

Study Session

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2018 SBC 901 Chapter 4 Prescriptive Compliance Method

OBJECTIVE: To gain an understanding for proper application of the prescriptive compliance method of the *Saudi Existing Building Code*. This includes specific requirements for alterations, repairs, additions to existing buildings, change of occupancy and relocations of buildings and structures, including historic buildings and structures.

REFERENCE: Chapter 4, 2018 *Saudi Existing Building Code*

KEY POINTS:

- Can existing materials, already in use, remain in use when executing a repair, alteration, addition, change of use, or relocation?
- Are new or replacement materials required to comply with the codes for new construction?
- Can the existing seismic force-resisting system remain unaltered?
- Does an existing building, together with an addition, need to comply with the height and area requirements of the SBC 201, Chapter 5?
- If an addition is made to an existing building within a flood hazard area that does not constitute a substantial improvement, does it need to comply with the flood hazard requirements for new construction?
- If an existing gravity load-carrying structural element has its gravity load carrying capacity reduced, is it considered an altered element?
- What are the requirements for design live load when constructing an addition to an existing building does not result in increased design live load?
- What are the requirements for existing structural elements carrying lateral load when an addition is structurally independent of the existing building? When it is not structurally independent?
- Are smoke alarms required in an existing building when an addition is made to that existing building?
- Can alterations make the existing building less compliant with the provisions of SBC 201 than it was prior to the alteration?

KEY POINTS:
(cont'd)

- How are alterations to existing buildings and structures in flood hazard areas addressed?
- When making alterations to an existing building, what is the threshold to require existing structural elements carrying gravity loads to comply with the code for new construction? Existing structural elements carrying lateral loads? Seismic Design Category F?
- What are the thresholds that trigger bracing for unreinforced masonry parapets during reroofing?
- What is considered to be a major alteration when evaluating wall anchorage requirements for unreinforced masonry walls? Bracing for unreinforced masonry parapets?
- What are the requirements for existing structural elements carrying lateral load when an addition is structurally independent of the existing building? When it is not?
- What is the threshold for roof diaphragms resisting wind loads in high wind regions to be evaluated in accordance with the code for new construction?
- Which occupancies with individual sleeping units and individual dwelling units are to be provided with smoke alarms in accordance with SBC 801.
- What are the thresholds for reducing the capacity of refuge areas when alterations affect the configuration of such areas? For Smoke Compartments in I-2 and I-3 Occupancies? For Ambulatory Care facilities? For Horizontal Exits?
- What are the requirements for repairs to buildings that have sustained substantial structural damage to vertical elements of the lateral force-resisting system? To gravity load carrying components? When damage is less than substantial structural damage?
- Can existing fire escapes continue to be used as a means of egress in existing buildings?
- Can new fire escapes be permitted for means of egress in existing buildings?
- When are opening control devices required on existing windows?
- Can windows serving as emergency escape and rescue openings in R-2 and R-3 occupancies be reduced in opening area from what is required for new buildings?
- When can a change of occupancy or use be made to an existing building without conforming to all the requirements of the SBC 201? Stairways?
- When does a structure need to conform to the seismic requirements for a new structure when a change of occupancy is being made?
- When do the provisions of the prescriptive compliance method apply to historic buildings?
- Can an alteration, using the prescriptive compliance method, impose a requirement for greater accessibility beyond that which is required for new construction?
- What is the threshold that triggers Type B dwelling units to be provided when an existing building undergoes a change of occupancy?
- What are the requirements for accessibility when a partial change of occupancy occurs? When a complete change of occupancy occurs?
- What are the accessibility requirements for additions? For alterations?
- What are the 14 areas where accessibility requirements are triggered when making alterations to an existing building?
- What are the four areas in historic buildings that are required to comply with accessibility requirements when such buildings undergo alterations or change of occupancy? What is the exception to this rule?

Code Text: *Except as otherwise required or permitted by this code, materials permitted by the applicable code, for new construction shall be used. Like materials shall be permitted for repairs and alterations, provided no hazard to life, health or property is created. Hazardous materials shall be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose, and location.*

Discussion and Commentary: There are two options for materials used in repairs to an existing building. Generally, the materials used for repairs should be those presently required or permitted for new construction in accordance with the Saudi Building Codes. It is also acceptable to use materials consistent with those that are already present, except where those materials pose a hazard. This allowance follows the general rule concept that any repair should not make a building more hazardous than it was prior to the repair.

