AMENDMENTS TO

THE BUILDING CODE

FOR THE

CITY AND COUNTY OF DENVER

1995
ACKNOWLEDGMENT

The City and County of Denver has adopted the Uniform Building and Mechanical Codes of the International Conference of Building Officials the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials and the National Electrical Code of the National Fire Protection Association as the basic Building Code. In order to make them effective for the construction and development conditions within the City and County of Denver the Mayor has established the Building Code Revision Committee to review and propose amendments to these Codes for the maintenance of existing buildings and the construction of new buildings. This committee represents various segments of the building and development industry. The different perspectives and interests presented by this committee during this code review process has helped to provide an effective building code which will maintain minimum standards for the health, safety and welfare of the people who live, work or visit in Denver.

We wish to thank the members of the City Council Public Works Department City Attorney’s Office Fire Department Central Services Commission on the Disabled Building Inspection Division the Building Code Revision Committee and the many BCRC subcommittees who represented various segments of the construction and development industry. They have all devoted their time, dedication and professionalism to develop this document.

Richard Brasher Acting Manager Department of Public Works

Dan Muse City Attorney
Cathy Donohue Director Office of Regulatory Reform
R. Doug Sutton P.E. Director of Building Inspection Division
Roderick Juniel Division Chief Fire Prevention Bureau

Carol Woolsey Director Central Services

MEMBERS OF CITY COUNCIL

Deborah L. Ortega Allegra Haynes
Dennis Gallagher T. J. Hackworth
Ramona Martinez Joyce Foster
Polly Flobeck Susan Casey
Bill Himmelman Hiawatha Davis Jr
Edward P. Thomas Cathy Reynolds
Susan Barnes Gelt
# Building Code Revision Committee (BCRC)

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<td>Edward Barsocchi</td>
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<td>Michael Huwaldt P E</td>
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<td>Bud Gaines P E</td>
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<td>Frank Nelson</td>
<td>Commission for People with Disabilities</td>
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<td>Kerry Madigan P E</td>
<td>Fire Protection Engineers</td>
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<td>R Douglas Sutton P E</td>
<td>Director Building Department</td>
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<td>Chief Roderick Juniel</td>
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<td>Joe Ryan</td>
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<td>Amelinda Montelongo</td>
<td>Secretary</td>
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<tr>
<td>Dyonne Broussard</td>
<td>Code Preparation Assistant Typist</td>
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An expression of sincere thanks is extended to all those who have contributed so much of their time and effort for the safety and welfare of the people who live, work or visit in Denver.

Wellington E Webb  
Mayor
## BCRC SUBCOMMITTEES

### Boiler
- **Henry Solano**, Chairman  
  Represents: Labor, Pipefitters  
- **Chuck Alden**, Executive Vice Chairman  
  Represents: Contractors  
- **Fred Steele**, Secretary  
  Represents: Labor, Boiler makers  
- **Jim Slavens**  
  Represents: Building Owners and Managers Association  
- **Kent Schuler**  
  Represents: Public Service  
- **George Kalmbach**  
  Represents: Boiler Contractors  
- **Jim Glarvville**, P.E.  
  Represents: B1D, Mechanical Engineer  
- **Domenic Stone**  
  Represents: B1D, Chief Boiler Inspector  
- **Joseph E. Troppman**  
  Represents: Insurance  

### Electrical
- **Syl Flex**, P.E.  
  Represents: Electrical Engineer  
- **Barney M. Illigan**  
  Represents: Secretary Fire Prevention Bureau  
- **Pat Hilleary**  
  Represents: Building Owners and Managers Association  
- **Ed Boetel**  
  Represents: Labor  
- **Nicholas Ottmans**  
  Represents: Electrical Contractor  
- **Jim Conway**  
  Represents: B1D, Chief Electrical Inspector  
- **Curt McMillan**, P.E.  
  Represents: B1D, Chief Electrical Engineer  
- **Gordo Linday**  
  Represents: Electrician  

### Fire Protection
- **David Kazin**, P.E. Chairman  
  Represents: Electrical Engineer  
- **Doug Wagner**, Vice Chairman  
  Represents: Apartment Owners Association  
- **John M. Gibson**, P.E.  
  Represents: Consulting Engineer  
- **David L. Shane**  
  Represents: B1D, Fire Prevention Bureau  
- **Ed Boetel**  
  Represents: Labor  
- **Jeff Hilleary**, P.E.  
  Represents: B1D, Chief Mechanical Engineer  
- **Curt McMillan**  
  Represents: B1D, Chief Electrical Engineer  
- **Frank Conner**  
  Represents: B1D, Chief Plumbing Inspector  
- **Jim Conway**  
  Represents: B1D, Chief Electrical Inspector  
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  Represents: Fire Prevention Bureau  
- **Fred Neideheiser**  
  Represents: Spinkler Contractor  
- **Mark Larson**  
  Represents: Supplier  

### Mechanical
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  Represents: B1D, Building Engineer  
- **Ed Resavage**, Vice Chairman  
  Represents: HVAC Supplier  
- **Mike Salazar**, Secretary  
  Represents: Labor  
- **David R. Robinson**  
  Represents: Mechanical Engineer  
- **Baltiard Hardman**  
  Represents: Mechanical Contractor  
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  Represents: B1D, Mechanical Engineer  
- **Tom M. Manus**  
  Represents: Fire Prevention Bureau  
- **Mark Nolan**, P.E.  
  Represents: P1blic Service Company  
- **Richard P. White**  
  Represents: Building Owners and Managers Association  

### Plumbing
- **Lee Overholt**, Chairman  
  Represents: Labor  
- **Howard Bader**, P.E. Secretary  
  Represents: B1D, Mechanical Engineer  
- **Frank Conner**  
  Represents: B1D, Chief Plumbing Inspector  
- **Allan Criddlebaugh**  
  Represents: Wastewater Management  
- **John McLinden**  
  Represents: Wastewater Management  
- **Joel Wildi**  
  Represents: Colorado Plumbing Board  
- **Mike Goldhammer**, P.E.  
  Represents: Water Department  
- **Arthur L. Kall**  
  Represents: Retired  
- **Don Rosier**, P.E.  
  Represents: Mechanical Engineer  
- **Thomas Ahrens**  
  Represents: ASPE Representative  
- **Tom Cowan**  
  Represents: H & H  

### Smoke Control
- **Donald L. Reigel**, P.E. Chairman  
  Represents: Mechanical Engineer  
- **Jerry Mills**, P.E. Vice Chairman  
  Represents: Mechanical Contractor  
- **Jeff Davis**, P.E. Secretary  
  Represents: B1D, Mechanical Engineer  
- **Curt McMillan**, P.E.  
  Represents: B1D, Chief Electrical Engineer  
- **Kay Krabs**  
  Represents: B1D, Structural Engineer  
- **Claude Neumann**, P.E. (Alt mate)  
  Represents: B1D, Structural Engineer  
- **Jim King**  
  Represents: B1D, Chief Mechanical Inspector  
- **John Brann**  
  Represents: B1D, Chief Construction Inspector  
- **Tom McManus**  
  Represents: Fire Prevention Bureau
BCRC Subcommittees

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David L. Geiner
Electrical Contractor
Wayne Jick
General Contractor
John Lantine
Labor
No m Alghinbaugh
F ndo Engineer
Ow n C Leslie AIA
A chiect

U.B.C. Review
John Hatfield P.E. Chairman
Apartment Owners Association
Ralph Hallman AIA Secretary
Consultant
Jos ph Solomon, AIA
Ar hitect
George Hadji P.E.
Consulting Engineer
Pete Bemelen, P.E. (Alternate)
BID Structural Engineer
Ed Kocman P.E.
BID Chief Structural Engineer
Phil Marin
BID Inspections Administrator
Steve Rondinelli, R.A
Fi P vention B a
Arthur Tarler
Developer
Lloyd L. Leal
Building Owners and Managers Association
Ernie Millto
Space Planner Interior Design

Ad-Hoc Refrigeration
Brian Meehan
Real Estate
George E Hadji P. E
Consultant Engineer
Ed Hegwood
Mechanical Contractor & Service
Bruce Powers
Mechanical Contractor & Service
St ve Rondinelli R.A
Fi e Pr vento B u
Stacey Robb
Manufacturing Representative
Dave Larson
Building Engineer
Fred Dellen
Service Contractor
Dean Neely
Colorado Department of Health
Domenic Stone
BID Chief Boiler Inspector
Gary Beardslee
Manufacturer Representative
Ken Nelvassil
Manufacturer Representative
Cliff Littlejohn
BID Mechanical Engineer
Jim Gianville P E
Building Engineer
Leonard Micek
Consultant Engineer
Don Rovler P.E
Manufacturer Representative
William D. Mele
Consultant Engineer
Don Riegel P. E
Mechanical Contractor
Larry Scharap
Building Owners and Managers Association
Wesley Andrid
Building Engineer
Carl Raish
Building Engineer
Kenneth E. Brusso
Manufacturer Representative
Bill Kennedy
Building Engineer
Harry Gorham

Ad-Hoc Licensing
Garland Cox P E
Electrical Engineer
Gail Hamby
Labor
Bob Koelb I Chai ma
Home Builders Association
Judy Freeman
BID Office Administrator
John Brann
BID Chief Construction Inspector
Joe Troppman
Insurance Consultant
Cathy Donohue
Mayor's Office of Regulatory Reform
Bob Olander P E
Mechanical Engineer
John Hendricks
General Contractor
Harry Gorham
Mechanical Contractor

Ad-Hoc Structural
Kent Peterson, P.E
Structural Engineer
Jim Harris P E
Structural Engineer
Bob Thompson, P.E
Soil Engineer
Pete Bemelen, P.E
BID Structural Engineer
Bob Hunnes P.E.
Structural Engineer
Al Wassenaar P.E.
Soil Engineer
Don Pyle P E Chairman
Structural Engineer
BY AUTHORITY

Ordinance No 896
Series of 1995

Council Bill No 897
Committee of Reference:

PUBLIC WORKS

A BILL

FOR AN ORDINANCE REPEALING ORDINANCE NO 961 SERIES OF 1993 WHICH ADOPTED AND AMENDED CERTAIN UNIFORM CODES AND ENACTING NEW MODEL CODES AS THE BUILDING CODE FOR THE CITY AND COUNTY OF DENVER

BE IT ENACTED BY THE COUNCIL OF THE CITY AND COUNTY OF DENVER:

Section 1 The Ordinance No 961 Series of 1993 as periodically amended be and the same are hereby repealed

Section 2 The 1994 Uniform Building Code Volumes 1, 2 and 3 (ICBO) 1994 Uniform Plumbing Code (IAPMO) 1994 Uniform Mechanical Code (ICBO) and the 1993 National Electrical Code (NFPA) 1991 Uniform Sign Code (ICBO) 1991 Uniform Swimming Pool Spa and Hot Tub Code (IAPMO) 1992 Model Energy Code (CABO) and their respective appendices all of which are attached hereto and incorporated herein are hereby adopted as the Building Code for the City and County of Denver except as each model code and appendix is amended and supplemented by section 3 of this ordinance

Section 3 That the Building Code for the City and County of Denver enacted by section 2 of this ordinance be the same is hereby amended and supplemented by Amendments to the Building Code for the City and County of Denver 1995 edition
which is attached hereto and incorporated herein

Section 4  That attached hereto and incorporated herein are the 1994 Uniform Code for the Abatement of Dangerous Buildings (ICBO) and the 1994 Uniform Code for Building Conservation (ICBO) and their respective appendices

Where they are applicable these Codes shall be standards to be applied in exercising discretion in the interpretation administration and enforcement of the Building Code by the Director in granting of modifications under Section 103 3 of the Building Code by the Chapter 61 Committee in exercising its authority under Chapter 61 of the Building Code and by the Board of Appeals in exercising its authority under Section 112

PASSED BY THE COUNCIL  October 30  1995

Deborah L. Ortega  PRESIDENT

APPROVED:  Mayor  November 1  1995

CLERK AND RECORDER
EX OFFICIO CLERK OF THE CITY AND COUNTY OF DENVER

PUBLISHED IN THE DAILY JOURNAL  October 27  1995  November 3  1995

PREPARED BY:  BUILDING INSPECTION DIVISION  PUBLIC WORKS

REVIEWED BY:  CITY ATTORNEY  10/18  1995

SPONSORED BY COUNCIL MEMBER(S)
AMENDMENTS

TO THE

BUILDING CODE

FOR THE

CITY AND COUNTY OF DENVER

1995

The Building Code of the City and County of Denver enacted by Ordinance No. 896 Series of 1995 Council Bill No. 897 which has adopted the Model Codes, Standards and Appendixes as set forth below is hereby amended in the following particulars:

Division 1 Amendments to 1994 Uniform Building Code Volumes 1, 2 and 3 and Appendix (ICBO)
Division 2 Amendments to 1994 Uniform Mechanical Code and Appendix (ICBO)
Division 3 Amendments to 1994 Uniform Plumbing Code and Appendix (IAPMO)
Division 4 Amendments to 1993 National Electrical Code (NFPA)

The effective date of the adopting Ordinance No. 896 Series of 1995 Council Bill No. 897 is November 3, 1995.

The effective date of the Denver Building Code shall be as follows:

1. Divisions 1 and 2 shall be effective March 3, 1996
2. Divisions 3 and 4 shall be effective November 3, 1995

See amended UBC Section 101.3.5 Transition Rules.

Vertical lines in the margin indicate that chapters, sections, lines, words, numbers, etc. have been added or revised from the 1994 editions of the related Model Codes or the 1993 edition of the National Electrical Code.

Deletion arrows > < in the margin indicate that chapters, sections, lines, words, numbers, etc. have been deleted from the 1994 editions of the related Model Codes or the 1993 edition of the National Electrical Code.

Policies and Interpretations established by the Director for clarification and effective Building Code application are indicated in the related code sections as follows:

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Policy                                               [Policy No]
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Policies

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AMENDMENTS

TO THE

1994 EDITION OF THE UNIFORM BUILDING CODE

VOLUME 1, 2, AND 3

AND APPENDIX

OF THE

INTERNATIONAL CONFERENCE OF
BUILDING OFFICIALS
(ICBO)
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**DENVER AMENDMENTS TO THE UNIFORM BUILDING CODE**
**BY PARTS, CHAPTERS AND SECTIONS**

The following Chapters and Sections have been amended by the Denver Amendments to the UBC

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Division 1
UNIFORM BUILDING CODE AMENDMENTS

Chapter 1 is amended in its entirety

CHAPTER 1 ADMINISTRATION

Section 101 TITLE PURPOSE AND SCOPE

101 1 Title The title of this Ordinance shall be and this Ordinance shall be cited and referred to as the Building Code for the City and County of Denver

101 2 Purpose The purpose of this Building Code is to provide minimum standards to safeguard life health property and public welfare by regulating and controlling the design construction quality of materials use occupancy location and maintenance of all buildings and structures within the City and County of Denver and certain equipment specifically regulated herein

101 3 Scope The provisions of this Building Code shall apply to and govern the following

101 3 1 New Buildings Structures and Utilities This Code shall regulate the construction addition alteration repair occupancy use and maintenance of any building structure or utility hereafter erected within the City except as set forth in subsection 101 3 3 below

101 3 2 Existing Buildings Structures or Utilities This Code shall regulate the alteration addition repair demolition removal moving change of occupancy and maintenance of any existing building structure or utility heretofore erected within the City

101 3 3 Buildings Structures and Utilities not Regulated by this Code This Code shall not regulate work performed

1 On work located primarily in the public way unless specifically provided for by this Code

2 On public utility towers poles and mechanical equipment used for the production generation or distribution of the utility product or service through the facilities owned and operated by the utility company to the point of customer service

3 Refer to Section 150 1 1 for additional exempt work

101 3 4 Most Restrictive Where in any specific case the requirements of different sections of this Building Code vary the most restrictive shall govern Where there is a conflict between a general requirement and a specific requirement the specific requirement shall be applicable Where there is a conflict between the provisions of this Building Code and any other legally adopted city ordinance the most restrictive shall govern

101 3 5 Transition Rules This Building Code and implementation of all its provisions and policies shall become effective as follows

1 The effective date of the new Building Code shall be as follows

A Divisions 1 and 2 4 months after the date of the adopting ordinance

B Division 3 and 4 the date of the adopting ordinance

2 The option of the use of the 1993 Denver Building Code or the new Building Code shall be allowed for each of the following conditions

A Any projects that will be submitted to the Building Department after the adopting ordinance and before the effective date of the new Building Code

B Major projects in the design stage during the drafting of the new Building Code that will be submitted to the Building Department after the effective date of the new Building Code

UBC 1
Provided that the owner or the owner’s agent submits a letter of commitment to the Building Department stating:

1 Election to proceed under the 1993 Denver Building Code or the new Building Code
2 Address of the construction project
3 Description number of stories floor area occupancy etc of the building
4 Date of beginning design drawings
5 Date of submitting construction drawings to Building Department
6 That the construction of the project will start within 6 months and be completed within 24 months of the effective date of the new Code if the option is to use the 1993 Denver Building Code

3 A letter of commitment must be submitted by the effective date of the new Building Code

4 Divisions 3 and 4 of the new Building Code shall be used with either option outlined in Item 2 of this Subsection

Section 102 ORGANIZATION OF THE BUILDING INSPECTION DIVISION

102.1 General The Building Inspection Division is established as an agency under the Manager of Public Works. See Chapter 2 for definition

102.2 Director The Department shall be administered by a Director. The Director is hereby authorized and directed to enforce all the provisions of this Code. Wherever this Building Code makes reference to the Building Official it shall mean the Director

102.3 Employees In accordance with prescribed procedures the Director shall authorize or appoint engineers, technicians, inspectors or other employees to perform duties and exercise powers delegated to him by this Building Code

102.4 Authorization and Identification Each employee of the Department shall be provided with an identification card bearing information required by the Director. This card shall be carried by the person identified and shall be displayed when necessary to identify the person properly to perform official duties

Section 103 GENERAL POWERS AND DUTIES OF THE BUILDING DEPARTMENT

103.1 Powers and Duties This Department shall administer and enforce this Building Code and all other ordinances which are or may be assigned to the Department for enforcement and administration. The Department is vested with the duties of enforcing and administering this Building Code and the power necessary for such enforcement

103.2 Interpretations Rules and Regulations The Director shall have the full power to render interpretations of this Code and to adopt and enforce Rules and Regulations supplemental to this Code as he may deem necessary in order to clarify the application of Code provisions. Such interpretations and Rules and Regulations shall be in conformity with the intent and purpose of this Code. Rules and Regulations shall be adopted and recorded in accordance with the provisions of the Revised Municipal Code. The Board of Appeals may review any appeal of a Department interpretation subject to Section 113

103.3 Modifications Under Special Circumstances Whenever there are practical difficulties involved in carrying out the provisions of this Code the Director may grant modifications for individual cases. Provided he shall first notify the owner of the building structure or utility and then find that a special individual reason makes the strict letter of the code impractical that the modification is in conformity with the intent and purpose of this
Code and that such modification does not lessen any fire protection requirements or any degree of structural integrity. The details of any action granting modifications shall be sent to the owner and entered in the permit files of the Department.

103.4 Authority to Inspect  The Department shall have the authority to inspect or cause to be inspected all buildings, structures or utilities for compliance with this Building Code.

103.5 Investigations and Surveys  Incidental to any of these duties and powers but without limitation of the same, the Department may conduct investigations or surveys to determine compliance or noncompliance with the provisions of this Building Code and further may investigate or cause to be investigated all accidents pertaining to buildings, structures or utilities.

103.6 Right of Entry

1. Whenever an authorized representative of the Department has reasonable cause to believe that there exists in any building or upon any premises any condition or Code violation which makes such building or premises an eminent hazard, the representative of the Department may enter such building or premises and take such action as is necessary to abate such hazard.

2. Whenever it is necessary to make inspections, investigations or surveys to enforce any of the provisions of this Code and permission is not obtainable, the Department may request a court to issue a warrant to inspect or perform any duty imposed upon the Department by this Code. Permission is not obtainable when:

   A. The Department’s representative has presented to the occupant of an occupied building or premises proper credentials and been refused entry.

   B. The Department’s representative has made a reasonable effort to locate the owner or other person having charge or control of an unoccupied premises and has been unable to locate such person or has been refused entry by such person.

103.7 Orders

1. Whenever work is or has been performed contrary to the provisions of this Building Code or whenever conditions exist which are in violation of this Building Code or any of the several codes or ordinances enforced or administered by this Department, the Department may:

   A. Order any work stopped until authorized by the Department to proceed. The owner, once notified of the order, shall not allow any further work upon the subject property until authorized by the Department.

   B. Order the work being performed or that has been performed to be completed or corrected so that the resulting work is in accordance with the requirements of this Building Code or other codes or ordinances enforced or administered by the Department.

   C. Order the use or occupancy of a building, structure or equipment discontinued and the structure or portion thereof vacated by notice served on any person causing such use to be continued. Such person shall discontinue the use within the time prescribed by the Building Official.

2. Any such order shall be by written notice served on the owner of the property upon which work was or is being performed or where the condition exists, or any person engaged in the work causing the work to be performed or having a permit to perform the work.
3 It shall be unlawful to disobey any written lawful order issued by the Department

4 A copy of any order issued by the Department shall when the original order has not been served on the owner be served upon the owner of the property affected by the order

5 The Board of Appeal may review any appeal of a Department order subject to Section 121

Section 104 SERVICE

Service of any order may be by personal service as specified in the Colorado Rules of Civil Procedure or by registered or certified mail return receipt requested and service shall be deemed complete upon delivery

Section 105 APPLICATION TO EXISTING BUILDINGS [B-015]

105.1 Additions Alterations or Repairs Additions alterations or repairs may be made to any building or structure without requiring the existing building or structure to comply with all the requirements of this Code provided that the addition alteration or repair conforms to that required for a new building or structure except as otherwise provided for in this Code The Director shall use the 1994 edition of the Uniform Code for Building Conservation and Guidelines as a guide for granting modifications to the Code for such additions alterations or repairs

105.2 When Additions Alterations or Repairs Are Not Allowed Additions alterations or repairs shall not be made to an existing building or structure which will cause the existing building or structure to be in violation of any of the provisions of this Code unless otherwise provided for in this Code Any addition alteration or repair shall not cause an existing building or structure to become unsafe

105.3 Materials Alterations or repairs to an existing building or structure which are nonstructural and do not adversely affect any structural member or any part of the building or structure having required fire resistance may be made with the same materials as of the existing building or structure

EXCEPTION The installation or replacement of glass shall be as required for new installations

105.4 Existing Occupancy

1 Buildings in existence at the time of the adoption of this Building Code may have their existing use or occupancy continued if such use or occupancy was legal at the time of the adoption of this Building Code provided that such continued use is not dangerous to life

2 Any change in the use or occupancy of any existing building or structure shall comply with the provisions of this Building Code

105.5 Maintenance All buildings structures or utilities both existing and new and all parts thereof shall be maintained in a safe and sanitary condition All devices utilities or safeguards which are required by this Building Code or which were required under any previous code or ordinance shall be maintained in good working condition The owner or legally responsible person shall maintain such buildings structures or utilities To deter mine compliance with this subsection the Department may cause any building structure or utility to be reinspected

105.6 Moved and Temporary Buildings or Structures Buildings or structures moved into the City shall comply with the provisions of this Code for new buildings or structures Temporary structures such as reviewing stands and other miscellaneous structures
sheds, canopies or fences used in conjunction with special events or construction work may be erected by special permit from the Department for a limited period of time as specified in Section 162. Temporary buildings or structures need not comply with the type of construction or fire resistive requirements except where specifically required by this Code. Tents shall be permitted as specified in the Fire Code. Temporary buildings or structures shall be completely removed upon the expiration of the time limit stated on the permit.

105.7 Historic Buildings. See Chapter 61 of this Code.

Section 106. UNSAFE BUILDINGS OR STRUCTURES [I]

An unsafe building or structure is one which constitutes a fire hazard or a hazard to life, health, property or public welfare by reason of use, construction, damage, vandalism, quality of materials, inadequate maintenance, dilapidation or abandonment, including but not limited to any building or structure in which any one or more of the following conditions exists:

1. Those buildings or structures in which a wall or other vertical structural member lists, leans or buckles to such an extent that a plumb line passing through the center of gravity falls outside of the middle third of the base.

2. Those buildings or structures that show damage or deterioration to:
   A. Any structural or load bearing member to the extent that the member does not have sufficient strength to resist all applicable loads specified in Chapter 16.
   B. Non-bearing exterior walls or enclosures to such an extent that they will not resist the wind pressure or lateral forces specified in Chapter 16.
   C. Any exposed exterior member to the extent that the member provides inadequate protection from the elements to the occupants of the building or structure.

3. Those buildings or structures in which the loads upon the walls, floors, roofs or any other necessary structural member exceed the maximum design limits specified in Chapter 16.

4. Those buildings or structures having floors or areas with inadequate egress.

5. Those building or structures having parts attached in such a manner that they may fall and cause injury to the public or property.

6. Uncompleted buildings or structures when the permit has been canceled.

7. Open pits, open wells and open excavations of all types when such are determined to be hazardous by the Department.

8. Trenches or ditches not properly shored or cribbed.

9. Vacant buildings which are not secure and to which entry may be made through opened or unlocked doors, windows or other openings.

10. Those buildings or structures which are uninhabitable including but not limited to buildings or structures with any one of the following conditions:
   A. Where building envelope damage or deterioration has caused the interior of the structure to be open to the elements.
   B. Where vandalism or deterioration has caused the plumbing system, electrical system or heating system to be no longer functional.
C Where vandalism or deterioration has caused the internal floor structure or stairways to be incapable of supporting the weight of normal occupancy

11 Any dilapidated building of whatever kind which is unused by the owner or uninhabited because of deterioration or decay which condition constitutes a fire hazard or subjects adjoining property to danger of damage by deterioration of structural building elements storm effect soil erosion or rodent infestation or which becomes a place frequented by trespassers and transients seeking a temporary hideout or shelter

Section 107  UNSAFE UTILITY ———————————————————————————————————— [1]

107.1 General  An unsafe utility is one which constitutes a fire hazard or a hazard to life health property or public welfare by reason of use construction installation obsolescence damage deterioration quality of materials abandonment or inadequate maintenance However without limitation of the foregoing any utility in which any one or more of the following conditions exists shall constitute an unsafe utility

107.2 Gas-Fired Oil Fired Solid Fuel Fired Devices  Gas fired oil fired or solid fuel-fired appliances devices or apparatus which have any of the following defects

1 Broken or cracked heat exchangers

2 Defective or deteriorated vents venting or flues which permit leakage of flue products

3 Defective or improperly installed fuel supply piping

4 Insufficient air supply for the combustion of fuel

5 Inadequate ventilation of the heating equipment room

6 Defective improperly installed or maladjusted controls and appurtenances

7 Defective or improperly installed heating equipment

8 Equipment locations which constitute a fire or explosion hazard

9 When a negative air pressure condition exists in a heating equipment room or area

10 Excessive corrosion of combustion chambers where the original thickness of the metal is reduced 50% or more

11 Warped or distorted combustion chambers or furnace boiler firing doors which permit leakage of combustion products

12 A listed appliance or appurtenance that is altered or modified

13 Excessive scaling corrosion cracks in seams tube or shell of boilers

14 Defective valves gauges or cocks of boilers

15 Grooving or pitting of boilers

16 Boilers with improperly installed or maladjusted controls and appurtenances

17 Any unlisted appliance or appurtenance installed without approval of the Department

18 Appliances not provided with required safety controls

107.3 Elevators and Similar Conveyances  Elevators escalators dumbwaiters moving walks or similar conveyances or apparatus which have any of the following defects

1 Hoisting counterweight or governor ropes or cables with frayed or broken strands
2 Operation in a hoistway used to store material other than elevator equipment. This shall also apply to elevator machine room machinery spaces and pits where materials other than elevator equipment are maintained or stored.

3 Operation in a hoistway that is in danger as a result of dust or other highly combustible material on the mechanism or in the hoistway penthouse or pit.

4 Brake mechanism not functioning properly or safely.

5 Those not safety tested in accordance with the requirements of this Building Code or where required safety devices have been disconnected or discontinued.

6 Those safety or operational devices provided in the elevator cab which are not functioning properly or safely.

7 Where hoistway entrance protection does not meet the requirements of this Building Code.

107.4 Electrical Systems Electrical systems appliances devices or apparatus which have any of the following defects:

1. Bare wiring.
2. Poor electrical connections.
3. Overloaded circuits feeders or services.
4. Equipment not properly grounded.
5. Disconnecting means not provided at the appliance.
6. Over fused circuits.
7. Misuse of cord wiring.
8. Wiring not properly supported.
9. Nonapproved wiring exposed to extreme heat moisture gases or other harmful vapors or liquids.

107.5 Refrigeration Systems Refrigeration systems which have any of the following defects:

1. Inadequate ventilation.
2. Inadequate venting of pressure relief valves.
3. Unauthorized fuel fired equipment located in the same room designated for the refrigeration equipment.
4. Improperly installed cooling towers by reason of location type fan water condition controls roof or floor overload.

5. Faulty controls.

107.6 Plumbing Systems Plumbing systems or devices which have any of the following defects:

1. When the supply water does not meet the standards of potability as required by the Colorado State Department of Public Health and the City Department of Health and Hospitals.

2. Those water systems subjected to the hazards of backflow or back siphonage which might create a pollution to the potable water supply i.e. hose bibs shall have anti siphon devices.
3 Where inadequate piping does not supply sufficient water to the various appliances
4 Clogged sewers or drains
5 Where a trap seal is not provided or is inadequate
6 Inadequate venting
7 Leaking water sewage or sewer gas within a building or structure
8 Trenches or ditches not properly shored or cribbed

Section 108 NOTICE AND ABATEMENT OF UNSAFE BUILDINGS STRUCTURES OR UTILITIES

108 1 General If after inspection by the Department the building structure or utility is determined to be unsafe it shall be abated by repair replacement removal or demolition upon notice by the Department In the building or structure has common property line walls then the Department shall notify the adjacent building owners that their building may be unsafe and may require repair or reinforcement

108 2 Unsafe Building or Structure In the case of an unsafe building or structure the Department may order such building or structure or any buildings or structures placed in jeopardy by the unsafe building or structure vacated immediately The unsafe buildings or structures shall be posted in accordance with the provisions of Section 108 7

108 3 Unsafe Utility
1 In the case of an unsafe utility the Department shall affix an approved warning tag on the unit declared to be unsafe The Department shall order the unsafe utility disconnected or its use discontinued until the nuisance created thereby is abated In addition the Department may order any building structure or utility which is placed in jeopardy by the unsafe utility to be vacated and/or disconnected and these shall not be reoccupied or reconnected until declared safe by the Department
2 It shall be unlawful for anyone to mark any unsafe utility as herein defined with any type markings or tags declaring them to be unsafe except as authorized by the Department

108 4 Demolition or Securing by the City If the owner and/or occupant of an unsafe building structure or utility fails to perform the repairs rehabilitation securing or removal required by an order within the time specified in the order or any extension of time to comply with said order, the City may as set forth in Section 108 5 cause the demolition or securing of the unsafe building or structure

108 5 Emergency Demolition or Securing In the event an emergency should occur wherein the continued use or existence of a building structure or utility may constitute an immediate hazard to life health property or public welfare the Department may order and/or cause the building structure or utility to be demolished removed disconnected secured or barricaded at once by any means available to the Department When feasible the Department shall attempt to give notice by any means to the owner of the building structure or utility prior to taking any action Cost and expense of demolition removal securing or barricading if borne by the City shall be recovered as provided for in Section 108 9

108 6 Emergency Barricades If any building structure or utility is declared a hazard to life or safety of persons using a public way the public way shall be provided with barricades to prevent public use The barricades shall be erected on order from the Department Recovery of cost and expense if borne by the City shall be made as provided for in Section 108 9
108.7 Posting of Signs When necessary to protect life, property, health and public welfare, the Department may post signs which shall prohibit entry into an unsafe building or structure. However, with permission of the Department, it shall be lawful to enter the unsafe building or structure for the purpose of effecting any required repairs, rehabilitation, or demolition, or by members of the Fire Department. The signs shall be provided and attached to the building or structure by the Department and shall read in addition to other information, "DANGER KEEP OUT." See Section 111 for Prohibitions and Violations.

108.8 Procedure for Demolition or Securing by City Upon the failure of the owner or legally responsible person of a building or structure to make any building or structure safe after the issuance of an order, the Department may obtain competitive bids for the securing or demolition of the building or structure:

1. May post competitive bids for the securing or demolition of the building or structure.
2. May issue a notice of intent to raze or secure the building or structure which shall include the estimated cost of demolition or securing plus a fee not to exceed 25% of the cost of demolition or securing with a minimum of $100.00 to cover administrative and other costs. Such notice shall be served personally or by registered or certified mail return receipt requested upon the owners of all record interests in the property at least 10 days prior to the demolition or securing.
3. If service cannot be obtained upon any or all parties with record interests as provided in subsection 2 above, may post the notice upon the property for 10 days and mail notices to the last known address of each party having a record interest.
4. Ten days after completion of service under subsection 2 or 3 above, may proceed with demolition or securing.
5. Upon completion of the demolition or securing, shall mail a notice of the final cost of demolition or securing and of the intent to file a lien against the property to owners of a record interest in the property.

108.9 City's Lien In the event the owner fails to pay the costs as set forth in the notice sent under Section 108.8, within 15 days of such notice, the amount shall constitute a lien against the real property upon which the building or structure was or is situated. The Department shall thereafter pay the cost and expense of demolition removal, securing, and/or barricading from any appropriation made available for that purpose, and shall certify a statement thereof to the Manager of Revenue who shall assess and charge the same against the property involved and collect the same due together with interest at the rate established by the law for delinquent real property taxes:

1. The lien created thereby shall be superior and prior to other liens, regardless of date except liens for general and specific taxes.
2. For purposes of this Building Code, cost and expense shall include the demolition, removal, securing, barricading, and administrative costs incurred therewith.

108.10 Right to Appeal The Board of Appeals may review a Department decision under Section 108 upon appeal. Object to Section 113.

Section 109 USED MATERIALS

Used materials may be used in the construction of any building, structure, or utility only with prior approval of the Department.
Sec 110

Section 110  ALTERNATE MATERIALS AND METHODS OF CONSTRUCTION AND EQUIPMENT

110.1 General The provisions of this Building Code shall not prevent the use of alternate methods, materials or equipment that meet the standards of strength, safety, sanitation and fire resistance required to be met in any building, structure or utility to which this Building Code applies provided that the alternate has been approved by the Department.

110.2 Application and Fee An application for approval of an alternate material method or equipment shall be filed with the Department upon a Departmental form. Information shall be that required by the Department and this Building Code. The application shall be accompanied by a fee of $200.00 payable to the Manager of Revenue City and County of Denver and shall be paid in the office of the Department.

110.3 Review and Renewal Each approved material method or equipment shall be subject to a review and renewal of the approval every 3 years. The fee for each review and renewal shall be $75.00.

110.4 Department Decision The Department shall notify the applicant in writing of its decision about the application for any such alternate methods, materials or equipment. No application shall be approved unless the Department finds that the proposed design is satisfactory and that the alternate is for the purpose intended at least the equivalent of that prescribed in this Building Code.

110.5 Requirements and Tests

1. When a construction material assembly fixture device utility or other article different from that provided for in this Building Code is proposed for use the plans specifications details test data samples and literature shall be furnished to the Department for review.

2. In order that claims for alternate materials methods or equipment may be substantiated the Department may require tests to be made at the expense of the applicant by an approved laboratory or agency. Test methods shall be as set forth by the Standards which are part of this Building Code or by a test method established for a particular product by a nationally recognized agency. If there are no appropriate test methods or Standards set forth in this Building Code the manufacturer or fabricator may present testing methods and their results for evaluation.

110.6 Approved Testing Laboratories At the discretion of the Department new methods and materials may be acceptable if tested by a recognized testing laboratory or agency. The testing laboratory or agency must be one approved by the Department and it shall provide listing, labeling and follow up inspection services. A copy of the agency approval report or the test report shall be submitted to the Department for approval.

110.7 Right to Appeal The Board of Appeals may review a Department decision upon appeal subject to Section 113.

Section 111  PROHIBITIONS VIOLATIONS PENALTIES AND REMEDIES

111.1 Prohibitions It shall be unlawful for anyone to do or cause to be done any act or allow a condition to exist that violates or is contrary to the provisions of this Building Code, any other code ordinance or rule and regulation promulgated thereunder which is enforced and administered by the Department and without limitation to the foregoing.

1. Alternate Methods, Materials or Equipment. It shall be unlawful for anyone to use any method, material or equipment as an alternate to the methods, materials or
equipment permitted by this Building Code without first obtaining approval in the manner herein provided.

2 **Licensing Certificate and Registration**  It shall be unlawful for any person to perform any work on any building or utility without first obtaining a license certificate or registration in accordance with the requirements of this Building Code except that the owner of a building where authorized under Section 150 of this Code who obtains a permit for the work being performed need not be licensed certified or registered.

3 **Licensing Certificate and Registration Holder Responsibility**  It shall be unlawful for any license certificate or registration holder to violate any of the responsibilities enumerated in Chapter 1 of this Building Code.

4 **Permits**  It shall be unlawful for any person to perform or cause to perform any work on any building, structure or utility without first obtaining a permit for such work from the Department in accordance with Sections 150 through 165 of this Building Code.

5 **Certificate of Occupancy**  It shall be unlawful for anyone to occupy a new building or structure or change the occupancy of any building or structure without first having obtained a Certificate of Occupancy from the Department as required by the provisions of this Building Code. A Certificate of Occupancy will not be required for remodeling or additions unless there is a change of occupancy. See Chapters 1 and 3.

6 **Unsafe Building, Structure or Utility**  It shall be unlawful for any person to maintain or permit to be maintained any building, structure or utility which is unsafe as defined in this Building Code. It shall also be unlawful to remove or deface any City red tag attached to a utility. These provisions shall apply to buildings, structures or utilities which are new existing under construction, altered or demolished.

7 **Enter, Occupy or Inhabit an Unsafe Building or Structure**  It shall be unlawful to enter, occupy or inhabit any unsafe building or structure posted in accordance with the provisions of Section 108.7.

8 **Removal of Danger Sign(s)**  It shall be unlawful to remove or deface a sign required by Section 108.7 without specific approval from the Department.

9 **False Information**  It shall be unlawful to furnish the Department any false information in any application for a license certificate or permit required by this Building Code or during the course of an investigation conducted by the Department to enforce this Building Code.

10 **Operate or Maintain Unsafe Utility**  It shall be unlawful for any person to operate or maintain an unsafe utility or reconnect the power or fuel supply to any utility declared by the Department as being unsafe and to which a City red tag has been attached as provided for in Section 108.3.1 of this Code. The owner and occupant of any building or structure containing an unsafe utility to which a City red tag has been attached who has notice that the utility has been declared unsafe and so tagged by the Department shall not permit said utility to be operated and shall take whatever steps are necessary to insure that the utility is not operated.

**EXCEPTION:** A properly licensed contractor with a permit may remove a City red tag for purposes of repair of the equipment. However, in the case of elevators, it shall be unlawful to allow any person to occupy the elevator except...
a licensed contractor and his employees during said repairs. Permission shall be obtained from the Department prior to removal of the City red tag.

11 Removal of City Warning or City Danger Tag It shall be unlawful for any person to remove a City red tag attached to any utility as provided for in Section 108.31 of this Building Code.

12 Conspiracy It shall be illegal for any person to act with another for the purpose of evading requirements of this Building Code.

1112 Violation Wherever by the provisions of this Building Code any act is prohibited or wherever any regulation, dimension or limitation is imposed on the erection, alteration, maintenance or occupancy of any building structure or utility each failure to comply with provisions of this Building Code shall constitute a violation. Each day on which a violation exists shall constitute a separate offense and a separate violation.

1113 Penalties Whenever in any Section of this Building Code or any Section of a Rule or Regulation promulgated thereunder the performance of any act is required prohibited or declared to be unlawful and no definite fine or penalty is provided for a violation thereof any person convicted of a violation of any Section shall for each offense be fined a sum of not more than $999.00 and/or imprisoned not to exceed 180 days or both so fined and imprisoned. The suspension or revocation of any license, certificate, permit or other privileges conferred by the City shall not be regarded as a penalty for the purpose of this Building Code.

1114 Remedies In the event any building structure or utility is erected, reconstructed, altered, repaired, converted, demolished, moved, maintained or used in violation of this Building Code the City or any proper person may institute an appropriate action or proceedings to prevent the unlawful erection, construction, reconstruction, alteration, repair, conversion, maintenance or occupancy and to restrain, correct or abate such violation or to prevent the occupancy of said building structure or land. The imposition of any penalty thereunder shall not preclude the City or any proper person from instituting any appropriate action or proceeding to require compliance with the provisions of this Building Code and with administrative orders and determination made thereunder.

Section 112 BOARD OF APPEALS

1121 Creation There is hereby created a Board of Appeals (the Board) which shall consist of 5 members and 3 alternates appointed by the Mayor. The Board shall be comprised of the following persons:

1. One professional engineer registered in the state of Colorado
2. One architect licensed in the state of Colorado
3. One person who is the holder of a City Building Contractor Class A, B or C license
4. Two citizen members who are not associated with the building industry

Two alternates shall be a professional engineer registered in Colorado and an architect licensed in Colorado respectively. A third alternate shall be a citizen not associated with the building industry and shall fill a temporary vacancy for a citizen member. In the absence of any member of the Board the alternates shall be authorized to fill such temporary vacancy regardless of the resulting composition of the Board with the full power and compensation accorded the regular member. A permanent vacancy shall be filled in accordance with subsection 1124 below. Alternates may appear at all meetings but shall not vote unless they are filling a temporary vacancy.

UBC 12
112.2 Secretary There shall be a Secretary of the Board furnished by the Department. The Secretary shall be the custodian of the records, shall conduct official correspondence of the Board and shall generally be responsible for clerical work of the Board. The Secretary shall be present at all meetings and shall present all relevant information regarding appeals to the Board including the application and other information submitted by the applicant prior to the hearing. The Secretary shall notify all interested parties regarding matters of the Board.

112.3 Fire Department Representative The Chief of the Fire Prevention Bureau or his authorized representative shall be an ex officio member of the Board without voting power. Terms of office and remuneration shall not be applicable to this member.

112.4 Terms As of the effective date of this Ordinance the Mayor shall appoint the initial Board members in accordance with Section 112.1 above. The initial terms of these members shall be as follows: Citizen 1: 1 year, Citizen 2: 2 years, Architect: 2 years, Contractor: 3 years, Engineer: 3 years, Engineer Alternate: 2 years, Architect Alternate: 3 years. The Alternate shall be appointed by the architect. Following these initial terms, subsequent terms of all Board members and alternates shall be for 3 calendar years. No member of the Board shall serve more than 3 consecutive full terms or a total of more than 9 consecutive calendar years. Any vacancy which occurs in the Board shall be filled by the Mayor for the unexpired term of that Board member. Board members may be removed only for cause upon written changes.

112.5 Procedures Meetings Quorum

1 Regular Meetings Regular meetings shall be held once each month or as often as may be required by the Department. At the first regular meeting of each calendar year, the Board shall elect a Chairman and a Vice Chairman. The Chairman of the Board shall require that all members of the Board be polled during voting at the meeting. Three members of the Board shall constitute a quorum.

2 Special Meetings Special meetings may be held at the call of the Chairman and at such times as the Board shall determine. The Board may determine if the Department or an appellant may request a special meeting. Any special meeting held at the request of an appellant shall be paid for by the appellant in the amount of $150.00. Three members of the Board shall constitute a quorum at special meetings.

3 Business Meetings Business meetings of the Board may be called by the Chairman of the Board.

4 Public Notice Public notice shall be given of all meetings and all meetings shall be open to the public except executive sessions or business meetings.

5 Notice Due notice of all meetings shall be given by the Secretary to all parties in interest including the Department. The Department shall be permitted to intervene for and on behalf of the City in all public meetings.

6 Oath/Subpoena. The Chairman may administer oaths accept affirmations and compel the attendance of witnesses. A failure or refusal to appear in response to a subpoena issued by the Board shall constitute a violation of this Building Code.

7 Department/Interested Party At any public meeting a representative of the Department and Fire Department and any other interested party may appear in person by agent or by attorney, offer evidence and testimony and cross examine witnesses. All evidence and testimony shall be presented publicly. The Board may take judicial notice of facts to the same extent and in the same manner as courts of
record and may consider relevant facts within the personal knowledge of any member of the Board that are stated into the record by such member.

8 **Recording** All meetings before the Board shall be recorded either by electronic means or by a Certified Court Reporter.

112.6 **Powers and Duties of the Board**

1 **Rules and Procedures** The Board shall adopt rules and procedures governing all proceedings before it consistent with the provisions set forth herein. The Rules and Regulations shall include proper procedures and time periods for applying to the Board contents of the application and time allotted for each case.

2 **Powers.** Subject to the limitations enumerated herein the Board shall have and may exercise the following powers:

A **Administrative Review** To hear and decide appeals where it is alleged there is error in any order, requirement, decision or determination made by the Department in the enforcement of the Building Code.

B **Variances** To hear, grant or deny requests for a variance from the terms of the Code or from an order or decision of the Department upon finding that the following conditions exist:

1. The applicant properly applied for a variance under Section 113.
2. That, owing to exceptional and extraordinary circumstances there are practical difficulties or unnecessary hardships involved in carrying out the strict letter of the Code.
3. That the variance will not weaken the general purposes of the Code.
4. That the variance will be in harmony with the spirit and purposes of the Code.
5. That the variance will not adversely affect the public health and safety.
6. That the variance will not adversely affect the structural integrity of the building.
7. That the variance will not adversely affect the fire safety of the building.

C **Alternate Methods and Materials** To hear and decide appeals from the Department's denial of an application for alternate materials and methods of construction and equipment under Section 110 herein after the applicant has obtained an approval or certified test results from an approved testing agency. All relevant information and documentation shall be submitted to the Board prior to the hearing. The decision of the Department shall not be overturned unless the Board shall find that the following conditions exist:

1. That the applicant properly applied under the terms of Section 110.
2. That the proposed design is satisfactory and that the alternate is, for the purpose intended, the equivalent of that prescribed in the Building Code.
3. That the proposed alternate will not weaken the general purposes of the Building Code.
4. That the proposed alternate will be in harmony with the spirit and purposes of the Building Code.
5. That the proposed alternate will not adversely affect the public health and safety.
6 That the proposed alternate will not adversely affect the structural integrity of the building
7 That the proposed alternate will not adversely affect the fire safety of the building and
8 That a written request for an extension of a temporary certificate of occupancy was filed at least 30 days prior to the expiration of any temporary certification of occupancy when applicable

D Stay of Enforcement  The Board shall have the power to stay the enforcement of any order issued by the Department unless the Building Official certifies that a stay of the order or denial would in the opinion of the Building Official based on facts stated in the request for a variance cause imminent peril to life or property  A stay shall not constitute a variance shall be personal to the applicant and not a variance cause imminent peril to life or property  A stay shall not constitute a variance shall be personal to the applicant and not transferable and shall be subject to the terms and conditions imposed by the Board

3 Additional Powers  The Board shall have and exercise the powers hereinafter set forth in connection with Chapter 10 of the Revised Municipal Code  In the exercise of its powers the Board may reverse or affirm wholly or partly or may modify the order requirement decision or determination as ought to be made and to that end shall have all the powers of the officer or department from whom the appeal is taken

A Administrative Review  To hear and decide appeals where it is alleged there is error in any order requirement decision or determination made by an administrative official in the enforcement of Chapter 10 of the Revised Municipal Code

B Variations  To authorize upon appeal in specific cases such variations from the terms of Chapter 10 of the Revised Municipal Code subject to terms and conditions fixed by the Board as will not be contrary to the public interest where owing to exceptional and extraordinary circumstances literal enforcement of the provisions of Chapter 10 of the Revised Municipal Code would result in unnecessary hardship  Every variation authorized hereunder shall not be personal to the applicant therefor but shall not be transferable and shall run with the land  No variation shall be authorized hereunder unless the Board shall find that all of the following conditions exist

1 That the use proposed by the applicant is a permitted use in the zoning district applicable to the subject land
2 That literal enforcement of Chapter 10 of the Revised Municipal Code would preclude a reasonable development of the land of the applicant for the use proposed
3 That the development of the land proposed by the applicant would not be such as to defeat the purpose of Chapter 10 of the Revised Municipal Code
4 That the development proposed by the applicant is the minimum development which would be needed to secure for the applicant from the land a reasonable return in service use or income
5 That the development proposed by the applicant would not result in damage to neighboring properties or public lands
4 Decision of the Board In the exercise of the powers described above the Board may reverse or affirm wholly or in part or may modify the order requirements decision or determination appealed from may impose conditions or requirements as deemed necessary and may make such order decision or determination as ought to be made and has the right to hold cases in abeyance until proper information needed by the Board is supplied Decisions shall be filed with the Department as a matter of public record

112.7 Procedure and Notice Upon written receipt of a request for a variance notice of the request shall be sent to the Fire Department the Health Department the City Attorney and the owner of the real estate affected by the request for a variance No variance shall be granted until 15 days after the required notifications are mailed

112.8 Limitations of Powers
1 The Board shall issue a written decision based on evidence presented at the public meeting setting forth the necessary findings of fact and the final decision of the Board A copy of this decision shall be mailed by the Secretary to all interested parties who received notice under subsection 112.7 including the Department The Board may order that a copy of the decision be recorded in the office of the Denver Clerk and Recorder
2 The concurring vote of 3 members of the Board shall be necessary to decide any matter upon which the Board is required to pass under this section of the Building Code
3 The Board shall have no authority to review administrative decisions or grant variances to the provisions of Chapters 1 of this Code except where specifically provided by the following Sections Section 103.6 Orders Section 108 Notice and Abatement of Unsafe Buildings Structures or Utilities Section 110 Alternate Materials and Methods of Construction and Equipment Section 122.3 Application and Fee Section 160 Certificate of Occupancy and Section 162 Permits for Temporary Building
4 Any determination or order of the Department shall be presumed to be correct until evidence is introduced that would support a contrary determination
5 Findings of Fact Every decision of the Board shall be based upon findings of fact and every finding of fact shall be supported in the record of its proceedings The enumerated conditions required to existing on any matter upon which the Board is authorized to pass under Chapter 10 of the Revised Municipal Code or to effect any variations in Chapter 10 of the Revised Municipal Code shall be construed as limitations on the power of the Board of act A mere finding or recitation of the enumerated conditions unaccompanied by findings of specific facts shall not be deemed findings of fact and shall not be deemed compliance with Chapter 10 of the Revised Municipal Code
6 Powers Construed Nothing contained in this Article shall be construed to empower the Board to change the terms of Chapter 10 of the Revised Municipal Code or to effect changes in any map incorporated therein The powers of the Board shall be so construed that the intent of Chapter 10 of the Revised Municipal Code and the maps incorporated therein are enforced

112.9 Compensation Each member of the Board shall receive $35.00 per meeting attended regardless of number or type of cases heard
Section 113  APPEALS

113 1 Method of Application Fee  Prior to an action by the Board an application shall be filed with the Department on a form providing the necessary information required by the Board.  An appeal shall not be considered unless filed with the Department at least 15 days prior to the meeting.  Upon filing the application a fee of $35.00 shall be paid to the City.  All checks shall be made payable to the Manager of Revenue and shall be paid in the office of the Department.  This fee is not refundable.

113 2 Grievance  Any person or city agency aggrieved by a decision of the Department any person or city agency claiming practical difficulties or unnecessary hardships in complying with the strict letter of this Building Code or Chapter 10 of the Revised Municipal Code or where it is alleged there is error in any order, requirement, decision or determination made by the Department may within 30 days of the date of notice of such decision or order appeal the decision or order of the Department by filing an application with the Board.

EXCEPTION:  Appeals of notices issued under Section 108 8 where such notice is personally served or delivered by overnight mail shall be made within 10 days of the delivery of such notice or the refusal to accept such notice.

113 3 Unsafe Condition  Whenever the owner or legally responsible person of an alleged unsafe building, structure or utility or other condition does not agree with the order from the Department as to the correction to be made he shall have the right to appeal to the Board within 30 days from the date of said order.  In his appeal he shall state how he proposes to make the building, structure, utility or other condition safe and if required by the Board he shall submit detailed engineering analysis or recommendations accompanied by plans and specifications prepared by a Colorado Licensed Architect or Colorado Registered Professional Engineer as prescribed in this Building Code.  The Board may require substantiating data concerning the removal or other remedial steps to be taken to render the building, structure, utility or other condition safe.

113 4 Hazard  In any matter in which an order or notice relating to an unsafe building or structure is appealed the Department may certify to the Board that the building or structure could become an imminent hazard in which case the Board shall schedule a meeting within 3 work days to hear said appeal.

Section 114  APPEALS FROM DECISIONS OF THE BOARD

114 1 Procedure  Any person aggrieved by the City or any officer, department or division of the City may have a decision of the Board reviewed in the manner provided by the Colorado Rules of Civil Procedure.  The Board shall not be required to return the original papers acted upon by it but shall return copies thereof.  The returned copies shall concisely set forth other facts pertinent and material to the decision appealed from and shall be verified.

114 2 Effect of Appeal  The issuance of a writ on a petition hereunder shall not stay proceedings upon the decision appealed from but the court on application after notice to the Board and on due cause shown may grant a restraining order.

114 3 Transcript Costs  Whenever a transcript is demanded by the person taking the appeal or when a transcript is furnished by the Board pursuant to court order the cost of preparing the transcript of proceedings shall be borne by the appellant in the amount of at least $200.00.
Section 115  VALIDITY OF BUILDING CODE

If any Section subsection sentence clause or phrase of this Building Code is, for any reason, held to be unconstitutional such decision shall not affect the validity of the remaining portions of this Building Code.

Section 116  LIABILITY

The Director, or his authorized employee or representative charged with the enforcement of this Code, acting in good faith and without malice in the discharge of his duties shall not thereby render himself personally liable for any damage that may accrue to persons or property as a result of any act or by reason of any act or omission in the discharge of his duties. Any suit brought against the Director or employee because of such act or omission performed by him in the enforcement of any provision of the Codes or the Charter or other pertinent laws or ordinances implemented through the enforcement of this Code or enforced by the Department shall be defended in accordance with Section 24 10 108 C.R.S.

This Code shall not be construed to relieve or lessen the responsibility of any person owning, operating or controlling any building or structure for any damages to persons or property caused by defects nor shall the Department or City be held as assuming any such liability by reason of the inspections authorized by this Code or any certificates of compliance or occupancy issued under this Code.

Sections 117 through 119 are reserved.

Section 120  LICENSING, CERTIFICATION REGISTRATION

This Chapter provides for the licensing of all persons, the certification of supervisory personnel registration and other types of certifications.

Section 121  AUTHORITY

121.1 Licenses  The Department is vested with the authority to establish licensing procedures to qualify applicants for licenses and to issue, revoke, renew, and suspend licenses.

121.2 Certificates  The Department is vested with the authority to establish certification procedures, prequalify applicants and issue, revoke, renew, and suspend certificates.

Section 122  LICENSES OR REGISTRATION

122.1 Definitions

1 A license is authority granted by the City to a person, agency or political entity to perform the work authorized by the license.

2 A registration is authority granted by the City to an electrical contractor registered by the State of Colorado to perform the work authorized by said registration.

122.2 Licenses or Registration Required  Licenses shall be required for all types of work described in this Chapter. Plumbing contractors shall be licensed by the Department and shall have a master plumber license issued by the State of Colorado as the licensee or in the full time employ of the contractor. Electrical contractors registered by the State of Colorado shall also register with the Department. Electrical registrants are required to comply with all the requirements of this Code.
EXCEPTIONS

1 Public utility companies will not be required to obtain licenses when engaged in the installation, operation and maintenance of their equipment used for the production, generation or distribution of the utility product or service through the facilities owned or operated by the utility company to the point of customer service.

2 Work performed by owners of Group R 3 and U Occupancies when work is performed under a permit authorized by Section 150.

3 Upon prior approval by the Department, a licensed Building Contractor Class A, B or C for the construction of one or two dwelling unit buildings may have subcontractors working under their building permit who are not licensed.

122.3 Application and Fee Every applicant for a license shall fill out a form provided by the Department and shall pay an application fee of $15.00 at the time of filing. This fee shall not be refundable and shall not apply to the license fee. The name of the certified supervisor shall appear on the license application. The applicant shall be notified of the action taken on the license application by the Department. If the license is approved, the applicant shall procure this license within 90 days after notification. Failure of the applicant to procure the license shall require the filing of a new application with fee. If the application for license is disapproved by the Department, the applicant may appeal to the Board of Appeals in the manner provided for in this Building Code.

122.4 Certified Supervisor Required Where required, each licensee shall be required to have in his employ a supervisor who holds a Supervisor Certificate of Qualification for that particular license. A plumbing contractor Class A or B shall be required to have in his employ a holder of a State of Colorado Master Plumbers License as the required supervisor. The license shall be valid only as long as the named supervisor remains in the employ of the licensee in an active full-time capacity. Active full-time capacity shall mean that the supervisor shall be available at the local office of the company at home or at the job site within a reasonable period of time. The supervisor shall take an active role in supervising and reviewing all work performed and materials used by the company in the process of construction. If the supervisor should leave the employ of the licensee, the licensee shall notify the Department within 3 working days after the termination. Failure of the licensee to notify the Department shall be cause for suspension or revocation of the license. The licensee shall be required to obtain a certified supervisor within 30 working days after the date the supervisor leaves the employ of the license. If a supervisor is not obtained within the 30 working day period, the license shall be deemed suspended until the supervisor is obtained and the Department notified.

1 Individual. If the licensee is an individual, he also may qualify as the supervisor for that license after examination.

2 Not Required. Electrical registration shall not require a certified supervisor.

Section 123 CLASSIFICATION OF LICENSES AND REGISTRATION [B-044]

123.1 General. There shall be various classes of licenses and an electrical registration and the holder thereof shall be authorized to perform the following:

1 Building Contractor Class A. To erect, add to, alter, demolish or repair any building or structure. All work shall be performed under the supervision of the holder of a Class A Construction Supervisor Certificate.

2 Building Contractor Class B. To erect, add to, alter or repair any building or structure of the following construction types.
A Types I or II limited in height to less than a high rise and in area to that allowed for a Type III building
B Type III IV or V buildings

The demolition of any R 3 Occupancy or one story building or structure is permitted. The contractor may install nonbearing partitions or do interior finish work in any type of building or structure. All work shall be performed under the supervision of the holder of a Class A or B Construction Supervisor Certificate

3 Building Contractor Class C To erect, add to, alter or repair any Group R 3 or U Occupancy building. The demolition of any Group R 3 or U Occupancy building or structure is permitted. All work shall be performed under the supervision of the holder of a Class A, B or C Construction Supervisor Certificate

4 Building Specialty Contractor Class D To perform building construction work which is covered by the Building Code but is not assigned to any other license listed in this section. Those building construction activities shall be approved separately and shall include but not be limited to the following:

- **Lathing plastering and dry wall** Installation of all lathing plastering and dry wall including the installation of nonbearing partitions, stucco or exterior texturing of buildings or structures and suspended ceiling systems
- **Roof covering and waterproofing** Installation of roof coverings including valleys, gutters, downspouts and waterproofing
- **Masonry** Laying and forming all types of masonry
- **Curtain walls** Installation of curtain walls and storefronts
- **Excavating shoring piles, caissons and drilled shafts** All types of excavating work, shoring and the installation of caissons and drilled shaft foundations
- **Wood framing** The fabrication and erection of wood framing for all types of buildings
- **Swimming pools** Installation of swimming pools required by this Code
- **Structural metals** The fabrication and erection of structural metal members for all buildings or structures
- **Precast concrete building units** The erection of precast concrete structural units
- **Concrete reinforcing steel placers** Placement of reinforcing bars, pre or post tensioning steel bar supports and welded wire fabric for reinforced concrete construction
- **Fireproofing** Application of fireproofing materials
- **Cast-in place concrete** The forming and construction of all cast in place concrete including the placement of reinforcing steel bar supports and welded wire fabric for reinforced concrete construction

Gutters and downspouts
Siding
Prefabricated patios, carports, canopies and awnings
Security bars, grills and grates, handrails, etc.
Building insulation
Fence structures
Scaffold erection
5 **Access Control System Contractor** To install, add to, alter or repair control units, electric door hardware, wiring and raceways electrically interconnected to control and regulate ingress and egress. Voltages shall not exceed 48 volts or the system shall be power limited as defined by the National Electric Code. Complete conduit or raceway systems shall not be installed by the holder of this license. All work shall be performed under the supervision of the holder of an Access Control Supervisor's Certificate. A certified supervisor shall be present at all work sites at all times that work is being performed.

6 **Boilermaker Contractor** To install, assemble or repair steam and hot water boilers, all pressure and nonpressure vessels, precipitators, breeching, metal stacks, plates, and casings. All work shall be performed under the supervision of the holder of a Boilermaker Supervisor Certificate.

7 **Demolition Contractor Class A** To demolish any building, structure, utility or portion thereof. All work shall be performed under the supervision of the holder of a Class A Demolition Supervisor Certificate.

8 **Demolition Contractor Class B** To demolish any building not more than 30 feet in height. All work shall be performed under the supervision of the holder of a Class A or B Demolition Supervisor Certificate.

9 **Electrical Registration** Performs all work authorized by the Registration issued by the State of Colorado.

10 **Electrical Signal Contractor** To install, add to, alter or repair electrical wiring and equipment for fire alarm, fire detection, emergency voice communication systems, electrical signaling and control wiring. Voltages shall not exceed 48 volts or the system shall be power limited as defined by the National Electrical Code. Complete conduit or raceway systems shall not be installed by the holder of this license. All work shall be performed under the supervision of the holder of an Electrical Signal Supervisor Certificate.

11 **Elevator Contractor** To install, add to, alter or repair elevators, escalators, moving sidewalks, moving ramps, dumbwaiters, stage lifts, manlifts, and amusement devices which employ ropes, cables, pulleys or platforms. In addition, this license shall include electrical work from the elevator controls to elevator equipment. This work does not include termination to any fire alarm system. All work shall be performed under the supervision of the holder of an Elevator Supervisor Certificate.

12 **Fire Protection Contractor Class A** To install, add to, alter or repair fire extinguishing systems of all types. All work shall be performed under the supervision of the holder of a Class A Fire Protection Supervisor Certificate.

13 **Fire Protection Contractor Class B** To install, add to, alter or repair automatic fire sprinkler and standpipe systems of all types. All work shall be performed under the supervision of the holder of a Class A or B Fire Protection Supervisor Certificate.

14 **Fire Protection Contractor Class C** To install, add to, alter or repair approved non-water factory engineered extinguishing systems. All work shall be performed under the supervision of the holder of a Class A or C Fire Protection Supervisor Certificate.

15 **Gas Service Contractor** To install, add to, alter or repair the following equipment which utilizes gas or liquid fuel.
A Gas and liquid fuel piping  
B Gas and liquid fuel controls  
C Commercial cooking equipment  
D After burners  
E Ranges  
F Dryers  
G Conversion burners  
H Venting of domestic water heaters, dryers, and incinerators  
I Water heaters not exceeding 100 Mbtu input  
J Low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway

All work shall be performed under the supervision of the holder of a Gas Service Supervisor Certificate or a Heating and Ventilating Class A Supervisor Certificate.

16 Heating and Ventilating Contractor Class A. To install, add to, alter or repair warm air heating venting, ventilation, evaporative cooling, exhaust systems and their appurtenances, duct work, duct collection systems, domestic and commercial range hoods, water heaters not exceeding 100 Mbtu input, gas piping burners, controls and venting, trash and laundry chutes, exterior sheet metal duct insulation, low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway and maximum of 10 tons of refrigeration when it is utilized for comfort cooling and the refrigerating system is self contained. This refrigeration shall not include systems with precharged lines or separate air cooled condenser or chilled water systems. All work shall be performed under the supervision of the holder of a Class A Heating and Ventilating Supervisor Certificate.

17 Heating and Ventilation Contractor Class B. To install, add to, alter or repair in Group R 3 or U Occupancies only warm air heating systems and their appurtenances, duct work, ventilation, evaporative cooling, duct insulation, exterior sheet metal gas piping, burners, venting and controls, water heaters not exceeding 100 Mbtu input and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway. All work shall be performed under the supervision of the holder of a Class A or B Heating and Ventilating Supervisor Certificate.

18 Hot Water Contractor. To install, add to, alter or repair in Group R 3 or U Occupancy only hot water heating systems and their appurtenances, solar water heating, water heaters, gas piping and controls, pipe insulation and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway. All work shall be performed under the supervision of the holder of a Steam and Hot Water or Hot Water Supervisor Certificate.

19 Moving Contractor. To move all types of buildings or structures. All work shall be performed under the supervision of the holder of a Moving Supervisor Certificate.

20 Plumbing Contractor Class A. To install, add to, alter or repair sanitary plumbing, potable water supply piping and appliances connected thereto, storm sewer, gas piping, water heaters, gas ranges, domestic gas incinerators, swimming pool and spa piping, solar plumbing utilized for potable water, fire sprinkler systems not to exceed 10 heads and all medical gas and vacuum systems in health care facilities.
All work shall be performed under the supervision of the holder of a State of Colorado Master Plumbers License

21 **Plumbing Contractor Class B** To install add to alter or repair in Group R 3 and U Occupancies only sanitary plumbing potable water supply piping and appliances connected thereto storm sewer gas piping water heaters not exceeding 100 Mbtu input gas ranges domestic gas incinerators and gas dryers swimming pool and spa piping All work shall be performed under the supervision of the holder of a State of Colorado Master Plumbers License

22 **Refrigeration Contractor Class A** To install add to alter or repair refrigeration systems and appurtenant cooling towers pipe insulation and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway A permit or license is not required for the installation of self contained window type air conditioners All work shall be performed under the supervision of a Class A Refrigeration Supervisor Certificate

23 **Refrigeration Contractor Class B** To install add to alter or repair in Group R 2 R 3 and U Occupancies only refrigeration systems consisting of self contained refrigeration systems of 5 tons or less the installation of precharged systems utilizing Group 1 Refrigerants and gas-fired absorption chillers All work shall be performed under the supervision of the holder of a Class A or B Refrigeration Supervisor Certificate

24 **Sign Contractor** To install erect or maintain all types of signs unless exempt by Section 150 All work shall be performed under the supervision of the holder of a Sign Supervisor Certificate

25 **Steam and Hot Water Contractor** To install add to alter or repair steam and hot water heating systems solar water heating process piping and related appurtenances piping used for the transmission of chemicals gases air and other products all items regulated by the Mechanical and Plumbing Code for boilers pressure vessels steam and water heating systems and process piping low static gas fired unit heaters industrial ovens burners controls piping and controls utilizing gas liquid or solid fuel water heaters pipe insulation and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway All work shall be performed under the supervision of the holder of a Steam and Hot Water Supervisor Certificate

26 **Water Service Contractor** To install service lines and appurtenances on new installations only from the corporation cock on the main up to and including

A The first valve downstream of the meter for an inside meter setting or

B The first valve inside the structure for an outside meter setting

This license shall not permit the installation of the water meter All work shall be performed by or under the supervision of the holder of a Water Service Supervisor Certificate or a State of Colorado Master Plumbers License

**Section 124 LICENSE FEES**

124 1 **Annual Fees Required** The annual license fee shall be paid to the Department in accordance with Table 1 A

124 2 **License Fee Refund** License fees shall not be refundable
Section 125  LICENSE RENEWAL

All licenses are subject to annual renewal

Section 126  REISSUANCE OF LICENSE

The Department shall have the authority to reissue a license without the filing of a new application provided that the reissuance is accomplished within one year after the license has expired

Section 127  LICENSEE AND REGISTRANT RESPONSIBILITY

127 1 Licensee Responsibility  Licensees shall be responsible for performing all work in conformity with the provisions of this Building Code including but not limited to the following items

1  To report in writing to the Department within 3 working days any accident occurring on any construction which results in injury or damage to the building structure or utility and any accident occurring during demolition

2  To provide minimum safety measures and equipment to protect workmen and the public

3  To present the license card when requested by the Department

4  To employ a full time qualified supervisor certified in accordance with the requirements of this Building Code

5  To employ qualified journeymen certified in accordance with the requirements of this Building Code

6  To obtain a permit when required prior to commencing work

7  To faithfully construct without departure from drawings and specifications filed and approved by the Department and permit issued for same unless changes are approved by the Department

8  To complete all work authorized by the permit issued under the authority of this Building Code unless acceptable cause is indicated to the Department

9  To obtain inspection services where required by this Building Code

10  To pay any fee assessed under authority of this Building Code

11  To obey all orders or notices issued under the authority of this Building Code

12  To provide all vehicles used in the operation of the business with identification in letters a minimum of 2 inches in height and a color contrasting to the background. The identification shall include the following information

A  Name of company

B  Business address

C  Business telephone

13  To provide toilet facilities prior to and during construction or demolition

14  To maintain with the Department a current mailing address  Any order, notice, summons, and complaint or other departmental communication whether delivered by personal service or by certified registered or first class mail sent to that address shall constitute service
127 2 Registrant Responsibility Registered electrical contractors shall comply with all provisions of Section 127 1 above and in addition shall comply with all provisions of the Colorado State Electrical Board

Section 128 LICENSE AND REGISTRATION CHANGES

128 1 Change of Name The change of name by a licensee or registrant shall be reported to the Department within 15 days after making the change on a form provided by the Department A $15.00 application fee shall be required

128 2 Change of Address A change of address of a licensee or registrant shall be reported to the Department within 15 days after making the change

128 3 New Licenses Required A new license or registration shall be obtained within 30 days after the creation of a new legal entity even through one or more of the members officers or directors have a license or are registered

128 4 Dissolution The dissolution of a corporation partnership or other legal entity which has been licensed or registered terminates the license or registration and no person may operate under that license or registration

Section 129 SUSPENSION OR REVOCATION OF LICENSE

129 1 Authority The Director may suspend or revoke a license when the licensee commits one or more of the following acts or omissions

1 Fails to comply with any of the licensee responsibilities as outlined in this Building Code

2 Conspires with any person to permit a license to be used by another person

3 Acts in any capacity with persons to evade the provisions of this Building Code

4 Willfully violates or disregards any of the provisions of this Building Code

5 Intentionally fails to perform in accordance with any written contract to perform work which is regulated by this Building Code

6 Creates as a result of work performed an unsafe condition as defined in Chapter 1 of this Building Code

7 Intentionally or fraudulently misrepresents the condition of any structure or utility or the requirements of this Building Code

8 Repeatedly violates the provisions of this Code or repeatedly fails to obey orders in a timely fashion

129 2 Procedure When any of the acts or omissions enumerated herein are committed by a license holder and the Director deems that the license shall be suspended or revoked the action shall be as follows

1 Notification The Department shall send written notice to the license holder by certified mail or by personal service identifying the acts or omissions and indicating that the license will be suspended or revoked The written notice shall advise the license holder that a request for hearing may be initiated as outlined in item 2

2 Request Hearing Upon receipt of the notice the license holder may request a hearing to show cause why the license should not be suspended or revoked This request shall be in writing to the Manager of Public Works within 7 days after receipt of the notice
3 **Time of Hearing** If a hearing is requested by the license holder the Manager of Public Works shall notify the license holder of the time, date and place of the hearing. Suspension or revocation of the license shall be stayed until after the hearing. In the event the license holder fails to appear the license may be suspended by the Director.

4 **Attendance** The license holder, the Department and other interested parties may be in attendance at the hearing. Upon completion of the hearing the Manager of Public Works shall take all evidence available as a result of the Department's investigation and all evidence presented at the hearing under advisement and shall give written notice of the findings and ruling to the license holder by certified mail or personal service.

5 **Suspension or Revocation** Unless the license is being suspended or revoked under the emergency provisions of Section 129.3 the suspension or revocation shall take effect.

   A Seven days after receipt by the licensee of the notification unless a hearing is requested.

   B Upon the return by the U.S. Postal Service of the notification as undeliverable or refused at the address maintained by the licensee with the Building Inspection Division.

   C If a hearing has been requested by the licensee which resulted in the affirming of the Director's decision to suspend or revoke the licensee's license upon receipt by the Division of the Manager of Public Works decision.

129.3 **Emergency Suspension or Revocation** If the Director finds that cause exists for emergency suspension or revocation of a license and that continued work under the license could be hazardous to life or property he may enter an order for the immediate suspension or revocation of the license pending further investigation. The licensee may within 7 days of receiving notice of the suspension request a hearing before the Manager of Public Works and such hearing shall be granted within 24 hours. The suspension or revocation is not stayed while the hearing is pending.

129.4 **Time of Suspension or Revocation** Time of suspension may be up to one year. Time of revocation may be from one year to five years.

129.5 **Delegation of Authority** The Manager of Public Works may appoint a hearing officer to conduct the hearing. Final decision shall be rendered by the Manager of Public Works.

129.6 **Right to Appeal** Any final decision by the Manager of Public Works may be reviewed in the manner provided by the Colorado Rules of Civil Procedure. See Section 114.

Section 130 **CERTIFICATES**

130.1 **Definition** A Certificate of Qualification is authority to perform certain skills and is issued by the Department on the successful completion of an examination. This certificate is not transferable. The term Certificate means Certificate of Qualification.

130.2 **Temporary Certificate** The Department may issue a temporary Certificate when the applicant has previously exhibited his skills to the satisfaction of the Department and the applicant's qualifications are acceptable. The Department shall determine the period of validity of the temporary Certificate.

130.3 **Reciprocal Certificate** The Department may issue a certificate when the applicant has passed an examination equivalent as determined by the Department to the
Sec 130 3

examination given by the Department for a Supervisor Certificate of Qualification and the applicant has submitted for Department approval a completed BID Application with supporting documents and required fees

130 4 Certificate Application Every applicant for a Certificate shall be required to complete a form provided by the Department and to pay an application fee of $15.00 at the time of the filing. The fee shall not be refundable and shall not apply to the Certificate fee. The payment of the fee shall entitle the applicant to one examination only. If the applicant is reexamined for any reason, a new application and fee shall be required.

130 5 Examinations All applicants for a Certificate shall have a written examination except for those who apply for a Construction D Supervisor Certificate in which case they shall be examined for experience and training by a standard procedure established by the Department. If an applicant who has successfully passed the examination given by the Department fails to procure this Certificate within 90 days after notification, the Certificate shall be declared to be null and void and a new application and fee shall be filed. When an applicant has failed to pass the examination, he shall be notified in writing by the Department.

130 6 Certified Supervisors

1 Every supervisor required for a particular license shall be examined by the Department and if qualified shall be issued a Supervisor Certificate of Qualification. The Certificate holder shall be entitled to perform and supervise the work in the particular skill for which he is qualified and certified. This Certificate is personal to that holder and shall not be construed to be a license.

2 The Certificate holder shall actively supervise the workmen of the licensee by whom he is employed in accordance with Section 122 4.

130 7 Certified Journeymen and Operators

1 Every Journeyman and Operator required by this Code shall be examined by the Department and if qualified shall be issued a Journeyman or Operator Certificate of Qualification. The Certificate holder shall be entitled to perform and supervise the work in the particular skill for which he is qualified and certified. This certificate is personal to that holder and shall not be construed to be a license.

2 The Certificate holder shall actively supervise the workmen of the licensee by whom he is employed in accordance with Section 132.

Section 131 CLASSIFICATION OF SUPERVISOR CERTIFICATE OF QUALIFICATION

A Supervisor Certificate for the particular work to be performed shall permit the holder to be a Supervisor under the licenses listed in Table 1 B.

Section 132 CLASSIFICATION OF JOURNEYMAN AND OPERATOR CERTIFICATE OF QUALIFICATION

132 1 General Unless otherwise provided for in this Section or in this Building Code, all journeymen and operators required to be certified shall perform that work permitted under the provisions of licenses for a particular type of work. The work permitted by the certification shall be performed in the employ of the licensee as hereinafter set forth.

132 2 Journeyman Certificate of Qualification A Journeyman Certificate of Qualification shall be required in the following trades and shall entitle the individual to work only in the trade for which he is certified under a Certified Supervisor.
1 Journeyman Boilermaker Certificate Permits the installation and erection of steam and hot water boilers pressure vessels precipitators incinerators breeching chimneys plate and casings. The holder of this Certificate may perform this work only in the employ of a Boilermaker Contractor.

2 Journeyman Electrical Signal Certificate Permits the installation of electrical wiring and equipment for fire alarm fire detection emergency voice communication system and electrical signaling and control wiring. Voltages shall not exceed 48 volts or the system shall be power limited as defined in the National Electrical Code. Complete conduit or raceway systems shall not be installed by the holder of this Certificate. The holder of this Certificate shall perform this work only in the employ of an Electrical Signal Contractor.

3 Journeyman Gas Service Certificate Permits the installation of the following equipment utilizing gas or liquid fuel:
   A Gas and liquid fuel piping. The low voltage wiring permitted by this Certificate shall apply to gas or liquid fuel fired appliances only. The holder of this Certificate may perform this work only when in the employ of a Gas Service Contractor or a Heating and Ventilating Contractor Class A or B.
   B Gas and liquid fuel controls
   C Commercial cooking equipment
   D After burners
   E Ranges
   F Dryers
   G Conversion burners
   H Venting of domestic water heaters, dryers and incinerators
   I Water heaters not exceeding 100 Btu input
   J Low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway.

4 Journeyman Heating and Ventilating Certificate Permits the installation of warm air heating duct work ventilation and evaporative cooling exterior sheet metal water heaters not exceeding 100 Mbtu input gas piping burners venting and controls exhaust systems and appurtenances thereof and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway. The holder of this Certificate may perform this work only in the employ of a Heating and Ventilating Contractor Class A or B.

5 Journeyman Refrigeration Certificate Permits the installation of refrigeration systems and appurtenant cooling towers, pipe insulation and low voltage wiring which does not exceed 48 volts and is not enclosed in a conduit or raceway. The holder of this Certificate may perform this work only in the employ of a Refrigeration Contractor Class A or B.

6 Journeyman Steam Fitter Certificate Permits the installation of steam and hot water heating systems, solar water heating process and industrial piping and related appurtenances piping used for the transmission of chemicals, gases, air, milk and other products transmitted through piping and all items regulated by the Mechanical and Plumbing Code for boilers, pressure vessels, steam and water heating systems and process piping, low static gas fired unit heaters, industrial ovens, burners piping and controls utilizing gas, low voltage wiring which does
not exceed 48 volts and is not enclosed in a conduit or raceway commercial
cooking equipment commercial incinerators and after burners. The holder of this
Certificate may perform this work only in the employ of a Steam and Hot Water
Contractor or a Hot Water Contractor

7 **Journeyman Water Service Certificate** Permits the installation of the initial water
service from the main tap through the stop box and meter pit and continuing to
and through the wall of the building and capped at that point. This Certificate shall
not permit the installation of the water meter. The holder of this Certificate may
perform this work only in the employ of a Water Service Contractor or a Plumbing
Contractor Class A or B

132.3 **Stationary Engineer and Operator Certificates** It shall be unlawful to operate
any of the following equipment without the personal attendance of a properly Certified
Stationary Engineer or a properly Certified Operator

1 Any steam boiler and appurtenances thereto, steam pumps, steam turbines and
steam engines where the steam pressure is in excess of 15 psi working pressure
and where the equipment produces a total of 10 boiler horsepower or more at
Denver altitude

2 Water heating systems when the water temperature exceeds 250 degrees F in the
system

3 Refrigeration systems having manual or semi-automatic control with charges of
1500 lbs or more of Safety Group A1 or B1 refrigerants as outlined in the
Mechanical Code

4 Built up grouping of multiple refrigeration units where the refrigeration system
charge is 1500 lbs or more of Safety Group A1 or B1 refrigerants as outlined in the
Mechanical Code

5 Refrigeration systems utilizing refrigerant other than Safety Group A1 or B1 as
defined in the Mechanical Code and which contains a charge of 200 lbs or more

**EXCEPTION** Personal attendance shall not be required for refrigeration units which
are categorized in items 3 and 4 that

1 Have fully automatic safety controls which will shut down the unit when any one
of the following conditions are detected

   A Excessive pressure in condenser
   B Excessive amperage draw
   C Improper voltage balance
   D Minimum temperature protection in evaporator

2 Are located in a mechanical room that is in compliance with UMC Chapter 11

3 Have immediate auto dial notification to an approved constantly attend location

4 Have annual testing and calibration of all operating and safety controls as
required by the manufacturers specifications. Records shall be maintained and
available for inspection by the Building and Fire Department

5 Have refrigerant vapor detectors that have local audible or visible alarm located
inside and outside of the refrigeration equipment room in accordance with UFC
Article 63
Sec 132.3

6 Have all safety controls that have individual manual reset to be reset only by a Certified Stationary Engineer Refrigeration Operator or Refrigeration Journeyman/Supervisor. The control limits shall be as required by the manufacturers specifications for the specific refrigeration unit.

NOTE As used in this Section semi automatic shall mean plants or systems which are provided with automatic safety controls by manual load proportioning controls requiring other than seasonal adjustments.

132.4 Stationary Engineer Certificate Permits the holder to take charge of and operate all steam boilers and appurtenances thereto steam pumps steam turbines, steam engines and mechanical refrigeration systems.

132.5 Boiler Operator Certificate Class A Permits the holder to take charge of and operate all steam boilers and appurtenances steam pumps steam turbines and steam engines.

132.6 Boiler Operator Certificate Class B Permits the holder to take charge of and operate all steam boilers and appurtenances steam pumps steam turbines and steam engines containing a steam pressure between 15 and 100 psi and where the equipment produces a total of between 10 and 100 horsepower at Denver altitude.

132.7 Refrigeration Operator Certificate Permits the holder to take charge of and operate mechanical refrigeration systems.

132.8 Hoist Operator Certificate It shall be unlawful to operate a construction hoist powered by steam electricity or other power when such hoist serves buildings or structures under construction or demolition exceeding 25 feet in height unless said hoist is operated by a properly Certified Hoist Operator. This Section shall not be construed to include elevators regulated and as defined in this Building Code.

EXCEPTION Single drum material hoists not more than 25 feet in height and not carrying personnel do not require a Hoist Operator Certificate Holder.

Section 133 APPRENTICES AND TRAINEES

133.1 General This Section shall govern the crafts listed in this Chapter where a Journeyman Certificate holder is required.

133.2 Requirements Apprentices and trainees shall not be required to possess a Certificate but shall be permitted to work as prescribed in other Sections of this Chapter.

133.3 Definition

1 An apprentice shall mean any person who has entered into an apprentice agreement which provides for participation in a program of training through employment and education in related and supplementary subjects.

2 A trainee shall mean any person working at the trade under the direct supervision of a certified Journeyman or Supervisor.

133.4 Work An apprentice or trainee may perform any work which is distinctive to a specific craft but only under the direction and supervision of a Certified Supervisor or Journeyman of the craft during working hours. Persons working on tasks not distinctive to any specific craft shall not be classed as an apprentice.

133.5 Employment of Apprentices Contractors may employ apprentices or trainees for the licensed crafts or trades. The ratio of apprentices and trainees to Journeyman or Master Electrician employed shall not exceed one apprentice or trainee to one Journeyman or Master Electrician.
133.6 Employer  All apprentices or trainees shall be in the employ of the licensed crafts where Journeymen Certificate holders are required.

Section 134 CERTIFICATE FEES

134.1 Fees  Certificate of Qualification fees shall be paid every 3 years to the Department in the amount as follows:

- Supervisor Certificate  $75.00
- Journeymen Certificate  30.00
- Engineer Certificate  30.00
- Operator Certificate  30.00

EXCEPTION  The certificate fee for employees of the City shall be waived when performing work for the City or when employed by the Department.

134.2 Certificate Fee Refund  Certificate fees are not refundable.

Section 135 CERTIFICATE RENEWAL

135.1 Certificates shall be renewed every 3 years and expire on the date specified on the Certificate. No work shall commence or continue after the date of expiration. A renewal examination will be required. The renewal examination shall be a written test on recent revisions to the Denver Building Code will be included with the renewal notices and must be answered and returned with the renewal application and the fee.

Section 136 REISSUANCE

136.1 General  The Department shall have the authority to renew a Certificate provided that the renewal is accomplished within the limits set forth herein.

1. The Certificate may be reissued without a new application provided that such reissuance is accomplished within one year after the Certificate has expired. A renewal examination will be required.

2. If the Certificate holder reapplies within 3 years of the date of expiration a new Certificate examination shall not be required but a renewal examination shall be required.

3. If the Certificate holder applies more than 3 years after expiration a new Certificate examination shall be required.

Section 137 CERTIFICATE HOLDER RESPONSIBILITY

137.1 General  All Certificate holders shall be responsible to insure that the work performed by the licensee is in accordance with the requirements of this Building Code without limitation and to

1. Have in possession at all times a Certificate

2. Present a Certificate when requested by the Department

3. Faithfully construct without departure from or disregard of approved drawings and specifications

4. Obey any order issued under authority of this Building Code

5. Pay any fee assessed under the authority of this Building Code

6. Observe the safety requirements of this Building Code

7. Actively supervise and oversee all work performed by or for the licensee by whom he is employed.
8 Be responsible for all permits being issued prior to the beginning of work
9 Maintain a current local mailing address and accept all mail so addressed
10 Notify the Department within 3 days whenever he leaves the employ of the licensee
11 Provide minimum safety measures and equipment to protect workmen and the public
12 Faithfully construct, without departure from drawings and specifications filed and approved by the Department and permit issued for same unless changes are approved by the Department
13 Complete all work authorized by the permit issued under the authority of the Department unless the cause of incomplete work is determined by the Department to be not the fault of the Certificate holder
14 Obtain inspection services where required by the Department

Section 138 SUSPENSION OR REVOCATION OF CERTIFICATE

138 1 Authority The Director may suspend or revoke a Certificate for any one or more of the following acts or omissions
1 Incompetence
2 Misuse of the Certificate
3 Failure to comply with any of the Certificate holder responsibilities outlined in Section 217
4 Knowingly conspire with a person to permit a license to be used by another person
5 Act as agent, partner, associate or in any capacity with persons to evade the provisions of this Building Code
6 Intentionally fail to perform in accordance with any written contract to conduct work which is regulated by this Building Code
7 Create, as a result of work performed an unsafe condition as defined in Chapter 1 of this Building Code
8 Intentionally or fraudulently misrepresent the condition of any structure or utility or the requirements of this Building Code
9 Repeatedly or willfully violate the provisions of this Code or repeatedly fail to obey orders in a timely fashion

138 2 Procedures When a Certificate holder commits any acts or omissions enumerated above and the Director deems that the Certificate shall be suspended or revoked the action shall be as follows
1 Notification The Department shall send written notice to the certificate holder by certified mail or by personal service identifying the acts or omissions and indicating that the certificate will be suspended or revoked. The written notice shall advise the certificate holder that a request for hearing may be initiated as outlined in item 2
2 Request Hearing Upon receipt of the notice the certificate holder may request a hearing to show cause why a certificate should not be suspended or revoked. This request shall be in writing to the Manager of Public Works within 7 days after receipt of the notice
3 **Time of Hearing** If a hearing is requested by the certificate holder, the Manager of Public Works shall notify the certificate holder of the time, date and place of the hearing. Suspension or revocation of the certificate shall be stayed until after the hearing. In the event the certificate holder fails to appear, the certificate may be suspended by the Director.

