

**NORTH CAROLINA
STATE BUILDING CODE**

VOLUME III

**HEATING
Air Conditioning, Refrigeration
& Ventilation**



1971 EDITION

**Published By
THE NORTH CAROLINA BUILDING CODE COUNCIL
and the
NORTH CAROLINA DEPARTMENT OF INSURANCE
Post Office Box 26387
Raleigh, N. C. 27611**

**NORTH CAROLINA
STATE BUILDING CODE
VOLUME III
HEATING
Air-conditioning, Refrigeration
& Ventilation**

Adopted by the North Carolina Building Code
Council in accordance with Act
of the General Assembly of
1957, Chapter 1138
Revised 1969

Adopted September 14, 1971

1971 EDITION

Effective Date July 1, 1972

Published by
THE NORTH CAROLINA BUILDING CODE COUNCIL

Staff and Offices
Located at
NORTH CAROLINA DEPARTMENT OF INSURANCE
ENGINEERING DIVISION
P. O. BOX 26387
RALEIGH, N. C. 27611
TELEPHONE 829-3901

**NORTH CAROLINA STATE BUILDING
CODE COUNCIL**

Chairman:

S. RAY MOORE, President—77
Mechanical Associates, Inc.
Plumbing and Heating Contractors
Box 456
Cary, N. C. 27511

Vice-Chairman:

T. L. WATSON, JR., President—77
Watson Electrical Construction Co.
Electrical Contractor
P. O. Box 3105
Wilson, N. C. 27893

Members:

JOHN EMERSON, P.E.—81
Office of State Construction
N. C. Department of Administration
116 W. Jones Street
Raleigh, N. C. 27603

C. B. GALPHIN, P.E., Pres.—77
L. E. Wooten & Company
Electrical Engineer
P. O. Box 2984
Raleigh, N. C. 27602

R. GLENN AGNEW, P.E.—79
Mechanical Engineers, Inc.
Mechanical Engineer
700 S. College Street
Charlotte, N. C. 28202

JOHN R. ANDREWS, P.E.—79
Henry vonOesen & Associates
Structural Engineer
P. O. Drawer 2087
Wilmington, N. C. 28401

WALTER F. PERRY—79
Dickerson, Inc.
General Contractor
P. O. Box 400
Monroe, N. C. 28110

JOHN R. ADAMS, President—81
The Adams-Built Co.
Home Builder
Box 18108
Raleigh, N. C. 27609

FRANK WILLIAM BILLMIRE—81
Representative of Public
5927 Gate Post Road
Charlotte, N. C. 28211

MOODY R. CLARY, AIA—81
Peterson/Clary Architects
Architect
One NCNB Plaza, Suite 3630
Charlotte, N. C. 28208

EDWARD L. WOODS, P.E., DIR—77
Mecklenburg County Bldg. Stds.
Building Inspector
Box 16040
Charlotte, N. C. 28216

**NORTH CAROLINA DEPARTMENT
OF INSURANCE**

By Statute the Commissioner of Insurance has general supervision of the administration and enforcement of the North Carolina Building Code and the Engineering Division serves as the staff for the Building Code Council. Officials of the Insurance Department are:

JOHN R. INGRAM
Commissioner

KERN E. CHURCH, P.E.
Deputy Commissioner
Engineering and Building Codes and
Secretary to Council

Accumulative Supplement to the
NORTH CAROLINA STATE
BUILDING CODE
VOLUME III
HEATING, AIR CONDITIONING,
REFRIGERATION AND
VENTILATION

1977 EDITION

**(All amendments noted as approved 6-8-76 become
effective on September 15, 1976)**

Published by
NORTH CAROLINA BUILDING CODE COUNCIL
and
NORTH CAROLINA DEPARTMENT OF INSURANCE
Box 26387
Raleigh, N. C. 27611

**Note: Please insert in back of 1971 Edition of the Heating
Code**

FOREWORD

North Carolina has been a pioneer in the field of Statewide Building and Fire Prevention regulations which have been enacted for the protection of the public. The Building Laws passed in 1903 and 1905 created a Building Code for materials and methods of construction in use at that time.

The General Assembly of 1933 created a Building Code Council and authorized it to, in cooperation with the Commissioner of Insurance, prepare and adopt a Building Code. The first North Carolina Building Code received the approval of the official Building Code Council and the Commissioner of Insurance in 1935 and was printed that same year. The General Assembly of 1941 ratified and adopted this edition, which was known as the 1936 Edition.

The 1936 Edition contained a State Plumbing Code. It was rewritten by the State Board of Health and the Building Code Council in 1954. The 1954 Edition was printed as Article XX of the State Code and it was bound in the 1958 Edition. The 1933 Building Code Council authorized cities and towns to make changes in the State Code as long as they were more stringent.

The 1957 Legislature rewrote the 1933 Building Code Council Act and reorganized and expanded the Council. All local Codes different from the State Code were required to be approved by the Council.

The Code is presented with the hope that its use will protect the public from dangerous and hazardous conditions in buildings and will provide architects and engineers a set of minimum standards to follow in designing buildings. The Building Code Council has authority to make changes in the Code when the wider use of materials and methods comply with standards set forth in the Laws. From time to time there will be modifications and changes in the Code.

This Heating and Air Conditioning Code of ¹⁹⁷¹~~1970~~ is the first edition. The ⁽⁶⁻¹¹⁻⁷⁴⁾ 1969 Legislature made many changes and revisions in laws pertaining to the construction industry, updating laws concerning codes and the inspection program for use throughout the State of North Carolina.

This Heating and Air Conditioning Code incorporates suggestions made by, or has been reviewed by representatives of the following organizations: Engineering profession through the "Professional Engineers of North Carolina", and the "American Society of Heating, Refrigeration and Air Conditioning Engineers"; architectural profession through the North Carolina Chapter of American Institute of Architects; State Board of Examiners of Plumbing & Heating Contractors; North Carolina Heating, Air Conditioning and Gas Inspectors' Association; Engineering School, North Carolina State University; State Department of Administration (Property Control and Construction Division); State Department of Labor (Bureau of Boiler Inspection); State Department of Public Instruction, (Division of School Planning); State Department of Education (School Maintenance); North Carolina Warm Air Heating and Air Conditioning Contractors' Association; North Carolina Association Plumbing-Heating-Cooling Contractors; League of Municipalities; Carolina Oil Fuel Institute; Utilities of Gas and Electric; Medical Care Commission of North Carolina (Hospital); Liquefied Petroleum Gas through the North Carolina Department of Agriculture; Building Code Council and others interested in the Code. For the excellent suggestions and critical review we are grateful and hereby acknowledge these contributions.