Hazardous Building Materials

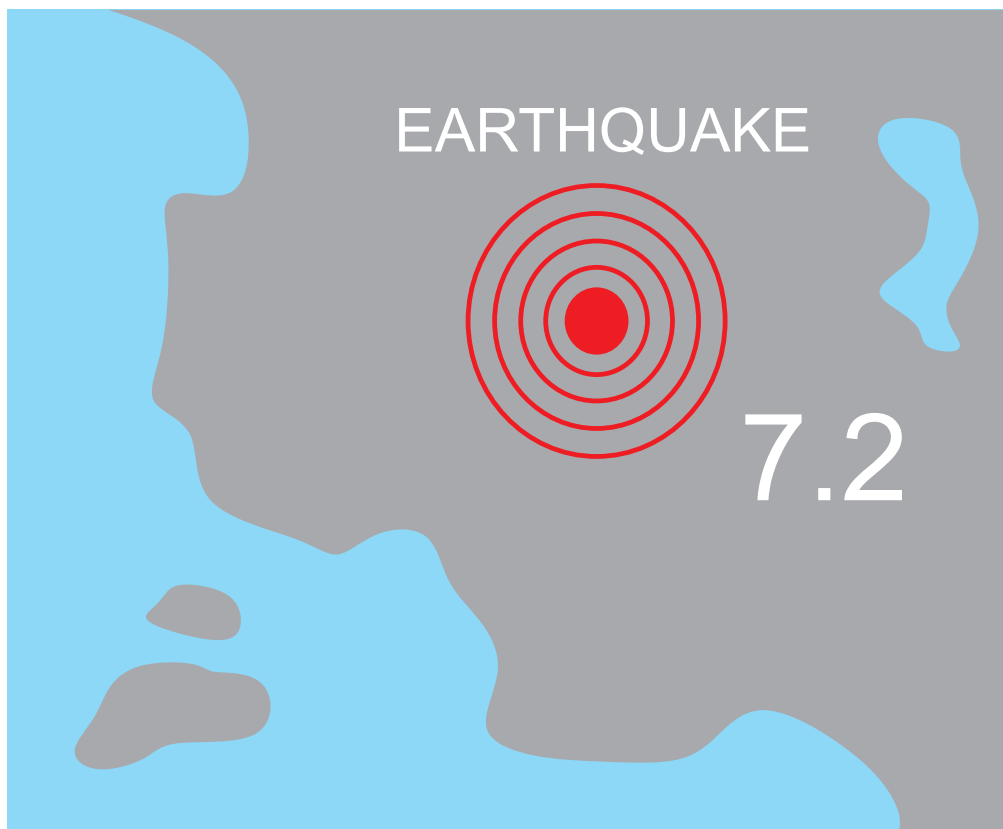
- Asbestos
- Lead
- Mercury
- Chlorofluorocarbons
- Polychlorinated Biphenyls (PCB)
- Radioactive sources



The uncontrolled disturbance of such materials can result in dangerous overexposures for contractor employees, contamination of the building, project delays, additional expenses, and even regulatory violations.

Code Text: *Where the existing seismic force-resisting system is a type that can be designated ordinary, values of R , Ω_0 and C_a for the existing seismic force-resisting system shall be those specified by the SBC 201 for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate, or special system.*

Discussion and Commentary: This section provides guidance to engineers on selecting system-related design coefficients for existing seismic force systems. Previously, this guidance was in each individual section related to alterations, additions, repairs and change of occupancy, but has been relocated to a more general section to ensure consistent application.



Center of Earthquake

The intent is that existing systems should be considered “ordinary” by default. For seismic systems that may provide performance equivalent to that of a detailed, intermediate, or special system, the code requires a demonstration of equivalence.

Code Text: *Additions to any building or structure shall comply with the requirements of the SBC 201 for new construction. Alterations to the existing building or structure shall be made to ensure that the existing building or structure together with the addition are no less conforming to the provisions of the SBC 201 than the existing building or structure was prior to the addition. An existing building together with its additions shall comply with the height and area provisions of Chapter 5 of the SBC 201.*

Discussion and Commentary: An addition is an increase in the area or height of an existing building. When a new building is erected immediately adjacent to an existing building, and they are separated by a fire wall, it is considered a separate building, not an addition to the existing structure. The new building must be designed to comply with the technical provisions of Chapters 1 through 33 of the SBC 201. A building with a proposed addition is to be evaluated to assure that such addition does not put the existing building into non-compliance or further non-compliance with SBC 201.