4 **Attendance** The certificate holder, the Department and other interested parties may be in attendance at the hearing. Upon completion of the hearing, the Manager of Public Works shall take all evidence available as a result of the Department's investigation and all evidence presented at the hearing under advisement and shall give written notice of the findings and ruling to the certificate holder by certified mail or personal service.

5 **Suspension or Revocation** Unless the certificate is being suspended or revoked under the emergency provisions of Section 138.3, the suspension or revocation shall take effect:
   
   A. Seven days after receipt by the certificate holder of the notification unless a hearing is requested.
   
   B. Upon the return by the U.S. Postal Service of the notification as undeliverable or refused at the address maintained by the certificate holder with the Building Inspection Division.
   
   C. If a hearing has been requested by the certificate holder which resulted in the affirming of the Director's decision to suspend or revoke the certificate holder's certificate upon receipt by the Division of the Manager of Public Works decision.

138.3 **Emergency Suspension or Revocation** If the Director finds that cause exists for the emergency suspension or revocation of a certificate and that continued work under the certificate could be hazardous to life or property, he may enter an order for the immediate suspension of the certificate pending further investigation. The certificate holder may within 7 days of receiving notice of the suspension or revocation request a hearing before the Manager of Public Works and such hearing shall be granted within 24 hours. The suspension or revocation is not stayed while the hearing is pending.

138.4 **Time of Suspension or Revocation** Time of suspension may be up to one year. Time of revocation may be from one year to five years.

138.5 **Delegation of Authority** The Manager of Public Works may appoint a Hearing Officer to conduct the hearing. The final decision shall be rendered by the Manager of Public Works.

138.6 **Right to Appeal** Any final decision by the Manager of Public Works may be reviewed in the manner provided by the Colorado Rules of Civil Procedure. See Section 114.

**Section 139 EXAMINATION STANDARDS AND REVIEW**

139.1 **Examination Standards** The Department shall develop standards for the examination of applicants for Certificates. These standards shall be consistent with the purpose of this Building Code, which is to provide for the public health, safety and welfare to the extent that those persons examined are to be found qualified in terms of their skills. Building Code knowledge, practical experience, and knowledge of pertinent laws to perform the construction work for which they may be certified.

1 The Department shall examine applicants in the following areas.
Sec 139 1

A  Applicable areas of the Building Code
B  Technical knowledge
C  Skills

2  The Department shall establish minimum standards for education and experience of the applicants

139 2 Citizen Review Board  The Department may establish an examination standards Citizen Review Board to review and monitor the examination testing criteria. The Citizen Review Board members shall be representatives of the various segments of the construction industry which are pertinent to the specific certification examinations.

139 3 Annual Review  The standards shall be reviewed annually or more frequently if necessary to maintain the standards current with changes in the Building Code and building construction practices.

Section 140

TABLE NO 1-A
CONTRACTOR LICENSE AND REGISTRATION FEE

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N/C = No Change
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Sections 141 through 149 are reserved
Section 150  PERMITS PLANS INSPECTIONS CERTIFICATE OF OCCUPANCY

150.1 Permits Required [B-003 B-005 B-006 B-019 B-023 B-042 B-071]

General  No person, business, corporation, agency or public, private or governmental institution shall erect, construct, enlarge, remodel, alter, repair, move, improve, remove, convert, demolish or change the occupancy of any building, structure or utility, or perform any other work regulated by this Building Code, or cause the same to be performed, in the City and County of Denver, without first having obtained a permit from the Department for the specific work to be performed. This permit shall be displayed or available on the job site at all times.

Exempted Work  The following construction is exempt from the permit requirements of this Code. Exemption from this Code shall not be deemed to grant authorization for any work to be done in any manner that violates the provisions of this Code or any other laws or ordinances of this jurisdiction. Wastewater Management, Zoning Administration and Fire Department permits may be required.

1. One story detached accessory buildings or structures used as tool and storage sheds, playhouses and similar uses provided that the projected roof area does not exceed 150 square feet and a maximum height of 8 feet.

2. Fences not over 4 feet high.

3. Oil derricks.

4. Movable cases, counters and partitions not over 5 feet 9 inches high.

5. Retaining walls which are not over 3 feet high measured from the lowest grade to the top of the wall, unless supporting a surcharge or impounding Class I, II or III A liquids. See Section 312.7.

6. Water tanks supported directly upon grade where the capacity does not exceed 5,000 gallons and the ratio of height to diameter or width does not exceed two to one.

7. Platforms, walks and driveways not more than 30 inches above grade and not over any basement or story below.

8. Painting wall papering, cabinets, curtains, drapes and similar decoration items except those items regulated by Chapter 8.

9. Temporary motion picture, television and theater stage sets or scenery.

10. Window awnings supported by an exterior wall of Group R-3 and U Occupancies when projecting not more than 54 inches over privately owned property.

11. Prefabricated swimming pools accessory to a Group R-3 and U Occupancy in which the pool walls are entirely above the adjacent grade and when utilities are provided.

12. Public utility Construction, repair or maintenance of public utility equipment and facilities used in the distribution of their utility. This exemption includes buildings whose primary function is to house utility distribution or signal control equipment and not intended for human occupancy.

13. State and Federal governments, their agencies or subdivisions, or contractors constructing improvements for said State and Federal governments, their agencies or subdivisions, when constructing improvements to be used for and maintained entirely and strictly for the operation of said governments.
14 Replacement of glass not in hazardous locations

15 Site development work including grading, water detention/retention ponds and soil erosion control. The Wastewater Division will require permits for this type of work.

16 Denver Public Schools (DPS) Construction remodeling or repair of any plumbing or electrical system except for fire and burglar alarm and detection systems in any portion of a building in which instruction is or will be given by any DPS school as long as such work is permitted and inspected by the State Examining Board of Plumbers or the State Electrical Board.

17 All plumbing fixture replacement or repair.

18 Tents 200 square feet or less and freestanding canopies 400 square feet or less open on 3 or more sides.

19 Membrane structures including tents and canopies of any size erected for a period of less than 180 days.

20 Nonilluminated signs of the following types:
   A. Cloth signs mounted directly on a wall.
   B. Wall signs not exceeding 200 square feet in area.
   C. Ground signs not exceeding 150 square feet in area.
   D. Arcade signs not exceeding 25 square feet in area on each side.

Section 151 PERMITS

151 1 Application [B-004; B-010; B-020; B-054]

1. The owner or the owner's agent shall apply for a permit on forms furnished by the Department. The applicant should exercise care in completing the necessary information especially addresses as permits are nontransferable unless the address change is approved by the Address Section of the Design Engineering Division of the Department.

   EXCEPTION The Department may correct minor errors in the address if the change can be made on all copies of the permit and initialed by the inspector.

2. The contractor's signature is not required on the permit application when the construction documents are submitted to the Department for review.

151 2 Issuance of Permits [B-053]

The Department shall issue permits to perform the work shown on submitted documents and as specified on the permit when the following conditions are met:

1. All phases of the project conform to the requirements of this Building Code.

Department of Public Works Zoning Administration Department of Health and Hospitals and Fire Department.

2. The permit form is signed by one of the following before the permit is issued:
   A. A contractor that is licensed under Chapter 1 of this Code.
   B. An authorized representative of the license holder.
   C. An owner applying for a permit under Subsection A of Section 151 2 3 or
   D. An owner or owner's agent applying for permits under Subsection 151 2 4.
3 When the applicant is a person who owns a single family dwelling a duplex a Group U Occupancy or a dwelling unit in a townhouse building or who owns property and wishes to construct a single family dwelling or Group U Occupancy a permit will be issued provided that

A Any work done under a homeowner’s permit including demolition of a dwelling or Group U 1 structure shall be done by the owner personally unless otherwise approved by the Department

B The applicant for a permit to perform electrical heating cooling or plumbing work shall hold an appropriate Certificate of Qualification or shall pass an examination appropriate to the work to be performed and shall personally perform the work

C Any electrical plumbing or mechanical work that is done on a homeowner’s permit shall be restricted to work in an owner occupied single family dwelling the owner occupied unit of a duplex or Group U Occupancy When the applicant does electrical work he must intend to occupy the unit for at least 12 months after the completion of the permitted work and shall submit a written statement to the Department before an electrical permit will be issued

D A permit for minor work involving the volunteer services of persons working through a recognized volunteer organization or of other qualified individuals may be issued to the applicant of a single family duplex or miscellaneous building A request for permit shall be in writing and shall be issued only when approved by the Director

EXCEPTIONS

1 A permit shall not be issued to the owner of a townhouse dwelling unit for structural or utility work

2 Only one permit to construct a single family or duplex building shall be issued to any person under Subsection 151 2.2 C in any 12 month period

4 When the applicant is the owner or owner’s agent of a Group R Division 1 building for the purpose of installing battery operated smoke detectors

5 Any work to the exterior or common elements of a townhouse or condominium apartment building must be approved by the Homeowner’s Association and the permit issued to a licensed contractor

6 The applicant is an owner or owner’s agent to establish a new certificate of occupancy when no construction work is to be done covered by a 1 C building permit

151 3 Nontransferable Permits shall not be transferable

EXCEPTION Permits for improper address issued to same contractor may be transferred A processing fee of $15.00 per permit will be charged Requests for transferable permits must be made within 30 days of issuance of the original permit

151 4 Validity The issuance of a permit or the approval of drawings and specifications shall not be construed to be a permit for nor an approval of any violation or deviation from the provisions of this Building Code or other ordinances laws rules or regulations The Department shall take any action it deems necessary to ensure that all work performed meets all requirements of this Building Code
151 5 Suspension Cancellation New Permits

1 A permit may be canceled by the Department when
   A Work is not commenced within 60 days from the date of issuance unless this
time is extended by the Department
   B Work is suspended or abandoned for a period of 60 days after work is
commenced unless this time is extended by the Department
   C No request for inspection has been made for a period of 60 days unless this
time is extended by the Department

2 A demolition or moving permit may be canceled by the Department when
   A Work is not commenced within 30 days after the date of issuance
   B Work is suspended or abandoned for a period of 10 days after work is com-
menced unless otherwise approved by the Department

3 A new permit may be issued to replace an expired permit provided that no
changes have been made in the original drawings and specifications for the work
when
   A The holder of a canceled permit demonstrates that the suspension or abandon-
ment of work was occasioned by circumstances beyond his control and that it
would be an injustice to require a new fee or
   B Payment of a fee equal to / the current permit fee provided that the applica-
tion is made within one year after cancellation

4 The Department may suspend or cancel any permit or may stop the work for any of
the following reasons
   A Whenever there is a violation of any provisions of this Building Code or any City
ordinance which the Department is empowered to enforce
   B When the owner or permit holder has failed to comply with the requirements of
the Departments of Public Works Zoning Administration Health and Hospitals
and the Fire Department
   C Whenever the continuance of any work becomes dangerous to life or property

151 6 Notice Notice of the suspension or cancellation for reasons stated in Section
151 5 shall be in writing and shall be served upon the holder of the permit the owner or
the person in charge of the work. If the original notice is not served on the owner a copy
of the notice shall be sent to the owner. It shall be unlawful to proceed with any work once
the notice is served

Section 152 PERMIT FEES

152 1 Permit Fees The fee for each permit shall be as set forth in Table No. 1 C The
determination of value or valuation under any of the provisions of this Code shall be made
by the Building Official. The value to be used in computing the building permit and
building plan review fees shall be the total value of all construction work for which the
permit is issued as well as all finish work roofing electrical plumbing heating air
conditioning elevators fire extinguishing systems and any other permanent equipment
Permit fees provide for the customary inspections only

In order to encourage energy conservation water conservation and reduction of air
pollution the Director is authorized to waive or reduce the permit fees for the installation of
equipment or appliances which meet the standards for achieving conservation of energy
water or which may reduce air pollution. Such waivers shall be in writing and shall be for a
specific period of time.

152.2 Plan Review Fees The plan review fee shall be 40% of the building permit fee
shown in Table No 1 C and shall be paid at the time of submitting plans and
specifications for review. The plan review fees specified in this subsection are included in
and not in addition to the permit fees specified in subsection 152.1 Where plans are
essentially incomplete in accordance with Sections 153, 154 and 155 or changed so as to
require additional plan review an additional plan review fee shall be charged at the rate
shown in Table No 1 C.

152.3 Type Approval When construction documents have been approved for a
typical structure and duplicate structures are to be constructed by the same contractor
80% of the original permit fees will be required for the building permits of duplicate or
typical buildings.

152.4 Expiration of Plan Review If no permit is issued within 180 days following the
date of application the application shall expire and plans and other data submitted for
review may thereafter be returned to the applicant or destroyed by the Building Official.
The Building Official may extend the time for action by the applicant for a period not
exceeding 180 days upon a written request showing that circumstances beyond the
applicant's control have prevented action from being taken. No application shall be
extended more than once. In order to renew action on an application after expiration the
applicant shall submit a new application with the plans and pay a new plan review fee.

152.5 Allowed Inspections Permit fees provide for the customary inspections only.

152.6 Late Fees When work for which a permit is required by this Building Code is
started without a permit the permit fees stated in Table No 1 C shall be doubled with a
minimum of $50.00 The payment of this double fee shall not relieve any person from fully
complying with the requirements of this Building Code in the execution of the work or from
other penalties for performing work without a permit.

EXCEPTION: For items of work performed on an emergency basis as determined
by the Department to maintain an existing service or utility when the maintenance
is necessary to protect health, life or safety the penalties stated herein shall not
apply if application for a permit is made within 3 normal working days after
commencement of the emergency work.

152.7 Permit Fees for Denver Agencies Enterprise fund agencies of the City and
County of Denver which are not subsidized by the General Fund shall pay permit fees for
all construction and repair work for which building permits are required. General Fund
agencies and Enterprise Fund agencies subsidized by the General Fund shall pay permit
fees for new construction projects only.

152.8 Additional Fees A supplementary permit shall be obtained for any additional
valuation not included in the original permit. The fee shall be the difference between the
fee paid and the fee that would have been required had the original permit included the
entire valuation.

152.9 Additional Plan Review Fees for Rejected Drawings When drawings are
rejected an additional fee shall be charged in accordance with Table No 1 C. When
submittal documents are incomplete or changed so as to require additional plan review or
when the project involves deferred submittal items as defined in Section 154.1.3.A an
additional plan review fee shall be charged at the same rate shown in Table 1 C.
152.10 Refunds  No refund will be granted for any permit fee paid to the Department.

**EXCEPTION**  Fees for duplicate or out of City permits may be refunded. A processing fee of $25.00 per permit will be charged and that amount will be deducted from the refund. Request for refund must be made in writing within 60 days of the date of the permit.

Section 153  DRAWINGS AND SPECIFICATIONS  [B-007; B-060 B-069]

153.1 General  Drawings and specifications shall be required for review and approval by the Department prior to the issuance of a permit except as set forth in subsection 153.6.

153.2 New Construction, Additions, Alterations or Repairs  Application for a permit shall be accompanied by the following:

1. Drawings including the information required in Section 155.

2. Copies of an engineering report containing studies and test results concerning the hazards present on the building, demolition or moving site when such site is within an area designated as a Special Construction Zone under Article VII, Chapter 10 of the Revised Municipal Code. Each report shall contain adequate information as a result of tests to allow identification of the hazards present and recommendations as to methods of minimizing the hazards during construction and methods for controlling the identified hazards likely to be present after construction. The Department of Health and Hospitals and the Fire Department shall approve all reports required by this subsection before any permit is issued.

3. When required by the Department, additional drawings shall be submitted for approval.

153.3 Approval  Drawings and specifications complying with the provisions of this Building Code and approved by the Department shall bear the Department stamp of approval on the first page thereof. When corrections are required, the Department may require that the drawings and specifications be revised and resubmitted for approval prior to the issuance of a permit.

153.4 Distribution  One set of approved drawings and specifications shall be returned to the applicant. One set of approved drawings and specifications shall remain in the office of the Department.

153.5 Disposal  Upon completion of the work and the final inspections by the Department, the Department's copy of the approved drawings and specifications may be disposed of after 6 years have elapsed from the date of issuance of the permit. If no permit is issued, plans and specifications may be disposed of after 180 days from the date of application.

153.6 Not Required  Drawings, specifications, and an engineering report need not be submitted for the construction, demolition or moving of minor buildings, additions, structures, or utilities or for minor alterations and repairs to existing buildings, structures, or utilities when the Department is satisfied that the strength, safety, sanitation, and fire resistance are adequately described on the permit application or when it is satisfied that such construction, alterations, repair, demolition, or moving will not substantially increase the hazard present in a Special Construction Zone.

153.7 Utility Companies  With the approval of the Department, the design of buildings, structures, or utilities for the authorized Public Utilities may vary from these Building Code requirements.
Section 154  PREPARATION OF DRAWINGS AND SPECIFICATIONS ———— [B-041]

154.1 Limitations Any person may submit drawings and specifications with an application for a building permit subject to the following limitations

1 Architect and/or Engineer required Construction documents for all buildings, structures, additions, alterations or repairs shall bear the seal and signature of the design professional responsible for each design phase except as provided in subsection 7

2 Seal The authorized seal, either the crimp type imprint or a rubber stamp facsimile with an original signature and date of signature through the seal shall be placed on

A Each sheet of reproductions of original drawings produced by or under the direct supervision of the design professional

B The cover title page and table of contents of specifications

C Each sheet of subsequent issues of revisions addenda clarifications or other modifications

D Title page of details bound in book form

E Title or signature page of all engineering reports

3 Architect or Engineer of Record When it is required that documents be prepared by an architect or engineer the Department may require the owner to engage and designate on the building permit application an architect or engineer who shall act as the architect or engineer of record. If the circumstances require the owner may designate a substitute architect or engineer of record who shall perform all of the duties required of the original architect or engineer of record. The Department shall be notified in writing by the owner if the architect or engineer of record is changed or is unable to continue to perform the duties. The architect or engineer of record shall be responsible for reviewing and coordinating all submittal documents prepared by others including deferred submittal items for compatibility with the design of the building

A Deferred submittals For the purposes of this section deferred submittals are defined as those portions of the design which are not submitted at the time of the application and which are to be submitted to the Department within a specified period. Deferral of any submittal items shall have prior approval of the Building Official. The architect or engineer of record shall list the deferred submittals on the plans and shall submit the deferred submittal documents for review by the Department. Submittal documents for deferred submittal items shall be submitted to the architect or engineer of record who shall review them and forward them to the Department with a notation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the buildings. The deferred submittal items shall not be installed until their design and submittal documents have been approved by the Department

B Inspection and observation program When special inspection is required by Section 1701 the architect or engineer of record shall prepare an inspection program which shall be submitted in the Department for approval prior to issuance of the building permit. The inspection program shall designate the portions of the work that require special inspection and the name or names of
the individuals or firms who are to perform the special inspections and indicate the duties of the special inspectors. The special inspector shall be employed by the owner, the engineer or architect of record or an agent of the owner, but not the contractor or any other person responsible for the work.

When structural observation is required by Section 1582, the inspection program shall name the individuals or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur. The inspection program shall include samples of inspection reports and provide time limits for submission of reports.

4 Consultant Drawings: Consultant drawings and specifications prepared by architectural or engineering subdisciplines shall be so designated by their name address and phone number and shall bear the seal and signature of the responsible architect or engineer for the subdiscipline.

5 Statement: When a design professional signs and seals a document, a statement shall also be included setting forth the aspects of the project for which the design professional is responsible (i.e., civil, structural, mechanical). If there is no statement, it is presumed that the design professional has assumed responsibility for the entire document.

6 Reproducible Drawings: The design professional's seal and signature shall not be placed on reproducible drawings that are used for multiple copies or on reproducible drawings that are transferred away from the design professional's possession and supervision.

7 Architect or Engineer not Required: An architect or engineer is not required to prepare drawings and specifications for the following buildings, structures, additions, alterations, or repairs:

   A Single family, duplex, or miscellaneous buildings.
   B Group R-1 Occupancies and townhouse buildings when the floor area of the building does not exceed 5,000 square feet and the building is not more than one story without a basement.
   C Garages, industrial buildings, warehouses, stores, mercantile buildings, or office buildings where the floor area of the building does not exceed 5,000 square feet and the building is not more than one story without a basement or excavated subfloor area.
   D Nonstructural alterations including alterations to utilities approved by the Department, which are to any building or structure provided that the alterations do not affect the stability of the building or the health and safety of the occupants.
   E If after review of the drawings and specifications, the Department determines that the proposed building or structure is inadequately designed, the Department may require that the drawings and specifications bear the seal of an architect or engineer who will be responsible for the design phases of the building or structure.

Section 155 INFORMATION REQUIRED FOR PREPARATION OF DRAWINGS — [B-001]

155-1 Information Required: Drawings and specifications shall be complete and of sufficient clarity to indicate the entire work proposed and to show in detail that the
building structure or utility conforms to the provisions of this Building Code and relevant laws, ordinances, rules and regulations. Each set of drawings and specifications shall contain at least the following:

1. **Architectural Structural Mechanical Electrical Drawings Specifications and Analysis**

   A. The exact address, legal description, and location of the work performed.

   B. The name and address of the owner.

   C. Name and address of the person or firm responsible for the preparation of the drawings and specifications. The seal and signature of the architect or engineer responsible for the preparation of the drawings and specifications when required by Section 154.

   D. A plot plan showing the location of the proposed construction and the location of every adjacent existing building, on the property, roads, utilities, and other site improvements, all property lines, streets, alleys, easements and other public areas. A plot plan is not required for interior alterations and repairs. The proposed construction shall not project beyond property lines except as provided for in Chapter 32.

   E. A completed Building Profile Form. The form shall be provided by the Department.

   F. Two complete sets of construction documents showing the construction of architectural structural, mechanical, and electrical arrangements.

   G. One copy of specifications or notes that clearly describe the type, quality, and finish of materials and the method of assembly, erection, and installation of equipment to be installed with proper reference to accepted standards.

   H. Architectural drawings and specifications as follows:

      1. Plans showing the arrangement of each floor elevations, sections, and details to show the construction of all architectural features including the location and type of fire-rated construction.

      2. The gross area in square feet of a) buildings or portions of buildings in which new construction or remodeling work is intended and b) different occupancy groups.

      3. A complete Code analysis including the building occupancy groups, the type of construction, and a comparison of actual floor areas and number of stories to those allowed under the provisions of this Code on the front sheet of drawings.

   I. Structural drawings, specifications, and analysis as follows:

      1. Design criteria indicating all lateral loads and allowable stresses in all structural materials.

      2. Foundation floor and roof plans indicating a) location of concentrated loads and varying live loads, b) roof areas used to impound water and c) pressurized shafts required for Chapter 9.

      3. Elevations, sections, and details showing all structural requirements.

      4. Foundation design criteria shall be submitted when requested by the Department for all new construction in accordance with a soils investigation.
report signed and sealed by an engineer responsible for the preparation of the report.

J  Mechanical drawings specifications and analysis as follows
1  Single line drawings including typical isometric of plumbing heating air treatment systems and gas piping layout
2  Btu rating of gas units method of combustion and ventilation air supply type and horsepower of refrigeration and gas meter locations
3  Heating cooling ventilating plumbing and fire protection details and fire or smoke damper locations
4  Plans and details showing a) the location of impounded water and b) shafts used for pressurization as required by Chapter 9

K  Electrical drawings specifications and analysis as follows
1  One line diagram showing sizes of service and feeder conductors sizes of service and feeder overcurrent devices all major components of service and distribution system ratings of equipment and grounding details
2  Load study and analysis to justify sizes of system components
3  Short circuit study and analysis to justify short circuit withstand ratings of all system components
4  Panelboard circuit schedules including loads per each circuit total bus load per phase AIC rating and NEC demand calculations

L  A field survey under Section 156 shall be required for all additions and new construction

M  A complete elevator and dumbwaiter layout if applicable

155.2 Additional Information When Requested
1  Reports from an independent testing agency which substantiate requirements of this Building Code regarding structural or fire resistive requirements
2  Engineering design calculations
3  Other information deemed necessary to determine compliance with the requirements of this Building Code

Section 156  FIELD SURVEYS

156.1 General  A Land Survey Plat or an Improvement Survey Plat shall be conducted by a land surveyor registered by the State of Colorado for the construction of a new building or structure an addition to an existing building or structure or a change of occupancy for an existing building or structure which shall include but not be limited to the following information
1  Scale drawing of the boundaries of the land parcel with all dimensions to establish those boundaries
2  All recorded and apparent rights of way and easements
3  Improvements locations shall be shown in scale with a minimum of two dimensions to the nearest property line to locate all improvements

156.2 Access for Department  The contractor or property owner shall provide unobstructed access for the Department to the required corner stakes or markers
Section 157 INSPECTIONS [B-028 B-046]

157 1 General All work for which a permit is required shall be subject to inspection by the Department and all such work shall remain accessible and exposed for inspection until approved by the Department. In addition, certain types of construction shall have continuous inspection as specified in Section 158. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this Code or of other Denver ordinances. Inspections presuming to give authority to violate or cancel the provisions of this Code or of other ordinances shall not be valid. It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection. Neither the Department nor the City shall be liable for expense entailed in the removal or replacement of any material required to allow inspection. A survey of the lot may be required by the Department to verify that the structure is located in accordance with the approved plans.

157 2 Inspection Record Card Work requiring a permit shall not be commenced until the permit holder or his agent has posted or otherwise made available an inspection record card so as to allow the Department to conveniently make the required entries regarding inspection of the work. This card shall be maintained by the permit holder until final approval has been granted by the Department.

157 3 Inspection Requests It shall be the duty of the person doing the work authorized by a permit to notify the Department when such work is ready for inspection. The Department may require that every request for inspection be filed at least one working day before such inspection is desired and such request may be in writing or by telephone. It shall be the duty of the person requesting any inspections required by this Code to provide access to and means for inspection of such work. It shall be the duty of the Department to conduct the inspections in a timely manner.

157 4 Approval Required Approval by the Department shall be required at progressive stages of the construction of the building or structure and the installation of the mechanical plumbing and electrical systems. The Department shall make the requested inspections and shall either approve that the completed portion of the construction is satisfactory or shall notify the permit holder or his agent that the same fails to comply with this Code. Any portion which does not comply shall be corrected and such work shall not be covered or concealed until approved by the Department.

There shall be a final inspection and approval of all completed construction before the building, structure or portion thereof shall be ready for occupancy and use.

157 5 Required Inspections The following inspections shall be required and shall be made by the Department after proper notification. Other inspections may be required. See Sections 157 6 and 158.

1 Foundation Inspection

A Footings Inspections shall be conducted prior to pouring concrete. The footing excavation, form work and any reinforcing steel must be in place. Any clay soil pipe encountered must be replaced with Schedule 40 PVC ABS/DWV or cast iron pipe by a licensed plumber under a separate permit. All such work shall be approved by the Department prior to the footing inspection.

B Walls Concrete walls shall have the form work and reinforcing steel inspected prior to the concrete placement. Approved treated wood walls shall be inspected as required by UBC Standard No 29 3.
C  **Waterproofing/Dampproofing Inspection**  To be conducted after the waterproofing/dampproofing system or materials are completely in place and exposed for inspection

D  Exterior wall insulation and drain tile when required

2  **Concrete Slab or Under Floor Inspection**  To be made after all in slab or under floor building service equipment conduit piping accessories and other ancillary equipment items are in place but before any concrete is placed or floor sheathing installed including the subfloor

3  **Frame Inspection**  To be conducted on the completed frame construction with all fire blocking and bracing in place. All framing must be exposed to view. Roof and wall sheathing or panel must be complete with windows in place. All rough installations or electrical plumbing and mechanical systems shall have prior approval by the Department

4  **Insulation Inspection**  

To be conducted after the installation of the insulation is completed

5  **Air Infiltration Barrier Inspection**  To be conducted after the air infiltration barrier system is in place and complete. See Appendix Section 1301 amended

6  **Gypsum Board or Lath and Plaster Inspection**  To be conducted after all gypsum board or lath interior and exterior is in place but before gypsum board joints and fasteners are taped and finished or before plastering is applied

7  **Final Inspection**  To be conducted after construction is completed (all subpermits must have final approval and sign off) and the building or space is ready for occupancy

5.6  **Other Inspections**  The engineer or architect responsible for the structural design work shall include in the construction documents the following

1  Special inspections required by Section 158

2  Other structural inspections required by the engineer or architect in responsible charge of the structural design work

In addition to the inspections specified the Building Official may make or require other inspections of any construction work to ascertain compliance with the provisions of this Code and other laws which are enforced by the Department.

Other inspections outside of normal business hours requested by the owner, design professional or contractor shall be requested no later than 12 noon of the day the inspection is needed. See Table 1 C for fees

5.7  **Reinspections**  A reinspection fee may be assessed for each inspection or reinspection when the inspected work is not complete or when corrections called for have not been made. This subsection is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of this Code but as controlling the practice of calling for inspections before the job is ready for inspection or reinspection. Reinspection fees may be assessed for failure to properly post the permit card on the work site for failure to have approved plans readily available to the inspector for failure to provide access on the date for which inspection is requested or for deviating from plans requiring the approval of the Department. To obtain a reinspection the applicant shall file an application therefor in writing upon a form furnished for that purpose.
and pay the reinspection fee of a minimum of one hour in accordance with Table No. 1 C. Where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

1578 Inspections

1 Boilers, Incinerators, Crematories and Pressure Vessel Annual Inspection: Boilers, pressure vessels, crematories, pool heaters, incinerators of all types and water heaters located in all Occupancies except one and two unit dwellings, townhouses and miscellaneous buildings shall be inspected by the Department at least once each year.

A If after inspection by the Department the equipment is found to be in safe condition, the Department shall issue a certificate of inspection stating that the equipment may be operated. The certificate shall be posted in a conspicuous place in the boiler room only mounted in a tamper proof frame.

B Owner to provide facilities: Every person owning or having in his possession or control the equipment enumerated herein shall provide at his expense proper arrangements and facilities for the required inspections.

C Annual inspection fees: The annual inspection fee for boilers, pressure vessels, incinerators and crematories shall be as specified in Table No. 1 D.

EXCEPTION: Listed storage type direct fired water heaters of less than 200,000 Btu/hr input do not need a yearly inspection.

2 Vertical and Horizontal Transportation Semiannual Inspection: The following units shall be inspected by the Department and City Licensed Elevator Contractors as indicated in this subsection passenger or passenger service elevators, combination passenger and freight elevators, freight and freight service elevators, escalators, dumbwaiters, sidewalk elevators, stage lifts, orchestra lifts, manlifts, and moving sidewalks.

A Required inspections: The owner, agent or lessee shall, at his expense, cause the elevator to be thoroughly checked by an Elevator Contractor licensed by the City. This inspection shall include the requirements of Chapter 30. The car safety device shall be tested without load at the lowest possible speed each year and full load at the rated car speed every 2 years for winding machines and every 5 years for traction machines. The overspeed governor actuating the safety device shall be checked for calibration every 3 years.

B Certificate of inspection: If after inspection by the Department the equipment is found to be in safe condition, the Department shall issue a certificate of inspection stating that the equipment is ready for use and indicating the maximum load permitted. Certificates of inspection shall be maintained in the building for which they are issued by the owner, agent or lessee in a manner easily accessible for checking by the Department or other interested persons. Valid elevator certificates of inspection shall be mounted in a tamper proof frame in the elevator for which they were issued or a metal plaque indicating where the certificate of inspection is located within the building may be mounted in the car in lieu of the current certificate of inspection.

C Equipment tag: The owner or operating agent shall cause the equipment to be tagged with an appropriate tag so as to indicate the contractor's name, date type of test and work performed.
D Semiannual inspection fee The semiannual inspection fee for vertical transportation units shall be as specified in Table No 1 E

Section 158 SPECIAL INSPECTIONS

158.1 See Section 1701 Special Inspections

158.2 Structural Observation When required by the Department the owner shall employ an engineer to make visits to the site to observe general compliance with the approved structural plans specifications and change orders. The engineer shall submit a statement in writing to the Department stating that site visits have been made and that any deficiencies noted have been corrected. He shall also submit a final report as required in subsection 1701.3

Section 159 FINAL INSPECTION APPROVAL/CERTIFICATE OF COMPLIANCE

A final inspection approval card will be issued by the Department upon the completion and approval of the work covered by the permit.

A Certificate of compliance will be issued by the Department when a certificate of occupancy is not required upon the request of the General Building Contractor when the inspection card issued by the Department is returned indicating that all final inspections by the Department have been made. There shall be a processing fee of $5.00 for each certificate issued.

Section 160 CERTIFICATE OF OCCUPANCY [B-027]

160.1 Required All new buildings or structures except miscellaneous buildings or structures shall not be used or occupied until a certificate of occupancy is issued by the Department. No building or portion thereof shall be used or occupied for an occupancy other than the one designated on the certificate until a new certificate of occupancy is issued by the Department.

160.2 Requirements Prior to Issuance A certificate of occupancy shall be issued to the owner after approval by the Department and the following:

1 Construction Engineers Division Wastewater Management and Zoning Administration

2 Department of Health and Hospitals and the Fire Department when specifically requested by either department in writing at the time of application

3 Department of Health and Hospitals Fire Department and the Department of Public Works showing compliance with all provisions of this Building Code applicable to buildings or structures located in a Special Construction Zone designated pursuant to Article 647 of the Revised Municipal Code

160.3 Issuance of Certificate When all the conditions of this Chapter have been fulfilled the Department in conjunction with Zoning Administration shall issue a certificate of occupancy indicating

1 The use and occupancy for which the certificate is issued

2 Approval by the Department and Zoning Administration

160.4 Duplicate Certificate of Occupancy Upon payment of $5.00 to the Department a duplicate certificate of occupancy may be secured by the owner, architect, engineer, contractor, permit holder or tenant.
160 5 Temporary Certificate of Occupancy  The Department may issue a temporary certificate of occupancy to the owner where unusual construction difficulties have delayed the completion of the construction work covered by the building permit. The certificate may be issued provided that no substantial hazard will result from the occupancy and subject to the following items being provided to the Department:

1. A written request by the owner or the owner’s agent itemizing the uncompleted work and justifying the TCO. This list shall not waive reduce or diminish any Building Code requirements required by the building permit.

2. Payment of the following processing fees:
   A. Zoning Administration $10.00
   B. Building Department $30.00

3. Approval from the following City agencies:
   A. Construction Engineering Division
   B. Wastewater Management Division
   C. Department of Health and Hospitals
   D. Fire Department
   E. Zoning Department

This temporary certificate of occupancy may be granted for a period up to 12 months. After the expiration date of the temporary certificate of occupancy the building or structure shall require a permanent certificate of occupancy in accordance with other provisions of this Chapter.

Additional inspections required for the TCO shall be charged as indicated in Table 1 C and shall be paid before the permanent certificate of occupancy is issued.

160 6 Change of Occupancy  Changes in the character or occupancy of all buildings or structures shall not be made except as specified in Chapters 3 and 11 of this Building Code. A new certificate of occupancy is required for all such changes.

160 7 Cancellation of Certificate of Occupancy  A certificate of occupancy may be canceled when:

1. The owner has failed to comply with the requirements of the Department of Public Works after appropriate notice and reasonable time to correct.

2. The continued occupancy of the structure is dangerous to the public health, safety, or welfare.

160 8 Violation  It shall be a violation of this Building Code to occupy a building or structure prior to obtaining a certificate of occupancy when required.

160 9 Right to Appeal  The Board of Appeals may review any appeal of the Department’s suspension or denial of a certificate of occupancy under Section 113. One extension of a temporary certificate of occupancy may be sought from the Board of Appeals subject to Section 113.

Section 161 ADDRESS

161 1 On Job Site  The construction permit holder shall post at the front of the job site in a conspicuous place a sign indicating the following:

[UBC 50]
1 The address number and street avenue court parkway or other as assigned by the Office of the City Engineer

2 The name of the firm address business phone number and emergency phone number of the permit holder

3 The building permit number

161 2 Permanent Address The owner or occupant of every building shall display the permanent address of each building in a permanent visible location with numbers made of durable materials and of a size to be visible and legible from the street fronting the property

Section 162 PERMITS FOR TEMPORARY BUILDINGS [B-070]

162 1 Issuance A permit for a temporary building may be issued by the Department if the applicant can substantiate a definite need for the temporary building. The permit may be granted for a period up to 36 months and may be renewed upon reapplication and approval by the Department. The request for a permit shall be in writing detailing the reason for the request. The approval shall be based on the need, extent of time and type of unit installed. A renewal permit fee equal to the original permit fee will be required.

EXCEPTION Temporary buildings for use by licensed contractors at the construction or demolition sites shall not require a building permit.

162 2 Right of Appeal An extension of a permit for a temporary building may be sought from a Board of Appeals subject to Section 113.

162 3 Fee A building permit fee shall be established by Table 1 C for the valuation of the temporary building installation which shall consist of 1) the rental cost or the prorated cost of the temporary buildings based on a 10 year life for the period of the permit and 2) the cost of the installation and removal of the temporary building.

Section 163 FOUNDATION PERMITS

163 1 General A foundation permit for all buildings and structures except one and two unit dwellings and miscellaneous structures may be issued to a contractor who holds a license qualifying him as a general contractor for the entire project prior to the issuance of the construction permit for the building provided that

1 The total valuation of the project excluding utilities exceeds $200,000.00 or as approved by the Department

2 Drawings of the proposed superstructure containing sufficient detail relating to the design of the foundation or substructure are submitted to the Department. Complete calculations shall be submitted to validate the design of footings, caissons and all other substructure elements.

3 Approvals required by the appropriate City agencies are obtained prior to issuance of the permit.

4 For purposes of the Section the term project shall mean one building only with a valuation in conformance with subsection 162 1.

163 2 Fee The plan review fee and the permit fee charged at the time of issuance of the foundation permit shall be based on the total valuation of the construction for both the substructure and the superstructure plus an additional 25% See Table No 1 C.
163.3 Deviations  Any deviation from the approval foundation permit drawings shall be cause for the cancellation of the permit. However, if changes are substantiated by engineering calculations and revised drawings, the deviations may be approved by the Department.

163.4 Responsibility  The contractor shall assume full responsibility for the installation of all utilities in the substructure. Any changes in design or construction to meet the requirements of this Building Code for the combined substructure shall be the sole responsibility of the contractor. A permit issued under this Section shall not be construed as approval for any portion of the structure not covered by the foundation permit.

163.5 Not Applicable  Foundation permits are not applicable to phased construction.

Section 164  PHASED CONSTRUCTION PERMITS

164.1 General  The Department may issue permits for the construction of a portion or phase of a building structure or utility prior to the submission of the complete drawings and specifications provided that:

1. The minimum total valuation of the building structure or utility is more than $1,000,000.00

2. The approval of appropriate City agencies has been obtained prior to application for the initial permit.

3. The valuation of the portion of the work including utilities is stated on each application.

4. Drawings shall show on each sheet the note Phased Construction with a brief description of the phase covered by the permit.

164.2 Fees  Plan review fees and permit fees shall be assessed at 150% the amount of those specified in Table No. 1C. A permit issued under this Section shall not be construed as approval for any portion of the structure not covered by the permit.

Section 165  TABLES AND FEES

165.1 Permit Fees  The fee specified in Table 1C shall be assessed for all permits except as otherwise provided for in this Chapter.

165.2 Other Fees  Annual and semiannual fees shall be as specified in Table Nos. 1D and 1E. Inspections outside of normal business hours shall be charged in accordance with Table No. 1C.
# TABLE NO 1 C

**FEE SCHEDULE**

**BUILDING PERMIT FEES**

<table>
<thead>
<tr>
<th>VALUATION OF WORK</th>
<th>PERMIT FEE</th>
<th>APPLICATION FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1.00          $500.00</td>
<td>$15.00</td>
<td>NONE</td>
</tr>
<tr>
<td>$501.00        $2,000.00</td>
<td>$20.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>$2,001.00      $50,000.00</td>
<td>$8.00 per $1,000 in Valuation or fraction thereof of Total Valuation</td>
<td>$20.00</td>
</tr>
<tr>
<td>$50,001.00     $100,000.00</td>
<td>$50.00 plus $7.00 per $1,000 in Valuation or fraction thereof of Total Valuation</td>
<td>$30.00</td>
</tr>
<tr>
<td>$100,001.00    $500,000.00</td>
<td>$150.00 plus $6.00 per $1,000 in Valuation or fraction thereof of Total Valuation</td>
<td>$40.00</td>
</tr>
<tr>
<td>Over $500,001.00</td>
<td>$650.00 plus $5.00 per $1,000 in Valuation or fraction thereof of Total Valuation</td>
<td>$50.00</td>
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**BUILDING MOVING PERMIT FEES**

<table>
<thead>
<tr>
<th>Per Each Address</th>
<th>OTHER FEES</th>
<th>$100.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Inspections outside of normal business hours (minimum charge two hours)</td>
<td>$50.00 per hour¹</td>
<td></td>
</tr>
<tr>
<td>2 Reinspection fees assessed under provisions of Section 157 7 (minimum charge one hour)</td>
<td>$35.00 per hour¹</td>
<td></td>
</tr>
<tr>
<td>3 Inspections required by the Department for which no fee is specifically indicated (minimum charge one half hour)</td>
<td>$35.00 per hour¹</td>
<td></td>
</tr>
<tr>
<td>4 Additional plan review required by changes additions or revisions to approved plans (minimum charge one half hour)</td>
<td>$50.00 per hour¹</td>
<td></td>
</tr>
<tr>
<td>a Incomplete plans or resubmittals Section 152 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Additional Plan Review Section 152 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Or the total hourly cost to the jurisdiction whichever is the greatest. This cost shall include supervision overhead, equipment hourly wages and fringe benefits of the employees involved
### TABLE NO ID

**PERIODICAL INSPECTION FEES**

**BOILERS, PRESSURE VESSELS, INCINERATORS AND CREMATORIES**

<table>
<thead>
<tr>
<th>HORSEPOWER</th>
<th>FEE</th>
</tr>
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<tbody>
<tr>
<td>0 to 50</td>
<td>$25.00</td>
</tr>
<tr>
<td>51 to 100</td>
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</tr>
<tr>
<td>101 to 250</td>
<td>45.00</td>
</tr>
<tr>
<td>251 to 500</td>
<td>55.00</td>
</tr>
<tr>
<td>501 to 1000</td>
<td>65.00</td>
</tr>
<tr>
<td>1000 and over</td>
<td>75.00</td>
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</table>

**STEAM BOILERS - CAST IRON**
15 PSI OR LESS IN PRESSURE

<table>
<thead>
<tr>
<th>SQUARE FEET OF RADIATION</th>
<th>FEE</th>
</tr>
</thead>
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<tr>
<td>0 to 1400</td>
<td>$20.00</td>
</tr>
<tr>
<td>1,401 to 5,000</td>
<td>25.00</td>
</tr>
<tr>
<td>5,001 to 10,000</td>
<td>30.00</td>
</tr>
<tr>
<td>10,001 to 25,000</td>
<td>35.00</td>
</tr>
<tr>
<td>25,001 and over</td>
<td>40.00</td>
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</table>

**BOILERS - HOT WATER**

<table>
<thead>
<tr>
<th>SQUARE FEET OF RADIATION</th>
<th>FEE</th>
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<tbody>
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<td>0 to 1400</td>
<td>$20.00</td>
</tr>
<tr>
<td>1,401 to 5,000</td>
<td>25.00</td>
</tr>
<tr>
<td>5,001 to 10,000</td>
<td>30.00</td>
</tr>
<tr>
<td>10,001 to 25,000</td>
<td>35.00</td>
</tr>
<tr>
<td>25,001 and over</td>
<td>40.00</td>
</tr>
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</table>

**WATER HEATERS**

<table>
<thead>
<tr>
<th>BTU/HR INPUT</th>
<th>FEE</th>
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</thead>
<tbody>
<tr>
<td>200,000 to 1,673,750</td>
<td>$20.00</td>
</tr>
<tr>
<td>1,673,751 and over</td>
<td>25.00</td>
</tr>
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**MISCELLANEOUS EQUIPMENT**

<table>
<thead>
<tr>
<th></th>
<th>FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool Heate All Size</td>
<td>$20.00</td>
</tr>
<tr>
<td>Unfired Pressure Vessel</td>
<td>$20.00</td>
</tr>
<tr>
<td>Incl tors and Cr m toti</td>
<td>$20.00</td>
</tr>
</tbody>
</table>

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S turday Sun y and Holiday In pecti n Fee h ll be d uble the fees indicated in t ble I D

1Fo purpose f'd terminating fee for electric b il rs n b l er r sepow r is qui al nt to 10 kilowatt

2F r lectri w ter he ters di id kil tr r ting by 0.000293 to btain BTU/HR equi l nt

### TABLE NO IE

**PERIODICAL INSPECTION FEES**

**(VERTICAL TRANSPORTATION)**

<table>
<thead>
<tr>
<th>TYPE OF INSPECTION</th>
<th>FEE</th>
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</thead>
<tbody>
<tr>
<td>El tors F ea h dditi l1 di g er 3</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>E cal tors</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>D mbw ite</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>Stag Lifts</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>O hestra Lifts</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>M Lifts</td>
<td>$37.00 (ea h nit)</td>
</tr>
<tr>
<td>Platform Lifts</td>
<td>$37.00 (ea h nit)</td>
</tr>
</tbody>
</table>

This hall mean each unit floor to floor in eith directi n

S turday Sun y and Holiday In pecti n F's sh l be doubl the fees indic te in T ble IE
Chapter 2
Definitions
CHAPTER 2  DEFINITIONS AND ABBREVIATIONS is amended

Section 201  Definitions is amended by adding

201 1 General  For purposes of this Building Code certain words, phrases and terms shall be given the defined meaning. Words, phrases and terms not defined in this Code shall be given their usual and customary meanings. Webster’s Third New International Dictionary of the English Language Unabridged shall be considered as providing ordinarily accepted meanings. The word shall is mandatory and not permissive. The word may is permissive and not mandatory. Words used in the singular shall include plural and words used in the plural shall include singular. Words used in the present tense shall include the future tense and words used in the future tense shall include the present tense. Words used in the masculine gender shall include the feminine and words used in the feminine gender shall include the masculine. Other terms and abbreviations used only with specialized application are defined in the Chapter in which they are used. Definitions are amended or added and where conflicts occur these definitions shall govern.

Section 202  A

ABANDON  The desertion of a building, structure or utility. Abandon shall also apply when the building, structure or utility is left to the effects of vandalism, dilapidation and deterioration thereby creating a fire hazard, unsafe condition or public nuisance.

ACCESSORY USE MINOR  A secondary occupancy or use closely associated with the principal use.

ADEQUATE  Determined to be acceptable to the Department.

ADMINISTRATIVE AUTHORITY  The Director.

ADULT DAY CARE  Adult day care is a program designed to meet the needs of adults with functional impairments through an individual plan of care. It is a structured comprehensive program that provides a variety of health, social and related support services by persons who are not their relatives or legal guardians in a protective setting during any part of a day but less than 24 hours.

ADULT DAY CARE CENTER  Adult day care center is any building or portion thereof that provides an adult day care program for 5 or more clients over the age of 16 years.

ADULT DAY CARE HOME  A private residence in a single unit dwelling or a dwelling unit in a multiple unit dwelling providing less than 24 hour a day care for 4 or fewer clients over the age of 16 years.

AISLE  A free, unobstructed passageway in a building for public ingress and egress to and from seats or other similar use areas leading to a lobby, foyer, corridor or exit.

AMBULATORY  A physical or mental condition under which a person is capable of judgment and appropriate action for self preservation under emergency conditions.

ARCHITECT  An architect licensed by the State of Colorado.

AREA WAY  An excavated space outside the wall of a building used for access, lighting or ventilation.

ASSISTED CARE FACILITIES  See Person Care Facilities.

Section 203  B

BOARD  The Board of Appeals.
BUILDING. A structure including utilities enclosed with a roof and within exterior walls built and designed for the housing shelter enclosure and support of individuals animals or property of any kind

BUILDING OFFICIAL. The officer charged with the administration and enforcement of this code See Director

Section 204 C

CARPORT A covered shelter for private or pleasure type motor vehicles that is open on two or more sides

CHILD CARE CENTER A facility which provides a comprehensive care service for the child when the parent or guardian is employed or otherwise engaged and unavailable to care for the child. The facility is maintained for the whole or part of a day but for less than 24 hour care of 5 or more children from the ages of 6 weeks through 16 years and not related to the owner operator or manager thereof whether such facility is operated with or without compensation for such care, and with or without compensation for stated educational purposes. The term includes facilities commonly known as a day care center day nurseries nursery school kindergarten preschool play groups school age programs centers for the developmentally disabled children day treatment centers extended day programs and summer playground programs

Child care centers shall not include

1. Child care homes

2. The pre-kindergarten and kindergarten programs which are maintained in connection with a public, private or parochial school system of at least 6 grades providing an educational program for the 2 years preceding entrance to the first grade

CHILD CARE HOME A private residence in a single unit dwelling or a dwelling unit in a multiple unit dwelling providing care and education for periods of less than 24 hours a day for 12 or fewer children under the age of 17

CITY The City and County of Denver

CLINIC A building or portion thereof that contains offices for the diagnosis and treatment of outpatients requiring health services excluding facilities for overnight accommodation of patients

COMBUSTIBLE MATERIAL Material that will ignite and burn when subjected to fire under ordinary conditions See noncombustible

CONGREGATE RESIDENCE Any building or portion thereof which contains facilities for living sleeping and sanitation as required by this Code and may include facilities for eating and cooking for occupancy by other than a family. A congregate residence may be a shelter convent monastery dormitory fraternity sorority house or group housing that provides personal care services but does not include jails hospitals nursing homes hotels or lodging houses

CONSTRUCTION The act of using labor and materials used for erection demolition or removal of a building structure utility appliance or device

CRAWL SPACE A space located under the first floor of a building that provides a clear height of less than 5 feet
Section 205  D

DEMOLITION The destruction and removal of a building structure or utility

DEPARTMENT The Building Inspection Division for the Department of Public Works of the City and County of Denver

DESIGN PROFESSIONAL The architect or engineer of record responsible for the production of construction documents

DETERIORATION The effect upon buildings structures utilities equipment and materials through corrosion decay wear and tear due to use or abuse obsolescence effects of the elements fire damage disaster flood earthquake lack of maintenance vandalism or any other cause including fatigue due to overstressing and disintegration of component parts and the separation of materials and structural parts

DIRECTOR The officer charged with the administration and enforcement of this Building Code

Section 206  E

ENGINEER An engineer registered by the State of Colorado as a Professional Engineer

EVACUATION CAPABILITY The ability of the occupants residents and staff as a group either to evacuate a building or to relocate from the point of occupancy to a point of safety Following are the levels of evacuation capability

1 Prompt Evacuation capability equivalent to the capability of the general population to evacuate a facility Evacuation drill time shall be 3 minutes or less

2 Slow Evacuation capability of a group to move to a point of safety in a timely manner with some of the residents requiring assistance from the staff Evacuation drill time shall be over 3 minutes but not in excess of 13 minutes

3 Impractical A group that even with staff assistance cannot reliably move to a point of safety in a timely manner Evacuation drill time is more than 13 minutes

Section 207  F

FIRE DEPARTMENT The Fire Department of the City and County of Denver

FLAME-SPREAD The propagation of flame over a surface

FLOOR The structural system which supports the applied loads within a building and may divide the building into stories

FLOOR LEVEL The top surface of the floor system

FLOOR SPACE The volume of space developed between the exterior wall or building line and

1 Adjacent floor levels or

2 The floor level and the top of the adjacent roof system

Section 208  G

GARAGE REPAIR A building or portion thereof used for the repair of internal combustion engines motor vehicle transmission differentials frames or bodies where any part is removed for repairs rendering a vehicle inoperative repairs requiring welding or brazing stripping of inoperative motor vehicles painting or any other work not permitted in a storage garage
GARAGE STORAGE  A building other than a private repair or open parking garage used exclusively for the housing of motor vehicles.

Section 209  H

HABITABLE SPACE (ROOM)  Is space in a structure for living, sleeping, eating or cooking. Bathrooms, toilet compartments, closets, halls, storage or utility space and similar areas are not considered habitable space. Basements within single dwelling units shall be considered habitable space when used for living, sleeping or eating.

HIGH RISE BUILDING  Any building having floors used for human occupancy more than 75 feet above the lowest level of Fire Department vehicle access.

HOTEL  A building or portion thereof used for the living and/or sleeping accommodation of guests and which will be licensed by the City as a hotel.

Section 210  I

INDEPENDENT LIVING  The ability of a resident to provide for and maintain the basic functions of everyday living and to recognize and respond to an emergency for self preservation.

Section 213  L

LANDING  A continuation of the floor of a building giving access to stairs, ramps or an escalator and any level space between stair runs.

Section 214  M

MACHINE ROOM  A room used for the housing of elevators, heating, refrigeration, or air handling equipment.

MAINTENANCE  The normal upkeep of property or equipment to keep it in an existing state such as minor repairs to keep equipment operational. This definition shall not invalidate the requirement for a permit when so determined by the Department as beyond the scope of maintenance.

MONITORING SYSTEM  An approved system of supervised circuits employing a connection between signaling devices at the protected premises and signal receiving equipment at the fire alarm headquarters or other location approved by the Fire Department. Class I and Class II central stations shall be as defined in Revised Municipal Code Section 22.62 of the City and County of Denver.

Section 215  N

NONAMBULATORY  A physical or mental condition under which a person is not capable of judgment and appropriate action for self preservation under emergency conditions.

NURSERY  A place where parents may temporarily leave children with trained attendants.

NURSING HOME  A facility that is operating in connection with a hospital or where nursing care and medical services are prescribed by or performed under the general direction of persons licensed to practice medicine or surgery by the State of Colorado or for the accommodation of convalescents or other persons who are not actually ill and not in need of hospital care and related services. The term "nursing home" is restricted to facilities designed to provide skilled nursing care and related medical services for a period of not less than 24 hours per day.
Section 216

OCCUPIED ROOF The roof of a building or structure used for purposes other than maintenance, repair or servicing of the building equipment.

Section 217

PARTITION PERMANENT Permanent partitions are those walls within a building which are required to provide protection of specific areas such as machine and equipment rooms, service areas, etc. Permanent partitions may be bearing or non-bearing walls.

PARTITION TEMPORARY Temporary partitions are those walls or portions of walls which are used to divide a floor space into rooms or spaces. Corridor and occupancy separations are special types of temporary partitions which must comply with specific fire resistive construction requirements. Temporary partitions shall be non-bearing walls only and shall include fixed partitions, folding portable or movable partitions and demising walls within the same occupancy.

PENTHOUSE An enclosed structure built on or above the roof of a building and used for the housing of machinery or equipment and not used for habitation.

PERSONAL CARE Protective care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building. Personal care may include daily awareness by the management of the resident’s functioning and whereabouts, making and reminding a resident of appointments, the ability and readiness for intervention in the event of a resident experiencing a crisis, supervision in the areas of nutrition and medication, and actual provision of transient medical care.

PERSONAL CARE FACILITY A facility where personal care of a resident who does not require chronic or convalescent medical or nursing care is provided.

PORCH A roofed structure providing shelter at the entrance of a building or an open enclosed room at the outside of a building.

PREFABRICATED ASSEMBLY See Section 1704.

PROSCENIUM A vertical plane or separation between an assembly area and a stage or enclosed platform.

PUBLIC UTILITY An authorized or franchised firm given the right to perform services necessary under the authorization or franchise.

Section 219

RECOGNIZED VOLUNTEER ORGANIZATION A nonprofit organization recognized by the Internal Revenue Service as a charitable or religious organization.

REFUGE AREA A specified area within a building constructed and mechanically ventilated to protect the occupants from fire and/or smoke. See Area of Evacuation Assistance Chapter 11.

REHABILITATION CENTER A center for the rehabilitation of handicapped persons.

RESTAURANT Any place which is kept or maintained for the purpose of preparing and/or serving food for sale and consumption but does not include food processing establishments or retail food stores. For the purposes of this Building Code, the provisions for restaurants shall pertain to those permanent facilities within buildings or structures only.
RETAIL FOOD STORE  Any establishment or portion of a building where food or food products are offered to the consumer for off premises consumption

ROOF OPEN FRAME  A roof with all supporting members exposed on the underside and without a ceiling

ROOF STRUCTURE  A structure above or on the roof of a building including cooling towers tanks heating and cooling equipment spires towers or any other projection above the roof not used for habitation

Section 220  S

SCHOOL, PUBLIC OR PRIVATE  An institution which provides instruction or education at elementary secondary and high school learning levels

SCHOOL, VOCATIONAL  An institution which provides instruction or education for a trade art voice music modeling or similar endeavors

SMOKE CONTROL SYSTEM  An engineered mechanical and electrical system designed to control the development and movement of smoke and a product of combustion

STAIRWAY  Two or more risers

STRUCTURE  An assembly of materials forming a construction for a specific use including among others buildings stadiums tents reviewing stands, platforms stagings observation towers radio and television towers water tanks swimming and wading pools retaining walls open sheds coal bins shelters fences and display signs  This definition shall not include utilities

Section 221  T

TENANT  A person occupying a building or portion thereof and separated from other tenants by walls floors and ceilings  The tenant shall have a lease to occupy the specified space from the owner

TOWNHOUSE  A specific type of arrangement for attached dwelling units which may be arranged as cluster homes or row houses by 3 or more units  The attached dwelling units may or may not be divided by property lines  See special provisions for Group R Division 2 Occupancies

TREAD  The horizontal portion of a step including nosings

Section 222  U

UNDERGROUND  Embedded by completely burying pipe cable etc in earth

UNSAFE BUILDING STRUCTURE OR UTILITY  See Chapter 1

USE  The purpose for which a building is occupied

USEABLE SPACE  Space that may be used  This definition does not apply when useable or potential useable space is sealed off so that access to the area is not provided

UTILITIES  For the purpose of this Code utilities shall be defined without limitation to include the following Refrigeration systems and their appurtenances electrical systems and all appurtenances such as motors etc heating and ventilation systems and appurtenances elevators dumbwaiters escalators and similar conveyances fire protection systems and apparatus air conditioning or air treatment systems including duct work exhaust or ventilating systems including duct work plumbing and sanitary systems and all appurtenances signal and annunciator systems gas oil and solid
fuel fired appliances piping controls burners and their appurtenances evaporative cooling antennae wells and equipment water heaters gas lights swimming pool piping gasoline pumps and LPG liquid fuel and gasoline tanks and piping

Section 223 V

VALUE OR VALUATION The building replacement value for permit purposes including labor profit overhead materials base building equipment and appliances. The determination of value or valuation shall be made or directed to be made by the Department.

VERTICAL OPENING An opening extending vertically through one or more floors of a building.

Section 224 W

WORK All construction or repair excluding decoration or maintenance of existing utilities or appliances.

WRECKING See Demolition.

Section 305.1 Division 3 is amended

Division 3 Any building or portion thereof used for adult care or child care purposes for periods of less than 24 hours a day.

EXCEPTION Adult Care Homes and Child Care Homes.

Section 305.2.3 is amended

305.2.3 Special Provisions Rooms in Divisions 1 and 2 Occupancies used for pre kindergarten kindergarten first or second grade pupils. Division 3 Occupancies shall not be located above or below the first story (Balance to Remain).

Section 305.2.3.1 is added

305.2.3.1 Conversion of Existing Buildings to Small Care Centers An existing building may be converted to a small care center without complying with all the requirements for a change of use under Section 305 provided that the following provisions are met.

1 Drawings and specifications need not bear the seal of an architect or engineer. However after review of the drawings and specifications the Department may require that the drawings and specifications bear the seal of an architect and engineer who will be responsible for the design phases of the conversion.

2 Any building additions or new facilities installed or erected as part of the conversion shall comply with present Building Code provisions.

3 The number of occupants excluding staff shall not exceed 20 and shall be permitted on the first story only.

EXCEPTIONS:

1 Basements as allowed per Section 305.2.3.

2 Any floor level with an exterior door leading directly to the outside where the floor level is within

A Two feet vertically of directly surrounding grade shall be allowed for children 2 / years or younger.
B Five feet vertically of directly surrounding grade shall be allowed for children more than 2 / and less than 5 years of age

C Eight feet vertically of directly surrounding grade shall be allowed for children over 5 years of age and ambulatory adults

Egress from the floor level to grade may be by stairs or ramps

4 A floor level occupied for day care activities shall have 2 exits. Two exits may include one exit directly to grade or as provided in item #3 above with a second exit as an interior stair or ramp. Egress through a window shall not be accepted as an exit.

5 There shall be no dead end corridors.

6 Gas fired heating appliances must comply with Section 808 of the Uniform Mechanical Code.

7 Existing partitions, walls and ceilings may be approved if the existing surface is of a fire resistive material consisting of lath and plaster or gypsum board of at least / inch thickness.

8 Section 907.3.4 Exception 2 shall apply to all conversions. Residential type multiple single station smoke detectors may be installed with field inspector approval. System type smoke detectors will require drawings signed and sealed by an electrical engineer.

9 Requirements of other City and State agencies must be complied with. When a conflict occurs between regulations of different agencies the most restrictive will govern.

Section 307.6 is amended by adding an exception to the second paragraph

EXCEPTION In buildings of Group H Division 4 Occupancies vehicular ramps in repair garages do not require shaft enclosures provided

1 Less than 3 stories/levels in height

2 Three or more stories/levels in height when an approved sprinkler system is installed throughout.

Section 308.2.2.1 is amended by adding this sentence to the end of the first paragraph

Duct penetrations of smoke barriers shall meet the requirements of Sec. 905.7.5.

Section 310.1 is amended by adding Division 2

Division 2 Three or more attached dwelling units that are separated from each other by a 2 hour fire rated wall assembly and which may contain a congregate residence accommodating no more than 10 persons.

Section 310.2 is amended by adding Sections 310.2.3 310.2.4 310.2.5 and 310.2.6

310.2.3 Special Provisions for Operable Windows. Openings of operable windows that are more than 30 inches above grade floor or roof surface shall not be less than 21 inches above the floor of the room that has the window.

EXCEPTION

1 Windows which when opened do not allow a 4 inch sphere to pass through the opening or which are normally enclosed but may be opened for cleaning as maintenance.
Sec 310.2.3

2 Open areas of the window that are protected by bars, grilles, grates or similar devices other than insect screens through which a 4 inch sphere will not pass.

3 Escape or rescue windows covered with bars, grilles, grates or similar devices that comply with Section 310.4 and the spacing between bars will not allow a 4 inch sphere to pass through.

310.2.4 Special Provisions for Residential Group Living Facilities Residential Group Living Facilities may occupy Group R Division 1, 2 or 3 Occupancies with the following provisions:

1 Minimum Requirements —---------------------------------------- [B-055]
   A Small congregate residences 10 or less occupants see Table 3 I or
   B Large congregate residences more than 10 occupants See Table 3 J

2 Plans and permit shall indicate the maximum occupant load and for Personal Care Facilities indicate the evacuation capability classification.

3 Plans for the renovation of an existing building or the construction of a new building shall bear the seal and signature of the architect or engineer responsible for the design phases of the building.

4 Personal Care Facilities
   A Develop a Facility Personal Care place which specifically establishes the services to be provided to the residents (forms provided by the Department).
   B Establish an evacuation capability by using the Facility and Resident Characteristics for Establishing Evacuation Capability chart. The actual evacuation capability will be verified by the Fire Department after the building is occupied.

310.2.5 Special Provisions for Group R Division 2 Occupancy

1 Group R Division 2 Occupancy shall consist of 3 or more attached single dwelling units not more than 3 stories in height with each unit having an independent means of egress to the exterior of the building.

2 Each dwelling unit shall be separated by a 2 hour fire resistive wall assembly extending from the foundation to the underside of the roof sheathing or deck. Utilities including plumbing, electrical, heating, air conditioning and telephone shall not be permitted in the 2 hour fire resistive separation wall. Common fireplace chases between dwelling units are not permitted.

   EXCEPTION Two 1 hour walls may be used. Penetration of the outer wall element would be allowed as provided in the listing of the wall assembly for electrical and telephone services that are run in conduit.

3 Dwelling units that are divided by property lines shall comply with the provisions of Section 503.2 for the fire resistance of exterior walls. Property lines as used in this Code shall define limits of land legally recorded with the Office of the County Clerk and Recorder.

4 Two hour area separation walls as provided in Section 504.6.3, 504.6.4 and 504.6.5 shall provide separation between portions of the building whose aggregate area of dwelling units exceeds a) 6,000 square feet on the first story or b) 3,000 square feet above the first story. Section 504.6.6 may be applied for dwelling units that are not divided by property lines.
5 Electrical heating plumbing and general construction provisions including exiting shall conform to all the requirements of Group R Division 3 Occupancy

**EXCEPTION** Artificial lighting may be provided in the basement instead of the required natural lighting.

6 Each dwelling unit shall be provided with separate sewage water supply heating electric and plumbing systems together with all other housing utilities and equipment. Separate exterior shutoff shall be provided for electric gas and water services.

7 Roof coverings shall comply with the roof classes as required for Group R Division 1 Occupancy based upon the aggregate area of the roof between parapets or area separation walls. Roof openings or vents shall not be located within 5 feet of the 2 hour separation wall.

8 Parapets shall be provided as required by Section 709.4.

9 Group R Division 2 Occupancy shall not be mixed with any occupancy except Group U Occupancies in which case a 1 hour occupancy separation is required. See Section 302.4 Exception 3.

**EXCEPTION** Group R Division 2 Occupancy may be mixed with Group S Division 3 subject to the special provisions of Section 311.2.2.1.

10 For emergency fire department access requirements see Uniform Fire Code (UFC).

11 For emergency escape or rescue see Interpretation UBC 3104.

**310.26 Special Provisions for Group R Division 3 Occupancy**

Group R Division 3 Occupancy shall not be mixed with any other occupancy except Group U Occupancies.

**Section 311.6** is amended by adding a second exception to the second paragraph.

**EXCEPTION 2** In buildings of Group S Division 3 Occupancies vehicular ramps in enclosed parking structures and storage garages:

1. Less than 4 stories/levels in height need not be enclosed.

2. Four or more stories/levels in height basement and underground parking structures need not be enclosed provided that:

   A. An approved automatic fire sprinkler system is installed throughout the parking structure or

   B. An approved automatic supervised fire detection system is installed throughout the parking structure using heat detectors and

   C. Manual controls are installed for the operation of a mechanical smoke exhaust system which are located as approved by the Department and Fire Department. When natural ventilation is provided as required for open parking garages a mechanical smoke exhaust system is not required.

**Section 312.1** is amended by revising Division 2.

**Division 2.** Fences over 4 feet high tanks towers and other miscellaneous structures.

Occupancy separations are not required for Division 2.
Section 312.7 is added

312.7 Fences and Retaining Walls

312.7.1 General This Section shall apply to all fences or walls in excess of 4 feet in height all retaining walls in excess of 3 feet in height combination fences and retaining walls in excess of 4 feet in height and all fences walls and retaining walls specifically provided for in this Section

When the Department determines that the installation removal or repair of a fence shall be for the public welfare and safety the Department may order any action deemed necessary notwithstanding the provisions of this Section

312.7.2 Design All fences walls and retaining walls shall be designed in accordance with the following

1. Retaining walls shall be designed and drainage provided so as to resist all lateral pressure to which they may be subjected

2. Fences shall be designed to resist any wind load to which they may be subjected

312.7.3 Prohibitions The following prohibitions shall apply to all fences walls or retaining walls regardless of height

1. The use of barbed wire or any other sharp pointed material as a fencing material or on top of fences or retaining walls is prohibited except when specifically approved by the Department

2. The use of electrically charged fences or on top of fences or retaining walls is prohibited except when specifically approved by the Department

312.7.4 Review and Approval Fences walls or retaining walls to be installed on corners or locations which may create a traffic hazard or be in violation of other City ordinances shall be subject to review by the appropriate City agency No fence wall or retaining wall shall be installed or maintained if disapproved of by any City agency

312.7.5 Repair or Removal The Department may order any fence wall or retaining wall it declares to be dilapidated or hazardous to be repaired or removed
### Table 31

**TABLE 3 I**

Minimum Requirements for Small Personal Care Congregate Residences (10 or less occupants) in addition to All Requirements for One and Two Unit Group R Division 3 Dwellings.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EVACUATION CAPABILITY OF RESIDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prompt and Slow</td>
</tr>
<tr>
<td>Exiting</td>
<td>Two remote on each habitable floor</td>
</tr>
<tr>
<td></td>
<td>Impractical</td>
</tr>
<tr>
<td>Vertical Openings (Includes stairways)</td>
<td>Doors separating floors shall be a minimum 1-3/8 inches thick solid core construction or minimum 20 minute fire resistive rating with self-closing device</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>Protection of Hazardous Areas</td>
<td>Fuel fired equipment rooms shall be enclosed with 5/8 inch type X gypsum board on the ceiling and in each side of the walls Doors shall be solid core construction, a minimum 1 3/8 inches thick with self-closing device Fire Dampers need not be installed in air ducts passing through the wall floors or ceilings Adequate outside combustion and relief air ducts are required for the fuel fired equipment room</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>Interior Finish</td>
<td>Class III in all areas</td>
</tr>
<tr>
<td></td>
<td>Class I in enclosed exitways Class II in other exitways Class III in rooms or areas</td>
</tr>
<tr>
<td>Fire Alarms and Smoke Detection</td>
<td>Approved residential single type station interconnected smoke detectors wired to a 115-volt AC unswitched electric power source Detectors shall be located in (1) sleeping rooms, (2) at a point centrally located in the corridor giving access to each sleeping room (3) general living areas and (4) basements</td>
</tr>
<tr>
<td></td>
<td>A complete fire alarm system and complete fire detection system shall be required and maintained in accordance with Section 901 Detectors shall be located in sleeping rooms at a point centrally located in the corridor giving access to sleeping rooms general living areas basements and attics</td>
</tr>
<tr>
<td>Separation of Sleeping Rooms</td>
<td>All doors from sleeping rooms to corridors shall be solid core construction, and be a minimum of 1 3/8 inches thick Walls and ceilings shall be covered with a minimum of 1/2 inch plaster or gypsum board</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>Disabled Access</td>
<td>Chapter 11</td>
</tr>
<tr>
<td></td>
<td>Chapter 11</td>
</tr>
</tbody>
</table>
### TABLE 3-J
Minimum Requirements for Large Personal Care Congregate Residences (more than 10 occupants) in addition to All Requirements for Group R Division 1 Occupancy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EVACUATION CAPABILITY OF RESIDENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prompt and Slow</td>
<td>Impractical</td>
</tr>
<tr>
<td>Exiting</td>
<td>Two remote on every floor including floors below the level of exit discharge and occupied for public purposes</td>
<td>Same</td>
</tr>
<tr>
<td>Vertical Openings (Includes stairways)</td>
<td>Every stairway elevator shaft and other vertical opening shall be enclosed or protected with a minimum 1 hour fire resistive construction Stairway doors shall have self-closing devices</td>
<td>Same</td>
</tr>
<tr>
<td>Protection of Hazardous Areas</td>
<td>Fuel fired equipment rooms shall be enclosed with 5/8 inch type X gypsum board on the ceiling and in each side of the walls Doors shall be solid core construction 1 3/8 inches min thick with self-closing device Fire Dampers need not be installed in air ducts passing through the wall floors or ceilings Adequate outside combustion and relief air ducts are required for the fuel fired equipment room</td>
<td>Same</td>
</tr>
<tr>
<td>Interior Finish</td>
<td>Class I in enclosed exitways Class II in other exitways Class III in rooms or areas</td>
<td>Same</td>
</tr>
<tr>
<td>Fire Alarms and Smoke Detection</td>
<td>A complete fire alarm system and complete fire detection system shall be required and maintained in accordance with Section 901 Detectors shall be located in (1) sleeping rooms (2) at a point centrally located in the corridor giving access to each sleeping room (3) general living areas and (4) basements The system need not be connected to a central station</td>
<td>Same and shall be connected to a central station</td>
</tr>
<tr>
<td>Separation of Sleeping Rooms</td>
<td>Walls separating corridors and sleeping rooms shall be of 1 hour fire resistive construction Doors from sleeping rooms to corridors shall be a minimum solid core construction 1-3/4 inches thick</td>
<td>Same</td>
</tr>
<tr>
<td>Sprinkler System</td>
<td>An automatic sprinkler system shall be installed when building is three or more stories in height or has an occupant load of 20 or more</td>
<td>Same</td>
</tr>
<tr>
<td>Disabled Access</td>
<td>Chapter 11</td>
<td>Chapter 11</td>
</tr>
</tbody>
</table>
Section 403.1 is amended as follows

403.1 Scope This Section applies to all Group A B E I M buildings and Group R Division 1 Occupancies each having floors used for human occupancy located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access. Such buildings shall be of Type I or II FR construction and shall be provided with an approved automatic sprinkler system in accordance with Section 403.2.

Section 403.3 is amended by adding 5 and 6

5 Other than R-1 not less than one foot and not more than three feet from the door on the occupied side of each door entering an area of evacuation assistance and an elevator lobby and an exit stairway which is not directly exiting from an area of evacuation assistance.

6 At openings extending vertically through floors which are not required to be enclosed. Detectors shall be located on each level in locations approved by the Department.

Section 403.5.1 is amended as follows

A two way approved Fire Department communication system shall be provided for fire department use. It shall operate between the central control station and elevator lobbies emergency and standpipe locations, the building engineering office, mechanical rooms, elevator equipment rooms, fire pump rooms and rooms containing the main electrical service disconnection means.

Fire Department communication system jacks shall be designed to prevent feedback by being arranged in such a manner that when a handset is plugged in it will disconnect any voice communication system speaker in the immediate area while maintaining full supervision of the voice communication circuit.

A firefighter's telephone handset shall be permanently mounted for the Fire Department communications system in the building engineer's office each mechanical room, each emergency or standby generator room, each fire pump room, the rooms containing the main electrical service disconnection means, and each elevator equipment room. Each permanently mounted handset shall initiate or signal from the handset to the central control station.

Section 403.5.2 is amended as follows

403.5.2 Emergency voice alarm signaling system. The operation of any automatic fire detector manual fire alarm box, sprinkler or water flow device shall automatically sound an alert tone followed by voice instructions giving appropriate information and direction on a general or selective basis (the fire floor and the floors immediately above and below the fire floor) to the following terminal areas:

(Balance to remain)

Section 403.5.3 is amended as follows

A two way approved Fire Department communication system shall be provided for Fire Department use. It shall operate between the central control station and elevators, elevator lobbies, emergency and standpipe locations, the building engineering office, mechanical rooms, elevator equipment rooms, fire pump rooms and rooms containing the main electrical service disconnecting means.

Fire Department communication system jacks shall be designed to prevent feedback by being arranged in such a manner that when a handset is plugged in it will disconnect...
any voice communication system speaker in the immediate area while maintaining full supervision of the voice communication circuit

A firefighter's telephone handset shall be permanently mounted for the Fire Department communications system in the building engineer's office each mechanical room each emergency or standby generator room each fire pump room the rooms containing the main electrical service disconnecting means and each elevator equipment room. Each permanently mounted handset shall initiate or signal from the handset to the central control station

Section 403.6.8 is amended to read as follows

Emergency and standby generator status and control panel with the following features

A Operating status (on off) and malfunction indication as per NFPA 110
B Start/stop controls
C Indication of transfer switch position (normal emergency)
D Indicator that generator is automatic mode
E Fuel level in main storage tanks
F Emergency fuel flow

Section 403.6.1 is amended by adding item 13 as follows

13 If main electrical service disconnecting means are located higher than 75 feet from grade remote tripping switches to disconnect incoming power shall be located within the central control station

Section 403.6.2 is amended

403.6.2 Annunciation Identification Control panels in the central control station or Fire Command Center shall be permanently identified as to function

Alarm supervisory and trouble signals as required by Item 3 and 7 above shall be annunciated in compliance with the Fire Code in the central control station by means of an audible and visual indicator. For purposes of annunciation zoning shall be in accordance with the following

1 When the system serves more than one building each building shall be considered separately

2 Each floor shall be considered a separate zone. When one or more sprinkler risers serve the same floor each riser shall be considered a separate zone

EXCEPTION When more than one riser serves the same system on the floor

3 Annunciation shall begraphic detailing building and placing annunciation indication relative to building smoke control zones. The fire alarm annunciation panel shall be combined with HVAC/Smoke Status Control Panel

4 Special extinguishing systems shall be annunciated separately (hood extinguishing system halon etc.)

5 Emergency graphics and signs required by this Section shall be of durable construction be easily readable in normal room or corridor light and have a smooth plastic surface. Diagrammatic building floor plans shall be permanently mounted unobstructed on an interior wall of the F.D. Operations Center and shall depict the components referenced in this Section
Sec 403.7

Section 403.7 Subparagraphs 1 and 2 are amended to read as follows

1 Elevators on all floors shall open into elevator lobbies with an area of at least 1% of the gross floor area of that story which are separated from the remainder of the building including corridors and other exits by walls extending from the floor to the underside of the fire resistive floor or roof above. Such walls shall not be of less than 1 hour fire resistive construction. Openings through such walls such be protected by 1 hour fire rated self-closing assemblies.

EXCEPTION:

1 The main entrance level elevator lobby in office buildings.

2 Elevator lobbies located within an atrium complying with the provisions of Section 402.

3 In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to the least one required exit without passing through the elevator lobby.

2 Any fire alarm initiating device shall return to grade level nonstop all elevators serving that alarm zone except for the smoke detector in the elevator lobby at grade level which shall return the elevators to an alternate level approved by the Department. Elevators without a landing at grade level shall be returned to the landing closest to grade level or other approved level. The elevator doors shall automatically open when the car reaches approved level. After a period of one minute the elevator doors shall automatically close. The doors shall be responsive by pressing the designated return floor landing(s) call button in the elevator lobby or by pressing the door open button in the interior of the elevator cab. Elevators shall remain at the level until manual overrides by the key operator switch required by ASME 17.1.

Section 403.8.1 is amended to read as follows

403.8.1 Emergency Generator

1 Sufficient emergency power shall be provided to operate enough elevators serving the fire floor to evacuate the occupants of the required refuge area on the fire floor to a minimum of 2 floors above or below the fire floor with a maximum of 2 elevator trips (assume one person per 3 square feet of required refuge area). A minimum of 2 elevators supplied with emergency power shall serve the fire floor refuge area at any time. In addition, emergency power shall be provided to operate an elevator that serves all other floors to operate air handling equipment for pressurization and exhaust systems as required and to operate other emergency system as required by this Code.

EXCEPTION: Where an elevator transfer floor is provided, only elevators in one bank providing access to the ground floor are considered to be serving that floor.

2 Emergency switchboards, panel boards, transfer switches, and conductors supplying this equipment shall be separated from main service equipment by a 1 hour fire rated wall.

3 Provide sufficient on-site fuel supply for 8 hours continuous operation under full load.

4 The emergency generation system shall be operated not less than once a month for not less than 30 minutes at a minimum of 30% of full load. An accurate log shall...
be maintained on the premises indicating the person or agency conducting test dates tested and length of test Any defect modification or repair shall be recorded in the log

5 The emergency generation system shall provide power for but not be limited to the following
   A Fire alarm and detection systems
   B Exit and emergency lighting
   C Fire pumps
   D Smoke control systems as required by Chapter 9
   E Emergency elevators and
   F Communications systems

> Section 403.8.2 is deleted
<
> Section 403.8.3 is deleted
<

Section 403.11 is added

403.11 Testing of Fire Alarm Detection and Emergency Communications Systems

1 Acceptance Testing Before the fire alarm detection and emergency communications systems are accepted by the Department and the Fire Department and prior to initial occupancy they shall be tested in their presence to confirm that the systems operate in compliance with this Section

2 Subsequent Testing The fire alarm detection and emergency communications systems shall be tested in accordance with Section 907.4.7

Section 403.12 is added

403.12.1 Emergency Air Rescue Replenishment System An approved emergency air replenishment system shall provide an adequate pressurized fresh air supply through a permanent piping system for the replenishment of self contained breathing apparatus carried by fire suppression rescue and other emergency personnel in the performance of their duties. The design specifications, location and testing of this system shall be in accordance with the requirements and specifications in Denver Building Code UBC Appendix Chapter 4 Division IV

Section 404.2.1 is amended

404.2.1 Type of Construction One floor and two floor covered mall buildings may be of Type II N construction. Three level covered mall buildings shall be at least Type II one hour construction. Anchor stores and parking garages shall be limited in height and area in accordance with Sections 504.505 and 506, and shall be considered separate buildings. Separation walls shall be as required in Section 504.6 except as provided in subsection 404.3.9 below. All anchor stores and attached structures open to the covered mall building shall be protected by an automatic sprinkler system throughout.

Section 404.3.2 is amended

404.3.2 Standpipes. There shall be a combined Class I standpipe outlet connected to a system sized to deliver 250 gallons per minute (946.4 L/min) at the most hydraulically remote outlet. The outlet shall be supplied from the mall zone sprinkler system and shall be hydraulically calculated. Standpipe outlets shall be provided at each of the following locations.
Sec 404 3.2

1 Within the mall at the entrance to each exit passage or exit corridor
2 At each enclosed stairway floor level door opening directly onto the mall
3 At exterior public entrances to the mall

Locations of standpipes shall be within 10 feet of the exit openings referenced above.

Section 404 3.8 is amended by adding a sentence

A copy of the current lease plan shall be kept in the FD Operations Center.

Section 404 3.9 is amended

404 3.9 Openings Between Anchor Building and Mall

Main entrance openings between an anchor store of Type I, II and III one hour construction and the covered mall need not be protected provided that anchor stores provide and maintain a smoke control system that prevents smoke from migrating to the covered mall in accordance with Chapter 9.

EXCEPTIONS:
1 The entire anchor store may be considered as one smoke zone and area detectors are not required.
2 Open parking garages shall not require a smoke control system.

Section 404 3.10 is amended

404 3.10 Standby and Emergency Power

Covered mall buildings exceeding 50,000 square feet (4,645.2 m²) shall be provided with standby emergency power systems which are capable of operating the public address system, the smoke control activation system for 4 adjacent smoke control zones and the smoke control equipment as required by Chapter 9, the fire pump and one elevator.

Section 404 3.11 is added

404 3.11 Central Control Station/Fire Command Center

A central control station room for Fire Department operations shall be provided. The location and accessibility of the central control station room shall be approved by the Fire Department. The central control station room shall be separated from the remainder of the building by not less than a 1 hour fire resistive occupancy separation. The room shall be a minimum of 96 square feet (9 m²) with a minimum dimension of 8 feet (2438 cm). The room shall contain the minimum components as listed in UBC 403.6.

Section 404 4.7.1 is added

1 Kiosks or similar structures a) shall not be located within the covered mall unless constructed of noncombustible material or fire retardant treated wood throughout conforming to Section 207 or b) that are covered or have roofs and are located within the covered mall and shall be protected by an approved automatic fire suppression system.

Section 404 4.7.4 is added

404 4.7.4 Toilet Facilities

See Chapter 29. The area of the mall is not to be considered in the occupant load calculation. However, public toilet facilities shall be accessible from the mall.

UBC 72
Section 419 is added

Section 419  TRANSMISSION OF CITY MICROWAVE SIGNALS

No construction permits or certificates of occupancy shall be issued for any building or structure exceeding 60 feet in height which interferes or may interfere with the transmission or reception of City microwave communication signals unless the owner of such building or structure provides for installation of equipment to retransmit or redirect the signal as necessary to eliminate any interference. Such equipment shall be approved by and installed at the direction of the affected City agency. A service agreement must also be approved by the City or agency whose transmission is affected by the proposed building or structure prior to the issuance of any permit or certificate of occupancy. Such agreement shall include provisions for easements and access for maintenance, electricity for operation and provision for the replacement of equipment.

Section 420 is added

Section 420  EMERGENCY POWER EQUIPMENT ROOM ENCLOSURES [I]

Emergency power equipment rooms shall be provided with a 1 hour occupancy separation. Doors shall be 1 hour rated with self-closing devices. See Electrical Code.

Section 421 is added

Section 421  VEHICLE EXIT FACILITIES

Where ramps are provided for vehicles exiting from buildings or from private drives onto public rights of way, the ramps shall be sloped at 0.5% min to 2.0% max for distance at least 20 feet inside of the building or property line. Vertical curves shall be used at all grade breaks.

Section 422 is added

Section 422  CEILING HEIGHTS

Ceiling Heights: Ceilings shall have a clear height of not less than 7 feet measured to the lowest projection from the ceiling.

EXCEPTION: Group R Occupancies

Section 423 is added:

Section 423  CONSTRUCTION IN A FLOOD PLAIN

All new buildings and additions to existing buildings hereafter erected in a flood plain shall comply with the requirements for location and elevation contained in Chapter 56 Article V of the Denver Revised Municipal Code.

All building plans must be submitted to the Wastewater Management Division for approval.

Section 424 is added

Section 424  VIEW PROTECTION ORDINANCES

Mountain view and central business district view protection ordinances contained in the Revised Municipal Code shall be enforced by the Department and shall require the following:

1. A written statement by the owner that the proposed building is within a view protection district.
2 A certification by an engineer with appropriate calculations that the proposed
building does not exceed the allowable height within the view protection district

Section 425 is added

Section 425 SIGNS AND SIGN STRUCTURES

The Uniform Sign Code 1991 Edition shall regulate all signs and sign structures not
located within a building

EXCEPTION: The Denver Zoning Code shall regulate all signs and sign structures
relative to type, size, location and projection

Section 430 is added

Section 430 CONSTRUCTION OF AIRPORT BUILDINGS AND STRUCTURES

430.1 General The provisions of this Chapter apply to the special problems that are
encountered in the construction and fire protection of airport buildings and related
structures. Due to the exposure of these structures by normal airport operations and the
large number of people who may occupy some of the buildings, special requirements are
required to assure public safety and welfare.

430.2 Federal Agencies The facilities, buildings, structures or portions thereof
owned, occupied and managed by an agency of the federal government may not be
subject to the provisions of this Code.

430.3 Definitions

AIRCRAFT LOADING WALKWAY An elevated device through which passengers move
between a point in a passenger terminal building and an aircraft. Included in this
category are walkways that may be essentially fixed and permanently placed and
walkways (jetways) that are essentially mobile in nature and fold, telescope or pivot
from a fixed point at the airport terminal building or at a fixed walkway.

