



CODE GUIDE

BUREAU OF DEVELOPMENT SERVICES



TOPIC: Fire and Life-Safety Guide for Existing Buildings (FLEx Guide) - UBC/1/#1

CODE: Structural Specialty Code: 1998 Edition

REVISED: July 15, 2004 [Ray Kerridge]

REFERENCE: Section 104.2.8 and Various – Structural Specialty Code

SUBJECT: Alternate Design, Methods and Materials of Construction for Existing and Historic Buildings

QUESTION: Are there alternate design, methods and materials of construction that are deemed to meet the intent of the code and provide an acceptable, equivalent level of fire and life safety in existing and historic buildings?

RESPONSE: The modification of existing buildings always creates unique challenges. Quite often the application of the Oregon Structural Specialty Code (OSSC) provisions for new construction do not practically address the unique circumstances of existing buildings. However, under Sections 104.2.7 and Section 104.2.8 of the OSSC, the building official may approve modifications or alternate methods of construction that meet the intent of the OSSC.

This guide provides a selection of approved modifications and alternate methods of construction that address some specific aspects of the alteration of existing buildings.

The provisions of this guide have been separated into several sections:

- A. Definitions
- B. General scoping and application statements
- C. Change of occupancy – hazard category classification
- D. Specific design requirements

Each section must be used in conjunction with the other. For example, if either the general scoping section or the change of occupancy section eliminates your building from the provisions of the guide, then you are not allowed to use the specific design requirements outlined in the guide.

A. DEFINITIONS

This section provides definitions for terms used within the context of this guide. The terms defined in this section apply only to the allowances and requirements of this guide. Terms listed in singular represent the plural and vice versa. Terms not defined in this section have the meaning provided in the current edition of the OSSC. Terms not defined in either this guide or the OSSC, have their ordinary accepted meaning.

1. **Addition.** Is an extension or increase in floor area, number of stories or height of a building or structure.
2. **Alteration.** Is any construction or renovation to an existing structure other than repair or addition.
3. **Building Code.** The current edition of the Oregon Structural Specialty Code (OSSC) or the structural and fire life safety portions of the Oregon One and Two Family Dwelling Specialty Code (OTFDSC), as appropriate. This definition of building code also includes locally adopted regulations governing the design, construction or alteration of structures within the City of Portland.
4. **Director.** The Director of the Bureau of Development Services including his or her designees. Designees may be either individuals or boards serving under the Director.
5. **Distinct Hazard.** Any clear and evident condition, as identified by the Director in consultation with the Fire Marshal's Office that exists as an immediate danger to the safety of the occupants during an emergency. Conditions that do not meet the requirements of current building codes and ordinances, in and of themselves, do not constitute a distinct hazard.
6. **Existing Building.** A building or structure that was constructed before the building code currently in effect. Existing buildings may be either vacant or occupied. For the purposes of this guide, the definition of existing building also includes historic buildings.

Alterations made to existing buildings not meeting this definition will need to meet all applicable building code requirements.

7. **Existing Elements.** Those elements within an existing building created with benefit of permit and inspection in existence at the time of current permit application.
8. **Historic Building.** An existing building, in whole or in part, which is listed on the National Register of Historic Places, established and maintained under the National Historic Preservation Act of 1966 (P.L. 89-665), or if the National Register of Historic Places ceases accepting nominations, is approved for listing on an Oregon register of historic places, or is a locally designated landmark protected by ordinance. Historic buildings are also those buildings or structures that are determined to be contributing buildings in a historic district.
9. **Life-Safety Elements.** Those elements in a building that facilitate safe occupation of and evacuation from the building.
10. **Life-Safety Hazards.** Conditions or elements that may restrict building occupants from prompt evacuation from the building in case of a building fire or similar event.
11. **Life-Safety Evaluation.** An evaluation of the life-safety hazards of a building or structure using the procedures contained in *NFPA 909, Standard for the Protection of Cultural Resources, Appendix B, Fire Risk Assessment in Heritage Premises*.
12. **Repair.** The restoration to good or sound condition of any part of an existing building for the purpose of maintenance.
13. **Sprinkler Protection.** Use of an automatic sprinkler system installed to either NFPA standard 13 or NFPA standard 13R as appropriate to reduce the fire hazard of a building.

B. GENERAL SCOPING AND APPLICATION

This section provides general guidance for the application of this guide to existing buildings where modifications requiring building permits are planned.

1. General.

Only those existing buildings constructed or altered with benefit of the appropriate construction permits qualify to use the provisions of this guide.