Note: All local amendments to this Code must be approved by the State Building Code Council before they are legally effective. (See Sec. 108 of Ch. 1, Administration of the State Code, in this Volume for procedure to follow.)

ACKNOWLEDGEMENT

The idea and original outline for this code was conceived and prepared by the Building Code Council of North Carolina. Many people have been involved in one way or another with its preparation. Their help is greatly appreciated even though all of them are not mentioned by name. Individual members of the industry, engineers, architects, contractors, inspectors, manufacturers' representatives, government engineers and others have supplied data, suggestions and ideas. Special thanks are expressed to—

The American Society Heating, Refrigeration & Air Conditioning Engineers for permission to use certain excerpts from the "Guide and Data Book".

The Sheet Metal and Air Conditioning Contractors' National Association, Inc. for their permission to reproduce the "Fire Damper Guide" as part of the Appendix.

The International Conference of Building Officials for permission to use excerpts from the "Uniform Mechanical Code".

The National Fire Protection Association for permission to reproduce parts of several Standards.

The North Carolina Department of Labor for permission to use excerpts from the North Carolina Boiler Code.

Every effort possible has been made to be accurate, factual, concise and honest. Many thanks to all those who have contributed.

TABLE OF CONTENTS

CHAPTER I—ADMINISTRATION

- SECTION 101—Title and Scope
102—Content of State Building Code
103—Administration by Commissioner of Insurance
104—Administration Building Code Council
105—Administration Heating & Air Conditioning Inspection
106—Appeals
107—Amendments to State Building Code
108—Approval of Local Ordinances
109—Alternate Materials
110—Violations and Penalties
111—Validity

CHAPTER II—DEFINITIONS

- SECTION 201—General
202—Definitions of Terms

CHAPTER III—SPECIFIC REQUIREMENTS, SCOPE, PRINCIPLES, CLEARANCES AND ACCESSIBILITY FOR EQUIPMENT

- SECTION 301.0—Scope
302—Principles
303—Accessibility
304—Appliances on Roofs
305—Clearances (Index)

CLEARANCE

-
- Table 1 Clearance, Inches—Residential Type Appliances
Table 2 Clearance, Inches—With Specified Forms of Protection
Table 3 Clearance, Inches—Industrial Low-Heat Appliances
Table 4 Clearance, Inches—For Listed Room Heaters
Table 5 Clearance, Inches—For Combustible Materials, Furnaces, Boilers,
etc., Installed in large Rooms
Table 6 Clearance, Inches—For Industrial Type Med.-Heat Appl.
Table 7 Clearance, Inches—For Oiled Fired Appliances
-

- SECTION 305.0 —General
305.1 —Low Pressure or Residential Type Boilers
305.2 —Furnaces, Boilers (Large Rooms)
305.3 —Gas Fired Floor Furnaces
305.4 —Floor Furnaces
305.5 —Central Furnaces
305.6 —Gas Fired Duct Furnaces
305.7 —Industrial Type High Heat Appliances
305.8 —Industrial Type Med. Heat Appliances
305.9 —Industrial Type Low Heat Appliances
305.10—Oil Fired Appliances
305.11—Access and Clearance—Gas Appliances

- SECTION 305.15—Floor Mounted Cooking Equipment**
Gas Appliances
Gas Equipment
305.12—Counter Top Gas Burning Appliances
305.13—Ranges Clearance
305.14—Open Type Broiler Clearance
305.15—Floor Mounted Cooking Equipment
305.16—Electrical Heating Appliances
305.17—Flu-fed Incinerators
305.18—Ind. Type Incinerators
305.19—Residential Type Incinerators
305.20—Water Heaters
305.21—Residential Type Clothes Dryer
305.22—Warm Air Ducts
305.23—Ducts-Combustible Material
305.24—Horizontal Supply Duct
305.25—Duct Clearances
305.26—Absorption Units Clearance
305.27, 28—Room Heaters
305.29—Infra-red
305.30—Refrigeration
305.31—Clothes Dryers
305.32—Unit Heaters
305.33—Appliances, Illumination
305.34—Draft Hood

CHAPTER IV—LP GAS

- SECTION 401—Legal References (N. C. Statutes)**
402—Excerpts from NFPA 58 and 54 (See Appendix)
403—Rules and Regulations (See Appendix)

**CHAPTER V—INSTALLATION OF APPLIANCES FOR
HEATING & COOLING**

- SECTION 501—Low Pressure Boilers (Residential Type)**
502—Central Furnaces
503—Attic Furnaces
504—Floor Furnaces
505—Room Heaters
506—Heating Panels
507—Water Heaters
508—Down Flow Systems
509—Incinerators (Residential)
510—Wall Furnaces
511—Factory Built Fireplaces & Fireplace Stoves
512—Air Conditioning and Heat Pumps
513—Industrial Type Low Heat Appliances
514—Unit Heaters
515—Restaurant Type Cooking Equipment
516—Industrial Type Medium Heat Appliances
517—Flue-Fed Incinerator (Apartment House Type)
518—Commercial and Industrial Type Incinerators
519—Industrial Type High-Heat Appliances
520—Installation of Oil Burners and Oil Fired Units

CHAPTER VI—DUCT SYSTEMS

SECTION 600—Warm Air Heating, Air Conditioning, Air Cooling and Ventilating Systems

- 601—Application
- 602—Construction of Ducts
- 603—Cleanout Openings in Ducts
- 604—Installation of Ducts
- 605—Use of Concealed Ceiling Space
- 606—Pipeless Furnace Registers
- 607—Joints
- 608—Duct Hangers
- 609—Firestopping
- 610—Returns-Residential
- 611—Register and Ducts
- 612—Supply Systems
- 613—Duct Design Recommendations