AIRPORT RAMP Any outdoor area including aprons and hardstands on which
aircraft may be positioned, sorted, serviced or maintained irrespective of the nature of
the surface of the area.

CONCOURSE A fully enclosed portion of the terminal building used for passenger
handling and aircraft flight service functions with provisions for parking aircraft on one
or more sides.

FREIGHT TERMINAL BUILDING (Air Cargo Buildings) A structure used for the
processing and/or storage of incoming or outgoing freight and other necessary
functions in connection with air freight operations.

PASSENGER TERMINAL BUILDING A structure used for air passenger enplaning or
deplaning including ticket sales, flight information, baggage handling and other
necessary functions in connection with air transport operations. Passenger terminal
buildings shall include any concourse or satellite buildings used for passenger
handling or aircraft flight service functions. Passenger walkways, aircraft loading walk
ways and mobile lounges are excluded.

PASSENGER WALKWAY A fully enclosed grade or ramp level walkway that is used
for the enplaning or deplaning of passengers.

SATELLITE PASSENGER TERMINAL BUILDING A structure which may be adjacent to
but separated from the main passenger terminal building, accessible above ground or
through subway passages and used to provide flight service operations (i.e., passenger
check in waiting rooms, floor service enplaning or deplaning).
430.4 General Requirements

430.4.1 Type of Construction

1 Passenger terminal buildings shall be Type I, II, F, R, II 1 Hr or II N as required for the areas allowed by Section 504. Section 505 Unlimited Area shall not apply to Passenger Terminal Buildings.

   EXCEPTION The concourse or part of the concourse of a passenger terminal building may be enclosed by unprotected noncombustible construction (i.e., walls and roof) provided that the following conditions exist:

   1 There is no occupied level above the concourse level or part of the concourse level being considered.

   2 The maximum height of the building is less than 55 feet. This height does not include ramp or Federal Aviation Agency control towers.

   3 The passenger terminal building is sprinklered.

   The structures for elevated interior walkways, people movers or interconnecting crossovers within this area of unprotected noncombustible construction shall have the same fire rating as the base building.

2 Freight terminal buildings shall be of noncombustible construction as allowed in Chapter 3.

3 All other buildings or structures may be of any type of construction allowed for the occupancy group by this Code.

4 Aircraft Loading Walkways (Bridges)

   A Movable jetways and fixed walkways shall meet the requirements of NFPA 417 (aircraft loading walkways). No hazardous storage or operations such as fuel supply lines, fuel storage tanks, vehicular storage or fueling may occur under or near the aircraft loading walkway.

   B Exit doors between walkways and the passenger terminal shall swing into the passenger terminal. Doors held open shall have automatic closing devices. All other doors shall have self-closing devices and be equipped with panic hardware on the aircraft side.

   C Sprinkler protection is not required in the interior or exterior of movable or fixed walkways.

5 Passenger Walkways on Grade Level

   A Construction shall be at least 1 hour noncombustible construction.

   B Doors and windows shall be 1 hour fire rated assemblies. Glazing area of windows shall not exceed 25% of the wall area. All gate doors shall swing outward and have a self-closing device.

   C Entrance doors between walkways and the passenger terminal shall swing into the passenger terminal and be equipped with panic hardware on the walkway side.

430.4.2 Occupancy Group The primary occupancy of the passenger terminal shall be a Group M Occupancy with the special provisions specified in this Chapter. Every building or portion thereof shall be classified by the use or the character of its occupancy according to the provisions of Chapter 3.
430.4.3 Limitation of Occupancy  Any occupancy considered extra hazardous (as defined in NFPA 13 Standard for the Installation of Sprinkler Systems) shall be prohibited in an airport terminal building.

430.4.4 Occupant Load Factors and Occupancy Groups

<table>
<thead>
<tr>
<th>USE</th>
<th>OCCUPANCY GROUP</th>
<th>OCCUPANT LOAD FACTOR Sq. Ft. / Occupant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hold Rooms</td>
<td></td>
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</tr>
<tr>
<td>a Open Areas</td>
<td>M</td>
<td>30</td>
</tr>
<tr>
<td>b Seating Areas</td>
<td>M</td>
<td>15 or fixed seat cout</td>
</tr>
<tr>
<td>2 Passenger Circulation Space includes ticket area check in and baggage claim area</td>
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<td>100</td>
</tr>
<tr>
<td>3 Office</td>
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<td>4 Retail</td>
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<td>5 Drinking and Dining Establishments</td>
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<td>a Occupant Load less than 50</td>
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<td></td>
</tr>
<tr>
<td>b Occupant Load 51 to 300</td>
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<td>7</td>
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<tr>
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<td>Sit down service</td>
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<td>15</td>
</tr>
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<td>6 Baggage Storage / Handling</td>
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<td>(a) Areas with vehicular access</td>
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<td>(b) Areas without vehicular access</td>
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<td>300</td>
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<tr>
<td>7 Transit Stations</td>
<td></td>
<td>as required by NFPA 130</td>
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</tbody>
</table>

430.5 Exits

430.5.1 Building Exits  All building exits shall comply with Chapter 10 unless specifically provided for in this Chapter.

430.5.2 Emergency Exits  If emergency exits discharge directly onto an airport ramp or service area, the doors shall be clearly marked Emergency Exit Only in letters at least 2 inches high with contrasting colors in addition to exit signs as required by Section 1011 or as approved by the Department and the Fire Department.

430.5.3 Delay Panic Hardware  All emergency exits from a passenger terminal building that discharge onto an airport ramp or service area shall be equipped with delay panic hardware. The locking device shall release without unlatching when activated by 2 alarm devices or by a loss of electrical power.
Sec 430 5 4

430 5 4 Numbering  Emergency exit doors shall be numbered on both sides 3 inches high minimum on the inside and 5 inches high minimum on the outside with contrasting colors.

430 5 5 Control Tower  There shall be 2 exits from any control tower floor which exceeds 1500 square feet in area or where 2 or more adjacent floors have an occupant load of more than 15. Scissor stairs are allowed with the following provisions:

1. That the wall between the 2 separate stairs shall be 2 hour fire rated minimum and with no penetrations allowed.
2. Both stairs shall be mechanically pressurized on alarm to maintain a minimum positive pressure of 0.15 inch water column relative to atmospheric pressure with all doors closed.

Activation of the mechanical equipment shall be through the fire alarm system which shall be provided per Chapter 9.

A. Provide a smoke detector in front of each stair door on the corridor ceiling of each floor.
B. Provide a smoke detector on the ceiling adjacent to the elevator lobby.
C. For air conditioning systems or pressure air supply serving more than one story, provide a smoke detector in the return air duct or plenum on each floor. The activation of any detector shall cause the return air to exhaust completely from the building without any recirculation through the building.

3. Power for the mechanical equipment and the fire alarm system smoke control shall be provided through the required emergency power section of the building electrical supply.

4. Stair shafts shall be provided with emergency lighting from the emergency power supply described in paragraph 3. In addition, battery backup supply shall be provided for these fixtures.

5. Before the mechanical equipment is accepted by the Department, it shall be tested to confirm that the mechanical equipment is operating in compliance with the requirements of this Section.

6. Stairways need not extend to the roof as required in Section 1006 14.

7. Control towers need not be accessible to the handicapped as required by this Building Code.

430 5 6 Exterior Doors  Exterior doors shall include doors opening onto roadways on grade or elevated which provide public access/egress to passenger terminals provided that:

1. The roadways have sidewalks width based on occupant load that lead to a dispersal area at grade.
2. Covered roadways are sprinklered and have at least one side open.

430 5 7 Security Grilles and Doors  See Section 404 4 8.

430 6 Airport Ramp Drainage

430 6 1 Definitions  Aircraft Fueling Ramp is defined as any outdoor area at an airport including aprons and hardstands on which aircraft are normally fueled or defueled.

430 6 2 Scope  The requirements specified herein provide standards for the design of the water drainage system of an aircraft fueling ramp to control the flow of fuel which may
be spilled on a ramp and to minimize the resultant possible danger therefrom. Such a drainage system is intended to limit spread of the fuel spill to aircraft loading walkways terminal structures or passenger loading walkways that might result in liquid or vapors reaching a source of ignition or in the accumulation of dangerous or toxic vapors.

430 6 3 Aircraft Fueling Ramp Slope and Drain Design

1. Aircraft fueling ramps shall slope away from terminal buildings passenger loading walkways, aircraft hangars and other structures (excluding aircraft loading walkways), with a minimum grade of 1% (1:100) for the first 50 feet (15.2 m). Beyond this distance, the slope to drainage inlets may be reduced to a minimum of 0.5% (1:200). Drainage inlets where provided shall be a minimum of 50 feet (15.2 m) from such structures.

2. Proximity of ramp drainage inlets and fueling hydrants to aircraft loading walkways shall not be restricted.

430 7 Vapor Penetration Protection. Below grade areas or blind spaces in airport terminal buildings shall be protected against flammable fuel or vapor penetration or shall be mechanically ventilated to provide at least 4 complete air changes per hour.

430 8 Smoke Control

430 8 1 Required. A mechanically operated air handling system shall be installed in the main passenger terminal building which will restrict the smoke to the general area of fire origin and maintain the exiting system in a condition that is safe for exiting. The system shall be designed so that exhausted smoke cannot contaminate the outside air intake of any system.

430 8 2 General. The smoke control systems shall be connected to the smoke detection and/or the automatic sprinkler systems and shall automatically operate when either system is actuated. The smoke control system shall also be capable of manual operation from the F.D. Operations Center. During those hours when the building air conditioning systems are not operating, the smoke detection system shall activate the smoke control system. All smoke control equipment for both tenant space and terminal buildings shall be in place and operational before any part of the passenger terminal buildings are occupied. The level of protection of the fire detection system for unoccupied tenant space shall be subject to the approval of the Department and Fire Department. For any space or corridor which exceeds 20 feet in length connected to an atrium or passenger terminal area which has separate smoke control zones provide supply air to the space or corridor at the farthest location from the point of connection to the atrium or passenger terminal area.

EXCEPTIONS:

1. Ramp service and nonpublic ramp level tenant areas of concourse buildings need not be provided with a smoke control system.

2. Unenclosed bag handling tenant areas of concourse or terminal buildings need not be provided with a smoke control system.

430 8 3 High Rise Buildings. See Section 403.

430 8 4 Atriums. See Section 402.

430 8 5 Passenger Terminal Buildings.

1. The smoke control equipment for the main passenger terminal building may be separate from that serving tenant spaces.
2 The passenger terminal buildings systems shall have a product of combustion detector located in the supply air system after the air filters which will stop the supply fan upon detection. In addition, a product of combustion detector shall be provided in the return or the exhaust air stream to activate the smoke control system.

3 The passenger terminal buildings public circulation area smoke removal systems shall provide at least 4 air changes per hour and shall be located to preclude accumulation of smoke in any part of the public circulation areas zoned not to exceed 52,000 square feet on a single floor and must coincide with required fire sprinkler zones. Within that sprinkler zone there may be one or more air moving systems but no single smoke control zone shall be larger than the sprinkler zone. The smoke removal system shall also be capable of manual operation from the F.D. Operations Center.

4 The tenant space shall be part of a smoke control zone not to exceed 52,000 square feet on a single floor. Tenant spaces that are within 2 adjacent smoke control zones may be connected to either of the adjacent smoke control systems.

5 The smoke control exhaust system for tenant spaces shall be sized to provide a minimum of 4 air changes per hour or 20,000 cfm from each smoke control zone whichever is greater.

6 For tenant spaces adjoining the concourse or terminal exceeding 7,500 square feet a separate smoke control zone shall be provided.

7 Ventilation for Smoke Control: See Section 1715(e)4.

430.8.6 Smoke Detection

Smoke detection shall be provided as follows:

1. There shall be an average of one detector per 2,500 square feet for areas with roofs/ceilings over 25 feet above an occupied floor.

   EXCEPTION: Thermal detectors or cross zone beam detectors may be used in lieu of smoke detectors where approved by the Department and Fire Department.

2. Detector zones may not exceed 20,000 square feet and no detector zone shall serve more than one smoke control zone.

3. A detector in a smoke control zone shall actuate all the adjacent zone smoke control equipment to pressurize those adjacent zones with 100% outside air while the affected smoke control zone goes into exhaust. All other smoke control zones shall remain in normal operation.

430.8.7 Specific Requirements

1. The mechanically operated supply and return exhaust systems servicing smoke control zones shall be arranged to exhaust at the indicated rates when activated by the smoke detection and/or sprinkler systems, all adjoining areas or smoke control zones shall be arranged to supply 100% outside air to prevent smoke migration to the unaffected areas.

2. In addition to other smoke zone area requirements passenger holding areas shall be treated as tenant spaces if separate systems are used otherwise they shall be treated as part of the concourse/passenger terminal public circulation space and horizontal smoke control zones shall be limited to 52,000 square feet maximum.
430 8.8 Draft Stops  Draft stops shall be required in all terminal/concourse buildings at the passenger level to prevent migration of smoke throughout the building. Stops shall be constructed of noncombustible materials. They shall be arranged to coincide with smoke control zones described in this Section and as follows:

1. For ceilings or exposed roofs less than 25 feet above the floor, draft stops shall be a minimum of 20% of the roof/ceiling height. The roof/ceiling height shall be measured as follows:
   A. For flat roofs from roof/ceiling to floor
   B. For sloped roofs from center of vent or point of exhaust to floor

   The minimum depth of the draft stop shall be 2 feet with a minimum headroom clearance of 7 feet.

2. For ceiling spaces, the draft stop shall be provided through the ceiling space from ceiling to structure.

3. Location of all draft stops shall be approved by the Building and Fire Departments.

4. The volume is measured from the area of the smoke control zone to the ceiling/roof up to a maximum height of 12 feet above each pedestrian area. Exhaust system inlets shall not be less than 6 feet above the walking surface of each level.

5. Each zone created by the construction of draft stops shall be mechanically exhausted at a rate of no less than 4 air changes per hour.

   EXCEPTION  For ceilings or roof structures not at an interface and over 25 feet above the floor of any occupied space, draft stops shall not be required.

430 8.9 Control Tower  Smoke control in the control tower shall be as follows:

1. Exhaust the occupied level where the fire alarm is activated at 6 air changes per hour.

2. Maintain normal HVAC operations on all other adjacent occupied levels.

3. Provide stairway pressurization and other requirements per Chapter 9.

430 8.10 Acceptance Testing  See Section 910.5.

430 9 Life Safety Systems

430 9.1 Fire Sprinkler System

1. Terminal/concourse buildings shall be fully sprinklered in accordance with NFPA 13 Standard for Installation of Sprinkler Systems. Design criteria for terminal buildings shall be in accordance with ordinary Hazard Group 2 for retail and service areas and light hazard for office and passenger areas.

2. Other locations for sprinklers shall include:
   A. Sprinklers shall be installed at 6 feet on center each side of draft stops required at the interface of a main terminal building and a concourse building.
   B. Kiosks or similar structures that are covered or have roofs and are located within the passenger terminal building or the concourse shall be protected by an approved automatic fire suppression system.

   EXCEPTION  No automatic fire suppression system is required if the kiosk is
1. Noncombustible construction and less than 4 feet wide in any dimension or
2. Portable vendor carts with a maximum size 4 feet x 8 feet spaced at more than 10 feet between carts

**430 9.2 Standpipe Systems.** All terminal structures and control towers shall have standpipes in compliance of this Code.

**430 9.3 Manual Pull Stations.** Manual pull station zones must be provided at the required exits and shall be annunciated separately. There shall be 200 feet maximum between pull stations.

**430 9.4 Fire Detection Systems.**
1. Detectors shall be located in all nonpublic areas that are not sprinklered and shall be annunciated separately. A remote status indicating light shall be located in the terminal or concourse building above each entry of an enclosed tenant area greater than 2500 square feet as approved by the Department and Fire Department. Concealed detectors shall also be annunciated immediately outside the concealed space.
2. Smoke detectors shall be installed in all occupied levels for smoke control as required by Section 430 8.
3. Area smoke detectors shall be cross zoned or addressable type with verifiable function.

**430 9.5 Emergency Communication Systems.** Both one way and 2 way systems shall be installed in all passenger terminal buildings in public areas at required exits. Building Engineering office, Airport Operations office, each mechanical room emergency generator room, fire pump room, main switch gear room, and each elevator cab which serves 4 or more stories as allowed by the Fire Department. Fire Department telephone jack locations shall be approved by the Fire Department.

**430 9.6 Fire Department Operations Center.** The F D Operations Center shall be provided in a space in each building as required by other Sections of this Code and approved by the Department and the Fire Department.

**430 9.7 Fire Extinguishers.** Hand fire extinguishers shall be provided throughout an airport terminal building in accordance with the requirements outlined by the Denver Fire Code.

**430 9.8 Security Systems.** Security systems shall be separate from fire alarm systems.

**EXCEPTION** Delay panic hardware systems as required in Section 430 5.3 may be part of the fire alarm system.

**430 9.9 Zones.** Zones for smoke control sprinkler detectors, etc., shall be coordinated to have the same zones or multiples thereof not to exceed the maximum area required by other provisions of this Code.

**430 9.10 Interface Openings.** An interface shall exist between a passenger terminal concourse and connecting concourses, hotel or office occupancy. Where occupancy separations are not required openings may be provided at the interface with the following conditions:

1. The size of the opening shall be limited to provide effective smoke control which will restrict the migration of smoke across the interface. See Section 430 8.8.
2 A noncombustible draft curtain shall be provided at the interface
3 Automatic fire sprinklers shall be located on both sides of the draft curtain spaced at 6 feet on center

430.9.11 Main Passenger Terminal Building Elevators and Stairs
1 Pressurized stairs elevators and exit passageways are required unless otherwise approved by the Department and Fire Department

   EXCEPTION: Elevators and enclosed stairways from the transitway station

2 Elevator refuge areas are not required at the transitway station and on levels having adequate exterior doors per Section 430.5.6

430.10 Mechanical Mechanical requirements shall comply with applicable sections of this Code and referenced National Standards

   EXCEPTION Air exhaust openings for air conditioning or ventilating equipment serving ramp level tenant spaces shall be permitted where the ramp surrounds the building. Such openings shall be located a minimum of 7 feet above the ramp

430.11 Electrical

430.11.1 General Requirements.
1 The purpose of this Section is the practical safeguarding of persons and property from hazards arising from the use of electricity and shall apply to all electrical installations electrical systems and all their component parts
2 Design installation and materials shall conform to the requirement of NFPA 70 National Electrical Code and this Code except
   A Runways taxiways ramps and all electrical systems required for their operations which are under FAA jurisdiction
   B Airplane parking light conduit runs and junction boxes which are fed from building power systems and may be within 1 inch minimum of ramp surface covered with FAA approved sealer
3 All electrical materials and equipment shall be of a type tested and listed by an approved laboratory, shall bear their label and shall be approved for the purpose for which the materials and equipment are to be used

430.11.2 Grounding See the Electrical Code Article 1003

430.11.3 Emergency Systems
1 Exit illumination shall be connected to an emergency power system. Exit ways shall be illuminated to an intensity of one footcandle at floor level during all times. Battery operated exit illumination with a minimum of 1 / hour of 100% output can be connected to a reliable normal power source
2 Exit signs with illuminated letters at least 6 inches in height shall be provided at each required exit doorway and elsewhere as required to clearly indicate the direction of egress. The letters shall be white on a green field and illuminated. Battery operated exit signs with a minimum of 1 / hour of 100% output can be connected to a reliable power source
3 Emergency power systems emergency generator and/or battery backup shall provide power to the following equipment
   A Mechanical equipment for smoke control
B Emergency egress and exit lighting
C Emergency elevator power
D Fire alarm and detection systems
E Fire pump
F Emergency communication systems
G Delay panic hardware

430 11.4 Raceways. All wiring for power lighting signal control computer communications and telephone shall be installed in raceways. Cable tray systems shall be allowed for electrical systems not exceeding 50 volts between any conductors. Installation shall comply with the National Electrical Code.

430 11.5 Hazardous Areas. Class I Division II

1 Hazardous wiring methods shall apply within a 15 foot radius of fuel connection (fuel pit or aircraft). All measurements are referenced from surface of ramp and the 18 inch vertical measurement shall not apply.

2 Electrical room access off of apron area is acceptable unless within 15 feet of fueling connections. Electrical equipment within 15 feet of a fuel connection shall comply with National Electrical Code Class 1 Division II methods.

430 12 Subsurface Tunnels

430 12.1 General. All subsurface tunnels shall comply with the following provisions:

1 Sprinklers. Utility tunnels (Ordinary Group I) and service tunnels (Ordinary Group II) shall be sprinklered throughout the transitway shall be sprinklered at the transit stations as approved by the Department and Fire Department.

2 Smoke Removal System. A smoke removal system shall be provided.

3 Life Safety System. All life safety systems shall be on an emergency generator.

4 Exits.

A A walkway with a minimum 74 inch width (2 exit path widths 22 inches each plus 12 inches wall clearance and an 18 inch platform edge clearance) shall be provided within all people mover transit tunnels.

B Exit doors into adjacent protected tunnels shall be provided at a maximum spacing of 200 feet and shall be monitored by the airport operations center.

EXCEPTION The walkway width and exit door spacing may be modified based upon an exit study submitted by the Design Professional and approved by the Department and Fire Department.

5 Separation. A minimum 2 hour separation shall be provided between tunnels.

6 Transit Station Separation. The transitway shall be separated from the transit station by a minimum 2 hour fire rated noncombustible wall with 1 /2-hour fire rated doors. Windows within these walls shall be:

A Approved 1/2-hour fire rated windows or

B A / hour rated window assembly protected with approved directional sprinkler heads 6 feet 0 inches o c both sides of glass.
Sec 430 12 1

7 Transit Systems Construction Guide - Fixed Guideway Transit Systems NFPA 130 shall be used as a construction guide unless specifically covered by this Code.

8 Transitway Tunnel - The transitway tunnel shall be used exclusively for the movement of passengers between stations.

430 13 Liquid Fuel Lines Penetrating Buildings or Structures. Liquid fuel lines that pass through or over any building or structure shall be double walled and monitored for leakage. Liquid fuel lines that pass through buildings shall have control valves at the outside of the building penetration and shall be automatically closed upon detection of a break or leak.

430 14 Temporary Structures Used in Public Areas. Uniform Fire Code Article 35

EXCEPTION - Temporary construction enclosures, construction barricades, walkways and similar temporary construction structures.

430 15 Standards - Unless provided for in other portions of this Building Code, the following Standards shall apply

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>TITLE OF PUBLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA</td>
<td>Aircraft Fueling Ramp Drainage Pamphlet 415 1987</td>
</tr>
<tr>
<td></td>
<td>Construction and Protection of Airport Terminal Buildings Pamphlet 416 1987</td>
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<tr>
<td></td>
<td>Construction and Protection of Aircraft Loading Walkways Pamphlet 417 1985</td>
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<tr>
<td></td>
<td>Fixed Guideway Transit Systems Pamphlet 130 1988 Standard on Aircraft Hangers Pamphlet 409</td>
</tr>
</tbody>
</table>

Section 503 2.1 is amended to add an Exception to the first paragraph

EXCEPTION: In fully sprinklered buildings, a sprinkler system designed as follows may be substituted for the required / hour fire resistive protection. The glass shall be protected by a sprinkler system equipped with listed quick response sprinklers. The sprinkler system shall completely wet the entire surface of the glass wall when actuated. The sprinkler shall be located within 18 inches of the opening and be spaced a maximum distance of 6 feet apart. The sprinkler system shall completely wet the entire surface of the glass or provide a spray that protects the building opening. Sprinklers shall be closed heads and may be taken off the sprinkler system piping serving that floor. The system shall be designed to distribute at least 3 gpm per lineal foot of wall opening. The sprinkler system serving the floor shall be designed to provide adequate water supply to either a hydraulically calculated remote floor area in accordance with NFPA 13 or to all of the exposure protection heads on any one level of the building, whichever demand is greatest.

Section 505 2 is amended

505 2 Unlimited Area.

1 New Buildings. The area of any one or two story buildings or Groups B, F, Division 1 or 2, M, S, Division 1, 2, 3, 4, or 5, and H, Division 5 Occupancies shall not be limited if the building is provided with an approved automatic sprinkler system throughout as specified in Chapter 9 and entirely surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.
Sec 505 2

The area of Group S, Division 2 or Group F Division 2 Occupancy in a one story Type II Type III one hour or type IV building shall not be limited if the building is entirely surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width

2 Existing Buildings. The area of any building constructed prior to March 26 1994 shall not be limited provided that it meets the requirements of one of the following categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Occupancy Group</th>
<th>Maximum No. of Stories</th>
<th>Type of Construction</th>
<th>Auto Sprinkler Throughout</th>
<th>Minimum Open Space</th>
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<td>60</td>
</tr>
<tr>
<td>3</td>
<td>F2 S 2 S 3</td>
<td>1</td>
<td>II III 1 HR</td>
<td>NR</td>
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</tbody>
</table>

NOTE: (1) NR NOT REQUIRED

(2) ENTIRELY SURROUNDED AND ADJOINED BY PUBLIC WAYS OR YARDS NOT LESS THAN DISTANCE INDICATED ADDITIONAL OPEN SPACE MAY BE REQUIRED FOR FIRE DEPARTMENT ACCESS SEE FIRE CODE

Section 509 2 is amended by adding Exception 4

EXCEPTIONS:

4. The top of guardrails around roof mounted appliances shall be at least 36 inches unless 6 feet is maintained between the appliance and the roof edge or other hazard

Sections 707 4 through 707 8 are added

707 4 R Factor Requirements. Insulation installed in existing Group R 2 and R 3 Occupancies shall provide a minimum R Factor of 11 for walls and 19 for ceilings New construction shall comply with the requirements of Chapter 13

707 5 Identification Tag Each application of insulating material shall be identified by an appropriate tag or card permanently affixed in a conspicuous place near the insulated areas The tag or card shall be on a form approved by the Department and shall include without limitation the following information

1. The manufacturer's name address and trade name of material used
2. The contractor's name and address
3. Type of insulation (batt blanket loose etc)
4. Density depth (inches) number of bags
5. R Factor (wall and ceiling)
6. Laboratory approval number indicating conformance with ASTM C 739 requirements Also label listing and follow up service indication flame spread and smoke
7. Date of installation
8. Signature of applicator certifying that these requirements have been complied with
Sec 707.6

707.6 Prohibitions. Insulation shall be prohibited in the following locations:

1. Insulation shall not be placed closer than 3 inches horizontally to transformers, recessed lighting.

   EXCEPTION: Recessed fixtures approved for insulation to be in direct contact with the fixture.

2. Insulation shall not be placed within 1 inch of Type B heating equipment vents and 6 inches from any other of heating vents or flues.

3. Insulation shall not be placed within 24 inches of attic-type furnaces unless of noncombustible material.

4. Insulation shall not be placed over soffit, roof or foundation vents.

5. Loose-type insulation shall not be placed over attic access doors. The access doors shall be insulated with batts or blanket insulation and securely fastened to the access door.

6. Insulation shall not be permitted in air plenums unless approved by the Department.

7. Foam plastics shall not be left exposed.

707.7 Combustible Insulation Bag Identification. In addition to the markings on each bag desired by the manufacturer, markings shall be provided in compliance with ASTM C739 Section 12 and shall also include the following:

1. CAUTION (in enlarged letters) Do not cover recessed light fixtures and attic vents. Loose-fill insulation shall be no closer than 1 inch to any Type B furnace or water heater vent pipe, bathroom vents or kitchen vents. Loose-fill insulation shall not be placed closer than 24 inches of an attic-type (horizontal) furnace or air handling equipment or within 6 inches of any chimney.

2. Manufacturer’s name, address, city and state, including the zip code.

3. Average minimum weight in pounds.

4. The label of an approved independent testing laboratory listing compliance with CSPC Cellulose Insulation Standards HH 1 515 C or D.

707.8 Roof Insulation. Insulation to be installed in roofs shall conform to the manufacturer’s instructions and shall be approved by the Department. When a Class A, B, or C roof is required, the insulation shall not deter from its classification.
Chapter 9
Fire Protection Systems
Sec 901

Section 901 is amended

Section 901 Scope This chapter applies to the design and installation of fire extinguishing systems, smoke control systems, smoke and heat venting systems, and fire alarm systems.

For requirements on fire alarm systems, see the Fire Code and the following

(Remainder of section is unchanged)

Section 902 is amended by adding item #5

5 Fire Alarm Systems UFC Standards 10.2 and 10.3

Section 904.5.3 is amended

904.5.3 Location of Class I Standpipes There shall be a Class I standpipe outlet connection at every floor level outside of every required stairway above or below grade and on each side of the wall adjacent to the exit opening of a horizontal exit. Outlets shall be located in a public corridor within 10 feet of the opening into the exit enclosure.

Section 904.5.6 is added

904.5.6 Standpipe hose and extinguisher An approved fire extinguisher shall be provided at each standpipe location. Hose shall not be required for any standpipe outlets.

Section 904.7 Basement Pipe Inlets is deleted

Section 905.2.2.1 is amended

905.2.2.1 General Systems or methods of construction to be used in smoke control shall be based on rational analysis in accordance with well-established principles of engineering. The analysis shall include but not be limited by Sections 905.2.2.2 through 905.2.2.6 below and Section 910 Smoke Control Alternate Design.

Section 905.7.2 Exhaust Fans is deleted

Section 905.7.3 is amended

905.7.3 Ducts Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they could be exposed under smoke control operating conditions. Ducts shall be constructed and supported in accordance with the Mechanical Code. Ducts shall be supported directly from fire-resistive structural elements of the building by substantial noncombustible supports.

EXCEPTION Flexible connections for the purpose of vibration isolations complying with the Mechanical Code may be used if constructed of approved fire resistive materials.

Section 905.7.5 is amended

905.7.5 Automatic Dampers Automatic dampers installed within the smoke control system shall be listed and conform to the requirements of approved recognized standards. See Chapter 35 Smoke dampers shall be supplied by emergency power systems when such power systems are required by the Sections of this Code.

Section 905.7.6 is amended

905.7.6 Fans In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty with the minimum of 2 belts. Fans shall
be selected for stable performance based upon the design intent of their smoke control function. Calculations and manufacturers' fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the requirements of Chapter 16. Motors driving fans shall not be operating beyond their name plate horsepower (kilowatts) as determined from measurement of actual current draw. Motors driving fans shall have a minimum service factor of 1.15.

Section 905.9.3 is amended by changing the reference section from 905.12 to 905.13.

Section 905.9.4 is amended.

905.9.4 Automatic Control Whenever completely automatic control is required or used the automatic control sequences shall be initiated from an appropriately zoned automatic sprinkler system meeting the requirements of UBC Standard 9.1 and/or from an appropriately zoned smoke detection system meeting the requirements of the Fire Code.

Section 905.10 Control Air Tubing is deleted.

Section 905.13.3 is amended.

905.13.3 Control Action and Priorities The firefighter's control actions shall be as follows:

1. **ON OFF OPEN-CLOSE** control actions shall have the highest priority of any control point within the building. Once issued from the firefighter's control panel, no automated or manual control from any other control point within the building shall contradict the control action except from motor control override at local motor controller and disconnects. Where automatic means is provided to interrupt normal nonemergency equipment operation to safeguard the building or equipment (i.e., duct freezestats, duct smoke detectors, high temperature cutouts, temperature actuated linkage and similar devices) Such means shall be capable of being overridden by the firefighter's control panel control action and the last control action as indicated by each firefighter's control panel switch position shall prevail.

   **EXCEPTION** Power disconnects required by the Electrical Code excessive fan vibration switches and excessive fan pressure switch

2. Only the **AUTO** position of each 3 position firefighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the NORMAL, nonemergency building control position. When a firefighter's control panel is in the AUTO position, the actual status of the device (on off open closed) shall continue to be indicated by the status indicator described above.

Section 905.14 is amended.

905.14 Response Time Smoke control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts, and other equipment. The total response time for individual smoke control systems to achieve their desired operating mode shall not exceed 60 seconds.
For purposes of smoke control the firefighter's control panel response time shall be the same for automatic or manual smoke control initiated from any other building control point.

Section 905 15.1 is amended

905 15.1 General Devices, equipment, components and sequences shall be individually tested. These tests in addition to those required above or by other provisions of this code shall consist of determination of function sequence and where applicable, capacity of their installed condition. The requirements of Section 910.5 shall apply.

Section 905 15.7 is amended

905 15.7 Smoke barriers Measurements using inclined manometers or other approved gauges shall be made of the pressure differences across smoke barriers to confirm system performance. Such measurements shall be conducted for each possible smoke control condition.

Section 905 15.9 is amended

905 15.9 Reports See Section 910.5.4 for testing reports.

Section 905 15.10 is amended

905 15.10 Identification and Documentation Charts, drawings and other documents identifying and locating each component of the smoke control system and describing their proper function and maintenance requirements shall be maintained on file at the building.

Section 907 is added

Section 907 FIRE ALARM SYSTEMS AND FIRE DETECTION SYSTEMS [B-036]

907 1 Installation Requirements

907 1.1 General Fire alarm systems and fire detection systems required in this Code shall be installed in accordance with the requirements of this Section.

Fire alarm control panels and fire alarm annunciator panels shall be at approved locations. The master keys for all fire alarm control and annunciator panels and manual fire alarm boxes shall be located within the elevator fire control key cabinet or other approved location.

907 1.2 Standards Required fire alarm systems and fire detection systems shall comply with NFPA 72 1993.

907 1.3 Nonrequired Full or Partial Systems Fire alarm systems and fire detection systems not required in this Code or by special agreement are not required to be connected to a central station. Where nonrequired fire alarm and/or fire detection systems are connected to a central station the central station shall be an approved Class I or Class II central station. Multiple central station connections from one building are not permitted. Nonrequired full or partial fire alarm or fire detection systems are required to comply with NFPA 72. Annunciation shall be provided in accordance with Section 907.4.5. Annunciator and control panels for nonrequired or partial systems shall have permanent signage indicating Nonrequired System or Partial System. Partial fire alarm and/or fire detection systems installed in a building having a required fire alarm system shall be annunciated separately on the building fire alarm annunciator panel.
907 1 4 Central Station Connection  Required fire alarm systems shall be connected to an approved Class I central station. Multiple central station connections from one building are not permitted.

907 1 5 Fire Alarm Permit. Prior to issuance of a fire alarm permit, 2 sets of shop drawings shall be provided and approved. The shop drawings shall include the following: completed permit application, building code occupancy classification and occupant load, manufacturers specification sheets, listed equipment applications, installation codes and standards used (including editions), type of system and reason system is provided, (required nonrequired board of appeals etc), voice message content and languages sequence of operation identification of air handling units exceeding 2,000 cfm, description of special system features and operations, voltage drop calculations, battery calculations, description of annunciation assignments, scale drawings of each floor including north arrow and showing all components controls, annunciators and end of line devices, site address and installing contractor's name and address, on each page identification of each room's usage, attic and ceiling details for areas having automatic detection mounting heights for manual fire alarm boxes and strobes, primary power supply connection details, symbol list, single line riser wiring diagram, interconnecting wiring diagrams, wiring color coding, central station interface and connection and full scale annunciator details.

907 2  Fire Alarm System

907 2.1 Where Required  A fire alarm system shall be installed and maintained in the occupancies and locations as set forth in this Section.

907 2.2 Group A 1 A 2 and A 2 1 Occupancies  See Section 303 9

907 2.3 Group B Occupancies of 5 Stories or More Above Grade

907 2.4 Group H Occupancies  See Section 307 9

907 2.5 Group H-6 Occupancies  See Section 307 11 5 5

907 2.6 Group M Occupancies of 5 Stories or More Above Grade

907 2.7 High Rise Buildings  See Section 403

907 2.8 Any Occupancy or Location Requiring a Fire Detection System  See Section 907 3

907 3  Fire Detection System

907 3.1 Where Required  A fire detection system shall be installed and maintained in the occupancies and locations as set forth in this Section.

907 3.2 Amusement Buildings  See Section 408 5

907 3.3 Group E 1 Occupancies

907 3.4 Group E-2 and E-3 Occupancies with Greater than 20 Occupants  If the occupant load is less than 50 the fire detection system is not required to be connected to an approved central station. For E 3 occupancies see Section 305 2 3

907 3.5 Group I Occupancies with Greater than 10 Occupants  See Section 308 9

907 3.6 Group E Division 2 and 3 Occupancies with 20 or Less Occupants and Group I Division 1 and 2 Occupancies with 10 or Less Occupants  May be provided with 120 volt residential type single station smoke detectors having battery backup wired to a 120 volt battery system.
AC unswitched electric power source and interconnected for simultaneous alarm. The detectors shall be installed in routes of egress and as may be required by the Department and Fire Department. A fire alarm system is not required. For E 3 occupancies see Section 305.23

907.3.7 Group R 1 Occupancies See Sections 310.9 and 310.10

907.3.8 High Rise Buildings See Section 403

907.3.9 Smoke Control See Section 905.9

907.3.10 High Piled Combustible Storage Uses See Section 906

907.4 Detailed Requirements

907.4.1 Manual Fire Alarm Boxes Manual fire alarm boxes shall be red with white lettering and located not more than 5 feet from each exit of each story and basement. Where the system is not connected to a central station, an engraved plaque with lettering no smaller than 1/2 inch in height shall be provided within 4 inches of each box. The plaque shall read "AFTER PULLING ALARM PHONE 911 THIS IS A LOCAL ALARM ONLY and shall be red with white lettering."  

907.4.2 Wiring Color Code The color code shall be consistent throughout the entire system and permanently posted inside the fire alarm control panel. Separate sets of colors shall be used for each type of initiating circuit indicating circuit and control circuit. Color coding shall either be by continuous colored insulation or by application of 6 inch long colored heat shrink tubing at the end of each conductor at all splices, taps and terminations.

907.4.3 Audible and Visible Alarms Audible and visible notification shall be provided to the occupants or inhabitants of the area having a required fire alarm system. Visible notification shall be provided in toilet rooms accessible to the handicapped corridors and at each audible device. The fire alarm control panel shall incorporate an audible alarm silencing switch which shall not cancel the visible alarm until the full system is manually reset.

907.4.4 Fire Detection Fire detection systems shall have smoke detectors located in all rooms within the occupancy or location except that heat detectors shall be used in lieu of smoke detectors in rooms where smoke detectors are not suitable because of the environment. Heat detectors are not required in rooms having an approved automatic fire extinguishing system.

907.4.5 Visible Zone Alarm Indication (Annunciation) Fire alarm systems shall have visible zone alarm indication (annunciation) as follows: Each building level shall be zoned separately. If the floor area exceeds 20,000 square feet, additional zones shall be provided so that no zone exceeds a 20,000 square foot area. In no case shall the length of any zone exceed 300 feet in any direction.

1. Each zone shall have a separate visible indication for each of the following within that zone: all manual devices, all automatic devices, and each fire sprinkler water flow detection device.

2. In addition, the building shall have a separate visible indication for each of the following within that building: main fire sprinkler water flow detection device, each special extinguishing system, each nonrequired system, each special detection system, each stair and each elevator hoistway.
3 In addition the building shall have a separate visible indication for each of the following supervisory alarms: system trouble system supervision all sprinkler valves all duct detectors

4 Annunciator panels shall contain the above visible indications and shall lock in until the system is reset with a dedicated reset switch located at the main fire alarm control panel. If the main fire alarm control panel is not located at an approved building entrance a remote annunciator panel shall be required at an approved location.

5 Annunciator panels shall be of a point display (directory) type having building plans permanently mounted adjacent to the fire alarm annunciator panel. Plans shall be of durable construction easily readable in normal lighting have a smooth plastic surface and shall indicate clearly the building outline, boundary of each zone and have a you are here with arrow. The plans shall indicate clearly the locations of the fire alarm control panels stairs elevator shafts emergency generator fire pump fire sprinkler valves electrical service equipment and each device. One plan may be used for typical levels. Plans shall be oriented so that up is compass heading of direction faced while looking at annunciator. Plans shall have north arrow. Plans may be black lines on white. Each point on the annunciator shall be permanently labeled to indicate the location and to identify the type of initiating device.

6 A remote indicating light shall be installed for detectors within each room with an entry door. The indicating light shall be located above the door on the exit corridor side. This shall include each door leading through adjoining or intervening rooms from an exit corridor to that room (progressive type). Remote indicating lights shall be installed on the ceiling directly below detectors located above ceilings. Remote indicating lights for duct detectors shall be installed in an accessible area directly below or adjacent to the detector. Remote indicating lights shall remain lit until the system is reset. Remote indicating lights may be deleted for each detector which is clearly annunciated in an approved manner at the fire alarm control panel and at required remote annunciators.

7 Annunciation by a method other than required above may be provided only if approved.

907 4 6 Group I Occupancies. A presignal system may be installed if approved and if 24 hour personnel supervision is provided at approved locations. Chimes may be installed in lieu of audible alarms. In hospital and nursing home patient sleeping rooms the smoke detectors shall cause activation of a visual display on the corridor side of the room in which the detector is located and shall cause an audible and visual alarm at the respective nurses' station. The visual display on the corridor side of the room and audible and visual alarm at the respective nurses' station may be a part of the nursing call system and need not be supervised.

907 4 7 Inspection Testing or Maintenance. Inspection testing or maintenance of fire alarm systems or fire detection systems shall be performed by a licensed electrical signal contractor or by factory trained and certified personnel or personnel certified by National Institute for Certification in Engineering Technologies for fire alarm systems.
Section 910 is added

Section 910 SMOKE CONTROL ALTERNATE DESIGN

910.1 Scope and Purpose

1. This alternate design method of smoke control has been developed over 15 years within the City of Denver and uses the rational approach for the design, installation and performance verification of smoke control systems and applies to mechanical or passive smoke control systems when they are required by other provisions of this Code. The purpose of this Chapter is to establish minimum requirements for the design and installation of smoke control systems which are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of content or for assistance in fire suppression or overhaul activities. Smoke control systems need to comply with the requirements of Section 609 of the Mechanical Code unless their normal use would otherwise require compliance. Nothing within these requirements is intended to apply when smoke control is not otherwise required by this Code. Smoke control systems are not a substitute for sprinkler protection.

2. The design methods of Sections 905 and 910 are separate and distinct and shall not be mixed unless approved by the Department.

910.2 Smoke-Control Systems for Atriums

910.2.1 General

1. A mechanically operated air handling system shall be installed that will exhaust smoke either entering or developed within the atrium. The smoke control system may be separate or integrated with other air handling systems.

2. Buildings with atriums shall be provided with atrium ventilation for smoke control as specified by this Section.

3. High rise buildings with atrium shall have pressurization and exhaust systems conforming to this Section and Section 910.3. Atrium supply air for smoke control under this Section shall be by mechanical means.

4. Existing high rise buildings with new atriums shall have pressurization and exhaust systems conforming to this Section and Section 910.3 as approved by this Department and the Fire Department.

5. Exhaust opening shall be located in the ceiling or in a smoke trap area immediately adjacent to the ceiling of the atrium. The lowest level of the exhaust openings shall be located above the top of the highest portion of the door openings into the atrium.

6. Ventilation for Smoke Control

A. In atriums 55 feet or less in height with volume of 600,000 cubic feet or less, the system shall exhaust a minimum of 6 air changes per hour. Gravity supply or fan power inlets shall be provided within 10 feet of the lowest level of the atrium and be sized for 75% of the exhaust. A maximum velocity of 1,500 feet per minute shall be maintained across the net free area of the gravity openings.

B. In atriums 55 feet or less in height with volume in excess of 600,000 cubic feet the system shall exhaust a minimum of 4 air changes per hour. Gravity supply or fan power inlets shall be provided as in paragraph A above.
Sec 910.2.1

C In atriums in excess of 55 feet in height regardless of volume the exhaust system shall exhaust a minimum of 4 air changes per hour. Supply air shall be mechanically introduced within 10 feet of the lowest level of the atrium at a rate of 75% of the exhaust.

D In all 3 cases above outside air intakes shall be less than 50 feet above grade. The atrium volume shall include all spaces open to the atrium.

7 In high rise buildings pressurization systems shall be designed to provide a positive pressure in the atrium in relation to adjacent areas utilizing 100% outside air (see Section 910.3). When the atrium is the source of the fire alarm the pressurization system shall provide 75% of exhaust quantity and the pressurization air shall be introduced within 10 feet of the lowest level of the atrium with outside air intakes located less than 50 feet above grade.

910.2.2 Activation of Systems In other than high rise buildings the activation of a smoke detector in the atrium zone or a sprinkler flow alarm in the atrium zone shall operate the atrium supply and exhaust systems.

910.2.3 Manual Operation The smoke control system shall also be manually operable by controls designed for Fire Department use.

910.2.4 Testing See Section 910.5.

910.3 Smoke-Control Systems for High Rise Buildings

910.3.1 Pressurization

1 Elevator lobby areas and elevator hoistways including elevator machine rooms that physically connect to hoistways shall be pressurized when activated to maintain a minimum positive pressure of 0.05 inch of water column with respect to adjacent occupied spaces on all floors with doors to the elevator lobby closed and general building pressurization systems not in operation and with stairway hoistway and elevator lobby pressurization systems in operation. The maximum pressure shall not create an opening force on any elevator lobby door greater than 30 pounds applied at the latch side of the door on the door opening device under any operating condition. Pressure shall not interfere with the opening and closing of elevator doors. When general building pressurization systems and elevator lobby systems are both activated and 4 doors into an elevator lobby from a tenant area on the fire floor and one door on each other floor into an elevator lobby from a tenant area are opened a minimum air flow of 150 feet per minute shall be maintained through each of the door openings on the fire floor (if less than 4 doors open into the elevator lobby all doors shall be opened and 150 feet per minute air flow shall be maintained). Supply air for the elevator lobby shall be obtained from outside air intakes mounted so that they will not be contaminated by products of combustion, with a minimum of 50% of the air drawn from intakes located not more than 50 feet above grade. Each intake shall be provided with a smoke detector which upon smoke detection shall be annunciated at the HVAC status panel. The fan shall continue to run until manually overridden by Fire Department personnel.

2 All elevator lobbies within Group R 1 high rise occupancies only shall be exhausted to outside when a fire is detected within the elevator lobbies. Exhaust systems shall be designed and sized to exhaust a minimum of 60 air changes per hour to provide a negative pressure relative to elevator shafts and occupied areas. The exhaust system shall be sized assuming supply air is available.
3 Atriums  See Section 910.2

4 A general building pressurization system shall be provided which will when activated shut off all supply air to the fire floor (except the elevator lobby) and shall exhaust air from the fire floor to the outside at a minimum design of 15 air changes per hour. The exhaust system shall be sized assuming supply air is available. Return air from all other floors shall be shut off. Supply air to all other floors shall be provided from the outside.

**EXCEPTION:** General building pressurization systems are not required in a Group R Division 1 Occupancy provided that the stairways are pressurized. See Section 910.3.1.7 for design requirements.

5 Smoke venting of elevator hoistways and elevator machine rooms to the exterior of the building shall not be required as provided for in ANSI A17.1. See Chapter 30. A relief damper may be provided to relieve excess pressure due to shaftway pressurization or from normal operation.

6 The elevator lobby and the elevator hoistway shall each be served by a separate dedicated pressurization system.

**EXCEPTIONS**

1 The elevator lobby may be pressurized using the elevator hoistway pressurization system by transferring air to the elevator lobby with the use of transfer openings. Penetration of the elevator shaft wall shall be protected with fire dampers listed under UL 555 and smoke dampers listed under UL 555S.

2 The general building pressurization system may be used to pressurize the elevator lobby if the system consists of more than one piece of air handling apparatus whose outside air intakes are located on opposite sides of the building and which comply with all other requirements of this Code. Each air handling apparatus shall be of sufficient size to provide required pressurization. Each piece of air handling apparatus shall be capable of being individually overridden from the Fire Department Operations Center. Sufficient air handling apparatus shall be connected to the emergency generator to provide required pressurization. Provisions shall be made so that fans on either side of the building may be operated by the emergency generator although not simultaneously. Air handling apparatus shall be defined as a fan or bank of fans and return air/outside air damper assemblies shall be dedicated to these fans.

7 Stairway Pressurization  Each interior enclosed exit stairway shall be mechanically pressurized with outside air when activated by any manual or automatic alarm initiating device to maintain a minimum positive pressure of 0.05 inch of water column across any closed stairway door. With general building pressurization not in operation, with elevator hoistway and the elevator lobby pressurization systems in operation, and with all stairway doors closed, the maximum pressure shall not create an opening force on any stairway door greater than 30 pounds applied at the latch side of the door on the door opening device under any operating condition. Each interior exit stairway shall have a separate dedicated pressurization system. Supply air for the stairway shall be obtained from outside air intakes mounted so that they will not be contaminated by products of combustion with a minimum of 50% of the air drawn from intakes located not more than 50 feet above...
Section 910.3.1

Stairway pressurization systems shall not have fire dampers. Each intake shall be provided with a smoke detector which upon smoke detection shall be annunciated at the HVAC status panel. Fans shall continue to run until manually overridden by Fire Department personnel. Each pressurization system shall be enclosed in a 2-hour fire-resistive enclosure when extended outside the stairway. Air volume introduced into the stairway shall be as follows: 15 floors or less at least 1,000 cfm per floor; 16 floors or more at least 15,000 cubic feet per minute plus 200 cubic feet per minute per floor level in excess of 16 floors.

910.3.2 Activation

1. Smoke Control Activation

A. Activation of smoke detectors, water flow devices or operation of manual fire alarm boxes shall activate the pressurization system for the elevator lobby, elevator hoistways, and stairways.

B. Activation of smoke detectors or water flow devices shall activate the general building pressurization system.

C. Activation of any manual or automatic alarm initiating device shall cause the audible and visual alarms of the fire alarm system on the fire floor and the floors immediately above and below to be activated.

2. Elevator Lobby System Activation

A. Activation of a smoke detector in an elevator lobby in an R-1 occupancy shall activate the pressurization systems for the elevator lobby, elevator hoistways, and stairways and the elevator lobby exhaust system and shall close the air supply to the elevator lobby in alarm. The elevator lobby exhaust system shall exhaust a minimum of 60 air changes per hour from the elevator lobby in alarm.

B. Activation of a smoke detector in an elevator lobby in an A, B, E, or L occupancy shall activate the pressurization systems for the elevator lobby, elevator hoistways, stairways, and general building pressurization system. Activation shall also close the air supply to the elevator lobby in alarm and to the adjacent tenant space, open the exhaust damper to that tenant space, and start the general building exhaust system. Return air from all other floors shall be shut off. Supply air to all other floors shall be provided from the outside.

C. Activation of a smoke detector in an elevator lobby shall cause the audible and visual alarms of the fire alarm system on the fire floor and the floors immediately above and below to be activated.

3. Activation of the fire alarm system by any manual or automatic initiating device shall override the normal operating mode of the smoke control air handling equipment and activate the smoke control system. Once activated, the operation of the smoke control system shall be overridden only through commands from the Fire Department Operations Center. Safety devices for protection against injury and equipment damage shall not be overridden during smoke control operation or from the Fire Department Operations Center (e.g., excessive fan vibration, high fan discharge and suction pressure, and power supply disconnects).

910.3.3 Testing

See Section 910.5
910.4 Smoke-Control Systems for Covered Mall Buildings

910.4.1 Smoke-Control Systems

1 Required A mechanically operated air handling system shall be installed in covered mall buildings which will restrict the smoke to the general area of fire origin and maintain the exiting system in a condition that is safe for exiting. The system shall be designed so that exhausted smoke cannot contaminate the outside air intake of any system.

2 General The smoke control system shall be activated by the automatic sprinkler system and the smoke detection system and shall automatically operate when either system is actuated. Also, the smoke control system shall be capable of manual operation from the F D Operations Center. During those hours when the building air conditioning systems are not operating, either the automatic sprinkler system or the smoke detection system shall activate the smoke control system. All smoke control equipment for both tenant space and the covered mall building shall be in place and operational before any portion of the covered mall building is occupied. The level of protection of the fire detection system for unoccupied tenant space shall be subject to the approval of the Department and the Fire Department.

3 Tenant Space

A The tenant space shall be compartmentalized into smoke control zones not to exceed 52,000 square feet on a single floor. Except for openings between the covered mall and tenant spaces, smoke control zones shall be separate from each other by wall construction having a fire resistance rating of not less than one hour. The walls shall extend from the floor to the underside of the floor or roof above.

B The tenant smoke control exhaust system shall exhaust a minimum of 6 air changes per hour or 20,000 cfm from each smoke control zone whichever is greater.

C Smoke detection shall be provided as follows:

1 On the tenant side at each opening into the mall and at each exit from the tenant space. For openings larger than 30 lineal feet an additional detector shall be provided for each 30 lineal feet or fraction thereof.

2 Electrical equipment rooms.

3 Detector zones may not exceed 20,000 square feet and no detector zone shall serve more than one smoke control zone.

4 Detectors in individual tenant spaces shall be spaced not to exceed 2,500 square feet per detector.

   EXCEPTION Thermal detectors may be used in lieu of smoke detectors where approved by the Department and the Fire Department. See Section 907.4.4.

D A strobe type remote annunciator shall be located in the mall above each tenant entry and shall annunciate those detectors within that space. Concealed detectors shall also be annunciated immediately outside the concealed space.

E A detector in a smoke control zone shall actuate the smoke control equipment to pressurize the covered mall with 100% outside air while the affected tenant
smoke control zone goes into exhaust. All other tenant smoke control zones shall remain in normal operation.

4 Covered Mall

A The smoke control equipment for the covered mall shall be separate from that serving tenant spaces. The tenant ventilation/smoke control system shall not be used to pressurize the covered mall.

B The covered mall system shall have a product of combustion detector located in the supply air system after the air filters which will stop the supply fan. In addition, a product of combustion detector shall be provided in the return or exhaust air stream to activate the fire alarm system.

C The covered mall smoke removal system shall provide at least 6 air changes per hour and shall be located to preclude accumulation of smoke in any area of the covered mall. The covered mall smoke removal system shall be automatically activated from the fire alarm system either upon detection of smoke within the covered mall or upon detection of fire sprinkler system water flow within the covered mall. If multiple smoke control zones for the mall area are provided either by zone area requirements of this Section or by system design, then only the smoke removal system for the zone in alarm shall be activated. Adjacent covered mall zones shall supply 100% outside air and adjoining tenant spaces shall go into normal operation if operation of those system will not contribute to the spread of smoke.

D Manual fire alarm initiating devices shall be located at each required exit from the covered mall buildings. The manual initiating devices shall activate the fire alarm system and an individual strobe light located directly above the station shall be by floor.

5 Sprinkler Activation A tenant or anchor store sprinkler flow shall activate the covered mall pressurization system.

910.4.2 Testing See Section 910.5

910.5 Testing of Smoke-Control System

910.5.1 Acceptance Testing Before the smoke control system is accepted by the Department and the Fire Department and prior to initial occupancy, it shall be tested in their presence to confirm that the systems operate in compliance with this Section.

1 Prior to acceptance testing of the smoke control system, an engineer qualified in the design and operation of smoke control systems for the purpose of this Section shall confirm and advise the Department and the Fire Department that the entire smoke control system has been tested, air balanced and installed in accordance with its design plans, specifications and this Code. The requirements of Operating Tests and Performance Tests defined hereinafter shall be minimum requirements.

2 The following shall be notified so that they may witness the system's performance test:

A Engineer
B Building Contractor
C Owner's Representative
D Fire Department
E Building Department

Special Note: All acceptance testing shall be done under the observation of the Department and the Fire Department

3 An engineer shall furnish a testing procedure in advance of the tests being performed. The procedure shall define how compliance with the Code will be demonstrated and identify areas of the building and floors that will be used for testing. The procedure shall also identify what instrumentation including artificial smoke generating equipment will be used during testing.

4 Unless otherwise approved by the Department and the Fire Department sufficient smoke shall be generated to produce at least the volume of the smoke zone being tested within 5 minutes.

5 After the system is activated smoke shall not continue to migrate to other areas of the building.

6 All smoke generating devices shall be supplied by the owner or his representative and shall meet with the approval of the Department and the Fire Department.

7 Required Tests
   A A test shall be performed in full automatic mode with the building operating under both normal power and emergency power.
   B Multiple tests on more than one floor and smoke control zone may be required to demonstrate proper operation.
   C With respect to atriums more than one test may be required depending upon the atrium configuration its relationship to adjacent spaces and if the atrium is located in a high rise building.

910 5 2 Operating Tests The following smoke control system tests shall apply to all buildings that contain smoke control systems, including those receiving construction permits prior to adoption of this Code Section. The tests shall be conducted on an annual basis. Prior to conducting smoke control system performance tests defined hereinafter the proper operation of smoke control system components shall be verified.

1 Verify proper status indication of smoke control dampers (i.e., open / closed) and fans (i.e., on / off) by visual observation at each damper and fan location and at the smoke control status/control panel in the FD Operations Center.

2 Verify that all smoke control dampers and fans assume the correct operating condition under both normal and fire modes and when the manual override switches at the smoke control status/control panel are placed in the auto position.

3 Verify that the manual override switches function properly for smoke control dampers and fans.

4 Items 1, 2 and 3 above can be performed by qualified service technicians who are familiar with the proper operation of the smoke control systems and equipment. Otherwise, the above testing either shall be performed by or directly supervised by an engineer. Direct supervision shall require the presence of the engineer at the building while the operating tests are taking place. If service technicians perform the operating tests the engineer responsible for either conducting or supervising.
the smoke control system performance tests defined hereinafter shall review the
test procedures used and results obtained by the service technicians. A statement
summarizing this review shall be included in the test report defined hereinafter
that is required to be submitted by the engineer to the Fire Department

5 A copy of the written test procedure and an accurate log of tests shall be
maintained in the FD Operations Center and at either the building's management
office or the maintenance office. Any defects, system modifications and repairs
shall be recorded in the log.

910 5.3 Performance Tests  Within 30 days of completing the annual Operating Tests
as required in Section 910.5.2, it is required to conduct tests to verify system performance
as set forth in this Section. These tests shall apply to all buildings that contain smoke
control systems including those receiving construction permits prior to adoption of this
Code Section. These tests shall be conducted on an annual basis. The performance tests
either shall be conducted by or shall be directly supervised by an engineer. Direct
supervision shall require the presence of the engineer at the building while the
performance tests are taking place.

1 It should be recognized that buildings receiving construction permits prior to
adoption of this Code Section could have smoke control systems that are different
than those described in this Section. In those cases, performance tests shall be
adjusted accordingly to meet the intent of this Article.

2 Activate the smoke control systems manually for tests used to confirm minimum
pressure differentials defined in this Section with the general building pressuriza-
tion systems not operating.

3 Activate the smoke control systems automatically through the fire alarm system for
tests used to confirm proper sequencing of system components actual relative
pressure differentials between areas in alarm and adjacent areas and actual door
opening forces with the general building pressurization systems operating.

4 For high rise buildings construct performance tests observations and measure-
ments of all aspects of the smoke control system at a minimum of 3 locations a
floor in the lower third, a floor in the middle third and a floor in the upper third of the
building. Performance tests in subsequent years shall be conducted on previously
untested floors as is practical so that all floors ultimately are tested.

5 For all other buildings conduct performance tests observations and measure-
ments of all aspects of the smoke control system at a minimum number of times to
demonstrate proper performance as approved by the Department and Fire
Department. Each test shall attempt to involve as many different fan systems as
practical. Performance tests in subsequent years shall be conducted on previously
untested locations as is practical so that all locations ultimately are tested.

6 At least one test shall include automatic activation of the smoke control system via
a smoke detector, one test via a sprinkler flow alarm and one test via a manual pull
station.

7 For high rise buildings pressure differentials shall be measured across stairway
doors between floors in alarm and floors immediately above and below floors in
alarm across refuge area doors in Group R 1 Occupancies across elevator
hoistway landing doors in Group R 1 Occupancies and between atriums and
areas immediately adjacent to atriums (where atriums are part of high rise buildings)

8. Upon activation of the fire alarm system for each test confirm that the smoke control system fans and dampers have assumed the correct operating condition for the type of alarm initiating device and the location of the initiating device. This shall be confirmed also at the smoke control status/control panel in the F D Operations Center.

9. Manually override the operation of a sampling of fans and dampers during each test taking care not to damage system components. Return all override switches to their auto position.

10. During at least one test for buildings requiring elevator recall confirm that the elevators return to the designated return floor and perform as required by the Code.

910.5.4 Test Reports. Within 30 days of completing the performance tests submit a test report to the Fire Department.

1. Provide a brief description of the smoke control systems installed in the building being tested and state the year the building received its construction permit.

2. Describe in general terms the operating tests procedures if the operating tests were performed by someone other than the engineer submitting the report. Include a list of operating test and performance test deficiencies along with a schedule of the proposed corrective action.

3. Describe detailed procedures followed during the operating tests if operating tests were performed by the engineer submitting the report on the performance tests. Describe detailed procedures followed during the performance tests.

4. List test equipment used and outside air temperature and wind conditions at the time the tests were conducted.

5. State sequences and timing of the system operations during all performance tests (e.g., smoke detector activation time, fan start times, dampers assume correct position time, etc.).

6. List the location of test measurements and the measured values for pressure differentials and door opening forces for each test.

7. Record any operational defects and performance deficiencies with respect to the requirements of this Section and state recommendations for corrective action and the results of subsequent testing.

8. Include a statement that the smoke control systems as installed and tested operated as required by this Section. If any part of the smoke control system did not operate as required by this Section state what action should be taken to correct the deficiencies and include a schedule to retest each deficiency.

9. The test report shall be either written by or written under the direct supervision of the engineer who supervised the testing. The test report shall bear the seal and signature of the engineer. An accurate and up-to-date file of all previous and current test reports shall be kept in the F D Operations Center. Any defects modifications and repairs shall be recorded in a log kept in the F D Operations Center and at either the building’s management office or maintenance office.
Section 1001.2 The following definition is added

**SCISSOR STAIRS** Two stairways constructed within the same enclosure but completely separated from each other by appropriate fire rated construction. Scissor stairs constructed after March 26, 1994 are prohibited from consideration as two separate exits.

Section 1003.1 is amended by adding Exception 8 to the fourth paragraph

**EXCEPTION 8:** Elevator lobbies may be secured when approved by the Department.

Section 1003.3 is amended by adding exceptions 2 and 3

**EXCEPTION 2** Tenant Space Requirements in Existing Buildings: Group B Office Occupancies in buildings constructed prior to March 26, 1994 shall meet the following minimum exit requirements:

If a tenant space is altered to require additional exits or a tenant space with 2 exits is altered to increase the occupant load by 15 or more, at least 2 exits shall be separated by a minimum of 25 feet. This 25 foot minimum straight line separation shall be maintained for required egress paths within the tenant space whenever those egress paths accommodate an occupant load of 30 or more.

If the exit separation cannot be provided, either option (1) or (2) below can be used:

Option (1) The space shall be divided into compartments or areas serving an occupant load of less than 30. Each compartment is to be provided with a separate and direct exit to a multi tenant corridor. The wall dividing the compartment shall be constructed as a floor to ceiling wall. If there are openings in the wall, they shall be of fixed glazed panels installed in tight fitting frames or automatic closing doors activated by smoke detectors as set forth in Fire Code Standard No. 10.3.

Option (2) The tenant space shall be protected with a fire detection system in the following manner:

A. Smoke detectors shall be located within 5 feet of the tenant side of each exit door to a multi tenant exit corridor.

B. Smoke detectors shall be located in all enclosed storage, copy supply or similar accessory rooms.

C. Smoke detectors shall be located in the exit corridor within the tenant space.

D. Smoke detectors shall be located in any room or open area in excess of 900 square feet.

E. Audible and visual alarm devices shall be located within the detected tenant space. Visual and audible alarms may be on the same circuit. Buildings with existing audible alarms in the corridor shall only be required to locate a visual alarm on the tenant side of each tenant space exit door.

F. All detectors shall be connected to the fire alarm control panel and an annunciator at an approved Fire Department location. The fire alarm control panel shall be monitored by an approved Central Station.
G Remote indicating lights shall be provided in detected areas as required by Chapter 9

H In areas where detection is required to be installed under this section installation shall be in accordance with NFPA 72

**EXCEPTION 3  Multi Tenant Corridor Requirements in Existing Buildings**  Group B Office Occupancies in buildings constructed prior to March 26, 1994 shall have required egress paths through the multi tenant corridor separated by a minimum of 25 feet along a direct line of travel within the corridor. The required separation shall be maintained to an exterior exit door horizontal exit passageway or enclosed stairway

If a tenant space is altered to require additional exits or a tenant space with multiple exits is altered to increase the occupant load by 15 or more and the 25 foot minimum separation is not maintained through the multi tenant corridor or the cumulative occupant load of tenant spaces with only one exit on a dead end corridor is increased then the multi tenant corridor shall be provided with a fire detection system installed with the following minimum requirements

A Multi tenant corridors shall be smoke detected

B Smoke detectors shall be located within 5 feet of the tenant side of each exit door to the multi tenant corridor

C Smoke detectors shall be installed in all accessory rooms opening onto the multi tenant corridor such as electrical mechanical mail or special equipment areas

D Unless the building is fully sprinklered rate of rise detectors shall be installed in all rest rooms and janitors closets equipped with sinks which have doors opening into multi tenant corridors

E Audible and visual alarm devices shall be installed within each altered tenant space. Visual and audible alarms may be on separate circuits. Buildings with existing audible alarms in the corridor shall only be required to locate a visual alarm on the tenant side of each tenant space exit door

F All detectors shall be connected to an alarm control panel and an annunciator at an approved Fire Department location. The system shall be monitored by an approved Central Station

G Remote indicating lights shall be provided in detected areas as required by Chapter 9

H In areas where detection is required installation shall be in accordance with NFPA 72

**Section 1004.3** is amended by adding Exception 3 to the first paragraph  

**Exception 3** Building and tenant space entrances are permitted to be equipped with an access control system when approved

**Section 1004.5** is amended to revise automatic sprinkler system and an approved automatic smoke detection system to automatic sprinkler system or an approved automatic smoke detection system
Section 1004 13 is added ———————————————————— [B-068]

1004 13 Security Doors in Stairway Enclosures Exit doors in stairway enclosures shall comply with the other requirements of this Code and the following if building/floor security requires that these exit doors are to be locked

1 All stairway doors which are required to be locked shall be locked from the stairway side only

2 All stairway doors which are locked shall have the capability of being unlocked simultaneously upon alarm or power failure or from a manual control at the fire department response point The system shall be designed so that if deactivated under emergency conditions as herein noted the mechanical latching system shall still be functional

3 A telephone or other 2 way communications system connected to an approved emergency service which operates continuously shall be provided at not less than every fifth floor when doors are locked for more than 5 consecutive floors

4 Signage shall be provided
   A On all locked doors for more than 5 consecutive floors This door is locked
   Emergency Phones are located at floors ____ and ____
   B At all phones Emergency Phone
   C On all locked doors for 5 consecutive floors or less This door is locked The next open door is down to Floor ____ or up to Floor ____
   D Stairway identification signage shall be provided as required by Section 1006 16

Section 1005 5 is amended by adding an Exception

EXCEPTION Dead end corridors in existing buildings of Group B Office Occupancies constructed prior to March 26 1994 shall meet the following minimum dead end corridor requirements whenever new interior construction takes place

1 The length of dead end corridors within an individual tenant space shall not exceed 50 feet

2 The length of dead end corridors in a building equipped with an automatic fire extinguishing system throughout may be 50 feet in multi tenant corridors and 75 feet for corridors within an individual tenant space

Section 1005 7 is amended by adding a new paragraph

Corridor walls which are part of the smoke control system as required by Section 905 shall comply with Section 905 2 3 and 905 2 4 for smoke barriers

Section 1005 7 Exception 5 is amended

> EXCEPTION: 5 Corridor walls and ceilings need not be of fire resistive construction within single tenant office spaces

Section 1005 7 Exception 8 is amended

> EXCEPTION: 8 Corridor walls and ceilings need not be of fire resistive construction when serving a conference or assembly room having an occupant load of less than 100 located within an individual tenant space
Section 1005.7 Exception 9 is added

**EXCEPTION:** 9 For Group B and Group A Division 3 Occupancies when the entire building is provided with an automatic fire extinguishing system throughout See Sections 905, 910 and 1005 for corridors in high rise buildings

Section 1006.7 is amended

**Landings** Every landing shall have a dimension measured in the direction of travel not less than the width of the stairway. Such dimension need not exceed 44 inches when the stair has a straight run. There shall not be more than 13 feet vertically between landings. For landings with adjoining doors see Section 1004.10. For areas of evacuation assistance see Chapter 11.

**EXCEPTION:** Stairs serving an unoccupied roof are exempt from these provisions.

Section 1009.1 is amended

**1009.1 General** Every interior stairway ramp or escalator shall be enclosed as specified in this Section.

**EXCEPTIONS**

1. In other than Groups H and I Occupancies an enclosure need not be provided for a stairway ramp or escalator serving only one adjacent floor and not connected with corridors or stairways serving other floors. For escalators serving Group B Occupancies see Section 304.6. Escalators in other Occupancies except Groups H and I may be installed as required in Section 304.6.

2. Stairs in Group R Division 2 and 3 Occupancies and stairs within individual dwelling units in Group R Division 1 Occupancies need not be enclosed.

3. Stairs in open parking garages as defined in Section 311.9 need not be enclosed.

Section 1009.7 is amended

**1009.7 Pressurized Stairway Enclosure for High Rise Buildings** See Chapter 9

> **Section 1009.8** is deleted

> **Section 1012.2** is amended

**1012.2 Separate Sources of Power** The power supply for exit illumination shall normally be provided by the premises wiring system. In the event of its failure illumination shall be automatically provided from an emergency system for Group I Division 11 and 12 Occupancies and for all other occupancies where the exiting system serves an occupant load of 100 or more the emergency system shall be supplied from storage batteries or an on-site generator set. For all other occupancies, a power source ahead of the main disconnect may be used in lieu of storage batteries or an on-site generator set. The system shall be installed according to the National Electric Code. For high rise buildings see Section 403.

Section 1013.2 is amended

**1013.2 Graphics** Words on the sign shall be in block letters 6 inches (152 mm) in height with a stroke of not less than 1/16 inch (19 mm). Lettering arrows and other symbols on exit signs shall be white luminous field, green luminous on white clear field or green light emitting diodes on white field.
Section 1013.3 is amended

1013.3 Illumination Exit signs shall be illuminated to a minimum of 50 footcandles. If incandescent lamps or bulbs are used, there shall be a minimum of 2 lamps or bulbs.

Section 1013.4 is amended

1013.4 Power Supply The power supply for exit signs shall normally be provided by the premises wiring system. In the event of its failure, exit signs shall be automatically powered from an emergency system for Group I, Division 1, and 1-2 Occupancies and for all other occupancies where the exit system serves an occupant load of 100 or more. For high rise buildings, see Section 403. Emergency systems shall be supplied from storage batteries or an on-site generator set and the system shall be installed in accordance with the requirements of the Electrical Code.
Chapter 11
Accessibility
Chapter 11 is amended in its entirety:

CHAPTER 11 ACCESSIBILITY REQUIREMENTS FOR PERSONS WITH DISABILITIES

NOTICE The City and County of Denver is not responsible for the enforcement of the Federal American Disabilities Act (ADA) 1990 Title 3 Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities Final Rule of the HUD Fair Housing Act of 1988

Your building plans will be reviewed and inspected for compliance with the Denver Building Code and will not be reviewed or inspected for compliance with the requirements of the ADA or the HUD Fair Housing Act therefore it is the sole responsibility of the developer or building owner to have their plans or facilities evaluated to comply with the applicable requirements Any modifications to a building will require a building permit

Acknowledgment

The accessibility requirements for persons with disabilities within this Chapter have been adopted from the State of Washington Regulations for Barrier Free Design which are the first building code regulations to be certified by the U.S. Department of Justice The Department of Justice has specified that the certification of these regulations applies to the State of Washington and would not apply to any other state or community However these regulations do reflect the most recent position of the Department of Justice on accessibility for the disabled into a building and as such will be the minimum requirements for the disabled accessibility within the City and County of Denver Minor revisions were made for clarification and accuracy and are indicated in the margin by a solid line for additions or an arrowhead for deletions

PART I GENERAL

Section 1101 SCOPE

1101.1 General Buildings or portions of buildings shall be accessible to persons with disabilities as required by this Chapter

> Reference is made to Appendix Chapter 11 for FFHA and ADA requirements not regulated by the Chapter

1101.2 Design The design and construction of accessible building elements shall be in accordance with this Chapter For a building structure or building element to be considered to be accessible it shall be designed and constructed to the minimum provisions of this Chapter

1101.3 Maintenance of Facilities Any building facility dwelling unit or site which is constructed or altered to be accessible or adaptable under this Chapter shall be maintained accessible and/or adaptable during its occupancy

1101.4 Alternate Methods The application of Section 104.2.8 to this Chapter shall be limited to the extent that alternate methods of construction designs or technologies shall provide substantially univalent or greater accessibility

1101.5 Modifications Where full compliance with this Chapter is impractical due to unique characteristic of the terrain the Building Official may grant modifications in accordance with Section 104.2.7 provided that any portion of the building or structure that can be made accessible shall be made accessible to the greatest extent practical

Section 1102 DEFINITIONS

1102 For the purpose of this Chapter certain terms are defined as follows
ACCESSIBLE is approachable and usable by persons with disabilities
ACCESSIBLE EXIT is an exit as defined in Section 1101.2 which complies with this Chapter and does not contain stairs, steps or escalators
ACCESSIBLE ROUTE OF TRAVEL is a continuous unobstructed path connecting all accessible elements and spaces in an accessible building or facility that can be negotiated by a person using a wheelchair and that is usable by persons with other disabilities
ALTERATION (See Section 1110)
ALTERATION SUBSTANTIAL (See Section 1110)
AREA FOR EVACUATION / RESCUE ASSISTANCE is an accessible space which is protected from fire and smoke and which facilitates egress
AUTOMATIC DOOR is a door equipped with a power operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat or manual switch (see also Power assisted Door)
CLEAR is unobstructed
CLEAR FLOOR SPACE is unobstructed floor or ground space (see Section 1106.2)
COMMON USE AREAS are rooms, spaces or elements inside or outside a building that are made available for use by occupants of and visitors to the building
CROSS SLOPE is the slope that is pedestrian to the direction of travel
CURB RAMP is a short ramp cutting through or built up to a curb
DETECTABLE WARNING is a standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired persons of hazards on a circulation path
DWELLING UNIT TYPE A is an accessible dwelling unit that is designed and constructed in accordance with this Chapter to provide greater accessibility than a Type B dwelling unit. (Type A dwelling units constructed in accordance with this Chapter also meet the design standards for Type B dwelling units)
DWELLING UNIT TYPE B is an accessible dwelling unit that is designed and constructed in accordance with this Chapter. (Type B Dwelling Unit Standards are based on the U.S. Department of Housing and Urban Development (HUD) Federal Fair Housing Act Accessibility Guidelines)
ELEMENT is an architectural or mechanical component of a building, facility, space or site such as telephone, curb, ramp, door, drinking fountain, seating or water closet
GROUND FLOOR is any occupiable floor less than one story above or below grade with direct access to grade. A building may have more than one ground floor
LANDING is a level area (except as otherwise provided) within or at the terminus of a stair or ramp
MARKED CROSSING is a crosswalk or other identified path intended for pedestrian use in crossing a vehicular way
MULTISTORY DWELLING UNIT is a dwelling unit with finished living space located on one floor and the floor immediately above or below it
PATH OF TRAVEL (See Section 1110)
PERSON WITH DISABILITY is an individual who has an impairment including a mobility sensory or cognitive impairment which results in a functional limitation in access to and use of a building of facility

POWER-ASSISTED DOOR is a door used for human passage with a mechanism that helps to open the door or relieve the opening resistance of a door upon the activation of a switch or a continued force applied to the door itself

PRIMARY ENTRANCE is a principal entrance through which most people enter the building. A building may have more than one primary entrance

PRIMARY ENTRANCE LEVEL is the floor or level of the building on which the primary entrance is located

PRIMARY FUNCTION is a major function for which the facility is intended

PUBLIC USE AREAS are those interior or exterior rooms or spaces which are made available to the general public. Public use may be provided at a privately or publicly owned building or facility

RAMP is any walking surface having a running slope exceeding 1 unit vertical in 48 units horizontal

SERVICE ENTRANCE is an entrance intended primarily for delivery or service

SINGLE-STORY DWELLING UNIT is a dwelling unit with all finished living spaces located on one floor

SITE is a parcel of land bounded by a property line or a designated portion of a public right of way

TACTILE is an object that can be perceived using the sense of touch

TECHNICALLY INFEASIBLE (See Section 1110)

TEXT TELEPHONE is machinery or equipment that employs interactive graphic (e.g., typed) communications through the transmission of coded signals across the standard telephone network. Text telephones include telecommunications display devices or telecommunications devices for the deaf (TDDs) or computers

VEHICULAR WAY is a route intended for vehicular traffic such as a roadway, driveway or parking lot located on a site

PART II NEW CONSTRUCTION

Section 1103 BUILDING ACCESSIBILITY

1103 1 Where Required

1103 1 1 General Accessibility to temporary or permanent buildings or portions thereof shall be provided for all occupancy classifications except as modified by this Chapter. See also Appendix Chapter 11

EXCEPTIONS

1 Floors or portions of floors not customarily occupied including but not limited to elevator pits, observation galleries used primarily for security purposes, elevator penthouses, nonoccupiable spaces accessed only by ladders, catwalks, crawl spaces, narrow passageways or freight elevators, piping and equipment catwalks, and machinery, mechanical and electrical equipment rooms
Sec 1103 1 1

2. Temporary structures, sites and equipment directly associated with the construction process such as construction site trailers, scaffolding, bridging or material hoists are not required to be accessible. This exception does not include walkways or pedestrian protection required by Chapter 30.

1103 1 2. Group A Occupancies

1103 1 2.1 General. All Group A Occupancies shall be accessible as provided in this Chapter.

EXCEPTION. In the assembly areas of dining and drinking establishments or religious facilities which are located in non-elevator buildings where the area of mezzanine seating is not more than 25% of the total seating, an accessible means of vertical access to the mezzanine is not required provided that the same services are provided in an accessible space which is not restricted to use only by persons with disabilities. Comparable facilities shall be available in all seating areas.

In banquet rooms or spaces where the head table or speaker's lectern is located on a permanent raised platform, the platform shall be accessible in compliance with Section 1106. Open edges on the raised platform shall be protected by a curb with a height of not less than 2 inches (51 mm).

Stadiums, theaters, auditoriums and similar occupancies shall provide wheelchair spaces in accordance with Table No. 11 A.

Wheelchair spaces shall be accessible and shall be located in places with unobstructed sight lines. Wheelchair spaces shall be reasonably distributed throughout the seating plan and located an accessible route of travel. At least one companion fixed seat shall be provided next to each wheelchair space. Removable seats shall be permitted in the wheelchair spaces.

In addition, 1% but not less than 1 of all fixed seats shall be aisle seats with no armrests or shall have removable or folding armrests on the aisle side. Each such seat shall be identified by a sign complying with Section 1106 16 1 1.

An accessible route of travel shall connect wheelchair seating locations with performance areas including stages, arena floors, dressing rooms, locker rooms and other spaces used by performers.

1103 1 2.2 Assistive listening devices. Assistive listening systems complying with Section 1106 21 2 shall be installed in assembly areas where audible communications are integral to the use of the space including stadiums, theaters, auditoriums, lecture halls and similar areas where fixed seats are provided as follows:

1. Areas with an occupant load of 50 or more

2. Areas where an audio amplification system is installed.

Receivers for assistive listening systems shall be provided at a rate of 4% of the total number of seats but in no way fewer than 2 receivers. In other assembly areas where permanently installed assistive listening systems are not provided, electrical outlets shall be provided at a rate of not less than 4% of the total occupant load.

Signage complying with Section 1106 16 1 3 shall be installed to notify patrons of the availability of the listening system.

1103 1 3. Group B F M and S Occupancies. All Group B F M and S Occupancies shall be accessible as provided in this Chapter. Assembly spaces in Group B F M and S Occupancies shall comply with Section 1103 2 2.
1103 1 4 Group E Occupancies  All Group E Occupancies shall be accessible as provided in this Chapter. Assembly spaces in Group E Occupancies shall comply with Section 1103 1 2 1.

1103 1 5 Group H Occupancies  All Group H Occupancies shall be accessible as provided in this Chapter.

1103 1 6 Group I Occupancies  All Group I Occupancies shall be accessible in all public use, common use, and employee use areas and shall have accessible patient rooms, call, and treatment or examination rooms as follows:

1. In Group I Division 1, patient care units within hospitals which specialized in treating conditions that affect mobility, all patient rooms in each nursing unit, including associated toilet rooms and bathrooms.

2. In Group I Division 1 patient care units within hospitals which do not specialize in treating conditions that affect mobility, at least one in every 10 patient rooms in each nursing unit, including associated toilet rooms and bathrooms.

3. In Group I Division 1 and Division 2 nursing homes and long-term care facilities, at least one in every 2 patient rooms, including associated toilet rooms and bathrooms.

4. In Group I Division 3 mental health occupancies, at least one in every 10 patient rooms, including associated toilet rooms and bathrooms.

5. In Group I Division 3 jail, prison, and similar occupancies, at least one in every 100 rooms or cells, including associated toilet rooms and bathrooms.

6. In Group I Occupancies, all treatment and examination rooms shall be accessible.

In Group I Division 1 and 2 Occupancies, at least one accessible entrance that complies with Section 1103 2 shall be under shelter. Every such entrance shall include a passenger loading zone which complies with Section 1108 2.

1103 1 7 Group U Occupancies  Group U Division 1 Occupancies shall be accessible as follows:

1. Private garages and carports which contain accessible parking serving Type A dwelling units, accessible hotel and lodging rooms, and congregate residences.

2. In Group U Division 1 agricultural buildings, access need only be provided to paved work areas and areas open to the general public.

1103 1 8 Group R Occupancies

1103 1 8 1 General  All Group R Occupancies shall be accessible as provided in this Chapter. Public and common use areas and facilities such as recreational facilities, laundry facilities, garbage and recycling collection areas, mailbox locations, lobbies, foyers, and management offices shall be accessible.

EXCEPTION  Common or public use facilities accessory to buildings not required to contain either Type A or Type B dwelling units in accordance with Section 1103 1 8 2.

1103 1 8 2 Number of dwelling units  In all Group R Division 1 apartment buildings, the total number of Type A dwelling units shall be as required by Table No. 11 B. All other dwelling units shall be designed and constructed to the requirements for Type B units as defined in this Chapter.
EXCEPTIONS

1. Group R Occupancies containing no more than 3 dwelling units need not be accessible.

2. Dwelling units in Group R, Division 1 apartment buildings which are located on floors other than the ground floor where no elevator is provided within the building need not comply with standards for Type B dwelling units provided:
   A. Where the ground floor is not a Group R Occupancy the first level of Group R Occupancy including dwelling units shall be accessible and
   B. The number of Type A dwelling units provided shall not be reduced below the number required by Table No. 11 B. See also Section 1105 3 1.

3. Dwelling units with 2 or more stories in a nonelevator building need not comply with standards for Type B dwelling units.

4. For sites where multiple nonelevator buildings are planned for a single site and where portions of the site have grades prior to development which exceed 10% the Building Official may approve the following modifications:
   A. Number of dwelling units
      (1) The number of Type B dwelling units provided may be reduced to a percentage of the ground floor units which is equal to the percentage of the entire site having grades prior to development which are 10% or less but in no case shall the number of Type B dwelling units be less than 20% of the ground floor dwelling units on the entire site and
      (2) The number of Type A dwelling units provided shall not be reduced below the number required by Table No. 11 B and
   B. Both Type A and B dwelling units may be located in the building or buildings located on the portion of the site where the grade prior to development has slopes of 10% or less and
   C. Common use facilities accessory to buildings not required to contain either Type A of B dwelling units in accordance with Item 4 1 1 above need not be accessible unless there are no other similar facilities provided on the site.

See also Appendix Chapter 11 Division I

1103 1 8 3 Hotels and lodging houses In all hotels and lodging houses accessible guest rooms including associated bathing, shower and toilet facilities shall be provided in accordance with Table 11 C. In addition sleeping rooms or suites for persons with hearing impairments shall be provided in accordance with Table 11 D. In addition public and common use areas of all hotels and lodging houses shall be accessible.

EXCEPTION Group R Division 3 lodging houses that are occupied by the owner or proprietor of the lodging house.

Required sleeping rooms for persons with hearing impairments shall have visible alarms complying with Section 1106 15. Such rooms shall have installed telephones complying with Section 1106 14 3 and an electrical outlet installed within 48 inches (1220 mm) of the telephone connection. Such rooms shall have devices separate from the visible alarm system which provide visible notification of incoming telephone calls and doorbell actuation.
Sec 1103.18.3

Where provided in accessible guest rooms the following facilities shall be accessible:
dining areas, kitchens, kitchenettes, wet bars, patios, balconies, terraces or similar facilities.

1103.18.4 Proportional distribution
Accessible dwelling units shall be apportioned among efficiency dwelling units and single bedroom
units in proportion to the numbers of such units in the building. Accessible hotel guest rooms shall
be apportioned among the various classes of sleeping accommodations.

1103.18.5 Congregate residences
In congregate residences with multi bed rooms or spaces, a percentage equal to the minimum
number of accessible rooms required by Table No. 11 C shall be accessible in accordance with
Section 1106.26.

EXCEPTION
Congregate residences with 10 or fewer occupants need not be accessible.

1103.19 Other parking facilities
Principal use parking facilities which are not accessory to the use of any building or structure
shall provide accessible spaces in accordance with Table No. 11.F.

1103.2 Design and Construction

1103.2.1 General
When accessibility is required by this Chapter it shall be designed and constructed in accordance with this Chapter.

1103.2.2 Accessible route of travel
When a building or portion of a building is required to be accessible an accessible route of travel
shall be provided to all portions of the building to accessible building entrances and connecting the building and the public way. The accessible route of travel to areas of primary function may serve but shall not pass through kitchens, storage rooms, toilet rooms, bathrooms, closets or other similar spaces.

EXCEPTIONS
1. A single accessible route shall be permitted to pass through a kitchen or storage room in an accessible dwelling unit.
2. An accessible route of travel need not be provided between floor levels provided that:
   All floor levels in the building contain less than 3,000 square feet (278.7 m²) each or:

   Where only 2 floor levels are provided, either floor is less than 3,000 square feet
   (278.7 m²).

This exception shall not apply to:
A. The offices of health care providers or
B. Transportation facilities and airports or
C. Buildings owned or leased by government agencies or
D. Multi tenant Group M retail and wholesale occupancies of 5 tenant spaces or more.

3. For sites where natural terrain or other unusual property characteristics do not allow the provision of an accessible route of travel from the public way to the building, the point of vehicular debarkation may be substituted for the accessible entrance to the site.