Existing buildings containing existing elements created or altered without benefit of a permit must be evaluated by BDS under the Get Legal program before utilizing the provisions of this guide. The following elements will be reviewed to determine eligibility:

- a. All structural and life-safety elements in the building will be evaluated to verify that they exist, have been maintained and function as intended; and
- b. All other building elements conform to the applicable provisions of this guide.

For more information about the Get Legal Program, please call (503) 823-7281.

2. Additions.

Additions to existing buildings fall out of the scope of this guide and shall conform to the requirements of the building code.

3. Adoption of Additional Standards.

In addition to the standards specified in this guide, the Director hereby adopts the following standards:

- a. U.S. Department of Housing and Urban Development (HUD) Guideline on Fire Ratings of Archaic Materials and Assemblies, published February 2000.

The following information shall be provided when the HUD guidelines are used:

- 1) Use of the guidelines shall be indicated on the plan cover sheet; and
 - 2) All appropriate documentation including table excerpts and calculations from the guidelines shall be provided for each instance that the guideline is being used; and
 - 3) A copy of the Preliminary Evaluation Worksheet shall be included with the permit submittal.
- b. International Existing Building Code (IEBC), as published by the International Code Council (ICC) in 2003.

Provisions in the IEBC may be used as an alternate to this Guide where it is demonstrated that the requirements outlined in the IEBC have been met.

Use of the IEBC as an alternate to this guide requires request for appeal through the BDS Administrative Review Process.

4. **Alterations or Repairs.**

The provisions of this guide apply to the alteration or repair of existing elements in existing buildings.

- a. **Repairs.** Repairs may be made with materials similar to those materials used in the original construction and shall be made in a manner consistent with the manner in which the original element was constructed. In no case shall a repair create nor allow a life safety hazard to continue.
- b. **Alteration Limitations.** The provisions of this guide are not applicable to alterations that create new rooms or space through the addition of new elements such as new partition walls, corridor walls, mezzanines or other new elements. Each new element, wall or mezzanine being created shall conform to the applicable provisions of the building code.

Any alteration resulting in the creation of new space, as described above, may be subject to requirements under Title 33 of the City

Zoning Code. Please contact the BDS Land Use Services Section at (503) 823-7526 for additional information.

5. **Change of Occupancy.**

Changes of occupancy shall be reviewed in relation to relative hazard category (See Below). In general, changes of occupancy resulting in a building or space increasing in relative hazard category must meet the provisions of the building code. Changes of occupancy resulting in a building or space maintaining or decreasing in relative hazard category may use the provisions of this guide.

6. **Existing Agreements.**

Existing agreements with BDS or the Fire Bureau regarding the construction or alteration of a building that have expired are no longer valid.

Existing agreements with BDS or the Fire Bureau regarding the construction or alteration of a building that have not expired are valid. Existing agreements include:

- a. FM-41 agreements
- b. Appeals
- c. Life-safety agreements

If the provisions of this guide cover building elements that are not addressed in the existing agreement, then this guide may be used for those elements.

7. **Historic Buildings.**

Historic buildings may take advantage of any provision allowed for existing buildings under the terms of this guide. However, in some cases only those existing buildings designated as historic buildings may take advantage of certain allowances. These individual specific allowances are identified throughout the guide as such.

8. **Land Use, Planning and Zoning Requirements.**

Land use, planning and zoning requirements are not contained in this guide. For information regarding land use, planning and zoning

requirements please contact the BDS Land Use Services Section at (503) 823-7526.

8. **Other Code or Program Guides.**

This guide may be used in conjunction with other applicable BDS Code or Program Guides. Where the requirements of two different guides are in conflict, the more restrictive requirement shall apply.

9. **Structural and Seismic Requirements.**

Seismic and structural requirements are not contained in this guide. Seismic retrofit requirements shall meet the provisions found in Chapter 24.85 of the Portland City Code. For assistance with other structural issues, please contact the BDS Structural Engineering section at (503) 823-7538.

11. **Specific Issues not Addressed in this Guide.**

This guide provides alternate methods for existing buildings for those building code items most commonly appealed through the BDS administrative review board. Unless addressed by a valid existing agreement as stated above, other alternate methods affecting existing buildings must be approved either through the BDS administrative review process or through use of another BDS code guide.

12. **Other Considerations.**

In some circumstances, use of a particular option will require the installation of a particular life-safety element throughout. This most commonly applies to the installation of a sprinkler system or smoke detection system. Unless otherwise specified within the guide, all elements must be provided for each specific alternate for the alternate to be valid.