CHAPTER VII—EQUIPMENT AND SYSTEMS IN HAZARDOUS OCCUPANCIES

SECTION 700—Heating and Ventilating Equipment in Hazardous Occupancies

- 701—Blower & Exhaust Systems (See Chapter X)
- 702—Spray Booth & Spray Finishing
- 703—Research Laboratory Fume Hoods

CHAPTER VIII—CHIMNEYS, FIREPLACES, AND VENTING SYSTEMS

SECTION 801—Chimneys

- 802—Fireplaces
- 803—Vents and Venting Systems
- 804—Appliances Burning Solid or Liquid Fuel
- 805—Appliances Burning Gas Fuel
- 806—Chimney and Vent Connectors, when Required
- 807—Materials for Chimney and Vent Connectors
- 808—Length of Chimney or Vent Connector
- 809—Size of Vent Connector
- 810—Clearance for Connector
- 811—Location of Connector
- 812—Installation of Connector
- 813—Interconnection of Chimney and Vent Connector
- 814—Dampers
- 815—Draft Hoods for Gas Appliances
- 816—Draft Regulators

CHAPTER IX—SPECIAL VENTING RESTAURANT COOKING EQUIPMENT, AND DRYERS

SECTION 901—Scope

- 902—Requirements
- 903—Hood or Canopy & Duct Systems
- 904—Air Movement
- 905—Grease Removal Devices, Listed Grease Extractors, Grease Filters (Materials and Installation)
- 906—Clearance
- 907—Dampers

- 908—Electrical Equipment
- 909—Fire Extinguishing Equipment
- 910—Recommended Procedures for Use and Maintenance
- 911—Inspection
- 912—Cleaning
- 913—Recommended Minimum Safety Requirements
- 914—Automatically Operated Appliances
- 915—Appliances with Power Means of Exhaust
- 916—Residential Open Type Broilers
- 917—Residential Type Clothes Dryers
- 918—Commercial Type Clothes Dryers

**CHAPTER X—BLOWER AND EXHAUST SYSTEMS FOR DUST, STOCK,
FLAMMABLE AND NON FLAMMABLE VAPOR REMOVAL AND CONVEYING**

- SECTION 1000—Scope**
- 1001—General
 - 1002—Power and Control
 - 1003—Grounding
 - 1004—Fans
 - 1005—Ducts—General
 - 1006—Duct Clearance
 - 1007—Systems for Removal of Flammable Vapors
 - 1008—System Design
 - 1009—Fire Extinguishing Apparatus, Manual and Automatic
 - 1010—Fire Extinguishing Apparatus, Automatic and Manual
 - 1011—Ducts (For Flammable Vapors)
 - 1012—Dust Collecting Systems—Stock and Refuse Conveying Systems
 - 1013—Ducts—Dust Collecting Systems—Stock and Refuse
 - 1014—Separating and Collecting Equipment
 - 1015—Explosion Relief Venting
 - 1016—Fire Extinguishing Systems
 - 1017—Protection Against Static Electricity

CHAPTER XI—FIRE CONTROL AND FIRE DAMPERS

- SECTION 1100—Scope**
- 1101—Illustrations of Dampers and Installations
 - 1102—Protection of Vertical Openings or Shafts
 - 1103—Fire Shutters (No restriction on heat)
 - 1104—Fire Shutters (Swinging Type)
 - 1105—Openings in Stairways or Shaftways
 - 1106—Protection for Stage and Projection Booth
 - 1107—Dampers

CHAPTER XII—CONTROLS

- SECTION 1200—Scope**
- 1201—Hot Water Tanks or Heater Controls
 - 1202—Controls—Residential Type—Central Furnaces
 - 1203—Controls—Residential Type—Boilers
 - 1204—Controls—Oil Burners
 - 1205—Warm Air Heating, Air Conditioning, etc. Other than Residential Type
 - 1206—Operating Controls (Cooking Equipment)
 - 1207—Controls—Heat Pump
 - 1208—Control Circuits—General
 - 1209—Room Temperature Thermostats

CHAPTER XIII—OIL STORAGE APPARATUS

- SECTION 1300—Tank Storage
1301—Design and Construction (Materials, fabrication, etc.)
1302—Installation—Underground
1303—Installation Inside Building—Unenclosed
1304—Installation Inside Building—Enclosed
1305—Installation Outside Aboveground 550 gal. or less
1306—Installation Outside Aboveground more than 550 gal.
1307—Location with Respect to Property Lines, Right of Way, etc.
1308—Spacing (Shell to Shell)—aboveground
1309—Location Outside Aboveground with Respect to Buildings
1310—Normal Venting Aboveground Tanks
1311—Emergency Relief Venting for Fire Exposure for Aboveground Tanks
1312—Piping Pumps and Valves (Materials and Designs)
1313—Fill and Return Piping
1314—Supply Connections
1315—Vent Piping
1316—Pressurized Tank Feed
1317—Oil Gauging
1318—Oil Pumps
1319—Valves
1320—Centralized Oil Distribution

CHAPTER XIV—GAS PIPING, VENTS, AND APPLIANCE INSTALLATION

- SECTION 1401—Piping Plan
1402—Provision for Meter Location
1403—Interconnections
1404—Size of Piping to Gas Appliances (With Capacity Tables)
1405—Gas Piping in Mobile Homes
1406—Acceptable Piping Materials, Fittings, etc.
1407—Pipe Threads
1408—Concealed Piping in Buildings
1409—Piping Underground
1410—Installation of Piping
1411—Gas Shutoff Valve
1412—Excerpts from Part 3 NFPA 54
1413—Excerpts from Part 4 NFPA 54
1414—Excerpts from Part 5 NFPA 54
1415—Excerpts from Part 6 NFPA 54

CHAPTER XV—VENTILATION, & AIR FOR COMBUSTION

- SECTION 1500—Ventilation—For Commercial Areas
1501—Ventilation—Bathrooms, Toilets and Rest Rooms
1502—Ventilation—Kitchens
1503—Negative Pressure
1504—Ventilation—Requirements for Shower and Toilet Rooms for Industrial and Commercial projects
1505—Ventilation—Elevator Equipment Rooms
1506—Ventilation—Mechanical Equipment Rooms
1507—Air for Combustion
1508—Stage and Projection Booth Ventilation & Protection