(For Group R Division 1 occupancies see Section 11015.31.)
Sec 1103.2.2

Accessible routes of travel serving any accessible space or element shall also serve as a means of egress for emergencies or connect to an area of evacuation assistance.

Where more than one building or facility is located on a site, accessible routes of travel shall connect accessible buildings and accessible site facilities. The accessible route of travel shall be the most practical direct route connecting accessible building entrances, accessible site facilities and the accessible site entrances.

1103.2.3 Primary entrance access. At least 50% of all public entrances or a number equal to the number of exits required by Section 1003.1 whichever is greater shall be accessible. One of the accessible public entrances shall be the primary entrance to a building. At least one accessible entrance must be a ground floor entrance. Public entrances do not include loading or service entrances.

EXCEPTION: In Group R Division 1 apartment buildings only the primary entrance need be accessible provided that the primary entrance provides an accessible route of travel to all dwelling units required to be accessible.

Where a building is designed not to have common or primary entrances the primary entrance to each individual dwelling unit required to be accessible and each individual tenant space shall be accessible.

1103.2.4 Signs

1103.2.4.1 International Symbol of Access. The following elements and spaces of accessible facilities shall be identified by the International Symbol of Access:

1. Accessible parking spaces
2. Accessible entrance when not all entrances are accessible (inaccessible entrances shall have directional signage to indicate the route to the nearest accessible entrance)

EXCEPTION: Individual entrances into dwelling units

3. Accessible passenger loading zones
4. Accessible toilet and bathing facilities when not all are accessible

EXCEPTION: Toilet and bathing facilities within dwelling units, patient rooms and guest rooms.

At every major junction along or leading to an exterior accessible route of travel there shall be a sign displaying the International Symbol of Accessibility. Signage shall indicate the direction to accessible entrance and facilities.

See also Sections 1103.1.2.1, 1104.2.5 and 1106.24.3

1103.2.4.2 Other signs. Where provided, signs which identify permanent rooms and spaces shall comply with Sections 1106.16.2, 1106.16.3 and 1106.16.5. Where provided other signs which provide direction to or information about the building or portion of a building shall comply with Sections 1106.16.3 and 1106.16.4.

EXCEPTION: Building directories and all temporary signs.

In hotels and lodging houses a list of accessible guest rooms shall be posted permanently in a location not visible to the general public for staff use at each reception or check in desk.

In assembly areas a sign notifying the general public of the availability of accessible seating and assistive listening systems shall be provided at ticket offices or similar locations.
Section 1104  EGRESS AND AREAS OF EVACUATION ASSISTANCE

1104.1 General  In buildings or portions of buildings required to be accessible accessible means of egress shall be provided in the same number as required for exits by Chapter 10  When an exit required by Chapter 10 is not accessible an area for evacuation assistance shall be provided

EXCEPTION  Areas of evacuation assistance are not required in buildings where an approved automatic fire extinguishing system is installed in accordance with UBC Standard No 9 1 provided that quick response sprinkler heads are used where allowed by the standard and that a written fire and life safety emergency plan which specifically addresses the evacuation of persons with disabilities is approved by the Building Official and the Fire Chief

Every area for evacuation assistance shall comply with the requirements of this Code and shall adjoin an accessible route of travel which shall comply with Section 1106

1104.2 Areas for Evacuation Assistance

1104.2.1 Location and construction  An area for evacuation assistance shall be one of the following

1  A portion of a landing within a stairway enclosure complying with Section 1009

2  A portion of an exterior exit balcony located immediately adjacent to an exit stairway when the exterior exit balcony complies with Section 1005  Openings to the interior of the building located within 20 feet (6 096 mm) of the area for evacuation assistance shall be protected with fire assemblies having a 1/2 hour fire protection rating

3  A portion of a one hour fire resistive corridor complying with Sections 1005.7 and 1005.8 located immediately adjacent to an exit enclosure

4  A vestibule located immediately adjacent to an exit enclosure and constructed to the same fire resistive standards as required by Section 1005.7 and 1005.88

5  A portion of a stairway landing within an exit enclosure which is vented to the exterior and is separated from the interior of the building by not less than one hour fire resistive door assemblies

6  When approved by the Building Official an area or room which is separated from other portions of the building by a smoke barrier Smoke barriers shall have a fire resistive rating of not less than one hour and shall completely enclose the area or room  Doors in the smoke barrier shall be tight fitting smoke and draft control assemblies having a fire protection rating of not less than 20 minutes and shall be self closing or automatic closing  The area or room shall be provided with an exit directly to an exit enclosure  When the area or room exits into an exit enclosure which is required to be of more than one hour fire resistive construction the room or area shall have the same fire resistive construction including the same opening protection as required for the adjacent exit enclosure

7  An elevator lobby complying with Section 1104.4

1104.2.2 Size  Each area for evacuation assistance shall provide at least 2 wheelchair spaces not smaller than 30 inches by 48 inches (760 mm by 1 220 mm) for each space  The area for evacuation assistance shall not encroach on any required exit width  The total number of such wheelchair spaces per story shall not be less than 1 for every 200 persons of calculated occupant load served by the area for evacuation assistance
EXCEPTION The Building Official may reduce the minimum number of 30 inch (760 mm) by 48 inch (1220 mm) areas to one for each area for evacuation assistance on floors where the occupant load is less than 200

1104 2.3 Stairway width Each stairway adjacent to an area for evacuation assistance shall have a minimum clear width of 48 inches (1220 mm) between handrails

1104 2.4 Two-way communication A telephone with controlled access to a public telephone system or another method of 2 way communication shall be provided between each area for evacuation assistance and the primary entrance. The telephone or other 2 way communication system shall be located with the reach ranges specified in Section 1106.2.4 The Fire Department may approve a location other than the primary entrance. The communication system shall not require voice communication

1104 2.5 Identification Each area for evacuation assistance shall be identified by a sign which states AREA FOR EVACUATION ASSISTANCE and the International Symbol of Access. The sign shall be illuminated when exit sign illumination is required. The sign shall comply with Sections 1013.3 and 1013.4. In each area for evacuation assistance instructions on the use of the area under emergency conditions shall be posted adjoining the 2 way communication system

1104 3 Accessible exits All exterior exits which are located adjacent to accessible areas and within 6 inches (152 mm) of grade shall be accessible

1104 4 Area for Evacuation Assistance High Rise Alternative Within a building of any height or occupancy constructed in accordance with the requirements of Section 403 an area for evacuation assistance may be located in the elevator lobby or adjacent to the elevator where no lobby is required when

1 The area for evacuation assistance complies with the requirements of a) Section 403.7 amended and b) two way communication and identification as specified in Section 1104.2

2 Elevator shafts and elevator lobbies are pressurized as required by Chapter 9. Such pressurization system shall be activated by smoke detectors on each floor located in a manner approved by the Department

3 The manager of the building has established and maintains a written fire and life safety emergency plan which in addition to other provisions shall specifically address the evacuation of persons with disabilities. Such plan shall be approved by the Building Official and the Fire Chief

Section 1105 FACILITY ACCESSIBILITY

1105 1 General Where buildings are required to be accessible building facilities shall be accessible to persons with disabilities as provided in this Section. For Group R Division 1 apartment buildings where specific floors of a building are required to be accessible the requirements shall apply only to the facilities located on accessible floors.

All building facilities or elements required by this Section to be accessible shall be designed and constructed in accordance with Section 1106.

1105 2 Bathing and Toilet Facilities

1105 2.1 Bathing facilities When bathing facilities are provided at least 2% but not less than 1 bathtub or shower shall be accessible. In dwelling units where a separate bathtub and shower are provided in the same room at least one shall be accessible
1105 2.2 Toilet facilities  Toilet facilities located within accessible dwelling units guest rooms and congregate residences shall comply with Sections 1106.11 and 1106.27

EXCEPTION: Within accessible dwelling units only one toilet facility need be accessible

In each toilet facility in other occupancies at least one wheelchair accessible toilet stall with an accessible water closet shall be provided. In addition when there are 6 or more water closets within a toilet facility at least one ambulatory accessible toilet stall complying with Section 1106.11.4 shall also be installed

Where urinals are provided at least one urinal shall be accessible

1105 2.3 Lavatories, mirrors and towel fixtures At least one accessible lavatory shall be provided within any toilet facility. Where mirrors, towel fixtures and other toilet and bathroom accessories are provided at least one of each shall be accessible

1105 2.4 Adaptable fixtures in dwelling units See Section 1106.27.6 for adaptable fixtures in dwelling units

1105 3 Elevators, Platform Lifts and Stairways

1105 3.1 Elevator

1105 3.1.1 Where required In multi story buildings or portions thereof required to be accessible by Section 1103, at least one elevator shall serve each level including mezzanines. Other than within an individual dwelling unit where an elevator is provided but not required it shall be accessible

EXCEPTIONS:

1 In Group R Division 1 apartment occupancies an elevator is not required where accessible dwelling units and guest rooms are accessible by ramp or by grade level route of travel

2 In a building of fewer than 3 stories an elevator is not required where ramps grade level entrances or accessible horizontal exits from an adjacent building are provided to each floor

3 In multi story parking garages an elevator is not required where an accessible route of travel is provided from accessible parking spaces on levels with accessible horizontal connections to the primary building served

4 In Group R Division 1 hotels and lodging houses less than 3 stories in height an elevator is not required provided that all accessible guest rooms are located on the ground floor

1105 3.2 Design All elevators shall be accessible

EXCEPTIONS

1 Private elevators serving only one dwelling unit

2 Where more than one elevator is provided in the building elevators used exclusively for movement of freight

Elevators required to be accessible shall be designed and constructed to comply with Chapter 30 amended

1105 3.2 Platform lifts Platform lifts may be used in lieu of an elevator under one of the following conditions subject to approval by the Building Official
1 To provide an accessible route of travel to a performing area in a Group A Occupancy or
2 To provide unobstructed sight lines and distribution for wheelchair viewing positions in Group A Occupancies or
3 To provide access to spaces with an occupant load of less than 5 that are not open too the public or
4 To provide access where existing site or other constraints make use of a ramp or elevator infeasible

All platform lifts used in lieu of an elevator shall be capable of independent operation and shall comply with Chapter 30 amended

1105 3 3 Stairways Stairways shall comply with Section 1106 9

1105 4 Other Building Facilities

1105 4 1 Water fountains On any floor where water fountains are provided at least 50% but in no case less than one fountain shall be accessible complying with Section 1106 13 and at least one fountain shall be mounted at a standard height

1105 4 2 Telephones On any floor where public telephones are provided at least one telephone shall be accessible. On any floor where 2 or more banks of multiple telephones are provided at least one telephone in each bank shall be accessible and at least one telephone per floor shall be designed to allow forward reach complying with Section 1106 2 4 5

Where any bank of public telephones consists of 3 or more telephones at least one telephone in each bank shall be equipped with a shelf and electrical outlet complying with Section 1106 14 7

All accessible telephones and at least 25% of all other public telephones but in no case less than one shall be provided with volume controls in accordance with Section 1106 14 3 and shall be dispersed among the public telephones provided in the building

Where 4 or more public telephones are provided at a building site and at least one is in an interior location at least one interior telephone shall be a text telephone in accordance with Section 1106 14

Where interior public pay phones are provided in transportation facilities assembly and similar areas including stadiums and arenas convention center hotels with convention facilities covered malls or in or adjacent to hospital emergency recovery or waiting rooms at least one interior text telephone shall be provided

1105 4 3 Kitchens Kitchens within accessible dwelling units shall be designed in accordance with Sections 1106 12 and 1106 27

EXCEPTION: Kitchens in Type B dwelling units need not comply with Section 1106 12 1 (See Section 1106 27 1)

Kitchens kitchenettes or wet bars in other than dwelling units which are provided accessory to a sleeping room guest room or suite shall be designed in accordance with Section 1106  Countertops and sinks shall be no more than 34 inches (865 mm) above the finished floor At least 50% of shelf space in cabinets and appliances shall be within the reach ranges of Section 1106 2 4

1105 4 4 Recreation facilities Where common or public use recreational facilities swimming pools hot tubs spas and similar facilities are provided they shall be accessible Swimming pools shall be accessible by transfer tier hydraulic chair ramp or other means Hot tubs and spas need be accessible only to the edge of the facility
EXCEPTION Common or public use facilities accessory to buildings not required to contain either Type A or Type B dwelling units in accordance with Section 1103 1 8 2

1105 4 5 Fixed or built in seating or tables Where fixed or built in seating or tables are provided at least 5% but no fewer than one shall be accessible Accessible fixed or built in seating or tables shall comply with Section 11016 19 In eating and drinking establishments such seating or tables shall be distributed throughout the facility

1105 4 6 Storage facilities In other than Group R Division 1 apartment buildings where fixed or built in storage facilities such as cabinets shelves closets and drawers are provided in accessible spaces at least one of each type provided shall contain storage space complying with Section 1106 18

1105 4 7 Customer service facilities

1105 4 7 1 Dressing and fitting rooms Where dressing or fitting rooms are provided for use by the general public patients customers or employees 5% but not less than 1 in each group of rooms serving distinct and different functions shall be accessible in accordance with Section 1106 24

1105 4 7 2 Counters and windows Where customer sales and service counters or windows are provided a portion of the counter or at least one window shall be accessible in accordance with Section 1106 24 2

1105 4 7 3 Shelving and display Self service shelves or display units in retail occupancies shall be located on an accessible route of travel in accordance with Section 1103 2 2 Not all self service shelves and display units need be located within reach ranges required by Section 1106 2 4

1105 4 7 4 Check-out aisles Accessible check out aisles shall be installed in accordance with Table No 11 E and Section 1106 24 3

1105 4 7 5 Food service lines Where self service shelves are provided in dining and drinking establishments at least 50% of each type shall comply with Sections 1106 2 and 1106 22

1105 4 8 Controls operating mechanisms and hardware Controls operating mechanisms and hardware including switches that control lighting ventilation or electrical outlets in accessible spaces along accessible routes or as parts of accessible elements shall comply with Section 1106 3

1105 4 9 Alarms Where provided alarm systems shall include both audible and visible alarms Visible alarm devices shall be located in all assembly areas common use areas including toilet rooms and bathing facilities hallways and lobbies and hotel guest rooms as required by Section 1103 1 8 3

EXCEPTIONS

i Alarm systems in Group I Division 1 1 and 2 Occupancies may be modified to suit standard health care design practice

2 Visible alarms are not required in Group R Division 1 apartment buildings

1105 4 10 Assembly Areas

1105 4 10 1 Wheelchair spaces

1105 4 10 1 1 Locations Wheelchair spaces shall be an integral part of any fixed seating plan and shall be dispersed throughout the seating area Spaces shall adjoin an accessible route of travel that also serves as a means of egress and shall be located to provide lines of sight comparable to those for all viewing areas
Section 1106  ACCESSIBLE DESIGN AND STANDARDS

1106 1 General Where accessibility is required by this Chapter buildings and facilities shall be designed and constructed in accordance with this Section unless otherwise specified in this Chapter

1106 2 Space Allowance and Reach Ranges

1106 2 1 Wheelchair passage width The minimum clear width for single wheelchair passage shall be 36 inches (915 mm) The minimum width for 2 wheelchairs to pass is 60 inches (1525 mm)

EXCEPTION The minimum width for single wheelchair passage may be 32 inches (815 mm) for a maximum distance of 24 inches (610 mm)

1106 2 2 Wheelchair turning spaces Wheelchair turning spaces shall be designed and constructed to satisfy one of the following requirements

1  A turning space not less than 60 inches (1525 mm) in diameter or
2  A turning space at T shaped intersections or within a room where the minimum width is not less than 36 inches (915 mm) Each segment of the T shall be clear of obstructions not less than 24 inches (610 mm) in each direction

Wheelchair turning space may include knee and toe clearance in accordance with Section 1106 2 4 3

1106 2 3 Unobstructed floor space A floor space including the vertical space above such floor space which is free of any physical abstraction including door swings to a height of 29 inches (737 mm) Where a pair of doors occurs the swing of the inactive leaf may be considered to be unobstructed floor space Unobstructed floor space may include toe spaces that are a minimum of 9 inches (230 mm) in height and not more than 6 inches (152 mm) in depth

1106 2 4 Clear floor or ground spaces and maneuvering clearance space for wheelchairs

1106 2 4 1 Size The minimum clear floor or ground space required to accommodate a single stationary wheelchair occupant shall be not less than 30 inches (760 mm) by 48 inches (1220 mm)

1106 2 4 2 Approach Wheelchair spaces shall be designed to allow for forward or parallel approach to an accessible feature
1106.2.4.3 Knee and toe clearances  Spaces under obstructions work surfaces or fixtures may be included in the clear floor or ground space provided that they are at least 30 inches (760 mm) in width. A minimum of 27 inches (685 mm) in height and not greater than 25 inches (635 mm) in depth. Toe spaces under obstructions work surfaces or fixtures which comply with the requirements for unobstructed floor space may be included in the clear floor or ground space.

1106.2.4.4 Approach to wheelchair spaces  One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin or overlap an accessible route of travel or shall adjoin another wheelchair clear space. Clear space located in an alcove or otherwise confined on all or part of 3 sides shall be not less than 36 inches (915 mm) in width where forward approach is provided or 60 inches (1525 mm) in width where parallel approach is provided.

1106.2.4.5 Forward reach  Where the clear floor space allows only forward approach to an object, the maximum forward reach allowed shall not be higher than 48 inches (1220 mm). Reach obstructions 20 inches (510 mm) or less in depth may project into the clear space provided that knee clearance is maintained in accordance with Section 1106.2.4.3. Reach obstructions greater than 20 inches (510 mm) in depth may project into the clear space provided that the reach obstruction shall not exceed 25 inches (635 mm) in depth and the maximum forward reach shall not exceed 44 inches (1118 mm) in height. The minimum low forward reach shall not be lower than 15 inches (380 mm).

1106.2.4.6 Side reach  Where the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall not be higher than 54 inches (1370 mm). Obstructions no greater than 34 inches (865 mm) in height and no more than 24 inches (610 mm) in depth may be located in the side reach area provided that such obstructions are present the side reach shall not exceed 46 inches (1170 mm) in height. The minimum low side reach shall not be lower than 9 inches (230 mm).

1106.3 Controls and Hardware

1106.3.1 Operation  Handles pulls latches locks and other operating devices on doors, windows, cabinets, plumbing fixtures and storage facilities shall have a lever or other shape which will permit operation by wrist or arm pressure and which does not require tight grasping, pinching or twisting to operate. Doors shall comply with Section 1004.

The force to activate controls on lavatories and water fountains and flush valves on water closets and urinals shall not be greater than 5 pounds (22.2 N).

1106.3.2 Mounting heights  The highest operable part of environmental and other controls, dispensers, receptacles and other operable equipment shall be within at least one of the reach ranges specified in Section 1106.2.4 and not less than 36 inches (915 mm) above the floor. Electrical and communications system receptacles on walls shall be mounted a minimum of 15 inches (380 mm) above the floor. Door hardware shall be mounted at not less than 36 inches (915 mm) and not more than 48 inches (1220 mm) above the floor.

1106.3.3 Clear floor space  Clear floor space that allows a forward or a side approach shall be provided at all controls or hardware.

1106.4 Accessible Route of Travel

1106.4.1 Width  The minimum clear width of an accessible route of travel shall be 36 inches (915 mm) except at doors (see Section 1106.10.2). Where an accessible route includes a 180° turn around an obstruction which is less than 48 inches (1220 mm) in width, the clear width of the accessible route of travel around the obstruction shall be 42...
Sec 1106.4.1

inches (1 065 mm) minimum. For exterior accessible routes of travel, the minimum clear width shall be 44 inches (1 118 mm).

**EXCEPTION** The minimum width for single wheelchair passage may be 32 inches (815 mm) for a maximum distance of 24 inches (610 mm).

Where an accessible route of travel is less than 60 inches (1 525 mm) in width, passing spaces at least 60 inches (1 525 mm) by 60 inches (1 525 mm) shall be located at intervals not to exceed 200 feet (61 m). A T-shaped intersection of 2 corridors or walks may be used as a passing space.

**1106.4.2 Height** Accessible routes shall have a clear height of not less than 79 inches (2 007 mm). Where the vertical clearance of an area adjoining an accessible route of travel is less than 79 inches (2 007 mm) but more than 27 inches (685 mm), a continuous permanent barrier shall be installed to prevent traffic into such areas of reduced clearance.

**1106.4.3 Slope** An accessible route of travel shall have a running slope not greater than 1 vertical in 12 horizontal. An accessible route of travel with a running slope greater than 1 vertical in 20 horizontal shall comply with Section 1106.3. Cross slopes of an accessible route of travel shall not exceed 1 vertical in 48 horizontal.

**1106.4.4 Changes in level** Changes in level along an accessible route of travel shall comply with Section 1106.6. Stairs or escalators shall not be part of an accessible route of travel. Any raised area within an accessible route of travel shall be cut through to maintain a level route or shall have curb ramps at both sides and a level area not less than 48 inches (1 220 mm) long connecting the ramps.

**1106.4.5 Surfaces**

**1106.4.5.1 General** All floor and ground surfaces in an accessible route of travel shall comply with Section 1106.7.

**1106.4.5.2 Detectable warnings** Curb ramps shall have detectable warnings complying with Section 1106.17. Detectable warnings shall extend the full width and depth of the curb ramp.

**1106.4.6 Illumination** Illumination shall be provided along an exterior accessible route of travel at any time the building is occupied with an intensity of not less than one footcandle (10.76 Lx) on the surface of the route.

**1106.4.7 Curb Ramps**

**1106.4.7.1 Slope** Slopes of curb ramps shall comply with Section 1106.8. Transitions from ramps to walks, gutters or vehicular ways shall be flush and free of abrupt changes in height. Maximum slopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp or accessible route of travel shall not exceed 1 vertical in 20 horizontal.

**1106.4.7.2 Width** Curb ramps shall be not less than 36 inches (915 mm) in width exclusive of the required side slopes.

**1106.4.7.3 Side slopes of curb ramps** Curb ramps located where pedestrians must walk across the ramps or where not protected by handrails or guardrails shall have sloped sides. The maximum side slope shall be 1 vertical in 10 horizontal. Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp.

**EXCEPTION** Where the width of the walking surface at the top of the ramp and parallel to the run of the ramp is less than 48 inches (1 220 mm), the maximum side slope shall be 1 vertical in 12 horizontal.
1106.4.7.4 Location  Built up curb ramps shall be located so as not to project into vehicular ways nor be located within accessible parking spaces.

1106.4.7.5 Obstructions  Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.

1106.4.7.6 Location at marked crosswalks  Curb ramps at marked crosswalks shall be wholly contained within the markings excluding any sloped sides.

1106.4.7.7 Orientation  Curb ramps shall be oriented in the same direction as pedestrian flow of crosswalks diagonally oriented curb ramps are prohibited.

1106.4.8 Vehicular areas  Where an accessible route of travel crosses or adjoins a vehicular way and where there are no curbs, railings or other elements which separate the pedestrian and vehicular areas and which are detectable by a person who has a severe vision impairment, the boundary between the areas shall be defined by a continuous detectable warning not less than 36 inches (915 mm) wide, complying with Section 1106.17.

1106.5 Protruding Objects  Protruding objects shall not reduce the clear width of a route of travel corridor passageway or aisle. Any wall or post mounted projection greater than 4 inches (102 mm) shall extend to the floor.

1106.6 Changes in level  Accessible routes of travel and accessible spaces within buildings shall have continuous common floor or ramp surfaces. Abrupt change in height greater than / inch (6 mm) shall be beveled to 1 vertical in 2 horizontal. Changes in level greater than / inch (13 mm) shall be accomplished by means of a ramp meeting the requirements of Section 1196.8, a curb ramp meeting the requirements 1106.4.7 or an elevator or platform lift meeting the requirements of Section 1105.3. For Type B dwelling units, see also Section 1106.27.

1106.7 Floor Coverings and Surface Treatment

1106.7.1 General  All surfaces shall be firm and stable.

1106.7.2 Carpeting  Carpets and floor mats in accessible areas shall be securely fastened to the underlying surface and shall provide a firm, stable, continuous and relatively smooth surface.

1106.7.3 Slip resistant surfaces  Showers, locker rooms, swimming pool, spa and hot tub decks, toilet rooms and other areas subject to wet conditions shall have slip resistant floors.

Exterior accessible routes of travel shall have slip resistant surfaces.

1106.7.4 Grates  Within an accessible route of travel, grates shall have openings not more than / inch (13 mm) in one direction. Where grates have elongated openings, they shall be placed so that the long dimension is perpendicular to the dominant direction of travel. The maximum vertical surface change shall be / inch (3 mm).

1106.7.5 Expansion and construction joints  Expansion and construction joints in exterior routes of travel shall have a width of not more than / inch (13 mm) shall be filled with a firm, compressible, elastic material and shall be substantially level with the surface of the accessible route of travel.

1106.8 Ramps

1106.8.1 General  Ramps required to be accessible shall comply with Section 1007 and the provisions of this Section. No ramp shall change direction between landings except ramps with an inside radius of 30 feet (9144 mm) or greater.
1106.8.2 Slope and rise  The maximum slope of a ramp shall be 1 vertical in 12 horizontal. The maximum rise for any run shall be 30 inches (760 mm).

1106.8.3 Width  The minimum width of a ramp shall be not less than 36 inches (915 mm) for interior ramps and 44 inches (1118 mm) for exterior ramps.

1106.8.4 Landings  Ramps within the accessible route of travel shall have landings at the top and bottom and at least one intermediate landing shall be provided for each 30 inches (760 mm) of rise. Landings shall be level and have a minimum dimension measured in the direction of ramp run of not less than 60 inches (1525 mm). Where the ramp changes direction at a landing, the landing shall be not less than 60 inches (1525 mm) by 60 inches (1525 mm). The width of any landing shall be not less than the width of the ramp.

1106.8.5 Handrails  Ramps having slopes steeper than 1 vertical to 20 horizontal shall have handrails as required for stairways except that intermediate handrails as required in Section 1106.9 are not required. Handrails shall be continuous provided that they shall not be required at any point of access along the ramp nor at any curb ramp. Handrails shall extend at least 12 inches (305 mm) beyond the top and bottom of any ramp run.

EXCEPTION  Ramps having a rise less than or equal to 6 inches (152 mm) or a run less than or equal to 72 inches (1830 mm) need not have handrails.

1106.8.6 Exterior ramps  Exposed ramps and their approaches shall be constructed to prevent the accumulation of water on walking surfaces.

1106.8.7 Edge protection  Any portion of the edge of a ramp with a slope greater than 1 vertical in 20 horizontal or landing which is more than 1 inch (13 mm) above the adjacent grade or floor shall be provided with edge protection in accordance with the following:

1. **Walls and curbs**  When used, walls or curb shall be not less than 2 inches (51 mm) in height above the surface of the accessible route of travel.

2. **Railings**  When used, railings shall comply with Section 1106.8.5 and also shall have one of the following features:
   A. An intermediate rail mounted 17 to 19 inches (430 to 485 mm) above the ramp or landing surface or
   B. A guardrail complying with Section 509.

1106.9 Stairways

1106.9.1 General  Stairways required to be accessible shall comply with Section 1006 and provisions of this Section.

1106.9.2 Open risers  Open risers shall not be permitted.

EXCEPTION  Stairways in Group R Division 1 apartment buildings may have open risers.

1106.9.3 Nosings  Stair nosings shall be flush, slip resistant and rounded to a radius of 1/4 inch (13 mm) maximum. Risers shall be sloped or the underside of the nosing shall have an angle of not less than 60° from the horizontal. Nosings shall project no more than 1/4 inches (38 mm).

1106.9.4 Exterior stairways  Exposed stairways and their approaches shall be constructed to prevent the accumulation of water on walking surfaces.
1106 10 Doors

1106 10 1 General  Doors required to be accessible shall comply with Section 1104 and with provisions of this Section. For the purpose of this Section, gates shall be considered to be doors. An accessible gate or door shall be provided adjacent to any turnstile or revolving door. Where doorways have two independently operated door leaves then at least one leaf shall comply with this Section.

1106 10 2 Clear width  Doors shall be capable of being opened so that the clear width of the opening is not less than 32 inches (815 mm).

EXCEPTION  Doors not requiring full user passage such as shallow closets may have a clear opening of not less than 20 inches (510 mm).

1106 10 3 Maneuvering clearances at doors  Except as provided in Section 1106.27 all doors shall have minimum maneuvering clearances as follows:

1. For a forward approach where a door must be pulled to be opened, an unobstructed floor space shall extend at least 18 inches (455 mm) beyond the strike jamb and extend at least 60 inches (1525 mm) perpendicular to the doorway.

2. For a forward approach where a door must be pushed to be opened and is equipped with a closer and a latch, an unobstructed floor space shall extend at least 12 inches (305 mm) beyond the strike jamb and extend at least 48 inches (1220 mm) perpendicular to the doorway.

3. For a forward approach where a door must be pushed to be opened and is not equipped with a closer and a latch, an unobstructed floor space shall be at least the width of the doorway and extend at least 48 inches (1220 mm) perpendicular to the doorway.

4. For a hinge side approach where a door must be pulled to be opened, an unobstructed floor space shall extend at least 36 inches (915 mm) beyond the latch side of the door and at least 60 inches (1525 mm) perpendicular to the doorway or shall have an unobstructed floor space that extends at least 42 inches (1065 mm) beyond the latch side of the door and at least 54 inches (1370 mm) perpendicular to the doorway.

5. For a hinge side approach where a door must be pushed to be opened and is not equipped with both a closer and a latch, an unobstructed floor space measured from the latch side shall extend across the width of the doorway and beyond the hinge side of the door for a total width of not less than 54 inches (1370 mm) and at least 42 inches (1065 mm) perpendicular to the doorway.

6. For a hinge side approach where a door must be pushed to be opened and is equipped with both latch and closer, an unobstructed floor space measured from the latch side shall extend across the width of the doorway and beyond the hinge side of the door for a total width of not less than 54 inches (1370 mm) and at least 48 inches (1220 mm) perpendicular to the doorway.

7. For a latch side approach where a door must be pulled to be opened and is equipped with a closer, an unobstructed floor space shall extend at least 24 inches (610 mm) beyond the latch side of the door and at least 54 inches (1370 mm) perpendicular to the doorway.
Sec 1106 10 3

8 For a latch side approach where a door must be pulled to be opened and is not equipped with a closer an unobstructed floor space shall extend at least 24 inches (610 mm) beyond the latch side of the door and at least 48 inches (1220 mm) perpendicular to the doorway.

9 For a latch side approach where a door must be pushed to be open and is equipped with a closer an unobstructed floor space shall extend at least 24 inches (610 mm) beyond the latch side of the door and at least 48 inches (1220 mm) perpendicular to the doorway.

10 For a latch side approach where a door must be pushed to be open and is not equipped with a closer an unobstructed floor space shall extend at least 24 inches (610 mm) parallel to the doorway behind the latch side of the door and at least 42 inches (1065 mm) perpendicular to the doorway.

11 For forward approach to a sliding or folding door an unobstructed floor space shall extend the same width as the door opening and at least 48 inches (1220 mm) perpendicular to the doorway.

12 For a slide side approach to a sliding or folding door an unobstructed floor space measured from the latch side shall extend across the width of the doorway and beyond the slide side of the door for a total width of not less than 54 inches (1370 mm) and at least 42 inches (1065 mm) perpendicular to the doorway.

13 For a latch side approach to a sliding or folding door an unobstructed floor space shall extend at least 24 inches (610 mm) beyond the latch side of the door and at least 42 inches (1065 mm) perpendicular to the doorway.

14 Where two doors are in series the minimum distance between two hinged or pivoted doors shall be 48 inches (1220 mm) in addition to any area needed for door swing. Doors in series shall swing either in the same direction or away from the space between the doors.

15 All doors in alcoves shall comply with the requirement for a forward approach.

1106 10 4 Thresholds at doors Thresholds at doors shall comply with Section 1106 6

EXCEPTION In dwelling units exterior doors other than the accessible entrance to a dwelling unit may be sliding doors with thresholds not exceeding 1/8 inch (19 mm).

1106 10 5 Automatic and power assisted doors Door closers or power operators shall be operable as required by Section 1004 8

EXCEPTION Floor pad or electric eye actuated power operator

All power operated doors shall remain in the fully open position for not less than 6 seconds before closing. Touch switches shall be mounted 36 inches (915 mm) above the floor and not less than 18 inches (455 mm) nor more than 36 inches (915 mm) horizontally from the nearest point of travel of the moving door. Other power operated doors must be actuated from a location not less than 36 inches (915 mm) from the nearest point of travel of the moving door. Power operated doors shall automatically reopen when they encounter an obstruction other than the strike jamb.

1106 10 6 Door closers Where provided door closers shall be adjusted to close from an open position of 70 degree to a point 3 inches (76 mm) from the latch in not less than 3 seconds when measured to the leading edge of the door.

UBC 126
1106 10 7 Vision panels Where a door contains one or more vision panels the bottom of the glass of at least one panel shall be not more than 40 inches (1,015 mm) above the floor.

1106 11 Bathrooms Toilet Rooms Bathing Facilities and Shower Rooms

1106 11 1 General Bathrooms toilet rooms bathing facilities and shower rooms shall be designed in accordance with this Section. For dwelling units see also Section 1106 27.

1106 11 2 Unobstructed floor space An unobstructed floor space shall be provided within bathrooms toilet rooms bathing facilities and shower rooms of sufficient size to inscribe a circle with a diameter not less than 60 inches (1,525 mm). Doors in any position may encroach into this space by not more than 12 inches (305 mm). The clear floor spaces at fixtures the accessible route of travel and the unobstructed floor space may overlap.

1106 11 3 Wheelchair accessible toilet stalls

1106 11 3 1 Dimensions Wheelchair accessible toilet stalls shall be at least 60 inches (1,525 mm) in width. Where wall hung water closets are installed the depth of the stall shall be not less than 56 inches (1,420 mm). Where floor mounted water closets are installed the depth of the stall shall be not less than 59 inches (1,500 mm). Entry to the compartment shall have a clear width of 32 inches (815 mm). Toilet stall doors shall not swing into the clear floor space required for any fixture. Except for doorswing a clear unobstructed access not less than 48 inches (1,220 mm) in width shall be provided to toilet stalls.

EXCEPTION Partitions may project not more than 1 inch (25 mm) in the aggregate into the required width of the stall.

1106 11 3 2 Toe clearances In any toilet stall the front partition and at least one side partition shall provide a toe clearance of at least 9 inches (230 mm) above the floor.

EXCEPTION Toe clearance is not required in stalls with a depth greater than 60 inches (1,525 mm).

1106 11 3 3 Door hardware Doors of accessible toilet stalls shall comply with Section 1106 3.

1106 11 3 4 Ambulatory accessible toilet stalls Ambulatory accessible toilet stalls shall be at least 36 inches (915 mm) in width with an outward swinging self closing door. Grab bars shall be installed on each side of the toilet stall and shall comply with Sections 1106 11 5 3 and 1106 11 11.

1106 11 5 Water closets

1106 11 5 1 Clear floor space The lateral distance from the centerline of the water closet to the nearest obstruction excluding grab bars shall be 18 inches (455 mm) on one side and not less than 42 inches (1,065 mm) on the other side. In other than stalls a clear floor space of not less than 32 inches (815 mm) measured perpendicular to the wall on which the water closet is mounted shall be provided in front of the water closet.

EXCEPTION In other than a toilet stall a lavatory may be located within the clear floor space required for a water closet provided that knee and toe clearances for the lavatory comply with Section 1106 11 7 below and

1 In type B dwelling units the edge of the lavatory shall be located not less than 15 inches (380 mm) from the centerline of the water closet or

2 In all other occupancies the edge of the lavatory shall be located not less than 18 inches (455 mm) from the centerline of the water closet.
Sec 1106 11 5 2

1106 11 5 2 Height  The height of water closets shall be a minimum of 17 inches (430 mm) and a maximum of 19 inches (485 mm) measured to the top of the seat. Seats shall not be sprung to return to a lifted position.

1106 11 5 3 Grab bars  Grab bars shall be installed at one side and at the back of the water closet. The top of grab bars shall be not less than 33 inches (840 mm) and not more than 36 inches (915 mm) above and parallel to the floor. Grab bars located at the side shall be a minimum 42 inches (1065 mm) in length located not more than 12 inches (305 mm) from the rear wall and extending at least 54 inches (1370 mm) from the rear wall. Grab bars located at the back shall be a minimum of 36 inches (915 mm) in length and shall extend at least 12 inches (305 mm) beyond the center of the water closet toward the side wall and at least 24 inches (610 mm) toward the open side of the water closet. Grab bars located at the back shall be mounted not more than 9 inches (230 mm) behind the water closet seat. See also Section 1106 11 11.

1106 11 5 4 Flush controls  Flush controls shall be mounted for use from the wide side of the water closet area and not more than 44 inches (118 mm) above the floor. Flush valves shall comply with Section 1106 3.

1106 11 5 5 Dispensers and receptacles  Toilet paper and other dispensers or receptacles shall be installed within easy reach of the water closet and shall not interfere with unobstructed floor space or grab bar utilization.

1106 11 6 Urinals  A clear floor space measuring 30 inches (760 mm) in width by 48 inches (1220 mm) in depth shall be provided in front of urinals to allow for forward approach. Urinal shields shall have a clear space between them of not less than 29 inches (737 mm) and shall not extend farther than the front edge of the urinal rim. Urinals shall be stall type or wall hung with an elongated rim at a maximum of 17 inches (430 mm) above the floor. Flush controls shall be mounted not more than 44 inches (118 mm) above the floor. Flush valves shall comply with Section 1106 3.

1106 11 7 Lavatories and sinks

1106 11 7 1 Clear floor space  A clear floor space not less than 30 inches (760 mm) in width by 48 inches (1220 mm) in depth shall be provided in front of lavatories and sinks to allow a forward approach. The clear floor space may include knee and toe clearance not to exceed 19 inches (485 mm) extending under the lavatory or sink.

1106 11 7 2 Height  Lavatories and sinks shall be mounted with the rim or counter surface no higher than 34 inches (865 mm) above the finished floor.

1106 11 7 3 Knee and toe clearances

1106 11 7 3 1 Lavatories  The total depth of the clear space beneath a lavatory shall be not less than 17 inches (430 mm) of which toe clearance shall be not more than 6 inches (152 mm) of the total depth. Knee clearance shall be not less than 29 inches (737 mm) in height and 30 inches (760 mm) in width.

1106 11 7 3 2 Sinks  Knee clearance not less than 27 inches (685 mm) in height, 30 inches (760 mm) in width, and 19 inches (485 mm) in depth shall be provided underneath sinks.

1106 11 7 4 Exposed pipes and surfaces  Hot water and drain pipes exposed under lavatories and sinks shall be insulated or otherwise covered. There shall be no sharp or abrasive surfaces under lavatories or sinks.

1106 11 7 5 Faucets  Faucet control handles shall be located not more than 17 inches (430 mm) from the front edge of the lavatory, sink or counter and shall comply with Section 1106 3. Self closing valves shall remain open for at least 10 seconds per operation.
1106.11.7.6 Sink depth Sinks shall be not more than 6 inches (165 mm) in vertical depth.

1106.11.8 Mirrors, dispensers, and other fixtures Mirrors or shelves shall be installed so that the bottom of the mirror or the top of the shelf is within 40 inches (1,015 mm) of the floor.

Drying equipment, towel or other dispensers, and disposal fixtures shall be mounted so as not to exceed 40 inches (1,015 mm) above the finished floor to any rack operating controls, receptacle or dispenser.

1106.11.9 Bathtubs

1106.11.9.1 Clear floor space A clear floor space not less than 60 inches (1,525 mm) in length shall be provided along the tub. Where the required seat is located at the end of the tub, the clear floor space shall be not less than 75 inches (1,905 mm) in length. The clear floor space shall be not less than 30 inches (760 mm) in width where access to the space is parallel to the tub, and not less than 48 inches (1,220 mm) in width where access to the space is at right angles to the tub.

A lavatory which complies with Section 1106.11.7 above may be located in the clear floor space for the tub.

Where a seat is provided and a lavatory is located in the clear floor space for the tub, the lavatory shall be located at the end of the tub adjacent to the controls.

1106.11.9.2 Seats An in tub seat or a seat at the end of the tub shall be provided. In tub seats shall be portable and removable not less than 12 inches (305 mm) in width and extend the full width of the tub. Seats at the end of the tub shall be constructed flush with the top of the tub and shall extend not less than 15 inches (380 mm) from the end of the tub. Seats shall be mounted securely and shall not slip during use.

1106.11.9.3 Grab bars All required grab bars shall be installed parallel to the floor. Lower grab bars shall be installed centered 9 inches (230 mm) above the tub rim. Upper or single grab bars shall be installed centered not less than 33 inches (840 mm) and not more than 36 inches (915 mm) above the floor of the clear space.

Where a tub has a seat at the end, two grab bars not less than 48 inches (1,220 mm) in length shall be installed on the wall opposite the clear floor space. One end of each grab bar shall terminate where the tub abuts the seat.

Where a tub has an in tub seat, 2 grab bars not less than 24 inches (610 mm) in length shall be installed on the wall opposite the clear floor space. The grab bars shall extend to not less than 24 inches (610 mm) from one end of the tub and not less than 12 inches (305 mm) from the other end. One grab bar shall be installed on the wall at the end of the tub opposite the drain extending at least 12 inches (305 mm) from the clear floor space.

For all bathtubs, one grab bar shall be installed on the wall at the end of the tub nearest the drain extending at least 24 inches (610 mm) from the clear floor space.

1106.11.9.4 Controls and fixtures Faucets and other controls shall be located above the tub rim and below the grab bars shall be offset laterally from the clear floor space between the open edge of the tub and the mid point of the tub and shall comply with Section 1106.3.

A shower spray unit with a hose at least 60 inches (1,525 mm) long that can be used as a fixed shower head or as a hand held shower shall be provided.
Sec 1106 11 9 5

1106 11 9 5 Bathtub enclosures Where provided enclosures for bathtubs shall not obstruct controls or obstruct transfer from wheelchairs onto bathtub seats or into tubs. Bathtub enclosures shall not have tracks mounted on the tub rim.

1106 11 10 Shower stalls

1106 11 10 1 Configuration Shower stalls shall have one of the following configurations:

1. Transfer shower stalls shall be 36 inches by 36 inches (915 by 915 mm) nominal and shall have a seat or

2. Roll-in shower stalls shall be not less than 30 inches (760 mm) in depth by 60 inches (1 525 mm) in length.

The seat shall be L-shaped and shall extend the full depth of the stall. The section of the seat adjacent to the wall opposite the clear floor space shall be at least 22 inches (560 mm) and not more than 23 inches (585 mm) wide measured from the wall on which the seat is mounted. That section of the seat shall extend not less than 14 inches (355 mm) but not more than 15 inches (380 mm) measured from the wall opposite the clear floor space. The remaining portion of the seat shall be not less than 16 inches (405 mm) wide measured from the wall on which the seat is mounted and shall extend the remaining depth of the stall.

1106 11 10 4 Grab bars All required grab bars shall be installed parallel to the floor. All grab bars shall be installed not less than 33 inches (840 mm) not more than 36 inches (915 mm) above the floor of the adjacent clear space.

For transfer shower stalls a grab bar not less than 18 inches (455 mm) in length shall be installed on the wall opposite the clear floor space. One end of the grab bar shall terminate at the wall opposite the seat.

For roll-in shower stalls grab bars shall be provided on all permanent stall walls. Grab bars located on either end of the stall shall be not less than 27 inches (685 mm) in length. The grab bar located opposite the clear space shall be not less than 48 inches (1 220 mm) in length.

1106 11 10 5 Controls and fixtures Faucets and other controls shall be located on the same wall as the shower spray unit and shall be installed not less than 38 inches (965 mm) or more than 48 inches (1 220 mm) above the shower floor and shall comply with Section 1106.3. In addition:

1. For transfer shower stalls the controls shall be located on the wall opposite the shower seat. The controls shall be located within 18 inches (455 mm) of the open side of the shower stall.

2. For roll-in shower stalls equipped with seats, the controls shall be mounted on the wall adjacent to the seat not more than 27 inches (685 mm) from the wall where the seat is mounted. For roll-in shower stalls without seats, the controls may be located on any wall. Where the controls are located on the back wall, they shall be located not more than 27 inches (685 mm) from a side wall.

A shower spray unit with a hose at least 60 inches (1 525 mm) long that can be used as a fixed shower head or as a hand-held shower shall be provided.

EXCEPTION In unmonitored facilities where vandalism is a consideration, a fixed shower head may be installed not more than 48 inches (1 220 mm) above the stall floor.
1106 11 10 6 Thresholds  In transfer shower stalls, thresholds shall be flush or beveled with a maximum edge height of / inch (13 mm) and a maximum slope of not more than 1 vertical in 2 horizontal.

Thresholds in roll in shower stalls shall be level with the adjacent clear space.

1106 11 10 7 Shower enclosures  Where provided, enclosures for shower stalls shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats.

1106 11 11 Structural requirements for grab bars and tub and shower seats

1106 11 11 1 General  All grab bars and tub and shower seats required to be accessible shall comply with this Section.

1106 11 11 2 Size and spacing of grab bars  Grab bars shall have an outside diameter of not less than 1 / inches (32 mm) nor more than 1 / inches (38 mm) and shall provide a clearance of 1 / inches (38 mm) between the grab bar and the wall.

1106 11 11 3 Structural strength  The structural strength of grab bars, tub and shower seats, fasteners and mounting devices shall meet the following specification:

1. Bending stress in a grab bar or seat induced by the maximum bending moment from the application of 300 pounds (1334 N) shall be less than the allowable stress for the material of the grab bar or seat.

2. Shear stress induced in a grab bar or seat by the application of 300 pounds (1334 N) shall be less than the allowable shear stress for the material of the grab bar or seat. If the connection between the grab bar or seat and its mounting bracket or other support is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress which shall not exceed the allowable shear stress.

3. Shear force induced in a fastener or mounting device from the application of 300 pounds (1334 N) shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structures, whichever is the smaller allowable load.

4. Tensile force induced in a fastener by a direct tension force of 300 pounds (1334 N) plus the maximum moment from the application of 300 pounds (1334 N) shall be less than the allowable withdrawal load between the fastener and the supporting structure.

1106 11 11 4 Special hazards  A grab bar and any wall or the surface adjacent to it shall be free of any sharp or abrasive elements. Edges shall have a minimum radius of / inch (3 mm).

1106 12 Kitchen

1106 12 1 Clear floor space  An unobstructed floor space shall be provided within kitchens of sufficient size to inscribe a circle with a diameter not less than 60 inches (1525 mm). Doors in any position may encroach into this space by not more than 12 inches (305 mm). The clear floor spaces at fixtures the accessible route of travel and the unobstructed floor space may overlap.

1106 12 2 Counter surfaces and shelving  Within Type A dwelling units, a counter surface a minimum of 30 inches (760 mm) wide by 24 inches (610 mm) deep shall be provided at a maximum height of 34 inches (865 mm) with a knee space beneath at least 27 inches (685 mm) in height.

In other than dwelling units, at least 50% of shelf space in cabinets, refrigerators and freezers shall be within the reach ranges specified in Section 1106 2 4.
1106 13 *Water Fountains*

1106 13.1 *Clear floor space*  Wall and post mounted cantilevered units shall have a minimum clear floor space in front of the unit of 30 inches (760 mm) in width by 48 inches (1,220 mm) in depth to allow a forward approach.

Free standing or built in units not having a clear space beneath them shall have an adjacent clear floor space at least 30 inches (760 mm) in depth by 48 inches (1,220 mm) in width in order to allow a person in a wheelchair to make a parallel approach to the unit.

1106 13.2 *Knee space*  Wall and post mounted cantilevered units shall have knee space in accordance with Section 1106 2.4.3. The knee space shall be not less than 17 inches (430 mm) nor more than 19 inches (485 mm) in depth.

1106 13.3 *Spout location*  Spouts shall be located not more than 36 inches (915 mm) above the floor or ground surface. Spouts shall be located at the front of the unit and shall direct a water flow not less than 4 inches (102 mm) in height in a trajectory parallel to the front of the unit. Recessed units shall be installed such that the spout is not recessed beyond the plane of the wall.

1106 13.4 *Controls*  Controls shall be located not more than 6 inches (152 mm) from the front of the unit and shall comply with Section 1106 3. The force required to activate the control shall not exceed 5 pounds (22.2 N).

1106 13.5 *Water fountains in alcoves*  Where a unit is installed in an alcove greater than 8 inches (205 mm) in depth the alcove shall be not less than 48 inches (1,220 mm) in width. A minimum 24 inches (610 mm) of clear space shall be provided from the spout to the nearest side wall of the alcove.

1106 14 *Telephones*

1106 14.1 *Clear floor or ground space*  A clear floor or ground space not less than 30 inches (760 mm) by 48 inches (1,220 mm) that allows either a forward or parallel approach shall be provided in front of telephones. Bases, enclosures and fixed seats shall not project into the clear floor space.

Where parallel approach is provided any shelf or enclosure shall not project farther than 10 inches (255 mm) beyond the face of the telephone.

Where a forward approach is provided any shelf shall not project farther than 20 inches (510 mm) beyond the face of the telephone. Any enclosure panels shall be a minimum 30 inches (760 mm) apart and where less than 36 inches (915 mm) apart shall project no more than 24 inches (610 mm) beyond the face of the phone.

1106 14.2 *Height*  The highest operable part of a telephone shall be within the reach ranges specified in Section 1106 2.4.

1106 14.3 *Equipment for persons with hearing impairments*  Telephones shall be equipped with volume controls and shall be hearing aid compatible. Volume controls shall be capable of increasing volume not less than 12 dBA above normal.

**EXCEPTION:** Where an automatic reset is provided 18 dBA may be exceeded.

1106 14.4 *Controls*  Telephones shall have push button controls where service for such equipment is available.

1106 14.5 *Cord length*  The cord from the telephone to the handset shall be no less than 29 inches (737 mm) in length.

1106 14.6 *Text telephones*  Text telephones shall be permanently affixed within or adjacent to the telephone enclosure. Where an acoustic coupler is used the telephone
cord shall be sufficiently long to allow connection of the text telephone and the telephone receiver.

1106 14 7 Shelf and electrical outlet Shelves and an electrical outlet shall be located within or adjacent to the telephone enclosure. The shelf shall be not less than 10 inches by 10 inches (255 mm by 255 mm) in dimension, with a vertical clearance above the shelf of not less than 6 inches (152 mm). The telephone handset shall be capable of being placed flush on the surface of the shelf.

1106 15 Alarms

1106 15 1 Audible alarms Audible alarms shall produce a sound in accordance with the Fire Code.

1106 15 2 Visible alarms Visible alarm signal appliances shall be integrated into the building or facility alarm system. Where single station audible alarms are provided, single stations visible alarm signals shall be provided.

EXCEPTION: Dwelling units in Group R Division 1 apartment buildings.

Visible alarms shall be located not less than 80 inches (2 030 mm) above floor level or 6 inches (152 mm) below the ceiling, whichever is lower, and at an interval of not more than 50 feet (15 m) horizontal in rooms, corridors, and hallways.

In rooms or spaces exceeding 100 feet (30 m) in horizontal dimension with no obstructions exceeding 6 feet (1 830 mm) in height above the finished floor, visible alarms may be placed around the perimeter at intervals not to exceed 100 feet (30 m) horizontally.

Visible alarm signals shall comply with the following criteria:

1. The lamp shall be a xenon strobe type or equivalent.
2. The color shall be clear or unfiltered white light.
3. The maximum pulse duration shall be 0.2 second with a maximum duty cycle of 40%. The pulse duration is defined as the time interval between initial and final point of 10% of maximum signal.
4. The intensity shall be a minimum of 75 candela.
5. The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.

1106 15 3 Access to manual fire alarm systems Manual fire alarm devices shall be mounted not more than 54 inches (1 370 mm) above the floor where a parallel approach is provided.

1106 16 Signage

1106 16 1 Symbols

1106 16 1 1 International Symbol of Access The International Symbol of Access shall be as shown below.

![International Symbol of Access](image-url)
1106 16 1 2 Text Telephones Text telephones required by Section 1105 4 2 shall be identified by the International Text Telephone Symbol as shown below.

1106 16 1 3 Assistive Listening Systems Permanently installed assistive listening systems that are required by Section 1103 1 2 2 shall be identified by the International Symbol of Access for Hearing Loss as shown below.

1106 16 1 4 Volume Control Telephones Telephones required by Section 1105 4 2 to have volume controls shall be identified by a handset containing a depiction of a telephone handset with radiating sound waves.

1106 16 2 Mounting Location and Height Signs shall be installed on the wall adjacent to the latch side of the door. Signs shall be centered at 60 inches (1525 mm) above the finished floor. Mounting location for such signage shall be such that a person may approach within 3 inches (76 mm) of signage without encountering protruding objects or standing within the swing of a door.

1106 16 3 Finish and Color Characters and symbols shall have a high contrast with their background. The character and background of interior signs shall be eggshell matte or other nonglare finish. All interior and exterior signs depicting the International Symbol of Access shall be white on a blue background.

1106 16 4 Character Proportion and Height Letters and numbers on signs shall have a width to height ratio between 3 5 and 1 1 and a stroke width to height ratio between 1 5 and 1 10.

Characters and numbers on signs shall be sized according to the viewing distance from which they are to be read. The minimum character height for signs that are suspended or projected overhead is 3 inches (76 mm) for upper case letters. Lower case letters are permitted.

1106 16 5 Raised and Braille Characters and Pictorial Symbol Signs (Pictograms)

1106 16 5 1 Raised Characters and Symbols Characters and symbols on tactile signs shall be raised at least \( \frac{1}{8} \) inch (8 mm). Raised characters and symbols shall be simple type face upper case characters. Raised characters and symbols shall be between 1/8 inch (16 mm) and 2 inches (51 mm) in height. Raised characters shall be accompanied by Braille in accordance with this Section.

1106 16 5 2 Braille Braille shall be separated from the corresponding raised characters or symbols. Braille shall be Grade 2.
1106 16.5.3 Pictograms Where provided, pictograms shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram shall be not less than 6 inches (152 mm) in height.

1106 17 Detectable Warnings Detectable warnings on walking surfaces shall consist of raised truncated domes having a diameter of 0.9 inches (23 mm) nominal, a height of 0.2 inches (5 mm) nominal and a center-to-center spacing of 2.35 inches (60 mm) nominal and shall contrast visually with adjoining surfaces.

1106 18 Storage, Shelving and Display Units

1106 18.1 Clear floor space Storage, shelving and display units shall have a clear floor space not less than 30 inches (760 mm) by 48 inches (1,220 mm) that allows for either a forward or parallel approach.

1106 18.2 Height Accessible storage, shelving and display units shall be within the reach ranges specified in Section 1106.2.4. Clothes rods shall be not more than 54 inches (1,370 mm) above the floor.

1106 19 Seating, Tables and Sinks

1106 19.1 Clear floor space Sinks and seating spaces at tables shall have a clear floor space of not less than 30 inches (760 mm) by 48 inches (1,220 mm) that allows forward approach. The clear floor space shall not overlap knee space by more than 19 inches (483 mm).

1106 19.2 Knee clearances Knee spaces at tables, counter, and sinks shall be provided in accordance with Section 1106.2.4.3. In addition, the depth of the knee space shall be not less than 19 inches (485 mm). No projection which might obstruct the arm of a wheelchair may intrude in this clearance within 24 inches (610 mm) horizontally from the table edge.

1106 19.3 Height The tops of tables and sinks shall be not less than 28 inches (710 mm) nor more than 34 inches (865 mm) in height above the floor or ground.

1106 20 Aisles All aisles required to be accessible including check-out aisles, food service lines and aisles between fixed tables shall be not less than 36 inches (915 mm) in width.

1106 21 Reserved

1106 22 Restaurants and Cafeterias

1106 22.1 Aisles Aisles to fixed tables required to be accessible shall comply with Section 1106.20.

1106 22.2 Food service lines

1106 22.2.1 Clear floor space Food service lines shall comply with Section 1106.20.

1106 22.2.2 Height Tray slides shall be mounted not more than 34 inches (865 mm) in height above the floor.

1106 22.2.3 Counters and bars Where service of food or drink is provided at counters more than 34 inches (865 mm) in height to customers seated on stools or standing, a portion of the main counter shall be provided in compliance with Section 1106.19 or service shall be available at accessible tables within the same area.

1106 22.2.4 Tableware and condiment areas Self-service shelves and dispensing devices for tableware, dishware, condiments, food and beverages shall be installed to comply with Section 1106.18.
1106 23 Patient Bedrooms  Each patient bedroom shall be designed and constructed to provide space for a 180° turn that complies with Section 1106 2 2. Each patient room shall have a minimum clear floor space not less than 36 inches (915 mm) on each side of any bed.

1106 24 Customer Service Facilities

1106 24 1 Dressing and fitting rooms

1106 24 1 1 Clear floor space  Each dressing and fitting room shall have a clear floor space complying with Section 1106 2.

EXCEPTION  Dressing and fitting rooms that are entered through a curtained opening need not comply with Section 1106 2 2.

1106 24 1 2 Doors  All doors to accessible dressing and fitting rooms shall comply with Section 1106 10.

1106 24 1 3 Benches  Every accessible dressing or fitting room shall have a bench installed adjacent to the longest wall in the room. The bench shall be not less than 24 inches (610 mm) in width and 48 inches (1220 mm) in length and shall be mounted not less than 17 inches (430 mm) nor more than 19 inches (485 mm) above the finished floor.

Clear floor space shall be provided adjacent to the bench to allow for parallel transfer and the structural strength of the bench shall comply with Section 1106 11 11 3.

Where benches are installed in dressing and fitting rooms adjacent to showers, swimming pools or other wet locations, water shall not accumulate upon the surface of the bench and the bench shall have a slip resistant surface.

1106 24 1 4 Mirrors  Where provided, mirrors in accessible dressing and fitting rooms shall be not less than 18 inches (455 mm) in width by 54 inches (1370 mm) in height and shall be mounted opposite the bench.

1106 24 2 Counters and windows  Where counters are required to be accessible, the accessible portion shall be not less than 36 inches (915 mm) in length and not more than 36 inches (915 mm) in height above the finished floor.

Where accessible windows are required, they shall be no more than 36 inches (915 mm) in height above the finished floor.

EXCEPTION  An auxiliary counter with a maximum height of 36 inches (915 mm) is installed in close proximity to the main counter.

1106 24 3 Check out aisles  The width of accessible check out aisles shall comply with Section 1106 20. Counters in accessible check out aisles shall be not more than 38 inches (965 mm) in height and the top of the raised edge of the counter shall not exceed 40 inches (1015 mm) in height above the finished floor.

Accessible check out aisles shall be identified by the International Symbol of Access in accordance with Section 1106 16 1 1.

1106 25 Libraries

1106 25 1 Reading and study areas  At least 5% or a minimum of 1 of each element of fixed seating, tables or study carrels shall comply with Section 1106 19. Clearances between fixed accessible tables and study carrels shall comply with Section 1106 20.

1106 25 2 Check-out areas  At least one lane at each check out area shall comply with Section 1106 20. Any traffic control or book security gates or turnstiles shall comply with Section 1106 10.

1106 25 3 Card catalogs, magazine displays and stacks
1106 25 3 1 Aisles  Aisles between card catalogs, magazine displays or stacks shall comply with Section 1106 20.

1106 25 3 2 Height  Card catalogs or magazine displays shall a reach height of not more than 54 inches (1370 mm) for side approach and not more than 48 inches (1220 mm) for forward approach.

Not all shelves in library stacks need be located within reach ranges required by Section 1106 2 4.

1106 26 Hotels and Congregate Residences

1106 26 1 Clear floor space  Each sleeping room shall have a space complying with Section 1106 4 1 along both sides of each bed.

EXCEPTION  In rooms with 2 beds, only one 36 inch (915 mm) wide maneuvering space need be provided between the 2 beds.

1106 26 2 Accessible route of travel  An accessible route of travel complying with Section 1103 2 2 shall connect all accessible spaces and elements including telephones, patios, terraces, balconies, carports, garages or parking spaces with all accessible sleeping rooms.

1106 26 3 Doors  Doors within all sleeping rooms, suites or other covered units shall comply with Section 1106 10.

1106 26 4 Storage  Where fixed or built in storage is provided in accessible units, sleeping rooms or suites including cabinets, shelves, closets and drawers, at least one of each type shall comply with Section 1106 18.

1106 26 5 Controls  All controls in accessible units, sleeping rooms and suites shall comply with Section 1106 3.

1106 27 Dwelling Units

1106 27 1 Type A and B dwelling units  Type A and B dwelling units shall comply with Section 1106.

EXCEPTIONS:

1  In a Type A accessible dwelling unit with 2 or more stories, access to other levels is not required if the accessible level complies with all requirements for Type A accessible dwelling units and that kitchen, toilet and bathing facilities and at least one bedroom are provided on the accessible level.

2  Kitchens in Type B dwelling units need not comply with Section 1106 12 1 provided that:

   A  A clear space at least 30 inches by 48 inches (760 mm by 1220 mm) that allows parallel approach by a person in a wheelchair is provided at the range or cooktop and sink and either a parallel or forward approach is provided at all other appliances and

   B  In all other kitchens, clearance between all opposing counters, base cabinets, countertops, appliances and walls shall be not less than 40 inches (1015 mm) and

   C  In U-shaped kitchens with a sink range or cooktop at the base of the U, an unobstructed floor space of sufficient size to inscribe a circle with a diameter of not less than 60 inches (1525 mm) shall be provided.

3  Bathrooms in Type B dwelling units need not comply with Section 1106 11 2, provided that sufficient maneuvering space which is not less than 30 inches by 48...
Sec 1106 27 1

inches (760 mm by 1220 mm) is provided within the bathroom. Doors may swing into the clear floor space provided at any fixture but shall not encroach on the required maneuvering space.

4 Doors in Type B dwelling units other than the primary entry door need not comply with Section 1106 10 3.

5 Mezzanines in Type B dwelling units need not be accessible.

6 Raised or sunken floors in Type B dwelling units need not be accessible provided that they do not interfere with the accessible route of travel through the unit and are not located in the kitchen or bathroom.

7 Counter surfaces in Type B dwelling units need not comply with Section 1106 12 2.

8 Within an individual dwelling unit in an elevated building access to other levels is not required if the accessible level complies with all requirements for accessible dwelling units and contains a bathroom.

9 In Type B dwelling units exterior deck, patio or balcony surfaces may be no more than 4 inches (100 mm) below the floor level of the interior surface where the exterior surface is constructed of an impervious material such as concrete, brick or flagstone.

10 Vanities or lavatories in Type A and B dwelling units may be located in the clear floor spaces as permitted in Section 1106 11 5 1.

11 Seats for bathtubs or showers are not required in Type B dwelling units.

12 In Type B dwelling units, the clear floor space for bathtubs or showers may be reduced to not less than 30 inches (760 mm) in width by 48 inches (1220 mm) in length.

1106 27 2 Adaptable fixtures for dwelling units

1106 27 2 1 Grab bars Grab bars may be omitted in bathing and toilet facilities within Type A and B dwelling units provided that all structural reinforcements for grab bar installation are provided in the appropriate locations in the adjoining walls.

1106 27 2 2 Kitchen counters Cabinets or shelving may be installed beneath the counter space required by Section 1106 12 2 provided that such cabinetry or shelving is not permanent and is easily removable.

1106 27 2 3 Lavatories Cabinets or shelving may be installed beneath bathroom lavatories provided that such cabinetry or shelving is not permanent and is easily removable.

1106 27 2 4 Signage Parking signage required by Section 1107 3 need not be installed in spaces designated for accessible dwelling units.

Section 1107 PARKING FACILITIES

1107 1 See the Zoning Code Accessible Parking Requirements.

Section 1108 Reserved

PART III ACCESSIBILITY FOR EXISTING BUILDINGS

Section 1109 SCOPE

1109 1 General The provisions of this part apply to renovation alterations and additions to existing buildings including those identified as historic buildings. This
Chapter includes minimum standards for removing architectural barriers and providing and maintaining accessibility for persons with disabilities to existing buildings and their related facilities.

1109.2 Equivalent Facilitation. Departures from specific technical and scoping requirements of this part by the use of alternate methods are permitted where such methods will provide equivalent or greater access to and disability of the facility. Alternate methods shall permit individuals with disabilities to approach, enter and use a site, building, facility or portion thereof as easily, safely, conveniently and independently as the specified method.

Section 1110 DEFINITIONS

1110 Definitions. For the purpose of this part certain terms are designated as follows:

ALTERATION is any change, addition or modification in construction or occupancy.

ALTERATION SUBSTANTIAL is an alteration where the total cost of all alterations (including but not limited to electrical, mechanical, plumbing and structural changes) for a building or facility within any 12 month period amounts to 60% or more of the current appraised value established by the County Assessor.

TECHNICALLY INFEASIBLE means that an alteration has little likelihood of being accomplished because existing structural conditions would require removing or altering a load bearing member which is an essential part of the structural frame or because site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and necessary to provide accessibility.

Section 1111 ADDITIONS

1111 Additions. New additions may be made to existing buildings without making the entire building comply provided that the new additions conform to the provisions of Part II of this Chapter except as follows:

1. Entrance. Where a new addition to a building or facility does not have an accessible entrance, at least one entrance in the existing building or facility shall be accessible.

2. Accessible Route. Where the only accessible entrance to the addition is located in the existing building or facility, at least one accessible route of travel shall be provided through the existing building or facility to all rooms, elements and spaces in the new addition which are required to be accessible.

3. Toilet and Bathing Facilities. Where there are no toilet rooms and bathing facilities in an addition and these facilities are provided in the existing building, then at least one toilet and bathing facility in the existing facility shall comply with Section 1106 or with Section 1112 3 7.

4. Group I Occupancies. Where patient rooms are added to an existing Group I Occupancy, a percentage of the additional rooms equal to the requirement of Section 1103 1 6, but in no case more than the total number of rooms required by Section 1103 1 6 shall comply with Section 1106 2 3. Where toilet or bathing facilities are part of the accessible rooms, they shall comply with Section 1106 11.

5. Path of Travel. Where an addition affects the access to or use of an area of primary function to the maximum extent feasible, the path of travel to the area of primary function shall be made accessible.
EXCEPTION: Subject to the approval of the Building Official the path of travel need not be made accessible if the cost of compliance with this part would exceed 20% of the total cost of construction inclusive of the cost of eliminating barriers within a 36 month period

Section 1112 ALTERATIONS

1112.1 General

1112.1.1 Compliance Alterations to existing buildings or facilities shall comply with this Section. No alteration shall reduce or have the effect of reducing accessibility or usability of a building portion of a building or facility. If compliance with this Section is technically infeasible the alteration shall provide accessibility to the maximum extent feasible

EXCEPTION: Except when substantial as defined by Section 1110 alterations to Group R Division 1 apartment buildings need not comply with this Section

1112.1.2 Existing elements Where existing elements spaces essential features or common areas are altered each such altered element space feature or area shall comply with the applicable provisions of Part II of this Chapter. Where an alteration is to an area of primary function to the maximum extent feasible the path of travel to the altered area shall be made accessible. See also Appendix Chapter 11 Division II

EXCEPTIONS

1. An accessible route of travel need not be provided to altered elements spaces or common areas which are not areas of primary function

2. Areas of evacuation assistance need not be added to an altered building

3. Subject to the approval of the Building Official the path of travel need not be made accessible if the cost of compliance with this part would exceed 20% of the total cost of construction inclusive of the cost of eliminating barriers within a 36 month period

1112.1.3 Installation of stairs or escalator Where an escalator or new stairway is planned or installed requiring major structural changes then a means of vertical transportation (e.g. elevator or platform lift) shall be provided in accordance with this Chapter

1112.1.4 Other requirements

1112.1.4.1 Where alterations of single elements when considered together amount to an alteration of a room or space in a building or facility the entire area or space shall be accessible

1112.1.4.2 No alteration of an existing element space or area of a building shall impose a requirement for greater accessibility than that which would be required for new construction

1112.1.4.3 Where the alteration work is limited solely to the electrical, mechanical or plumbing system or hazardous materials removal and does not involve the alteration structural or otherwise of any elements and space required to be accessible under these standards Chapter 11 does not apply

1112.1.4.4 Where alterations would increase the number of public pay telephones to 4 with at least 1 on the interior or where the facility has 4 or more public pay telephones and 1 or more is altered at least 1 interior text telephone shall be provided in accordance with Section 1106.14
1112.4.5 Where a building has an accessible entrance, altered entrances need not be made accessible unless they provide access to areas of primary function.

1112.4.6 Where sleeping rooms are altered in an existing Group R Division 1 hotel at least 1 sleeping room that complies with Section 1106.26 shall be provided for each 25 sleeping rooms or fraction thereof. In addition, at least 1 sleeping room for each 25 sleeping rooms or fraction thereof shall have telephones, visible alarms and visible notification devices in accordance with Section 1103.18.3.

1112.4.7 Where patient bedrooms are altered in an existing Group I Occupancy a percentage of the altered bedrooms equal to the requirement of Section 1103.16. But in no case more than the total number of bedrooms required by Section 1103.16 shall comply with Section 1106.23. Where toilet or bathing facilities are part of the accessible rooms, they shall comply with Section 1106.11.

1112.2 Substantial Alterations Where substantial alteration as defined in Section 1110 occurs to a building of facility, the entire building or facility shall comply with Part II of the Code.

Exception
1. Areas of evacuation assistance need not be added to a substantially altered building.
2. Type B dwelling units need not be provided in buildings which are substantially altered.

1112.3 Modifications

1112.3.1 General The following modifications set forth in this Section may be used for compliance where the required standard is technically infeasible or when providing access to historic buildings.

1112.3.2 Ramps Curb ramps and ramps constructed on existing sites or in existing buildings or facilities may have slopes and rises greater than specified in Part II of this Chapter where space limitations preclude the use of 1 vertical in 12 horizontal slope or less provided that:

1. A slope not greater than 1 vertical in 10 horizontal is allowed for a maximum rise of 6 inches (152 mm).
2. A slope not greater than 1 vertical in 8 horizontal is allowed for a maximum rise of 3 inches (76 mm).
3. Slopes greater than 1 vertical in 8 horizontal are prohibited.

1112.3.3 Stairways Full extension of stair handrails is not required when such extension would be hazardous or impossible due to plan configuration. When an accessible elevator is provided, existing stairs need not be made accessible.

1112.3.4 Elevators Elevators shall comply with Chapter 30 amended.

1112.3.5 Platform lifts Upon the approval of the Building Official, platform lifts may be used in alterations in locations in addition to those permitted in Part II of this Chapter if installation of an elevator is technically infeasible. Platform lifts shall comply with Chapter 30 amended.

1112.3.6 Doors

1112.3.6.1 Clearance When existing elements prohibit strict compliance with the clearance requirements, a projection of 9/ inch (16 mm) maximum is permitted for the latch side door stop.
1112 3 6 2 Thresholds Existing thresholds measuring / inch (19 mm) high or less which are modified to provide a beveled edge on each side may be retained

1112 3 7 Toilet rooms

1112 3 7 1 Shared facilities The addition of one unisex toilet facility accessible to all occupants on the floor may be provided in lieu of making existing toilet facilities accessible when it is technically infeasible to comply with either part of Chapter 11. The unisex facility shall be located in the same area as existing facilities.

1112 3 7 2 Number The number of toilet facilities and water closets required by the Uniform Plumbing Code may be reduced by one in order to provide accessible features.

1112 3 7 3 Signage When existing toilet facilities are altered and not all are made accessible, directional signage complying with Sections 1106 16 3 and 1106 16 4 shall be provided indicating the location of the nearest accessible toilet facility.

1112 3 8 Assembly areas Seating shall adjoin an accessible route of travel that also serves as a means of emergency egress or route to an area for evacuation assistance. In alterations, accessibility to raised or sunken dining areas or to all parts of outdoor seating areas is not required provided that the same services and amenities are provided in an accessible space usable by the general public and not restricted to use by people with disabilities.

1112 3 9 Dressing rooms Where it is technically infeasible to meet the requirements of Part II of this Chapter, one dressing room for each sex or a unisex dressing room on each level shall be accessible.

Section 1113 HISTORIC PRESERVATION

1113 1 General Generally the accessibility provisions of this part shall be applied to historic buildings and facilities as defined in Section 3403 5 of this Code.

The Building Official, after consulting with the appropriate historic preservation officer, shall determine whether provisions required by this part for accessible routes of travel (interior or exterior) ramps, entrances, toilets, parking or signage would threaten or destroy the historic significance of the building or facility.

If it is determined that any of the accessibility requirements listed above would threaten or destroy the historic significance of a building or facility, the modifications of Section 1112 3 for that feature may be utilized.

1113 2 Special Provisions Where removing architectural barriers or providing accessibility would threaten or destroy the historic significance of a building or facility, the following special provisions may be used:

1. At least one accessible route from a site access point to an accessible route of travel shall be provided.

2. At least one accessible entrance which is used by the public shall be provided.

EXCEPTION Where it is determined by the Building Official that no entrance used by the public can comply with access at any accessible entrance which is unlocked during business hours may be used provided that directional signs are located at the primary entrance and the accessible entrance has a notification system. The route of travel for the accessible entrance shall not pass through hazardous areas, storage rooms, closets, kitchens or spaces used for similar purposes.
3 Where toilet facilities are provided at least one toilet facility complying with Sections 1111 and 1112 shall be provided along an accessible route. Such toilet facility shall be a shared facility available to both sexes.

4 Accessible routes from an accessible entrance to all publicly used spaces on at least the level of the accessible entrance shall be provided. Access should be provided to all levels of a building or facility when practical. Displays and written information and documents shall be located where they can be seen by a seated person.

Section 1114 APPEAL

1114.1 Request for Appeal An appeal from the standards for accessibility for existing buildings may be filed with the Board of Appeals in accordance with DBC Section 113 when existing structural elements or physical constraints of the site prevent full compliance or would threaten or destroy the historical significance of a historic building.

1114.2 Review

1114.2.1 Consideration of alternative methods Review of appeal requests shall include consideration of alternative methods which may provide partial access.

1114.2.2 Waiver or modification of requirements The Appeals Board may waive or modify the requirements of this Section when it is determined that compliance with accessibility requirements would threaten or destroy the historic significance of a building or facility.

| TABLE NO 11-A |
| WHEELCHAIR SPACES REQUIRED IN ASSEMBLY AREAS |

<table>
<thead>
<tr>
<th>Capacity of Seating In Assembly Area</th>
<th>Number of Required Wheelchair Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 to 25</td>
<td>1</td>
</tr>
<tr>
<td>26 to 50</td>
<td>2</td>
</tr>
<tr>
<td>51 to 300</td>
<td>4</td>
</tr>
<tr>
<td>301 to 500</td>
<td>6</td>
</tr>
<tr>
<td>over 500</td>
<td>6 plus 1 for each 100 over 500</td>
</tr>
</tbody>
</table>

| TABLE NO 11 B |
| REQUIRED TYPE A DWELLING UNITS |

<table>
<thead>
<tr>
<th>Total Number of Dwelling Units on Site</th>
<th>Required Number of Type A Dwelling Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 10</td>
<td>None</td>
</tr>
<tr>
<td>11 20</td>
<td>1</td>
</tr>
<tr>
<td>21 40</td>
<td>2</td>
</tr>
<tr>
<td>41 60</td>
<td>3</td>
</tr>
<tr>
<td>61 80</td>
<td>4</td>
</tr>
<tr>
<td>81 100</td>
<td>5</td>
</tr>
<tr>
<td>For every 20 units or fractional part thereof over 100</td>
<td>1 additional</td>
</tr>
</tbody>
</table>

UBC 143
TABLE NO 11-C
NUMBER OF ACCESSIBLE ROOMS AND ROLL IN SHOWERS

<table>
<thead>
<tr>
<th>Total Number of Rooms</th>
<th>Minimum Required Accessible Rooms</th>
<th>Rooms With Roll In Showers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 25</td>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>26 50</td>
<td>2</td>
<td>None</td>
</tr>
<tr>
<td>51 75</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>76 100</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>101 150</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>151 200</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>201 300</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>301 400</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>401 500</td>
<td>9</td>
<td>4 plus 1 for every 100 rooms or fraction thereof over 400</td>
</tr>
<tr>
<td>501 1000 over 1000</td>
<td>2% of total rooms 20 plus 1 for every 100 rooms or fraction thereof over 1000</td>
<td>4 plus 1 for every 100 rooms or fraction thereof over 400</td>
</tr>
</tbody>
</table>

For congregate residences the numbers in these columns shall apply to beds rather than rooms.

TABLE NO 11 D
NUMBER OF ACCESSIBLE ROOMS FOR PERSONS WITH HEARING IMPAIRMENTS

<table>
<thead>
<tr>
<th>Total Number of Rooms</th>
<th>Minimum Required Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 25</td>
<td>1</td>
</tr>
<tr>
<td>26 50</td>
<td>2</td>
</tr>
<tr>
<td>51 75</td>
<td>3</td>
</tr>
<tr>
<td>76 100</td>
<td>4</td>
</tr>
<tr>
<td>101 150</td>
<td>5</td>
</tr>
<tr>
<td>151 200</td>
<td>6</td>
</tr>
<tr>
<td>201 300</td>
<td>7</td>
</tr>
<tr>
<td>301 400</td>
<td>8</td>
</tr>
<tr>
<td>401 500</td>
<td>9</td>
</tr>
<tr>
<td>501 1000 over 1000</td>
<td>2% of total rooms 20 plus 1 for every 100 rooms or fraction thereof over 1000</td>
</tr>
</tbody>
</table>

TABLE NO 11 E
REQUIRED CHECK-OUT AISLES

<table>
<thead>
<tr>
<th>Total Check Out Aisles Units on Site</th>
<th>Minimum Number of Accessible Check-out Aisles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 4</td>
<td>1</td>
</tr>
<tr>
<td>5 8</td>
<td>2</td>
</tr>
<tr>
<td>9 15</td>
<td>3</td>
</tr>
<tr>
<td>Over 15</td>
<td>3 plus 20% of additional aisles</td>
</tr>
</tbody>
</table>

UBC 144
Section 1202.2.1 first paragraph is amended as follows:

1202.2.1 General All enclosed portions of Groups A, B, E, F, H, I, M and S Occupancies ordinarily occupied by human beings shall be provided with a mechanically operated ventilation system which complies with ASHRAE Standard 62. 1989 Ventilation of Acceptable Indoor Air Quality. If the velocity of the air at the register exceeds 10 feet per second the register shall be placed more than 8 feet above the floor.

Section 1202.2.7 is amended by adding a sentence to the end of the first paragraph to read:

The automatic CO sensing devices shall be approved for both gas detection and electrical performance.

Section 1203.2 is amended by revising the Exception to read:

EXCEPTION Kitchens in Group R Occupancies and habitable space in basements in Group R 2 and R 3 Occupancies may be provided with artificial light.

Section 1505.3 is amended by deleting:

Where determined necessary by the Building Official due to atmospheric or climatic conditions.

The rest of the section is to remain.

Section 1506.6 is added:

1506.6 Flashing Flashing for interior roof drains shall be one of the following:

1 A minimum of 2 x 2 feet 4 pound lead sheet or lead copper coated sheet set on completed felts in flashing cement.

2 The metal shall be turned a minimum of 1/8 inch into a drain sump and plied with two plies of Type 15 felt.

3 A 2 component drain system. The membrane flashing shall be polyvinylchloride sheet measuring 22 inches in its overall length and factory attached to the underside of the strainer flange. The membrane flashing shall be applied on top of the completed felt shall extend a minimum of 7 inches from the outside diameter of the drain throat shall be set into hot asphalt or roofing cement and shall be plied in with two plies of Type 15 felt.

4 Drain details for single ply systems shall be installed per the manufacturer's currently published details for the specific single ply system.

Section 1506.7 is added:

1506.7 Gutters and Downspouts [B-014]

1 Gutters shall be installed so that the line of the slope of the roof intersects the inside face of the gutter. Gutters shall slope to drain.

2 Hangers shall be the same material as the gutters and installed level with the gutter.

3 Maximum spacing of hangers shall be as follows:

- Stainless steel gutter: 60 inches on centers
- Galvanized steel gutters: 36 inches on centers
- Copper, aluminum or zinc copper alloy gutters: 24 inches on centers
4 Gutters shall be anchored to the roof deck or to a structural member
5 All joints within the gutter trough shall be soldered or riveted and sealed with an approved sealant
6 Gutter backs shall extend beneath roof covering a minimum of 1 inch or be provided with a drip edge 1 inch beneath the roof covering and extending down a minimum of 2 inches into the gutter trough
7 Downspouts shall be anchored to the building by supporting straps not more than 8 feet on centers and be of the same material as the gutter
8 Downspouts shall be installed at the rate of one 2' x 3' per 750 square feet of roof surface drained All other sizes are to be installed based on the 100 year storm for Denver and the Uniform Plumbing Code
9 All roof drains shall discharge away from any building or structure Where it is necessary concrete blocks at least 12 inches in width and 36 inches in length or permanently attached or hinged metal downspout extensions 36 inches long shall be used

Sections 1509.1 1509.2 1509.3 and 1509.4 are added

1509.1 Flashing New Built up Roof Covering Flashing shall be installed on all vertical walls and curbs in accordance with the manufacturer's specifications and
1 All flashing surfaces shall be primed
2 A minimum of one ply of finishing felt shall be used but shall not be less than the manufacturer's flashing recommendations

   EXCEPTION For Group R 3 and M Occupancies the flashing shall be equivalent to the type of roofing being installed

3 All flashing shall extend at least 8 inches but not more than 12 inches up all vertical surfaces and at least 4 inches out onto the roof
4 The top edges of the flashing shall be fastened at 3 inch intervals and sealed with plastic cement
5 End laps shall be at least 3 inches long nailed vertically and covered with 4 inches of felt embedded in plastic cement
6 The entire base of the flashing shall be covered with a coating of the applicable surfacing materials in accordance with the manufacturer's specifications
7 The top edges of all felts and roofing shall be given a coating of approved plastic cement upon completion of the nailing requirements
8 On smooth surfaced roofs the bottom edge of the flashing extending out onto the roof shall be covered with a 4 inch strip of manufacturer's recommended felt
9 All vertical walls and projections shall be counterflashed with a 2 piece metal system installed watertight
10 Nailer strips shall be provided on vertical walls and drips in edge and curbs which will not accept conventional nailing

1509.2 Flashing New Single Ply Roof Coverings
1 All flashing details for new single ply roofing systems shall be installed per the manufacturer's currently published details for that system
2 Installation of special flashing details may be approved by the manufacturer for unusual site conditions if covered by a manufacturer issued warranty

1509 3 Vertical Surfaces Flashing shall be provided wherever vertical surfaces meet a roof and shall be constructed as follows:

1. On new construction when the roofs are of slate, wood or asphalt shingles, a metal base flashing and metal counterflashing of at least 26 gauge galvanized sheet metal. Similar corrosion resistant metal of equal thickness could be substituted for either the base or counterflashing material.

2. Base flashing of the step type shall be installed between each course of material.

3. Under clay or concrete shingles, a metal base flashing and counterflashing shall be installed on all roofs.

4. Where the new roof is installed over an existing composition shingle roof, all pipes and vertical projections shall be flashed with plastic cement.

5. A saddle or cricket shall be installed on the upper side of all projections 30 inches or more in width on all sloping roofs.
   - A. All saddles or crickets on the upper side of all projections shall be covered with galvanized metal with soldered joints or asphalt rolled roofing at least 18 inches wide and equivalent to the type of roofing being applied nailed over the saddles or crickets and sealed with plastic cement.
   - B. Areas where saddles and crickets are not required on the upper side of projections shall be flashed with galvanized metal with a minimum width of 18 inches or asphalt rolled roofing 18 inches wide equivalent to the type of roofing being applied and shall be nailed and sealed with plastic cement.

1509 4 Vertical Projections All projections through the roof surface shall be properly flashed to prevent moisture entry.

1. Pipe penetrations shall be completed with a standard roof jack or manufacturer recommended pipe penetration details.

2. Pitch pans may be used on all penetrations when the material within the pitch pan is composed of expansive cement grout to 1 inch below the top edge of a pitch pan. The top 1 inch must be filled with a manufacturer recommended pourable sealer placed in a crowned condition of 1/4 inch above pitch pan edge. Alternates to this would be to provide 26 gauge sheet metal or manufacturer's material cap over the pitch pans.

3. Mechanical penetrations may penetrate through properly sized flashing extending 12 inches above the roof deck with a permanent drip collar around the pipe.

Section 1514 is added

Section 1514 EQUIPMENT ON ROOFS [B-021]

1514 1 Mechanical Equipment Mechanical equipment placed, replaced or reset over roofing shall be supported by curbs or legs which shall be flashed to the roofing and made watertight. Mechanical equipment shall include by way of example and not limitation heating, cooling, refrigeration, ventilating fans, blowers and similar type equipment.
1514.2 Flat Roofs. On roofs having a pitch of less than 2 inches rise in a 12 inch run mechanical equipment shall be supported on a platform that shall be sheathed solid with intermediate supports if necessary and covered in a water tight manner with a minimum 40 pound coated felt and metal of at least 26 gauge. All seams and miter corners of the metal on the platform shall be riveted and soldered so as to be watertight. The platform shall be a minimum of 9 inches above the finished roof or the units may be set on legs when the following is adhered to:

1. Units and duct work in which at any point 1 horizontal dimension of the equipment on a roof is less than 4 feet shall have a clearance of at least 18 inches from the bottom of the unit or duct work to the finished roof.

2. Units and duct work in which at any point 1 horizontal dimension of the equipment on a roof is more than 4 feet but less than 8 feet shall have a clearance of at least 36 inches from the bottom of the unit or duct work to the finished roof.

3. Units and duct work in which at any point 1 horizontal dimension of the equipment on a roof is in excess of 8 feet shall have a clearance of at least 48 inches from the bottom of the unit or duct work to the finished roof.

1514.3 Sloped Roofs. On roofs having a pitch of more than a 2 inch rise in a 12 inch run mechanical equipment may be set on legs which provide a minimum of 11 inches clearance between the equipment frame and the finished roof.

1514.4 Piping and Conduits. Except where they vertically penetrate the roof, all piping or conduits shall protrude a minimum of 12 inches above the surface of the finished roof and shall be supported on metal stands installed in pitch pans no more than 10 feet between stands.

1514.5 Structures. Supports for signs, mansard roofs and other miscellaneous structures shall be installed in pitch pans with a minimum of 12 inches clear distance above the finished roof to the structure.

Section 1515 is added.

Section 1515 STAPLES

Staples shall be permitted on new installations only.
Chapter 16
Structural Forces
Section 1603.7 is added

1603.7 Fire Truck Loading  When parking structures are designed to accommodate fire trucks, the beams and slab shall be designed for a concentrated load of 31,000 pounds bearing on an area with dimensions of 20 inches by 32 inches. The condition of concentrated or equivalent uniform live load as given in Table No. 16 A or AASHTO H 20 loading may be used to determine design conditions.