C. CHANGE OF OCCUPANCY – HAZARD CATEGORY CLASSIFICATION

Quite often, throughout the life of an existing building, the occupancy classification changes from one type of activity to another. Each change of occupancy classification creates unique and challenging circumstances. The following rules will be used to evaluate change of occupancies in existing buildings. The outcome of the evaluation will determine if an

existing building going through a change of occupancy may use the provisions outlined in this guide.

1. **General.**

Change of occupancy will be reviewed in relation to relative hazard category. Relative hazard category is a function of three things:

- a. Occupancy classification as established by the building code
- b. Floor area of the proposed occupancy
- c. Increase in occupant load

As stated above, if a change of occupancy places a building into a higher relative hazard category, then the provisions of this guide do not apply.

2. **Hazard Category Classification.**

Use the following steps to determine the overall relative hazard category classification.

- a. Determine the new occupancy classification using chapter three of the building code.
- b. Using the following table, compare current occupancy classification, as determined from existing permit records, with new occupancy classification to determine the Occupancy Relative Hazard Category:

Occupancy Relative Hazard Classification	
Relative hazard	Occupancy Classification
5 (Highest)	A, E, I-1.1, I-3, H-1, H-2, H-3, H-6, H-7
4	R-1, SR, I-2, I-3.1
3	B, F, I-1.2, I-1.3, M, S
2	H-4, H-5
1 (Lowest)	R-3, U

- c. Determine the percentage of net building area changing in relation to the existing building net floor area.
- d. Based on the new occupancy classification and the percentage of area affected by the proposed change, using Table 10 A of the building code, determine any increase or

decrease in occupant load from the existing occupancy classification.

- e. Use the following table to establish the Overall Relative Hazard Category Determination and decide if provisions of this guide may be used:

Overall Relative Hazard Category Determination				
Occupancy Relative Hazard Classification Increase, Same or Decrease	Net Floor Area of Changed Portion	Increase in Occupant Load	Higher Relative Hazard Category?	Guide Use Allowed Yes or No
Increase (e.g. change from ORHC level 3 to level 4)	More than 50% of net building area	or More than 149	Yes	No
Increase	50% or less of net building area	and 149 or less	No	Yes
Same or Decrease	N/A	More than 50% or more than 149 occupants	Yes	No
Same or Decrease	N/A	50% or less and 149 occupants or less	No	Yes

D. SPECIFIC DESIGN REQUIREMENTS

Existing buildings qualifying to use the provisions of this guide, may choose from the following alternate methods as a means to comply with specific minimal life safety provisions. If a specific life safety element is not listed in this section, then the provisions of the building code apply. Alternates not provided for in this section may be submitted for consideration and possible approval through the BDS Administrative Appeal Process. For more information on the Administrative Appeal Process, please call (503) 823-7541.

The alternates in this guide have been organized to follow the flow of building planning and construction. As such, the subsections are organized as follows:

1. Alteration and Repair
2. Use and Occupancy

3. Fire Resistive Construction
4. Means of Egress
5. Emergency Systems
6. Accessibility
7. Occupancy Ventilation
8. Energy Conservation
9. Other Alternates
10. Residential Occupancies

In many cases, each subsection will provide a number of specific alternates each addressing a specific building element. For those buildings qualifying for use of this guide, a combination of the provisions of this guide, other code guide provisions, applicable administrative appeals and building code provision may be used together. In certain circumstances, the provisions of this guide may be used in conjunction with valid existing agreements. To determine if this is applicable, please contact BDS at (503) 823-7541.

1. **Alteration and Repair.**

Unlimited use of materials or construction methods consistent with those in an existing building is allowed for the alteration or repair of existing elements of that building where:

- a. The application of materials or construction methods meet the provisions of this guide; and
- b. Use of such materials or construction methods does not create nor allow a life safety hazard to continue; and
- c. There is not an increase in the floor area, volume or size of the existing building.

2. **Use and Occupancy.**

a. **Change of occupancy.**

Changes in occupancy, either use or character, falling under the provisions of this guide will not mandate conformance with all new construction requirements outlined by the building code, provided:

- 1) The new use or occupancy neither decreases life safety or allows a deficiency to continue; and

- 2) Unless otherwise stated in this guide, all alterations and additions meet the provisions of the building code or this guide as applicable.

b. **Maximum floor area.**

Regardless of the use or character of occupancy, and where a change of occupancy to a higher occupancy relative hazard classification is not involved, floor area of an existing building may exceed the allowable floor area as specified in the building code, so long as the area does not exceed that of the building as constructed and documented by the Director. This allowance only applies to floor area that can be verified by either historic data or a previous permit.

