



POLICY

Cancels:

See Also:

Approved by: **GLA**

BD POL - 1180 Evaluating Alternate Methods or Materials

The scope of this interpretation is to provide guidance and clarity for the evaluation of alternate methods of design or construction and alternate materials in the International Building (IBC) and Residential (IRC) Codes. It is also providing guidance on how Modifications in those codes differ and/or compliment alternate methods of design or construction and alternate materials.

1 Code References

IBC 104.10 & IRC R104.10 Modifications. Wherever there are practical difficulties involved in carrying out the provisions of this code, the building official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the building official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

IBC 104.11 & IRC R104.11 Alternate materials, designs and methods of construction. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

104.11.1 Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

104.11.2 Tests. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

2 General

Both code sections allow the building official (or staff) to make decisions on how to apply the code based on the code's intent. What is the code's intent or fundamental purpose? It can be summed up in five ideas. They are:

- * Safety of building occupants.
- * Stop panic.
- * Safety of fire personnel.
- * Safety and protection of other's property.
- * Safety and protection of own property.

Section 104.11 & R104.11 contain criteria for an evaluation. They are:

Quality, strength, effectiveness, fire resistance, durability and safety.

Using these six criteria with the ideas expressing the code's intent most alternates and/or modifications can be evaluated. Applicants should use **Bulletin 28** to make requests.

3. Interpretation

Modifications. The provisions of Section 104.10 allow the building official to make modifications to the requirements of the code under certain specified circumstances. The building official may modify requirements if it is determined that strict application of the codes impractical and, furthermore, that the modification is in conformity with the intent and purpose of the code. Without this provision in the code, the building official has very little discretionary enforcement authority and, therefore would have to enforce the specific wording of the code, no matter how unreasonable the application may seem.

The code does not intend to allow the building official to issue a variance to the provisions of the code to permit, for example, the use of only two exits where three are required. This is clearly not in conformity with the intent and purpose of the code no matter how difficult it may be to meet the requirements of the code.

Section 104.10 would permit the building official, for example, to modify fees relative to plan review fees when a housing project of several hundred buildings is to be constructed and only four different building plans are to be used for the construction. The amount of work expended by the building department and, consequently, the plan check fee to be charged in this particular case is not proportional to the number of buildings but rather to the number of separate building plans used. Therefore, a lower plan check fee could be developed by the building official to reflect the amount of work actually to be performed."

Alternate materials, designs and methods of construction. This section of the code may be one of the most important sections of the code. The intent is to implement the adoption of new technologies in materials and building construction which currently are not covered by the code. Furthermore, it gives the code even more of a performance character. The code thus encourages state-of-the-art concepts in construction and materials as long as they meet the performance intended by the code. This section also charges the building official to require that substantiating data and evidence be submitted to show that the alternate is in fact equivalent to the performance required by the code. Moreover, the code charges the building official with maintaining a record of such approvals in the department files."

Over the years we have used modifications primarily for existing buildings or conditions. For example, in remodeling an old building it might be determined that the existing 40" wide corridor should be 42" wide. It would be impractical to tear out one existing corridor wall for 2" of width. During plan review for a new building the same modification is not a practical difficulty and would not normally be approved.

Modifications may be considered during plan review. The test is still to identify a practical difficulty exists when applying the code. Cost may be considered but should be a minor factor. An example that recently was accepted was the Puyallup High School. To provide the functional needs of the school large open areas connecting with the exit way were required. In order to provide exit way protection the mall provisions for a smoke control system were used.

The authority to approve alternate materials, alternate designs and methods of construction is not as easy as it might appear. Most assemblies and/or products have standards for their manufacture and test they must meet for specific uses. For most building departments the review of engineering evaluations, weatherization tests, fire tests or any of the hundreds of other test is not a practical option. Without test facilities, laboratories and specialty engineers first hand evaluation is also not practical.

For these reasons Pierce County prefers to use products and/or assemblies that have been listed by an approved agency. ICBO has a list of approved listing agencies that assist in identifying which agency would be appropriate for a specific product or assembly. ICBO Evaluation Services also lists products and evaluates them against the proper standard(s) as well as against the code provision under which the product or assembly

would be used. Evaluation Reports from ICBO are very useful. They contain product and installation requirements. They also identify any limitations of use.

Products or assemblies without a current listing from an approved agency shall apply to the Building and Fire Code Board of Appeals (Board). Application to the Board requires an application fee of \$150 and seven (7) copies of any supporting data for the Board's review.

Exception: Old or expired reports may be used if the manufacturer can demonstrate that the product or assembly has not changed and that it is to be used in accordance with the conditions of the original listing. Additionally, the special inspection agency or quality control agency must still be overseeing the production process. Finally, the manufacturer must also address changes in code editions if relevant provisions for use of the product or assembly have been modified since it was listed.

In summary, modifications are used to trade code provisions to gain equal safety results. Alternate methods of design or construction and materials is product or system based reviews for equal safety results.

Board of Appeals.

Pierce County Code (PCC) 17C.10.050, Board of Appeals has been amended and states in part:

"In order to determine the suitability of alternate materials and type of construction and to provide for reasonable interpretations under the provisions of the codes named in 17C.01.010 Pierce County Code, the Building and Fire Codes Board of Appeals is hereby established."

The Board is an additional tool that can assist the building official in the evaluation of alternates or modifications. The Board is made up of five (5) members.

The five (5) regular members shall consist of one (1) member who is a licensed professional engineer or architect with at least ten (10) years experience, two (2) members who are laypersons, one (1) member who is a member of the Local Master Builder's, and one (1) member of the Pierce County Fire Chiefs' Association.

The variety of disciplines represented by board members allows the County to have thorough evaluations. Generally the Board is used when applicants disagree with the County's interpretation of the code. On occasion, The County has supported a request for an alternate when it was felt that approval would be controversial.

3 CODE INTERPRETATIONS

Section 104.1 and R104 General. The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

Code interpretations are very similar in nature to evaluating alternates or modifications. The first concern is to follow the intent and purpose of the code.

- * Safety of building occupants.
- * Stop panic.
- * Safety of fire personnel.
- * Safety and protection of other's property.
- * Safety and protection of own property.

Use the same criteria for evaluation:

Quality, strength, effectiveness, fire resistance, durability and safety.

Using these elements most interpretations can be evaluated and stay within the intent and purpose of the code. In day to day review and inspection all staff members make interpretations of the code. These informal interpretations should continue to be handled at the inspector or plans examiner level. To help in this level of interpretation staff should use handbooks from ICBO or IAPMO, plan review manual from ICBO and internal policies, procedures and interpretations.

Occasionally **formal interpretations** are needed. ALL requests for interpretation from outside agencies shall go through a supervisor. ALL responses from these agencies shall be reviewed by the building official, building inspector supervisor and the plans examiner supervisor prior to being used.