



June 3, 2019

Diane Glenn
Technical Advisory Group Chair
2018 International Residential Code Technical Advisory Group Chair
1500 Jefferson Street SE
PO Box 21499
Olympia, WA 98504

Dear Diane,

During the May 1, 2019 meeting of the Residential Code Technical Advisory Group (TAG) the City of Seattle presented a proposal amending the future 2018 Washington State Building Code. The proposed code change allows “wet setting” of anchor bolts in structures covered by the Washington State residential code. The motion to recommend this amendment to the Committee did not receive a second.

While there is no appeal mechanism for a TAG recommendation, we understand that we can provide a report that will be included in the information that goes from the TAG to the Committee. Attached you will find a copy of our report for item 19-IRC27 Placement of Anchor Bolts in Concrete. We have changed the wording of the proposal as a result of the discussion of the TAG.

Thank you for the work your technical advisory group does and the opportunity to present our ideas to it.

Sincerely,

Jenifer Gilliland
Senior Code Development Analyst
Seattle Department of Construction and Inspections

State Building Code Council Committee

Report to Committee requesting review of proposed Washington State code change

Submitted by Jenifer Gilliland, Seattle Department of Construction and Inspections

Log No. 19-IRC27 Placement of Anchor Bolts in Concrete

Request for reconsideration: This item was heard in the May 1st TAG meeting and a motion to recommend it to the committee received no second. However, the meeting was lightly attended by TAG members and the Seattle Department of Construction and Inspections would like to see this code change heard by a larger group of stakeholders before it is disapproved. The proposal has been revised in response to comments made in the TAG meeting relating to the consolidation of concrete. Leaving the code “as is” puts building inspectors in the difficult position of disapproving a common practice or risking the liability of approving something not allowed by the code. We request that the Committee or the State Building Code Council review and consider including this item in the 2018 Washington State Residential Code.

The American Concrete Institute (ACI) that publishes the standards [ACI 332 Residential Code Requirements for Structural Concrete](#) and [ACI 318 Building Code Requirements for Structural Concrete](#) did not oppose this proposal at the International Code Council’s Committee Action Hearings for inclusion in the 2021 ICC codes. ACI has reacted positively to the most recent draft and is circulating it for comment.

Revised Proposed Code Change

The original code change proposal submitted to the TAG has been revised. Here is the language that is now proposed:

2018 IRC

R403.1.6 Foundation anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates in accordance with Section R505.3.1 or R603.3.1, as applicable. Wood sill plates supporting cold-formed steel framing shall be anchored to the foundation in accordance with this section.

Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of *braced wall panels* at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum 1/2-inch-diameter (12.7 mm) anchor bolts spaced not greater than 6 feet (1829 mm) on center or *approved* anchors or anchor straps spaced as required to provide equivalent anchorage to 1/2-inch-diameter (12.7 mm) anchor bolts. Bolts shall extend not less than 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be not fewer than two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a *braced wall panel* shall be positively anchored with *approved* fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318. Anchor bolts

shall be permitted to be located while concrete is still plastic and before it has set. in accordance with ACI 332. Where anchor bolts resist placement or the consolidation of concrete around anchor bolts is impeded, the concrete shall be vibrated to ensure full contact between the anchor bolts and concrete.

R404.1.3.3.6 Form materials and form ties. Forms shall be made of wood, steel, aluminum, plastic, a composite of cement and foam insulation, a composite of cement and wood chips, or other *approved* material suitable for supporting and containing concrete. Forms shall be positioned and secured before placing concrete and shall provide sufficient strength to contain concrete during the concrete placement operation. Form ties shall be steel, solid plastic, foam plastic, a composite of cement and wood chips, a composite of cement and foam plastic, or other suitable material capable of resisting the forces created by fluid pressure of fresh concrete.

Reason for code change:

Placing anchor bolts in a foundation immediately after concrete placement is commonly known as “wet setting”. The wet setting technique is useful where the design of a foundation makes it difficult to place anchor bolts in the correct location before concrete placement or where actual placement of the concrete around the bolts and forms is difficult. Additional labor costs are also associated with preparing the anchor bolt to stay in place before concrete placement. Many contractors wet set anchor bolts and some inspectors approve them. However, this practice conflicts with the code and referenced standards requiring anchor bolts and other steel reinforcement to be set and secured in place before concrete is placed.

Concerns about allowing wet setting in residential construction stem from the need for concrete to consolidate around the anchor bolt. Voids can form in concrete not in full contact with the bolt. A requirement to vibrate the concrete where the concrete’s plasticity is in question has been included and should address this concern.