Where a change of occupancy to a higher occupancy relative hazard classification is involved, the floor area of an existing building may exceed the allowable floor area as specified in the building code by a maximum of 10%. In cases where the existing floor area exceeds the floor area permitted by building code by more than 10%, the Director may approve the increased floor area by mandating additional requirements. Additional requirements may include but are not limited to:

- 1) The installation of sprinkler protection;
- 2) An increase in the exit capacity;
- 3) The creation of area separation components or horizontal exits; or
- 4) The addition of stair enclosures.

c. **Maximum height.**

Where a change of occupancy to a higher occupancy relative hazard classification is not proposed, regardless of construction type or the use or character of occupancy, the maximum height and number of stories of an existing building may exceed the permitted height and number of stories specified in the building code, provided the height and number of stories does not exceed that of the building as originally constructed and documented by the Director. This allowance applies to number of stories or measured

height that can be verified by either historic data or a previous permit.

Where a change of occupancy to a higher occupancy relative hazard classification is proposed, and the existing height or number of stories exceeds the height permitted by the building code, the Director may allow the additional height by mandating additional requirements. Additional requirements may include but are not limited to:

- 1) The installation of sprinkler protection;
- 2) An increase in the exit capacity;
- 3) The creation of areas separation components or horizontal exits; or
- 4) The addition of stair enclosures.

3. **Fire Resistive Construction.**

a. **Exterior wall construction.**

One- or two-hour fire resistive construction. Where exterior walls are required to be either one - or two-hour fire resistive construction or are required to have opening protection, the fire resistive construction requirements or opening protection may be satisfied by providing all the following:

- 1) The building shall have sprinkler protection throughout; and
- 2) For each opening requiring protection, at least one internal and one external sprinkler head shall be located over the opening.

All sprinkler protection shall be installed as required by the City Fire Marshal.

Three- or four - hour fire resistive construction. Where existing exterior walls are required to be of three - or four-hour fire resistive construction per the building code, the Director may, on a case by case basis, approve alternative

construction that demonstrates equivalency to at least two-hour fire resistive construction. In addition to other components of the alternate, the approved alternate must include all of the items listed for one- or two-hour fire-resistive construction above.

b. **One-hour construction.**

Where the building code requires an existing building to be one-hour fire-resistive construction throughout, existing non-rated construction may remain in place provided the building meets all of the following conditions:

- 1) The building has sprinkler protection throughout; and
- 2) The building does not contain an H occupancy; and
- 3) The Director and the Fire Marshal have approved a building life-safety evaluation resulting in a classification of low or normal hazard.

c. **Occupancy separations.**

All new occupancy separations shall comply with the building code.

Where rated occupancy separations are required between existing occupancies, the following allowances are permitted when the building has sprinkler protection throughout.

- 1) **Two-hour separation.** Required two-hour occupancy separations may be constructed to meet one-hour requirements. In addition:
 - a) Openings shall be protected by fire resistive assemblies that are rated at least three-fourths hour; and
 - b) All opening protection shall be either self-closing or automatic closing.

New windows or relites shall be permitted in occupancy separations with reduced fire ratings as allowed under this section when they meet the

requirements for a listed and labeled one-hour assembly.

- 2) **One-hour separation.** Required one-hour occupancy separations may be non-rated construction complying with the following requirements:
 - a) Combustible or non-combustible studs (consistent with construction type of the building) shall be spaced at 16 inches on center with either $\frac{3}{4}$ cement plaster on non-combustible lath or $\frac{1}{2}$ inch gypsum wallboard on both sides of the stud assembly.
 - b) Openings for doors, windows or relites shall be protected by tight fitting smoke and draft-control assemblies having a fire-protection rating of not less than 20 minutes. Door closers are not required.

d. **Glazing in fire-rated systems.**

Where an existing interior wall is required to have a one-hour fire resistive rating due to corridor construction requirements, existing glazing materials may be allowed to remain in the existing wall provided:

- 1) The glazing is provided with approved smoke seals; and
- 2) The affected area is provided with sprinkler protection.

Where required by the City Fire Marshal, additional sprinkler protection for the existing glazing material shall be provided.

e. **Doors in occupancy and area separations.**

- 1) **Non-rated solid core doors.** Existing, solid core non-rated doors, including panel doors, may be accepted as equivalent fire-rated doors, when an approved fire door manufacturer conducts an

evaluation of the door and provides a letter to the Director certifying that the door is constructed to a standard equal to the required fire-rated construction.