**CHAPTER XVI—PROTECTION OF FURNACE, BOILER ROOMS, AIR
CONDITIONING AND REFRIGERATION MACHINERY ROOMS**

- SECTION 1600—Furnace and Boiler Room**
1601—Special Requirements for Furnace and Fuel Room Areas
in Public Owned Buildings (School)
1602—Machinery Rooms
1603—Machinery Room Ventilation
1604—Equipment in a Machinery Room

CHAPTER XVII—COMFORT COOLING

- SECTION 1701—General**
1702—Installation
1703—Circulating Air Supply

CHAPTER XVIII—ABSORPTION UNITS AND ABSORPTION SYSTEMS

- SECTION 1801—General**
1802—Approval of Equipment
1803—Label and Instructions
1804—Location
1805—Installation

CHAPTER XIX—REFRIGERATION

- SECTION 1901 —Scope and Purpose**
1901.1—Scope
1901.2—Purpose
1901.3—Application
- SECTION 1902 —Definitions**
- SECTION 1903 —Occupancy Classification**
1903.1—Locations Governed by this Code
1903.2—Adjacent Locations
- SECTION 1904 —Refrigeration System Classification by Type**
1904.1—Refrigerating Systems
1904.2—Direct System
1904.3—Double Direct System
1904.4—Indirect Systems
- SECTION 1905 —Refrigerant Classification**
- SECTION 1906 —Requirements for Groups A, B, C, D & E Occupancies**
1906.1—General
1906.2—Group 1 Refrigerants
1906.3—Group 2 Refrigerants
1906.4—Group 3 Refrigerants
- SECTION 1907 —Requirements for Groups F & G Occupancies**
1907.1—General
1907.2—Open Flames
1907.3—Flammable Refrigerants
- SECTION 1908 —Design and Construction of Equipment**
1908.1—Materials
1908.2—Design Pressure

- 1908.3—Refrigerant-Containing Pressure Vessels
- 1908.4—Refrigerant Piping, Valves, Fittings and Related Parts
- 1908.5—Components other than Pressure Vessels and Piping
- 1908.6—Service Provisions
- 1908.7—Factory Tests
- 1908.8—Nameplate

- SECTION 1909 —Pressure Limiting Devices
 - 1909.1—Pressure Limiting Devices
 - 1909.2—Pressure Limiting Device Maximum Setting
 - 1909.3—Pressure Limiting Devices and Stop Valves

- SECTION 1910 —Pressure-Relief Protection
 - 1910.1 —General
 - 1910.2—Setting of Pressure-Relief Devices
 - 1910.3—Marking Relief Devices and Fusible Plugs
 - 1910.4—Pressure Relief Protection

- SECTION 1911 —Installation Requirements
 - 1911.1 —Foundations and Supports
 - 1911.2 —Moving Machinery
 - 1911.3 —Clear Space
 - 1911.4 —Enclosures for Compressors
 - 1911.5 —Water Supply and Discharge Connections
 - 1911.6 —Illumination
 - 1911.7 —Electrical Equipment and Wiring
 - 1911.8 —Gas Fuel Devices and Equipment
 - 1911.9 —Air Duct Systems
 - 1911.10—Pipe Joints in Air Ducts
 - 1911.11—Exposure of Pipe Joints
 - 1911.12—Location of Refrigerant Piping
 - 1911.13—Machinery Room Requirements

- SECTION 1912 —Field Tests
 - 1912.1—General
 - 1912.2—Test Medium
 - 1912.3—Declaration of Test

- SECTION 1913 —General Requirements
 - 1913.1 —Signs
 - 1913.2 —Metal Signs for Systems Containing Over 100 Pounds of Refrigerant
 - 1913.3 —New Sign for Changed Refrigerant
 - 1913.4 —Substitution of Refrigerant
 - 1913.5 —Charging and Discharging Refrigerant
 - 1913.6 —Containers for Withdrawn Refrigerant
 - 1913.7 —Weighing Containers of Withdrawn Refrigerant
 - 1913.8 —Refrigerant Stored in Machinery Room
 - 1913.9 —Masks or Helmets
 - 1913.10—Maintenance
 - 1913.11—Responsibility as to Operation of System
 - 1913.12—Pressure Gages

- SECTION 1914 —Titles and Sources of Reference Standards

CHAPTER XX—STORAGE OF REFRIGERANTS

- SECTION 2001—General

CHAPTER XXI—COOLING TOWERS

SECTION 2101—General

APPENDIX INDEX

Appendix A—L-P Gas, Rules, Regulations and excerpts from NFPA 58 and 54	Pages A-1 thru A-31
Appendix B—National Electrical Code (excerpts) Article 422—Appliances (heating) Article 423—Fixed Electric Space Heating Equipment	Pages B-1 thru B-15
Appendix C—North Carolina State Boiler Code excerpts and information	Pages C-1 thru C-28
Appendix D—Duct (Typical Exhaust Illustration) Hood Design Recommendations	Pages D-1 thru D-2
Appendix E—Inspection and Maintenance recommendations	Pages E-1 thru E-6
Appendix F—Gas regulations (NFPA 54) and other information	Pages F-1 thru F-33
Appendix G—Fire Dampers, Types Illustrated, Where Required and Typical Installations Illustrated	Pages G-1 thru G-13
Appendix H—Recommended Design Criteria for North Carolina (Map indicating Coastal Plain, Piedmont Area and Mountain Area)	Pages H-1 thru H-7
Appendix I—Chimneys, Fireplaces, Etc. (Based on excerpts from the North Carolina Building Code, Chapter 27)	
Appendix J—Standards, and References (and excerpts from the North Carolina Building Code, Vol. 1 with information concerning adoption)	

NORTH CAROLINA STATE BUILDING CODE
VOLUME III
HEATING, AIR CONDITIONING, REFRIGERATION & VENTILATION
CHAPTER I — ADMINISTRATION

Section 101—Title and Scope

101.1—TITLE

These rules and regulations shall be known as the 1971 Edition of the North Carolina State Building Code, Volume III *Heating, Air Conditioning, Refrigeration and Ventilation*, may be cited as such and will be referred to hereinafter as this Code. [See G.S., 143-138 (a) and (b)]