Section 1605.4 is deleted and replaced with the following

1605.4 Snow Loads. Snow loads full or unbalanced shall be considered in place of loads set forth in Table No. 23 C where such loading will result in larger members or connections. The load reduction provisions of Section 2306 shall not be used to reduce snow loads. Rain on snow need not be considered. Roofs shall be designed for snow loads in compliance with the procedures specified in either Appendix 23 Division 1 or in American Society of Civil Engineers ASCE 7-88. The procedures may not be mixed. The ground snow load for such procedures shall be 25 pounds per square foot. The importance factor, I, shall be

1.4 for essential facilities
1.0 for all other structures

In addition, roofs shall be designed for not less than the following uniformly applied snow load:

30 pounds per square foot for all structures in Occupancy categories 1 or 2 according to Table A 23 T

25 pounds per square foot for all other structures

Roofs used for automobile parking or storage shall be designed for a nonreducible live load of 55 psf which includes snow and snow removal equipment.

Section 1613 is amended

Section 1613 GENERAL

Every building or structure and every portion thereof shall be designed and constructed to resist the wind effects determined in accordance with the requirements of this Section. Wind shall be assumed to come from any horizontal direction. No reduction in wind pressure shall be taken for the shielding effect of adjacent structures. Structures sensitive to dynamic effects such as buildings with a height/width ratio greater than 5 shall be designed with wind excited oscillations such as vortex shedding or icing and buildings over 400 feet in height shall be and any structure may be designed in accordance with ANSI/ASCE 7-88.

Section 1616 is amended

Section 1616 BASIC WIND SPEED

The following parameters shall be used for Denver, Colorado:

1. Basic wind speed = 85 miles per hour
2. q = 19 psf
3. Exposure B unless flat and generally open terrain extends uniformly 1 mile or more from the site in any full quadrant in which case Exposure C shall be used.
### Table No 16-A

**UNIFORM AND CONCENTRATED LOADS**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>DESCRIPTION</th>
<th>UNIFORM LOAD</th>
<th>CONCENTRATED LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Schools</td>
<td>Classrooms</td>
<td>40(^{11})</td>
<td>1000(^{2})</td>
</tr>
<tr>
<td>17. Sidewalks and driveways</td>
<td>Public access</td>
<td>250</td>
<td>7</td>
</tr>
<tr>
<td>18. Storage</td>
<td>Light</td>
<td>125</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Heavy</td>
<td>250</td>
<td>0</td>
</tr>
<tr>
<td>19. Stores</td>
<td>Retail</td>
<td>75</td>
<td>2000(^{2})</td>
</tr>
<tr>
<td></td>
<td>Wholesale</td>
<td>100</td>
<td>3000(^{2})</td>
</tr>
<tr>
<td>20. Pedestrian bridges and walkways</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>21. Kitchens</td>
<td>Other than residential</td>
<td>100(^{12})</td>
<td>0</td>
</tr>
<tr>
<td>22. Penal Institutions</td>
<td>Cell blocks</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>23. Ra QU b II &amp; TNn C ts</td>
<td></td>
<td>60</td>
<td>0</td>
</tr>
</tbody>
</table>

10. Garage loadings shall not include an imp. ct for floors r roofs Ramp l adings hall b th am as for flo rs.

Garage roofs shall be designed for n n redu b le load f 55 p f which in lud now and now rem al equipment Gar ge roofs that provid acce for fire tru k hall be de gned for the liv l d required C ntact th Fire Department for specifications.

11. School and ture rooms in exce of 1200 square feet in re without fixed e t hall be de gned for a uniform li e ad f 75 pounds per square foot.

12. Use weight f ctual equipment wh n gr ator.

---

Section 1704.7 is added

**1704.7 Manufactured or Factory Built Structures**

1. Definitions

A. **Manufactured or Factory Built Structures** shall mean factory assembled structures which are completely finished to include all utilities and are transported to a site of permanent installation. This shall include mobile homes, factory built housing and nonresidential structures as defined by state and federal regulations.

B. **Federal Act** shall mean the National Manufactured Home Construction and Safety Standards Act of 1974 42 USCA Sections 5401 to 5426 and the rules and regulations promulgated thereunder.

C. **Colorado Housing Act** shall mean the Colorado Housing Act of 1980 as amended Title 24 Article 32 Part 7 of the Colorado Revised Statutes.

2. **Factory Approval of Manufactured Structures**

A. Housing manufactured in or out of state under the Federal Act are inspected and approved by a HUD authorized product Primary Inspection Agency (PIPA).
The manufacturer shall permanently attach a HUD label (seal) to the exterior of the home on the tail light end of each transportable section. Each manufactured home shall bear a data compliance sheet (plate) permanently affixed to the interior of the home near the electrical panel in a visible location. The data compliance sheet (plate) shall show structural zone and snow and wind loads for which the home has been designed, thus determining whether the home does or does not meet the Colorado requirements of the Federal Act.

B Manufactured structures not constructed to the Federal Act shall be constructed in compliance with the Colorado Housing Act or the Colorado Factory Build Nonresidential Structures Act. The Colorado Division of Housing shall be the inspection agency and shall require a permanent Colorado approval label (seal) with a factory built (FB) certification number attached to each unit.

C Other factory built structures are not allowed. Prefabricated systems for residential or nonresidential use shall comply with the other sections of this Chapter. For example:

1. Stressed skin panels assembled at the site for roof, floor, and walls
2. Shell type units

3 Permits Required. The installation of factory built structures shall comply with all provisions of the Building Code except the plans for the MHU are not required when either of the following items are provided to the Department:

A. A data compliance sheet for HUD approved manufactured housing units

B. A copy of the Colorado approval label (seal) with a legible factory built certification number

4 Seal. A Colorado Division of Housing approval label (seal) must be permanently affixed to each factory built structure.

5 Inspection and Notice. The Federal Act and the Colorado Housing Act preempt the Building Code in relation to factory built structures. Therefore, the Department does not inspect them. However, the Department shall inspect the foundation installation of utilities and installation of the factory built structures to the foundation:

A. The following notice shall be given to all persons applying for any permit relating to manufactured homes and factory built structures from any agency of the city:

   In accordance with Federal and Colorado law, this manufactured structure has not been inspected by the City and County of Denver and may or may not meet the requirements of the Denver Building Code.

   It shall be the obligation of the permit applicant to forward this notice to the owner of the manufactured home or factory built structure.

B. The notice set forth in subsection A above shall be permanently installed in a visible location by the permit applicant adjacent to the date plate required by the Federal Act or in the furnace closet on factory built structures.
Table No 181D is amended

**TABLE NO 181D**

**FOUNDATIONS FOR STUD BEARING WALLS**

**MINIMUM REQUIREMENTS**

<table>
<thead>
<tr>
<th>NUMBER OF FLOORS SUPPORTED BY THE FOUNDATION</th>
<th>THICKNESS OF FOUNDATION WALL (INCHES)</th>
<th>WIDTH OF FOOTING (INCHES)</th>
<th>THICKNESS OF FOOTING (INCHES)</th>
<th>DEPTH BELOW FINISHED GROUND SURFACE (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONCRETE</td>
<td>UNIT MASONRY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>6               36^5</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>8</td>
<td>15</td>
<td>7               36</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>10</td>
<td>18</td>
<td>8               36</td>
</tr>
</tbody>
</table>

1. Where unusual frost conditions are found footings and foundations shall be required in Section 1806.
2. The ground under the floor may be excavated to the top of the footing.
3. Footings may support roof in addition to the specified number of footings.
4. Exterior footings and grade beams shall be permanent unless otherwise specified.
5. See Section 1806.1 for Group U Occupancies.
6. Does not apply in expansible soils.

Section 1801.1 is amended

1801.1 General

This Chapter sets forth requirements for excavation and fills for any building or structure and for foundations and retaining structures. Also see Chapter 33 for the Wastewater Management Division for requirements governing excavation, grading and earthwork construction including fills and embankments.

Section 1806.1 is amended

1806.1 General

Footings and foundations shall be constructed of masonry concrete or treated wood in conformance with Division II. Footings of concrete and masonry shall be of solid material. Foundations supporting wood shall extend at least 6 inches above the adjacent finish grade.

Exterior footings, footings and grade beams of permanent structures shall be placed not less than 3 feet below the finished grade.

**EXCEPTIONS**

1. Foundations footings or grade beams bearing on nonexpansive rock.
2. Grade beams supported by footings piers, piles or other foundations where the following conditions are present:
   A. Strength and stability requirements are satisfied and
   B. The grade beam is constructed over a permanent void space and
   C. In soils containing silt or fine sand the highest expected water table is at least 5 feet below the exterior finished grade or

UBC 152
D In expansive soils the soil on each side of the grade beam is either permanently enclosed covered or protected from moisture penetration and irrigation or paved with a material that prevents the penetration of water into the soil and is sloped to drain away from the grade beam

3 The following may be placed on a minimum 4 inch reinforced concrete slab, with thickened edges. The bottom of the thickened edges shall extend at least 12 inches below the final exterior finished grade

A Single Group U buildings of less than 1,000 square feet and not a mixed occupancy
B Single occupancy buildings other than Group R of less than 400 square feet without a basement and of only one story

4 Frost Protected Shallow Foundations (FPSF) are approved subject to the following

A A soil engineers report to identify the soil classification frost susceptibility moisture content and water table and that this information be used to design the foundation
B That the foundation bear on firm undisturbed soil or compacted fill approved by an engineer
C That the top of slab be a minimum of 6 inches above finish grade and the bottom of the slab edge beam be a minimum of 12 inches below finish grade
D The insulation be type EPS Thermal Insulation which complies with ASTM C 578 92 to cover the full exterior vertical face of the slab edge beam with a minimum 12 inch wing insulation

**EXCEPTION** The 12 inch wing insulation is not required when the bottom of the slab edge beam is a minimum of 18 inches below finish grade

E With the exception of Items A thru D, the design of FPSF shall comply with the Design Guide For Frost Protected Shallow Foundations prepared by U S Department of HUD June 1994

---

**Section 2317 3 is amended**

2317 3 **Under Floor Clearance** Minimum clearance between any obstruction and the ground within a crawl space shall be at least 18 inches. Access to a crawl space shall be at least 18 by 24 inches. See the Mechanical Code for equipment access requirements

**Section 2317 7 Under Floor Ventilation** is amended by revising the second sentence of the first paragraph to read: Such openings shall have a net area of \( \frac{1}{2} \) square foot for each 25 linear feet of exterior wall

**Section 2322.2** is amended by revising the second paragraph

- Roof sheathing shall conform to the provisions of Table Nos 23 l R 1 and 23 l R 2 or 23 l S 1, 23 S 2 or Table 23 l S 3 with the exception that the minimum thickness of plywood or particle board roof sheathing shall be
  - \( 1/2 \) inch plywood or
2. 1/2 inch nonveneer APA rated sheathing (oriented strand board panels, structural particle board panels, composite panels or wafer board panels)

Section 2326.12.8 is amended

2326.12.8 Blocking Roof rafters and ceiling joists shall be supported laterally to prevent rotation and lateral displacement when required by Section 2306.7. Roof trusses shall be supported at points of bearing to prevent lateral displacement and if necessary rotation.
Chapter 29
Plumbing Systems
Chapter 29 is amended

CHAPTER 29  PLUMBING SYSTEMS

Section 2901  PLUMBING CODE

Plumbing systems shall comply with the Plumbing Code

Section 2902  MINIMUM PLUMBING PROVISIONS

2902.1 General  Each building shall be provided with the minimum sanitary facilities for various occupancies as provided in this Section and in Appendix Chapter 29. Each plumbing fixture shall be equipped with hot and cold running water as necessary for its normal operation.

2902.1.1 Location of toilet facilities  Facilities shall be installed in a location convenient to occupied areas served by them and not more than 300 feet and one floor removed from any portion of the occupied area.

2902.1.2 Rest room  Separate toilet room facilities shall be provided for males and females unless otherwise allowed in this Code. Toilet room facilities shall be completely enclosed or screened to ensure privacy. A toilet room utilized by both sexes shall be identified as a rest room.

2902.1.3 Access  There shall be no access through a toilet room to any portion of a building. Access to toilet rooms shall not be through food preparation areas except for toilet room facilities provided exclusively for the use of employees in the food preparation area.

2902.1.4 Toilet room accessories  A minimum of one hand drying facility shall be provided in each toilet room where lavatories are provided.

2902.1.5 Location of service sinks  Except for Group R Occupancies, service sinks are required on each floor where toilet facilities are required. Service sinks shall not be installed in toilet rooms.

2902.1.6 Urinals for women  Women's urinals may be installed only under the following conditions:

1. Urinals may be installed as auxiliary fixtures and shall not be considered as substitutes for required water closets. The required minimum number of water closets shall be provided in all cases.

2. Urinals shall be in enclosed compartments with doors for privacy.

2902.1.7 Coin-operated toilets  Toilet facilities for public use and provided with coin operated or other external locking devices shall be provided only in addition to the toilet room facilities required by this Code.

2902.1.8 Occupancy/ratio of sexes  To determine the number of occupants in a building or portion thereof, see Table No. 10 A of the Uniform Building Code. In buildings occupied by both sexes, the ratio of male to female facilities shall be established on the basis of 50% male and 50% female occupants except when the building or portions thereof are designated and intended for an imbalanced division of the sexes. For imbalanced situations, the number of fixtures for each sex shall be installed on the basis of the actual or intended ratio of male to female occupants of the building or portion thereof.
Section 3002 is amended by amending the third paragraph

Elevator lobbies shall have at least one exit with direct access to an exit corridor or enclose stairway. The use of such exit shall not require keys, tools, or special knowledge or effort. See Exception 8 to Section 1003.1.

Section 3003.6 is amended by adding a sentence

All required exit stairs shall be graphically located on the elevator call button signs and shall indicate areas of evacuation assistance where they are required.

Section 3004 is amended

3004 Hoistway Venting. Shafts (hoistways) housing elevators extending through more than 2 floor levels shall be vented to the outside. The area of the vent shall be not less than $3\frac{1}{2}\%$ of the area of the elevator shaft provided that a minimum of 3 square feet per elevator is provided.

All hoistway vents shall be normally closed and they shall be opened automatically by the activation of:

1. The elevator hoistway detector and
2. A power failure and
3. In addition, a manual override shall be provided by a key switch adjacent to the elevator emergency controls.

**EXCEPTION:** Elevator shafts (hoistways) required to comply with Section 403.

Section 3005 is amended by adding Section 3005.2

3005.2 Cable slots. Cable slots entering the machine room shall be provided with the minimum clearance necessary for the free passage of the cable and to inhibit the passage of smoke into the machine room.

Section 3102.3.6 is amended as follows

3102.3.6 Height and termination. Every chimney shall extend a minimum of 3 feet above the roof and any part of the building within 10 feet of the chimney unless this Code or the Mechanical Code requires a greater height. See Table No. 31-B.

Section 3102.3.8 is amended by deleting the first part of the first sentence up to the comma following hazard.

Section 3104 is added

Section 3104 CANOPY SPECIAL USES

3104.1 Definition. Canopy is a supported cover for shelter and may be used over a building entrance for pedestrian or vehicle window or selected area.

Also see Awning Sec 3206 Membrane Structures Appendix Chapter 31 Division III and Patio Covers Appendix Chapter 31 Division II.

3104.2 Canopies that cover vehicle or pedestrian entrances shall have noncombustible frames. Frames covered with membrane material conforming to the UBC Standard 31.1 shall be classified as Type VN construction. Frames covered with noncombustible materials may be classified as Type IIIN construction.
3104.3 Canopies that cover occupied areas shall have noncombustible frames covered with membrane material conforming to UBC Standard 31-1 and shall be classified Type VN construction

**EXCEPTION** Noncombustible cover materials may be used subject to the approval of the Building and Fire Departments

3104.4 Canopies that cover windows shall comply with Section 3206.2

3104.5 Canopies that serve as marquees shall comply with Section 3205

3104.6 Special Provisions

1. Separation between different types of construction shall not be required

2. Minimum height above walk or drive shall be 7 feet

3. Canopies in the public right of way shall comply with Sections 3206.3 and 3206.4

4. Canopies shall not obstruct required exits or Fire Department access to the building

Section 3301.1 is amended

3301.1 General Excavation or fills for buildings or structures shall be so constructed or protected that they do not endanger life or property

Slopes for permanent fills shall not be steeper than 1 unit vertical in 2 units horizontal (50% slope). Cut slopes for excavations shall not be steeper than 1 unit vertical in 1 unit horizontal (slope) unless substantiating data justifying steeper cut slopes are submitted. Deviation from the foregoing limitations for cut slopes shall be permitted only upon the presentation of a soil investigation report acceptable to the Building Official or shall have supports designed to retain the adjacent soil together with any surcharge loads. (Balance of Section to remain)

Section 3301.2 is amended

3301.2 Protection of Adjoining Property All excavations shall be protected so that the adjoining property will not cave or settle. The person or persons making or causing the excavation to be made shall give notice in writing at least 10 days before the excavation is started to the owners of adjoining properties advising them that the excavation is to be made.

A Building or Excavation Permit will not be issued until a copy of the notice is submitted to the Department

Section 3301.3 is added

3301.3 Excavations Abutting Public Property Prior to the issuance of a permit by the Department for the construction of any building involving excavation extending within one foot of the angle of repose or a slope of one to one under any public sidewalk, street, alley or other public property, the owner of the property or proposed building shall submit to the Manager of the Department of Public Works an indemnity bond in the amount determined by the Manager in a form approved by the City Attorney.

Section 3303.7.3 is amended

3303.7.3 Fences Fences or adequate barricades shall be required where a building or structure is under construction or is partially or totally demolished. Fences shall be substantially built, be not less than 6 feet in height above grade and be placed on the side
of the walkway nearest to the building site and each end shall be returned to the building line.

Openings in such fences shall be protected by doors or gates which normally are kept closed.

**EXCEPTION** When approved by the Department a second person in addition to the equipment operator shall be present on the job site to act as a safety watchman to prevent the entry of unauthorized persons.

In addition to the above when required by the Department a second person in addition to the equipment operator shall be present on the job site to act as a safety watchman to prevent the entry of unauthorized persons.

Section 3304 is added.

### Section 3304  DEMOLITION AND MOVING ———— [B-005]

#### 3304 1 General

1. **Scope**  In addition to the other requirements of this Building Code the Revised Municipal Code and the Fire Code this Chapter shall govern the demolition and moving of buildings, structures and utilities. Any device or equipment such as scaffolds, ladders, derricks, hoists or similar equipment used in connection with demolition or moving shall be constructed, installed, maintained and operated in accordance with the requirements governing the construction, installation, maintenance and operation of such device or equipment as specified in other portions of this Building Code.

2. **Loads**  Structures, floors, temporary supports, scaffold, sidewalk, barricade or bridge or any part thereof or any device or equipment shall not be loaded in excess of the safe carrying capacity.

3. **Danger Signs**  Every demolition project shall be provided with danger signs posted around the property. See Chapter 1 for the posting of danger signs.

4. **Cleaning Brick**  The cleaning of brick or lumber at the job site shall be performed only by employees of the demolition contractor.

5. **Dust**  All dust resulting from demolition operations shall be settled with water and approved by the Department.

6. **Transportation Approval**  Trucks and other equipment used by the contractor shall not interfere with or block either vehicular or pedestrian traffic except when approved by the Department of Public Works. Where it becomes necessary to transport units of a wrecked building, structure or utility upon and through the public streets, alleys or other public ways and places, permission to do so shall be obtained from the Department of Public Works.

7. **Rubbish and Waste**  All adjacent streets, alleys and other public ways and places shall be kept free and clear of all rubbish, refuse and loose material resulting from the moving, demolition or demolition removal operations.

8. **Sale of Material on Job Site**  The sale of any material on a demolition or moving site is hereby prohibited except as approved by the Department. See Chapter 1 for violations.

9. **Sanitary Facilities**  Toilet facilities shall be provided on each demolition or moving site in accordance with the requirements of Appendix Chapter 29 of the Building Code.
10 **Extinguishers** When cutting torches are required on any demolition or moving project approved type extinguishers shall be provided. The approval and number required shall be set forth by the Fire Department. See the Uniform Fire Code.

11 **Liability Insurance** Prior to the issuance of a permit by the Department any person, firm or corporation demolishing or moving any building, structure or utility shall provide insurance to cover bodily injury and property damage to the public or public property. A copy of the certificate of liability insurance shall be provided to the Department. This insurance shall contain a non-cancellation clause and be valid at all times during demolition or moving operations.

**EXCEPTION** Homeowners for the demolition of Group R 3 or U Occupancies when approved by the Department.

A **Insurance** The minimum amount of insurance to be provided shall be as follows:

**CONTRACTOR INSURANCE COVERAGE**

<table>
<thead>
<tr>
<th>Class</th>
<th>Minimum amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A Wrecking</td>
<td>$500 000 00</td>
</tr>
<tr>
<td>Class B Wrecking</td>
<td>$300 000 00</td>
</tr>
<tr>
<td>House Moving</td>
<td>$300 000 00</td>
</tr>
</tbody>
</table>

Additional insurance coverage may be required by the Office of Risk Management for contractors utilizing explosives in their demolition operations.

B **Other permits** Whenever any other permittee except a homeowner performs demolition work, he shall be required to show proof of insurance in the same amounts as indicated herein.

12 **Damage to Public Property** As a condition of obtaining a permit to wreck or move any building, structure or utility, the permittee assumes liability for any damage to public property occasioned by such moving, demolition or removal operations. The permittee agrees to repair any damage to public property included any public sidewalks occasioned by such moving demolition or removal operations. Failure to make such repairs within 30 days shall be grounds for the revocation of the contractor's license.

13 **Permit** A permit shall be required for the erection of all covered walkways and railings. See Chapter 1.

14 **Protection of Utilities** Materials or equipment used in or required for demolition or moving operations shall not be placed or stored so as to obstruct free and convenient approach to any fire hydrant, fire or police alarm box, utility box, catch basins or manhole, or so as to interfere with the free flow of water in any street or alley gutter. Every street lamp, utility box, fire or police alarm box, fire hydrant, catch basin and manhole that might be damaged by any work being performed or by the placement or storage of any materials or equipment shall be protected adequately against such damage. This protection shall be maintained only as long as the actual work may require and shall be completely removed as soon as the work status permits.

### 3304 2 Preparatory Operations

1 **Survey and Notification** Prior to the start of demolition operations, the owner of the property to be demolished shall

A Have a structural survey made to determine the condition of the structure and to determine the possibility of unplanned collapse of any portion of the building or structure and
B Notify in writing by registered mail with a return receipt, the owners of the adjoining buildings not less than 60 days before the demolition is to begin that their buildings should be surveyed and protected if necessary. If the building to be demolished shares a common wall with an adjacent building the owner of the building to be demolished shall provide an engineer's report stating the effect the removal of the building will have on the structural stability of the adjacent buildings. Should the engineer's report indicate adverse effects on the adjacent buildings a demolition permit will not be issued until the stability of the buildings is resolved. Except as approved by the Department, buildings 4 or more stories in height shall require an engineer's report to be filed with the Department prior to a demolition permit being issued. This report shall contain information as to type of construction, method of demolition, street sidewalk or other public way closures, method of protecting the public and pertinent data pertaining to adjacent structures. The Department may request an engineer's report for other demolition operations when deemed necessary. Buildings being demolished containing friable asbestos shall conform to the provisions of the National Emission Standard for Asbestos and all other federal and state regulations.

2 Damage by Fire, Flood or Other When persons are required to work within a structure to be demolished which has been damaged by fire, flood, explosion or other cause the structure shall be braced or shored for safety.

3 Utility Shut Off All electric, gas, water, steam, sewer and other service lines shall be shut off, capped or otherwise controlled outside the building line prior to beginning demolition work.

4 Relocation of Utilities Any power, water or other utilities required to be maintained during demolition shall be temporarily relocated and protected.

5 Dangerous Utilities A determination shall be made by the contractor if any type of hazardous chemicals, gases, explosives, flammable materials or similarly dangerous substances have been used in any pipes, tanks or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed by the demolition contractor and the hazard eliminated prior to demolition operations.

6 Glass Hazard Hazards from the fragmentation of glass shall be removed.

7 Wall Opening Hazard Wall openings shall be protected to a height of approximately 42 inches above the floor.

8 Exterior Wall Floor Demolition The demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into storage space before commencing the removal of exterior walls and floors in the story next below.

3304 3 Stairs Passageways and Ladders

1 Access Only those stairways, passageways and ladders designated as means of access to the structure of a building shall be used. Other access ways shall be closed at all times.

2 Maintenance All stairs, passageways, ladders and incidental equipment thereto shall be periodically inspected and maintained in a clean, safe condition.
3 **Stairwells** In a multistory building when a stairwell is being used as access the stairwell shall be properly illuminated by either natural or artificial means and completely and substantially covered over at a point not less than 2 floors below the floor on which the work is being performed. Access to the floor where the work is in progress shall be through a properly lighted protected and separate passageway

4 **Doorways** All access doorways or thoroughfares to the property shall be kept barricaded except during the actual passage of men or equipment

#### 3304.4 Chutes

1 **Prohibition** Materials shall not be dropped to any point lying outside the exterior walls of the structure unless the area is protected. Where the distance from the property line or sidewalk is equal to or greater than the height of the demolition work materials may be dropped by gravity to the ground provided that the dust control is maintained.

2 **Enclosure** All material chutes or sections thereof which are at an angle of 45° or more from the horizontal shall be entirely enclosed except for openings equipped with closures at each floor level for the insertion of materials. The opening shall not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor openings shall be kept closed when not in use.

3 **Gate** A substantial gate shall be installed in each chute at or near the discharge end. When chutes are used a competent employee shall be assigned to control the operation of the gate and the backing and loading of trucks. When operations are not in progress the area surrounding the discharge end of the chute shall be securely closed off.

4 **Guardrail** Any chute opening used to dump debris shall be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump material. Any space between the chute and the edge of the openings in the floors through which it passes shall be solidly covered over.

5 **Toeboard or Bumper** Where the material is dumped from motorized equipment or wheelbarrows a securely attached toeboard or bumper not less than 4 inches thick and 6 inches high shall be provided at each chute opening.

#### 3304.5 Removal of Walls, Masonry Sections and Chimneys

1 **Floor Loads** Masonry walls or sections of masonry shall not be permitted to fall upon floors of the building in such masses as to exceed the safe carrying capacities of the floors.

2 **Freestanding Walls** No wall section which is more than one story in height shall be permitted to stand alone without lateral bracing. All walls shall be left in a stable condition at the end of each shift.

3 **Cutting Load-Supporting Members** Structural or load supporting members on any floor shall not be cut or removed until all stories above such floor have been demolished and removed. This provision shall not prohibit the cutting of floor beams for the disposal of materials or for the installation of equipment.

4 **Skeleton Type Buildings** In buildings of steel or concrete frame construction the framing may be left in place during the demolition of the masonry. Where this is performed all beams, girders and similar structural supports shall be cleared of all loose material as the masonry demolition progresses downward.
5 **Walls Serving as Support** Walls that serve as retaining walls to support earth or adjoining structures shall not be demolished until the earth has been properly braced or adjoining structures have been properly supported.

6 **Walls Serving as Retainers** Walls which are to serve as retaining walls against which debris will be piled shall not be used unless they are capable of supporting the imposed loads.

### 3304.6 Catch Platforms

1 **General** During the demolition of the exterior walls of a structure originally more than 70 feet high, catch platforms shall be erected along the exterior faces of these walls.

*EXCEPTION:* Catch platforms shall not be required when the engineer's report specified in Section 4602 specifically deletes this requirement.

2 **Height** The catch platforms shall be constructed and maintained not more than 3 stories below the story from which the exterior walls are being removed. Catch platforms shall not be considered necessary when the demolition has progressed to within 3 stories of ground level.

3 **Width** Catch platforms shall be at least 5 feet in width measured in a horizontal direction from the face of the structure and shall consist of outriggers and planks. Planks shall be laid tight together and without openings between such planks and the wall.

4 **Material** Catch platforms may be constructed of material other than wood provided that such material is of equal strength and does not otherwise lessen the security against falling material.

5 **Loading** Catch platforms shall be capable of sustaining a live load of at least 125 pounds per square foot.

6 **Incline** The catch platforms shall be inclined so that the outer edge is at least 6 inches higher than the inner edge.

7 **Supports and Outriggers** Supports shall consist of outriggers of ample strength secured against turning and spaced not more than 20 feet apart. Each outrigger shall have ample support against the building or in window openings and shall be properly secured.

8 **Enclosure** The outer edge of each catch platform shall be provided with a substantial enclosure constructed at an angle of approximately 45° with the horizontal and having its outer edge at least 48 inches from the platform measured along the slope of the enclosure.

   A The enclosure shall consist of galvanized wire mesh made of at least No. 16 U.S. gauge wire and 1/2 inch mesh. The enclosure shall be secured to supports placed not more than 10 feet apart.

   B There shall be no openings between the platform and the enclosure.

   C Supports for the enclosure shall be at least 2 inches by 6 inches in section with the greater dimension at right angles to the enclosure.

### 3304.7 Storage

The storage of waste material and debris on any floor shall not endanger the structural stability of the building.

### 3304.8 Machine Demolition

Machine demolition shall be subject to approval by the Department.
3304.9 Use of Explosives Contractors utilizing explosives in their demolition operation shall be specifically approved by the Director. For storage and transportation of explosives see the Fire Code.

3304.10 Moving

1 Compliance Buildings, structures or utilities which are moved from one location to another, within or from the City shall conform to all requirements of this Building Code. These buildings, structures or utilities shall be inspected and approved by the Department prior to moving. See Chapter 1.

2 Other Requirements During actual moving operations on the public way, one or more men shall be stationed on the roof of the structure being moved to determine that there is no interference with trees, wires, traffic signals, signs or other obstructions.

3 Utilities Disconnect See Section 3304.2

4 Filling Holes and Clearing of Site See Section 3304.11

5 Approvals Prior to the issuance of a permit by the Department, and the subsequent moving of any building, structure, or utility, approval shall be obtained from the Traffic Engineer.

6 Storage of Moved Buildings Buildings, structures or utilities shall not be stored on any property for more than 72 hours unless approved by the Department.

3304.11 After Removal Upon completion of the removal of a building, structure, or utility, either by demolition or moving the ground shall be left in a clean, smooth condition. Basements or cellars shall be filled with an inorganic material, provided, however, that the top one foot of fill shall be clean earth. The filling of such excavations shall not be required when a building permit has been issued for a new building on the site and construction is to be started within 60 days after completion of the demolition or moving operations. The holder of the building permit shall provide a temporary barricade protecting the excavation on all sides as specified for safety by the Department. The temporary barricade may remain in position for a time not exceeding 3 days after which a solid barricade or fence shall be provided or the excavation filled.

3304.12 Standards

Unless provided for in other portions of this Building Code, the following Standards shall apply.

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<tr>
<td>American National</td>
<td>Demolition Safety Requirements A106 1990</td>
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<td>Standards Institute</td>
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Section 3503 Chapter 9 is amended by adding the following National Fire Protection Association Standards:

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<td>Portable Fire Extinguisher</td>
<td>1994</td>
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<tr>
<td>11</td>
<td>Low Expansion Foam and Combined Agent System</td>
<td>1994</td>
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<tr>
<td>11A</td>
<td>Medium and High Expansion Foam Systems</td>
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</table>
Section 3503 is added

Section 3504  ADDITIONAL STANDARDS

Unless provided for in other portions of this Building Code the following Standards shall apply

Chapter 7

ORGANIZATION  TITLE OF PUBLICATION

ASTM
Cellulosic Fiber (Wood Base) Loose Fill Thermal Insulation  C739 73
Mineral Fiber Blanket Thermal Insulation for Wood Frame and Light Construction Buildings  C665 70
Mineral Fiber Loose Fill Thermal Insulation  C764 73
Perlite Loose Fill Insulation  C764 73
Rigid Performed Cellular Urethane Thermal Insulation  C591 69
Flammability of Treated Paper and Paper Board  D777 065

CPSC
Cellulose Insulation Standards HH 1 515C  HH 1 515D

Chapter 19

ORGANIZATION  TITLE OF PUBLICATION

CRSI
Placing Reinforcing Bars
Chapter 61 is added

CHAPTER 61 REHABILITATION OF OLDER BUILDINGS

Section 6101 GENERAL

1 Scope This Chapter applies to the rehabilitation of all existing buildings, structures and utilities of any occupancy classification except Group H Occupancy which is at least 30 years old. This Chapter shall supersede all the requirements of this Building Code that are in conflict with the provisions of this Chapter except the requirements of Chapter 1 relating to unsafe buildings, structures or utilities.

2 Intent The intent of this Chapter of the Building Code is to allow for cost effective and efficient renovation of existing buildings that are at least 30 years old which may not meet the strict letter of present Building and Fire Codes, but that still meet basic life safety standards.

3 Declaration It is hereby declared as a matter of public policy that the rehabilitation, preservation and restoration of older buildings located within the City are a public necessity and are required in the interest of the general welfare of the people. Special consideration shall be given to buildings that are Denver landmarks on the National Register of Historic Places or National Historic Districts.

4 Exception for the Rehabilitation of Existing Buildings Buildings, structures and utilities conforming with Section 6101 1 of this Building Code may be granted an exception from the requirements of this Building Code concerning the repair, rehabilitation or change of use or occupancy of such building, structure or utility. No exception shall be granted unless the following conditions exist:

A The building, structure or utility is at least 30 years old and

B The building, structure or utility is structurally sound and the proposed repair, rehabilitation or change of use or occupancy will substantially improve the use, safety and welfare of the occupants. The Committee or Director in making this decision may request an engineer's or architect's report to determine the condition of the building, structure or utility.

Section 6102 CHAPTER 61 COMMITTEE

1 Creation There is hereby created the Committee composed of 9 members who shall be appointed by the Mayor for terms of 3 years except that in making the
initial appointments the Mayor shall appoint 3 members for a 1 year term 3
members for a 2 year term and 3 members for a 3 year term. The Mayor shall
appoint the Chair of the Committee who shall serve as Chair at the pleasure of the
Mayor.

2 Composition  The Committee membership shall have mechanical structural and
electrical expertise and shall consist of at least 1 representative of the following
fields:

A  Architect or engineer
B  Trades person with expertise in electrical plumbing or heating and ventilation
C  Person with expertise in real estate or real estate financing
D  Person with expertise in historic preservation
E  Person with expertise in accessible design or construction to represent the
disabled community
F  The Executive Director of the Mayor's Office of Regulatory Reform or designee

3 City Representation  The Director, the Chief of the Fire Prevention Bureau and the
Manager of Health and Hospitals or their designees shall be ex officio members
of the Committee but shall have no voting power.

4 Removal  The Mayor may remove any member of the Committee for cause.
Cause may include but is not limited to absence from more than 3 meetings in a
row.

5 Vacancy  The Mayor may fill any vacancy for the remainder of the unexpired term.

Section 6103  COMMITTEE ACTIVITIES

1 Support  The Department shall provide the Committee with a coordinator and
secretary. The coordinator may be but need not be the Director or his designee.

2 Meetings  There shall be at least 1 meeting per month unless there is no work for
the Committee to conduct. A simple majority of the Committee shall be necessary
to conduct business. Guidelines shall be established to govern the activities of the
Committee. The Committee may hold meetings to inspect the physical condition of
subject buildings. All meetings of the Committee shall be open to the public. At
the meeting the Committee and the applicant are encouraged to discuss the
application the requested variances and possible options and changes to the
application in order to meet necessary health and safety requirements in a manner
that is acceptable to all parties.

3 Compliance  The Committee shall make a recommendation as to any variances
requested by the applicant and forward it to the Director. The Director shall grant
the recommended variances within 2 weeks after receipt of the Committee's
recommendation unless the Director determines by clear and convincing
evidence that the variance would cause imminent peril to life or property. Such a
determination must be made in writing and forwarded to the applicant and the
Committee. The Chief of the Fire Prevention Bureau and the Manager of Health
and Hospitals may provide written comments concerning the variance to the
Director. The Director shall consider any such comments when making such
determination and make them part of the record. Failure to comply with present
codes shall not in and of itself constitute clear and convincing evidence of
imminent peril to life or property.
4 Compensation Each member of the Committee except those that are city employees acting in their official capacity shall receive $35.00 per meeting.

Section 6104 APPLICATION AND FEE

Prior to any action by the Committee an application for a variance shall be filed with the Department on a form approved by the Committee. A nonrefundable fee of $100.00 shall accompany the application. The check shall be made payable to Manager of Revenue.

Section 6105 PROCEDURE

Application for a variance shall be submitted to the Building Department by the last Wednesday of each month. The Building Department shall review the application with the applicant before the first Wednesday of the next month. If the issues for a variance can not be resolved by the first Wednesday of the month the application shall be directed to the Rehabilitation Committee for its review and recommendation at its next meeting.

The application for a variance shall stay enforcement of any outstanding order or denial unless the Director certifies that a stay of the order or denial would cause imminent peril to life or property.

Section 6106 DECISION

1. The decision on the application for variance shall be sent to the applicant and to the Committee. Decisions shall be filed with the Department as a matter of public record.

2. A denial of a variance by the Director based on a Committee recommendation for denial may be appealed to the Board of Appeals under Section 112.

3. A denial of a variance by the Director contrary to the recommendation of the Committee because of clear and convincing evidence that the variance would cause imminent peril to life and property may be appealed to the Manager of Public Works or his designee. Upon an appeal the Manager shall decide only whether the Director has clear and convincing evidence of imminent peril to life or property with which to deny the variance. If the Manager determines that the Director has met the burden of proof the Director's denial of the variance shall be upheld. The Manager shall order the Director to grant the variance if the burden of proof has not been met.

4. A variance approved for the rehabilitation of existing buildings, structures, and utilities pursuant to this Chapter based on the original application shall be valid for a period of 2 years from the date of approval after which period the variance shall lapse and become void unless a building permit has been issued within said period and is not thereafter cancelled.
UBC
Appendix
# APPENDIX

All Chapters and Sections of this Appendix are adopted as part of this Code except for those that are deleted in this summary. Those that are amended or added shall also be adopted as part of this code.

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APPENDIX CHAPTER 4 is amended by adding Division IV

Division IV EMERGENCY AIR RESCUE REPLENISHMENT SYSTEM

Section 436 Scope This specification covers the requirements for the construction and installation of an emergency air rescue replenishment system which will allow firefighters to refill their breathing apparatus at stations in the elevated locations of buildings which may be remote from the Fire Department ground level portable high pressure air resupply system. This system shall be permanently installed in high rise buildings hereafter constructed.

Section 437 Pressure Rating The emergency air system shall be constructed of material tested and certified for an operating pressure of 5,000 pounds per square inch at 70° F.

Section 438 Locations The emergency system is a series of remote filling stations connected by high pressure piping to a single ground level filling and connection station. Only 1 system shall be required in each high rise building. The location of the filling station shall be shown on the floor layout diagram within each valve cabinet.

1. The ground level filling and connection station shall include a shutoff valve, pressure gauge and quick couple high pressure connection in a lockable weatherproof enclosure located within 10 feet of the Fire Department connection at a height between 1 foot 6 inches and 3 feet 6 inches above the ground or a location approved by the Fire Department.

2. The remote filling station shall be located on alternate floors beginning at the third floor and terminating no more than 2 floors from the highest portion of the building. The filling station shall include a shutoff valve, pressure gauge, quick couple high pressure connection pressure bleed valve and an isolation valve installed in the Fire Department standpipe cabinet or separate lockable enclosure. When located in a separate enclosure, the top of the enclosure shall not be located more than 5 feet above the finished floor. The isolation valve will be installed so that when it is closed, all filling stations above the valve will seal out the remainder of the system. The remote filling stations and enclosure may be located in the stairwell and shall not extend more than 4 inches into the required exit width.

Section 439 Required Clean Materials of Construction All materials and components used in the construction of the emergency air rescue system shall meet the requirements of ANSI B31 and ASME Section 8. High quality commercial components shall be used. All materials used in unaccessible areas shall be corrosion resistant steel.

Internal surfaces of all components must be free of contamination especially hydrocarbons and the air contained within the system shall meet grade D breathing requirements.

Fittings and piping shall be joined by welding or the use of commercial high pressure pipe fittings. Where compression type fittings are used, the ferrules shall be properly selected to match the type of pipe being joined. Fittings may only be used in areas that are accessible. All welded connections shall be socketed welding conforming to ANSI Section IX. Fittings shall be installed by trained personnel in conformance with the manufacturer's recommended instructions.

The high pressure piping shall be adequately supported and protected from abrasion. Pipe bends shall be avoided. Where necessary, they shall be made by using a commercial pipe bender with sufficient radius and support to prevent collapse.

All piping shall be sized to minimize flow losses and maximize flow rate at 4500 psig.
Section 440 Testing and Maintenance

1 Testing The entire emergency air rescue system shall be subject to a pneumatic pressure test of 1/ the maximum working pressure with oil free dry air or nitrogen. This test pressure shall be maintained until each connection has been examined for leakage by means of soapy water or other equally effective means of leak detection safe for use with grade D breathing air. After completing the testing the system shall be subject to a 24 hour standing air pressure test at 1/ the maximum working pressure.

2 Maintenance The emergency air rescue system shall maintain a minimum residual air pressure of 150 psig to minimize the contamination and moisture build up. This system shall be maintained as a fire and life safety and operational at all items.

Section 441 Labeling and Graphics The emergency air rescue system shall be readily identifiable by appropriate labeling reading High Pressure Rescue Air System Labeling shall be permanently attached at intervals of not more than 20 feet and at each remote filling station. A graphic representation shall be required in the fire command center or to indicate the location of the emergency air rescue system and the ground and remote filling stations.

APPENDIX CHAPTER 11 is amended in its entirety

THIS APPENDIX CHAPTER IS FOR REFERENCE ONLY IT IS NOT THE RESPONSIBILITY OF THE BUILDING DEPARTMENT TO ENFORCE IT

DIVISION I GUIDELINES FOR SITE TERRAIN EXEMPTIONS

US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

FEDERAL FAIR HOUSING ACT

Section 1115

1115 1 Purpose The purpose of this division is to provide the United States Department of Housing and Urban Development Federal Fair Housing Act Guidelines for Site Terrain Exemptions

1115 2 Scope

1115 2 1 General The provisions of this division may apply to all buildings and dwelling units that are regulated by the Federal Fair Housing Act Amendments of 1988

1115 2 2 Applicability of other provisions Except as specifically allowed by this division for determining site terrain exemptions Group R Division 1 apartment houses shall meet all applicable provisions of this Code

1115 3 Definitions For the purpose of this division certain terms are defined as follows

COVERED MULTIFAMILY DWELLINGS means buildings consisting of 4 or more dwelling units if such buildings have 1 or more elevators and ground floor dwelling units in other buildings consisting of 4 or more dwelling units Dwelling units within a single structure separated by firewalls do not constitute separate buildings

FINISHED GRADE means the ground surface of the site after all construction leveling grading and development has been completed
Appendix Sec 1115 3

UNDISTURBED SITE means the site before any construction leveling grading or development associated with the current project

1115 4 Site Impracticability

1115 4.1 General Covered multifamily dwellings with elevators shall be designed and constructed to provide at least one accessible entrance on an accessible route regardless of terrain or unusual characteristics of the site. Covered multifamily dwellings without elevators shall be designed and constructed to provide at least one accessible entrance on an accessible route unless terrain or unusual characteristics of the site are such that the following conditions are found to exist.

Site Impracticability Due to Terrain. There are 2 alternative tests for determining a site impracticability due to terrain. The individual building test provided in paragraph 1 or the site analysis test provided in paragraph 2. These tests may be used as follows.

A site with a single building having a common entrance for all units may be analyzed only as described in paragraph 1.

All other sites including a site with a single building having multiple entrances serving either individual dwellings units or clusters of dwelling units may be analyzed using the methodology in either paragraph 1 or paragraph 2. For these sites for which either test is applicable regardless of which test is selected at least 20% if the total ground floor units in nonelevator buildings on any site must comply with the guidelines.

1 Individual Building Test. It is impractical to provide an accessible entrance served by an accessible route when the terrain of the site is such that:

A The slopes of the undisturbed site measured between the planned entrance and all vehicular or pedestrian arrival points within 50 feet (15 m) of the planned entrance exceed 10%.

B The slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet (15 m) of the planned entrance also exceed 10%.

If there are no vehicular or pedestrian arrival points within 50 feet (15 m) of the planned entrance the slope for the purpose of this paragraph 1 will be measured to the closest vehicular or pedestrian arrival point.

For purposes of these guidelines vehicular or pedestrian arrival points include public or resident parking areas; public transportation stops; passenger loading zones and public streets or sidewalks. To determine site impracticability the slope would be measured at ground level from the point of the planned entrance or if there are no vehicular or pedestrian arrival points close to the planned entrance in the case of sidewalks the closest point to the entrance will be where a public sidewalk entering the site intersects with the sidewalk to the entrance or in the case of resident parking areas the closest point to the planned entrance will be measured from the entry point to the parking area that is located closest to the planned entrance.

2 Site Analysis Test. Alternatively for a site having multiple buildings or site with a single building with multiple entrances impracticability of providing an accessible entrance served by an accessible route can be established by the following steps:

A The percentage of the total buildable area of the undisturbed site with a natural grade less than 10% slope shall be calculated. The analysis of the existing slope (before grading) shall be done on a topographic survey with two foot (610 mm) contour intervals with slope determination made between each.
successive interval The accuracy of the slope analysis shall be certified by a professional licensed engineer landscape architect architect or surveyor

B To determine the practicality of providing accessibility to planned multifamily dwellings based on the topography of the existing natural terrain the minimum percentage of ground floor units to be made accessible should equal the percentage of the total buildable area (not including floodplain wetlands or other restricted use areas) of the undisturbed site that has an existing natural grade of less than 10% slope

C In addition to the percentage established in paragraph B above all ground floor units in a building or ground floor units served by a particular entrance shall be made accessible if the entrance to the units is on an accessible route defined as a walkway with a slope between the planned entrance and a pedestrian or vehicular arrival point that is no greater than 8 33%

3 Site Impracticability Due to Unusual Characteristics Unusual characteristics include sites located in a federally designated floodplain or coastal high hazard area and sites subject to other similar requirements of law or code that the lowest structural member of the lowest floor must be raised to a specified level at or above the base flood elevation An accessible route to a building entrance is impractical due to unusual characteristics of the site when

A The unusual site characteristics result in a difference in finished grade elevation exceeding 30 inches (760 mm) and 10% measured between an entrance and all vehicular or pedestrian arrival points within 50 feet (15 m) of the planned entrance or

B If there are no vehicular or pedestrian arrival points within 50 feet (15 m) of the planned entrance the unusual characteristics result in a difference in finished grade elevation exceeding 30 inches (760 mm) and 10% measured between an entrance and the closest vehicular or pedestrian arrival point

1115 4 2 Exceptions to site impracticability Regardless of site considerations described in Section 1115 4 1 an accessible entrance on an accessible route is practical when

1 There is an elevator connecting the parking area with the dwelling units on a ground floor (In this case those dwelling units on the ground floor served by an elevator and at least one of each type of public and common use areas would be subject to these guidelines )

A Where a building elevator is provided only as a means of creating an accessible route to dwelling units on a ground floor the building is not considered an elevator building for purposes of these guidelines hence only the ground floor dwelling units would be covered

B If the building elevator is provided as a means of access to dwelling units other than dwelling units on a ground floor then the building is an elevator building which is a covered multifamily dwelling and the elevator in that building must provide accessibility to all dwelling units in the building regardless of the slope of the natural terrain

2 An elevated walkway is planned between a building entrance and a vehicular or pedestrian arrival point and the planned walkway has a slope no greater than 10%
DIVISION II  GUIDELINES FOR READILY ACHIEVABLE BARRIER REMOVAL AMERICANS WITH DISABILITIES ACT

Section 1116

1116 1 Purpose  The purpose of this division is to provide the United States Department of Justice Americans with Disabilities Act Guidelines for readily achievable barrier removal in existing buildings

1116 2 Scope

1116 2 1 General  The provisions of this division may be used as a guideline for the removal of readily achievable barriers to accessibility in existing buildings as required by the Americans with Disabilities Act of 1990

1116 2 2 Applicability of other provisions  Except as specifically allowed by this division all buildings and portions thereof shall meet all applicable provisions of this Code

1116 3 Definitions  For the purpose of the division, certain terms are defined as follows

COMMERCE is travel  trade  traffic  commerce  transportation or communication

1 Among the several states

2 Between any foreign country or any territory or possession and any state or

3 Between points in the same state but through another state or foreign country

COMMERCIAL FACILITIES are facilities

1 Whose operations will affect commerce

2 That are intended for nonresidential use by a private entity and

3 That are not

A Facilities that are covered or expressly exempted from coverage under the Fair Housing Act of 1968 as amended (42 U S C 3601 3631)

B Aircraft or

C Railroad locomotives  railroad freight cars  sleeping cars  lounge cars  food service cars and any other railroad cars described in Section 242 of the Americans with Disabilities Act or covered under Title II of the Americans with Disabilities Act or railroad rights of way  For purposes of this definition rail and railroad have the meaning given the term railroad in Section 202(e) of the Federal Railroad Safety Act of 1970 (46 U S C 431(e))

PLACE OF PUBLIC ACCOMMODATION is a facility operated by a private entity whose operations affect commerce and fall within at least 1 of the following categories

1 An inn  hotel  motel or other place of lodging except for an establishment located within a building that contains not more than 5 rooms for rent or hire and that is actually occupied by the proprietor of the establishment as the residence of the proprietor

2 A restaurant  bar or other establishment serving food or drink

3 A motion picture house  theater  concert hall  stadium or other place of exhibition or entertainment

4 An auditorium  convention center  lecture hall or other place of public gathering
Appendix Sec 1116.3

5 A bakery, grocery store, clothing store, hardware store, shopping center or other sales or rental establishment

6 A laundromat, dry cleaner, bank, barber shop, beauty shop, travel service, shoe repair, service, funeral parlor, gas station, office of an accountant or lawyer, pharmacy, insurance office, professional office, of a health care provider, hospital, or other service establishment

7 A terminal, depot or other station used for specified public transportation

8 A museum, library, gallery, or other place of place of public display or collection

9 A park, zoo, amusement park, or other place of recreation

10 A nursery, elementary, secondary, undergraduate, or postgraduate, private school, or other place of education

11 A day care center, senior citizen center, homeless shelter, food bank, adoption agency, or other social service center establishment, and

12 A gymnasium, health spa, bowling alley, golf course, or other place of exercise or recreation

PRIVATE ENTITY is a person or entity other than a public entity

PUBLIC ACCOMMODATION is a private entity that owns, leases (or lease to) or operates a place of public accommodation

PUBLIC ENTITY is

1 Any state or local government

2 Any department, agency, special purpose district, or other instrumentality of a State or States or local government, and

3 The National Railroad Passenger Corporation and any commuter authority (as defined in Section 103(8) of the Rail Passenger Service Act)

READILY ACHIEVABLE is easily accomplishable and able to be carried out without much difficulty or expense. In determining whether an action is readily achievable factors to be considered include

1 The nature and cost of the action needed under this part

2 The overall financial resources of the site or sites involved in the action, the number of persons employed at the site, the effect on expenses and resources or the impact otherwise of the action upon the operation of the site

3 The overall financial resources of any parent corporation or entity, the overall size of the parent corporation or entity, with respect to the number of its employees, the number, type, and location of its facilities

4 The type of operation or operations of the parent corporation or entity, including the composition, structure, and functions of the work force of the parent corporation or entity and

5 The geographic separateness and the administrative or fiscal relationship of the site or sites in question to the parent corporation or entity

1116.4 Removal of Barriers A public accommodation shall remove architectural barriers in existing facilities including communication barriers that are structural in nature where such removal is readily achievable i.e. easily accomplishable and able to be carried out without much difficulty or expense
Appendix Sec 1116.5

1116.5 Examples  Examples of steps to remove barriers include but are not limited to the following actions:

1. Installing ramps
2. Making curb cuts in sidewalks and entrances
3. Lowering shelves
4. Rearranging tables, chairs, vending machines, display racks, and other furniture
5. Lowering telephones
6. Adding raised letter markings on elevator control buttons
7. Installing flashing alarm lights
8. Widening doors
9. Installing offset hinges to widen doorway
10. Eliminating a turnstile or providing an alternative accessible path
11. Installing accessible door hardware
12. Installing grab bars in toilet stalls
13. Rearranging toilet stalls
14. Insulating lavatory pipes
15. Installing a raised toilet seat
16. Installing a full-length bathroom mirror
17. Lowering the paper towel dispenser in a bathroom
18. Creating a designated accessible parking space
19. Installing an accessible paper cup dispenser at an existing inaccessible water fountain
20. Removing high pile, low density carpeting or
21. Modifying vehicle hand controls

1116.6 Priorities  A public accommodation shall take measures to comply with the barrier removal requirements of this Section in accordance with the following order of priorities:

1. First, a public accommodation shall take measures to provide access to a place of public accommodation from public sidewalks, parking or public transportation. These measures include, for example, installing entrance ramps, widening entrances, and providing accessible parking spaces.
2. Second, a public accommodation shall take measures to provide access to those areas of a place of public accommodation where goods and services are made available to the public. These measures include, for example, adjusting the layout of display racks, rearranging tables, widening doors, and installing ramps.
3. Third, a public accommodation shall take measures to provide access to rest room facilities in places of public accommodation where rest room facilities are used by the public on more than an incidental basis. These measures include, for example, removal of obstructing furniture or vending machines, widening of doors, installations of ramps, providing accessible signage, widening of toilet stalls, and installations of grab bars.
4 Fourth a public accommodation shall take any other measures necessary to provide access to the goods services facilities privileges advantages or accommodations of a place of public accommodation

1116 7 Relationship to Alterations Requirements of Chapter 11 Part III of this Code Measures taken solely to comply with the barrier removal requirements of this Section are not required to conform to the requirements for alterations in Chapter 11 Part III of this Code. These measures include for example installing a ramp with a steeper slope or widening a doorway to a narrower width than that required by Chapter 11 Part III of this Code. No measure shall be taken however that poises a significant risk to the health or safety of individuals with disabilities or others. Barrier removal is required to conform to the Americans with Disabilities Act requirements for existing buildings.

1116 8 Portable Ramps Portable ramps should be used to comply with this division only when installation of a permanent ramp is not readily achievable. In order to avoid any significant risk to the health or safety of individuals with disabilities or others in using portable ramps due consideration shall be given to safety features such as nonslip surfaces, railings, anchoring and strength of materials.

1116 9 Interpretation of Readily Achievable

1116 9 1 The rearrangement of temporary or movable structures such as furniture equipment and display racks is not readily achievable to the extent that it results in a significant loss of selling or serving space.

1116 10 Alternative to Barrier Removal

1116 10 1 General Where a public accommodation can demonstrate that barrier removal is not readily achievable a public accommodation shall not fail to make its goods and service facilities privileges advantages or accommodations available through alternative methods if those methods are readily achievable.

1116 10 2 Examples Examples of alternatives to barrier removal include but are not limited to the following actions:

1 Providing curb service or home delivery
2 Retrieving merchandise from inaccessible shelves or racks
3 Relocating activities to accessible locations
4 Providing refueling service at inaccessible self service gas stations

1116 11 Personal Devices and Services This Section does not require a public accommodation to provide its customers clients or participants with personal devices such as wheelchairs or services of a personal nature including assistance in eating, toileting or dressing.

1116 12 Multiscreen Cinemas If it is not readily achievable to remove barriers to provide access by persons with mobility impairments to all of the theaters of a multiscreen cinema the cinema shall establish a film rotation schedule that provides reasonable access for individuals who use wheelchairs to all films. Reasonable notice shall be provided to the public as to the location and time of accessible showings.

1116 13 Readily Achievable and Undue Burden Factors to be Considered In determining whether an action is readily achievable or would result in an undue burden factors to be considered include:

1 The nature and cost of the action needed under this part.
2 The overall financial resources of the site or sites involved in the action the number of persons employed at the site the effect on expenses and resources or the impact otherwise of the action upon the operation of the site

3 The overall financial resources of any parent corporation or entity the overall size of the parent corporation or entity with respects to the number of its employees the number type and location of its facilities

4 The type of operation or operations of the parent corporation or entity including the composition structure and functions of the work force of the parent corporation or entity and

5 The geographic separateness and the administrative or fiscal relationship of the site or sites in question to the parent corporation or entity

1116 14 Accessible or Special Goods

1116 14 1 This part does not require a public accommodation to alter its inventory to include accessible or special goods that are designed for or facilitate use by individuals with disabilities

1116 14 2 A public accommodation shall order accessible or special goods at the request of an individual with disabilities if in the normal course of its operation it takes special orders or requests for unstocked goods and if the accessible or special goods can be obtained from a supplier with whom the public accommodation customarily does business

1116 14 3 Examples of accessible or special good include items such as Braille versions of books books on audio cassettes closed captioned video tapes special sizes or lines of clothing and special foods to meet particular dietary needs

1116 15 Seating in Assembly Areas To the extent that it is readily achievable a public accommodation shall

1 Provide a reasonable number of wheelchair seating spaces in assembly areas and

2 Locate the wheelchair seating spaces so that they

A Are dispersed throughout the seating area

B Provide lines of sight comparable to those in all viewing areas

C Adjoin an accessible route of travel that also serves as a means of egress in case of emergency and

D Permit individuals who use wheelchairs to sit with family members or other companions

EXCEPTION If removal of seats is not readily achievable a public accommodation shall provide a portable chair or other means to permit a family member or other companion to sit with an individual who uses a wheelchair

DIVISION III ALTERNATE GUIDELINES FOR DETECTABLE WARNINGS

AMERICANS WITH DISABILITIES ACT

Section 1117

1117 1 General The purpose of this division is to provide additional design guidelines for construction and installation of truncated domes as required by the Americans with Disabilities Act of 1990
Appendix Sec 1117 2

1117.2 Raised Truncated Domes  Raised truncated domes shall have a diameter of 0.9 inches (23 mm) nominal, a height of 0.2 inches (5 mm) nominal, and a center-to-center spacing of 2.35 inches (60 mm) nominal. Raised truncated domes shall comply with Appendix Chapter 11 Division VI for visual contract.

DIVISION IV  ALTERNATE GUIDELINES FOR AUDIBLE ALARMS

Section 1118

1118.1 Purpose  The purpose of this division is to provide the United States Department of Justice Americans with Disabilities Act Guidelines for audible alarms.

1118.2 Audible Alarms  Audible alarms shall exceed the prevailing equivalent sound level in the room or space by at least 15 decibels or shall exceed any maximum sound level with a duration of 30 seconds by 5 decibels whichever is louder. Sound levels for alarm signals shall not exceed 120 decibels.

DIVISION V  ALTERNATE GUIDELINES FOR VISUAL CONTRAST

Section 1119

1119.1 Purpose  The purpose of this division is to provide the United States Department of Justice Americans with Disabilities Act Guidelines for visual contrast.

1119.2 Guidelines for Visual Contrast

1119.2.1 Raised truncated domes  Raised truncated domes used as detectable warnings shall contrast visually by 70% with adjoining surfaces. Contrast in percent shall be determined as follows:

\[
\text{Contrast} = \frac{[(B^1 - B^2)/B]}{B^2} \times 100
\]

Where

\[B^1 = \text{light reflectance value (LRV) of the lighter area}
\]
\[B^2 = \text{light reflectance value (LRV) of the darker area}
\]

The material used to provide contrast shall be an integral part of the walking surface.

1119.2.2 Signage  The characters and background of signs shall be eggshell (11 to 19) degree gloss on a 60° glossimeter. Characters shall be light on a dark background (or dark on a light background) and contrast with their background by at least 70%.

Contrast in percent shall be determined as follows:

\[
\text{Contrast} = \frac{[(B - B^2)/B]}{B^2} \times 100
\]

Where

\[B = \text{light reflectance value (LRV) of the lighter area}
\]
\[B^2 = \text{light reflectance value (LRV) of the darker area}
\]

DIVISION VI  GUIDELINES FOR AUTOMATED TELLER MACHINES

AMERICAN WITH DISABILITIES ACT

Section 1120

1120.1 Purpose  The purpose of this division is to provide the United States Architectural and Transportation Barriers Compliance Board Americans with Disabilities Act Guidelines for automated teller machines.

1120.2 Accessible Buildings  Automated Teller Machines  Where automated teller machines are provided, each machine shall comply with the requirements below except where 2 or more machines are provided at a location, then only 1 must comply.
Appendix Sec 1120 2

**EXCEPTION** Drive up only automated teller machines are not required to comply with Sections 1120 4 and 1120 5

**1120 3 General** Each automated teller machine required to be accessible by Section 1120 2 shall be on an accessible route and shall comply with the provisions of this Section

**1120 4 Clear Floor Space** The automated teller machine shall be located so that clear floor space complying with Sections 1106 2 4 1, 1106 2 4 2, 1106 2 4 3, and 1106 2 4 4 is provided to allow a person using a wheelchair to make a forward approach a parallel approach or both to the machine

**1120 5 Reach Ranges**

1 **Forward Approach Only** If only a forward approach is possible operable parts of all controls shall be placed within the forward reach range specified in Section 1106 2 4 5

2 **Parallel Approach Only** If only a parallel approach is possible operable parts of controls shall be placed as follow

A **Reach depth not more than 10 inches (255 mm)** Where the reach depth to the operable parts of all controls as measured from the vertical plane perpendicular to the edge of the unobstructed clear space at the farthest protrusion of the automated teller machine or surround is not more than 10 inches (255 mm) the maximum height above the finished floor of grade shall be 54 inches (1370 mm)

B **Reach depth more than 10 inches (255 mm)** Where the reach depth to the operable parts of any control as measured from the vertical plane perpendicular to the edge of the unobstructed clear floor space at the farthest protrusion of the automated teller machine or surround is more than 10 inches (255 mm) the maximum height above the finished floor or grade shall be as follows

<table>
<thead>
<tr>
<th>Reach Depth</th>
<th>Maximum Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inches</strong></td>
<td><strong>Mm</strong></td>
</tr>
<tr>
<td>10</td>
<td>255</td>
</tr>
<tr>
<td>11</td>
<td>280</td>
</tr>
<tr>
<td>12</td>
<td>305</td>
</tr>
<tr>
<td>13</td>
<td>330</td>
</tr>
<tr>
<td>14</td>
<td>355</td>
</tr>
<tr>
<td>15</td>
<td>380</td>
</tr>
<tr>
<td>16</td>
<td>405</td>
</tr>
<tr>
<td>17</td>
<td>430</td>
</tr>
<tr>
<td>18</td>
<td>455</td>
</tr>
<tr>
<td>19</td>
<td>485</td>
</tr>
<tr>
<td>20</td>
<td>510</td>
</tr>
<tr>
<td>21</td>
<td>153</td>
</tr>
<tr>
<td>22</td>
<td>560</td>
</tr>
<tr>
<td>23</td>
<td>585</td>
</tr>
<tr>
<td>24</td>
<td>610</td>
</tr>
</tbody>
</table>

3 **Forward and Parallel Approach** If both a forward and parallel approach are possible operable parts of controls shall be placed within at least 1 of the reach ranges in paragraph 1 or 2 of this Section
Appendix Sec 1120 5

4 Bins Where bins are provided for envelopes waste paper or other purposes at least 1 of each type provided shall comply with the applicable reach ranges in paragraphs 1 and 2

EXCEPTION Where a function can be performed in a substantially equivalent manner by using an alternate control only 1 of the controls needed to perform that function is required to comply with this Section If the controls are identified by tactile markings such markings shall be provided on both controls

1120 6 Controls Controls for user activation shall comply with Section 1106 3

1120 7 Equipment for Persons with Vision Impairments Instructions and all information for use shall be made accessible to and independently usable by persons with vision impairments

Appendix Chapter 13 is amended

Appendix Chapter 13

ENERGY CONSERVATION IN NEW BUILDING CONSTRUCTION

Section 1302 GENERAL

1302 1 Purpose The purpose of this Appendix is to regulate the design and construction of the exterior envelopes and selection of heating ventilating and air conditioning service water heating electrical distribution and illuminating systems and equipment required for the purpose of effective conservation of energy within a building or structure governed by this Code

1302 2 Model Energy Code Adopted In order to comply with the purpose of this Appendix buildings shall be designed to comply with the requirements of the Model Energy Code promulgated jointly by the International Conference of Building Officials (ICBO) the Southern Building Code Congress International Inc (SBCCI) the Building Officials and Code Administrators International Inc (BOCA) and the National Conference of States on Building Codes and Standards Inc (NCSBCS) dated 1992

EXCEPTION Residential buildings that are

1 Detached one and two dwelling units and

2 Multi dwelling units not exceeding 3 stories above grace

The following Thermal Design Parameters are established for Section 302 1

<table>
<thead>
<tr>
<th>Season</th>
<th>Design Dry Bulb</th>
<th>Design Dry Bulb 91°F</th>
<th>Design Wet Bulb 59°F</th>
<th>Degree Days Heating 6000 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degrees North Latitude</td>
<td></td>
<td>40°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1302 3 Residential Building Energy Conservation Code New residential construction including additions for 1) detached one and two dwelling units and 2) multi dwelling units not exceeding 3 stories above grade shall comply with prescriptive or performance procedure as follows

1 Prescriptive Procedure
A Temperature Control Electric or gas fired heating systems shall be thermostatically controlled. Programmable thermostats may be used which can be set for high and low temperatures during selected time periods.

B Water Conservation See Uniform Plumbing Code amended Section 901(b) Conservation for the flow rate of shower heads lavatory kitchen and service faucets.

C Air Infiltration Protection against air infiltration shall be provided to include the sealing of air leaks through and around windows doors and penetrations. Buildings shall be built with the following provisions:

1. All electrical outlets and switches on exterior walls and on interior walls which connect with an insulated ceiling or attic shall have foam gaskets installed behind the outlet and switch cover.

2. Box sills and sill plates shall be sealed at the top of the foundation wall with 1 of the following:
   a. Closed cell foam backer rod or gasket minimum / inch thick or
   b. Foam caulk for gaps over / inch wide and polyurethane caulk for smaller gaps.

Fiberglass sill sealers are not permitted.

3. Provide 1 of the following air infiltration barrier systems:
   a. Seal penetrations in the building envelope with foam sealant and appropriate caulking. Foam sealant and caulking must meet ASTM E 814 for fire stopping characteristics only when sealing penetrations in a fire rated assembly. Areas to be sealed with foam sealant include the spaces between rough openings and window and door frames, wiring and plumbing penetrations through exterior walls, openings into garage ceiling and wall systems, openings between the house and crawl spaces, and around all accessible penetrations of the ceiling vents, ducts, plumbing lines, electrical cables, and light fixtures. Openings around chimney stacks shall be blocked with noncombustible material and sealed with high temperature caulk. Bottom plates can be sealed to the floor decking with adhesive caulk during framing or a bead of caulking or foam may be applied after walls are in place. Weather strip the framework around attic hatch and secure hatch and secure the door tightly against the weather stripping with latches.

   b. Wrap the exterior of the house with an infiltration barrier film (water vapor permeability rating of at least 5). It must be continuous from the foundation to the top plate and must be taped with a seal around all penetrations such as windows, doors, and utility penetrations.

   c. The building can be wrapped with foam sheathing and covered with a flexible stucco-like coating.

   d. Use either blow-in blanket or spray cellulose insulation in wall cavities.

   e. Install a continuous interior air barrier that relies on sealed drywall (also referred to as the Airtight Drywall Approach ADA). Drywall is sealed with air sealing gasketing or caulk (between deck rim and top plate).

   f. Install interior insulated sheathing with joints taped. The sheathing should be sealed with either foam or construction grade tape all.
around the base and around all rough openings. Reflective bubble pack insulation can also be used if it is taped at the seams.

g Install a foam core building system in which the wall and ceiling panels are sealed or adhered to each other with compatible caulk or foam material. Where only the walls are made of foam core material, vertical penetrations from the occupied space into the attic must be sealed as described in step a.

**EXCEPTION:** The air infiltration performance procedure may be used instead of the prescriptive air infiltration procedure. See item 2 C of this subsection.

**D Insulation** The following minimum R values shall be provided by the insulating material only. See Section 707.5

1. **Roof/Ceilings** R 30
   **EXCEPTION** Roof panels of foam core construction with an R value of 26.1 (not including air films, cladding materials or reflective)

2. **Walls** R 15 The wall system shall include any combination of cavity insulation and rated insulating foam sheathing to achieve the stated minimum R value.

**EXCEPTION**

1. Plywood for purposes of sway bracing may be substituted for the foam board sheathing over an area not to exceed 20% of the total wall area. Door and window areas will be included for the purpose of calculating the total wall area. When the use of plywood sheets for sway bracing would exceed 20% of the total wall area, it will be necessary to provide other means of lateral support such as steel straps or let-in braces so that in no case is more than 20% of the total wall area reduced to less than the required minimum R value when replacing the insulated foam sheathing with plywood.

2. Wall panels of foam core construction with an R value of 13.3 minimum (not including air films, cladding materials or reflective barriers).

3. **Basement walls** R 5 Provide either exterior or interior insulation as follows:
   a. Exterior insulation shall be installed a maximum of 8 inches from the top of foundation or finished grade, whichever provides the least amount of exposure, to a minimum of 24 inches below grade against basement walls.
   b. Interior insulation shall be installed from the sill plate to the top of basement slab.

4. **Floor insulation above crawlspace** R 19 See amended UBC Section 2317.7 for crawlspace ventilation. Crawlspace foundation walls are not required to be insulated.

5. **Frost wall insulation** (for heated areas only) minimum R 5 shall be installed as follows:
   a. Exterior. See paragraph D 3 Basement walls above or
b. Interior: The insulation shall extend downward from the top or bottom of the slab vertically for a minimum distance of 24 inches on the face of the frost wall or horizontally beneath the slab from the face of the wall for a minimum total distance of 24 inches.

E. System Efficiency: Equipment related to heating efficiency

1. When a gas heating system is installed, it shall have an AFUE (efficiency) rating of 78% or greater.

2. High efficiency water heaters shall be installed with the following minimum energy factors:

<table>
<thead>
<tr>
<th>Tank Size</th>
<th>Gas</th>
<th>Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Gal</td>
<td>0.62</td>
<td>0.91</td>
</tr>
<tr>
<td>40 Gal</td>
<td>0.61</td>
<td>0.90</td>
</tr>
<tr>
<td>50 Gal</td>
<td>0.60</td>
<td>0.88</td>
</tr>
</tbody>
</table>

F. Windows: Double pane windows shall be installed as a minimum. Existing single pane with storm windows may be used for existing buildings. Metal framed multi paneled windows must have thermal break design.

G. Wall Openings: Maximum area of wall openings shall not exceed 20% of total exterior wall area.

H. Duct Insulation: Ducts within unconditioned spaces shall be covered with a minimum insulation of R-4.

2. Performance Procedure: Provide all of the following

A. Provide items A, B, E, F, and H of the prescriptive procedure.

B. Provide calculations to provide the required thermal performance of the building. Calculations shall be based on the State of Colorado Residential Building Energy Conservation Standards Handbook August 1990. Alternative I, II, or III with the following exceptions:

1. The maximum U-Values for various building components shall be:

<table>
<thead>
<tr>
<th>Component</th>
<th>U-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>15</td>
</tr>
<tr>
<td>Roof</td>
<td>04</td>
</tr>
<tr>
<td>Floors</td>
<td>05</td>
</tr>
<tr>
<td>Basement or Frost Wall</td>
<td>2</td>
</tr>
</tbody>
</table>

2. All references to the ASHRAE Fundamentals Handbook shall be for the 1985 edition.

C. Air Infiltration: Protection against air infiltration shall be verified by a blower door test which shall certify that the building has a leakage ratio (LR) between LR 2 and LR 4 (Leakage ratio is a measurement system established by the Colorado Thermal Insulation Association Standard 1985). Builders of buildings with type approved plans may submit blower door test results for 1 of every 5 homes built according to each plan.

EXCEPTION: Leakage factors below LR 2 may be accepted if an upgraded ventilation system has been installed to maintain fresh air requirements as required by the Mechanical Code. (At a minimum, an upgraded ventilation system must include an exhaust fan with a humidistat controller device which turns on the fan whenever indoor humidity rises above pre-set level.)
Appendix Section 1515 is amended by adding a third paragraph

Reroofing of existing floor surfaces which have a slope of less than / inch per foot may be allowed provided that ponding does not occur. Ponding is considered to occur when water remains on the roof for 72 hours under temperature conditions which average at least 70 Fahrenheit for the evaluation period. Ponding must be corrected if water remains after the evaluation period. The Department may approve alternate materials and methods of construction submitted for cases of ponding water that cannot be corrected by the provisions of this Section.

Appendix Section 1516 is amended by adding Subsection 1516 4 ———— [B-013]

1516 4 Patching Permanent repairs when completed shall incorporate material into the repair that must be compatible with the existing roofing product. Compatibility shall be determined by manufacturer’s written specifications for reroof installation over the existing roof.

Appendix Section 1517 is amended by adding Subsection 1517 8

1517 8 Hip and Ridge All original hip and ridge shingles or shakes shall be removed prior to installing a new roof covering.

Appendix Section 1521 is amended by adding a new paragraph

All reroofing that leaves the existing membrane in place shall have original flashings on walls and curbs removed except as allowed by the new material manufacturer. Published manufacturers’ details showing the original flashings covered must be submitted at time of permit approval.

Appendix Chapter 29 is amended

APPENDIX CHAPTER 29 MINIMUM PLUMBING FIXTURES

Section 2905 GENERAL

Each building shall be provided with sanitary facilities including provisions for accessibility in accordance with Chapter 11. Plumbing fixtures shall be provided for the type of building occupancy with the minimum numbers as shown in Table A 29 A and are assumed to be based on 50% male and 50% female. The occupant load factors shall be as shown in Table No. 10 A.

EXCEPTION Where circumstances dictate that a different ratio is needed the adjustment shall be approved by the Building Official.
Table A-29-A is amended:

**TABLE A-29-A**

**MINIMUM PLUMBING FACILITIES**

Each building shall be provided with sanitary facilities, for use by both the public and employees, including provision for the physically handicapped (See Section 411, Plumbing Fixtures Required). For Handicapped requirements the design, installation and materials used in all structures shall comply with this Plumbing Code and Chapter 11 amended.

<table>
<thead>
<tr>
<th>Type of Building Occupancy 2</th>
<th>Water Closets 11</th>
<th>Male Urinals 4, 10, 18</th>
<th>Lavatories</th>
<th>Bath tubs or Showers</th>
<th>Drinking Fountains 4, 13</th>
</tr>
</thead>
</table>

Assembly Places - Theatres, Auditoriums, Convention Halls, Arenas, Field Houses, Assembly Halls, Stadiums, and similar occupancies - for permanent public use.

<table>
<thead>
<tr>
<th>Type of Building Occupancy 2</th>
<th>Water Closets 11</th>
<th>Male Urinals 4, 10, 18</th>
<th>Lavatories</th>
<th>Bath tubs or Showers</th>
<th>Drinking Fountains 4, 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormitories 5 - School or Labor</td>
<td>Male 1:1-100, Female 3:1-50, 2:101-200, 3:201-400, 4:401-600</td>
<td>For Additional Occupants 1 per 500, Male 1:10, Female 1 per 25</td>
<td>Male 1:1-100, Female 1 per 12, 1 per 25</td>
<td>Male 1 per 8, For female, add 1 additional bathtub per 30. Over 150 occupants, add 1 fixture per 20</td>
<td>Male 1 per 150 12 Min. .1 per Floor</td>
</tr>
</tbody>
</table>

Dormitories 5 - For Staff Use

<table>
<thead>
<tr>
<th>Type of Building Occupancy 2</th>
<th>Water Closets 11</th>
<th>Male Urinals 4, 10, 18</th>
<th>Lavatories</th>
<th>Bath tubs or Showers</th>
<th>Drinking Fountains 4, 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormitories 5 - For Staff Use</td>
<td>Male 1:1-15, Female 1:1-12, 2:16-35, 3:36-55, 4:40-55</td>
<td>For Additional Occupants 1 per 40</td>
<td>Male 0:1-9, Female 1:11-50</td>
<td>Male 1 per 40, Female 1 per 8</td>
<td>Male - 1 per 8, Female - 1 per 8</td>
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<tr>
<td>Type of Building Occupancy</td>
<td>Water Closets</td>
<td>Male Urinals&lt;sup&gt;6,10,18&lt;/sup&gt;</td>
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<td>Bath tubs or Showers</td>
<td>Drinking Fountains&lt;sup&gt;7,13&lt;/sup&gt;</td>
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<td>Dwellings</td>
<td></td>
<td></td>
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<tr>
<td>Single Dwelling or Apartment House</td>
<td>1 per dwelling unit</td>
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<tr>
<td>Waiting Room</td>
<td>1 per room for each sex</td>
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<td>Male</td>
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<td>Female</td>
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<td>2:13-24</td>
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<td>3:30-65</td>
<td>3:26-39</td>
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<tr>
<td>Female</td>
<td>1:1-30</td>
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<td></td>
<td>2:10-200</td>
<td>2:31-75</td>
<td>3:61-200</td>
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<tr>
<td></td>
<td>3:30-200</td>
<td>3:61-150</td>
<td></td>
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<td>Water Closets</td>
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<td>Lavatories</td>
<td>Bath tubs or Showers</td>
<td>Drinking Fountains, 5, 13</td>
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<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>1:1-9</td>
<td>1 per 10 up to 100</td>
<td>1 shower for each 15</td>
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<td>2:31-60</td>
<td>2:11-25</td>
<td>4:11-65</td>
<td>1 per 15 over 100</td>
<td>excessive heat or to</td>
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<td>3:61-90</td>
<td>3:26-50</td>
<td>4:51-75</td>
<td>occupants</td>
<td>skin contamination with</td>
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<td>4:51-75</td>
<td>5:76-100</td>
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<td></td>
<td>5:121-150</td>
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<td></td>
<td></td>
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<td>For Additional Males</td>
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<td>Female</td>
<td>0:1-9</td>
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<td>Female</td>
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<td>3:401-750</td>
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<td>1 per 300</td>
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<td>Motels or Hotels</td>
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<td>Female</td>
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<td>2:201-400</td>
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<td>4:401-600</td>
<td>3:401-750</td>
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<td>For Additional Males</td>
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<td>1 per 300</td>
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<td>Type of Building Occupancy²</td>
<td>Male</td>
<td>Water Closets¹⁸</td>
<td>Female</td>
<td>Urinals⁴,¹⁰,¹³</td>
<td>Lavatories</td>
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<td>Office or Public Buildings¹⁵ for Employee Use</td>
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<td>Female</td>
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<td>0:1-9</td>
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<td>Penal Institutions for Employee Use</td>
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<td>Female</td>
<td>1:1-12</td>
<td>0:1-9</td>
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<td>Female</td>
<td>1 per exercise room</td>
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<td>Cell</td>
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<td>Exercise Room</td>
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<td>2:21-45</td>
<td>3:151-300</td>
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<td>4:76-115</td>
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<td>Type of Building Occupancy</td>
<td>Water Closets</td>
<td>Urinals(^5), (^6), (^8), (^10), (^18)</td>
<td>Lavatories</td>
<td>Bath tubs or Showers</td>
<td>Drinking Fountains(^9), (^13)</td>
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<td>Female 1:1-20  2:21-50</td>
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<td>Child Care Center</td>
<td></td>
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<td>Elementary</td>
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<td>1 per 5(^14) 1 per 150(^12) Min. 1 per Floor</td>
</tr>
<tr>
<td>Others (Colleges, universities, adult centers, etc.)</td>
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<td>1 per 30</td>
<td>Male 1 per 40</td>
<td>1 per 5(^14) 1 per 150(^12) Min. 1 per Floor</td>
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<tr>
<td>Type of Building Occupancy</td>
<td>Water Closets</td>
<td>Male Urinals</td>
<td>Lavatories</td>
<td>Bath tubs or Showers</td>
<td>Drinking Fountains</td>
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<td>Schools</td>
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<td>0.1-9</td>
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<tr>
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<td>1 per 50</td>
<td>1 per 50</td>
<td>1 per 150</td>
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</table>

| Worship Places - Educational and activities unit | Male 1 per 150 | Female 1 per 75 | 1 per 125 | 1 per 2 Water Closets | 1 per 150 |
| For Each Dwelling Unit | | 1 per 40 | 1 per 60 | 1 per 2 Water Closets | 1 per 150 |

| Worship Places - Principal Assembly Place | Male 1 per 150 | Female 1 per 75 | 1 per 125 | 1 per 2 Water Closets | 1 per 150 |
| For Each Dwelling Unit | | 1 per 40 | 1 per 60 | 1 per 2 Water Closets | 1 per 150 |

| Public Swimming Pools | Male 1 per 60 | Female 1 per 40 | 1 per 60 | 1 per 2 Water Closets | 1 per 150 |

1. The figures shown are based upon one (1) fixture being the minimum required for the number of persons indicated or any fraction thereof.
2. Building categories not shown on this table shall be considered separately by the Administrative Authority.
3. Drinking Fountains or service sinks shall not be installed in toilet rooms.
4. Laundry and kitchen. For each dwelling unit, in buildings with one or two dwelling units, one (1) capped automatic washer standpipe in a space large enough to accept laundry equipment. For each dwelling or apartment unit, in buildings with three (3) or more dwelling or apartment units, one (1) laundry tray and one (1) automatic washer for the first ten units; in excess of ten units, one (1) automatic washer for each additional fifteen dwelling or apartment units; this equipment shall be accessible to all units. Kitchen sinks with garbage disposals; one (1) for each dwelling or apartment unit.
5. For each urinal added in excess of the minimum required one water closet may be deducted. The number of water closets shall not be less than two-thirds (2/3) of the minimum requirements.
7. Where there is exposure to skin contamination with poisonous, infections, or irritating materials, provide one (1) lavatory for each five (5) persons.
8. Twenty-four (24) lineal inches (609.67 mm) of wash sink or eighteen (18) inches (457.2 mm) of circular basin, when provided with water outlets for such space, shall be considered equivalent to one (1) lavatory.
9. Laundry trays, one (1) for each fifty (50) persons. Slop sinks, one (1) for each hundred (100) persons.
10. General. In applying this schedule of facilities, consideration must be given to the accessibility of the fixtures. Conformity purely on numerical basis may not result in an installation suited to the need of the individual establishment. For example, schools should be provided with toilet facilities on each floor having classrooms.
TABLE A-29-A (Continued)
MINIMUM PLUMBING FACILITIES\(^1\)

a. Surrounding materials. Wall and floor space to a point two (2) feet (0.6m) in front of urinal tip and four (4) feet (1.2)m above the floor, and at least two (2) feet (0.6m) to each side of the urinal shall be lined with non-absorbent material.

b. Trough urinals are prohibited.

11. A restaurant is defined as a business which sells food to be consumed on the premises.

a. The number of occupants for a drive-in restaurant or drive-in theatre shall be considered as equal to twice the number of parking stalls.

b. Employee toilet facilities are not to be included in the above restaurant requirements. Hand washing facilities must be available in the kitchen for employees.

c. Walk-up restaurants with no access inside of building by customers.
   (1) If less than 17 outside seats, one toilet room is required, for employees only.
   (2) If more than 16 outside seats, both male and female toilet rooms are required, for public and employees per Appendix C.

d. Restaurants with less than 225 sq. ft. inside customer area and less than 17 outside seats.
   (1) A minimum of one toilet room shall be provided for public and employees.

e. Restaurants with less than 225 sq. ft. inside customer area and more than 16 outside seats.
   (1) Both male and female toilet rooms are required, for public and employees per Appendix C.

f. Restaurants with more than 224 sq. ft. inside customer area and which may include outside seating of less than 50% of inside occupant load. Occupancy load may be based on inside customer area only.
   (1) Both male and female toilet rooms are required for public and employees per Appendix C.

g. Restaurants with more than 225 sq. ft. inside customer area and with outside seating greater than 50% of inside occupant load. Occupant load must include outside and inside occupant loads.
   (1) Both male and female toilet rooms are required for public and employees per Appendix C.

12. Where food is consumed indoors, water stations may be substituted for drinking fountains. Offices, or similar public buildings for use by more than six (6) persons shall have one (1) drinking fountain for the first on hundred fifty (150) persons and (1) additional fountain for each three hundred (300) persons thereafter.

13. There shall be a minimum of one (1) drinking fountain per occupied floor in schools, theatres, auditoriums, dormitories, offices or public buildings.

14. Provide one shower for each 5 students of a gym or swimming class.

15. A single restroom may be provided for both sexes, and both service sinks and drinking fountains may be eliminated for the following:
   (1) Retail occupancies of 3, 000 sq. ft. or less.
   (2) Offices, medical and dental clinics of 1000 sq. ft. or less.

16. Check with the State Department of Health for specific occupancy as their requirements may be more or less stringent.

17. Toilet with bed pan flushing equipment.

18. For temporary construction facilities, one (1) water closet and one (1) urinal shall be provided for each 30 workers of each sex (Urinals not required for women). Fixtures may be conventional type water closet and urinals or of the chemical "storage" type.

19. Does not apply to motel, hotel, condominium, apartment house or other limited access pools, provided that the use of the pool is restricted to bona fide occupants & the guests of these buildings and provided that the pool is within three hundred (300) feet, by normal pedestrian route, of the individual's residence or quarters.
Appendix Section 3010 is deleted

Appendix Section 3011 is deleted

Appendix Section 3012 is amended

Section 3012  STANDARDS

Unless provided for in other portions of this Building Code the following standards shall apply:

Safety Code for Elevators Dumbwaiter Moving Walks and Escalators ANSI A17 1 1993 including supplements A17 1(A) 1994 and A17 1(B) 1995

Practice for the Inspection of Elevators Inspectors Manual ANSI A17 2 1 1993 including supplements A17 2 1A 1994 Electric Elevators and A17 2 2 1994 Hydraulic Elevators

Personnel Hoists and Employee Elevators ASME A10 4 1990

Existing Elevators and Escalators ANSI A17 3 1993

Base Mounted Drum Hoists ANSI B30 7 1977

Legend

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<tr>
<td>11 W 42nd Street</td>
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<td>New York NY 10036</td>
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</tr>
<tr>
<td>22 Law Drive Box 2900</td>
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<tr>
<td>Fairfield New Jersey 07007</td>
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Appendix Section 3014 is amended

3014 5 Inspection Reports After each required inspection a full and correct safety test report by the elevator contractor performing the test shall be filed with the Department

Appendix Section 3116 is amended by deleting the last sentence in the first paragraph and adding [B-043]

Openings may be enclosed with panels of insect screening plastic or single pane glass which are readily removable (i.e., panels which can be placed or removed without inserting or removing screws, bolts or other connectors which would require the use of tools or special knowledge). The plastic or glass shall not be more than 0.125 inch in thickness and may be transparent or translucent.

