



DENVER AMENDMENT PROPOSAL FORM FOR PROPOSALS TO THE 2019 DENVER BUILDING CODE AMENDMENTS AND THE 2021 INTERNATIONAL CODES

DENVER
THE MILE HIGH CITY

2021 CODE DEVELOPMENT CYCLE

1) Name: **Robby Schwarz** Date: **11/22/2021**
 Email: robby@btankinc.com Representing (organization or self): **Denver**

2) One proposal per this document is to be provided with clear and concise information.

Is a separate graphic file provided (“X” to answer): Yes or No

3) Highlight the code and acronym that applies to the proposal

<u>Acronym</u>	<u>Code Name</u>	<u>Acronym</u>	<u>Code Name</u>
DBC-AP	Denver Building Code–Administrative Provisions	IPC	International Plumbing Code
IBC	International Building Code	IRC	International Residential Code
IECC	International Energy Conservation Code	IFGC	International Fuel Gas Code
IEBC	International Existing Building Code	IMC	International Mechanical Code
IFC	International Fire Code	DGC	Denver Green Code

Please provide all the following items in your amendment proposal.

Code Sections/Tables/Figures Proposed for Revision:

Instructions: If the proposal is for a new section, indicate (new), otherwise enter applicable code section.

N1102.2.10 / R402.2.10 Crawl space walls

Proposal:

Instructions: Show the proposal using ~~strikeout~~, underline format.

Place an “X” next to the choice that best defines your proposal: Revision New Text Delete/Substitute Deletion

N1102.2.10 / R402.2.10 Crawl space walls. Crawl space walls shall be insulated in accordance with Table N1102.1.3 / R402.1.3.

Exception: Crawl space walls associated with a crawl space that is vented to the outdoors and the floor overhead is insulated in accordance with Table N1102.1.3 / R402.1.3 and Section N1102.2.7 / R402.2.7.

N1102.2.10.1 / R402.2.10.1 Crawl space wall insulation installations. Crawl space wall insulation is installed, it shall ~~be permanently fastened to the wall and shall extend downward from the floor to the finished grade elevation and then vertically or horizontally for not less than an additional 24 inches (610 mm).~~ Comply with the following:

1. Where exterior crawl space wall insulation is installed, it shall be permanently attached to the foundation and extend downward from the sill plate to not less than the base of the foundation.

2. Where interior crawl space wall insulation is installed, it shall be permanently attached to the foundation wall and extend downward from the sill plate at the top of the foundation wall to not less than the interior floor of the crawlspace.

Exposed earth in ~~unvented~~ crawl space foundations shall be covered with a continuous Class I vapor retarder in accordance with the International Building Code or International Residential Code, as applicable. Joints of the vapor retarder shall overlap by 6 inches (153 mm) and be sealed or taped. The edges of the vapor retarder shall extend not less than 6 inches (153 mm) up stem walls and shall be attached to the stem walls.

Supporting Information (Required):

All proposals must include a written explanation and justification as to how they address physical, environmental, and/or customary characteristics that are specific to the City and County of Denver. The following questions must be answered for a proposal to be considered.

- Purpose: The proposal offers direction for installation of foundation insulation that performs, and which makes enforcement easier and more straight forward. The standing language does not address insulating from the outside and ambiguously speaks to insulating the rim joist or "the depth of the floor"
- Reason: In Denver and else where the top of the foundation wall next to the sill plate connection for interior application of insulation, and at the bottom connection with footings or soils for exterior application of insulation are rarely insulated. Moving to requirements for the installation of insulation based on where it is installed increased Performance and efficiency in Denver through consistent application. This will benefit the City of Denver in there move to zero energy homes and the need for continuous thermal envelopes that avoid thermal bridging in order to reduce heating and cooling loads which will mean fewer PV panels needed on roof tops to achieve Zero energy in the future.
- Substantiation: There may be a perception that the removal of the requirement to insulate horizontally for 2' from the interior of the foundation inward over the dirt floor is a reduction in the stringency of the IECC, however, energy modeling has determined that the horizontal application of insulation inward for 2' over the crawl dirt vapor retarder does not improve the energy performance of the home. This currently required detail is rarely enforced in Denver and adjoining jurisdictions and or applied in the field. Proposals need to address cost of application and this proposal reduces cost by removing ineffective application.
- This proposal removes the requirement to bring insulation in bound from the foundation 24".
- There is no building science literature that supports this installation technique as a means to meaningfully reduce heat loss or gain. On the contrary, frost protected shallow foundations that are constructed with horizontal insulation extending away from the foundation on the outside of the building are not prohibited by this change in language. As demonstrated in the Bibliography, this type of insulation technique takes the insulation horizontally from the bottom of the installed vertical installed insulation which in this case would be at the bottom of the foundation wall on the exterior.
- The IECC has never specifically addressed the application of insulation on the exterior so this proposal clarifies that insulation shall extend above grade to the sill plate and below grade to the footing in this application.
- Regardless of if the crawl space is vented or unvented (both of which are allowed to be built in Denver) exposed earth needs to be covered with a class I vapor retarder to avoided moisture intrusion and as a first step in radon control. This proposal ensures that there is no confusion

about this sound building durability and building science point with the inclusion of “Vented” to the existing language.

Bibliography and Access to Materials (as needed when substantiating material is associated with the amendment proposal):

<https://www.huduser.gov/publications/pdf/fpsfguide.pdf>

Other Regulations Proposed to be Affected

***For proposals to delete content from the 2019 Denver Green Code in conjunction with adding it to other mandatory Denver codes and/or regulations, only.**

Please identify which other mandatory codes or regulations are suggested to be updated (if any) to accept relocated content.

Referenced Standards:

List any new referenced standards that are proposed to be referenced in the code.

Impact:

How will this proposal impact cost and restrictiveness of code? (“X” answer for each item below)

Cost of construction: ___ Increase ___ Decrease _x_ No Impact
Cost of design: ___ Increase ___ Decrease _x_ No Impact
Restrictiveness: ___ Increase ___ Decrease _x_ No Impact

Departmental Impact (City use only):

This amendment proposal increases/decreases/is neutral to the cost of plans review.

This amendment increases/decreases/is neutral to the cost of inspections.