101.2—PURPOSE

The purpose of the Code is to provide certain minimum standards, provisions and requirements for reasonable safety, stable design, methods of construction and uses of materials in buildings and/or structures hereafter erected, constructed, enlarged, altered, repaired, moved, converted to other uses or demolished and to regulate the heating and air conditioning equipment, maintenance, use and occupancy of all buildings and/or structures. All regulations contained in the North Carolina State Building Code shall have a reasonable and substantial connection with the public health, safety, morals, or general welfare, and their provisions shall be construed liberally to those ends. (See G. S. 143-138 (c))

101.3—SCOPE

(a) **NEW BUILDINGS: EXEMPTIONS.** The Code shall apply to all new buildings, structures and additions thereto wherever they might be situated in the State of North Carolina, provided, however, that such regulations shall not apply to the following types of buildings unless the governing body of the municipality or the county wherein such buildings are located shall by vote adopt a resolution making the regulations applicable to one or more such types of buildings within its jurisdiction as defined in subsection (b) below: (Sec. 143-138 (b))

- (1) Dwellings and outbuildings used in connection therewith;
- (2) Apartment buildings used exclusively as the residence of not more than two families;
- (3) Temporary buildings or sheds used exclusively for construction purposes, not exceeding twenty feet in any direction and not used for living quarters.

*1971 G.A.
Effective
1-1-72*

This Code shall not apply to farm buildings located outside any municipality. (See G. S. 143-138 (b))

(b) EXISTING BUILDINGS

1. Alterations: This Code shall apply to all alterations which affect the safety of heating, air conditioning, gas piping, refrigeration and ventilation of any building in the State of North Carolina except those exempted in Section 101.3 (a) above. (See G. S. 143-138 (b))

2. Change of Use: This Code shall apply to all buildings which are to be devoted to a new use and which the requirements of this code are in any way more stringent than the requirement covering the previous use of the building. (See G. S. 143-138 (b))

Section 102

SECTION 102—CONTENT OF STATE BUILDING CODE

Volume I — General Construction
Volume I-A — Fire Resistance Ratings
Volume II — Plumbing
Volume III — Heating, Air Conditioning, Refrigeration & Ventilation
Volume IV — Electrical
(See G.S. 143-138 (b))

SECTION 103—ADMINISTRATION BY COMMISSIONER OF INSURANCE

103.1—GENERAL

The Commissioner of Insurance shall have general supervision through the Division of Engineering of the Department of Insurance, of the administration and enforcement of all sections of the North Carolina State Building Code referred to in Section 102 above (except elevators), through the cooperation of local inspectors appointed by the governing body of municipalities and counties (G.S. 143-139 (b))

103.2—STAFF FOR BUILDING CODE COUNCIL

The Engineering Division serves as Staff for the Building Code Council. (See G.S. 143-137 (c))

103.3—RIGHT OF ENTRY

The Commissioner of Insurance and his authorized deputies in the Engineering Division have the right at all reasonable hours to enter into or upon all buildings in their jurisdiction for the purpose of examination and inspection. (See G.S. 69-4, 69-13, 160-143, 143-139 (b))

103.4—INSPECTIONS

The Commissioner of Insurance through the Division of Engineering may inspect any building wherever it may be situated in the State to assist local officials in the enforcement of the Building Code. (See G.S. 143-139 (b))

SECTION 104—ADMINISTRATION BY BUILDING CODE COUNCIL G.S. 143-136

104.1

Building Code Council created; membership—(a) Creation; Membership; Terms— There is created by Statute a Building Code Council composed of ten members appointed by the Governor, consisting of one registered architect, one licensed general contractor, one registered architect or licensed general contractor specializing in residential design or construction, one registered engineer practicing structural engineering, one registered engineer practicing mechanical engineering, one registered engineer practicing electrical engineering, one licensed plumbing and heating contractor, one municipal or county building inspector; a representative of the public who is not a member of the building construction industry; and a registered engineer on the engineering staff of a State agency charged with approval of plans of state-owned buildings.

104.2—OFFICERS

The Council shall elect from its appointed members a Chairman and Vice-Chairman. Officers shall serve for a period of two years from the date of

Section 104

election or until their successors are elected. (See G.S. 143-137 (a) & 143-136)

104.3—MEETINGS

SUNC The Building Code Council shall meet regularly the *second Tuesday in March and September* Special meetings may be called by the Chairman. Any five members of the Council shall constitute a quorum. (See G.S. 143-137 (b))
December

9-12-72

104.4—DUTIES

The Building Code Council shall have the duty of adopting and amending the North Carolina State Building Code, the approval of local ordinances and hearing appeals from the decision of an enforcement agency. (See G.S. 143-138 (a), (d) and (g); 143-141)

104.5—STAFF AND PERSONNEL

The Division of Engineering of the Department of Insurance shall serve as the staff for the Council. (See G.S., 143-137(C))

104.6—RECOMMENDED STATUTORY CHANGES AND ENFORCEMENT PROCEDURES

(a) The Building Code Council has the duty of studying the building laws of the State and to recommend to the Legislature desirable changes to simplify and improve such laws. (See G.S. 143-142 (a))

(b) The Council has the duty of advising State Agencies as to any changes in Administrative practice to improve enforcement of the building laws. (See G.S. 143-142 (b))

**SECTION 105—ADMINISTRATION BY LOCAL BUILDING OFFICIALS
(Building Inspector, Plumbing Inspector,
Heating & Air Conditioning Inspector)**

105.1—OFFICE OF BUILDING OFFICIAL (BUILDING INSPECTOR CREATED)

Note: The Building Inspector who is delegated to enforce the Heating & Air Conditioning Code is usually referred to as the Heating & Air Conditioning Inspector

(a) City Building Inspector: There is created by Statute the office of building inspector in all cities and towns of 1000 or more in population according to the last U.S. census whose duty shall be to enforce the North Carolina State Building Code including Volumes I, II, III & IV. (See G.S. 160-115)

(b) County Building Inspector: The Board of County Commissioners may appoint one or more building inspectors to enforce the State Building Code including Volumes I, II, III & IV. (See G.S. 153-341 thru 153-366)