Appendix Section 3117 is amended by deleting vertical live load of 10 pounds per square foot and replacing it with snow load of 30 psf nonreducible.

Appendix Section 3119 is amended

A patio cover may be supported on a concrete slab on grade without footings provided that the slab is not less than 4 inches thick with thickened edges 12 inches below grade and further provided that the columns do not support live and dead loads in excess of 2,000 pounds per column.
Appendix Chapter 34 is amended in its entirety

APPENDIX CHAPTER 34  LIFE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS

Division I  LIFE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS
OTHER THAN HIGH RISE BUILDINGS

Section 3406  GENERAL

3406 1 Purpose  The purpose of this division is to provide a minimum degree of safety to persons occupying existing residential buildings constructed prior to October 1 1990 by providing for alterations to such existing buildings which do not conform with the minimum requirements of this Code

EXCEPTION 1  Group R  Division 3 and Group M Occupancies

EXCEPTION 2  Group R  Division 2 buildings that have been reviewed by an architect or engineer for compliance with UBC Section 1202(c) amended Special provisions for Group R Division 2 Occupancy

3406 2 Compliance Date  Plans for compliance shall be submitted by January 1 1994 The work shall be completed by July 1 1995

3406 3 Permit and Plan Review Fee  No plan review fee will be required at the time of plan submittal  The total permit fee shall be paid when the permit is issued  The permit fee shall be based on the installation cost of each unit as provided for in Table 3 A Multiple units within a single building with one or multiple addresses may be combined on one permit application and the permit fee based on the combined installation cost Each address shall be listed on the permit application for multiple address buildings

3406 4 Failure to Comply  Any building in violation of this Division I is an unsafe and hazardous building and is in violation of the Denver Building and Fire Codes Such violation subjects the owner of the building or unit to the fines and penalties provided

Section 3407  SMOKE DETECTORS

3407 1 General  Approved smoke detectors shall be provided as follows

1  Dwelling units  hotel rooms and rooms used for sleeping purposes shall have detectors that are battery operated or that receive their primary power from the building wiring

2  Interior corridors which serve more than 2 dwelling units  hotel or sleeping rooms and that provide a path of egress shall have detectors that receive their primary power from the building wiring and may be 1 of the following systems

A  120 volt residential type detectors which when activated shall sound an alarm throughout the corridor on that floor  When more than 1 detector is required for any 1 corridor the detectors in that corridor shall be interconnected  Wiring diagrams showing detector location and power pick up points shall be provided Certification by a Colorado professional engineer will not be required  The manufacturer’s cut sheet on the electrical equipment shall be submitted

B  Interconnected commercial systems type detectors which when activated shall sound an alarm 1) throughout the building corridors for buildings 4 stories or less  or 2) throughout the corridors on the fire floor and the floor above and below for buildings more than 4 stories
EXCEPTION  Buildings that have an approved sprinkler system throughout

When the primary power of the building is used the wiring shall be permanent and without a disconnecting switch other than required for overcurrent protection

3407.2 Location Within Dwelling Units  In dwelling units detectors shall be mounted on the ceiling or wall at a point centrally located in the corridor or area giving access to each separate sleeping area. Where sleeping rooms are on an upper level the detector shall be placed at the center of the ceiling directly above the stairway. Detectors shall also be installed in the basement of dwelling units having a stairway which opens from the basement into the dwelling. Detectors installed within dwelling units under this Subsection need not be interconnected.

3407.3 Location in Efficiency Dwelling Units, Hotel Rooms and Sleeping Rooms  In efficiency dwelling units, hotel rooms and sleeping rooms detectors shall be located on the ceiling or wall of the sleeping room. When actuated the detector shall sound an alarm audible within the sleeping area of the dwelling unit, hotel or sleeping room in which it is located.

3407.4 Installation and Spacing  The approved smoke detectors shall be installed as required by the manufacturer's specification. The spacing between detectors shall not exceed 30 feet. The maximum spacing from any wall shall not exceed 15 feet. Ceiling projections and corridor arrangement shall be considered in locating smoke detectors for maximum effectiveness.

3407.5 Required Inspections
1. Battery powered smoke detectors must be tested every 6 months for proper function, and if any are not functioning properly they shall be replaced and repaired. The batteries shall be replaced annually. A record keeping log book must be maintained by the building or unit owner indicating location of detector date and result of inspection date of battery installation and repairs.

2. In condominium dwelling units the owner of the unit filing a compliance certificate every 6 months with the manager or board of directors of a homeowners association shall not be in violation of this Division I so long as a current compliance certificate is on file from the unit owner or the Department has been notified by the manager or board of directors of the failure of the unit owner to file the compliance certificate within 20 days of the date set for detector inspections. The Department or Fire Department may inspect the filed certificates and the association's log book at any reasonable time to ensure owner compliance. If the certificates or log book are maintained off the premises then they shall be made available at the premises by appointment.

Division II  LIFE-SAFETY REQUIREMENTS FOR EXISTING HIGH RISE BUILDINGS  [B-067]

Section 3414  GENERAL

These provisions apply to existing high rise buildings. There shall be 2 subdivisions as follows:

Division II A  Apartment Buildings (includes residential condominiums)

Division II B  Hotels, Retail and Office Buildings
Section 3414 Division II A  Apartment Buildings (includes residential condominiums)

3414 1 Purpose  The purpose of this Division II is to provide a minimum degree of life safety to persons occupying high rise apartment buildings which do not conform with the minimum requirements of this Building Code

3414 2 Compliance Date  Plans for compliance shall be submitted by December 29 1995  The work shall be completed by January 1 1998

Section 3415  EXITS

3415 1 Number of Exits  Exits shall be provided as required in Section 1003 1  When 2 or more exits are required from upper floors an exterior fire escape complying with Section 3415 4 may be used as 1 of the required exits

3415 2 Stair Construction  All required stairs shall have a minimum run of 9 inches and a maximum rise of 8 inches and shall have a minimum width of 30 inches exclusive of handrails  Every stairway shall have at least 1 handrail  A landing having a minimum 30 inch run in the direction of travel shall be provided at each point of access to the stairway

EXCEPTION  Fire escapes as provided for in this Section  Exterior stairs shall be of noncombustible construction except on buildings of Types III IV and V construction provided that the exterior stairs are constructed of wood not less than 2 inch nominal thickness

3415 3 Corridors  Corridors serving as an exit for an occupant load of 30 or more shall have walls and ceilings of not less than one hour fire resistive construction as required by this Code  Existing walls surfaced with wood lath and plaster in good condition or / inch gypsum wall board or openings with approved fixed wire glass set in steel frames are permitted for corridor walls and ceilings and occupancy separations when approved  Doors opening into such corridors shall be protected by 20 minute fire assemblies or solid wood doors not less than 1 / inches thick  Where the existing frame will not accommodate the 1 / inch thick door a 1 / inch thick solid bonded wood core door or equivalent insulated steel door shall be permitted  Doors shall be self closing or automatic closing by smoke detection  Transoms and openings other than doors from corridors to rooms shall comply with Section 1005 7 of this Code or shall be covered with a minimum of / inch plywood or 1 / inch gypsum wallboard or equivalent material on the room side

EXCEPTION  Existing corridor walls ceilings and opening protection not in compliance with the above may be continued when such buildings are protected with an approved automatic sprinkler system throughout

3415 4 Fire Escapes

1  Existing fire escapes which in the opinion of the Building Official comply with the intent of this Section may be used as 1 of the required exits  The location and anchorage of fire escapes shall be of approved design and construction

2  Fire escapes shall comply with the following

A  Access from a corridor shall not be through an intervening room

B  All openings within 10 feet shall be protected by 45 minute fire assemblies  When located within a recess or vestibule adjacent enclosure walls shall be of not less than one hour fire resistive construction
C. Egress from the building shall be by a clear opening having a minimum dimension of not less than 29 inches. Such openings shall be openable from the inside without the use of a key or special knowledge or effort. The sill of an opening giving access shall not be more than 30 inches above the floor of the building or balcony.

D. Fire escape stairways and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot and shall be provided with a top and intermediate handrail on each side. The pitch of the stairway shall not exceed 10 inches. All stair and balcony railings shall support a horizontal force of not less than 50 pounds per lineal foot of railing.

E. Balconies shall be not less than 44 inches in width with no floor opening other than the stairway opening greater than 6 inches in width. Stairway openings in such balconies shall be not less than 22 inches by 44 inches. The balustrade of each balcony shall be not less than 36 inches high with not more than 9 inches between balusters.

F. Fire escapes shall extend to the roof or provide an approved gooseneck ladder between the top floor landing and the roof when serving buildings 4 or more stories in height having roofs with less than 4 12 slope. Fire escape ladders shall be designed and connected to the building to withstand a horizontal force of 100 pounds per lineal foot. Each rung shall support a concentrated load of 500 pounds placed anywhere on the rung. All ladders shall be at least 15 inches wide located within 12 inches of the building and shall be placed flatwise relative to the face of the building. Ladder rungs shall be 6 inches in diameter and shall be located 12 inches on center. Openings for roof access ladders though cornices and similar projections shall have minimum dimensions of 30 inches by 33 inches.

G. The lowest balcony shall be no more than 18 feet from the ground. Fire escapes shall extend to the ground or be provided with counterbalanced stairs reaching to the ground.

H. Fire escapes shall not take the place of stairways required by the codes under which the building was constructed.

I. Fire escapes shall be kept clear and unobstructed at all times and maintained in good working order.

3415.5 Exit and Fire Escape Signs. Exit signs shall be provided as required by Section 1013.1 thru 1013.4. All doors or windows providing access to a fire escape shall be provided with fire escape signs.

EXCEPTION. The use of existing exit signs may be continued when approved by the Building Official.

Section 3416 BASEMENT ACCESS OR SPRINKLER PROTECTION

An approved automatic sprinkler system shall be provided in basements or stories exceeding 1500 square feet in area and not having a minimum of 20 square feet of opening entirely above the adjoining ground level in each 50 lineal feet or fraction thereof of exterior wall on at least 1 side of the building. Openings shall have a minimum clear dimension of 30 inches. If any portion of a basement is located more than 75 feet from required openings, the basement shall be provided with an approved automatic sprinkler system throughout.
Section 3417 STANDPIPES

All buildings in Division II A shall be provided with an approved Class I or Class III standpipe system

Section 3418 SMOKE DETECTORS

3418 1 General Smoke detectors shall be provided in the following locations

1 Dwelling units
2 All interior corridors which service more than 1 tenant and which provide a path of egress

Detectors shall be installed in accordance with the approved manufacturer’s instruction

EXCEPTION: Buildings that have an approved sprinkler system throughout

3418 2 Power Source Smoke detectors within dwelling units may be battery operated or may receive their primary power from the building wiring when such wiring is serviced from a commercial source. Smoke detectors within corridors serving more than 1 tenant shall receive their primary power from the building commercial electrical service and shall be annunciated as required by the Fire Department and the Department. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection

3418 3 Location Within Dwelling Units In dwelling units detectors shall be mounted on the ceiling or wall at a point centrally located in the corridor or area giving access to each separate sleeping area. Where sleeping rooms are on an upper level the detector shall be placed at the center of the ceiling directly above the stairway. Detectors shall sound an alarm audible in all sleeping areas of the dwelling unit in which they are located

3418 4 Required Inspections

1 All battery powered smoke detectors must be tested for proper function and need for replacement of batteries on a semiannual basis. Batteries shall be replaced annually. A record keeping log book must be maintained by the building or unit owner indicating the location of detector, date and result of inspection and date of battery installation.

2 In condominium dwelling units the owner of the unit shall file a compliance certificate semiannually with the manager or board of directors of the homeowners association. The manager or board of directors of a homeowners association shall not be liable or responsible for enforcement or detector failure or any damages resulting therefrom within a unit so long as a current compliance certificate is on file from the unit owner or the Department has been notified by the manager or board of directors of the failure of the unit owner to file the compliance certificate within 20 days of the date set for detector inspections. The Department or Fire Department may inspect the filed certificates and the association's log book at any reasonable time to ensure owner compliance. If the certificates or log book are maintained off the premises then they shall be made available at the premises by appointment.

3418 5 Failure to Comply with Required Inspections Failure to comply with the required inspections as required in subparagraph 3418 4 shall constitute an unsafe and hazardous condition, in which case all the detectors in the building (or individual condominium unit) shall be required to receive their primary power from the building's commercial electrical service
Section 3419  SEPARATIONS OF OCCUPANCIES

Occupancy separations shall be provided as specified in Section 302 of this Code. When approved by the Building Official, existing wood lath and plaster in good condition or / inch gypsum wallboard may be acceptable where one hour occupancy separations are required.

Section 3420 Division II B Hotels Retail and Office Buildings

(The provisions of this Section were complied with for existing hotels retail and office buildings by 1987. All code references refer to the Building Code effective during 1982 through 1987.)

3420.1 Scope This Section provides for the installation of fire protection systems in existing high rise office retail and hotel buildings. The provisions of this Section shall become effective per the following schedule. Plans and specifications for the necessary alterations shall be filed with the Building Official within 18 months after the date of owner notification. Work on the required alterations to the building shall commence within 42 months of the date of owner notification and such work shall be completed within 5 years from the date of owner notification.

3420.2 Requirements for Group R Division 1 Hotel Occupancies in Buildings over 75 Feet (High Rise) in Height

1. A fire sprinkler system conforming to the requirements of this Chapter shall be installed throughout the building. For purposes of this Section only bathrooms of 55 square feet or less and closets of 25 square feet or less that are within residential units need not be equipped with sprinkler heads.

EXCEPTION 1 In lieu of the above requirements on floors with residential units 1 of the following alternate systems may be used:

A Alternate 1 Corridors in all areas shall be fully sprinklered. Annunciation of sprinklers shall be by individual level water flow indication. Residential units shall have supervised smoke detectors installed and annunciated per Section 3809(c) (d) (e) (f) (g) and (h) except an emergency generator will not be required.

EXCEPTION In lieu of individual level water flow annunciation supervised smoke detectors shall be provided in front of stairwell doors on the corridor side and at entrances to elevator lobbies or in front of elevators. Main riser water flow indication will be required.

B Alternate 2 Corridors in all areas shall be fully sprinklered. Annunciation shall be by individual level. Each residential unit shall have a sprinkler head in the foyer of the room within 3 feet of the door opening onto the corridor. Each residential unit shall also have a single station detector wired to a 115 volt AC unswitched electric power source.

EXCEPTION In lieu of individual level water flow annunciation supervised smoke detectors shall be provided in front of stairwell doors on the corridor side and at entrances to elevator lobbies or in front of elevators. Main riser water flow indication will be required.

C Alternate 3 All areas shall be provided with a supervised fire detection system installed per Section 3809(c) (d) (e) (f) (g) and (h) except an emergency generator will not be required. Doors opening into public corridors shall be provided with automatic closers per Section 4306(f).
Appendix Sec 3420.2

EXCEPTION 2. In lieu of a sprinkler system assembly service and retail areas and equipment rooms shall be provided with a fire detection system per Section 3809. Assembly areas with ceiling heights in excess of 16 feet shall have a specially engineered system.

EXCEPTION 3. In lieu of a sprinkler system, kitchens may be equipped with fixed temperature heat detection in addition to requirements of Section 3812.

2 Standpipe systems shall be required as follows:
   A All buildings shall have a standpipe system complying with the requirements of this Chapter.
      EXCEPTION 1 In buildings with an existing standpipe a separate sprinkler riser sized per NFPA 13 and interconnected with the standpipe system at the base of the riser may be installed to serve the sprinkler system.
      EXCEPTION 2 Where the building is fully or partially sprinklered the combination standpipe or sprinkler riser shall operate the sprinklers on any floor properly as per NFPA 13 without Fire Department pumping into the system to increase the pressure. In addition, the standpipe shall have adequate capacity to supply two 1\' inch hose outlets with each outlet capable of maintaining a pressure of 100 psi with 150 gallons per minute flowing at the topmost outlet with the Fire Department pumping into the system.
      EXCEPTION 3 Where the building is fully detectored the standpipe shall supply two 1\' inch hose outlets with each outlet capable of maintaining a pressure of 100 psi with 150 gallons per minute flowing at the topmost outlet with the Fire Department pumping into the system.
   B A Fire Department connection shall be provided as required in this Chapter.
   C 1\' inch hose connections shall be provided on each floor.
   D Provide a main riser workflow indication/annunciation.

3 Communications systems shall be required as follows:
   A A one way voice communication (PA) system conforming to the requirements of this Code shall be provided.
      EXCEPTION 1 Phone jacks will be required only at stairway entrances adjacent to manual fire alarm boxes.
      EXCEPTION 2 Phone jacks at stairway entrances may be on 1 zone per stairway.

4 The F D Operations Center shall be located on the first floor (ground) level at a location approved by the Department and the Fire Department. The F D Operations Center shall consist of the main fire alarm panel and/or annunciator panel controls for the voice communications systems, controls for the firefighters' communication system, and a graphic diagram of the building by floor (typical floors may use a single graphic).

3420.3 Requirements for Retail and Office Occupancies in Buildings Over 75 Feet (High Rise) in Height
   1 A fire sprinkler system conforming to the requirements of this Chapter shall be installed throughout the building.
Appendix Sec 3420.3

EXCEPTION 1 In buildings utilizing a central structural concrete or masonry core the areas outside the core shall be provided with a fire sprinkler system conforming to the requirements of this Chapter areas within the core may be provided with supervised fire detection system installed per Section 3809 in lieu of the fire sprinkler system

EXCEPTION 2 In lieu of a full sprinkler system all areas shall be provided with a supervised fire detection system installed per Section 3809

EXCEPTION 3 A sprinkler system shall be provided in the corridor with smoke detectors provided outside each door into an exit stairway and on the occupied (tenant) side of each door opening into the corridor. The above detectors shall be located not less than 1 foot nor more than 3 feet from the protected door. Detectors shall also be installed in mechanical electrical and telephone equipment rooms and in all janitor closets and storage closets opening into the corridor. Detectors not located in the corridor shall have a remote indicating light above the door in the corridor or be annunciated on a panel at an approved location.

EXCEPTION 4 Where the building has at least 2 means of exiting from each floor complying with the requirements of Chapter 33 and has a fire standpipe system complying with the requirements of Section 3817(c)2 A Exception 3 a fire detection system shall be installed as follows: detectors shall be provided in the corridor outside each door into an exit stairway and on the occupied (tenant) side of each door opening into the corridor. The above detectors shall be located not less than 1 foot nor more than 3 feet from the protected door. Detectors shall also be provided in the corridor connecting the exit stairways in all elevator lobbies in mechanical electrical and telephone equipment rooms and in all janitor and storage closets opening into the corridor. Where there is no enclosed corridor (open floor plan) detectors shall be located as above at each stairway entrance in all elevator lobbies equipment rooms janitor closets and closets intended to be entered (walk in) and used for storage of combustible materials and with a minimum of 4 additional detectors provided for the rest of the floor area. Detectors installed in enclosed areas such as equipment rooms and closets shall have a remote indicating light over the door in the corridor or outside the room or be annunciated on a panel at an approved location.

2 Standpipe systems shall be required as follows:

A All buildings shall have a standpipe system complying with the requirements of this Chapter.

EXCEPTION 1 In buildings with an existing standpipe a separate sprinkler riser sized per NFPA 13 and interconnected with the standpipe system at the base of the riser may be installed to serve the sprinkler system.

EXCEPTION 2 Where the building is fully or partially sprinklered, the combination standpipe or sprinkler riser shall operate the sprinklers on any floor properly as per NFPA 13 without the Fire Department pumping into the system to increase the pressure. In addition the standpipe shall have adequate capacity to supply two 1/2 inch hose outlets with each outlet capable of maintaining a pressure of 100 psi with 150 gallons per minute flowing at the topmost outlet with the Fire Department pumping into the system.
EXCEPTION 3  Where the building is fully or partially detected the stand pipe system shall supply two 1/2 inch hose outlets with each outlet capable of maintaining a pressure of 100 psi with 150 gallons per minute flowing at the topmost outlet with the Fire Department pumping into the system

B A Fire Department connection shall be provided as required in this Chapter

C 1/2 inch hose connections shall be provided on each floor

D Main riser water flow indication/annunciation shall be provided

E When the existing standpipe cannot meet the above criteria a new standpipe system sized per Section 3806 shall be required

EXCEPTION 1 Connection to City main water supply and the installation of a fire pump is not required

EXCEPTION 2 The system shall be supervised by air pressure or by water (as approved by the Denver Water Board)

EXCEPTION 3 New standpipe risers may be installed in stairwells provided that the exitway is not obstructed. Outlets shall be located per Section 3806

3 A communication system shall be required as follows for existing retail and office high rise occupancies

A A one way communication shall be provided. The system shall be provided with a minimum of 2 one way communication zones. Design of the communication system shall be such that half the speakers on each floor are connected to one zone and half connected to the other zone so that damage or loss of any one speaker cable amplifier preamplifier or any other single component will not cause the failure of more than 1/2 of the communications system on each floor. The cable system shall be routed in a minimum of 2 vertical risers remotely located from each other. Speakers connected to each system shall be evenly distributed on each floor with adjacent speakers connected to opposite zones.

EXCEPTION 1 Speakers will not be required in stairways but shall be audible in these areas

EXCEPTION 2 Speakers will not be required in elevators

B A 2 way (firefighters) telephone communication system shall be provided conforming to the requirements of this Code

EXCEPTION 1 Phone jacks will be required only at stairway entrances adjacent to manual fire alarm boxes

EXCEPTION 2 Phone jacks at stairway entrances may be one zone per stairway

4 The F D Operations Center shall be located on the first floor (ground) level at a location approved by the Department and the Fire Department. The F D Operations Center shall consist of the main fire alarm panel and/or annunciator panel controls for the voice communications systems controls for the firefighters communication and a graphic diagram of the building by floor (typical floors may use a single graphic)
Appendix Chapter 40 is added

APPENDIX CHAPTER 40 CONSTRUCTION IN DESIGNATED SPECIAL CONSTRUCTION ZONES

Section 4001 SCOPE

All construction alteration repairs demolition or moving in areas designated under Article VII Chapter 10 of the Revised Municipal Code as Special Construction Zones shall conform to the provisions of this Chapter

Section 4002 GENERAL PROVISIONS

4002.1 Permits No permits for construction alteration repairs demolition or moving in a designated Special Construction Zone shall be issued without being in compliance with all recommendations contained in the engineer's report if required by Section 155

4002.2 Engineer's Reports If the applicant is required to prepare an engineer's report pursuant to Section 155, the Department may require such additional information and recommendations as it deems necessary and may require such additional measures as are necessary to minimize potential hazards during construction and control hazards from the completed structure

4002.3 Inspections All construction and excavation sites shall be subject to inspection by the Department Fire Department and the Department of Health and Hospitals and results of tests or monitoring required by this Chapter shall be available at the site for inspection

4002.4 Work Stoppage In the event of a material violation with the requirements of this Chapter the Department may stop all construction activity until it is satisfied that the violation has been corrected

Section 4003 HAZARDOUS GASES GENERATED BY LANDFILLS

4003.1 New Construction Except as provided in Section 153.6 of this Building Code all new buildings structures and utilities to be constructed in a Special Construction Zone which is so designated because of the presence of hazardous gases generated by landfills shall be designed by an engineer registered in the state of Colorado to control and protect against accumulation of over 1.0% by volume of flammable gas in the building structure or utility The following precautions shall be taken during and after construction activity

1 A flammable gas indicator shall be utilized at all times during trenching excavating drilling or when working within 10 feet of an open excavation

2 When trenching excavating or drilling deeper than 2 feet into the soil or fill or in the presence of detectable concentrations of 1.0% by volume of flammable gas the operating equipment shall be provided with spark proof exhausts

3 A dry chemical fire extinguisher approved by the Fire Department shall be provided on all equipment used in the landfill

4 Personnel within or near an open trench or drill hole deeper than 2 feet into the soil or fill shall be fully clothed wear shoes with nonmetallic soles and wear a hard hat and safety goggles or glasses

5 Exhaust blowers shall be used in instances where trenches may show a build up of flammable gas of 1.0% by volume or less than 19.5% by volume of oxygen
Appendix Sec 4003.1

6 Smoking and/or an open flame shall not be permitted in any area within 100 feet of the excavation.

7 Personnel shall be kept upwind of any open trench unless the trench and the downwind atmosphere are continuously monitored.

8 Before personnel are permitted to enter an open trench the trench shall be monitored for flammable gas and at least 19.5% by volume oxygen sufficient. When in the excavation each work party shall be working no more than 5 feet from a continuously operating flammable gas and oxygen monitor.

9 The applicant shall employ an inspector whose duty it shall be to effect continuous compliance with the foregoing precautions. The inspector shall be a qualified person approved by the Department or shall be an engineer registered with the state of Colorado or a person in the employ of or subject to the direct supervision and control of such an engineer. Said inspector shall submit a written report of his inspection to the applicant and to the Department at 10 day intervals during active construction stating that all new construction is in compliance with these regulations and that all testing and monitoring has been and is being done as required by the Code.

10 After construction is completed hazardous gas monitoring devices approved by the Fire Department shall be installed in the completed building or structure in such number and in such places within the building or structure as may be required by the Fire Department.

4003.2 Alteration or Repair of Existing Building Structures or Utilities

Except as provided in Sections 153.6 and 4003.3 no alterations or repairs to any existing building structure or utility shall be made unless the following precautions are taken:

1 Within 5 days prior to applying for a permit under Chapter 1 of the Building Code to alter or repair an existing building structure or utility the work site shall be tested for the presence of flammable gas by an engineer registered in the state of Colorado.

2 The applicant shall be exempt from all other requirements of this Section 4003.2 if

A Test results show that there is less than 2.0% of the Lower Explosive Limit (L.E.L.) of hazardous gas, then the permit for the work shall be issued and

B Upon completion of the work the applicant shall install hazardous gas monitoring devices approved by the Fire Department in such number and in such places within the building or structure as may be required by the Fire Department.

3 If the test results show that there is 2.0% or more of the Lower Explosive Limit (L.E.L.) of hazardous gas, then the applicant shall take all of the precautions pursuant to Section 4003.1 as if the construction were new construction.

4003.3 Exemption

Whether or not he is an applicant for a permit, the owner of real property within a Special Construction Zone may apply to the Building Department for a certificate of exemption from the provisions of Article 647 of the Revised Municipal Code and Section 4003 of the Building Code. To obtain such exemption, said owner shall have his property tested by an engineer registered in the state of Colorado and tests shall meet the following requirements:

1 A test for the presence of flammable gas shall be performed at a time when there is frost on his property to a depth of at least 6 inches in the soil again at a time when
there is no frost in the soil and again within 5 days of the date when an exemption certificate is applied for

2 The test holes shall be placed along each major boundary line of the real property for which the exemption is sought in such number and at such locations as the engineer deems proper

3 If the test results show that there is less than 2.0% of the Lower Explosive Limit (L.E.L.) of flammable gas and if such test results are satisfactory to the Department then the Department shall issue a certificate stating that the real property described in the certificate is exempt from the provisions of Article 647 of the Revised Municipal Code and Section 6303 of the Building Code

4 As a condition of receiving an exemption certificate from the Department the owner shall acquire and install in all existing and future buildings and structures devices approved by the Fire Department to monitor for the presence of hazardous gas in such number and in such places within the building or structure as may be required by the Fire Department

5 Upon a finding that flammable gas is present in amounts greater than 2% of the lower explosive limit on any property where an exemption certificate has been issued the Department shall revoke the exemption certificate Further upon a finding that the monitoring devices on any property for which an exemption certificate has been issued are inoperative the Department may suspend or revoke the exemption certificate
UMC
Division 2
DIVISION 2

AMENDMENTS

TO THE

1994 EDITION OF THE UNIFORM MECHANICAL CODE

AND APPENDIX

OF THE

INTERNATIONAL CONFERENCE OF

BUILDING OFFICIALS

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**APPENDIX B**

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<tr>
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1314 Appliance Fuel Connectors UMC 13
1319 Required Gas Piping Size UMC 13
1320 Medium and High Pressure Gas Piping UMC 13
UNIFORM MECHANICAL CODE AMENDMENTS

> CHAPTER 1 ADMINISTRATION is deleted The administrative provisions of UBC Chapter 1 as amended by Denver shall govern

Section 303 3 Exceptions 5 and 7 are amended [B-016]

5 Only appliance manufacturer supplied aluminum alloy connectors are approved for use when supplied with the appliance for installation. These connectors may be used only in interior locations where they shall not be in contact with masonry, plaster or insulation or are not subject to repeated corrosive wettings.

7 Outdoor portable appliances may be connected with an approved outdoor hose connector not to exceed 15 feet (4,572 mm) in length provided that it connects outdoors to an approved gas piping including an approved valve at the inlet of the hose connector. Installations shall not be subject to damage and shall be approved by the Building Official.

> Section 306 1 506 Exception delete reference to log lighter

Section 314 1 Access to Furnace Room is amended by adding the following:

Furnace rooms shall be separated from refrigeration equipment machinery rooms and from air handling equipment rooms by a fire separation wall of at least one hour fire resistive construction. There shall be no access to a furnace room from a refrigeration equipment machinery room or from an air handling equipment room.

Section 315 1 General Restriction is amended as follows:

Revise paragraph 5 by adding toilet room and janitor’s closet to the list of rooms.

Add subsection 8 Under a stairway.

Section 321 8 Access is amended as follows:

321 8 Access: Every furnace and air handling unit that is installed on an exterior wall or on the roof of a building shall be readily accessible. In buildings having an eave height of 20 feet or more or 2 or more stories in height where appliances are located on the roof, there shall be permanent inside means of access. For buildings with eave height of less than 20 feet roof access shall be either through permanent inside means or through the use of a permanent exterior ladder.

EXCEPTION: A portable ladder may be used for access to equipment for Groups R Divisions 2 and 3 and Group U Occupancies where the eave height does not exceed 20 feet.

Permanent ladders providing roof access shall:
1. Have side railings which extend at least 30 inches above the roof edge or parapet wall.
2. Be at least 14 inches in width.
3. Have rungs not more than 14 inches on center.
4. Have a minimum of 6 inch toe space.

Permanent exterior ladders need not extend closer than 8 feet to the finish grade.
Section 321.9 Guardrails is added as follows

321.9 Guardrails Guardrails of at least 3 feet in height shall be provided wherever an appliance is located within 6 feet from the edge of the roof and only the top rail is required

EXCEPTION Guardrails are not required if a minimum height parapet of 3 feet is installed

Section 324 FLOOR FURNACES is amended

Floor furnaces shall not be installed repaired replaced or used

Section 326.1 Suspended Type Unit Heaters is amended as follows

326.1 Suspended Type Unit Heaters In addition to Section 326.6 suspended type unit heaters shall be installed as follows

1 Approved unit heaters may be installed in garages enclosed loading docks and other similar occupancies When heaters are installed in public repair or storage garages they shall be suspended from the roof or ceiling so that there is at least 8 feet from the floor to the bottom of the unit In spaces where vehicular equipment in excess of 6 feet in height is present a minimum of 2 feet clearance shall be provided between the bottom of the unit heater and the top of the vehicle

2 Unit heaters installed in private garages shall be installed with a clearance of at least 66 inches measured from the floor to the bottom of the unit

3 Unit heaters shall be installed with clearances from combustible material of not less than 18 inches at the sides 12 inches at the bottom 6 inches above the top and 18 inches beyond the front and rear of the heater except as provided in Sections 326.2 and 326.4

Section 326.2 Floor Mounted Type Unit Heaters is amended by adding paragraph 3 as follows

3 Floor mounted type unit heaters shall not be installed in repair garages storage garages or any other areas where Class 1 flammable liquids are used or stored

Section 504.6 is added as follows

504.6 Exhaust Duct Termination Exhaust ducts that terminate on horizontal or flat roofs shall terminate a minimum of 12 inches above the roof’s surface and be equipped with a / inch bird screen

> Section 505.1 General is amended by deleting the last sentence Exhaust ducts shall not extend into or through ducts and plenums and adding the following

Exhaust ducts under positive pressure shall not extend into or through ducts and plenums unless contained within an airtight enclosure

< Section 507.6 Duct Enclosure first sentence is amended as follows

507.6 Duct Enclosure A grease duct serving a Type I hood shall be installed in an enclosure from the point where the duct first penetrates a fire rated wall floor or ceiling assembly

Section 508.1 is amended by adding an Exception

EXCEPTION Dishwashers that are low temperature and nonsteam producing
Section 508.2.4 Joints and Seams is amended as follows

508.2.4 Joints and Seams Joints and seams shall be made with continuous liquid tight weld or braze.

EXCEPTION Hoods of listed grease extractors or listed automatic damper and hood assemblies evaluated under the same conditions of fire severity as the hood of listed grease extractors shall be considered as complying with this requirement.

Section 508.6 Canopy Size and Location is amended by adding the following:

In addition, the minimum vertical distance between the lip of the hood and the finished floor shall be 6 feet 6 inches.

Section 508.7.4 Low Temperature is amended as follows

508.7.4 Low Temperature Type I hoods where the cooking equipment includes low temperature appliances such as medium-to-low temperature ranges, roasters, roasting ovens, pastry ovens, pizza ovens, and equipment approved for use under Type II hood:

<table>
<thead>
<tr>
<th>Number of Exposed Sides</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (island or central hood)</td>
<td>Q = 75A</td>
</tr>
<tr>
<td>3 or less</td>
<td>Q = 50A</td>
</tr>
<tr>
<td>Alternate formula</td>
<td>Q = 50PD</td>
</tr>
</tbody>
</table>

EXCEPTION: Listed grease extractors are to be installed in accordance with the terms of their listing and manufacturer's installation instructions.

Domestic type kitchen ranges installed in other than the individual dwelling units of R Occupancies shall require a Type I hood to be installed unless otherwise approved by the Department.

Section 509.8 Fire Dampers is amended as follows

509.8 Fire Dampers Fire dampers shall not be installed in a grease duct system when the exhaust fan is to operate during a fire mode.

EXCEPTION Fire dampers are permitted to be installed in a grease duct system only when used in conjunction with a carbon dioxide fire extinguishing system.

UL listed range hoods with fire dampers are approved for use only in conjunction with a carbon dioxide fire extinguishing system.

Fire dampers shall be installed in range hood makeup air and diffuser penetrations of the continuous liquid tight welded surface in accordance with NFPA 96.

Section 601.1 Material is amended by adding the following paragraph:

Gypsum board products shall not be used as a duct except that a fire rated shaft extending through a multi-level building and constructed of an approved fire rated gypsum board assembly may be used as a central return air duct.

Section 601.1.1 Use of Corridor as Plenum is amended by adding the following EXCEPTION:

EXCEPTION The transfer of air from such corridors into toilet facilities of all but R Occupancies is permitted provided that the corridor wall penetrations are protected with fire dampers.
Section 603.2 Factory Made Air Ducts is amended as follows

**603.2 Factory Made Air Ducts**  Approved Class O and Class 1 factory made air ducts may be installed in any occupancy covered by this Code. Factory made flexible air ducts shall be used only to connect diffusers and grills to a main duct and shall be limited to a maximum of 16 inches in diameter and 10 feet in length.

Approved high pressure semi rigid metal flexible ducts may be used to connect variable volume boxes to main ducts and shall be limited to a maximum of 16 inches in diameter and 6 feet in length.

Section 603 Installation of Ducts is amended by adding subparagraph 603.5 Installation References as follows

**603.5 Installation References**  In addition to the specific requirements outlined in this Section, duct installation shall comply with American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and Sheet Metal and Air Conditioning Contractors National Association (SMACNA) standards.

Section 605.7 Temperature Classification of Operating Elements is amended by adding the following exception

**EXCEPTION:**  Fire dampers and combination fire/smoke dampers located in a smoke exhaust path shall be equipped with 212° fusible links.

Section 608 is amended by adding Exception 5

**EXCEPTIONS:**

5 Automatic shut off is not required in evaporative coolers or in units that supply untempered 100% outside air.

Section 701.2 Unusually Tight Construction is amended by adding the following exception

**EXCEPTION:**  For appliances located in unconfined areas where roll up overhead doors are located, infiltration may be used for combustion air.

Section 701.3 Ordinary Construction is deleted

Section 703.4 Interior Spaces is deleted

Table 7-A Size of Combustion Air Openings of Ducts is amended as follows

1 Delete all of Column I Buildings of Ordinary Tightness in its entirety

2 Amend section under Column II Size of Openings or Ducts for appliances in unconfined space as follows: Provide a combustion air duct from the outside to within 3 inches of the firebox side of the appliance having a total free area of at least 1 square inch per 5,000 Btu/hr of input rating. Ducts admitting outdoor air may be connected to the cool air return of the heating system.

**EXCEPTION**  Two combustion air ducts shall be provided for Group R Occupancies and each duct shall be at least 1 square inch per 10,000 Btu/hr of total input rating.

Section 806.6 Vent Terminals is amended by revising the first sentence as follows

Venting systems for direct vent appliances shall terminate not less than 4 feet below or 4 feet horizontally from and not less than 1 foot above a door an openable window or a gravity air inlet into a building.
Section 901  GAS LOGS IN FIREPLACES is amended as follows

901.1 General Requirements  In addition to the general requirements specified in Section 323 gas logs installed in fireplaces shall comply with the requirements specified for heating equipment and heating appliances in this Code.

901.2 New Gas Log Fireplaces  Installations shall comply with the manufacturer's recommendations and listing. An approved direct vented enclosed gas log fireplace may be installed in bedrooms, bathrooms and toilet rooms in accordance with their listing.

901.3 Existing Fireplace Conversion  A gas fired decorative log set may be installed in an existing solid fuel burning fireplace subject to the following limitations:

1. Construction shall be in accordance with ANSI Standard Z21.60 and equipment shall be listed.

2. Input rating shall not exceed 90,000 Btu/hr nor be less than 11,000 Btu/hr. Orifices shall be fixed and sized for Denver altitude.

3. A safety pilot is required. The safety pilot shall be protected from mechanical damage and shall not be covered by sand or granules.

4. A thermostatic control valve is not permitted.

5. The use of a flexible gas connector is not permitted unless the connector is manufacturer supplied part of the unit.

6. Masonry fireplaces shall comply with UBC Chapter 31. Factory built fireplaces shall be approved for installation of gas logs and provided with a means for installing the gas piping.

7. The chimney serving a masonry fireplace shall comply with UBC Chapter 31 or for existing chimneys as approved by the Department. Factory built fireplaces shall be equipped with a listed chimney. Chimney size shall comply with Section 901.6.

8. The chimney damper shall either be removed or an opening or openings shall be cut in the damper or a permanent nonremovable clamp with a breakaway bolt fastener shall be installed on the damper all to provide the minimum amount of opening prescribed in Section 901.6 or the manufacturer's instructions whichever is more restrictive.

9. Permanent combustion air openings communicating directly with outside air shall be provided in the firebox or in the area directly communicating with the room in which the fireplace is located. Openings shall be sized in accordance with Table 7-A.

10. Glass doors and a fireplace screen shall be required on the fireplace when a gas log appliance is installed.

11. The gas log appliance shall be provided with a permanent label with lettering, 1 inch in height stating NO SOLID FUEL SHALL BE USED IN THIS FIREPLACE. This label must be visible after installation.

12. Manufacturer's instructions  Complete instructions shall be attached to each unit.

901.4 New Fireplaces  In addition to the above limitations neither new masonry fireplaces or new prefabricated metal fireplaces will be allowed to be installed in any building regardless of occupancy unless an approved gas log set is permanently affixed in the firebox to establish the fireplace as a gas burning fireplace. Permanently affixed is defined as follows
1. Gas burners must be affixed to the gas log set metal pan as recommended by the manufacturer's specifications.

2. A metal pan must be permanently affixed to the firebox floor using high temperature adhesive over the entire pan surface (RTV Silicon adhesive 600° F temperature red in color UL letter attached). Red adhesive should be visible around edge of pan.

**901 5 Wood Burning Appliances** Installation of new factory built wood burning appliances are restricted to certified wood stoves as approved by the Environmental Protection Agency. These appliances must be listed by an approved testing lab. If a wood burning appliance is not on the EPA approved list it cannot be installed unless it is converted to a gas log fireplace in accordance with the requirements of Chapter 9.

**901 6 Gas Log Chimney Sizing** Chimney size shall be in accordance with the following Table.

### TABLE 9 A

**CHIMNEY SIZING FOR GAS LOGS**

Minimum free area required within the chimney and at the damper opening

(SQ IN)

<table>
<thead>
<tr>
<th>Chimney Height Feet</th>
<th>13</th>
<th>20</th>
<th>29</th>
<th>39</th>
<th>51</th>
<th>64</th>
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<tr>
<td>Appliance Input: Rating Btu Per Hour</td>
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<tr>
<td>6</td>
<td>14,000</td>
<td>23,200</td>
<td>34,000</td>
<td>46,400</td>
<td>62,400</td>
<td>80,000</td>
</tr>
<tr>
<td>8</td>
<td>15,200</td>
<td>25,200</td>
<td>37,000</td>
<td>50,400</td>
<td>68,000</td>
<td>86,000</td>
</tr>
<tr>
<td>10</td>
<td>16,800</td>
<td>27,600</td>
<td>40,400</td>
<td>55,800</td>
<td>74,400</td>
<td>96,400</td>
</tr>
<tr>
<td>15</td>
<td>18,200</td>
<td>30,200</td>
<td>44,600</td>
<td>62,400</td>
<td>84,000</td>
<td>108,800</td>
</tr>
<tr>
<td>20</td>
<td>20,200</td>
<td>32,600</td>
<td>50,400</td>
<td>68,400</td>
<td>94,000</td>
<td>122,200</td>
</tr>
<tr>
<td>30</td>
<td>21,600</td>
<td>36,600</td>
<td>58,200</td>
<td>78,800</td>
<td>106,800</td>
<td>138,800</td>
</tr>
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</table>

Gas meters shall not be located in or under any building unless the meter is located in its own dedicated vault that is adequately ventilated.

**Section 909 1 General** is amended as follows.

**909 1 General** Direct gas fired make up air heaters may only be installed in Group F, H, M, S and U Occupancies and in commercial kitchens as makeup air for range hood exhaust systems. Such equipment may only be used in conjunction with powered exhaust systems to prevent any accumulation of products of combustion.

**> Section 909 2 Relief Openings** is deleted in its entirety.

**Section 1104** add the following section.

**1104 4 Conversion of Existing Systems** Replacement of equipment or refrigerant within an existing equipment room with refrigerant of equivalent or lesser safety group (Table 11 A) shall not require modification or upgrade of the refrigerant machine room ventilation controls or associated accessories. Conversions of systems to a higher refrigerant safety group will require full compliance with this Chapter 11.
Section 1124 Storage of Refrigerants and Refrigerant Oils is amended by adding the following:

Refrigerants stored in a refrigeration machinery room shall be stored in appropriately labeled approved containers and shall not exceed the amount contained in the largest refrigeration machine installed in the machinery room. Refrigerant oils not charged within the refrigeration system shall be stored as required by the Fire Code.

Section 1603 Recognized Standards is amended by adding the following standards under the N section:

| NFPA 33 | Spray Application Using Flammable & Combustible Liquids | 1989 |
| NFPA 37 | Stationary Combustion Engines & Gas Turbines | 1994 |
| NFPA 99 | Health Care Facilities | 1993 |
| NFPA 664 | Wood Processing and Woodworking Facilities | 1993 |
| NFPA 82 | Incinerators Waste and Liner Handling Equipment & Equipment | 1994 |
| NFPA 86 | Ovens and Furnaces | 1990 |
| NFPA 91 | Blower and Exhaust Systems | 1992 |
| NFPA 90A | Installation of Air Conditioning and Ventilation Systems | 1993 |
| NFPA 96 | Ventilation Control and Fire Protection of Commercial Operations | 1994 |
| NFPA 211 | Chimneys Fireplaces Vents and Solid Burning Appliances | 1992 |

Appendix B Section 1005 is amended:

Section 1005 PERMIT REQUIRED

It shall be unlawful to install, alter, or repair any boiler or pressure vessel without first obtaining a permit to do so from the Building Official. All repairs or alterations shall be completed in accordance with the National Board Inspection Code (NBIC). All repairs or alterations of a welded nature to ASME coded boilers or pressure vessels must be performed by a company in possession of a National Board R Symbol Stamp or an ASME Code Symbol Stamp. Repairs or alterations shall be performed in accordance with procedures outlined in the National Board Inspection Code. In addition, the scope of the work must be within the capability of the company as outlined in the company's quality control manual. Assembly of code boilers requiring field welding must be performed by an organization in possession of a valid and appropriate ASME Code Symbol Stamp.

Appendix B Section 1006 6 is added:

1006 6 Prohibitions The following prohibitions shall apply to boiler and pressure vessels:

1. Cast iron boilers and cast iron radiators shall not be permitted on steam systems operating at pressure in excess of 15 psig for steam or 30 psig for water unless such boilers or radiators are designed and tested for higher or working pressures and so certified by the manufacturer or listing agency and approved for use by the Department.

2. The use of sealants introduced into boilers and piping systems is prohibited.

3. The plugging of boiler tubes is prohibited.

4. Single wall exchangers are prohibited unless approved by the Building Department.

EXCEPTION: Replacement of an existing single wall heat exchanger.
Appendix B Section 1008 is amended

Section 1008  SAFETY OR RELIEF VALVE DISCHARGE

The discharge from relief valves shall be piped to within 6 inches of the floor or to an open receptacle and when the operating temperature is in excess of 212º F shall be equipped with a splash shield or centrifugal separator. When the discharge from safety valves would result in a hazardous discharge of steam inside the boiler room such discharge shall be discharged to the outside atmosphere at a safe location. When condensate can accumulate at the relief valve a drip pan or el is required. No valve of any description shall be placed between the safety or relief valve and the boiler nor on the discharge pipe between the safety valve and the atmosphere. The cross sectional area of the discharge pipe shall not be less than the full area of the valve outlet or of the total of the areas of the valve outlets discharging thereto. It shall be as short and straight as possible and arranged as to avoid undue stresses on the valve or valves.

Appendix B Section 1015 is amended

Section 1015  BOILER ROOMS AND ENCLOSURES

Boiler rooms and enclosures and access thereto shall comply with Chapter 3 of this Code and the Building Code. In addition the following prohibitions shall apply:

1. The storage of materials of any kind shall not be permitted in boiler rooms.
2. The installation of compressors shall not be permitted in boiler rooms.
3. The installation or use of gaseous chlorinators or chlorine piping in boiler rooms or rooms where fuel fired equipment is located is prohibited.
4. The installation of any device that will create a pressure less than atmospheric in the boiler room containing gas oil or solid fuel fired equipment is prohibited.

   EXCEPTION: Equipment designed listed and approved with power burners or induced draft fans.

5. Fuel fired equipment with atmospheric burners shall not be installed in the same room with equipment having power burners or induced draft fans.

   EXCEPTION: Engineered systems specifically approved by the Department.

6. Refrigeration equipment forced air or gravity furnaces or air handlers shall not be located in or access made through boiler rooms.

   EXCEPTION: Group R 3 Occupancies and individual living units of R 1 Occupancies.

7. Incinerators or access to incinerators shall not be located in boiler rooms.
8. Crawl spaces or attics shall not be used for boiler locations.
9. Installations of sinks in the boiler room is prohibited.

   EXCEPTION: Floor sinks may be installed.

Appendix B Section 1016 the first sentence is amended as follows

Section 1016  MOUNTING

A boiler or water heater shall rest on a concrete or other approved base extending not less than 3 inches above the supporting ground or floor level. Exterior mounting shall not be located closer than 5 feet to any property line.
Appendix B Section 1023 is amended

Section 1023  INSPECTIONS AND TESTS

1 Testing and Inspection Responsibility  The testing of boilers and pressure vessels shall be performed by the permit holder. In addition to the inspections required in Chapter 1 of the Building Code the inspection of boilers and pressure vessels shall be performed by the Department.

2 Owners to Provide Facilities  Every permit holder owning or having possession or control of any such equipment subject to inspection shall provide proper arrangements and facilities for attaching the instruments of inspection. Immediately before the time set for such inspection every such person shall remove all scale, dirt, soot and sediment in beneath and around the equipment. When directed by the Department a hydrostatic test shall be performed by a licensed steam and hot water contractor or boilermaker contractor in accordance with the provisions of the National Board Inspection Code (NBIC) and witnessed by the Department. The hydrostatic test pressure need be no greater than the set pressure of the safety valve having the lowest setting and shall not exceed 1\times the maximum allowable working pressure of the boiler. When hydrostatic pressure test is deemed necessary by the Department an internal examination shall be performed prior to the hydrostatic pressure test.

3 Equipment Tests  When leaks occur that prevent a successful test the Department shall make a second test upon receiving notice that all leaks have been repaired. If upon making a second test such equipment is still defective the owner or user thereof shall pay an additional inspection fee as provided in Chapter 1 of the Building Code for each subsequent test. The Department shall not issue a certificate until fully satisfied that the equipment is safe.

4 Piping System  The piping system shall be pressure tested to a minimum of 1\times the maximum allowable working pressure or 100 psig whichever is greater.

5 Inspection Fees  See Chapter 1 of the Building Code.

Appendix B Section 1024  EXCEPTION is amended

EXCEPTION  The operation only of steam heating boilers, low pressure hot water heating boilers, hot water supply boilers and pressure vessels in Group R Occupancies of one or two dwelling units and in Group U Occupancies.

> Appendix B Section 1025  Maintenance Inspection is deleted  (See Chapter 1 of the Building Code.)

Appendix B Section 1027 is added

Section 1027  USED EQUIPMENT

1027 1 General  This Section shall not be construed to prevent the use or reinstallation of a boiler or pressure vessel provided that it conforms to the requirements of this Chapter governing new or existing installations.

1027 2 Working Pressure  The maximum allowable working pressure of a boiler or pressure vessel carrying the ASME Code symbol shall be determined by the applicable sections of the ASME Code under which it was constructed and stamped.

1027 3 Nonstandard Working Pressure  The maximum allowable working pressure of a boiler or pressure vessel which does not carry the ASME Code symbol shall be...
computed in accordance with the Inspection Code of the National Board of Boiler and Pressure Vessel Inspectors

1027.4 Used Equipment Before a used boiler or pressure vessel may be installed an inspection shall be made by a Denver licensed steam and hot water heating or boilermaker contractor

**EXCEPTION:** For equipment to be installed in one and two unit dwellings the boiler may be inspected by a hot water heating contractor

1027.5 Testing Used boilers and pressure vessels shall be hydrostatically tested in accordance with requirements outlined in the National Board Inspection Code (NBIC). The hydrostatic test shall be witnessed by a member of the Department. Test results and written certification of the boiler condition shall be submitted by the licensed contractor to the Department and approved prior to installation

1027.6 Reinstallation Where a stationary boiler or pressure vessel is moved and reinstalled the fittings and appurtenances shall comply with the requirements for new installations

Appendix B Section 1028 is added

**Section 1028  UTILITY STEAM**

1028.1 General Steam piping from any central utility heating system entering into an individual building shall be provided with a steam shutoff valve of the same size as the supply pipe to the building and shall be installed near the entrance of the pipe to the building. Connections to the steam supply of building piping shall be made on the building or load side of the valve

1028.2 Reducing Valve Required

1 Where the steam pressure supplied from such systems is of greater pressure than the design pressure of the heating equipment or other equipment used in the building an approved reducing valve shall be installed to regulate the steam pressure to this equipment

2 A bypass line installed around the pressure reducing valve shall be at least / the size of the reducing valve and shall be controlled by a globe type stop valve

3 On the downstream side or low pressure side of the reducing valve a steam gauge and low pressure relief or safety valve shall be installed and set at maximum pressure at which the low pressure heating system is designed to be operated

1028.3 Return Condensate The return condensate from a building heated by a central steam supply may be discharged either into a return condensate system or wasted into a sewer drain connection or approved leaching well. Condensate discharging into a sanitary sewer system shall be sufficiently cooled so that the temperature of the discharge water is not in excess of 180 F. The discharge cannot be directly connected to any sanitary sewer system. The discharge shall be to an open floor drain special drain connection or approved receptor. If the floor drain or drain connection to the sewer is above the level of the return piping so that it cannot flow by gravity an automatic sump pump shall be installed so that the condensate can be discharged and pumped from the sump to the sewer drain
Section 1029 STANDARDS

Unless otherwise provided for in the Building Code the following Standards shall apply

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<thead>
<tr>
<th>ORGANIZATION</th>
<th>TITLE OF PUBLICATION</th>
</tr>
</thead>
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<tr>
<td>AISI</td>
<td>American Iron and Steel Institute C 140 Flow Chart and Sizing Table</td>
</tr>
<tr>
<td>ANSI</td>
<td>Pipe Threads (Except Dryseal) 82 1 1968</td>
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<tr>
<td></td>
<td>Power Piping B31 1 1992</td>
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<td>Petroleum Refinery Piping 31 3 1993</td>
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<td>Refrigeration Piping B31 5 1992</td>
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<td>API</td>
<td>Recommended Rules for Design and Construction of Large Welded Low Pressure Storage Tanks Std 620 Sixth Edition 1978</td>
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<td>Welded Steel Tanks for Oil Storage Std 650 Seventh Edition 1980</td>
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<td>ASHRAE</td>
<td>984 Systems 1993 Handbook of Fundamentals</td>
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<td>1982 Applications</td>
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Appendix Sec 1201 1

Appendix B Section 1201 1 paragraph 1 is amended as follows

1 Those portions of piping systems in which the pressure exceeds 160 psig or the temperature exceeds 250 °F shall comply with the ASME Boiler and Pressure Vessel Code ASME/ANSI B31.1 Power Piping and with the requirements of paragraph 2 below. The design of steam systems with pressure that exceeds 15 psig and water systems with temperature that exceeds 250 °F shall be the responsibility of a registered professional engineer with experience in these types of system design. The design shall include but not be limited to calculations and drawings that show pipe routing, expansion and contraction control, support and anchor locations.

Appendix B Section 1201 1 1 1 Pipe is amended by deleting galvanized pipe from the list of approved materials.

Appendix B Section 1201 1 1 4 Fittings is amended by deleting galvanized pipe fittings from the list of approved materials.

Appendix B Section 1201 1 7 8 is amended by adding paragraph 10 as follows

10 The installation of piping shall not be permitted in the shaft, pit or penthouse of elevators.

**EXCEPTION:** Piping necessary for the installation of heating equipment for penthouses shall be permitted in the penthouses.

Appendix B Chapter 10 Table No B10-C footnote #8 is amended by changing the number of units in which the boiler controls may be tested without system drainage in Group R Occupancies from less than 6 to one or two units.

Appendix B Section 1311 4 Inlet Location is amended as follows

1311 4 Inlet Location The gas piping inlet shall be located adjacent to the approved meter location. Gas pipe entry into the building shall be above grade unless the entry is into an approved ventilated gas meter vault.

Appendix B Section 1311 6 Meter Location is amended by adding the following

Gas meters shall not be located in or under any building unless the meter is located in its own dedicated vault that is adequately ventilated.

Appendix B Section 1312 1 General is amended as follows

1312.1 General Pipe used for the installation, extension, alteration or repair of gas piping shall be malleable black iron pipe or standard weight black steel pipe or when special circumstances dictate, internally tinned copper pipe or tubing. Polyethylene pipe meeting the standards of ASTM D2513.93A may be used in exterior buried piping systems. The use of PVC galvanized steel, yellow brass or cast iron for any gas piping is prohibited.

Appendix B Section 1313 2 Location is amended as follows

1313 2 Location Gas piping shall not be installed in or on the ground under any building or structure and exposed gas piping shall be kept at least 6 inches above grade.
Appendix Sec 1313 2

Gas piping shall not be installed under any concrete or asphalt slab that butts up against a building unless the pipe is sleeved and the sleeve is vented to the atmosphere to dissipate any gas leaks. Welded or threaded gas piping may be installed in concealed spaces provided that bushings, unions, valves, lugged or capped openings are not concealed. Gas piping is not imbedded in concrete or masonry and access is provided to all threaded joints. Threaded joints behind drywall are considered accessible. All exposed gas piping shall be adequately protected where the piping is subject to physical damage from an exterior source.

Appendix B Section 1314 Appliance Fuel Connectors is amended as follows

Appliance connections shall be in accordance with Section 303.3 of the Uniform Mechanical Code.

Appendix B Section 1319 1 General is amended as follows

1319 1 General Where the maximum demand does not exceed 250 cubic feet per hour and the maximum length of piping between the meter and the most distant outlet is not over 250 feet, the size of each section and each outlet of any systems of gas piping shall be determined by means of Table No. B13-D. Other systems within the range of Table No. B13-D may be sized from that table or by the methods set forth in Section 1319.2. Table No. B13-J representing Denver's condition of altitude and 67 specific gravity gas may be used to size gas piping systems.

Appendix B Section 1320 3 Pressure Regulators is amended by amending the first paragraph as follows

1320 3 Pressure Regulators Approved regulators shall be installed on medium and high pressure gas piping systems in approved locations and shall be accessible for servicing. Each regulator shall vent to the outside either separately or through a common vent stack of adequate size as determined by the design engineer and approved by the Department. A common vent which has a cross sectional area equal to the sum of the cross sectional areas of the individual vents is acceptable.
### TABLE B13-J

**FUEL LINE SIZING TABLE**

CAPACITIES FOR 60 INCHES W/C FUEL LINE SYSTEMS

STEEL PIPE 0.5 INCHES W/C PRESSURE DROP

PIPING CAPACITY TABLE FOR 0.67 SPECIFIC GRAVITY GAS

MAXIMUM CAPACITY OF STEEL PIPE IN CFH

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UPC Division 3
DIVISION 3

AMENDMENTS

TO THE

1994 EDITION OF THE UNIFORM PLUMBING CODE

AND APPENDIX

OF THE

INTERNATIONAL ASSOCIATION OF
PLUMBING AND MECHANICAL OFFICIALS
(IAPMO)
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UNIFORM PLUMBING CODE AMENDMENTS

Chapter 1 Administration of the Uniform Plumbing Code is deleted. The Administration provisions of UBC Chapter 1 as amended by Denver shall govern.

Section 202.0 is amended by amending or adding the following definitions:

- **BRANCH INTERVAL**: A length of waste stack not less than 8 feet in length or height within which horizontal branches are connected to the stack.

- **COMBINATION WASTE AND VENT SYSTEM**: A specially designated system of waste piping embodying the horizontal wet venting of one or more sinks, lavatories, drinking fountains, or floor drains by means of a common waste and vent pipe adequately sized to provide free movement of air above the flow line of the drain.

- **FLOOR DRAIN**: An opening in the floor that is used to drain water from floors into the plumbing waste system.

- **FLOOR SINK**: A receptacle in the floor used for the waste discharged from indirect drain piping.

- **GREASE INTERCEPTOR**: See Interceptor.

- **JANITORS CLOSET**: A room in which either a mop service basin or service sink is located and which contains mops, brooms, chemical cleaning supplies, etc.

- **MUNICIPAL WATER SYSTEM**: The system by which water is supplied to the City and its inhabitants.

- **TOILET ROOM**: A room which contains a water closet but no bathtub or shower.

- **WEIR**: The level at which water leaves the outlet of a trap.

Section 301.1.1 Approvals is amended as follows:

**301.1.1 Approvals**: Unless otherwise provided for in this Code, all materials, fixtures, or devices used or entering into the construction of plumbing and drainage systems, or parts thereof, shall conform to approved applicable standards or to other equivalent standards acceptable to the Administrative Authority and shall be free from defects.

Section 305.3 is amended as follows:

**305.3 Wastewater Management Division**: Uniform Plumbing Code provisions for wastewater quality control facilities inside and/or outside of any structure shall be administered and enforced by the Wastewater Management Division (WMD). These facilities include and are not limited to pretreatment devices such as grease interceptors, acid neutralization tanks, silver recovery units, swimming pool discharge area drains, control manholes, flow equalization facilities, flow meters, and inspection chambers. Construction of all storm and sanitary sewers facilities and service connections from a point 2 feet outside the structure to the point of connection at the public sewer system is within the purview of the WMD and thus must be approved by the WMD and meet all applicable WMD standards.

References:

1. Rules and Regulations Governing Sewage Charges and Fees and Management of Wastewater, Wastewater Management Division.
2 Sanitary Sewer Design Technical Manual Wastewater Management Division
3 Revised Municipal Code of the City and County of Denver
4 Directives Procedures and Standards Wastewater Management Division

Section 311.9 Dead Ends is added as follows

311.9 Dead Ends In the installation or removal of any part of a drainage system dead ends shall be avoided except where necessary to make a cleanout accessible

Sections 401.3 401.4 and 401.5 are added as follows

401.3 Conservation in New Commercial Industrial and Public Use Construction All plumbing fixtures in new commercial industrial and public use construction shall meet the following requirements for water use

401.3.1 All water closets shall be designed to use a maximum of 1.6 gallons per flush All closets shall be listed with an approved listing agency

EXCEPTION Where flushometer valves are used up to 3.5 gallons per flush is approved

401.3.2 Shower heads for the purpose of bathing and washing shall have maximum flow rate of 2.5 gallon per minute at 80 psig

401.3.3 All lavatories shall be equipped with faucets that either deliver a maximum flow of 0.5 gallons per minute at 60 psig that are equipped with metering valves that close automatically after delivering a maximum of 25 gallon or that are controlled by an infrared or other device so that they operate only upon demand with a maximum flow rate of 0.5 gallons per minute at 60 psig except required handicapped facilities may be equipped with faucets designed for handicapped

401.3.4 Allowance of Standard Fixtures The Department may allow the use of a standard fixture when in its opinion conformance would cause a health hazard or unusual hardship would not accomplish the intent of this Section or would require a greater quantity of water to be used to properly operate the fixture

EXCEPTION Hazardous waste handling facilities and health care facilities shall be exempted from the requirements of this Section except for their rest room facilities used exclusively by visitors

401.4 Conservation in New Residential Construction All plumbing fixtures in new residential construction shall meet the following requirements for water use

401.4.1 All water closets shall be designed to use a maximum of 1.6 gallons per flush All closets shall be listed with an approved listing agency

EXCEPTION Where flushometer valves are used up to 3.5 gallons per flush is approved

401.4.2 Shower heads for the purpose of bathing and washing shall have a maximum flow rate of 2.5 gallons per minute at 80 psig

401.4.3 Kitchen and service faucets shall have a maximum flow of 2.2 gallons per minute at 60 psig Residential hose bibs shall be exempted

401.4.4 Lavatory faucets shall have a maximum flow of 2.2 gallons per minute at 80 psig
401.4.5 Allowance of Standard Fixtures  The Department may allow the use of a standard fixture when in its opinion conformance would cause a health hazard or unusual hardship would not accomplish the intent of this Section or would require a greater quantity of water to be used to properly operate the fixture.

401.5 Definitions

401.5.1 Commercial, industrial and public construction as used in Section 401.3 of this Chapter means all rest rooms and bathrooms in commercial, industrial and public establishments including but not limited to restaurants, bars, night clubs, public buildings, comfort stations, schools, gymnasiums, factories, offices and athletic clubs.

401.5.2 Residential construction as used in Section 401.4 of this Chapter means all single-family residences and any accessory guest houses, multi-family dwellings, row houses, apartments, condominiums, townhouses, hotels, and motels.

401.5.3 New construction as used in Sections 401.3 and 401.4 of this Chapter shall not include redecoration, renovations or additions to existing structures.

401.5.4 Water closets as used in Sections 401.3 and 401.4 of this Chapter means any fixture consisting of a water flushed bowl with a seat used for disposal of human wastes.

401.5.5 Urinal as used in this Chapter means any fixture consisting of a water flushed bowl used for the disposal of human urine.

Section 409.1 is amended as follows:

409.1. Automatic Flushing Tanks  The use of automatic flushing tanks which flush more than one urinal at a time shall be prohibited.

Section 409.3 is added as follows:

409.3 All urinals shall be designed to use a maximum of 1 gallon per flush. No urinal shall be installed which uses a timing device to flush periodically irrespective of demand.

Section 411.0 is amended as follows:

411.0 Plumbing Fixtures Required  Each building shall be provided with sanitary facilities as prescribed by the local or state department having jurisdiction. In the absence of local requirements, a recommended list of minimum facilities for various occupancies is given in Appendix Chapter 29 of Uniform Building Code.

Section 414.0 is added as follows:

414.0 Commercial Sinks  All commercial sinks, such as bar sinks and dishwashing sinks used in food preparation areas shall be directly connected to the plumbing waste system. A floor drain or floor sink shall be installed in the same room within 5 feet of and immediately downstream of a sink with no other fixtures connected upstream of the branch line serving the sink and floor drain or floor sink to relieve any drainage backup.

Section 507.0 is amended as follows: Delete Sections 507.1, 507.2, 507.3, 507.4, 507.5 and Table 5.1.

Section 507.0 is added as follows:

507.0 Combustion Air  All fuel fired water heaters shall be provided with combustion air in accordance with Chapter 7 of the Uniform Mechanical Code.
Sec 509 0

**Section 509 0** is amended as follows

**509 0 Prohibited Locations** Water heaters which depend on the combustion of fuel for heat shall not be installed in a room used or designed to be used for sleeping purposes, bathroom, clothes closets, toilet rooms, or janitors' closets, or in a closet or other confined space opening into a bath or bedroom.

**EXCEPTION:** Direct vent water heaters where not prohibited by other regulations, water heaters may be located under a stairway or landing.

Water heaters shall not be located in any area where the water heater and connected piping is subject to freezing.

**Section 603 1** is amended by deleting Table 6.1 Backflow Assemblies Devices & Methods and adding Table 6.1 Backflow Preventer Applications. See Table 6.1.

**Section 603 2.2** is amended as follows:

603 2.2 The premises owner or responsible person shall have the backflow prevention assembly tested by a certified backflow assembly tester at the time of installation, repair or relocations.

**Section 603 3.4** is amended as follows:

603 3.4 Heat Exchangers and other assemblies or methods of construction using potable water shall be of listed construction and materials. The sections in contact with potable water shall be of material and weights suitable for potable water as set forth in this Chapter. A pressure differential device shall be provided which shall shut off heating media whenever pressure of the potable water is less than 10 psi greater than heating media.

**Section 603 3.6** is amended as follows:

603 3.6 Lawn Sprinkler An approved backflow preventer shall be installed in all lawn sprinkler systems. The backflow preventer, unless of the reduced pressure type, shall be installed at least 6 inches above the highest sprinkler head.

**Section 608 5** is amended as follows:

608 5 Relief valves located inside a building shall be provided with a drain not smaller than the relief valve outlet of galvanized steel, hard-drawn copper piping and fittings, CPVC, PB, or listed relief valve drain tube with fittings which will not reduce the internal bore of the pipe or tubing (straight lengths as opposed to coils) and shall be piped and turned down into a sump or into a plumbing fixture with an air gap as an indirect waste. Such drains may terminate at other approved locations but shall not be run outside of the building. No part of such drain pipe shall be trapped and the terminal end of the drain pipe shall not be threaded. A maximum of 3 elbows is allowed in the discharge piping. Whenever a drain pan is used as a receptacle for receiving the discharge from a relief valve, the drain pipe from the drain pan shall be a minimum pipe size equal to appliance relief valve outlet.

**Section 609 5** is amended as follows:

609 5 Location Building water supply must comply with Denver Water Department requirements.

> **Section 609 6** is deleted
Section 701 1 6 is added as follows

701 1 6 No vitrified clay tile shall be installed under or within 2 feet of any building or structure.

Section 705 1 4 is deleted

Section 705 3 2 is amended as follows

705 3 2 Expansion Joints Expansion joints shall be accessible except when in vent piping or drainage stacks and may be used where necessary to provide for expansion and contraction of the pipes. For plastic sanitary drainage and vent systems restraint and expansion fittings shall be used at each branch interval or each vertical 25 feet whichever is less to accommodate movement due to contraction and expansion.

Section 710 1 is deleted

Section 713 4 is amended as follows

713 4 The public sewer shall be considered as not being available when it is more than 300 feet from the nearest point of the property line or the building to be served is more than 1,000 feet from such public sewer.

Section 713 7 is added as follows

713 7 All sump or receiving tanks that require dual pumps shall be alarmed to provide visual and/or audible notification of failure of either pump.

Section 717 0 is amended as follows

717 0 Size of Building Sewers The minimum size of any building sewer shall be determined on the basis of the total number of fixture units drained by such sewer in accordance with Table 7 8. In no case shall the building sewer size be less than 4 inches inside diameter.

Section 719 1 is amended as follows

719 1 An approved type of two way cleanout shall be installed outside the building near the connection between the building drain and building sewer and extended to grade. Additional building sewer cleanouts shall be installed at intervals not to exceed 100 feet (30.4 m) in straight runs and for each aggregate horizontal change in direction exceeding 135.

Section 807 4 is amended as follows

807 4 No domestic dishwashing machine shall be directly connected to a drainage system or food waste disposer without the use of an approved dishwasher airgap fitting on the discharge side of the dishwashing machine. Listed airgaps shall be installed with the flood level (FL) marking at or above the flood level of the sink or drain board whichever is higher or separately trapped with the airbreak located on the stand pipe.
Section 808.0 is amended as follows

**808.0 Cooling Water** Domestic water used for cooling purposes shall be consumed or recycled and shall not be wasted to storm sewer sanitary sewer above ground drainage or below ground drainage unless specifically approved by the Denver Water Department

**EXCEPTION:** Diesel drive fire pump

Section 811.8 is amended as follows

**811.8** The provisions in this Section relative to materials and methods of construction may not apply to minor installations such as small photographic or X-ray darkrooms or small research or control laboratories where minor amounts of chemicals are discharged as approved by the Wastewater Management Division

Section 812.0 add as follows

**812.0 Food Waste Disposers** An approved food waste disposer shall be required whenever food is to be prepared either commercially or in any area consisting of a refrigerator sink and stove

Section 904.1 is amended as follows

**904.1** The size of vents shall be determined from its length and the total number of fixtures connected thereto as set forth in Table 7.5 of this Code. In addition the drainage piping of each building and each connection to a public sewer or a private sewage disposal system shall be vented by means of one or more vents one of which must be 3 inches or larger the aggregate cross sectional area of which shall not be less than that of the largest required building sewer as determined from Table 7.5
EXCEPTION: When connected to a common building sewer the drainage piping of 2 or more buildings located on the same lot and under 1 ownership may be vented by means of piping sized in accordance with Table 75 provided that the aggregate cross sectional area of all vents is not less than that of the largest required common building sewer

Section 911.0 is added as follows

911.0 Horizontal Wet Vent Single bathroom groups a single bathroom group of fixtures may be installed with the drain from an individually vented lavatory or lavatories serving as a wet vent for a bathtub shower compartment or floor drain and for a water closet provided that the requirements listed below are met

911.1.1 Not more than 4 fixture units drain into a minimum 2 inch diameter wet vent Kitchen sinks dishwashers or automatic clotheswasher connections are not permitted

911.1.2 The horizontal branch drain connects to the stack at the same level as the water closet drain or it may connect to the upper half of the horizontal portion of the water closet bend at an angle not greater than 45° from the direction of flow

911.1.3 Trap arm sizes and lengths shall conform to Tables 73, 75 and 10.1

Section 911 Illustration

HORIZONTAL WET VENT
Sec 1008.0

Sections 1008.0 through 1008.5 are amended by adding this illustration:

**Oil or Sand Interceptor**

Minimum capacity of oil and sand interceptors shall be 6 cubic feet plus 1 cubic foot for each vehicle washed during a 24 hour period. Maximum depth permitted is 12 inches below grade.

For concrete or hard surface, extend top ring and install iron ring and cover. Location depends on fire regulations and other considerations. If a gas tight cover is provided, the interceptor may be installed inside of the structure.

SHAPE IS CYLINDRICAL OR RECTANGULAR

Section 1011.0 is deleted.

Section 1012.0 is amended as follows:

**1012.0 Grease Interceptors for Commercial Kitchens** When grease interceptors are required, a recommended sizing criteria is provided in Appendix H.

**EXCEPTION:** Alternative sizing as approved by the Wastewater Management Division.

Section 1013.0 is amended as follows:

**1013.0 Food Waste Disposal and Dishwasher Prohibited** All food waste disposal in commercial kitchens shall be connected to and discharge into a grease interceptor.

**EXCEPTION** Vegetable preparation area disposal.
Appendix C

> Appendix C is deleted

Appendix D Part C Paragraph D 3 1 is amended as follows

Part C Sizing of Rainwater Piping

D 3 1 Vertical rainwater piping shall be sized in accordance with Table D 1. Table D 1 is based upon maximum inches (mm) of rainfall per hour falling upon a given roof area in square feet (m²). Three inches (76 mm) per hour is the selected rate for Denver.

Appendix D Part C Paragraph D 3 6 is added

D 3 6 Controlled Flow Storm Water System

(a) The roof drainage system may be sized on the equivalent or adjusted maximum projected roof areas which result from controlled flow and storage of storm water on the roof provided that approved flow control devices are incorporated into a finished roof.

(b) A control device shall be installed to limit the rate of discharge water in gallons per minute not to exceed the rate permitted in Tables D 1 through D 3. Height of stones or other granular material above waterproofed surfaces shall be protected by secured metallic strainers.

(c) At least 2 drains shall be installed in roof areas 10,000 square feet or less and at least 4 drains in roof areas over 10,000 square feet.

Appendix F is amended to read as follows


Appendix I Private Sewage Disposal Systems is deleted

Appendix J Reclaimed Water System for Nonresidential Buildings is deleted

APPENDIX K UNIFORM SWIMMING POOL, SPA AND HOT TUB CODE (IAPMO) 1991

Part I Administrative is amended as follows

PART I ADMINISTRATION

1 0 Title This Code shall be known as the Uniform Swimming Pool, Spa and Hot Tub Code and will be referred to as this Code herein.

1 1 Purpose This Code provides minimum requirements and standards for the protection of the public health, safety and welfare.
Appendix K Sec 1.2

1.2 Scope The provisions of this Code shall apply to the erection installation alteration addition repair relocation replacement maintenance or use of any swimming pool plumbing system except as otherwise provided for in this Code.

1.3 Existing Installations

(a) Any swimming pool plumbing system lawfully installed prior to the effective date of this Code may have its existing use a maintenance or repair continued if the use maintenance or repair is in accordance with the original design and location and no hazard to the public health safety or welfare has been created by such systems.

(b) The owner or his designated agent shall be responsible for the maintenance of the swimming pool plumbing system in a safe and sanitary condition.

1.4 Administrative Provisions The administrative provisions of the Building Code as amended shall govern.

Sections 1.5 through 1.18 are deleted.

CHAPTER 1

Section 102 Definitions The following definitions are amended.

SWIMMING POOL PRIVATE Shall include all constructed pools which are used as a swimming pool in conjunction with no more than 3 family dwellings and available only to the family of the householder and his private guests.

SWIMMING POOL PUBLIC Any constructed or prefabricated pool other than a private or semi public swimming pool.

Section 102 Definitions The following definition is added.

SWIMMING POOL SEMI PUBLIC A swimming pool of less than 2,000 square feet area which is not available for use by the general public but rather is used for residents or tenants and their guests of motels hotels apartments and condominiums or other swimming pools of a similar scope and nature of usage.

CHAPTER 2

Chapter 2 is amended as follows.

The provisions of Chapter 3 General Regulations of the Plumbing Code shall govern.

CHAPTER 3

Section 301(a) is amended as follows.

(a) Every swimming pool shall be equipped complete with approved mechanical equipment consisting of filter pump piping valves and component parts.

Section 303(c) is added.

(c) Hair and Lint Catcher A hair and lint catcher of acceptable design shall be provided.

1 The hair and lint catcher shall be installed on the suction side of the pump.

2 The strainer shall be so located as be easily accessible for cleaning.

3 The hair and lint catcher shall have the following design features.

a Water shall pass through the strainer from the inside to the outside.
Appendix K Sec 303

b The strainer shall be constructed of noncorrosive material
c The width or diameter of the strainer openings shall not be more than / inch
d The area of the strainer openings shall be at least 10 times the area of the inlet pipe to the strainer
e The hair and lint catcher shall be so constructed that it can be easily and quickly taken down for cleaning
f The removable strainer with perforated openings shall be provided unless sufficient cause can be shown for using some other type

Section 306 (a) and (b) are added

Section 306 FILTERS

(a) Rapid Sand Filters Design filtration rate is not greater than 3 gpm/ft (126 L/min/m²) for public pools, spas or hot tubs and not greater than 5 gpm/ft (210 L/min/m²) for residential pools, spas or hot tubs

(b) High Rate Sand Filters Design filtration rate greater than 5 gpm/ft (210 L/min/m²) for public and residential pools, spas or hot tubs (may be pressure, vacuum or gravity type)

Section 307 (11) (12) and (13) are added

(11) Rooms in which gas chlorinators are located shall have a light switch and an exhaust fan interlocked to come on whenever the door into the room is opened

(12) Chlorine Gas Equipment Respiratory Protection Equipment At least Self Contained Breathing Apparatus (SCBA) minimum 30 minute capacity certified by the National Institute of Occupational Safety and Health (NIOSH) shall be provided operative and hung in a conspicuous place outside the chlorination room in an area easily accessible to pool employees. A cabinet may be utilized to provide security for the SCBA. Monthly working condition checks of the SCBA shall be done and records kept thereof. Pool employees shall be trained in the proper use SCBA equipment.

(13) Pools using chlorinated isocyanurate or chlorinated hypochlorites shall have on site and available either a Self Contained Breathing Apparatus as required in Section 307(12) or have available a canister type respirator approved by either the U.S. Bureau of Mines or NIOSH for use with chlorine. Canister type respirators must have available canisters which have not exceeded their manufacturer's expiration date. Canister dates should be checked monthly and recorded on the record. This respiratory protection device shall be stored outside the chlorine area be kept in good working order and be easily accessible to the employee.

Section 308(b) is amended

(b) Surface Skimmers Listed surface skimmers where used in lieu of a perimeter overflow system shall be installed in strict accordance with the manufacturer's installation instructions. For public pools there shall be at least 1 skimmer for each 500 square feet of surface area or fraction thereof. For private pools there shall be at least 1 skimmer for each 900 square feet of surface area or fraction thereof. In public pools a minimum of 75% of the turnover rate through the surface skimmers must be provided with capability of 100%
Appendix K Sec 308

Section 308(c)(6) is amended

(6) Channel Outlet Covers  Overflow channel outlets shall be provided with a clear opening area in the grating not less than one fifth times the cross sectional area of the outlet required in Section 308(b)(5)

Section 308(f) is amended

(f) Inlet Fittings  Approved or listed manufactured inlet fittings for the return of recirculated pool water shall be provided on the basis of at least 1 per 15 000 gallons of pool capacity  Such inlet fitting shall be of such design and construction as to insure an adequate seal to the pool structure and shall provide a convenient means for sealing for pressure testing of the pool circulation piping  Where more than 1 inlet is required the shortest distance between any 2 required inlets shall be at least 10 feet and maximum distance shall be not more than 15 feet  Spacing and locations shall be as required to avoid dead spots

Section 309(d) is amended as follows

(d) PVC or CPVC piping are the only acceptable materials suitable for swimming pool piping

Section 309(f) is added

(f) Flanged joints or unions shall be inserted at intervals to permit any part of the system to be taken down quickly for cleaning or repairs  The piping system of the pool shall be appointed in distinguishing colors to determine filter water raw water waste water vacuum lines and heating lines  The color system for distinguishing the different piping systems in a swimming pool shall be as follows

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Filtered water</td>
</tr>
<tr>
<td>Yellow</td>
<td>Raw or make up water</td>
</tr>
<tr>
<td>Black</td>
<td>Waste water</td>
</tr>
<tr>
<td>Red</td>
<td>Heating lines</td>
</tr>
<tr>
<td>Blue</td>
<td>Vacuum lines</td>
</tr>
</tbody>
</table>

A flow diagram of the entire system with operating instructions shall be posted in close proximity to the filtering equipment

Section 310(b) is amended as follows

(b) No direct connection shall be made between any storm drain sewer drainage system seepage pit underground leaching pit or sub soil drainage line and any line connected to a swimming pool

Section 314 is amended

Section 314  See Section 316 0 Joints & Connections of the Mechanical Code

Section 316 is amended

Section 316  ACCESSIBILITY AND CLEARANCES

Equipment shall be so installed as to provide ready accessibility for cleaning operating maintenance and servicing

(a) The equipment room shall be so located that it cannot be entered directly from shower rooms or from swimming pool area
Appendix K Sec 316

(b) The recirculation equipment shall be conveniently located for inspection and servicing. Special attention is called to the necessity of providing adequate headroom above pressure filters.

(c) The floor shall have a minimum slope of 1/ inch per foot toward the drains with no low spots which would allow the water to stand.

(d) The equipment room drains shall not discharge to a sewer or drain which may surcharge into the equipment room floor.

Section 317(a) is amended

(a) Tests: All pool piping shall be inspected and approved before being covered or concealed. It shall be tested and proved tight to the satisfaction of the Administrative Authority under a static water or air pressure test of not less than 35 psi for 15 minutes.

EXCEPTION: All exposed equipment need not be tested as required in this Section.

CHAPTER 4

Chapter 4 is amended

SWIMMING POOL HEATERS AND VENTS

Section 401 GENERAL

The appropriate Sections of Chapters 3, 7 and 8 of the Uniform Mechanical Code shall govern combustion air and venting requirements for swimming pool heaters.

Sections 402 and 403 are deleted.

Sections 407 through 421 are deleted.

CHAPTER 5

Chapter 5 is amended

Section 501 GENERAL

Chapter 13 Fuel Gas Piping of the Uniform Mechanical Code shall govern.

Sections 502 through 513 are deleted.
## Table 6.1
### Backflow Preventer Applications

<table>
<thead>
<tr>
<th>Type of Connection</th>
<th>Degree of Hazard</th>
<th>Types of Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe Rate (s)</td>
<td>Reduced Pressure</td>
</tr>
<tr>
<td></td>
<td>Mod Rate (min)</td>
<td>Backflow Preventer Assembly</td>
</tr>
<tr>
<td></td>
<td>Min Rate (m)</td>
<td>Air Gap</td>
</tr>
</tbody>
</table>

### I. Direct Water Connections subject to pressure -

#### A. Pumps, tanks and lines handling:
1. Sewage and lethal substances
2. Toxic substances<sup>1</sup>
3. Non-toxic substances<sup>2</sup>

#### B. Water connection to steam and Steam Boiler
1. Boiler or steam connection to toxic substances<sup>1</sup>
2. Boiler or steam connection to non-toxic substances<sup>2</sup> (boiler blow-off through approved gap)

#### C. Hot water heating boilers, generators or pressure vessels
1. Connection to toxic substances<sup>1</sup>
2. Connection to non-toxic substances<sup>2</sup>

#### D. Fire Sprinkler Line

### II. Direct or Indirect Water Connections not subject to pressure -

#### A. Low inlet to receptacles containing toxic substances<sup>1</sup>

#### B. Low inlet to receptacles containing non-toxic substances<sup>2</sup>

#### C. Lawn sprinkler systems (chemical injection prohibited)

#### D. Coils or jackets used as heat exchangers in compressors, degreasers or other equipment:
## BACKFLOW PREVENTER APPLICATIONS (Continued)

<table>
<thead>
<tr>
<th>TYPE OF CONNECTION</th>
<th>DEGREES OF HAZARD</th>
<th>TYPES OF PROTECTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe</td>
<td>Moderate</td>
<td>Minor</td>
</tr>
<tr>
<td>1. In Sewer Lines</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2. In toxic substances(^1)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3. In non-toxic substances(^2)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Flush valve toilets &amp; urinals</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Toilet and urinal tanks</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Valved outlets or fixtures with hose attachments which may constitute a cross-connection:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Toxic substances(^1)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2. Non-toxic substances(^2)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>H. Water connected into domestic water tanks</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Plumbing drainage lines</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>J. Reclaimed or recycled water</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)**TOXIC** SUBSTANCE: Any substance (liquid, solid, or gaseous) which, when introduced into the water supply system, creates or may create a danger to the health and well being of the consumer.

\(^2\)**NON-TOXIC** SUBSTANCE: Any substance or a non-poisonous nature that is potable or edible and that may create moderate or minor hazard to the domestic water system.

**EXAMPLES:**
1. Connections of food processing lines such as syrups, lard, beer, etc.
2. Connections to steam and steam boilers where the steam does not come in contact with poisonous materials.
3. Steam clean-up connection in food plants, apartment house boilers, or pressing boilers, where toxic compounds are not used.
4. Connections to enclosed circulating systems, such as radiant heating systems and refrigerated water systems, where toxic compounds are not used.