- 2) **Calamine fire doors.** Existing calamine fire doors in stairwells or area separation walls may remain in use provided they are in good repair and are operable with a force not exceeding that allowed by the building code.
- 3) **Labeled doors.** Existing doors, which are labeled with a fire rating consistent with the enclosure requirements, need not be replaced even though they are not time and temperature rated as required by current code.

f. **Interior finish materials.**

- 1) **New finishes.** New interior wall and ceiling finishes shall conform to the provisions of the building code.
- 2) **Existing finishes.** Where approved by the Director, existing finishes need not be treated with fire retardant where sprinkler protection is provided throughout the building.
- 3) **Firtex type ceiling tiles.** Where an alteration affects ceiling finishes, existing firtex type ceiling tiles must always be treated to achieve the required flame spread class.
- 4) **Other finishes.** Other existing nonconforming materials used on interior walls and ceilings may be treated with an approved product that decreases the flame spread classification of the existing finish to within one flame spread classification of that required by Chapter 8 of the building code.

g. **Wood lath and plaster.**

Wood lath and plaster walls built in conformance with codes, standards, and listings published before 1943, are allowed to remain in place.

Under these provisions, a wood stud wall assembly with gypsum or lime plaster on hand split or sawn wooden lath obtains a one-half (1/2) hour fire-resistive rating.

h. Vertical shafts.

For other than stairways, vertical shafts need not be enclosed when:

- 1) The shafts are blocked at every floor level by the installation of approved fire-stopping material or equivalent construction installed to prevent the initial passage of smoke and flame; and
- 2) The building has sprinkler protection throughout.

Stairways required to be enclosed under the requirements of the building code shall always be located in enclosures.

i. Roof materials.

Existing or original roofing materials may be repaired or reconstructed subject to the following requirements:

- 1) The existing roofing system shall be in good repair, exclude dampness and be capable of providing shelter to the building occupants.
- 2) Where the existing roof consists of wooden roof materials, like materials may be utilized where fire resistance is required, provided they are treated with fire-retardant materials to achieve an equivalence to a Class C fire-resistive rating.
- 3) Repair or reconstruction shall preserve any historic materials and the appearance of the roof.

j. Penthouses.

Existing penthouses serving only building mechanical or elevator equipment may exceed the 1/3 floor area limitation

of the building code, but shall be not more than $\frac{1}{2}$ of the area of the supporting roof provided:

- 1) The penthouse construction is non-combustible; and
- 2) The penthouse is equipped with sprinkler protection.

Penthouses shall meet the height limitations specified in the building code.

4. **Means of Egress.**

a. **General.**

As an alternate to total conformance with the building code for egress, the Director will consider approval of existing egress plans that:

- 1) Allow quick and safe evacuation from any portion of the building; and
- 2) Meet the intent of the building code for exiting and life-safety provisions; and
- 3) Have been approved through an FM41 process or another code enforcement action such as an appeal.

Exceptions to individual egress system requirements of the building code may be submitted for consideration and possible approval through the Administrative Appeal Process. Exceptions granted under the administrative appeal process cannot adversely affect the intended life-safety element. For example, existing door openings, corridor and stairway widths may be less than the specified dimensions in the building code, provided there is sufficient width and height for a person to pass safely through the opening or traverse the exit and the reduced dimensions do not substantially reduce the overall exit capacity of the building.

b. **Doors.**

- 1) **Swing.** Upon specific case approval by the Director, the front or main exit door(s) need not be rehung to

swing in the direction of exit travel provided the total occupant load of the building, can exit through other exits.

- 2) **Width.** Doors providing less than the code required minimum 3 feet width x 6 feet-8 inch height may be approved on a specific case approval by the Director where it can be demonstrated that:

- a) The required overall total exit width is met; and
- b) The narrower doors do not pose a life-safety hazard relative to exit capability; and
- c) Disabled access is adequately addressed.

- 3) **Historic hardware.** Where existing door hardware is determined to be an historic feature of the building, it may remain in place provided it has functioning latches.

c. **Corridor construction.**

Where existing corridors are required to be one-hour rated fire-resistive construction by the building code, the existing corridor may remain in place provided all of the following provisions are met:

- 1) The building has sprinkler protection throughout; and
- 2) The building is provided throughout with an automatic smoke detection system; and
- 3) Corridors of non-rated construction shall consist of combustible or non-combustible studs (consistent with construction type of the building) spaced at 16 inches on center with either $\frac{3}{4}$ cement plaster on non-combustible lath or $\frac{1}{2}$ inch gypsum wallboard; and
- 4) Where provided, glazing in corridors meets the following:
 - a) Existing non-rated glazing of any size is allowed provided it is protected on both sides by sprinkler heads spaced no more than six feet on center; or