(c) Combination City and County Building Inspectors: By mutual agreement between the County Commissioners and the City Commissioners, a building inspector or inspectors may be appointed to serve a county and cities within the county and/or one or more counties. (See G.S. 153-344. See Local Administrative Ordinance G.S. 160-118)

(d) County Heating Inspector: The County Commissioners may appoint one or more Heating & Air Conditioning Inspectors to enforce the State Heating & Air Conditioning Code and approved local regulations. (See G.S. 153-341. See Local Administrative Ordinance)

Section 105

105.2—DUTIES AND AUTHORITY OF HEATING & AIR CONDITIONING INSPECTOR

(a) Duties of Heating & Air Conditioning Inspector. The inspector shall have the power, and it shall be his duty, to enforce the requirements and provisions of this code; to approve or disapprove the plans and specifications pertinent to heating, air conditioning, refrigeration and ventilation within a reasonable time after receipt of an application; to issue permits, notices and certificates; to witness tests and/or accept certification as required by the architect and designing engineer and to perform such other duties that may be required by the local governing authority, in connection with the administration and enforcement of this code and other applicable heating and air conditioning regulations. (See G.S. 160-115 and 153-342)

(b) The Inspection Department may revoke a permit in accordance with G.S. 160-127. The Inspection Department may issue a "Stop Order" as stipulated in G.S. 160-126. Unsafe buildings may be condemned in accordance with G.S. 160-131 and G.S. 160-132. The Inspection Department shall issue a certificate of compliance for satisfactory and completed work as per G.S. 160-128.

Buildings constructed by the State of North Carolina in accordance with plans and specifications approved by the North Carolina Department of Administration are not subject to inspection by the heating and air conditioning inspector of a county or municipality or the Codes and requirements thereof. (G.S. 143-135.1 and in accordance with G.S. 143-131.1)

(c) Discretionary Power, Appeal: In the event heating, air conditioning, refrigeration and ventilation cannot be reasonably installed, altered or restored in accordance with the provisions of this code, due to structural barrier, the decision of the inspector shall prevail, based upon general accepted standards that will not jeopardize the public health or safety. Should any controversy arise relating to the interpretation of this code, the master mechanic or installer may appeal to the local governing authority, provided, however, an appeal from the local governing authority or inspector may be taken to the Engineering Division of the Department of Insurance or to the N.C. Building Code Council or Superior Court, as provided for in G.S. 143-139 and G.S. 143-141).

105.3—LICENSING OF HEATING & AIR CONDITIONING AND REFRIGERATION CONTRACTORS

(a) *Master*; The word "Master" when used in this code shall be deemed and held to mean a person who holds a current license, H-1, H-2 or H-3, issued by the State Board of Examiners of Plumbing & Heating Contractors in accordance with the provisions of GS 87, Article 2, which authorizes the said person to engage in the business of heating and air conditioning contracting in cities or towns having a population of more than 1500 in accordance with the last official U.S. Census.

H-1 Heating Group No. 1 (GS87-21 (a) (2)). "The phrase 'heating group No. 1' shall be deemed and held to be the heating system of a building which requires the use of high or low pressure steam, vapor or hot water, including all piping, ducts and mechanical equipment appurtenant thereto, within, adjacent to or connected with a building, for comfort heating."

H-2 Heating Group No. 2 (GS 87-2 (a) (3)). "The phrase 'heating group No. 2' shall be deemed and held to be the air conditioning system of a building which provides conditioned air for comfort cooling by the lowering of temperature, requiring a total of more than 15 motor horse power or a total of more than 15 tons of mechanical refrigeration, in single or multiple units, and air distribution ducts."

H-3 Heating Group No. 3 (GS 87-21 (a) (4). "The phrase 'heating, group No. 3' shall be deemed and held to be a direct heating system of a building which produces heat to raise the temperature of the space within the building for the purpose of comfort in which electric heating elements or products of combustion exchange heat either directly with the building supply air or indirectly through a heat exchanger and using an air distribution system of ducts.

LICENSE FOR REFRIGERATION

Refrigeration business or contracting is defined to include all persons, firms or corporations engaged in the installation, maintenance, servicing and repairing of refrigeration machinery. It shall not apply to replacement of lamps, and fuses and equipment connected by attachment plug-in devices. It shall not apply to selling, repairing and installing air conditioning units, devices for the purpose of comfort cooling. It shall apply only in cities or towns of a population of more than 10,000.

(b) *Installer*; The work "installer" when used in this code shall be deemed and held to mean a person who installs heating and air conditioning equipment, or who is responsible for the installation of heating and air conditioning equipment, in accordance with the provisions of this code, in cities, towns or incorporated areas required by the State Board of Examiners of Plumbing and Heating Contractors.

(c) *Journeyman or Mechanic*: For the purpose of this code, the word "Journeyman" shall be deemed and held to mean a person who is skilled in the art of installing heating and air conditioning and who is employed by, and under the supervision and jurisdiction of a Master or Installer as defined herein.

105.4—PERMITS REQUIRED

(a) *Applications, permits Required*: (Exceptions) Applications shall be obtained from the inspector for the installation of heating, air conditioning systems, or refrigeration systems and ventilation systems, or the extensions, alterations or general repairs thereof, in accordance with the provisions of this code; however, the provisions of this code shall not apply to those who make minor repairs or replacements to an already installed system of heating, air conditioning or refrigeration or ventilation systems, provided such repairs or replacements in no way disrupts the original water supply, waste or ventilating systems. In the event old equipment is replaced, a permit shall be secured and same shall be inspected by the inspector.

(b) *Applications, Permits Issued to Master Heating, Air Conditioning, Refrigeration and Ventilation Installers*: Applications to install heating, air conditioning, refrigeration and ventilation systems shall be received from, and permits issued only to, master heating, air conditioning, refrigeration and ventilation installers, as defined herein. When applications and permits are required in cities or towns, same shall be made by, and issued to, the installer of heating and air conditioning or refrigeration and ventilating system or the person responsible for the installation of same.

(c) *Master Heating & Air Conditioning contractor or installer not to Secure Permit For Others*: No heating and air conditioning contractor shall secure a permit from the heating and air conditioning inspector for others, not qualified in accordance with the provision of this code, to install heating and air conditioning.