\(^3\)**DEVICES ARE REQUIRED TO BE TESTED**

\(^4\)**MINIMUM DOUBLE CHECK VALVE.**
NEC
Division 4
DIVISION 4

AMENDMENTS

TO THE

1993 EDITION OF THE NATIONAL ELECTRICAL CODE

OF THE

NATIONAL FIRE PROTECTION ASSOCIATION

(NFPA)
DENVER AMENDMENTS TO THE NATIONAL ELECTRICAL CODE
BY PARTS, CHAPTERS, AND SECTIONS

Chapter 10 Amendments to Electrical Design, Installation and Materials

Art.  |
1001  | General Requirements
1002  | Service
1003  | Grounding
1004  | Wiring Methods
1005  | Appliances
1006  | Mechanical Equipment
1007  | Standards

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<thead>
<tr>
<th>Art.</th>
<th>NEC Code</th>
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<tbody>
<tr>
<td>1001</td>
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<tr>
<td>1002</td>
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<td>1</td>
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<tr>
<td>1006</td>
<td>2</td>
</tr>
<tr>
<td>1007</td>
<td>3</td>
</tr>
</tbody>
</table>
NATIONAL ELECTRICAL CODE AMENDMENTS

Chapter 10 is added

CHAPTER 10
AMENDMENTS TO ELECTRICAL DESIGN INSTALLATION AND MATERIALS

Article 1001 GENERAL REQUIREMENTS [B-018]

1001 1 Scope In addition to the other requirements of this Code the provisions of this Chapter shall apply to all electrical installations electrical systems and their components

1001 2 Design Installation and Materials Design installation and materials shall conform to the requirements of this Chapter and the National Electrical Code NFPA 70 (see Standards) The abbreviation NEC shall mean the National Electrical Code Where a conflict exists between this Chapter and the Standards indicated herein the requirements of this Chapter shall govern

1001 3 Release The public utility company shall not provide electrical service to a building structure or utility until electrical inspection has been completed and the building structure or utility has been released for electrical service by the Department

1001 4 Temporary Power Electrical meters for heating and construction purposes must have a release from the Department

Article 1002 SERVICE [B-008]

1002 1 Disconnecting Means Service entrance switches or any service distribution equipment including branch circuit panelboards shall not be installed within a bathroom toilet room clothes closet, storage closet bedroom furnace room boiler room or mechanical room or over or under stairways

EXCEPTIONS:

1 Branch circuit panelboards or control centers serving a furnace boiler or associated mechanical equipment may be installed in furnace boiler and mechanical rooms

2 Furnace or boiler rooms in a townhouse or one and two unit dwellings

Article 1003 GROUNDING

1003 1 Grounding Electrode

(a) Driven rod electrodes of iron or steel shall be protected by a conductive coating other than galvanizing or painting

(b) Pipe or conduit electrodes shall not be permitted

1003 2 Grounding Connections Grounding conductors shall not be secured to any plumbing fixture or fitting

Article 1004 WIRING METHODS [B-062]

1004 1 Connection of Cable Assemblies to Exterior Panelboard Cables shall enter an exterior panelboard through a nipple extending completely through the outer wall structure into the hollow space within the wall The nipple shall be secured to the panelboard by locknut or connector and insulated bushings shall be provided at each end of the nipple into the panelboard
1004 2 Raceway
(a) Raceway installed directly in or on the earth or in concrete which is placed in or on the earth shall be one of the following types
   (1) Rigid nonmetallic conduit
   (2) Rigid steel or intermediate metal conduit covered with
       a. A factory applied approved banded polyvinyl chloride (PVC) or bituminous base tape. Field applied tape is not acceptable
       b. An approved coat of bituminous base paint
       c. An approved special coating (e.g., double galvanizing, etc.)
(b) Raceway installed in concrete not in contact with the earth may be electrical metallic tubing in addition to the types listed above
(c) Aluminum conduit shall not be installed in or on the earth or embedded in concrete
(d) Electrical nonmetallic tubing may be installed in concrete in addition to the types listed above and shall comply with Article 331 NEC

1004 3 Roof Penetrations Conduits penetrating a roof shall be installed in roof jacks to preserve the integrity of the roof

1004 4 Conduits on Roofs When conduits are installed on roofs they shall be a minimum of 12 inches above the finished roof and shall be supported on metal stands installed in pitch pans with no more than 10 feet between stands

1004 5 Duct Attachment or Support Support or attachment of conduit or fixtures from ducts is prohibited

1004 6 Townhouse Buildings Electrical telephone and signaling wiring and equipment shall not be permitted in 2 hour fire resistive walls between dwelling units

1004 9 Type AC and MC Cable An approved tool shall be used to cut the armor on Type AC and MC cable. Metal cutting saws or pliers are not permitted

1004 10 Identification of Branch Circuit Conductors All branch circuit conductors shall be identified at all junctions, splices and terminations. When a neutral conductor is required the neutral conductor shall be identified with corresponding phase conductor which forms the branch circuit

Article 1005 APPLIANCES
1005 1 Electric Fences Electric fences are prohibited See the Denver Building Code

Article 1006 MECHANICAL EQUIPMENT
1006 1 General See the Uniform Mechanical Code for refrigeration equipment

1006 2 Furnaces Unit Heaters and Boilers All motors for furnaces, heaters and boilers, either new installations or replacements, shall have a separate overcurrent device that shall open the circuit when the motor current exceeds 125% of the full load rated amperage. A thermal protector integral with the motor is not acceptable as the overcurrent device for motors on furnaces, unit heaters or boilers. Each motor shall be provided with a disconnecting means located on or adjacent to the unit. All motors for furnaces and boilers shall be on separate circuits except that when replacing a furnace or boiler a separate circuit is not required when the ampacity of the replacement motor is equal to or less than 50% of the existing circuit ampacity
Article 1007  STANDARDS

Unless provided for elsewhere in this Building Code the following Standards shall apply:

- National Electrical Code  NFPA 70 1993
- Lightning Protection Code  NFPA 780 1992
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INDEX

- A

ABANDON
Defined

ACCESS
Access to Furnace Room
Access to Roof Appliances
General Restriction

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Alteration Defined
Alteration Substantial Defined
Alterations
General
Compliance
Existing Elements
Installation of Stairs or Escalator
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Assembly Areas
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Appeal
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Policies shall be employed as determined by the Director by the authority of Denver Building Code UBC Section 103.3 Modifications Under Special Circumstances.
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Patio Covers  32 B043
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  Inflated Structures  32 B023
Visual Alarms  32 B057
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The following procedures will be implemented in an attempt to minimize construction problems:

1. When basement excavations, foundation repairs or replacement and/or foundation underpinning is proposed for any structure, the architect, engineer, contractor or owner shall submit 2 sets of complete plans for the proposed work to the Department for approval. An architect's or engineer's dated signature and Colorado seal shall be required on all plans.

2. Complete plans shall be scaled drawings and shall indicate but not be limited to the following:
   a. The exact address and location of work to be performed.
   b. Name and address of owner.
   c. Name and address of the person responsible for the preparation of the drawings.
   d. An overall plan indicating location of the existing foundations and location of proposed construction.
   e. Plans and specifications which clearly describe design criteria, sequence of excavation, construction procedure and how all loads are applied to the new construction.
   f. Detailed cross sections to clearly illustrate all existing and proposed structural elements and features.
   g. A description of existing soil conditions substantiated when required by an engineer's soil report and analysis.
   h. Structural calculations indicating all lateral and vertical loads applied to the existing and proposed structural elements.

3. No verbal approval concerning construction procedures or alterations will be made either by the field inspector or office engineers. All requests for approval shall be documented by the engineer, contractor or owner and submitted to the Department for approval.

4. All plans for this type of work shall be logged in for review. No walk through permits will be allowed.

END OF DOCUMENT
The following policy will be adhered to in the issuance of permits:

Where a building consists of multiple addresses identified by either a number or a separate designation (i.e., A, B, C), separate permits for individual units may be issued for work to be accomplished. This holds true for such buildings as condominiums, duplexes, row housing, stores within a shopping center, etc.

Not covered by this policy would be such items as hotels or motels or rental apartment buildings where units are not identified by separate addresses.

**EXCEPTIONS:**

1. One address may be used for 1 building that has several addresses when the building is being demolished.
2. Use address where tap is made for lawn sprinklers.
3. One permit for preparatory work can be used.
4. All addresses for 'move out' permits may be placed on 1 permit.
5. Apartment buildings. Each unit must have a separate electrical permit when each apartment has its own meter.

END OF DOCUMENT
CITY AND COUNTY OF DENVER

POLICY

PUBLIC WORKS DEPARTMENT

Subject: SIGN PERMITS

Approved:

R. Doug Sutton, P.E., Director, Building Inspection

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Reference UBC Section 150-1 Denver Building Code

Christmas decoration paper plastic or cloth banners over public right of-way will not require a Building Permit but will need approval from Traffic Engineering

END OF DOCUMENT
There have been some problems concerning the mailing of permit applications to the Building Department and the subsequent validation of approved permits. This Department will maintain the following policy in regard to mailed permit application forms.

**MAILING OF PERMIT APPLICATIONS** There is no provision in the Building Code for recognition of mailing in permits. It does, however, place the responsibility with the contractor to obtain a valid permit prior to beginning work whether he obtains the permit by personal application at this Department or by sending in the application through the mail. This Department cannot, and will not, be responsible for lost applications or any other irregularity occasioned by the mailing of permit applications.

**COMMENCING IMMEDIATELY THE FOLLOWING PROCEDURE WILL BE IN EFFECT:**

The completed application form properly signed and including ALL of the pages of the form may be mailed to the Building Department. Do not detach any of the pages. At this point the permit is ONLY AN APPLICATION and the mailing in of such permit does not carry with it any connotation of approval.

Upon receipt in the Building Department, the date stamp will be applied and the Permit Section will review the application for completeness and compliance with the code. If approved, the application will be validated. The validated copy is the applicant's record of the approved permit. Along with the application form must be sent an 8" x 11" self-addressed, stamped envelope which will be used by the Building Department to return the validated copy and permit card. No permit card or validated copy will be sent back at the expense of the Building Department.

Until this validated copy and permit card is received by the applicant and posted on the job site no work shall be permitted. Failure to furnish proof of such validated copy and permit card upon demand by the inspector will constitute a violation of Section 150 of the Building Code and will make the violator subject to the fines and imprisonment legally applicable to those violations.

END OF DOCUMENT
Reference U B C Section 150 and 3304 Denver Building Code

1 PROCEDURE FOR OBTAINING A PERMIT

Prior to obtaining a demolition or moving permit the following procedure shall be implemented. Submit a completed #1D Permit application for each building that shall indicate but not be limited to the following:

1. The exact address of the building to be demolished or moved
2. Name address and telephone number of the building owner
3. Name address license number class of demolition license expiration date of license and telephone number of the demolition contractor
4. Exact use of the building (when building is used for any type of dwelling show the exact number of dwelling units)
5. Provide proper demolition insurance with a copy of insurance certificate on file with this Division. Insurance to be valid during the demolition of building. Reference Section 3304 1 11
6. Submit Demolition Notification for demolition of commercial, industrial and residential (with 5 or more dwelling units) buildings or structures. The Demolition Notification shall be completely filled out and must bear the original signature of Certified Asbestos Inspector
7. Authorized signature from

WASTEWATER MANAGEMENT DIVISION
Main Office 446 3400
2000 W 3rd Ave
Denver CO 80223
(Licensed Contractor Must Call for
Sewer Cut off Inspection 446 3400)

TRANSPORTATION
Traffic Engineering 640 3958
200 W 14th Avenue #352
Denver CO 80204

WALK THROUGH OFFICE 640 5186
200 W 14th Avenue Atrium
Denver CO 80204

(#1D Permit Signature With Cut Off Clearance
From Main Office)

HEALTH & HOSPITALS 436 7305
605 Bannock Street #333
Denver CO 80204

ZONING ADMINISTRATION 640 2191
200 W 14th Ave #230
Denver CO 80204

DENVER WATER BOARD 628-6100
1600 W 12th Avenue
Denver CO 80204

LANDMARK COMMISSION 640 2736
200 W 14th Ave, #203
Denver CO 80204
CITY AND COUNTY OF DENVER  POLICY  PUBLIC WORKS DEPARTMENT

Subject: DEMOLITION PERMIT OR MOVING PERMIT PROCEDURE

Number 32 BO05  Effective Date February 26 1986
(Revised September 20 1995)  Page 2 of 2

UTILITIES  COMPANY/TELEPHONE
Gas  electric  steam  Public Service Company  571 3261
Water  Denver Water Board  628 6100
Sewer  Wastewater Management  964 0630
Telephone  U S West Communications  896 1111
Cable TV  Mile Hi Cablevision  744 9696

BLUE STAKES  1 800 922 1987 (48 HOURS BEFORE YOU DIG CALL FOR THE LOCATION OF UNDERGROUND GAS ELECTRIC AND TELEPHONE)

8 Utilities must be removed Any demolition work started prior to all gas steam electric water sewer and other services lines being shut off cut off removed capped or otherwise controlled outside of the building line will be subject to the penalties described in Section 111 of the Denver Building Code Please call the following companies prior to demolition to insure that utilities have been properly shut off

9 The permit number date of issuance and date of inspection of required fence around a demolition project (a notarized affidavit for a watchman or an existing fence may be submitted in lieu of new fence when signed and approved by a Public Safety Inspector)

10 Total number of square feet of floor area of building (to include all levels) total number of stories and basements and valuation of work as defined in Chapter 2 of the Denver Building Code

11 Authorized signature on permit application

12 Other items that may be required for any specific demolition project (engineer's report etc) Reference Section 155 2 of the Denver Building Code

2 FILLING OF HOLES OR BASEMENTS RESULTING FROM DEMOLITION OR MOVING OF STRUCTURES

The Building Inspection Division policy regarding filling of holes or basements resulting from demolition or moving of structures be as follows

Section 3304 11 After Removal Upon completion of the removal of a building structure or utility either by demolition or moving the ground shall be left in a clean smooth condition Holes basements or cellars shall be filled with an inorganic material provided however that the top 1 foot of fill shall be clean earth The filling of such excavations shall not be required when a building permit has been issued for a new building on the site and construction is to be started within 60 days after completion of the demolition or moving operations The holder of the building permit shall provide a temporary barricade protecting the excavation on all sides as specified for safety by the Department The temporary barricade may remain in position for a time not exceeding 3 days after which a solid barricade or fence shall be provided or the excavation filled

NOTE Inorganic fill material up to the top 1 foot can be from the demolition site or can be hauled in from other sites Inorganic fill is defined as earth sand gravel concrete and similar material Large slabs of concrete that would create voids and prevent total filling of the hole cannot be used Wet concrete cannot be used

END OF DOCUMENT
Reference  U B C  Section 150  Denver Building Code

It has been the practice to allow roofing installations and gutter installations to be done on new construction under the General #1 Permit if the roofing contractor and gutter contractor was Denver licensed.

This Department will require separate roofing and gutter permits effective July 1, 1986, for all new construction. This is in effect for A through U1 occupancies. Roofing and gutter work may be put on the same #2 Permit if being done by the same contractor.

END OF DOCUMENT
Reference  U B C  Section 153  Denver Building Code

Although plans filed with the Building Inspection Division become Public Records under the Open Records Act (Part 2 of Article 72 of Title 24 of the Colorado Revised Statues) the creator of the plans may also have a copyright in the plans.

When this issue was raised several years ago we decided that a compromise between the 2 principals was, as a practical matter the best way to handle the situations. It was agreed that we would allow the public to see plans but not allow them to be copied as this could violate the copyright of the creator of the plans.

This still appears to be the proper decision. Federal statutes have preempted all state copyright law and therefore all copyrights are controlled by Title 17 of the United States Code. Under this statute properly identified plans would be covered by the copyright law and copies cannot be made.

Submitted by  John Stoffel Jr  Assistant City Attorney
Reference NEC Article 1002 amended

All single phase meter housings installed after July 1, 1987 are customer owned and no longer furnished by Public Service Company. Metering is the responsibility of Public Service and the meter housing is exempt from code requirements when owned and maintained by the public utility. When the meter housing is customer owned and contractor installed, the meter housing short circuit rating must withstand a potential fault without extensive damage. (Reference NEC 110-10) Effective January 3, 1989, the following policy will be enforced:

1. Installations served by a transformer greater than 25 KVA have a potential for a fault over 10,000 amperes. All single phase meter housings presently approved by Public Service Company are rated to withstand 10,000 amperes fault current. At the time of permit application, short circuit calculations at the meter based on the available fault current at a Public Service transformer greater than 25 KVA must be submitted. The available fault current at the transformer secondary can be obtained by calling your Public Service marketing representative at 571-7742.

The electrical contractor will need to ascertain the loop size for his calculations. If the short circuit calculations at the meter housing exceed 10,000 AIC, it is Public Service's option to:

A. Specify CT metering in lieu of the in-line self-contained meter. Refer to Section 4 of the Public Service Bluebook for details on customer responsibility. The CT's are Public Service owned. The single phase CT housing is customer owned; must be listed and UL labeled, and will be inspected by the Building Department.

B. Approve the installation of a current limiting fusible disconnect ahead of the in-line meter housing. This disconnect device would be the total responsibility of the installer. Written approval from Public Service's Electric Meter Section will be required prior to permit application.

2. All single and three phase services rated 200 amperes or less and served by a Public Service Company transformer having a rating of 25 KVA or less are acceptable for self-contained meter housing installations. All loads over 200 amperes will require current transformers. The transformer rating to be verified by field inspection prior to making the service inspection.

3. Engineering for single and three phase services including calculations may be submitted by the electrical contractor up to 400 amperes. Engineering for all services of 400 amperes or greater must carry a wet ink seal and signature of the electrical engineer responsible for the design and calculations.

4. Public Service Company will continue the practice of furnishing the three phase CT's and the three phase meter housing. The three phase CT housing is customer owned, must be listed and UL labeled, and will be inspected by the Building Department.
5 A remote register is an extension of a single phase nondemand watthour meter. All new wiring installed by the contractor for remote registers will be inspected by the Building Department. Refer to Section 7 of the Public Service Bluebook for complete installation specifications. All new wiring for remote registers from existing Public Service Company owned meter housings is considered Public Service property and will not be inspected by the Building Department.

6 Permit required information that is the responsibility of the contractor please refer to the permit example. The service rating and phase to be indicated as in the past. Provide the Public Service Company transformer rating and state if pad or pole mounted. For Public Service Company transformers over 25 KVA under remarks indicate the size of the service conductors and distance from the transformer to the meter housing. State available fault current obtained from calling Public Service and the calculated potential fault current at the meter housing. The calculations are not required for PSCo transformers or 25 KVA and smaller.

END OF DOCUMENT
Reference UBC Section 157 5

This is to inform you of a new procedure to help us expedite insulation inspections and make entry into residences more accessible.

You will be required to inform your customers to call us in our office between 7:30 a.m. and 8:30 a.m. to set up an appointment with our insulation inspector.

This procedure will allow us to have direct contact with the homeowner and will help us utilize our inspectors more effectively and minimize disruption to the homeowner.

Thanks for your cooperation!
<table>
<thead>
<tr>
<th>REISSUE OF PERMIT FOR CHANGE TO CORRECT ADDRESS</th>
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<tr>
<td>Approved:</td>
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<tr>
<td>R. Doug Sutton, P.E., Director, Building Inspection</td>
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<td>Number 32 B010</td>
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Reference UBC Section 1511DBC

In the future we will not apply paragraph 1511 Denver Building Code to this type of permit.

If a new permit is required to correct an improper address we will not charge a new total permit fee. Instead we should charge a minimum fee of $15 to cover the costs of administrative work involved in cancelling the original permit and filing the new permit.

END OF DOCUMENT
Existing built up roofs can be patched using a modified bitumen membrane system if the following conditions are met:

1. The building owner or his authorized agent must sign the waiver form provided by BID. The form must be submitted with the permit application and will be attached to the roofing inspector's copy of the permit.

2. The membrane manufacturer must be prequalified by the roofing inspection section. To become prequalified, the manufacturer must submit an acceptable written procedure to the roofing inspection section explaining the steps to be followed in installing the patch. The roofing inspection section will maintain a file on the acceptable manufacturers and their written procedures.

3. The roofing permit application must list the name of the manufacturer of the membrane. If the permit is issued and the roofing inspection section determines the manufacturer is not prequalified, the permit will be canceled.

4. The maximum area of any individual patch cannot exceed 200 square feet or 10 percent of the area of the roof level under repair unless approved in writing by the roofing inspector on the white copy of the permit application.

5. The aggregate area of all patches cannot exceed 10 percent of the area of the roof at the roof level being patched.

6. Individual patches must be separated by a minimum distance of 5'0'.

7. The patch installation must be in accordance with the written procedures filed with the roofing inspection section. All work is subject to the review and approval of the roofing inspector.
Gutters and downspouts need not be provided on minor accessory use buildings which meet all of the following criteria:

1. Building must be a freestanding minor accessory use U1 occupancy building not used for human occupancy and having a maximum floor area of 400 square feet. Roof projections cannot exceed 1 foot.

2. Exterior walls must be of water/weather resistant construction other than masonry or masonry veneer.

3. Building cannot be located closer than 3 feet to a property line (measured from the edge of any roof overhang) or another building on the same property.

4. Drainage from the roof cannot result in a hazardous condition or be detrimental to another building or property.

Requirement number 4 will probably not be obvious at the time the permit is issued; however, it does provide the Department with a means of requiring gutters/downspouts should a condition become apparent once the building is being built or after it is in service and a justifiable complaint is received.
Occuants desiring to operate a home occupation in their home which is classified as an R1, R2 or R3 occupancy need not apply for a change of occupancy to operate a home occupation as long as they comply with all of the following conditions:

1. Home occupancy complies with all of the zoning requirements for home occupation (refer to Zoning Form Z/A 26 (Rev 3/88))
2. Zoning approval is obtained for the home occupancy
3. Permits are obtained from this Department for all remodel work to be done to accommodate the home occupancy.

A new certificate of occupancy will not be required for a complying home occupancy.
Based on information from the ANSI Z21 subcommittee on flexible metal connectors the Department policy regarding the installation of flexible connectors for gas piping has been revised. The subcommittee stated that the type of vibration caused by a dryer was not of the magnitude envisioned when the instruction to avoid vibration was implemented. The subcommittee also agreed that connectors complying with either Z21 24 or Z21 69 are considered to be suitable for use with clothes dryers and infrared tube type heaters.

Based on this information the policy of the Department will be to allow flexible metal connectors complying with either Z21 24 (metal connector standard) or Z21 69 (movable appliance connector standard) to be installed serving clothes dryers or infrared tube type heaters. The provisions of UMC Section 303.3 pertaining to flexible connectors remain in effect.
The policy of the Denver Building Department and Denver Health and Hospitals regarding hood and ventilation requirements for cooking equipment shall be as follows:

1. Microwave ovens may be installed without any type of hood or ventilation.

2. Convection ovens shall be provided with a Type II hood as defined in the UMC. Hoods shall provide a minimum air volume of 50 cfm per square foot of hood. Grease extraction devices and fire suppression systems are not required.

3. Commercial cooking devices other than those listed above and all gas or electric cooktop surfaces shall be provided with code complying Type I ventilating hoods as defined in the UMC.
Reference: NEC Article 1001 D B C

All electric/neon signs and skeletal lighting, both interior and exterior, will require proper Building Department permits and inspection. EXCEPTION: U.L. listed portable signs.

If the secondary wiring is done by a licensed Class A sign contractor, a #5 Permit must be taken out for this work. A licensed electrical contractor will be required to do the primary wiring connecting the sign or lighting to the building power and a #3 Permit must be drawn for this work.

If a licensed electrical contractor does both the primary and secondary wiring, only a #3 Permit is necessary.

Building Department permits for all 'window' signs and all exterior signs or lighting must be approved by the Zoning Department. All interior signs or lighting need Building Department permits only. No Zoning approval is necessary. Zoning defines 'window' signs as a sign which is applied to or attached to or located within 3 feet of the interior of a window. And the sign can be seen through the window from the exterior of the building.

All interior and exterior signs that are hard wired require a permit.

Treat wall signs as a fixture if an electrical contractor does the work.

END OF DOCUMENT
Reference UBC Section 150 11 DB C

Retaining walls concrete and/or masonry fence-walls antennas and skylights shall require a #1 Permit. See UBC Section 150 11 amended for exemptions. When the installation of antennas or skylights necessitates roof repair, a #2 Roofing Permit shall also be required.

A #1R Permit shall be needed for work at a single family dwelling or duplex. All other locations shall require a #1C Permit.

Individual retaining walls over 3' in height or terraced retaining wall systems carrying contributory loads shall require engineered drawings. The department may require engineered drawings and calculations wet stamped, signed, and dated by an Engineer.
CITY AND COUNTY OF DENVER  POLICY  PUBLIC WORKS DEPARTMENT

Subject: PERMITS ON STRUCTURES BUILT WITHOUT PERMITS

Approved:  

Doug Sutton  
R. Doug Sutton, P.E., Director, Building Inspection

Number 32 B020  Effective Date August 1, 1995  Page 1 of 1

Reference  UBC Section 151-D-B-C

Structures built without a permit will be treated as if application was being made prior to construction and will be required to meet all the requirements of the Building Code. If the structure is an R3 Occupancy or an enclosed addition to an R3 Occupancy, 2 sets of As Built Drawings complying with UBC Section 155 amended, wet stamped signed and dated by a design professional shall be submitted to the Department for review and approval before the issuance of a permit.

Plans may be required for an attached carport (open on 2 sides minimum) a patio a deck or a detached U1 occupancy. This will be determined by the Building Inspector based on a visual inspection or by the Code Investigator based on information or lack of information given by the applicant. If plans are deemed necessary they shall comply with UBC Section 155 amended and depending upon design may require an engineer's stamp. In either case no permit shall be issued until such plans have been submitted for review and approved by the Building Department.

END OF DOCUMENT
CITY AND COUNTY OF DENVER

POLICY

PUBLIC WORKS DEPARTMENT

Subject: ROOF PENETRATIONS MADE BY MECHANICAL AND ELECTRICAL CONTRACTORS

Approved:

Doug Sutton
R Doug Sutton, P E, Director Building Inspection

Number 32 B021  Effective Date June 1 1979

Reference  U B C Section 1514 D B C

Our previous policy of making a roofing contractor responsible for sealing all pipe conduit and duct penetrations was not working. It resulted in extra cost to the owner and introduced unnecessary delays.

It is still important that our Department makes sure that these penetrations are sealed properly and inspected by our roofing inspectors. In an effort to continue that control but allow the procedure to work a little easier we will follow a policy as outlined below:

1. We will require and allow the mechanical and electrical contractors to seal their own penetrations. Sealing must be done in a manner acceptable to our roofing inspectors.

2. We will require and allow a licensed mechanical and electrical contractor to take out a #2 Roofing Permit. This permit will be limited to sealing duct conduit or pipe penetrations and that lamination must be noted in the remarks section.

3. On all jobs that have roof penetrations the mechanical and electrical inspectors should not final their permits until a #2 Permit has been taken out by their contractor and the #2 Permit has been inspected and finalized by our roofing inspectors.

END OF DOCUMENT
CITY AND COUNTY OF DENVER                      POLICY                      PUBLIC WORKS DEPARTMENT

Subject:       TEMPORARY FABRIC STRUCTURES: TENTS CANOPIES AND TEMPORARY AIR INFLATED STRUCTURES

Approved:

R. Doug Sutton, P.E., Director, Building Inspection

Number 32 B023   Effective Date  June 7 1995   Page 1 of 1

Reference  U B C  Section 150 1 D B C

Denver’s ordinances limit the time that a temporary fabric structure may be in place to 180 days within a 12 month period on a single premises.

Building Inspection Division will not review tent plans site placement exiting or design of erection and supports. Building Inspection Division will not inspect erection or configuration. This review and inspection will be done by the Fire Department. Building Inspection Division will review and inspect electrical service.

If electrical service is provided by Public Service Company all electrical work must be done under a #3 Building Permit issued to a licensed electrical contractor. Contact Electrical Inspection Section at 640 5531 for information. If electricity is provided by portable generators an electrical building permit is not required. Contact the Fire Department.

Membrane covered structures which are in place 180 days or more shall comply with U B C Appendix Chapter 31 Division II

END OF DOCUMENT
Effective October 1, 1990, BID will recognize the Reciprocal Construction Supervisor Exam (RCSE) administered by the RCSE Board. A Construction Supervisor A Certificate issued by that board will be accepted by BID in lieu of taking Denver’s Construction Class A Supervisor’s test. It will still be necessary to obtain a valid Denver Certificate which will require a completed BID application supporting experience documents and the required fees.
Reference UBC Section 160 D B C Certificate of Occupancy

Background There are requests to use existing buildings for special events that may conflict with the building Certificate of Occupancy i.e. life safety features and service facilities. This policy is intended to provide a procedure for review and approval by the Building Department and Fire Department.

1. Special events that occupy a building for less than 60 days shall be considered temporary use for the building and may be allowed subject to the approval for the Building and Fire Departments.

2. The Building Department will process these projects as follows:
   A. All temporary wall construction must be done by a licensed contractor with a proper validated permit. The Building Department will not require plans or do any plan review. We will require a copy of a valid Special Events Permit issued by the Fire Department and make note of any special conditions required by the Fire Department on the BID permit. In the remarks section we should note issued under Special Events Permit. All construction to be removed within 20 working days following the last day of the Special Event. The Building Department will inspect the building prior to any construction prior to any public occupancy after all construction is completed and after all temporary construction is removed on or before the date of removal stated on the construction permit.

   B. Any electrical work to be done will also be issued without plan review based on a valid Special Events Permit issued by the Fire Department with the same requirements to remove all construction after the Special Event. Building Inspection will inspect all electrical work for code compliance prior to the Special Event and also for removal after the Special Event.

3. Fire Prevention Bureau will process the Special Events Permit when the following information is submitted to the Bureau:
   A. Descriptive letter of the Special Event
   B. Fire Department fire protection requirements
   C. Event Staff requirements
      1. Security personnel will have portable radio (walkie-talkie) communication with each other and with a staffed command center location
      2. Security personnel will have flashlights
      3. Security personnel will be trained in evacuation and/or relocation procedures (Emergency Reaction Plan)
   D. Special information/requirements
   E. Descriptive letter of the building or space including a floor plan and Emergency Reaction Plan
F Verify the Life Safety Systems in the building or space

1 Operational fire sprinkler system

2 Operational smoke detection system Use of battery type detectors must be approved by the Fire Prevention Bureau

3 Exit signage number of exits and exit configuration must meet required standards All required exits shall be unlocked and operative during all hours of operation (Illuminated exit signs shall be provided and lit when the building is occupied)

4 Fire separation including patching of all holes in ceilings floors and walls through which smoke and flames could easily travel

5 Decorative materials shall be in accordance with Uniform Fire Code Articles 11 and 25

6 a) Lighting If special use of occupancy requires the use of darkness (i.e. Haunted House) the building shall be wired so as to allow for switching to full lights in all occupied areas from a supervised location

   b) Automatic emergency lighting By approved emergency generator or battery packs to light all areas but in particular exit passageways

7 a) Close all shafts pits and stairways as required

   b) Barricade or otherwise protect loading docks stairways and similar hazards that are in occupied areas or are part of exiting scheme

8 One-way PA system From a supervised command center' location to all occupied areas Approved messages for all emergency situations will be included in Emergency Reaction Plan

9 A private telephone must be provided for emergency use in a supervised command center' location Instructions as to when staff members are to call 911 for an emergency response (fire police medical) shall be included in Emergency Reaction Plan

G Required Documentation

1 Emergency information Name address and phone numbers of event personnel who may be contacted on an emergency basis

2 Proof of required flame proofing treatment

3 Proof of fire sprinkler system check by licensed contractor

4 Proof of current check of all other installed fire protection systems by licensed contractor

5 Proof of current check of portable fire extinguishers (Minimum acceptable rating is 2 a 10 b c )

6 Designated Occupancy Load from Denver Building Department
7 Proof of insurance (binder) Copies of the following documentation may be given to the City's Risk Management Division for approval
   a) Public Liability
   b) Worker's Compensation

   Note: JOINT Fire Department and Building Inspection Division approval may be required for these items.

END OF DOCUMENT
**CITY AND COUNTY OF DENVER**

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<td><strong>Subject:</strong> INSPECTIONS – ROOFING CONTRACTORS</td>
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**Approved:**

[Signature]

R Doug Sutton, P.E., Director, Building Inspection

| Number: 32 B026 | Effective Date: June 7 1995 | Page 1 of 1 |

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Reference **UBC Section 157 3 D B C**

Roofing Contractors are required to request a final inspection upon completion of each job as per Section 127 1 9 of the Denver Building Code.

Any commercial flat roof contractor shall be required after obtaining a permit to first obtain a pre-roofing inspection as per Section 1515 of the Uniform Building Code Appendix. Work shall not commence until a pre-roofing inspection has been made or an Engineer’s Report or Special Inspector’s Report has been submitted to this Department.

Section 1506 1 Uniform Building Code requires that all re-roofing jobs must have positive drainage.

ALL PRE INSPECTIONS ON COMMERCIAL FLAT ROOFS ARE REQUIRED TO BE SCHEDULED DIRECTLY WITH THE INSPECTOR. SCHEDULING CAN BE DONE AT LEAST 3 DAYS IN ADVANCE WITH THE INSPECTOR BETWEEN 7:30 A.M. AND 8:30 A.M. AT 640 2037.

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**END OF DOCUMENT**
Reference UBC Section 3405

UBC Section 3405 which requires upgrading to present code requirements is only applicable when the change of use places the building in a different division of the same group of occupancy or in a different group of occupancies. It is important to recognize this limitation when we deal with changes of use within an occupancy group.

This section also notes that a new Certificate of Occupancy is necessary when a building undergoes a change of use even though that change is within the same occupancy group.

The Department's policy when dealing with a change of use within the same occupancy group will be to apply only those code requirements that are related to the proposed new use and that are more restrictive than the old use (Example increased occupant density which raises the question of exiting and toilets floor loading etc.) We will not require that the building be completely upgraded to comply with total present code requirements for the new use.

Our ordinances do contain Sections 106 and 107 which allow Building Inspection Division to identify unsafe buildings and utilities but the Department's policy must be consistent in this area. We apply these 2 sections in the field on a very selective basis using them only when we feel it is necessary to correct a very unsafe condition. We will use that same restraint when we look at buildings in our engineering department that are undergoing a change of use within the same occupancy group. We will only apply those sections of the code that are raised because of the new use. Anything beyond these requirements is an application of sections 106 and 107 and must be done with the Director's approval.
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<td><strong>Subject:</strong> RANGE HOODS AND EXHAUST DUCTS COMMERCIAL</td>
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**Reference** UMC Section 507.6

Mechanical Code Interpretation
(Revision to October 8, 1990 Interpretation)
ICBO 1-800-423 5687 Gordon Clyde Jim Hodges
November 30 1990

**REFERENCE**

Sections 507.6 UMC says duct enclosures shall be constructed as the code requires shaft enclosures to be constructed. Clearances are defined as 3 minimum and 12 maximum.

Sections 508.4 UMC and 216 (definition of noncombustible) indicate that x rated gyp board meets the definition of noncombustible. This section however goes on to say that materials conforming to the item 2 definition cannot be used for materials required to be noncombustible for reduced clearances to flues heating appliances or other sources of high temperature.

**QUESTION:** 1 Can enclosures for grease exhaust ducts be constructed of unprotected x rated gyp board with 3 to 12' clearance?

**ANSWER:** YES The qualification of Section 216 does not apply to kitchen exhaust ducts. ICBO does not include commercial kitchen hood exhaust ducts in the categories listed in the definition of noncombustible in Section 216.

**QUESTION:** 2 Can grease hoods be installed directly against x rated gyp boards?

**ANSWER:** NO A minimum of 3' clearance is required per 508.4 UMC. (This is true for metal stud walls as well as combustible wood studs.)

Mr. Clyde also offered the explanation that the 12' maximum was intended to place a limit on the distance of the duct from any access door in an enclosure in order to allow reach and to limit the space for retrofit of other ducts piping conduit etc. in the enclosure.

No other duct systems should be housed in the same chase other than another grease exhaust or similarly welded duct from the same room [UMC 507.6]

**END OF DOCUMENT**
Reference  U B C  Section 707 6 6 D B C

Section 707 6 6 UBC amendment says
   Insulation shall not be permitted in air plenums unless approved by the Department

Section 601 3 UMC says
   Materials exposed within ducts or plenums shall have a flame spread index of not more than 25 and a smoke developed rating of not more than 50  (i.e., Class I material)

Section 604 2 UMC says:
   Materials shall have a mold humidity and erosion resistant face that meets the requirements of UMC Standard No. 6 1

It will be the policy of the Building Inspection Division to accept insulation in an air plenum if it meets the Class I designation for flame spread and smoke and also meets the mold humidity and erosion criteria of the UMC Standard. The Mechanical Inspection Section will be responsible for field enforcement of this policy however it is important that the construction inspectors are aware of how we are applying these sections of the code. Our engineers must also be aware of this policy
CITY AND COUNTY OF DENVER POLICY PUBLIC WORKS DEPARTMENT

Subject: EXIT DOORS LOCKING AND SECURING

Approved: 

R Doug Sutton, P E., Director, Building Inspection

Number 32 B033 Effective Date March 22 1991 Page 1 of 3

Reference UBC Section 1004

The Uniform Building Code (Section 1004 3) does not allow the use of manually operated sliding bolts on any exit door. The use of any hardware that provides key locking or electric locking from the inside is also prohibited on any exit door. The following exceptions are permissible:

A. In B occupancies hardware that provides key locking from the inside may be used on the main exit door only if the main exit consists of a single door or a single pair of doors. If a pair of doors is key locked from the inside the locking arrangement must be such that it will be impossible to unlock only 1 door of the pair while the other door remains locked (1 unlocking operating must free both doors). Proper signage is required (Section 1004 3)

If the main exit is made up of multiple doors or multiple pairs of doors none of these doors can be key locked from the inside. The reason this is not acceptable is that inside locking of the main exit is allowed because there is assurance that a single door or a single pair of doors will in fact be unlocked when the facility is opened for business. This assurance is lost when we get into multiple doors because only 1 door could be unlocked in order for the business to operate and the other exit doors which might remain locked would not be available for emergency exiting.

B. Key locking from the inside may also be used in A3 occupancies and in all churches in lieu of required panic hardware on the main exit when the exit consists of a single door or pair of doors (Section 1016 4) All criteria outlined in (A) above is applicable

C. Door hardware is available that includes a supplementary deadbolt that is operated by turning the main unlatching knob or lever. This type of hardware would be acceptable on any exit door except those requiring panic hardware (See attached literature)

The UBC (Section 1004 12) contains the provision that additional doors that are not required exit doors but are provided for egress purposes shall comply with all the provisions for exit doors. This provision is interpreted as follows:

An exterior door that is not a required exit but provides access to the outside for employees (deliveries shipments trash etc.) will not be considered as a door provided for egress purposes and therefore will be allowed to be secured or locked in any manner desired by the business owner.

An exterior door that is not a required exit but is in an area normally occupied by the public must comply with all of the provisions for exit door unless the following conditions are met in which case locking is permitted:

1. Door must be completely nontransparent and located in a nontransparent wall so that it does not visually suggest egress to the outside.
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2. Door must be equipped with a sign that reads **THIS DOOR IS NOT AN EXIT**

3. All **required** exit doors must be equipped with code complying exit signs

**NEW RESIDENTIAL UNITS**

The Uniform Building Code requires only 1 exit for residences smaller than 3000 sf. When additional exit doors are provided, these additional doors in the case of single family residences are clearly provided for egress purposes and therefore must comply with all the requirements for exit doors (Section 1004.12).

Key locking of residential exit doors from the inside is prohibited. The code does allow a second securing device in addition to the normal lockset. This device can be a thumb turn or sliding deadbolt or it can be a security chain. These devices must be mounted within 48" of the floor. Any device that needs a key to unlock it from the inside is prohibited (Section 1004.3 Exception 2).

**EXISTING COMMERCIAL BUILDINGS**

Existing buildings with exit door hardware that was installed prior to October 1990 and that complied with the old Denver Building Code (Section 3303) and with the joint City policy dated February 1983 will be allowed to remain in place. This criteria was as follows:

A. Any exit door in an office, retail, or industrial occupancy could be equipped with 1 sliding surface bolt mounted above the primary door latch but no more than 6" above the latch. Any door equipped with a sliding surface bolt was required to have a sign that read **THIS DOOR TO BE UNLOCKED DURING BUSINESS HOURS** IF THIS DOOR IS LOCKED DURING BUSINESS HOURS NOTIFY THE FIRE DEPARTMENT.

B. If an existing exterior door only provides access to the outside for employees (delivers shipments, trash, etc.) and is not identified with exit signage, it may be secured or locked in any manner desired by the business owner. If such a door is identified with exit signage, the building owner may apply in writing to the Building Department to review the exiting requirements of the building. If it is determined that the door is not a required exit and the owner's application is approved by both the Building Department and the Fire Department, the exit signage shall be removed and the door may be secured or locked in any manner desired by the business owner.

C. If an existing exterior door is in an area normally occupied by the public and the owner wishes to provide more security on the door than what was allowed by previous policy (Item A), he may apply in writing to the Building Department to review the exiting requirements of the building. If it is determined that the door is not a required exit, the door must also meet the following conditions before the Building Department and Fire Department can approve additional locking:

1. Door must be completely nontransparent and located in a nontransparent wall so that it does not visually suggest egress to the outside.
2 Doors must be equipped with a sign that reads THIS DOOR IS NOT AN EXIT

3 All required exits must be equipped with code complying exit signs

D A double keyed lock was permitted on the main entrance door of any commercial occupancy. This was permitted on the theory that this main entrance door would always be unlocked during business hours

E Other than the circumstances outlined in A, B, C and D hardware that permitted key locking of exit doors from the inside was prohibited

Door hardware that was installed to meet the above criteria will be allowed to remain in place unless the building or tenant space undergoes a change in occupancy a change in use or unless new doors or hardware are installed in which case the present code for new installations is applicable

EXISTING RESIDENTIAL UNITS

In the past the City did not apply any restrictions to inside locking of residential exit doors. When the opportunity presents itself, we should point out the hazards of double keyed bolts and recommend that they be changed to single key bolts (key lock from outside, thumb turn release from inside)

END OF DOCUMENT
Reference U B C Section 901 D B C

I Purpose:
The policy stated herein is to supplement the requirements of the State of Colorado Fire Suppression Program (Senate Bill 90-4) and to clarify procedures to be followed in the plan review and field inspection process.

II Plan Submittal:
A. The submittal of plans will not be required for any project with an aggregate cost below $500 00 per Section III para. E of the Colorado Division of Fire Safety Fire Suppression Program Rules. Permits for this work must be reviewed by the Building Department's mechanical engineers and issued on a walk-through basis. Subject to Field Inspection.
B. For projects of $500 00 or more plans and calculations (when required) are to be submitted and processed as follows:
   1. Two sets of submittals will be required for review.
   2. Tenant finish work involving head relocations and no head additions can be reviewed on a walk-through basis.
   3. Tenant finish work involving both head relocations and additions can be reviewed on a walk-through basis unless it is determined during the review that the integrity of the existing system is affected and hydraulic calculations are required.
   4. Tenant finish work involving addition of 100 heads or more and work located in Ordinary or Extra Hazard Occupancies shall be logged in for review.
   5. All projects that require hydraulic calculations shall be logged in for review regardless of the number of heads involved.
C. All plans and calculations are required to bear the seal and dated signature of a current Colorado registered professional engineer (P E).

EXCEPTION: Tenant finish work up to a maximum of 100 heads may bear the seal of either a P E or a NICET Level three engineering technician.

D. Size and scale of plans shall be sufficient to clearly indicate the extent of work involved. Plans or sketches smaller than 8 x 11 will not be acceptable.

E. Information required on drawings:
   1. Head relocation projects. Provide ceiling plans showing existing and new locations of heads to be moved. The existing pipe system does not need to be shown unless a relocated head is to be connected to another branch of pipe (in which case the branch piping shall be shown including pipe sizes).
   2. Any project involving additional heads to an existing system. The existing piping (along with any new piping) shall be shown with all pipe sizes.
3 Any project requiring a P.E. seal and dated signature shall be the same as that required in NFPA 13

III Field Inspection:

A. The criteria that will be followed by Building Inspection Division field inspectors to determine the acceptance of a tenant finish job released Subject to Field Inspection are as follows

1 When sprinkler heads are added to a dead end sprinkler branch line, the size criteria of the original design must be followed i.e. number of heads supplied by any given pipe size or pipe sizing must be in accordance with the pipe schedules for Light Hazard Occupancy. When this criteria cannot be met, a new branch line shall be installed or drawings and calculations submitted for review.

2 When sprinkler heads are added to a gridded branch line with water supplied from both ends, the only change or addition allowed will be that 2 sprinkler heads may be taken off any one inch sprinkler connection provided that the grid branch line is at least 1¼ in size. If this criteria cannot be met, it will be necessary to run a new grid branch line or submit drawings and calculations for review.

IV State of Colorado Plan Registration Form:

A. The plan registration form is not required for any project of less than $500.00 where a plan submittal is not required.

B. The Denver Fire Department shall be responsible for the circulation and distribution of copies to the various agencies after all signatures required by the form have been obtained.

END OF DOCUMENT
CITY AND COUNTY OF DENVER  
POLICY  
PUBLIC WORKS DEPARTMENT

Subject:  BASEMENTS OF SINGLE FAMILY HOMES

Approved:

R Doug Sutton, P.E., Director, Building Inspection

Number  32 B035  
Effective Date  April 16 1991  
(Revised September 20 1995)  
Page 1 of 1

Reference  UBC Section 310.61

1 General Information:

   Ceiling Height for Habitable Spaces  BID will require the basements of new homes to be constructed so that habitable space will have ceiling heights that comply with Section 310.61

2. Remodeling work in unfinished basements of homes built prior to October 1990 shall comply with the following:

   1. We will not require the minimum natural light required by present code. We will accept natural light which was the applicable standard when the home was built or artificial light as required by the present Building Code.

   2. We will not require the 7.6 minimum ceiling height required by present code. Recognizing the physical limitations inherent in most of Denver's older residential structures we will accept and require a minimum ceiling height of 6.8 with a minimum clearance of 6.0' to any ceiling projection caused by beams, ducts or pipes. If unusual circumstances are present, ceiling heights lower than 6.8 may be allowed by joint approval of the Chief Construction Inspector and the Permit Section Supervisor prior to the issuance of the Building Permit.

   3. For each new sleeping room created in a basement we will require an escape window or door directly to the outside. See UBC Section 310.4. Outside window wells shall be as required by UBC Section 310.4 and can be constructed of any type material. Escape windows in bedrooms have been a requirement of Denver's code since 1976 and are also a requirement of Denver's present code. This requirement is legally applicable to all new construction involved in basement remodeling and is such an important life safety feature that we must insist on compliance.

This policy only deals with natural light, headroom, and bedroom escape windows. All other code requirements that relate to remodeling of unfinished basements are applicable.

END OF DOCUMENT
Multiple Central Station connections from any one building are not permitted. When a building is equipped with a main fire alarm or fire detection system all other fire alarm or fire detection systems shall be connected to the main building fire alarm panel.

EXCEPTION: Individual tenants may have their own alarm system linked to a Central Station connection when the building does not have an alarm system and when each tenant space faces the street and has a separate and distinct street address.

If you have any questions regarding this matter please contact the Fire Prevention Bureau at 640 5522 or the Building Inspection Division at 640 3643.

END OF DOCUMENT
Effective immediately BID’s policy on these structures will be as follows

1. We will accept wood shakes and wood shingles on roofs that do not have the slope required by code (4:12) if we have a letter from the owner acknowledging the code limitations and requesting BID to allow shingles for appearance considerations.

2. In the past 1 layer of 90lb felt has been very satisfactory for flat roofs on these miscellaneous type structures. Based on that past history BID will continue to allow the use of 1 layer of 90lb felt on these structures under the following conditions:
   a. With a roof incline of 1 inch per foot or greater the roofing shall be applied with a minimum 2 inch lap.
   b. With a roof incline of less than 1 inch per foot the concealed nailing method shall be used.
   c. 30lb felt is required as underlayment as per code.

END OF DOCUMENT
Sprinklers shall be installed throughout the premises including rooms containing computer data processing communication and similar electronic equipment when such rooms are located in buildings that are required by the Denver Building and Fire Codes to be fully sprinklered. Otherwise, electronic equipment rooms are not required to be either sprinklered or detected.

**Systems Design**

Sprinklers shall be installed to comply with the National Fire Protection Association Standard for the Installation of Sprinkler Systems No 13. The types of system may be wet pipe, dry pipe or preaction. The double interlocked dry system is intended for refrigerated area systems or freezers and is not permitted for this application. A preaction system is a special system and shall be annunciated as a separate zone on the building’s main fire alarm control panel.

The occupancy classification is Light Hazard. Heads shall be the recessed type or shall be protected from mechanical damage with listed guards. Heads shall be of an intermediate temperature classification (212°F).

A preaction system shall comply with all provisions of NFPA 13 and in addition shall be installed with:

- piping integrity monitored by a very low air pressure
- automatic low air pressure warning
- piping pitched at least ½ inch in 10 feet back to main drain
- auxiliary drains as necessary preferably outside the rooms
- separate control valve electrically monitored or chained location clearly marked and readily accessible
- smoke and/or ion detectors in same areas as the sprinklers installed per NFPA Standards (see code references at end)

When a preaction system is controlled by a double or cross zoned detector arrangement every point in the room must be covered by detectors on both zones. The first detector in alarm shall activate the building’s main fire alarm system. The emergency power off circuit may be operated by a first or second zone signal and may incorporate an abort switch. The E O P switch may be operated at the same time as the preaction solenoid valve or earlier but never later. The preaction solenoid circuit may incorporate an abort switch but abort switches are generally not recommended. Verifiable smoke detection systems with verification delay of up to 1 minute are permitted.
Note: Halon 1301 or similar fire suppression systems or detection systems are not permitted to be substituted for required sprinkler extinguishment systems.

Code References

National Fire Protection Association Standard 13 Installation of Fire Sprinkler Systems
NFPA 25 Inspection Testing and Maintenance of Water Based Fire Protection Systems
NFPA 12A Halon 1301 Abort Switches 2 3 5 3
NFPA 72 National Fire Alarm Code
NFPA 75 Protection of Electronic Computer/Data Processing Equipment
NFPA 2001 Clean Agent Fire Extinguishing Systems

END OF DOCUMENT
In buildings that are required by the Denver Building or Fire Codes to be fully sprinklered automatic sprinklers shall be installed throughout the building including rooms having spaces dedicated to electrical switchboards electrical panel boards electrical distribution boards and/or electrical control boards

EXCEPTION:
Automatic sprinklers shall not be required in electrical rooms when all of the following conditions are met

1. The room is separated from the rest of the building by not less than a 2 hour fire resistive occupancy separation
2. The room contains electrical equipment operating above 600 volts
3. The room is dedicated to electrical distribution equipment only
4. The room is provided with smoke/ionization detector(s) connected to a fire alarm system monitored by a Central Station
5. Combustible storage is not permitted in the electrical room

SYSTEM DESIGN
Sprinklers shall be installed to comply with National Fire Protection Association Standard 13 for the Installation of Sprinkler Systems. The occupancy classification is light hazard. Heads shall be flush type or shall be protected from mechanical damage with listed guards. Heads shall be high temperature classification 250 to 300 F. Only the sprinkler branch lines necessary to protect the room may penetrate into the room

CODE REFERENCES
NFPA 13 Formal Interpretation 83 10 Reference 4 1 1 1
NEC Section 384 4
ICBO Formal Interpretation UBC Section 904 4 UFC Section 10 308
The policies outlined below regarding our relationships with architects and engineers are effective immediately.

1. If any BID employee believes that there is cause to file a complaint against an architect or an engineer with the State regulatory authority or the District Attorney's office, the Director shall personally review the situation before any contact is made with the regulatory body. This is not intended to restrict anybody from making an inquiry with the State regarding the question of a valid registration or other questions to solicit general information. Neither is it intended to say that it is not appropriate for BID to file a complaint against an architect or engineer. However, any contact with a regulatory agency that might be interpreted as a complaint about the competency or integrity of an architect or engineer and that is connected with our work at BID must be cleared by the Director.

2. The State does not regulate engineers by discipline or area of expertise. BID cannot refuse to accept construction documents because we believe that the engineer of record is working out of his discipline or area of expertise. We can reject the documents if they are inadequate or do not comply with code requirements.

3. The Denver Building Code is specific in requiring original signatures. BID will require that all required architect and engineer seals include an original, dated signature. Stamped signatures will not be accepted.
Reference UBC Section 1501D1BC

PURPOSE: Permit procedure for temporary process equipment Ground water cleanup of previous/present service station sites

CODE CLASSIFICATION:

Occupancy Group S1 (Moderate Hazard Storage)
Type of Construction V(N)
Location on Property Per Section 503 (Note: the exception for buildings aggregate area shall not apply)
Allowable floor area 150 square feet maximum
Height and number of stories 8 feet and 1 story

Applications shall contain but not be limited to the following requirements and the Denver Building Code

Release from Zoning
Wastewater Management
Health and Hospitals Environmental Health
Fire Department Hazardous Materials

Site Plan
60 gallon maximum volume of flammable liquid in a closed system
Secondary Containment
Electrical Review

Hazardous Material Management Report (HMMP) per Section 307 16

May be skid mounted but must meet the stability requirements of Chapter 16
Underfloor spaces if any must be open and freely vented

Facilities not meeting the above criteria will be administered under the Denver Building Code and Codes of applicable agencies

END OF DOCUMENT
1 **General**

The intent of the limitations in this policy is to assure that enclosed patio covers are used only for their intended purpose - outdoor recreational use. In keeping with this purpose, single-pane glass may be used instead of the 1/8" plastic but must be readily removable i.e., panels which can be placed or removed without inserting or removing screws, bolts, or other connectors which would require the use of tools or special knowledge. The building permit must be qualified in the remarks section to be for outdoor recreational use only — no heating provisions permitted. A letter from the owner must accompany the permit application in which the owner acknowledges that the enclosed patio is an unheated space used for outdoor recreational purposes only and that all doors and windows located in the walls between the house and the patio enclosure shall be considered as exterior doors and windows. Safety glazing shall be installed as required by UBC Section 2406.

2 **ICBO Listed Patio Covers**

Systems that have been evaluated by ICBO and are documented by an ICBO Evaluation Report will be accepted by BID. All components must correspond to the elements described in the ICBO Evaluation Report for the system selected. Substitution or mixing of components from other systems or manufacturers is not acceptable unless the mixed system is submitted as outlined for specially engineered patio covers. Two copies of the manufacturer's installation drawings must be submitted with color coding identifying the design path chosen for each specific patio submittal. Design path selected must reflect load requirements specified in Chapter 16 of the Denver Building Code. P.E. certification of drawings will not be required. Permit techs will do a limited review to verify proper application of the manufacturer's installation instructions general code compliance and proximity to property line.

3 **Specially Engineered Patio Covers**

If a contractor or owner wishes to construct a patio cover that is not covered by an ICBO Evaluation Report, drawings must be submitted to BID showing size configuration design loads, placement site and specs on structural members. Drawings must be sealed by a Colorado P.E. or Architect accompanied by written statement from that design professional stating that the structural design of the patio cover and enclosure walls and the design complies with Chapter 16 and Appendix Section 3117 of the latest edition of the Denver Building Code for uplift, wind load, live load, and dead load.

4 **Wood Framed Patio Covers**

Patio covers constructed with a conventional wood framing will not require P.E. however plans showing framing details must be presented to the department for review.
5 Structural Attachment of Patio Cover to House
When a patio cover is to be structurally supported by the house drawings must include details of structural attachment. Structural attachment directly to brick veneer is prohibited. Structural attachment to a stud wall behind brick veneer using bolts or other fasteners extending through the brick veneer is prohibited.

6 Structural Attachment of Patio Cover to House
Regardless of whether patio cover is an ICBO listed system or a specially engineered project if the cover is structurally supported by the rafter ends or fascia member the following additional certification will be necessary:

A. Method of structural attachment must be shown on the drawing and the drawing must be certified by a Colorado P.E. or Architect.

B. The contractor must be advised that before the job is approved by our inspection staff the design professional must certify that the existing construction has been examined during erection of the patio cover and verify that the existing material is structurally sound and the structural attachment as actually made in the field is acceptable.

7 Foundations
See attached details for foundation information.

PATIO COVERS
Foundation and Anchorage Details
A. When the roof area supported by each column is less than 60 square feet Figures A, B or C can be used under the following conditions:

1. Total downward load is less than 2,000 pounds
2. Tributary column area is less than 60 square feet
3. Column is not located on a full depth concrete joint nor within 1 of any joint
4. Uplift anchorage is adequate for 1,000 pounds
5. Post may be supported on a thickened edge slab See Figure A for new slabs and Figure B for existing slabs
6. Posts may be supported on a pad that is partially located under the existing slab See Figure C

B. Pads or piers may be used when the roof area supported by each column is 60 square feet or greater or when Figure A through C is not used. Pads or piers shall be designed to meet the following conditions:

1. Maximum allowable soils bearing pressure specified in Table 18.1.1 A is not exceeded
2. The pad or piers is of sufficient size to resist uplift
3. Pier anchors are of sufficient size to resist uplift

NOTE: The setting of a wood post into concrete is not allowed. Metal post may be set into concrete when positive anchorage is provided for uplift.
FIGURE A
NEW SLAB WITH THICKENED EDGE

FIGURE B
EXISTING SLAB WITH THICKENED EDGE ADDED

FIGURE C
PLAN

FIGURE D
SECTION

END OF DOCUMENT
CITY AND COUNTY OF DENVER  POLICY  PUBLIC WORKS DEPARTMENT

Subject: COLD STORAGE ROOM CONTRACTORS USING MODULAR FOAM INSULATION WALL AND CEILING PANELS

Approved:  

R. Doug Sutton  P.E. Director Building Inspection

Number 32 B044 Effective Date February 6, 1992 Page 1 of 1

Reference UBC Section 123 D B C

What type of contractor can do this work?

For small cold storage rooms where neither height or roof span exceeds 12 feet the construction of these rooms can be done by either a Class A or B construction contractor (#1 permit) or by a Class A refrigeration contractor (#8 permit)

Permits for all cold storage rooms should be signed off by the engineering section prior to sign off by the permit counter. #8 permits will be reviewed by mechanical engineers #1 permits by architectural/structural engineers

Special Provisions:

1 Rooms larger than 9000 sf will require 2 remote exits

2 If a cold storage room is built within a fully sprinklered building the interior of the cold storage room must be sprinklered regardless of room size

3 Foam insulation must meet UBC Standard 8.1 (maximum flame spread of 75 maximum smoke developed of 450) When the cold storage room is constructed within a building the foam insulation must be protected on both sides with a thermal barrier having an index of 15 (UBC Standard 26.2) The UBC handbook notes that regular ½ thick gyp board provides a thermal barrier index of 15

4 Section 2602.4 Exception 5 stipulates certain conditions where foam plastic insulation without the thermal barrier would be allowed (All of the conditions must be met)

   a Low flame spread low flash and self ignition temperature

   b Insulation must be covered by a corrosion resistant steel skin at least 016 inches thick or aluminum skin at least 032 inches thick

   c Both the cold storage room and that part of the building in which the cold storage room is located must be protected with automatic sprinklers (area of building in which cold storage room is located which is required to be sprinklered must be separated from the rest of the building by at least a 1 hour separation)

END OF DOCUMENT
BID will apply 2 sections of the Denver Building Code to existing small R1 occupancies (usually converted from large, old single family homes) as follows:

- UBC Section 302.5 requires that a central heating plant that serves more than 1 unit must be separated from the rest of the occupancy by a 1 hour occupancy separation.

- UMC Section 317.8 prohibits a central forced air system from serving more than 1 dwelling unit.

The policy of Building Inspection Division will be to not apply either of these requirements to an existing situation. Neither will replacement of an existing furnace or boiler be interpreted as reason to apply either one of these sections.

The Building Inspection Division will follow this policy in an effort to recognize the long standing existence of these systems in the older and smaller multifamily buildings and the fact that Denver's old building codes did not prohibit central forced air systems. In larger, more commercial structures with any central plant over 400,000 BTU per hour, we will identify the lack of a 1 hour separation as an unsafe condition and require correction.

This policy applies to existing R1 occupancies. If a building undergoes a change of occupancy to an R1 use then the code requirements and restrictions would be applicable.
The Building Inspection Division policy for the installation of subsurface foundation drains will be as follows:

1. BID has an obligation to make sure that the drawings specify foundation drains if the soils report recommends them.

2. If drawing or specs call for foundation drains, BID has an obligation during the field inspection process to make sure that the drains are installed.

3. BID will allow either the general contractor, the dampproofing contractor or the plumbing contractor to install the foundation drain piping. A separate permit will not be required.

4. BID's construction inspector will inspect the foundation drain installation at the same time that he inspects the dampproofing of the foundation wall. The inspection will be to determine:
   a) that foundation drains are installed where they are specified and
   b) that the drains are installed with proper gravel bedding.

5. Foundation drains can either terminate in a sump or can daylight by gravity as long as the point of daylighting does not create a nuisance like running over a sidewalk.

6. If a foundation drain terminates in a sump, the pump and piping to evacuate the sump must be done by a plumbing contractor and inspected by BID plumbing inspectors.

END OF DOCUMENT
When an existing building that previously was inaccessible to people with disabilities is modified to become accessible

1. The City will not apply all of the requirements of Chapter 11 to the new accessible levels. The recommendations of the Commission for People with Disabilities will be accepted as the City position on this question.

2. When existing buildings are made accessible, accessible egress or areas of evacuation assistance will not be required.

Existing buildings that undergo a Change of Occupancy must comply with present building code ordinances. Therefore, the building must be made accessible to people with disabilities. However, Denver's code has been modified to be compatible with the ADA to not require areas of evacuation assistance for new buildings or buildings under going change of occupancy if the building is fully sprinklered. This policy for new buildings and occupancy changes will be effective immediately. The exception would be high rise buildings which of course require areas of evacuation assistance as part of Section 403.7.

END OF DOCUMENT
CITY AND COUNTY OF DENVER       POLICY       FIRE & PUBLIC WORKS DEPARTMENT

Subject: FIRE PROTECTION SYSTEMS INSTALLATION REQUIREMENTS FOR NONREQUIRED FULL OR PARTIAL SYSTEMS

Approved: 
Roderick A. Juniel Division Chief F P B  
R Doug Sutton P E Director B I D

Number 32 B050  Effective Date December 17 1992  Page 1 of 2

Reference  U B C Section 904 2.1

1 Partial or nonrequired systems will be allowed  For partial automatic sprinklers the area to be protected must be separated from unsprinklered areas by at least a 1 hour fire resistive separation

2 All devices shall be listed by an approved testing laboratory for their intended use Areas protected by automatic sprinklers shall be fully covered in accord with NFPA 13 Areas protected by detectors are recommended but not required to follow NFPA 72E for coverage

3 This policy does not apply to special extinguishing systems

4 Shop drawings must be submitted for review and approval  Shop drawings must be signed sealed and dated by a Colorado P E unless the building is 1 story without basements and less than 5 000 square feet in area in which case P E certification is not required  Shop drawings for nonrequired detection systems do not have to include information on electrical panelboard loading for additional detector circuit  This will be monitored by field inspection

5 One audible/visual alarm per floor will be accepted
   a  No requirement for strobes to remain flashing when audible is silenced

6 No more than 1 zone will be required per floor level

7 The following will not be required
   a  Manual pull stations
   b  Remote lights
   c  Duct detectors in existing HVAC systems will not have to be connected to the nonrequired fire detection system nor will nonexisting duct detectors be required to be added
   d  Emergency electrical connection Detection system will be required to be on a separate unswitched circuit
   e  Central station connection  (If a central station is desired the fire alarm panel location must be approved by the Fire Department )

8 Partial or nonrequired systems shall be maintained operational

9 Partial or nonrequired systems may not be abandoned in place they must be maintained or removed with approval of the Building Inspection Division and the Fire Department
10 Partial fire alarm and/or detection systems installed in 1 or more tenant spaces in a building without a fire alarm system shall not be required to be interconnected.

a. Partial fire alarm and/or detection systems installed in 1 or more tenant spaces in a building with a building fire alarm system shall be interconnected with the building fire alarm system. The partial systems shall be annunciated as a separate zone in the building fire alarm system.

11 If additional partial systems are installed in a building already having a partial system these new systems shall have annunciators identifying the area the systems protect. Trouble indication and key operated alarm activation. These annunciators shall be located as approved by the Building Inspection Division and the Fire Department. Where a central station is provided all systems shall be connected to this one central station transmitter.
Subject: FIRE PROTECTION OF ELEVATOR SHAFTS AND ELEVATOR MACHINERY ROOMS IN FULLY SPRINKLERED BUILDINGS

Approved:

Roderick A. Junior Division Chief F P B
R Doug Sutton P E Director B I D

Number 32 B051 Effective Date January 5 1993 Page 1 of 2

Reference U B C Section 904 2 1

(Revised September 19 1995) (Revised January 24 1994 ANSI A17 1 1993 requires all elevators to be equipped with automatic recall Previous policy exemption for elevators with less than 25 feet of travel has been removed)

<<This policy is not retroactive>>

Sprinklers shall be installed throughout the premises including elevator machinery rooms and at the top and bottom of elevator shafts as required by NFPA 13 4 5 5 in buildings that are required by the Denver Building Code or Fire Code to be fully sprinklered

Locations and Coverage

Sprinklers shall be installed in elevator machinery rooms and as required per NFPA 13 4 5 5 at the top of elevator shafts and at the bottom of elevator shafts. Sprinkler coverage shall be designed for Ordinary Hazard Group One. Sprinkler heads shall be high temperature classification (286 F)

System Design

The sprinkler heads in the elevator shaft and in the elevator machinery room shall be supplied from a separate independent sprinkler branch line with a readily accessible indicating shut off valve located outside of the shaft or machinery room. Valves shall carry identification signs.

At least 1 smoke detector shall be located in the same area of each sprinkler head. Activation of any one of these detectors shall cause emergency recall of the elevator(s) and also put the building into alarm.

In addition to the smoke detectors at least 1 thermal detector with 190 F fixed temperature shall be installed in the same area of each sprinkler head. The circuitry for the thermal detector(s) shall be separate from the circuitry for the smoke detector(s). When any thermal detector is activated a shunt-trip circuit breaker shall automatically disconnect all electrical power to the elevator machinery room and the elevator machinery. The shunt trip breaker shall be located in either:

1 Main power distribution room
2 Elevator machinery room and shall be installed in a NEMA 4 disconnect box

Sequence of Operation

Fire in the elevator machine room and/or the hoistway. A smoke detector would place the building in an alarm condition and cause recall of the elevator(s). Subsequently a thermal detector would go into alarm and operate a shunt trip circuit breaker to disconnect all electrical power to both the elevator machine room and within the hoistway. As the fire gains intensity a sprinkler would fuse and extinguish the fire.
Pre-Action Sprinkler Systems
Pre action systems may be installed at the option of the building owner.

Specific Code References

NFPA 13 4-5 5 Elevator Hoistways and Machine Rooms.
4 5 5 1 Sidewall spray sprinklers shall be installed at the bottom of each elevator hoistway not more than 2 ft (0.61m) above the floor of the pit.

EXCEPTION For enclosed noncombustible elevator shafts that do not contain combustible hydraulic fluids the sprinklers at the bottom of the shaft are not required.

4 5 5 2 Automatic sprinklers in elevator machine rooms or at the tops of hoistways shall be of ordinary or intermediate temperature rating.

4 5 5 3 Upright or pendent spray sprinklers shall be installed at the top of elevator hoistways.

EXCEPTION Sprinklers are not required at the tops of noncombustible hoistways of passenger elevators whose car enclosure materials meet the requirements of ASME A17 1 Safety Code for Elevators and Escalators.

The Uniform Building Code (UBC) Section 904.4.1 Sprinklers shall not be omitted from any room merely because it is damp of fire resistive construction or contains electrical equipment.

Safety Code for Elevators and Escalators ASME/ANSI A17 1 Rule 102.2(c) Standard sprinkler protection conforming to the requirements of ANSI/NFPA 13 may be installed in these spaces subject to the following (3) Means shall be provided to automatically disconnect the main line power supply to the affected elevator prior to the application of water. This means shall not be self resetting.

END OF DOCUMENT
Exception 1 does exempt Group R Division 3 Dwelling Occupancies from all provisions of Chapter 11. If a homeowner desires to make some improvements to accommodate a particular need for accessibility, BID will not apply any provisions of Chapter 11. We will instead ask that the proposed plans be approved by Denver's Commission for People with Disabilities. Building permits will be required and all other aspects of the building code will be applicable.

END OF DOCUMENT
Reference  UBC Section 1512.6.4.3 C

The following procedure will be used to process a 1C Building Permit

1. The owner shall submit 2 sets of plans of the building indicating the areas which are affected by the change of occupancy and a 1C permit application. The permit application shall be signed by the owner.

2. The plans shall be reviewed to confirm that the change of occupancy can be in the existing building without any modifications to the building or building structural systems.

3. The plan review engineer shall indicate in the remarks section on the permit application the approval of the change of occupancy with any pertinent comments (i.e., an electrical permit required for a new fire alarm and detection system).

4. The A/S plan review engineer shall sign the application.

5. The permit application shall be processed with no application fee and a plan review fee of $50/hr with a minimum of 1 hour.

6. The new Certificate of Occupancy shall be issued when all related changes have been completed.

END OF DOCUMENT
The items necessary to obtain a permit for a solar system are as follows:

1. Zoning approval form 21
2. One line drawing of system
3. Name of system manufacturer, model name or number of system
4. Name of testing agency and approval number for the system
5. Details showing mounting of panels
6. Engineer's calculations to verify the roof structure can withstand wind load created by the addition of solar panels. Calculations for the connections between the panels to the roof structure
7. Homeowners shall take the homeowner's examination
 Occupy Group R Division 1, 2, or 3 buildings may be used for Congregate Residences with the following provisions:

1. The Congregate Residence Flow Chart (Exhibit 1) shall be used to determine the characteristics of a congregate residence.

2. The minimum construction requirements shall be those specified for Group R Division 1 or 3 (depending on occupant load) and those special provisions indicated in Tables 3I and 3J. UBC Section 310.2.4 amended.

3. For Personal Congregate Residences, the facility operator must:
   a. Develop a Facility Personal Care Plan which specifically establishes the services to be provided to the residents. Forms for the Facility Personal Care Plan are provided by the Department (Exhibit 2).
   b. Establish an Evacuation Capability by using the Chart. Facility and Resident Characteristics for Establishing Evacuation Capability (Exhibit 3). The actual evacuation capability may be verified by the Fire Department after the building is occupied.
CONGREGATE RESIDENCES FLOW CHART

CONGREGATE RESIDENCE

R1
More Than 10 Occupants

R2
10 Occupants or Less

Residential Group Living Such AS:
- Assisted Care Facility
- Bed & Breakfast
- Boarding House
- Convent
- Dormitory
- Drug Dependency Facility
- Fraternity
- Halfway House
- Homeless Shelter
- Hospice
- Monastery
- Personal Care Boarding Home
- Residence for Elderly
- Residential Care Developmentally Disabled Mentally Ill Room & Board Resort Care Elderly House Shelter Special Care House Special Care Home Tourist Home
Facility Personal Care Plan

Any facility that provides personal care shall provide the following information:

**Personal Care**  Personal care means protective care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building. Personal care may include daily awareness by the management of the resident's functioning and whereabouts, making and reminding a resident of appointments, the ability and readiness for intervention in the event of a resident experiencing a crisis supervision in the areas of nutrition and medication and actual provision of transient medical care.

1. **Address of Facility**

2. **Name of Facility**

3. **Type of Facility**

4. **Owner of Facility**

   **Address**

   **Phone #**

5. **Residents**  Physical and mental condition

   a. Maximum number provided for

   b. Age range of residents

   c. Number using walkers

   d. Number limited to wheelchairs

   e. Number confined to bed

   f. Type and degree of any physical impairment which residents may have (include any that are deaf or blind and how many)
g Type and Degree of Any Mental Impairment Which Residents May Have 

6 SERVICES
a. List Basic Services Provided for Residents 

b. List Assistance and/or Care Provided for Residents 

c. List Specific Training Counseling or Rehabilitation Services Provided for Residents 

7 SOURCE OF RESIDENT REFERRALS
a. List Agencies 

b. Private Referrals 

c. Services Expected From Referral Agencies 

8 EVACUATION CAPABILITY (see page 6) 

9 PLEASE INCLUDE A PRELIMINARY COPY OF YOUR EMERGENCY AND FIRE EVACUATION PLANS

10 STAFF Training and number of
a. Number of Staff on Duty Each Shift and Hours of Each Shift 

b. Skills and/or Professional Training Required of Staff 

11 BUILDING
a. Year Constructed 

b. Present Building Code Occupancy Classification 

c. Is the Proposed Use a Change of Occupancy? 

**CITY AND COUNTY OF DENVER**

**POLICY**

**PUBLIC WORKS DEPARTMENT**

**Subject:** CONGREGATE RESIDENCES

<table>
<thead>
<tr>
<th>Number</th>
<th>Effective Date</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>32 B055</td>
<td>March 30, 1993</td>
<td>5 of 9</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>d</td>
<td>Number of Floors</td>
</tr>
<tr>
<td>e</td>
<td>Number of Bedrooms on Each Floor</td>
</tr>
<tr>
<td>f</td>
<td>Number of Residents on Each Floor</td>
</tr>
<tr>
<td>g</td>
<td>Number of Exits From Each Floor</td>
</tr>
<tr>
<td>h</td>
<td>Are Exits Locked to Confine Residents?</td>
</tr>
<tr>
<td>i</td>
<td>Fire Protection (smoke detectors, sprinklers, fire alarm systems, etc.)</td>
</tr>
</tbody>
</table>

IF YOU HAVE ANY QUESTIONS ABOUT FILLING OUT THIS FORM CONTACT

BILL BALDACCHINI Denver Building Department 640 3150 or
CURT JEFFERIES Denver Fire Prevention Bureau 640 5522 or
LEROY VOGT Denver Environmental Health Department 436 7455

---

Name of Applicant

Address

Phone No

Signature of Applicant

Title

Date

RETURN TO ZONING ADMINISTRATION
DENVER PERMIT CENTER
200 W 14TH AVE
DENVER CO 80204

Zoning Classification of Facility

Zoning Approval: Yes __ No __ Date ______ By ________

AFTER APPROVAL BY ZONING Submit two (2) copies with the construction plans to

BUILDING DEPARTMENT
DENVER PERMIT CENTER
200 W 14TH AVE
DENVER CO 80204
PHONE NO 640 3643
The evacuation capability of the residents and staff is a function of both the ability of the residents to evacuate and the assistance provided by the staff. When a facility is occupied, the evacuation capability is determined by having the Denver Fire Department conduct a fire drill observing the reactions of the staff and residents and when practical, timing the duration of total evacuation. (Total evacuation is not practical when residents are bedridden or otherwise confined.)

When a facility is in the planning stage obviously the building is not built or occupied and a fire drill cannot be conducted. In this case it is the responsibility of the facility owner or his representative to determine approximately how long it would take the residents and staff to evacuate the building. In doing this, any physically and/or mentally impaired condition the prospective residents may have should be taken into account.

Evacuation capability in all cases is based on the time of day or night when evacuation of the facility would be most difficult (i.e., sleeping residents or fewer staff present).

Translation of fire drill times to evacuation capability is determined as follows:
(a) 3 minutes or less PROMPT
(b) over 3 minutes but not in excess of 13 minutes SLOW
(c) more than 13 minutes IMPRACTICAL

(The above has been condensed from the National Fire Protection Association Life Safety Code 101)

Please write in your evacuation capability at item #8 page 4
### FACILITY AND RESIDENT CHARACTERISTICS FOR ESTABLISHING EVACUATION CAPABILITY

Each category that applies to this facility must be initialed in the initial box. The evacuation capability classification will be determined by the most restrictive condition in any one category.

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>E. C.</th>
<th>PROMPT 3 Mins. or Less</th>
<th>SLOW More than 3 mins. not in excess of 13 min.</th>
<th>IMPRACTICAL More than 13 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION</td>
<td>Covers a broad range of housing options for persons who are functionally and socially independent most of the time.</td>
<td>Provides a living arrangement which integrates shelter and services for those persons who are frail, chronically mentally or physically ill, socially maladjusted, and require 24-hour supervision. Applies to adults and children.</td>
<td>Provides living arrangement which integrates shelter with psychosocial and rehab services for persons who require 24 hour supervision.</td>
<td></td>
</tr>
<tr>
<td>PRIMARY SERVICES</td>
<td>A - Segregated Building Environmental Security Administrator may coordinate services for residents (i.e., transportation, housekeeping, etc.) Creating opportunities for socialization</td>
<td>A Plus: Meals Transportation Housekeeping Assistance</td>
<td>B - Assistance with activities or daily living Medications Monitoring 24-Hour Protective oversight</td>
<td>- C - A and B plus: 24-Hour Supervision</td>
</tr>
<tr>
<td>MOBILITY</td>
<td>I. Capable of moving about independently. Able to seek and follow directions. Able to evacuate independently in an emergency.</td>
<td>I. Capable of moving about independently. Able to seek and follow directions. Able to evacuate independently in an emergency. OR</td>
<td>I. May require assistance with transfers from bed, chair, toilet. OR</td>
<td>II. Ambulatory with cane/walker. Independent with wheelchair but needs help in an emergency OR III. Mobile but may require escort/assistance due to confusion, poor vision, weakness or poor motivation. OR IV. Requires occasional assistance to move about but usually independent.</td>
</tr>
<tr>
<td>FACILITY</td>
<td>E. C.</td>
<td>PROMPT 3 Mins. or Less</td>
<td>SLOW More than 3 mins. not in excess of 13 min.</td>
<td>IMPractical More than 13 min.</td>
</tr>
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</tr>
<tr>
<td>NUTRITION</td>
<td>I.</td>
<td>Able to prepare own meals. Eats meals without assistance.</td>
<td>I. May require assistance getting to dining room and / or requires minimal assistance such as opening cartons or other packages, cutting food, or preparing trays.</td>
<td>I. May be unable or unwilling to go to dining room. May be dependent on staff for eating / feeding needs. OR II. Totally dependent on staff for nourishment (includes reminders to eat and / or feeding).</td>
</tr>
<tr>
<td>HYGIENE</td>
<td>I.</td>
<td>Independent in all care including bathing and personal laundry.</td>
<td>I. May require assistance with bathing, or hygiene. OR II. May require assistance, initiation, structure, or reminders. Resident completes the task.</td>
<td>I. May be dependent on staff for all personal hygiene.</td>
</tr>
<tr>
<td>HOUSE KEEPING</td>
<td>I.</td>
<td>Independent in performing housekeeping functions (includes making bed, vacuuming, cleaning and laundry).</td>
<td>I. Housekeeping and laundry services provided. OR II. May need assistance with heavy housekeeping, vacuuming, laundry and changing linens.</td>
<td>I. Housekeeping and laundry services provided.</td>
</tr>
<tr>
<td>DRESSING</td>
<td>I.</td>
<td>Independent, and dresses appropriately.</td>
<td>I. May require occasional assistance with shoe laces, slippers, etc., and / or medical appliances or garments. OR II. May require reminders, initiation or motivation. Resident completes the task.</td>
<td>I. May be dependent on staff for dressing.</td>
</tr>
<tr>
<td>TOILETING</td>
<td>I.</td>
<td>Independent and completely continent. OR II. May have incontinence, colostomy or catheter, but independent in caring for self through proper use of materials / supplies.</td>
<td>I. Same as Independent Living. OR II. May have occasional problem with incontinence, colostomy, or catheter, and may require assistance in caring for self through proper use of materials / supplies.</td>
<td>I. May have problem with incontinence, colostomy / catheter and require assistance. OR II. May be dependent and unable to communicate needs.</td>
</tr>
<tr>
<td>MEDICATIONS</td>
<td>I.</td>
<td>Responsible for self administration of all medications.</td>
<td>I. Able to self-administer medications. Facility staff may remind and monitor the actual process. OR II. May arrange for family or home health agency to establish a medication administration system. Staff may remind and monitor. OR III. Facilities staffed by RNs and LPNs can administer medications to residents.</td>
<td>I. Medications administered by licensed personnel.</td>
</tr>
</tbody>
</table>
### Exhibit 3 (cont'd)

<table>
<thead>
<tr>
<th>FACILITY OPERATOR</th>
<th>SIGNATURE</th>
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</thead>
<tbody>
<tr>
<td>END OF DOCUMENT</td>
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</tbody>
</table>
Reference: UBC Section 307

With the adoption of the Uniform Codes in 1990 Denver's ordinances address high piled storage high rack storage or high rack systems much more comprehensively than did the previous codes. The 1991 Uniform Fire Code Denver Amendments Section 9 110 defines High Piled Combustible Storage as

Combustible materials in closely packed piles more than 12 feet in height or combustible materials or pallets or in racks more than 12 feet in height. For certain special hazard commodities such as rubber tires, plastics, some flammable liquids, idle pallets, etc. see UFC Standard Nos. 81 1 and 81 2 and NFPA 231D to establish storage heights and product classifications identified as High Piled Combustible Storage.

A Denver through the Uniform Building Code (UBC) requires that high piled combustible storage be located in a building which is protected by a sprinkler system designed to meet NFPA Standards.

B UBC 3206(a) requires smoke/heat venting and curtain boards in buildings with high piled combustible stock and references the Uniform Fire Code (UFC) for details.

C UFC Article 81 requires buildings housing high piled combustible stock to be protected with automatic sprinklers except for very small storage areas which are then required to be detectored (UFC Table 81 105).

D UFC Article 81 contains other requirements which are necessary for buildings with high piled storage i.e. small hose connections, fire department access through exterior walls, etc.

It is understood that these ordinance requirements apply to all new buildings. This memo is written to establish a consistent policy regarding high piled storage in existing buildings.

1 In buildings that were built and occupied by a tenant with high piled combustible stock prior to the adoption of the Uniform Codes on October 1, 1990 as long as that tenant remains in operation it will be up to the regular Fire Department inspection to identify any unsafe conditions.

2 When a new tenant moves into an existing building and the new tenant's operation involves high piled storage of combustible stock, the City will require the following:

a If Class IV or V commodities are to be stored and the storage area is of a size that would require automatic sprinkler protection by UFC Article 81 an automatic sprinkler system designed to comply with UFC Article 81 and NFPA 231 and 231C will be required.
If Class I, II, or III commodities are to be stored an existing automatic sprinkler system will be accepted provided it is certified by a licensed Colorado professional engineer or a licensed fire protection contractor to provide a protection level equal to at least 70% of that required by the above standards.

If Class I, II, or III commodities are to be stored and the existing building is not equipped with an automatic sprinkler system and UFC Article 81 would require sprinkler protection a sprinkler system complying with the above standards will be required.

All sprinkler systems protecting high piled storage must be connected to a central station.

b Small hose connections will be required per UFC Article 81.

c Automatic smoke/heat venting and curtain boards will not be required for existing buildings Smoke removal capabilities will be required Curtain boards will be required as an area separation when Early Suppression Fast Response (ESFR) sprinklers are used in a portion of the building and remaining area has standard sprinklers Existing roof openings such as skylights may be used as smoke vents when approved by the Building Inspection Division and the Fire Prevention Bureau.

3 Sprinkler Protection for High Piled Stock (over 12 feet high) There are several options that will achieve acceptable levels of sprinkler protection Ceiling sprinklers may be adequate by themselves provided the system is designed to deliver the required amount of water over the fire area This water flow requirement may necessitate the addition of a fire pump to boost the water pressure Under some circumstances the addition of in rack sprinkler heads within the rack storage construction may satisfy the requirements A licensed fire protection contractor or fire protection engineer can make this analysis.

Sprinkler protection requirements for high piled storage can be eliminated if storage levels are kept below 12 feet or those required by UFC Article 81.

4 Fire Department access for existing buildings will be as approved by the Fire Prevention Bureau Access will be required on 4 sides of the building.

5 Storage Rack Installation A building permit shall be required for all rack system installations.

- Drawings must be submitted to the Building Inspection Division for review prior to the issuance of a permit showing
  - Scaled plans
  - The rack arrangement in the warehouse area with sufficient detail to allow an exiting analysis
  - A typical section view showing the height of the racks
  - Indicate the location of any required smoke vents and curtain boards in relation to the rack locations

- No structural analysis will be required on the rack systems however installation and application shall be in accord with rack manufacturer's recommendations.
- When the rack system is supported on a structurally framed floor system
  An analysis by a licensed Colorado professional engineer must be submitted which certifies the floor system is adequate to support the rack system loading

- When the rack system is supported by slab on grade construction
  No structural analysis of the floor system need be submitted
  The building owner and tenant should verify that the slab construction is adequate to support the load

Any questions by the building owner, tenant etc regarding this policy should be addressed to the Building Inspection Division (640 3643) or the Fire Prevention Bureau (640 5522)

END OF DOCUMENT
Both Chapter 9 and Chapter 11 of the Denver Building Code require fire alarm systems to include both audible and visual alarms. For all new buildings and for buildings undergoing a change in occupancy classification or change in use that would require a fire alarm and fire detection system, both audible and visual alarms will be required for any required fire alarm or fire detection system. A visual alarm will be required wherever an audible alarm is located to be heard throughout the building. UL 1971 labeled strobes will not be required by the Building Inspection Division.

In an existing building equipped with audible alarms but not presently equipped with visual alarms, the City will not require the addition of visual alarms under any circumstance surrounding tenant improvements or tenant finish work or fire alarm modification work.

Exception 1 Change in occupancy classification

Exception 2 New alarm devices required to correct exiting deficiency under Section 1003.3

If a building owner desires to install visual alarms in a building that is presently not equipped with visual alarms, the City will accept the number and location of visual alarms as designated by the owner. The City will not require a separate circuit between the fire alarm control panel and the visual alarms installed under these circumstances. The City will enforce only Chapter 9 requirements and not any other American Disabilities Act (ADA) fire alarm requirements.

END OF DOCUMENT
Reference  U B C Section 150 1 D B C

1  Construction  No Permit Required For
Painting  wallpaper  floor covering  replacing kitchen cabinets  glass replacement not in hazardous locations

2  Mechanical  No Permit Required For
All general repairs and replacements of like unit unless the work involves disconnection and reconnection of either
   a  Natural gas line  (except replacement of gas valve with like unit)
   b  Flue vent from fuel fire appliance
   c  Refrigerant line
   d  Steam line or hot water line
   e  Safety controls on high pressure boilers

3  Electrical  No Permit Required For
All general replacements of existing electrical appliances and/or apparatus with like units or general repairs that do not involve altering or changing the electrical system

Exemption 1  Permits are required for any work on emergency engine generator sets  emergency transfer switches  emergency system feeders and circuits and emergency system overcurrent devices

Exemption 2  Permits are required for any work on fire alarm systems  fire detection systems or automatic fire extinguishing systems

Exemption 3  Permits are required for any work on service entrance equipment

4  Plumbing  No Permit Required For
   a  Single Family Homes  Duplexes  Townhouses  no permit required for general repairs that do not alter existing system including replacement of like units such as bathroom/kitchen sinks  garbage disposals and water closets
   b  Commercial Buildings  No permit required for replacement of sinks  garbage disposals and water closets with like units  No permit required for faucet and trap replacement or repair  Permit required for all other plumbing work in commercial buildings

END OF DOCUMENT
When joint approval of life safety systems is required by the Denver Building Code Uniform Fire Code or Policies of the Building Inspection Division/Fire Prevention Bureau, the following methods shall be used in performing plan reviews. The Building Inspection Division will review submittals for items concerning the Denver Building Code, the Fire Prevention Bureau will review submittals for items concerning the Uniform Fire Code with Denver Amendments. When special issues or agreements are reached in preconstruction meetings, a copy of those approved agreements shall be attached to the plan review drawings submitted to the Building Inspection Division plan review engineers for their record and a copy forwarded to the master file at the Fire Prevention Bureau.