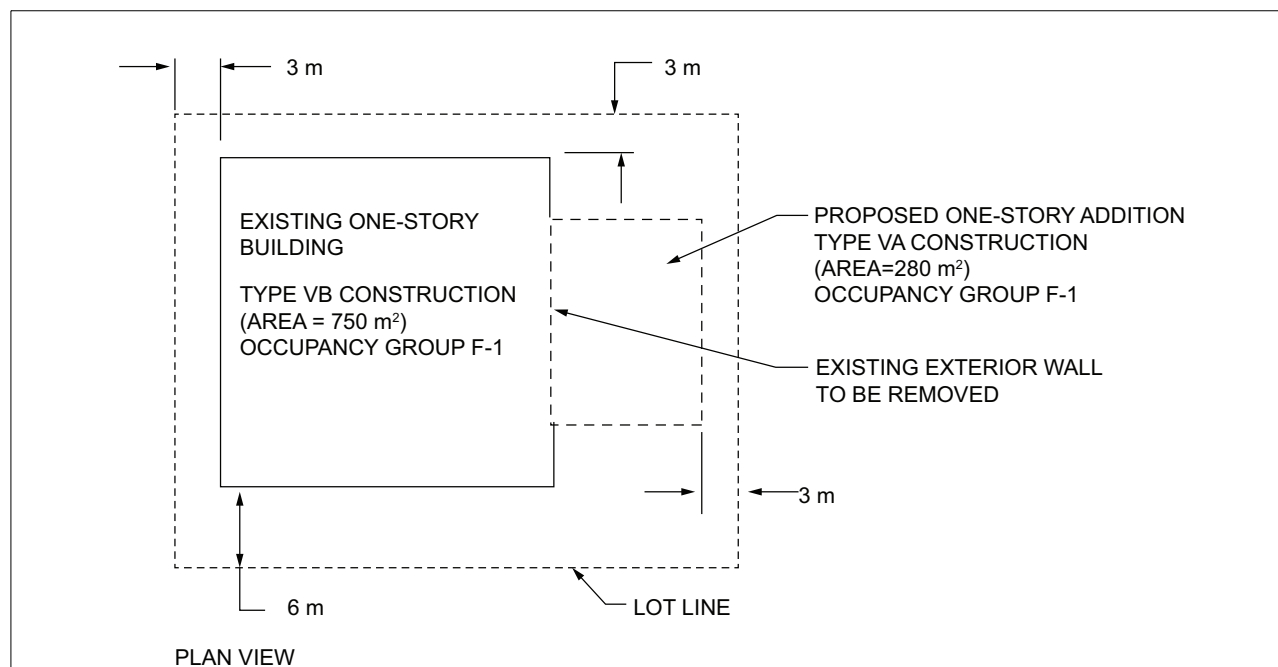


FIGURE 402.1
EXISTING BUILDING WITH ADDITION

A building with a proposed addition, without a firewall separation, is to be evaluated based on type of construction of the existing building or the addition, whichever is the lower type. When reviewing for compliance with SBC 201 sections for height and area, SBC 201 Section 602.1.1 is also applicable. One area of the code that is often overlooked is open perimeter. A horizontal addition to the existing building that alters the existing building's perimeter may put that building in non-compliance if the building had received area increases for open perimeter previously.

Code Text: *For buildings and structures in flood hazard areas established in Section 1612.3 (1612.1) of the SBC 201, or Section R322 of the SBC 1101, as applicable, any addition that constitutes substantial improvement of the existing structure shall comply with the flood design requirements for new construction, and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.*

For buildings and structures in flood hazard areas established in Section 1612.3 (1612.1) of the SBC 201, or Section R322 of the SBC 1101, as applicable, any additions that do not constitute substantial improvement of the existing structure are not required to comply with the flood design requirements for new construction.

Discussion and Commentary: Buildings or structures located in flood hazard areas are to be brought into compliance with the flood-resistance provisions of SBC 201 Section 1612 or SBC 1011 Section R322, as applicable, where the value of improvements, including additions, exceeds a certain value. See Chapter 2 for the definition of “Substantial improvement.” Section 105.3 requires the applicant to state the valuation of proposed work, which is to include the total value of work, including materials and labor. If the proposed work will be performed on buildings in flood hazard areas, a determination must be made as to whether the proposed work constitutes a substantial improvement.

If applicable, the value of work must include estimates of the value of the property owner’s labor and the value of donated labor and materials. To make a determination about whether a proposed addition constitutes a substantial improvement, the cost of the proposed work is to be compared to the market value of the building or structure before the work is started.



Water Line Inside Building

In order to determine market value, the building official may require the applicant to provide an appraisal or use other methods acceptable to the Federal Emergency Management Agency (FEMA) or equivalent program in Saudi Arabia. For additional guidance see FEMA P-758, Substantial Improvement/Substantial Damage Desk Reference.