- b) New non-rated glazing of any size may be installed provided it meets all of the following requirements:
 - i) Frames shall be consistent with the type of construction of the building, i.e. non-combustible frames in buildings of Type I or II construction or combustible frames in buildings of Type III, IV, or V construction.
 - ii) Glass shall be tempered; and
- 5) All exit-access doorways and doors opening onto the corridor shall meet the requirements below:
 - a) Doors shall be tight fitting; and
 - b) Doors in all H, I, R-1 and SR Occupancy categories shall meet the building code.
- d. **Dead ends.**

Where access to two exits is required by the building code and where access is provided by an existing corridor, the corridor may have dead end elements up to a maximum of fifty feet provided the building has sprinkler protection throughout.
- e. **Elevator lobbies.**

Except in residential occupancies, where elevator lobbies are required in an existing multi-story building due to:

 - 1) installation of new elevators;
 - 2) replacement of existing elevators;
 - 3) alterations to elevator shafts;
 - 4) alterations to the egress system that the elevator opens onto;
 - 5) a change of occupancy; or
 - 6) when otherwise required by the Director

An elevator pressurization system may be provided in lieu of elevator lobbies provided that all the following provisions are met:

- 1) The elevator pressurization equipment shall be tied into the emergency power system required for the public egress system of the building and shall activate upon building alarm; and
- 2) Shaft pressurization shall attain 0.05 inch water gage relative to the building floors; and
- 3) The elevator pressurization system shall account for any vents and openings in the shafts, as well as stack effect; and
- 4) The elevator pressurization system must be activated upon receipt of alarm from any smoke detector or water flow alarm in the building; and
- 5) The building has sprinkler protection throughout; and
- 6) The building must be provided with a smoke detector connected to the building alarm system and elevator pressurization system at each lobby.

See BDS Code Guide UBC/4/#4 for additional clarification.

f. **Stair openings between three floors.**

Stairways may be open between three floors where all of the following apply:

- 1) Open stairs connect a single tenant; and
- 2) The open stair is not a required means of egress; and
- 3) The building has sprinkler protection throughout; and
- 4) The total building is provided with a smoke detection and alarm system; and
- 5) A soffit-draft curtain shall be installed at each ceiling/floor opening of the open stair. Soffit design shall be approved by the Director; and
- 6) Additional sprinkler protection shall be provided around the perimeter of the floor openings within two (2) feet of the draft curtain; and

- 7) A smoke detector connected to the building smoke detection/alarm system shall be provided adjacent to the open stair on each floor.

g. **Existing stairs.**

Existing stairs may remain in place where they meet the provisions listed below:

- 1) **Historic stairways.** In designated historic buildings, stairs, including handrails, may remain as originally constructed and documented by the Director provided they do not create a life-safety hazard and that the State Historic Preservation Office provides a written statement that the stairs are an important element in the historic fabric of the building.
- 2) **Stairways in existing commercial buildings.** In commercial buildings other than designated historic buildings meeting the above allowances the following provisions apply:
 - a) Rise. Stairs may have a maximum rise of 7 ½ inches.
 - b) Run. Stairs may have a minimum run of 10 inches.
 - c) Width. Width of stairs shall be sufficient to accommodate the calculated occupant load served, but shall be not less than 36 inches in width.
 - d) Existing Handrails. Existing handrails located at 30-36 inches above the tread nosings are allowed. A 6-inch extension of the handrail beyond the top and bottom riser or termination at a newel post is acceptable.
 - e) Intermediate vertical rails (stair "pickets"). Stair pickets shall be spaced a maximum 6 inches apart.
 - f) Handrails. Historic handrails shall provide an equivalent gripping surface to the requirements of the building code.

- g) Stairwell doors. Existing calamine or labeled fire doors in stairwells may remain in use provided they are in good repair and are operable with a force not exceeding that allowed by the building code.
 - h. Winder Stairs. Winder stairs may remain in use provided it can be documented that the winder stair was an original element of the building construction or was constructed legally under a building permit at a later time. At least one other stair, meeting the above standards, is required in the building. The winder stair shall have a minimum width of 36 inches, have a minimum tread depth of 9 inches measured at a point 12 inches from the narrowest point of the winder treads and shall have or be provided with handrails meeting the standards established in this code guide.
- 3) **Stairways in historic single family buildings.** For one and two family dwellings designated as historic buildings, where the above allowance for a designated historic building cannot be met, the following provisions apply:
- a) Rise. Stairs may have a maximum rise of 8 inches.
 - b) Run. Stairs may have a minimum run of 9 inches.
 - c) Width. Stairs shall be not less than 30 inches in width.
 - d) Existing Handrails. Existing handrails located at 28-36 inches above the tread nosings are allowed. A 6-inch extension of the handrail beyond the top and bottom riser or termination at a newel post is acceptable. A newel post or volute may be located at the bottom most tread and serve as the termination of the handrail.