(d) *Applications, Permits Required Before Work Begins*: Applications must be approved by, and permits secured from the heating and air conditioning inspector before beginning the installation, alteration or restoration of heating and air conditioning as provided in this code.

Section 105

(e) Permit may be revoked, Damages: The heating and air conditioning inspector at any time during the progress of the installation of heating and air conditioning may revoke a permit for reason of noncompliance with the provisions of this code and, further, upon the condition that interested parties shall have no claim for damages that may result from such procedure.

105.5—INSPECTIONS REQUIRED

(a) Inspection required: All heating, air conditioning, refrigeration and ventilation installed in accordance with the provision of this code shall be inspected and/or tested by the inspector and no part of the heating, air conditioning, refrigeration or ventilation system shall be covered until same has been so inspected and approved as herein prescribed.

(b) Request for Inspection: Requests for inspection of heating and air conditioning, refrigeration and ventilation as required in this code shall be filed by the master contractor or the installer of same in the office of the inspector at such time as the local governing authority may determine.

105.6—HEATING AND AIR CONDITIONING, REFRIGERATION AND VENTILATION SYSTEM TESTED

(a) In order to prevent the use of defective materials and to provide for a safe system of heating and/or air conditioning, refrigeration and ventilation, said system may be tested for proper controls and safety devices in the presence of the heating and air conditioning inspector. Where deemed advisable by the Inspector, the system in large installations may be inspected in sections.

(b) Gas and Oil Piping Tested

Piping for natural gas, for L.P. gas and oil lines shall be tested upon completion by pressure tests as required by the heating and air conditioning inspector (See Principle No. 10 and as per NFPA 54, 58 and 31)

105.7—FEES

(a) Inspection Fees: Prior to the issuance of a permit to install, alter or restore heating or air conditioning in accordance with the provision of this code, the master heating and air conditioning installer shall pay the required inspection fees, as designated by the local governing authority.

Section 106—APPEALS

106.1—APPEALS TO COMMISSIONER OF INSURANCE

Any person desiring to raise any questions under the North Carolina State Building Code shall be entitled to a full hearing before the Commissioner of Insurance upon proper request in writing by any such person. (G.S. 143-140, 69-13)

106.2—APPEALS TO BUILDING CODE COUNCIL FROM DECISIONS OF STATE ENFORCEMENT AGENCIES

(a) Any person desiring to take an appeal to the Building Code Council from the decision of a State or local enforcement agency must file such an appeal within 30 days after such decision giving written notice to the Council. (See G.S. 143-141)

(b) Procedural Rules for Appeals from Decisions of Enforcement Agencies: Rule 1—Time of Notice—Any person wishing to appeal from the decision of an enforcement agency to the Building Code Council shall give a written Notice of Appeal as follows:

Section 106

14
(a) The original and ~~eleven~~ copies of said notice shall be filed not later than 30 days from the date of the decision of the enforcement agency with the Building Code Council, c/o Division of Engineering, Department of Insurance, Box 26387, Raleigh, North Carolina, 27611.

(b) The Staff of the Building Code Council shall immediately forward one copy of said notice to the enforcement agency from which the appeal is taken.

(c) The time within which notice is to be filed, shall be computed by excluding the first and including the last day. If the last day is Saturday, Sunday or a legal holiday, it must be excluded.

Rule 2—Form of Notice—Whenever Notices of Appeal is given as provided by these rules, said notice shall be legally printed, typewritten or mineographed and shall contain the following information:

(a) The name of the party or parties taking the appeal:

(b) The name of the enforcement agency and the date of the decision from which the appeal is taken:

(c) The decision from which the appeal is taken must be set forth in full in the Notice of Appeal, or a copy of said decision must be attached to all copies of the Notice of Appeal;

(d) The contentions and allegations of fact of the party or parties taking the appeal must be set forth in full in a clear and concise manner with particular reference to the section or sections of the North Carolina State Building Code in controversy;

(e) The original notice shall be signed by the party or parties filing same. No notarization or verification is required.

Rule 3—Time for Hearing—Upon the proper filing of an appeal in accordance with these rules, the Chairman of the Building Code Council shall cause the appeal to be heard by the Council within a reasonable time with at least ten days notice to Council members.

Rule 4—Notice to Appellant—The Chairman of the Building Code Council shall cause all appeals to be docketed for hearing and shall fix the time and place for said hearing and shall cause not less than ten days notice in writing, of the time and place of the hearing on the appeal to be given to the appellant, the enforcement agency from which the appeal is taken and all members of the Council.

Rule 5—Dismissal—The Council shall, upon motion of the enforcement agency or on its own motion, dismiss all appeals for the following reasons:

(a) Not prosecuted by the appellant.

(b) All appeals wherein the Notice of Appeal has not been filed in accordance with these rules.

(c) For lack of jurisdiction.

106.3—APPEALS TO COURT

By Statute a person may appeal directly to the Superior Court in the county in which the building is to be situated with or without an appeal to the Building Code Council. (See G.S. 153-141(d))

106.4—LOCAL BOARD OF APPEALS (See Local Administrative Ordinance)

Section 107

SECTION 107—Amendments to State Building Code.

107.1—PROCEDURAL RULES FOR HEARING BEFORE THE BUILDING CODE COUNCIL ON PROPOSED AMENDMENTS TO THE NORTH CAROLINA STATE BUILDING CODE, VOLUME III, HEATING, AIR CONDITIONING, REFRIGERATION AND VENTILATION

The following procedural rules shall apply when any citizen, state agency or political subdivision of the State makes application to the Building Code Council requesting that the North Carolina State Building Code be revised or amended pursuant to G.S. 143-138 (d):

Rule 1—Request of Hearing—Any citizen, State agency, or political subdivision of the State requesting a hearing before the Building Code Council for the above purposes shall submit a written request as follows:

(a) An original and ¹⁴ten copies of said request for hearing shall be filed with the Building Code Council, c/o Division of Engineering, Department of Insurance, Box 26387, Raleigh, North Carolina 27611

(b) The staff of the Building Code Council shall immediately forward one copy of said request to each member of the Building Code Council.

Rule 2—Form of Request for Hearing—Each request shall be legibly printed, typewritten or mimeographed and shall contain the following information:

(a) Name, address and basis of interest of party or parties requesting hearing.