BUILDING INSPECTION DIVISION

1. The Building Inspection Division shall normally review and approve all shop drawings for the following:

A. Fire Alarms and Detection
   - Wiring
   - Sequence of operation
   - Device and equipment locations and types
   - Riser locations
   - Fire alarm and fire detection system one line diagrams
   - Standby battery calculations
   - Any items required as a result of requirements of the Board of Appeals, Chapter 61, the Building Inspection Division or the Fire Prevention Bureau

B. Automatic Sprinkler Systems
   - Hydraulic calculations
   - Pipe sizes
   - Sprinkler spacing
   - Type of sprinkler heads
   - Adequate water supply/pressure
   - Nameplate information
   - Hazard classification
   - Valve arrangement
C Smoke Control
   ▪ Air handling capacity and calculations
   ▪ Damper location

D Emergency Generators

E Elevator Recall

F Walk-thru Permits including spray booths and kitchen hood systems

G Special issues
   ▪ Agreed upon during preconstruction meetings or in house meetings between the Building Inspection Division and Fire Prevention Bureau

2 The Building Inspection Division will conduct field rough in electrical, mechanical and plumbing inspections on all life safety systems

FIRE PREVENTION BUREAU

1 The Fire Prevention Bureau will not normally review shop drawings for the following projects

   Non required systems
   Tenant finish or remodel jobs
   Additions or alterations which do not alter the use or cause a change of occupancy in a building

2 For projects not identified in Item 1 the Fire Prevention Bureau shall normally review and approve shop drawings only for the following items

A Fire Alarm and Detection
   ▪ Zone annunciation schedules and layout
   ▪ Location of fire alarm control panel and graphic annunciation panel
   ▪ Design of graphic panel

B Automatic Sprinkler Systems
   ▪ Verify and approve location of
      Fire Department connections
      Location and connection to water supply
      Zoning and annunciation of flow switches
      Fire pump and fuel supply

C Smoke Control Pressurization and Heat and Smoke Venting
   ▪ Annunciation and control
   ▪ Zones
   ▪ Sequence of operation
D Special Occupancy Uses; issues of direct concern from the Uniform Fire Code:

- Rack and high pile storage systems
- Aerosol storage
- Tire storage
- Storage use dispensing or processes involving flammable or hazardous materials
- H Occupancies defined by the Denver Building Code

3 The Fire Prevention Bureau will conduct acceptance testing on all life safety systems.

4 The Fire Prevention Bureau shall review and should be notified by the Building Inspection Division of any issues involving the following Articles of the Uniform Fire Code. Whenever Building Inspection Division engineers learn of a building containing any of the following (most likely through log set plan review) they will notify one of the Fire Prevention Bureau engineers of the situation so that a review by the Fire Prevention Bureau can be accomplished. Notification can be to an engineer from FPB working at the Building Inspection Division or by calling the Fire Prevention Bureau.

Art 24 Heliports and Helistops
Art 29 Garages
Art 30 Lumber Yards and Woodworking Plants
Art 32 Tents
Art 35 Covered Mall Buildings
Art 45 Special Processes
Art 50 Manufacture of Organic Coatings
Art 51 Semiconductor Fabrication Facilities Using Hazardous Production Materials
Art 74 Compressed Gases
Art 75 Cryogenic Fluids
Art 77 Explosive Materials
Art 79 Flammable and Combustible Liquids
Art 80 Hazardous Materials
Art 81 High Piled Combustible Storage
Art 82 Liquefied Petroleum Gases (LPG)
Art 86 Pesticides Storage and Display
Art 88 Aerosol Products
5 The Fire Prevention Bureau shall review all logged in base building drawings for
   A Fire Department vehicular access and available water supplies
   B Fire Flow
   C Fire Hydrant Location and Distribution

BUILDING INSPECTION DIVISION/FIRE PREVENTION BUREAU
JOINT REVIEW

Joint review of logged in base building drawings for the following
   A High Rise Buildings
   B Special Occupancy Uses
      ▪ Rack and high pile storage systems
      ▪ Aerosol storage
      ▪ Tire storage
      ▪ Storage use dispensing or processes involving flammable or hazardous materials
      ▪ H Occupancies defined by the Denver Building Code
   C Special Issues
      ▪ Agree upon during preconstruction meetings or in house meetings between the Building Inspection Division and Fire Prevention Bureau

END OF DOCUMENT
The 1990 Federal Clean Air Act has established regulations to control the types and use of refrigerants. The production of the most common refrigerant: CFC's, is being phased out December 31, 1995 with limited exceptions. Replacement refrigerants may be toxic and flammable.

**POLICY:**

The American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 15 1992 Safety Code for Mechanical Refrigeration and Standard 34 1992 Number Designation and Safety Classification of Refrigerants shall be used as design guidelines for (1) the design and installation of new refrigeration systems and (2) for upgrading safety and ventilation systems when a refrigerant in an existing refrigeration system is replaced with a new or alternative refrigerant that is classified more toxic or flammable than the original refrigerant.

A building permit shall be required when new or alternate refrigerants are used that are classified more toxic or flammable than the original refrigerant by the provisions of ASHRAE Std. 34 1992.

Exception: For refrigeration systems with less than a total charge of 50 lbs, ASHRAE Stds. 15 and 34 shall not apply and a building permit shall not be required.

Submitted: Refrigeration Ad Hoc Committee
Telephone conversations with Mr Colignio NFPA Chief Electrical Engineer and Mr Richard Buschart NEC Panel 14 Special Occupancy Committee chairman have allowed us to formulate a policy on the proper classification for electrical wiring and electrical equipment in buildings used to store flammable and combustible liquids. These two authorities emphasized the importance of UFC Table 79 1407 and FPN No 2 under 500 5(b)NEC.

Buildings used for storage only of flammable and combustible liquids in closed containers where there is no mixing or dispensing will not be considered Class I Division 1 or 2 areas as defined in the NEC. General purpose electrical apparatus will be acceptable. Color tinting of 1 gallon cans will not be considered mixing.

This policy is applicable even though the storage building may be classified as an H 2 occupancy under UFC Sections 79 201 through 79 205 and UBC Section 307. Certain unusually hazardous liquids that are extremely volatile or reactive or certain types of storage containers may present hazards that would require a more restrictive electrical classification.

The attached flammable and combustible liquid location guidelines set forth in UFC Table 79 1407 and NEC Section 500 5(b) FPN No 2 will be followed by the Building Inspection Division and Fire Prevention Bureau.

UFC Table 79 1407

<table>
<thead>
<tr>
<th>Indoor Warehousing Where There is No Flammable Liquid Transfer</th>
<th>Ordinary</th>
<th>If there is any opening to these rooms within the extent of an indoor classified area the room shall be classified the same as if the wall curb or partition did not exist</th>
</tr>
</thead>
</table>

NEC Article 500 5(b) FPN No 2

(FPN No 2) Piping without valves checks meters and similar devices would not ordinarily introduce a hazardous condition even though used for flammable liquids or gases. Locations used for storage of flammable liquids or of liquefied or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also.

Electrical conduits and their associated enclosures separated from process fluids by a single seal or barrier shall be classed as a Division 2 location if the outside of the conduit and enclosures is an unclassified location.

END OF DOCUMENT
The Denver Building Code requires a pressure regulating device at any standpipe outlet where the pressure exceeds 100 psi.

The installation of pressure regulating devices could in themselves compromise the reliability of fire hose water supply; therefore, a pressure regulating device shall not be required on any standpipe outlet unless operating pressures exceed 175 psi. When pressures are greater than 175 psi, a pressure regulating device will be required but only field-adjustable pressure regulating devices shall be allowed. If these devices require special tools to make field adjustments, a minimum of 4 tools shall be provided at locations within the building or structures as approved by the Denver Fire Department.
Occupancies spray painting exclusively with water based finishes will not be classified as H Occupancies Based Upon NFPA Standard 33 Section 1.14 sprinkler systems and spray booths will not be required These occupancies will not be required to comply with Division Class I Electrical however Standard 33 Sections 4.3, 4.4 and 4.5 should be followed in relation to preventing deposits of combustible residues on electrical and heating appliances NFPA Standard 33 Section 5.2 shall be followed for ventilation requirements NFPA Standard 33, Sections 8.3, 8.5 and 8.8 relating to the accumulation of combustible residue shall be followed Copies of these sections are attached An application for a Permit must be submitted along with the owner's written agreement that flammable finishes will not be used at any time An annual fire department inspection will be conducted if any violations of the above Sections exist the occupancy will be reclassified as an H Occupancy and be required to follow all conditions of NFPA Standard 33 I.e. installation of spray rooms or booths and automatic sprinkler systems

NFPA 33
Standard of
Spray Application Using Flammable
and Combustible Materials
1989 Edition

1.14* This standard does not cover the spray application of noncombustible finishing material Certain water type finishes however although involving little or no hazard in the liquid state may leave highly combustible residues upon evaporation of the liquid carrier The provisions of this standard for minimizing the hazards of combustible residues shall be followed irrespective of the characteristics of the liquid

4-3 Space heating appliances steam pipes or hot surfaces shall not be located in a spray area where deposits or combustible residues may readily accumulate and be ignited

4-4 Electrical wiring and equipment shall conform to the provisions of this section and shall otherwise be in accordance with NFPA 70 National Electrical Code.

4-5* Unless specifically listed for locations containing deposits of dangerous quantities of flammable or combustible vapors mists residues dusts or deposit (as applicable) there shall be no electrical equipment in any spray area as herein defined wherein deposits of combustible residue may readily accumulate except wiring in rigid metal conduit Type MI cable or in metal boxes or fittings containing no taps splices or terminal connections
5-2 All spray areas shall be provided with mechanical ventilation adequate to confine and remove flammable or combustible vapors or mists to a safe location to maintain the concentration of flammable or combustible vapors or mists in the exhaust stream below 25 percent of the lower flammable limit (LFL) and to confine and control combustible residues, dusts or deposits.

Exception Confined spaces may represent areas in which ventilation may not be capable of effectively handling the hazardous atmosphere associated with spray finishing therein. In such cases, a properly applied inerting procedure in accordance with NFPA 69, Standard on Explosion Prevention Systems, and acceptable to the authority having jurisdiction may be more effective in reducing the hazard and may be used.

8-3* All spray areas shall be kept free from the accumulation of deposits of combustible residues. Combustible coverings (thin paper, plastic etc.) and strippable coatings may be used to facilitate cleaning operations in spray areas. If residue accumulates to excess in booths, duct or duct discharge points or other spray areas then all spraying operations shall be discontinued until conditions are corrected.

8-5* Residue scraping and debris contaminated with residue shall be immediately removed from premises and properly disposed of.

8-8 Solvents for cleaning operations shall have flash points above 100°F (37.8°C). However, for cleaning spray nozzles and auxiliary equipment solvents having flash points not less than those normally used in spray operations may be used. Cleaning operations using flammable or combustible solvents shall be conducted inside spray booths with ventilating equipment operated during cleaning or in other adequately ventilated locations complying with the requirements of Chapter 4.
All Waste Oil Heaters shall be listed and approved by the Denver Building Inspection Division Engineering Section, prior to sale and installation. A Permit required for use and installation of Waste Oil Heaters shall be obtained from the Denver Building Inspection Division and the Denver Fire Department Fire Prevention Bureau. Used oil Fired spaced heaters may be used to burn of specification used oil for energy recovery provided that:

1. Waste oil tanks shall be installed in accordance with the 1994 Uniform Fire Code Article 79
2. The space heater burns only used oil that Owner/Operator generates only non contaminated used oil shall be used
3. The space heater has a maximum capacity of not more than 500 MBH
4. The combustion gases from the Burner Unit are vented to the ambient air
5. Portable units are not permitted only permanent units will be permitted
6. Placarding be attached to the tank to indicate a (Class III B Combustible)
7. Secondary containment shall be provided
8. Maximum tank capacity is 250 gallons
9. Eighteen inches (18) clearance shall be kept around heating unit and tank
10. Storage of combustible materials is not allowed on top of tank
11. The tank shall be vented to the outside of the building

END OF DOCUMENT
Appendix Chapter 34 Division II A Apartment Buildings Would allow an approved automatic sprinkler system throughout as an exception to the requirements for (1) Corridors Section 3415.3 and (2) Smoke Detectors Section 3418.1. All of the other provisions of the Division II A must be complied with.

The following provisions will be accepted as an alternate to the approved automatic sprinkler system throughout for the retrofit of existing high rise buildings as required by DBC Appendix Chapter 34 Division II A:

a. Sprinklers shall be provided in basements as required in Section 3416 and in all hallways, corridors, common areas (i.e., laundry rooms, party meeting rooms, boiler rooms, storage areas, etc.) top of stairwells and one head within 3 feet of the entrance to each dwelling unit, on the tenant side. Residential or quick response standard sprinklers shall be used in the dwelling units of the building.

b. Sprinkler head spacing fully sprinklered areas shall comply with NFPA 13.

c. An existing standpipe capable of providing 100 psi at 500 gpm at the roof riser may be used to supply the sprinkler system.

d. Connection to a City main water supply per NFPA 13 shall be provided. System to be hydraulically designed for 4 heads operating at the most remote area with adequate City pressure for sprinkler operation at the top most floor. A fire pump shall not be required if the above criteria is met.

e. A fire department connection with outside horn and light in accordance with DBC shall be provided at a location approved by the Denver Fire Department.

f. Main riser and floor level water flow indication/annunciation by floor shall be provided by a indicating light type directory annunciator on the first floor at a location approved by the Denver Fire Department.

g. Types of pipe or tube for sprinkler systems other than steel may be used if listed for this use (Ref NFPA 13).

h. Provide detectors in each dwelling unit as required by Section 310.9.1. Battery operated detectors may be used or 120v single station powered by an unswitched source.

i. All corridor doors shall be self-closing or automatic closing by the activation of a smoke detector.
LIFE SAFETY REQUIREMENTS FOR EXISTING RESIDENTIAL HIGH RISE BUILDINGS

PURPOSE
To clarify the code language pertaining to high rise retrofit requirements of the Denver Building Code (DBC) for apartment and condominium buildings. For complete requirements please refer to DBC Appendix Chapter 34 Division II A. This document summarizes 3 options for code compliance; options may not be intermixed.

COMPLIANCE DATE:
Complete Construction documents shall be submitted no later than December 29, 1995.

Construction documents shall include 4 sets of architectural drawings; smoke detection shop drawings and sprinkler system shop drawings as required by the option employed for your project. These drawings shall be submitted at the same time and shall be signed and sealed by the Colorado registered engineer or architect responsible for the design or analysis.

CONSTRUCTION DEADLINE
Construction or installation shall be completed by January 1, 1998.

CHOOSE 1 OF THESE OPTIONS AND SPECIFY OPTION NUMBER ON DRAWINGS

<table>
<thead>
<tr>
<th>OPTION ONE</th>
<th>OPTION TWO</th>
<th>OPTION THREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building is not sprinklered throughout.</td>
<td>Building is sprinklered throughout.</td>
<td>Building is partially sprinklered per Policy B-067</td>
</tr>
<tr>
<td>DBC Appendix Chapter 34 Section 3415</td>
<td>(a) The same as Option One</td>
<td>(a) The same as Option One</td>
</tr>
<tr>
<td>(a) Two exits required</td>
<td>(b) The same as Option One</td>
<td>(b) The same as Option One</td>
</tr>
<tr>
<td>(b) Stair construction</td>
<td>(c) Not required due to sprinkler protection</td>
<td>(c) Not required due to sprinkler protection except that doors shall be self or automatic closing</td>
</tr>
<tr>
<td>Min run 9&quot;, Max. rise 8&quot;, at least 1 handrail required Min 30&quot; wide landing required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Corridor construction for occupant load of 30 or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 1 hour fire-resistive walls and ceiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 ½&quot; gyspum wall board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Wood lath &amp; plaster in good condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openings into corridors Doors shall be self or auto-closing of following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 20-minute fire rated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 1½&quot; solid wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 1½&quot; solid bonded wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 1½&quot; insulated steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPTION ONE</td>
<td>OPTION TWO</td>
<td>OPTION THREE</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>For window and transom openings into corridors see DBC Sec 3415.3</td>
<td>(d) The same as Option One</td>
<td>(d) The same as Option One</td>
</tr>
<tr>
<td>(d) Existing fire escapes</td>
<td>(e) The same as Option One</td>
<td>(e) The same as Option One</td>
</tr>
<tr>
<td>See DBC Sec 3415.4 for complete requirements Obtain approval from the Building Department prior to plan submittal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Exit &amp; fire escape signs     See DBC Sec 1013.1 through 1013.4(e) for complete requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 3416</td>
<td>Section 3416</td>
<td>Section 3416</td>
</tr>
<tr>
<td>Sprinkler Protection for basements exceeding 1500 sq ft. in area. If basements do not have 20 sq ft. of openings (30&quot; min dimension) in each 50 linear feet of wall or if any portion of basement is more than 75 feet from the openings sprinkler protection is required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 3417</td>
<td>Building is sprinklered throughout. Sprinkler System Alarms &amp; Zoning to comply with UBC Sec 904.3</td>
<td></td>
</tr>
<tr>
<td>Standpipes Either a Class I or a Class III standpipe system with adequate capacity to supply one 2½ hose outlet capable of maintaining a pressure of 100 PSI with 500 GPM flowing at the topmost outlet with the Fire Department pumping into the system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 3418 Smoke Detectors (a) Detectors shall be installed in: 1 Dwelling units 2 Interior corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standpipes</td>
<td>The same as Option One except that combination standpipe and sprinkler riser if used shall operate the sprinkler on any floor properly as per NFPA 13 without Fire Department pumping into the system to increase the pressure</td>
<td></td>
</tr>
<tr>
<td>Section 3418 Smoke Detectors (a) Detectors Not required within dwelling units or corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standpipes</td>
<td>The same as Option One except that combination standpipe and sprinkler riser if used shall operate the sprinkler on any floor properly as per NFPA 13 without Fire Department pumping into the system to increase the pressure</td>
<td></td>
</tr>
<tr>
<td>Section 3418 Smoke Detectors (a) Detectors shall be installed in: 1 Dwelling units 2 Not required in interior corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPTION ONE</td>
<td>OPTION TWO</td>
<td>OPTION THREE</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(b) Power Source</td>
<td></td>
<td>(b) Power Source</td>
</tr>
<tr>
<td>1 Dwelling unit detectors to be battery operated or 120v residential type detectors powered by an unswitched source</td>
<td>2 Not required due to sprinkler protection</td>
<td>1 The same as Option One</td>
</tr>
<tr>
<td>2 Corridor detectors to be 24v system type or 120v detectors interconnected at each floor and powered by an unswitched source</td>
<td></td>
<td>2 Not required due to sprinkler protection</td>
</tr>
<tr>
<td>Audible devices shall activate on floor of alarm or on all floors Visual devices if provided may be on the same circuits as audible devices Annunciation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corridor detectors on each floor shall be annunciated (zoned) separately Pull stations (if provided) and detectors may be on 1 zone per floor Annunciator panel shall be on ground floor in an approved location</td>
<td>(c) Location within Units Detectors are not required but are HIGHLY RECOMMENDED</td>
<td>(c) The same as Option One</td>
</tr>
<tr>
<td>(c) Location within units Detectors to be mounted on ceiling or wall at a point centrally located in an area giving access to each separate sleeping room</td>
<td></td>
<td>(d) The same as Option One</td>
</tr>
<tr>
<td>(d) Required inspection See DBC Sec 3418 4</td>
<td></td>
<td>(e) The same as Option One</td>
</tr>
<tr>
<td>(e) Failure to Comply with Required Inspection See DBC Sec 3418 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 3419 Occupancy Separation required per UBC Section 302 Existing ½&quot; gypsum board or wood lath &amp; plaster in good condition may be accepted as 1 hour construction</td>
<td>The same as Option One</td>
<td>The same as Option One</td>
</tr>
</tbody>
</table>

**NOTE:** When battery powered detectors are used the ten year lithium nonremovable battery detector is recommended


CITY AND COUNTY OF DENVER
POLICY
PUBLIC WORKS DEPARTMENT

Subject: ACCESS CONTROL

Approved: 
R Doug Sutton, P E., Director, Building Inspection

Number 32 B068 Effective Date April 18 1995 Page 1 of 26

Reference U B C Section 1004.3 and 1004.13

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CITY AND COUNTY OF DENVER  POLICY  PUBLIC WORKS DEPARTMENT

Subject: ACCESS CONTROL

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I  PREVAILING POLICY

All access Control related policies previously adopted by the City and County of Denver are now null and void and are superseded by this policy including by not limited to

P 26  Securing of Elevator Lobbies  2/05/93
P 47  Interim Policy Electric Door Hardware Applications For Exit Doors  9/21/92 and
P 25  Securing of Stair Doors Into Exit Enclosures  9/04/90
II STATEMENT OF NONLIABILITY

This policy represents the best efforts by members of the Ad Hoc Access Control Committee (the Committee) to address the issues of safety, security, technology, and economics as they pertain to access control. The responsibility for proper evaluation of each given condition encountered in the field followed by diligent design and competent installation and testing lies with those who choose to undertake same.

To the extent that this policy is used in the City and County of Denver (or any other municipality) the Committee and its members (and their sponsoring companies and/or associations organizations, etc.) shall bear no liability jointly and/or severally from any claims or actions which may result from the use, misuse, or nonuse of the provisions of the policy.

SECURING OF EXTERIOR AND INTERIOR DOORS

III GENERAL REQUIREMENTS

A. MECHANICAL FREE EGRESS All doors shall have mechanical free egress at all times unless otherwise approved by the BID and FPB.

B. FIRE RATED DOORS Required fire rated doors shall remain latched at all times that the door is in a closed position.

C. MODIFYING DOORS AND DOOR FRAMES Remachining fire rated doors or frames may void the fire label per DBC Section 713.4. Remachining shall comply with the manufacturer's specified procedures.

D. KEY LOCK BOXES Provision for ingress by way of an approved key box (e.g., Knox Box) for entry by emergency personnel should be provided and shall be located in an DFD approved location.

E. ACCESS CONTROL SYSTEM POWER Access control system power supplies shall comply with the following:

1. All power supplies shall be listed assemblies.

2. All power supplies shall be Class II power supplies limited in accordance with NEC Tables 725.31a and b.

3. Plug-in Class II power supplies along with their serving outlets shall be enclosed in a protective cabinet.

4. All power supplies other than plug in Class II power supplies shall be hard wired to primary power.

5. When the manufacturer's name plate primary power requirement exceeds 180 volt amps, the power supply shall be served by a dedicated branch circuit. If the power requirement is less than 180VA then an existing power outlet may be converted to a junction box serving the power supply.


F  FAIL SAFE WIRING When electric locks or magnetic locks, etc are held in the locked position by virtue of applied power the wiring between the power supply and lock shall be installed in a fail safe arrangement. All portions of the circuit shall be configured in such a way that parallel conductors in a common cable or raceway shall be of opposite polarity to ensure that the lock releases of any wire breaks if parallel conductors are shorted. See Figure 1 for an example of fail safe wiring.

FIGURE 1

IV  HARDWARE REQUIREMENTS

A. LISTING All access control system units shall be listed by an approved agency or as otherwise approved by BID.

B. ELECTRICAL COMPATIBILITY Access control system units shall be powered in accordance with section III part E above. All components of the operating system shall be matched electrically in all ratings (i.e. voltage and current).

C. ELECTRIC STRIKES Doors or frames may be equipped with electric strikes which do not affect mechanical free egress. Electric strikes used on fire rated doors shall be fail secure and shall bear the appropriate fire listing.
D ELETRIFIED LOCKSETS Approved and listed electrically modified lock sets (mortise cylindrical or unit type) that do not affect mechanical free egress are approved. Locks shall bear appropriate fire listing when used on fire rated doors.

E ELECTRICALLY OPERATED EXIT DEVICES Approved and listed electrically operated exit devices (rim mortise concealed or vertical rod type) shall be permitted. The exit device shall bear appropriate fire rating when used on fire rated doors.

F ELECTRIC BOLTS Electric bolts either flush or surface mounted shall not be installed altered or repaired.

G SHEAR TYPE MAGNETIC LOCKS Shear type magnetic locks shall be permitted provided the exit door does not require panic hardware as defined in the DBC. Shear type magnetic locks shall be nonbinding.

V EXCEPTIONS TO MECHANICAL FREE EGRESS (see section VIII for exception to DBC Section 3304(c))

A MAGNETIC LOCKS Magnetic locks that cannot bind or remain locked during power loss shall be permitted for use in the path of egress on nonfire rated doors by method 1 or 2 below subject to accommodating the supplemental requirements of B - 1 through 3 below

1 Magnetic Lock Release A magnetic lock release may be used provided that the switch is mounted internally to the device so that operation of the exit device will release the magnetic lock and allow the door to open with 1 motion. The switch shall have a proven operable life as part of the exit device equal to the listing requirements for the device (typically 250,000 cycles).

2 Contact Sense Exit Bars Contact sense exit bars that electrically detect contact or touch may be used on doors that do not require panic exit hardware pursuant to DBC.

B SUPPLEMENTAL REQUIREMENTS FOR MAGNETIC LOCKS

1 Fire Alarm Interface Activation of any manual and/or automatic fire alarm detection or extinguishing system to the extent that the building is equipped with same will directly unlock the doors and the doors will remain unlocked until the system has been reset.

2 Loss of Power Loss of building power and/or loss of power to that part of the access control system which locks the door shall directly unlock the door.

3 Magnetic Lock Power Transfer Power transfer from the door to the frame shall be listed and approved. Listing shall be by an approved testing laboratory.

SPECIAL APPLICATIONS

VI ELEVATOR LOBBIES SECURING

Elevator lobbies may be secured to prevent access from the elevator lobby into the tenant space when all of the following requirements are satisfied.

A EXIT PATH BLOCKAGE Securing of the lobby cannot result in the blockage of exit paths from normally occupied areas. The exit path circulation cannot be interrupted by a secured lobby.
B DEAD END CORRIDORS Securing of the lobby cannot result in dead end exit corridors with lengths which exceed the provisions of DBC Section 1005.5 as amended.

C TOILET ACCESS Securing of the lobby cannot result in elimination of access to required toilet facilities from normally occupied areas. Each individual tenant shall have access at all times to required toilet facilities.

D ELECTRIC LOAD CENTER ACCESS Securing of the lobby cannot eliminate the access required by the NEC to electrical overload protection or disconnect equipment. Each tenant shall have the access required by the NEC.

E EXIT STAIRWAY ACCESS At least 1 exit stair enclosure shall open into the secured elevator lobby so that people cannot become trapped in the event of elevator failure.

1 Exceptions For Securing Nonrefuge Area Elevator Lobbies A nonrefuge area elevator lobby that does not have direct access to at least 1 exit stair may be secured provided all of the following conditions are met:

a Fire System Requirements The building shall be equipped with either a fire alarm system and be fully detected or be fully sprinkled and have manual fire pull stations installed throughout the building or be equipped with the life safety features prescribed under DBC Section 1807.

b Electric Lockset, Electric Strike or Magnetic Lock Requirements All doors connecting the secured lobby with normally occupied areas or with corridors leading to the exit stair enclosure can only be secured with an electric fail safe lock or magnetic lock which is listed to unlock when the fire alarm is activated or upon a loss of power. The electric lock electric strike or magnetic lock cannot be connected to an emergency power source which would keep the lock engaged when normal power is lost.

c Emergency Communications An emergency telephone or other approved communication device shall be installed in the elevator lobby and mounted at a height to comply with the requirements of DBC 1106.3. The location shall be approved by the FPB. The system/device shall transmit to a continuously staffed operating emergency service or other continuously manned security center within the building or where otherwise approved by the BID and the FPB. A sign shall be provided at the communication device which reads:

```
Emergency Phone
Floor Elevator Lobby
Building Address
```

OR
A manual fire alarm box shall be installed in a clearly visible location within the elevator lobby and mounted at a height to comply with the requirements of DBC section 1106.3. The location shall be subject to approval by the FPB. A manual fire alarm box installed under these requirements shall transmit to a Class I central Station.

d Lighting Requirements The elevator lobby shall be illuminated at all times with a light intensity level of at least that required by DBC Section 1012.1. This lighting shall also be connected to an emergency power source which will keep the lighting operational during a power outage similar to the requirements of Section 1012.1.

e Compatibility With Accessibility Requirements All doors into the elevator lobby area from normally occupied areas shall have hardware compatible with the requirements of DBC Section 1106.3 and 1106.10 on each side of the door.

2. Exceptions For Securing Refuge Area Elevator Lobbies Additional Requirements

a Electric Lock Requirements Electric locks or magnetic locks shall be designed so that when they are released the door will remain latched. The lock shall also be connected to an on/off toggle switch in the building's Fire Control Center which can simultaneously unlock all refuge area doors. The switch shall be in a location approved by the FPB and shall be clearly labeled as to its function and the ON and OFF positions.

b Door and Door Hardware Requirements All doors opening into elevator lobby refuge areas shall be ¾ hour fire rated assemblies as required by DBC section 403.7. All hardware necessary to maintain the fire rating of the door shall be listed and approved fire door hardware. All hardware installed on the rated door and frame assembly shall be compatible with the manner in which the door was manufactured and shall not reduce the fire rating of the assembly. Field or other modification of rated doors and frames is prohibited unless approved in writing by the agency which labeled the fire rated assembly.

c Securing Doors Leading Into a Refuge Area Doors leading into the refuge area from normally occupied areas shall not be locked to prevent or restrict access into the refuge area at any time (DBC Section 1004.3 requires exit doors to be operable without the use of a key or any special device knowledge or effort. The door shall be operable with 1 operation only.) The following types of locking devices are prohibited on doors leading into the elevator lobby refuge area:

(1) Mechanical locks requiring a key combination or other special knowledge or device to open the door

(2) Combinations of mechanical door hardware and/or electric locks which require more than 1 operation to open the door

(3) Electric locking devices which are unlocked by means of a key card reader motion detector key pad pressure sensitive mat push button switch or other similar method.
d Compatibility With Accessibility Requirements All doors into the elevator lobby refuge area from normally occupied areas shall have hardware compatible with the requirements of DBC Section 1106.3 and 1106.10 on each side of the door.

e Refuge Area Subdivision A refuge area, which includes the elevator lobby and the corridors which connect the lobby to the exit stair enclosures shall remain as 1 open area without restriction of movement within the refuge area.

VII EXIT ENCLOSURES SECURING OF DOORS (STAIRWELL DOORS)

The acceptability of hardware on doors which serve exit enclosures shall be evaluated on the basis of the criteria and requirements listed in sections A through E which follow.

A. DOOR LOCKS WHICH PREVENT ACCESS INTO EXIT ENCLOSURES Doors into exit enclosures except for the door at the discharge level cannot be locked to prevent or restrict access into the exit enclosure at any time. Section 1004.3 of the DBC requires exit doors to be operable without the use of a key or any special knowledge or effort. The door shall also be capable of being opened with 1 operation only. The following types of locking devices are prohibited on the exit side of doors into enclosures.

1. Mechanical Locks Mechanical locks requiring a key combination or other special knowledge to open the door.

2. Combination of Mechanical and Electrical Locks Combinations of mechanical door hardware and/or electric locks which require more than 1 operation to open the door.

3. Electrical Locks Electric locking devices which are unlocked by use of a key card reader, motion detector, key pad, pressure sensitive mat, push button switch or other similar method.

4. Electric Strikes Electric strikes are prohibited on doors into exit enclosures in high rise buildings.

5. After Hours Locks Locking devices which are activated after normal business hours and which restrict access into the exit enclosure.

6. Delayed Egress Locks Electric locks with a time delayed unlocking unless approved by the BID for a specific system and installation.

B. EXIT ENCLOSURE DOORS AT THE DISCHARGE LEVEL The door from the exit enclosure at the discharge level cannot be locked from the exit enclosure side at any time.

C. DOOR LOCKS WHICH PREVENT ACCESS OUT OF EXIT ENCLOSURES Except for doors at the discharge level of the exit enclosure, doors out of exit enclosures can be secured from the exit enclosure side as long as the following requirements are satisfied.

1. New Door Locks Which Prevent Access Out Of Exit Enclosures In High Rise Buildings All new lock installations which prevent access out of an exit enclosure shall satisfy the following requirements.
a. **Electric Locks** All new locks shall be electric locks which shall simultaneously unlock but not unlatch upon a fire alarm or a power loss or by a manual on/off toggle switch located at an approved FPB response point. Any of these 3 conditions shall unlock but not unlatch the stairway doors. The switch shall be clearly labeled as to its function and the on/off positions clearly indicated. These locks shall not be connected to an emergency power source which would keep the locks engaged during a power outage. All electric locks and associated components shall be listed by any approved testing lab.

b. **Mechanical Locks** Conventional keyed combination or other mechanical locks are not allowed in new lock installations.

c. **Fifth Floor Rule** Where doors are locked for more than 5 consecutive floors a telephone or other approved 2 way communication system connected to an approved emergency service which operates continuously shall be provided. The travel distance between each phone or communication system shall not exceed 5 floors as required by DBC Section 1004 13 3. Phones controls etc shall be mounted at a height which complies with the requirements of DBC Section 1106 3.

d. **Signage** All locked doors shall have the applicable sign required by DBC Section 1004 13 4(a) or (c). Stairway identification signs as required by Section 1006 16 of the Denver Building Code are required on all doors. All signs shall comply with the requirements of DBC Section 1103 2 4 2 and 1106 16. Signage shall be provided as follows:

1. All doors that are locked for more than 5 consecutive floors

   THIS DOOR IS LOCKED
   EMERGENCY PHONES ARE LOCATED
   ON FLOORS ___ AND ___

2. At all emergency phones in exit enclosures

   EMERGENCY PHONES

3. All doors that are locked for 5 consecutive floors or less

   THIS DOOR IS LOCKED
   FOR THE NEXT OPEN DOOR GO
   DOWN TO FLOOR ___
   OR
   UP TO FLOOR ___
2. Existing Door Locks Which Prevent Access Out of Exit Enclosures in High Rise Buildings Existing locks in high rise buildings shall comply with section VII A and C Part 1 above. They shall also satisfy the following criteria in order to remain in service:

   a. Requirements For Existing Mechanical Locks Existing keyed mechanical locks may continue in service when the following requirements are satisfied:

      (1) Master Keys Four sets of master keys to operate the locks shall be available for Fire Department use in a location approved by the FPB.

      (2) Fifth Floor Rule Doors shall not be locked for more than 5 consecutive floors with keyed mechanical locks. Where keyed locks are in place for more than 5 consecutive floors at least 1 shall be replaced by an electric lock such that the keyed locks do not occur for more than 5 consecutive levels. The electric locks shall comply with all high rise building requirements as defined in section VII C part 1 above.

      (3) Existing Mechanical Combination Locks Existing mechanical combination locks shall be removed and replaced with complying electric locks.

   b. Existing Electric Locks Existing electric locks on the enclosure side may remain in service if they comply with all of the requirements listed in section VII C part 1 above.

3. New and Existing Door Locks Which Prevent Access Out of Exit Enclosures For Non High Rise Buildings Except for doors at the discharge level of the exit enclosure doors out of exit enclosures in non high rise buildings may be secured from the exit enclosure side with any type mechanical or listed electrical lock or strike provided that the stairway doors remained latched at all times. Installation of electric strikes is allowed but not recommended.

D. FIRE RATING AND LATCHING REQUIREMENTS OF DOOR HARDWARE In addition to the requirements for exit access all door into exit enclosures shall also be fire rated assemblies as required by DBC 1009.3. In order to maintain the fire rating of the door assembly all hardware installed on enclosure doors shall meet the following criteria:

1. Latching Requirements The door shall remain latched at all times that the door is in a closed position as required by DBC Section 713.6.3. Electric locks which unlatch the door upon activation of the fire alarm system or loss of power are unacceptable.

2. Fire Rating Requirements All hardware shall be listed for use on fire rated door assemblies. The hardware shall be listed for an hourly rating equal to or greater than the rating of the door assembly. Field or other modifications of rated doors and frames is prohibited unless approved in writing by the agency which labels the door/frame assembly. Doors which are modified to accommodate hardware without the approval of the labeling agency are not approved and shall be replaced with properly labeled doors manufactured to accommodate the hardware.
E. DOOR HARDWARE REQUIREMENTS TO PROVIDE ACCESSIBILITY FOR THE DISABLED

All new hardware on doors to exit enclosures shall be compatible with the requirements of DBC Section 1106.3 and 1106.10. All hardware that was installed after August 1, 1993 shall comply with DBC Section 1106.3 and 1106.10.

VIII. ACCESS CONTROL SYSTEMS FOR ENTRANCE DOORS  EXCEPTION TO DBC SECTION 1004.3

A. OCCUPANCY TYPES

Building and tenant space entrances in Occupancy Groups A, B, E, F, H, M, R.

Division 1 (excluding Hotels) and S are permitted to be equipped with an access control system in accordance with the provisions below subject to the limitation the Occupancy Groups A, B, E, F, H, M, and S shall not be secured from the egress side by the access control system during periods in which the building is open to the general public.

B. MAGNETIC LOCK

An approved Magnetic Lock may be used in conjunction with an approved motion detector under the following conditions:

1. Fire Alarm Interface

Activation of any Automatic Fire Alarm Detection or Extinguishing System to the extent the building is equipped with same will directly unlock the doors and the doors will remain unlocked until the system has been reset.

2. Loss of Power

Loss of building power or loss of power to the Motion Detector or that part of the access control system which locks the door shall directly unlock the door.

3. Exit Motion Detector

An approved exit motion detector may be used to release the lock provided that operation of the motion detector causes the interruption of the power to the lock independent of access control system electronics upon an occupant approaching the door from the inside within a 6-foot radius from the center line of egress side of the door opening. Loss of power to the motion detector shall directly unlock the door. See Figures 2a and 2b. Motion Detector Coverage.
4 Manual Unlocking Switch An approved Manual Unlocking Switch shall be provided as an emergency door release. Activation of the Manual Unlocking Switch shall result in direct interruption of power to the lock independent of the access control system electronics and conform to the following conditions:

a. Be located within 2 feet of either edge of the egress side of the door opening in the same plane as the door

b. Be located between 42 inches and 54 inches above the finished floor

c. Provide for a minimum of a 30 second unlock time

d. Be a minimum of 1 inch in diameter and red in color

e. Include the following signage UNLOCK DOOR (See Figure 3 Unlock Door Signage) The sign shall be in letters not less than 1 high on a contrasting background. Sign background shall also contrast with the Manual Unlocking Switch. The Manual Unlocking Switch shall be integral to the sign.
### IX. ACCESS CONTROL SYSTEM CONTRACTOR LICENSE

The Access Control System Contractor license replaces the E 10 license (Electric Locksmith) The Access Control System contractor may only work on electrical circuits that are powered with less than 48 Volt AC/DC The scope of work under this license is the installations of access control systems telephone entry systems electric door strikes magnetic locking hardware card readers and other access control equipment Installation includes the associated interconnecting wiring for system operation and the modifications of doors and door frames relating to access control equipment

### X. PERMITTING

**A. PURPOSE AND BACKGROUND** The 3B permit allows the installation of access control systems and electric door locks in existing buildings additions and new buildings The 3B permit combines the following

- #1C permit for approved modification to doors and door jambs
- #3A permit for the interconnection with the fire detection system
- #3 permit for the electrical hookup
- #6 permit for the elevator controls
B PERMIT REQUIREMENTS

1 SCOPE OF WORK COVERED BY A #3B PERMIT
   a. Access Control System Contractor The scope of work for the access control system contractor covers the installation of access control equipment and electric locks which includes the alteration of an existing door or jamb to accept the electric lock or the replacement of doors and jambs in an existing opening
   b. Electrical Signal Contractor The electrical signal contractor scope of work covers the fire alarm panel interconnection when a building fire alarm system is available
   c. Electrical Contractor The electrical contractor scope of work covers all electrical work above 48 volt. Also the electrical contractor can perform any work that an Electric Signal Contractor is licensed to perform
   d. General Contractor The general contractor scope of work covers installation of new doors, jambs and doorways
   e. Elevator Contractor The elevator contractor scope of work covers alteration of elevator controls

2. ISSUANCE OF A #3B PERMIT A #3B permit can only be issued to
   a. Electrical Contractor A Colorado licensed electrical contractor The electrical contractor shall have licensed subcontractors listed on the #3B permit for work he is not licensed to perform

   OR

   b. Electrical Signal Contractor A Denver licensed electrical signal contractor The electrical signal contractor shall have licensed subcontractors listed on the #3B permit for work he is not licensed to perform

   OR

   c. Access Control System Contractor A Denver licensed access control system contractor The access control system contractor shall have licensed subcontractors listed on the #3B permit for work they are not licensed to perform

C #3B PERMIT The applicant/contractor is responsible for completely filling in the description of work and the names and license numbers of the other contractors involved The work allowed pursuant to this permit includes the following

1 Door and Door Frame Changes Door and door frame changes include alteration of an existing door or jamb to accept the electric lock or the replacement of doors and jambs in existing openings. New installation of doors is allowed if properly detailed on the drawing submittal and the work is done by a general contractor. The general contractor's name and license number in either case shall be listed on the #3B permit form in the (1C) space

2. Electric Work In Excess of 48 Volts For electrical work in excess of 48 volts the electrical contractor's name and license number shall be shown in the spaces provided on the permit form
3 Fire Alarm Interconnection When the design includes a fire alarm panel interconnection check the block Yes. If there is an interconnect enter the electrical signal contractor name and license number in the 3A spaces.

4 Elevator Controls Form #3B does not include a space for the elevator contractor. If the work involves the elevator controls the elevator contractor's name and license number shall be entered in one of the open spaces on the permit form.

D PLAN SUBMITTAL The plan submittal shall accompany the #3B permit form and include the following:

1 Mechanical Free Egress All doors shall have mechanical free egress except as allowed for in this policy.

2 Floor Plans Two complete sets of floor plans to scale showing the device locations and door swings in plan view(s). Location of all equipment involved shall be shown in plan view(s). All drawings shall be prepared by a licensed access control system contractor (signed with the date and license number) or a Professional Engineer (Signed dated and sealed) as the person responsible for the design.

3 Hardware Schedule Door and hardware schedule of each door involved specifying sizes, types and hardware functions.

4 Narrative A narrative describing in detail the sequence of operations.

5 Penetrations Detail(s) of penetrations of rated assemblies to maintain fire rating (if applicable).

6 One Line Diagram One line diagram of the system design. The diagram shall include the source of power battery backup if provided and interconnection with burglar alarm or fire alarm or elevator control systems if provided. All devices in the design shall be shown on the one line diagram.

7 Specifications Manufacturers specification sheets for all devices that are part of the scope of work. One complete set of spec sheets should be attached to each plan.

8 Modifications to Fire-Rated Doors And Frames Documentation of shop modifications to fire rated door and frame assemblies.

9 Wiring Details Point to point wiring details of all connections including all interconnections to other electrical equipment and/or systems including but not limited to fire alarm and elevators shall be shown.

E LOG IN All #3B permits, plans and specifications will be logged in for approval by the plan review engineers. The applicable fee as required by DCB is to be paid prior to log in. The contractor will be given a log number when the submittal is acceptable for log in.

F PLAN REVIEW The submittal shall be logged in by the applicant and reviewed by BID.
G. INSPECTION The installation's rough in and final inspection shall be inspected and approved by the BID's, Public Safety Electrical and/or Elevator inspectors. The contractor shall call Public Safety for inspections covering low voltage rough in doors after modifications. The contractor shall call for electrical inspections for all high voltage electrical work, fire alarm interconnections and elevator control interconnections when applicable. The installation shall be tested and approved by Public Safety Electrical and/or Elevator Inspectors when applicable. The Public Safety inspector has the responsibility to finalize the permit when all required inspections are approved.

XI ELECTRIC LOCKING SYSTEM TESTING A record shall be maintained by a representative from each building to verify that locking systems without mechanical free egress or electrical locking systems that are interconnected to the building fire alarm have been tested at intervals not to exceed 6 months. Testing shall be performed by an individual or company approved by the BID and records shall be kept at an approved location within the building.

XII ACCESS CONTROL SYSTEMS GLOSSARY

A. ACCESS CONTROL SYSTEM: A group of devices including control unit(s) electrical hardware wiring and raceways electrically interconnected to control and regulate ingress and egress.

B. ACCESS CONTROL SYSTEM CONTRACTOR: A contractor licensed to install add to, alter or repair control units electric hardware wiring and raceways electrically interconnected to control and regulate ingress and egress. Voltages shall not exceed 48 volts or the system shall be power limited as defined by the NEC. Complete conduit or raceway systems shall not be installed by the holder of this license. All work shall be performed under the supervision of the holder of an Access Control System Supervisors Certificate.

C. ACCESS CONTROL SYSTEM UNIT: The component(s) of an access control system that provide system logic and control (e.g., reader electronic panels, stand-alone keypads, telephone entry controllers, burglar alarm system units with access control capability, intercom controllers and door entry buzzers or buttons).

D. APPROVED: Approved as to materials and types of construction as determined by the building official following investigation and tests conducted by him or by reason of accepted principles or tests by recognized authorities technical or scientific organizations.

E. BID: Building Inspection Division (the Denver Building Department).

F. CABINET: An enclosure with a hinged or screw lid used primarily to provide a degree of protection against incidental contact.

G. DBC: Denver Building Code. The Uniform Codes as currently adopted including the City and County of Denver amendments.


I. EGRESS: The path or opening by which one goes out exit.
J ELECTRIC BOLT: Deadbolt type of lock that is electrically operated and is dependent upon power to either project or withdraw the bolt. Due to binding problems this device is not approved by the BID.

K ELECTRIC HARDWARE: Refers to any door hardware or accessory product that is used in a circuit as a conductor load power supply or switch.

L ELECTRIC STRIKE: Lock strike that is modified to release latchbolt when power is applied to unit.

M ELECTRIC LOCK: Any locking or latching door hardware which relies on electrical energy for its operation.

N ELECTRICAL CONTRACTOR: Colorado state licensed electrical contractor.

O ELECTRICAL SIGNAL CONTRACTOR: A contractor licensed to install add to alter or repair electrical wiring and equipment for fire alarm fire detection emergency voice communication systems electrical signalling and control wiring. Voltages shall not exceed 48 volts or the system shall be power limited as defined by the NEC. Complete conduit or raceway systems shall not be installed by the holder of this license. All work shall be performed under the supervision of the holder of an Electrical Signal Supervisor Certificate.

P ELECTRICALLY MODIFIED LOCKSET: A standard builder's hardware lockset that has been modified to operate electrically without compromising mechanical free egress.

Q ELECTRICALLY OPERATED EXIT DEVICE: An exit device that has been modified to operate electrically without compromising mechanical free egress.

R EXIT DEVICE: A door latching device designed to grant immediate exiting by pressing on a cross bar.

S FAIL-SAFE LOCK: Lock which unlocks automatically upon loss of power.

T FAIL-secure LOCK: Lock that remains locked during loss of power.

U FIRE ASSEMBLY: An assembly of a fire doors fire windows or fire damper including all required hardware anchorage frames and sills.

V FIRE DETECTION SYSTEM: Fire detection system is a building that is fully smoke detected or smoke detection where required by the DBC Section 1807 Smoke Control in High Rise Buildings.

W FPB: The Denver Fire Department (Fire Prevention Bureau).

X LABEL: Fire doors shall have a label or other identification showing the fire protection rating. Such label shall be approved and shall be permanently affixed. The label shall be applied at the factory where fabrication and assembly are performed. Inspection shall be made by an approved inspection agency during fabrication and assembly.

Y LISTED and LISTING: Terms referring to equipment and materials which are shown in a list published by an approved testing agency, qualified and equipped for experimental testing and maintaining an adequate periodic inspection of current productions and whose listing states that the equipment complies with recognized safety standards.
Z  MAGNETIC LOCK: Lock that relies on magnetic power to mate the door plate to the lock housing.

AA  MAGNETIC LOCK RELEASE: A switch to release a magnetic lock which is mounted in a BID approved exit device.

AB  MANUAL UNLOCKING SWITCH: A permanently wired manually operated raised push-type switch with integrated time delay which immediately and directly unlocks a door.

AC  MECHANICAL FREE EGRESS: The provision for a continuous and unobstructed path to the exterior of the building. Doors crossing this path shall be mechanically operable from the inside (egress side) with 1 motion without key card or any special knowledge or effort.

AD  MOTION DETECTOR: A device which is listed by an approved testing laboratory as a request to exit sensor under UL294. Access Control System Unit (i.e. UL ALVY) or appropriate category.

AE  NEC National Electric Code

AF  OPERATING SYSTEM: The total circuit including all loads, conductors, switches and power supplies.

AG  POWER TRANSFER: Hinge pivot or door cord that provides that routing for the wire to pass from the frame into the door.

AH  SHEAR TYPE MAGNETIC LOCK: A magnetic lock that relies on a shear pin post(s) or other similar projections to prevent unlocking. Shear type magnetic locks shall be listed to be nonbinding.

XIII  ACCESS CONTROL SAMPLE DRAWING SUBMITTAL PACKAGE

A. DRAWING AC1 TITLE SHEET

B. DRAWING AC2 SEQUENCE OF OPERATION

C. DRAWING AC3 FLOOR PLAN AND DOOR SCHEDULE

D. DRAWING AC4 POINT TO POINT DIAGRAM

E. DRAWING AC5 ONE LINE DIAGRAM

F. DRAWING AC6 PLAN VIEW OF DOORS

STANDARDS

ACCESS CONTROL SYSTEM
FOR
XYZ CORPORATION
1234 5TH ST
DENVER CO 80200
OCCUPANCY B2

SYSTEM DESIGNED BY:
ACME CONTROL SYSTEMS
678 MAIN ST.
DENVER, CO 80200
303 123-4567

ACCESS CONTROL CONTRACTOR LICENSE #

BY: ________________________________
PRINTED NAME

____________________________ DATE
SIGNATURE

INCLUDING SHEETS AC1 THROUGH AC6

PROJECT SCOPE

DOOR 1
ADD MAGNETIC LOCK TO MAIN ENTRY.
ADD CARD READER TO MAIN ENTRY.
REPLACE THE EXIT HARDWARE ON MAIN ENTRY.
ADD EXIT SENSOR TO MAIN ENTRY.
ADD EXIT BUTTON TO MAIN ENTRY.

DOOR 101
REPLACE EXISTING HARDWARE WITH ELECTRIC
HARDWARE ON OFFICE DOOR.
ADD CARD READER TO OFFICE DOOR.
CONTROL EQUIPMENT SHALL BE LOCATED
INSIDE THE ELECTRICAL ROOM.

ACME

ACME CONTROL SYSTEMS
678 MAIN ST.
DENVER, CO 80200
303 123-4567

TITLE: XYZ CORPORATION
ACCESS CONTROL SYSTEM
ORDER NO: 1234
TEL: 1234 567-8900
SCALE

DATE: AC1

AC6
SEQUENCE OF OPERATION

MAIN ENTRY DOOR 1 INGRESS (MAGNETIC LOCK)

Door 1 is located at the east entry of the facility and is used by the general public. Door 1 shall be electronically locked after hours. After hours door 1 may be accessed by valid card read.

Passing a card validated for entry through the card reader will cause the magnetic lock to release the door allowing it to be opened. A validated card will cause relay K1 to momentarily energize which will deactivate the magnetic locks. The positive side of the magnetic locks power is wired in series with the normally closed contacts of relay K1.

MAIN ENTRY DOOR 1 EGRESS

When energized (locked), the magnetic lock will be de-energized by the exit sensor upon approaching the door. In the event of a malfunction, the magnetic lock may be released with the "DOOR UNLOCK" button provided in the event of a Fire Alarm or loss of power the magnetic lock will be de-energized. Free egress shall be maintained at all times.

OFFICE DOOR 101 INGRESS (ELECTRIC HARDWARE)

Door 101 is an entry into the electrical room. Door 101 shall be locked at all times, requiring valid access control card or building master key to enter.

Passing a card validated for entry through the card reader will cause the electric lockset to release allowing the lever handle to be turned. A validated card read will cause relay K2 to energize which will release the electric lockset. The electric lockset will be wired in series with the normally open contacts of relay K2. When K2 is energized, the contacts will close, which will apply power to the lockset, releasing it momentarily. Door modifications for installation of the electric lockset shall be approved by testing agency.

OFFICE DOOR 101 EGRESS

Door 101 shall be equipped with an interoom function electric lockset. When someone exits Door 2, the handle is turned and the spring latch is extracted. Free egress shall be maintained at all times.
OUTDOOR STAGES AND PLATFORMS

Reference: UBC Section 153 D B C

1 Stage or platforms that are open to the sky and intended for entertainers only do not need a building permit

2 Stages or platforms that involve any of the following must be erected by a licensed Building Specialty Contractor with a building permit
   A Reviewing stands for dignitaries or the general public
   B Stages or platforms that have an overhead roof structure that may or may not include lighting equipment
   C Stages or platforms that are equipped with side or back towers for lights speakers or promotional material

3 The design of stages or platforms that require a building permit must be certified by 1 of the following methods
   A Erection plans and structural analysis including lateral stability certified by a licensed Colorado P.E. must be submitted to the Building Department at least 2 weeks before erection is scheduled to begin. A building permit will not be issued until plans have been reviewed and approved by the Building Department

   OR

   B The Building Specialty Contractor must retain the services of a licensed Colorado structural engineer to review the planned erection procedure inspect the structure erection during the process and certify the structure to the Building Inspection Division. Engineer’s review must address both vertical loading and lateral stability analysis to resist wind forces

4 Design Criteria

   Stage Floor Loading
   A If no public access 75 pounds per sq. ft. minimum or equipment load whichever is greatest
   B With public access 100 pounds per sq. ft. minimum

   Bleachers
   Live load shall be in accord with Chapter 16 UBC/DBC

The following sections of the building code are applicable: Sections 303 2 1 509 1806 9 1006 1021 and Chapter 16 (Structural)

END OF DOCUMENT
Temporary Building Permit  A permit for a temporary building may be issued by the Department if the applicant can substantiate that a definite need for the temporary building exists. The permit shall not exceed 36 months duration. However, after the expiration date of the permit if the applicant can demonstrate that there have been no complaints or hazards as a result of this temporary occupancy, the department may issue a renewal of the permit. The request for a permit shall be in writing detailing the reason for the request. The basis for approval shall be on the need, extent of time, and then type of unit to be installed. EXCEPTION: Temporary building for use by licensed contractors at the construction or demolition sites shall not require a permit.

The following items shall be provided to the Building Inspection Division:

1. The applicant must substantiate by a letter the need for a temporary building permit and also indicate the following:
   A. The specified period of time for which the temporary building will be needed and the date that it will be removed from the property.
   B. Toilet facilities must be provided. If toilet facilities are in an adjacent building, then travel distance (maximum 300 feet) from the temporary building to the toilet facilities must be given. Portable toilets shall be specifically approved by the Building Inspection Division and may only be approved for use during temperate weather.
   C. Specify the licensed contractor that will install or construct the temporary building.

2. A plot plan of the site indicating:
   A. Location of the temporary building with dimensions to adjacent building/structures and property lines.
   B. Location of Utilities:
      1. Electrical service: A one-line diagram shall be included to show sizes and ratings of service equipment.
      2. Water and sanitary sewer connection if toilets are provided.

3. Approval from other city agencies e.g., Zoning City Engineers Traffic Engineers Wastewater and Fire Department is required.
   A. Prefabricated Units:
      1. Manufacturer's certification that the prefab unit complies with Denver Building Code Section 1704. Two sets of plans shall be submitted showing the structural, mechanical, and electrical details.
(2) State Division of Housing certification on new prefabricated units is required
   a. Provide a copy of State approved plans for buildings to be used for the first time
   b. Secondary uses of buildings shall be approved for use by the Building Inspection Division or the State Department of Housing
   c. Under no circumstances is a prefabricated unit to be used for any other purpose than for which it was originally approved
B Site built units shall comply with the Denver Building Code
C Foundations shall be provided for stability. Details of the foundation are to be submitted as part of the required plans
   (1) Mud sills are acceptable
   (2) Tie downs are required (Provide number, type, size and capacity of tie downs)
D Exit stairs shall conform to Chapters 10 and 16
E Skirts around the bottom of temporary units shall be installed to the ground. Construction may be of wood
F Provisions for the handicapped shall be provided as per Chapter 11 of the Denver Building Code
G Units connected together (Ganged Units) shall comply with the provisions of the Denver Building Code
H Temporary buildings used for the following occupancies shall comply with the Denver Building Code and be logged in for review: A, E, H and I
4 A building permit fee for the cost of the temporary building shall be established by Table 1 C of the Denver Building Code. The valuation of work shall be based on the duration of the rental and the cost of the installation of the building.
A The renewal fee is the same as the original fee

END OF DOCUMENT
Subject: MOBILE HOMES IN TRAILER PARKS

Approved: 

R Doug Sutton, P.E., Director, Building Inspection

Number: 32 B071 Effective Date May 9 1995 Page 1 of 1

Reference UBC Section 150 1 DBC

In as much as the building code does not address the above (except for utilities) this will reconfirm our long standing policy of not requiring permits (except utilities) for work on mobile homes in trailer parks i.e. carports, decks, stairs, etc.
INTERPRETATIONS
DENVER BUILDING CODE

INTERPRETATIONS

1995

BUILDING INSPECTION DIVISION
CITY AND COUNTY OF DENVER

INTERPRETATIONS — The Director, by the authority of Denver Building Code U.B.C Section 103.2 shall render interpretations to clarify the application of the Building Code provisions.
DENVER BUILDING CODE INTERPRETATIONS

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Our Division has always been faced with a great deal of uncertainty on how to deal with code deficiencies in existing buildings when a change of occupancy is not involved. The uncertainty comes about because of the many sections in the code that deal with this subject and each section seems to come from a different perspective.

Section 105.1 says additions, alterations, or repairs may be made to any building or structure without requiring the existing building to comply with all the requirements of the code.

Section 105.4 says existing occupancies can continue if such use was legal at the time of the adoption of our present code.

Sections 106, 107, and 108 cover all the things that can be identified as an unsafe building or unsafe utility and give our division the authority to require abatement.

Our Division has always tried to apply Sections 106, 107, and 108 with restraint and use it only to address situations that we view as extremely hazardous. To do otherwise and attempt to identify every code deficiency that we see in an existing building, either in the plan review, prices or during field inspections, would result in an unending stream of correction notices. We have to use good judgment and use 106, 107, and 108 only to address conditions that represent a serious hazard.

Therefore, in an attempt to establish some consistency in how our division handles existing conditions, these guidelines shall be used:

1. If an inspector or plan reviewer believes an existing situation in an existing building is a serious hazard and should be corrected, he or she must first check with his or her supervisor (Chief Inspector, Chief Engineer, Permit Section Supervisor). The supervisor must agree that a serious hazard exists and the supervisor must decide whether to pursue abatement.

2. If a decision is made to pursue abatement, the correction notice or order must clearly identify the fact that we are identifying this existing condition as an unsafe building or an unsafe utility under Section 106 or 107. We must make it very clear that we are not ordering correction of this existing condition because of the new work that is being done in the building.

END OF DOCUMENT
General Information:
There has been some confusion as to what class of license is required for installing pneumatic control systems

Recommendations:
License Class 123 1 25 Steam & Hot Water Contractor allows the installation of Process Piping Air and Controls therefore the installation of pneumatic control systems shall be installed by fitters employed by a Denver Licensed Steam & Hot Water Contractor The work shall be covered by a #7 permit Air control tubing that is a part of the HVAC system may be installed by the HVAC contractor under the #11 permit

END OF DOCUMENT
The Department has frequently been asked to clarify how the City applies this section of
the code which allows an existing building to be converted to day care (20 or less) with
a limited specific list of necessary code upgrades

1 **Change of Occupancy** This process does involve a change of occupancy and a
new Certificate of Occupancy and a new Certificate of Occupancy will be required.
Code upgrades are nonetheless limited to those specified in Section 305 2 3 1. The
Certificate of Occupancy should note that issuance was based on limited code compli-
ance under Section 305 2 3 1 Denver Building Code.

2 **Exiting** Section 305 2 3 1 4 requires at least 2 exits from the day care level. These
exits must be code complying exits (minimum clear width of 32 inches for doors 36 for
corridors, proper stair rise and run, proper guardrails etc.)

3 **Kitchen** Section 305 2 3 1 does not require that an existing kitchen be upgraded.
If the existing kitchen does not meet code requirements for a commercial kitchen, Sec-
tion 305 2 3 1 does not give us the authority to require upgrading. If, however, a new
kitchen is being created as part of this conversion, the Section 305 2 3 1 2 which states
Any building additions or new facilities installed or erected as part of this conversion
shall comply with present Building Code provisions, would require that any new gas or
electric cooktop surface installed in the newly created kitchen be protected with a Type I
hood in accord with UMC Section 507. If an existing kitchen is being used and an old
stove is being replaced with an equal size new stove, it should be treated as a replace-
ment only (Type I hood not required)

END OF DOCUMENT
Section 310.4 requires basements in dwelling units and every sleeping room below the fourth story to have at least 1 operable emergency escape or rescue window or door that opens directly into a public street, public alley, yard or exit court.

In row type attached multiple single dwelling unit projects (R2 occupancies) required escape/egress windows typically open up to a small back patio that is closed in with privacy fences and a rear garage structure. In those circumstances the following criteria will be applied to comply with the intent of the above section. Each patio must have a direct open to-the-sky passage to the public way or the patio will function as an acceptable area of refuge if the garage wall is at least 20 feet from the dwelling wall the patio is open to the sky and all privacy fencing is equipped with a see-through gate which provides a continuous line of sight through the entire row of patios to assist the Fire Department in responding to a fire emergency. Gates may be locked with a lock that is acceptable to the Fire Department. Gates may not be covered to restrict line of sight and this limitation must be written into the Homeowner’s Association agreement or bylaws and filed with the Department.
General Information:

Section 420 Emergency Power Equipment Room Enclosure  Emergency power equipment rooms shall be provided with a 1 hour fire resistive occupancy separation  Doors shall be 1 hour rated with self closing devices  See the Electrical Code

Recommendation:

The operation and hazards of a diesel fueled engine for the Emergency Generator is essentially the same as the operation of the engines for the vehicles within a parking structure  Therefore, as per Denver Building Code UBC Section 301 Emergency Generator Equipment shall be considered compatible with a parking garage use and shall not require an occupancy separation and shall be enclosed as follows

A. Open Parking Structure  The enclosure may be approved fence or room of noncombustible construction with the required provisions for combustion air and exhaust

B. Enclosed Parking Structure  The enclosure shall be a room of noncombustible construction with the required provisions for all air and exhaust directly to the outside  The storage of the Emergency Generator Engine Fuel shall be as required by the Denver Fire Code
UBC Section 605.6.5 states that floors in Type IV heavy timber construction shall be without concealed spaces. Design of new buildings should comply with this code restriction. When we deal with renovation of older buildings however, this is sometimes difficult to achieve. Consequently, when renovating older buildings of Type IV heavy timber construction, we will allow raised floors which might create concealed spaces provided the following conditions are met:

1. All wood framing in these concealed spaces shall be of fire retardant material.

2. All concealed spaces shall be entirely filled with noncombustible insulation. (Ref NFPA 13 4.5.1.1)

Concealed spaces created by drop ceilings in Type IV heavy timber renovations could also be accepted if the building is fully sprinklered, the area above the ceiling is protected with automatic sprinklers and the drop ceiling area is limited.
Background: The City & County of Denver submitted a code change in the 1995 Code Development cycle which eliminates a requirement from Section 801 where there are no specific standards or even approved tests available that compare the surface during characteristics of paper with a thickness of less than 1/28 inch and as such this provision is unenforceable. This code change was approved at the 1995 ICBO Annual Business Meeting and will be in the 1995 UBC Supplement and included in the 1997 Edition of the UBC.

Section 801 is revised to read as follows:

801.1 Scope Interior wall and ceiling finish shall mean interior wainscoting, paneling or the finish applied structurally or for decoration, acoustical correction, surface insulation, sanitation or similar purposes. Requirements for finishes in this chapter shall not apply to trim defined as picture molds, chair rails, baseboards and handrails, or to doors and windows or their frames or to materials which are less than 1/28 inch (0.9 mm) in thickness applied directly to the surface of walls or ceilings.

END OF DOCUMENT
1 HANDRAIL STARTING NEWELS AND VOLUTES:

Background Handrails have terminated in starting newels or volutes on the first tread in single family residences for years without a record of accidents or lawsuits for an unsafe condition. The application of the code as presently stated prohibits this condition which creates a conflict with historical practice. In the 1995 ICBO Code Development cycle the City & County of Denver submitted a proposal which would eliminate that conflict and decrease the enforcement code in eliminating the time and effort spent to enforce a code provision which is overly restrictive.

This proposal was supported through the code proposal review process and was approved as a Uniform Building Code code change at the 1995 ICBO Annual Business Meeting. This code change will be part of the U B C 1995 Supplement and will be included in the 1997 Edition of the U B C.

During this interim the following exception will be allowed to the requirement that handrails shall be continuous the full length of stairs.

   EXCEPTION: Handrails may have starting of volute newels within the first tread on stairways in Group R, Division Occupancies and in Individual dwelling units of Group R, Division 1 Occupancies.

2 HANDRAILS EQUIVALENT GRIPPING SURFACE

Discussion Handrails are intended to provide support or assistance when a person traverses up or down a flight of stairs. The shape of the handrail should be one that can be grasped firmly with a comfortable grip and supported to provide a feeling of stability. The profile of the gripping surface of the handrail should match the hand grip. The handrail should be supported so that a hand can slide along the rail without encountering any obstructions.

The following definition of handrail handgrip portion has been developed with the assistance of representatives for the handrail industry.

The handgrip portion of handrails shall have a gripping surface of not less than the circumference of a 1 1/4 inch circle (approximately 4 0 inches) nor more than the circumference of a 2 inch circle (approximately 6 25 inches) or equivalent surface with a minimum of 1 3/4 inch and maximum 3 inch horizontal cross sectional dimension. The dimension of the opposing grip between the thumb and forefinger shall be a minimum of 3/4 inch less than the widest cross sectional dimension of the gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners.
**Recommendation:** The provisions of the definition for handgrip portion of handrails has been used on shaped handrails for years by the handrail industry and meet the requirements of a graspable surface. Those provisions are (1) dimension of the gripping surface (min 4.0' max 6.25'), (2) cross sectional dimension (min 1¼' max 3"), (3) opposing grip dimension (min ¾' less than widest cross sectional dimension) and (4) smooth surfaces. Standard handrail shapes that meet those provisions are shown on the attached pages.

It shall be the interpretation of the Department to accept the handrail shapes shown and any other that would meet the provisions of the definition of handgrip portion of a handrail.
### Handrails Starting Newels and Volutes and Equivalent Gripping Surface

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<th>Cross Sectional Dim.</th>
<th>Opposing Grip Dim.</th>
<th>Smooth Surface</th>
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<td>5 7/8 Yes</td>
<td>2 7/8 Yes</td>
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<td>1 1/2</td>
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HEAVY LINES INDICATE "EQUIVALENT GRIPPING SURFACE"

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HEAVY LINES INDICATE "EQUIVALENT GRIPPING SURFACE"

- **Accept:**
  - Gripping Surface: 5 Y
  - Cross Sectional Dim.: 1 1/4 Y
  - Opposing Grip Dim.: 1/2 Y
  - Smooth Surface: N

- **NOT APPROVED:**
  - Gripping Surface: 6 7/8 Y
  - Cross Sectional Dim.: 2 9/16 Y
  - Opposing Grip Dim.: 1 3/4 Y
  - Smooth Surface: Y

- **Acceptable:**
  - Gripping Surface: 4 5/8 Y
  - Cross Sectional Dim.: 1 1/2 Y
  - Opposing Grip Dim.: 1 1/2 Y
  - Smooth Surface: Y

- **Acceptable:**
  - Gripping Surface: 4 3/4 Y
  - Cross Sectional Dim.: 2 5/8 Y
  - Opposing Grip Dim.: 1 7/8 Y
  - Smooth Surface: Y

- **Acceptable:**
  - Gripping Surface: 4 3/8 Y
  - Cross Sectional Dim.: 2 3/4 Y
  - Opposing Grip Dim.: 2 Y
  - Smooth Surface: Y

END OF DOCUMENT
Subject: STAIRWAY TO THE ROOF SURFACE ON ALL BUILDINGS FOUR OR MORE STORIES IN HEIGHT WITH ROOF SLOPES LESS THAN 4/12

Approved:

R Doug Sutton P E Director Building Inspection

Building Code Section UBC 1006 14 Effective Date April 16 1991 Page 1 of 1

General Information:

The Handbook to the Uniform Code Section 1006 14 clarifies that the one stairway required to extend to the roof must comply with all code requirements including headroom.

Recommendation:

To satisfy all of the code requirements of a stairway it will be necessary to either build an enclosure above the roof to provide the necessary headroom and landing size or construct an interior stairway well with code complying stairway proper landing size and provision for drainage In either case a vertically hinged door 3 0 x 6 8 minimum must be provided

END OF DOCUMENT
This section prohibits penetrations into stairway enclosures except for ductwork and equipment necessary for independent stair pressurization, sprinkler piping, standpipes and electrical conduit serving the stairway and terminating in a listed box not exceeding 16 square inches in area.

General Information:

UBC Section 904.5.3 requires that standpipe outlets be located within the stairway. UBC Section 1009.3 recognizes this requirement and concludes that penetrations of the stairway enclosure by sprinkler piping or standpipes is acceptable provided that the penetrations are properly sealed by an approved sealing method. Denver Amendment Section 904.5.3 requires that standpipe outlets be located outside of the stairway enclosure but UBC Section 1009.3 which has not been amended by Denver is still valid and concludes that properly sealed sprinkler and standpipe piping penetrations do not compromise the integrity of the stairway.

Recommendation:

Standpipe and/or sprinkler risers may be located within a stairway enclosure without a fire rated separation between the standpipe and the interior of the stairway. Sprinkler branch piping and hose outlet piping to serve the floor plate may penetrate the stairway enclosure but must be properly sealed with an approved sealing method. Penetrations will be limited to 1 sprinkler feed main and 1 hose outlet pipe per floor. Control valves, drain valves, inspector test valves and flow switches will be allowed within the stairway enclosure. Piping and valves within a stairway may not encroach on required exit widths or areas of evacuation assistance.

Reference
ICBO telephone inquiry (August 5, 1981)
Rolf Jensen letter (Mr. Jeffrey Maddox)
September 10, 1991
Scope:

The following design graphics are the graphic illustrations developed for the ANSI 117.1 1980 American National Standard for Buildings and Facilities Providing Accessibility and Usability for Physically Handicapped People with revisions and additions for clarity and have been used in the City and County of Denver since 1982. They are provided as supplemental graphics to the design information contained within the provisions of the amended UBC Chapter 11 Accessibility Requirements for Persons with Disabilities. The design criteria within Chapter 11 shall control. In those cases where the information in Chapter 11 is not complete or unclear, then the information within the supplemental graphics shall govern. In any case, the design graphics may be used to illustrate the intent of the code to provide accessibility to buildings for persons with disabilities.
TABLE 11 A  
FIXTURES REQUIRED TO BE ACCESSIBLE  
TO THE DISABLED PERSON  

<table>
<thead>
<tr>
<th>WATER CLOSETS</th>
<th>MALE URINALS</th>
<th>LAVATORIES</th>
<th>DRINKING FOUNTAINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1 per 1 t 15 WC p ovided</td>
<td>1 per 1 t 2 WC p ovided</td>
<td>1 t 1 tory p ovided</td>
<td>50% of those p ovided t least p e floor</td>
</tr>
<tr>
<td>1 per ry 10 WC thereasfe</td>
<td>1 per every 10 urin thereasfe</td>
<td>1 per ry 6 l tories th roaster</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 11 B  
GRAPHIC CONVENTIONS  
G phi C venti n  

<table>
<thead>
<tr>
<th>Con ti</th>
<th>D scripti n</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 700</td>
<td>Typical dim illi h wi gUS ustom ry its (i i hes) bo th li d SI nits (i millin ter ) bel w</td>
</tr>
<tr>
<td>9 200</td>
<td>Dim nsi for h rt dista ces i dicated exte ded lin</td>
</tr>
<tr>
<td>9 30 700</td>
<td>Dim i li h wing t er te dim nsi equi ed</td>
</tr>
</tbody>
</table>

| max | Maximi m |
| mi | Mi m |
| B d ry f lea floo ea |
| C terli |

TABLE 11 C  
ALLOWABLE RAMP DIMENSIONS  
Allow ble Ramp Dim n i on for Constr uction in  
Exi ting Sites, Building and P iliti  

<table>
<thead>
<tr>
<th>Sl pe13</th>
<th>Maximum Ri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steeper th 1 10 1 t teeper th 1 8</td>
<td>3 i 750mm</td>
</tr>
<tr>
<td>Steeper th 1 12 1 t ot teeper th 1 10</td>
<td>6 i 150mm</td>
</tr>
</tbody>
</table>

1'A 1 pe teeper th 1 8 h ll ot be pe mitted
TABLE 11 D
FIGURES

(Note  All numbers in parentheses refer to the ANSI A117 1 1980 Standard )

Fig 1
Minimum Clear Width for Single Wheelchair

Fig 2
Minimum Clear Width for Two Wheelchairs

(a)
60 in (1525 mm) Diameter Space

Fig (3)
Wheelchair Turning Space

(b)
T Shaped Space for 180° Turns
TABLE 11 D (Continued)

Fig (4)
Minimum Clear Floor Space for Wheelchairs

(a) Clear Floor Space

(b) Forward Approach

(c) Parallel Approach

(d) Clear Floor Space in Alcoves

NOTE x < 24 in (610 mm)

NOTE If x > 24 in (610 mm), the additional man using clear area of 6 in (150 mm) shall be provided as shown.

NOTE If x > 15 in (380 mm), the additional clearance of 12 in (305 mm) shall be provided as shown.

(e) Additional Maneuvering Clearances for Alcoves
TABLE 11 D (Continued)

(a) High Forward Reach Limit

NOTE: \( x \) shall be <25 in \((635 \text{ mm})\); \( y \) shall be >2 in \((510 \text{ mm})\), then \( y \) shall be 48 in \((1220 \text{ mm})\) maximum. When \( x \) is 20 to 25 in \((510 \text{ to } 635 \text{ mm})\), then \( y \) shall be 44 in \((1120 \text{ mm})\) maximum.

(b) Maximum Forward Reach over an Obstruction

Fig (5)

Forward Reach
TABLE 11 D (Continued)

(a) Clear Floor Space
    Parallel Approach

(b) High and Low
    Side Reach Limits

(c) Maximum Side Reach
    over Obstruction
    Fig (6)
    Side Reach
TABLE 11 D (Continued)

(a) 90° Turn

NOTE: Dimensions shown apply when \( x < 48 \text{ in} (1220 \text{ mm}) \)

(b) Turns around an Obstruction

Fig (7)
Width of Accessible Route
TABLE 11 D (Continued)

(a) Walking Parallel to a Wall

(b) Walking Perpendicular to a Wall

Fig (8) Protruding Objects
TABLE 11 D (Continued)

<table>
<thead>
<tr>
<th>Object</th>
<th>M</th>
<th>t d</th>
<th>P t</th>
<th>Pyl</th>
</tr>
</thead>
</table>

---

**Fig (8)**

Pr trudi g Objects (Co ti d)
TABLE 11 D (Continued)

Example of Edge Protection and Handrail Extensions
TABLE 11 D (Continued)

Fig 10 (18)
Usable Tread Width and Examples of Acceptable Nosings

Fig 11 (19)
Stair Handrails
TABLE 11 D (Continued)

Fig 11 (19)
Stair Handrails (continued)

NOTE The door must be equipped with an automatic closing device with an emergency release mechanism. The doors must swing inward. The doors must be fire-rated. The doors must be equipped with automatic closing devices with an emergency release mechanism.
TABLE 11 D (Continued)

<table>
<thead>
<tr>
<th>T</th>
<th>0</th>
<th>1</th>
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<td>45</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
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</table>

**Fig 13 (21)**
Graph of Timing Equation

**NOTE:** Elevator cars with a minimum width less than that above but no less than 54 in (1370 mm) are allowed for elevators with capacities of less than 2000 lb. A center opening door application may necessitate increasing the 68 in (1730 mm) dimension

**Fig 14 (22)**
Minimum Dimensions of Elevator Cars
TABLE 11 D (Continued)

(a) Panel Detail

(b) Control Height

(c) Alternate Locations of Panel with Center Opening Door

(d) Alternate Locations of Panel with Side Opening Door

Fig 15 (23)
Car Controls
TABLE 11 D (Continued)

(a) Detail
(b) Hinged Door
(c) Sliding Door
(d) Folding Door
(e) Maximum Doorway Depth
TABLE 11 D (Continued)

(a) Front Approaches - Swinging Doors

NOTE: 12 in (305 mm) if d has b th

(b) Hinge Side Approaches - Swinging Doors

NOTE: 36 in (915 mm) min if y 60 in (1525 mm); 42 in (1065 mm) if m if y

(c) Latch Side Approaches - Swinging Doors

NOTE: All d i will imply with the f f t pp h

Fig 17 (25)
Maneuvering Clearances at Doors
TABLE 11 D (Continued)

(d) Front Approach – Sliding Doors

(e) Slide Side Approach – Sliding Doors

(f) Latch Side Approach – Sliding Doors

NOTE: All dimensions apply with the front approach.

Fig 17 (25)
Maneuvering Clearances at Doors (Continued)

Fig 18 (26)
Two Hinged Doors in Series
TABLE 11 D (Continued)

(a) Spout Height and Knee Clearance

(b) Clear Floor Space

(c) Free Standing Fountain or Cooler

(d) Built In Fountain or Cooler

Fig 19 (27)
Drinking Fountains and Water Coolers
TABLE 11 D (Continued)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tbody>
<tr>
<td>36 min</td>
<td>915</td>
</tr>
<tr>
<td>18 min</td>
<td>455</td>
</tr>
<tr>
<td>48 min</td>
<td>1220</td>
</tr>
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<td>56 min</td>
<td>1420</td>
</tr>
<tr>
<td>66 min</td>
<td>1975</td>
</tr>
<tr>
<td>60 min</td>
<td>1525</td>
</tr>
<tr>
<td>56 min</td>
<td>1410</td>
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</table>

Fig 20 (28)
Clear Floor Space at Water Closets

(a) Back Wall
(b) Side Wall

Grab Bars at Water Closets
TABLE 11 D (Continued)

(a) Standard Stall

(b) Alternative Stall
TABLE 11 D (Continued)

3 Sizes shown
52 X 84
610 X 68
80 X 56
Other sizes may be
within this range

(f)
Door Swing Out

Smallest Acceptable Toilet Room Sizes
Alternate Design
Fig. 22 (30)
Toilet Stalls (Continued)
TABLE 11 D (Continued)

(c) Rear Wall of Standard Stall

(d) Side Walls

Fig 22 (30)
Toilet Stalls (Continued)
TABLE 11 D (Continued)

Fig 23 (31)
Lavatory Clearances

Fig 24 (32)
Clear Floor Space at Lavatories
TABLE 11 D (Continued)

(a) With Seat in Tub

(b) With Seat at Head of Tub

Symbol Key:
- Shower controls
- Shower head
- Drain

Fig 25 (33)
Clear Floor Space at Bathtubs
TABLE 11 D (Continued)

(a) With Seat in Tub

(b) With Seat at Head of Tub

Fig 26 (34)
Grab Bars at Bathtubs
TABLE 11 D (Continued)

(a) 36 in by 36-in
(915 mm by 915 mm) Stall

(b) 30-in by 60 in
(760-mm by 1525 mm) Stall

Fig 27 (35)
Shower Size and Clearances

Fig 28 (36)
Shower Seat Design
TABLE 11 D (Continued)

(a) 36-in by 36-in (915 mm by 915 mm) Stall

(b) 30-in by 60-in (760-mm by 1525 mm) Stall

Fig 29 (37)
Grab Bars at Shower Stalls
TABLE 11 D (Continued)

Fig 30 (38)
Storage Shelves and Closets

Fig 31 (39)
Size and Spacing of Handrails and Grab Bars
TABLE 11 D (Continued)

(c)

(d)

Fig 31 (39)

Size and Spacing of Handrails and Grab Bars (Continued)
TABLE 11 D (Continued)

(a) Proportions

(b) Display Conditions

Fig 32 (43)
International Symbol of Accessibility
TABLE 11 D (Continued)

Minumum Clearances for Seating and Tables

Fig. 33 (45)
TABLE 11 D (Continued)

(a) Forward or Rear Access

(b) Side Access

Fig 34 (46)
Space Requirements for Wheelchair Seating Spaces in Series
TABLE 11 D (Continued)

(a)
Clear Floor Space for Adaptable Bathrooms

(b)
Reinforced Areas for Installation of Grab Bars

NOTE Th h h d i fo d t i g bb

Fig 35 (47)
Water Closets in Adaptable Bathrooms
TABLE 11 D (Continued)

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Description</th>
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<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td>With Seat in Tub</td>
</tr>
<tr>
<td><img src="image2.png" alt="Diagram" /></td>
<td>With Seat at Head of Tub</td>
</tr>
</tbody>
</table>

NOTE Th h t hed as info ced t hv grab bar

Fig 36 (48)
Location of Grab Bars and Controls of Adaptable Bathtubs
TABLE 11 D (Continued)

(a) 36-in by 36-in (915 mm by 915 mm) Stall

(b) 30-in by 60-in (750-mm by 1525 mm) Stall

NOTE: The hatched areas are reinforced to receive grab bars

Fig 37 (49)
Location of Grab Bars and Controls of Adaptable Showers
TABLE 11 D (Continued)

(a)
Before Removal of Cabinets and Base

(b)
Cabinets and Base Removed and Height Alternatives

Fig 38 (50)
Counter Work Surface
### TABLE 11 D (Continued)

#### (a)
Before Removal of Cabinets and Base

![Diagram of a kitchen sink before removal of cabinets and base.](image)

**Fig 39 (51)**
Kitchen Sink

#### (b)
Cabinets and Base Removed and Height Alternatives

![Diagram showing cabinets and base removed with height alternatives.](image)

#### (a)
Side Hinged Door

![Diagram of a side hinged door.](image)

#### (b)
Bottom Hinged Door

![Diagram of a bottom hinged door.](image)

**Fig 40 (52)**
Ovens without Self-Cleaning Feature

---

**SYMBOL KEY**
1. C  t  r  p  wall m  t  d
2. Pull-o  t  b  ard p  f  err d  w  i  th  id  -op  ning d
3. C  l  p  p  ce
4. B  t  m  h  ing d  d
TABLE 11 D (Continued)

**NO ACCESSIBLE EXITS OR REFUGE AREAS ABOVE OR BELOW THIS FLOOR**

**THIS ENTRANCE IS THE ONLY ACCESSIBLE EXIT**

---

**Fig 41**
Sample Signs For Buildings With Limited Access
### TABLE 11 D (Continued)

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>915</td>
<td>1050</td>
</tr>
</tbody>
</table>

**Fig 42 (ADA Fig 53)**
Food Service Lines

**Fig 43 (ADA Fig 54)**
Tableware Areas

---

![Diagram of Roll in Shower with Folding Seat]

**Fig 44 (ADA Fig 57)**
Roll in Shower with Folding Seat

---

END OF DOCUMENT
In lieu of required exterior openings for natural ventilation in laundry rooms a mechanical ventilation system connected to the outside and capable of exhausting 5 ACH shall be provided.

Building Inspection Division will not apply this room exhaust requirement to a washer/dryer installation in a single family home or in the individual dwelling unit of an apartment or hotel building. Venting of the dryer to the outside will be required. The room exhaust requirement will be applied to central laundry rooms serving multiple family users.
General Information:
UMC Section 308 governs the protection, location, installation, and access to furnaces and boiler rooms (as well as any other heating and cooling equipment) in parking garages but does not mention installations on rooftop parking levels.

Recommendation:
Rooftop parking shall not be considered a garage. Therefore, Section 1511 UBC Penthouses and Roof Structures will apply.

One hour occupancy separation between boiler/furnace room and rooftop area will not be required; however, physical barriers shall be provided to keep vehicles at least 10 feet away from combustion air louvers and boiler room access door or louvers. Doors and louvers shall be kept at least 18 above roof surfaces.

For all enclosed parking levels and for all interior levels of open parking garages, 1 hour occupancy separation shall be required for all boiler/furnace rooms.

END OF DOCUMENT
**CITY AND COUNTY OF DENVER**  **INTERPRETATION**  **PUBLIC WORKS DEPARTMENT**

**Building Inspection Division**

**Subject:** TERMINATION FOR FLUES COMBUSTION AIR AND RELIEF AIR DUCTS

**Approved:**

[Signature]

R. Doug Sutton, P.E., Director, Building Inspection

<table>
<thead>
<tr>
<th>Building Code Section</th>
<th>Effective Date</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>UMC 502</td>
<td>March 13, 1993</td>
<td>1 of 1</td>
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<tr>
<td>UMC 609.10</td>
<td></td>
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<td>UMC 703</td>
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<td>UMC 806.6</td>
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The following background information and summary of code requirements was developed so that the mechanical inspection and engineering departments can be consistent in their enforcement of separations.

Paraphrasing the UMC definition of combustion air, the term combustion air openings is taken to mean both combustion air intakes and relief air outlets.

UMC Section 806.6 states venting systems shall terminate not less than 4 feet below or 4 feet horizontally from and not less than 1 foot above a door or openable window or activity air inlet into a building. A gravity air inlet would include combustion air openings.

UMC Section 806.6.1 states venting systems shall terminate at least 3 feet above an outside air or makeup air inlet located within 10 feet and at least 4 feet from a property line except a public way.

UMC Section 502 defines environmental air duct as a duct for conveying air at less than 250°F from occupied areas through other HVAC systems. UMC Section 1107(j) calls for environmental air duct exhaust to be 3 feet from openings into the building and 3 feet from a property line.

UMC Section 703.1 calls for combustion air to be obtained through permanent openings to the outside of the buildings and future states regarding attic vents. Provided openings are not subject to ice or snow blockage. These statements must be applied to all combustion air openings.

**SUMMARIZING.**

Flues must be at least 40 below 4.0 feet horizontally from and 1 foot above any opening into a building including combustion air openings. (The and is an important change from 1991.)

Flues must be at least 3 feet above any Mechanical Air inlet within 10 feet.

Relief air outlets and combustion air inlets must be separated by a minimum of 3 horizontally.

Relief air outlets must be at least 3 from any opening into a building.

Combustion air openings must be at least 18 above grade to the bottom of the opening to avoid snow blockage.

Flues must be at least 4 feet from a property line.

---

END OF DOCUMENT
CITY AND COUNTY OF DENVER  INTERPRETATION  PUBLIC WORKS DEPARTMENT
Building Inspection Division

Subject: SMOKE DETECTORS IN AIR HANDLING UNITS SUPPLYING 100% OUTSIDE AIR

Approved: 

R. Doug Sutton, P.E., Director, Building Inspection

Building Code Section UMC 608  Effective Date April 18, 1988  Page 1 of 1

General Information:
UMC Section 606 requires smoke detectors in all air handling units including those handling 100% outside air that are rated over 2000 cfm. Detectors that are required to be wired into equipment controls shall shut down the equipment automatically when smoke detected. Both photo electric detectors and ionization detectors perform erratically in cold temperatures and in high humidity conditions. This type of erratic performance causes nuisance shutdowns and false alarms when building is monitored by a central station.

Recommendation:
Smoke detectors shall not be required in evaporative coolers or in units that supply untempered 100% outside air.

END OF DOCUMENT