- e) Intermediate vertical rails (stair “pickets”). Stair pickets shall be spaced a maximum 9 inches apart.
- f) Handrails. Historic handrails shall provide an equivalent gripping surface to the requirements of the building code.
- g) Doors. Existing doors consistent with the historic character of the dwelling may be located at the bottom of a stair without providing the required landing between the door and the first riser. Such doors shall be openable from the stair side without the use of a key or special knowledge.
- h) Winder Stairs. Winder stairs may remain in use provided it can be documented that the winder stair was an original element of the building construction or was constructed legally under a building permit at a later time and provided the stair has a minimum width of 30 inches, has a minimum tread depth of 8 inches measured at a point 12 inches from the narrowest point of the winder treads and has or is provided with handrails meeting the standards established in this code guide.

h. **Guardrails.**

Existing guardrails may remain in place where they meet the following provisions:

- 1) **Historic buildings.** In designated historic buildings, guardrails may remain as originally constructed and documented by the Director provided they do not create a safety hazard and that the State Historic Preservation Office provides a written statement that the guardrails are an important element in the historic fabric of the building.
- 2) **Other existing commercial buildings.** In buildings other than designated historic buildings meeting the above allowances or other than a one or two family

dwelling designated as a historic building the following provisions apply:

- a) The height of guardrails shall be not less than 38 inches.
- b) Intermediate pickets shall be spaced not more than 8 inches apart.
- c) The applicant shall provide documentation to verify that the guardrail is capable of resisting the required lateral force as specified in the building code.

- 3) **Historic single family residences.** For one and two family dwellings designated as a historic building, where the above allowance for a designated historic building cannot be met, the following provisions apply:

- a) The height of guardrails shall be not less than 32 inches.
- b) Intermediate pickets shall be spaced not more than 9 inches apart.
- c) The applicant shall provide documentation to verify that the guardrail is capable of resisting the required lateral force as specified in the building code.

i. **Exit separation.**

Two exits may be separated a maximum of one-third of the overall diagonal of the area served where:

- 1) The building has sprinkler protection throughout; and
- 2) The area served by these exits is protected by smoke detectors connected to the building fire alarm system.

j. **Fire escapes.**

Existing fire escapes that have been previously approved by the Director shall be acceptable as one of the required means of egress provided any fire escape:

- 1) Extends to the ground, unless the removal of the extension to the ground has been specifically approved by the Fire Marshal's Office in writing; and
- 2) Is adequately signed; and
- 3) Is in good working order and repair; and
- 4) Complies with ORS 479.040 through and including 479.080.

Access to fire escapes shall be by an opening having a minimum width and height of 29 inches when open. No sill shall be more than 30 inches above the adjacent floor, landing or approved step.

In addition, at least one other stair, other than a winder stair, meeting the stair requirements as stated above is available for exiting.

- k. **Egress lighting.**
Egress lighting shall be provided as required by BDS Program Guide for Egress Lighting.

5. **Emergency Systems**

- a. **General.**
Where emergency systems of an existing building are upgraded, then the upgrade shall comply with the following requirements:
- b. **Emergency generator.**
Emergency generator installation shall comply with BDS Code Guide UBC/10/#6, governing the installation of generators and generator enclosures, and the following:
 - 1) **Fuel storage areas.** Fuel storage areas for emergency generator systems storing fuel quantities in excess of the exempt quantities specified in the building code but housing no more than 660 gallons of combustible liquid, may be constructed to the following:

- a) The area of the emergency generator and fuel supply tank may be separated from other areas of the building by non-combustible construction.
 - b) The sprinklers in the generator area must be designed to an Extra Hazard Group I standard.
 - c) Spill containment for the area equal to the capacity of the tank plus 20 minutes of sprinkler flow must be provided.
 - d) Ventilation for the area must meet the requirements of the Oregon Mechanical Specialty Code.
- 2) **Generator placement.** If the generator is placed in a garage area, it shall be on an elevated platform at least 18 inches high to prevent flammable vapors from vehicle fuel tanks leaks from being ignited by generator operation.
 - 3) **Building requirements.** The building containing the emergency generator must be totally protected by an approved automatic sprinkler system.
 - 4) **Locking requirements.** The generator area must be locked at all times.
- c. **Ventilation in Parking Garages.**
Group S, Division 3 parking garages may have ventilation provided at the rate of less than 1.50 cfm/ square foot of gross floor area provided that an approved carbon monoxide (CO) detection system is in use that will operate the ventilation system to maintain a maximum average concentration of CO of 50 ppm during any 8-hour period, with a maximum concentration not greater than 200 ppm for a period not exceeding one hour.
 - d. **Fire Alarm Systems.**
Existing buildings shall be provided with fire alarm systems as required for the use or occupancy by the building code.