(b) The proposed amendment to the North Carolina State Building Code must be set forth in full, and the request shall contain explicit reference to the affected section or sections of the Building Code.

(c) The request shall state, in support of the proposed amendment or amendments, the reason for proposing the amendment or amendments.

(d) The proposed amendment or amendments shall comply with the standards set forth in G.S. 143-138(c) and reference to the particular standards and sections involved shall be set forth in the request for hearing.

(e) The original request for a hearing shall be signed by the party or parties or their duly authorized agent submitting same.

Rule 3—Time of Hearing—Upon the proper filing of a request for hearing in accordance with these rules, the Chairman of the Building Code Council shall cause a hearing to be held within a reasonable time and not to exceed six months; said hearing shall be open to the public.

Rule 4—Notice of Hearing—The Chairman of the Building Code Council shall fix the time and place for said public hearing and shall cause notice of the hearing to be given as follows:

(a) Notice in writing to the party or parties or their duly authorized agents requesting the hearing not less than ³⁰fifteen days prior to the hearing;

(b) Notice of public hearing by publication as required by G.S. 143-138 (a);

(c) Not less than ten days notice in writing to all members of the Building Code Council.

Rule 5—Improper Filing of Request for Hearing—When a request for hearing is filed under this Section other than in accordance with these Rules, the staff of the Building Code Council shall notify the applicant of proper procedure to follow.

107.2—PRINTING AMENDMENTS

Amendments to the State Building Code will be printed once each year as an accumulative supplement. (See G.S. 143-138(g))

SECTION 108—APPROVAL OF LOCAL ORDINANCES

108.1—LOCAL CODES AND ORDINANCES TO BE APPROVED

The 1957 Legislature revised the North Carolina Building Code Council act which requires that all local city and county building, plumbing, heating, air conditioning, refrigeration, ventilation and electrical ordinances be approved by the Council before they are legally effective. In the interest of standardization of local codes and ordinances throughout the State and to further facilitate statutory and code references by all inspectors, architects, engineers, builders and the general public and the resultant ease of understanding and enforcement brought about by uniformity, the Building Code Council has taken the position of approving only those local amendments to the State Building Code which are deemed absolutely necessary on a local basis in lieu of approving a separate code for each city or county.

108.2—PROCEDURAL RULES

The following procedural rules shall apply when any city or county makes application to the Building Code Council requesting approval of a local ordinance.

Rule 1

(a) An original and 11 copies of the request for the hearing and proposed local ordinance shall be filed with the Building Code Council in care of the Division of Engineering, Department of Insurance, Box 26387, Raleigh, North Carolina.

(b) Request for the hearing must be signed by a responsible official of the city or county.

(c) Request for hearing and copies of ordinance must be sent in at least 15 days before date of hearing to be acted on. (Regular meetings of the Council are held the second Tuesday in March and September).

Rule 2

All Local Ordinances (including those relating to Building construction; plumbing; heating and air conditioning; refrigeration and ventilation; and electrical must be divided into three major sections:

1. Local administrative regulations, fees, etc. dealing with administration of the Code. These regulations shall not conflict with State laws.

2. Reference to an adoption of the State Building Code (including general construction, plumbing, heating and air conditioning, refrigeration and ventilation and electrical). Reference also should be made to adoption of the recommended Uniform Residential Code for dwellings if it is desired to have regulations applicable to dwellings.

3. The proposed amendments to the State Building Code (including general construction, plumbing, heating and air conditioning, refrigeration and ventilation and electrical) must be set forth in full, designating page and paragraph reference to that section of the State Building Code proposed to be modified or supplemented.

Rule 3

The reasons for requesting the change to the State Code must be shown. Reference to sections of nationally recognized standards set forth in G.S. 143-138(c) should be made to support this request.

Section 108

Rule 4

After approval of the Council and local administrative body, two copies of all amendments must be sent to the Secretary of the Council in the form they are to be distributed, one for the Council's file and the other to be stamped approved by the Building Code Council and returned for the local file.

SECTION 109—ALTERNATE MATERIALS AND ALTERNATE METHODS OF CONSTRUCTION

3-13-73
The provisions of this code are not intended to prevent the use of any material, or method of construction not specifically prescribed by this code, provided any such alternate has been approved and its use authorized by the heating and air conditioning official. The heating and air conditioning official shall approve any such alternate, provided he finds that the proposed design is satisfactory and complies with the provision of this Code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire-resistance, durability and safety. The heating and air conditioning official shall require that sufficient evidence or proof be submitted to substantiate any claim that may be made regarding its use. If, in the opinion of the heating and air conditioning official the evidence and proof are not sufficient to justify approval, the applicant may refer the entire matter to the Building Code Council. (See G.S. 143-141)

SECTION 110—VIOLATIONS AND PENALTIES

Any person who shall be adjudged to have violated the North Carolina State Building Code shall be guilty of a misdemeanor and shall upon conviction be liable to a fine not to exceed \$50.00 for each offense. Each thirty days that such violation continues shall constitute a separate and distinct offense. (See G.S. 14-68, 69-36 and 69-37; 87-14; 143-138(h); 160-119; 160-120; 160-121; 160-125 thru 160-136; 153-356 thru 153-362)

SECTION 111—VALIDITY

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

Section 109—3-13-73—Alternate Materials and Methods of Construction

—Substitute the following wording for Section 109:

“Although a certain material, or a particular method of construction, is specifically prescribed by this Code, this Code is not intended to prevent the use of a material, or method of construction, different from the material, or method of construction specifically prescribed by the Code, provided any such alternate material or method of construction has been approved and its use authorized by the building official. The building official shall approve any such alternate material, or method of construction, provided the building official, in his sole discretion, finds that the proposed alternate material, or method of construction complies with the provisions of Chapter XII, and that the alternate material, or alternate method of construction is, for the purpose intended, at least the equivalent of that specifically prescribed by the Code in quality, strength, effectiveness, fire-resistance, durability and safety. The building official may require that sufficient evidence or proof be submitted to substantiate any claim that may be made regarding its use, and, in the opinion of the building official, the evidence and proof are not sufficient to justify his approval, the aggrieved party may refer the entire matter to the Building Code Council.”