Fire alarm systems shall comply with the Uniform Fire Code Standard 10-2, (NFPA 72, 1999 edition).

e. **Automatic Fire-extinguishing Systems.**

Existing buildings which cannot be made to conform to the construction requirements specified in the building code for the occupancy or use, and which constitutes a distinct fire hazard, shall be deemed to be in compliance if:

- 1) The building has sprinkler protection throughout; and
- 2) The building is shown to be in compliance with other applicable provisions of this guide, such as egress, allowable height and area etc, as necessary for the specific project.

A sprinkler system shall not be used to substitute for or act as an alternative to the required number of exits from any facility.

Where an alternative life-safety system has been approved by the Director, the implementation of those systems shall be deemed to bring the building into compliance.

6. **Accessibility.**

a. **Historic buildings.**

Disabled access for historic buildings shall meet the provisions found in Chapter 11, Division IV, Section 1114 – Historic Preservation of the building code.

b. **Existing buildings.**

Disabled access for existing buildings shall meet the provisions of Chapter 11, Division IV, Sections 1111, 1112 and 1113 of the building code. Where appropriate, disabled access shall also comply with BDS Code Guides UBC/11/#1 through UBC/11/#8.

7. **Occupancy Ventilation.**

To insure acceptable levels of indoor air quality, except as otherwise required by the Oregon Occupational Safety and Health Code, general ventilation shall be provided as noted below:

- a. **Existing buildings – no change of occupancy.** In existing buildings where no change in occupancy or change in use involving an increase in occupant load of more than 10%, existing ventilation systems may remain as originally constructed and documented by the Director.
- b. **Existing buildings – change of occupancy.** Except in H occupancies, existing buildings involving a change in occupancy or change in use with an increase in occupant load of more than 10%, shall have occupancy ventilation provided at a rate not less than 50% of that as specified in the building code.

Where the change of occupancy includes the addition of a H occupancy, occupancy ventilation shall be provided at the rate specified in the building code.

8. **Energy Conservation.**
Energy conservation shall be provided as specified in Section 1301.1 of the building code.
9. **Other Alternatives.**
 - a. **Non-structural archaic materials.**
Subject to the approval of the Director, where non-structural, historic materials exist in a building and their use does not meet the requirements of the building code, their continued use is allowed by this code guide, provided that any public health, fire- life safety hazards are mitigated.
 - b. **Special provisions for historic buildings.**
Should the State Historic Preservation Office determine that application of any provisions of this guide or requirements of the building code compromise the historic fabric of a designated historic building, the Director may, based on the written comments and recommendations from the State

Historic Preservation Office, approve additional alternative methods and materials of construction. Approval of such alternatives shall not create a hazard to fire and life safety or cause any distinct hazard to fire and life safety to remain.

10. **Residential Occupancies.**

a. **General.**

In addition to the applicable provisions as specified above, the following specific requirements and alternatives apply to one and two family dwellings (R-3 occupancies) that are designated as historic buildings or which are located in a designated historic district, or to existing multi-family residential buildings including apartment buildings, condominiums, hotels, motels, dormitories and similar occupancies classified as R-1 occupancies.

b. **Room dimensions.**

Except in Single Room Occupancies as described in City Title 29.30.290 and efficiency dwelling units as described in the building code, habitable rooms, except kitchens, may contain a minimum of 50 square feet floor area provided:

- 1) An average ceiling height of 7 feet, calculated as defined in the building code is maintained; and
- 2) The room is a minimum width of 6 feet in any dimension.

c. **Light and ventilation.**

Windows in habitable rooms shall have an area of 6% of the floor area, or 5 square feet, whichever is greater. Windows in sleeping rooms shall be openable.

d. **Escape or rescue windows and doors.**

Basements in dwelling units and every sleeping room below the fourth floor, shall have at least one openable window or door approved for emergency escape meeting the following provisions:

- 1) Escape or rescue windows or doors shall meet the dimensions and sill height requirements outlined in the emergency egress provisions of Code Guide UBC/3/#3.
- 2) Escape or rescue windows or doors shall be openable without the use of special tools or knowledge.
- 3) All emergency escape or rescue doors or windows shall open directly into a street, alley, yard or exit court and shall have access to the public way. Access to the public way may be waived where it is documented by the Director that an existing residential building has sleeping rooms with windows opening onto light wells or courts and that this condition existed as a part the original building construction.

- e. **Smoke alarms.**
Smoke alarms shall be provided in the locations and amounts required in the building code.