

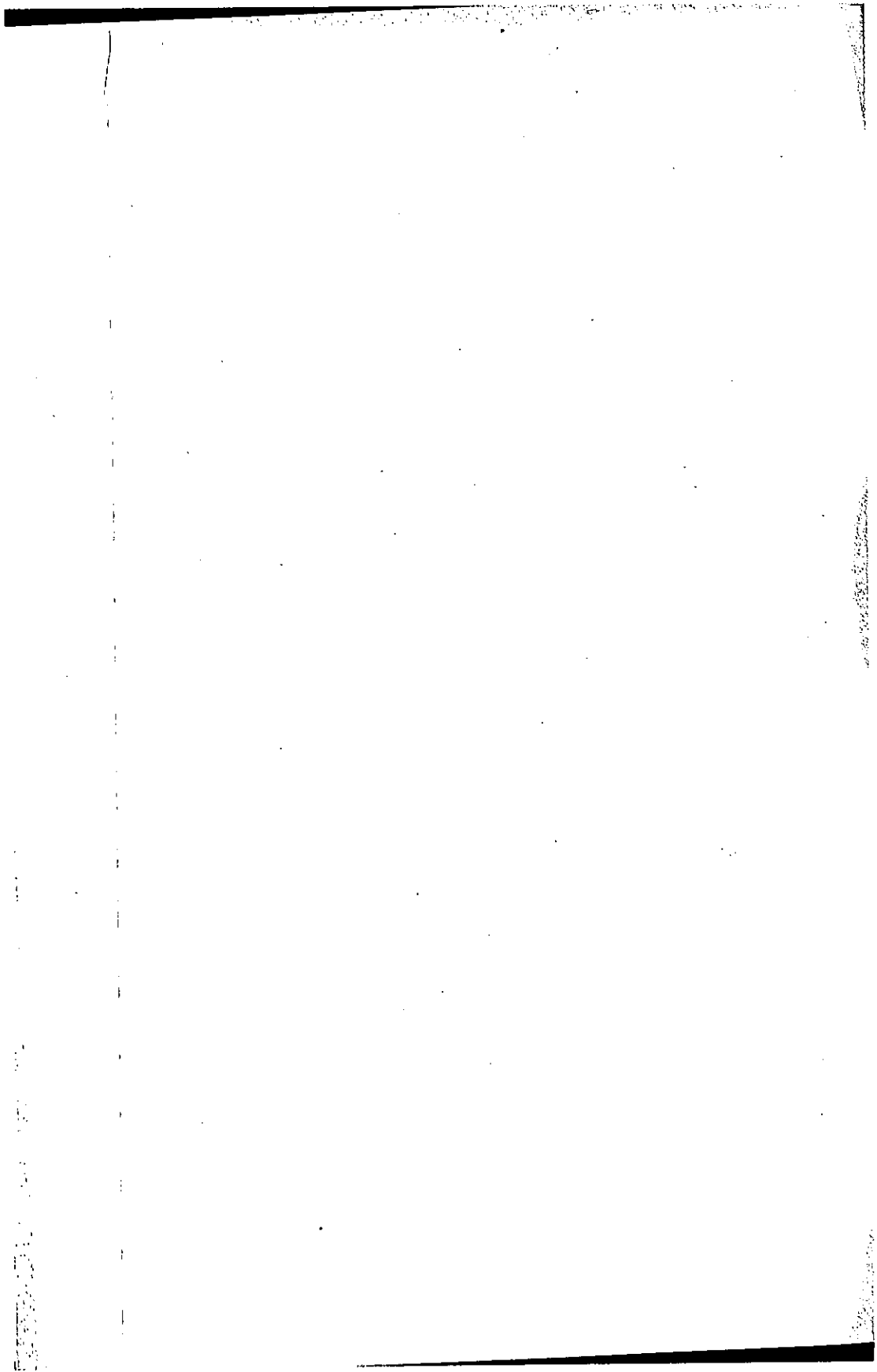
APPENDIX I

NORTH CAROLINA UNIFORM RESIDENTIAL BUILDING CODE



Prepared by
NORTH CAROLINA BUILDING INSPECTORS' ASSOCIATION

1958 Edition



FOREWORD

This Code shall not apply to one and two family dwellings unless the city or county by ordinance, adopts this Code in accordance with Section G. S. 143-138b. This Code was prepared by the North Carolina Building Inspectors' Association and was indorsed by the Association at their annual meeting held in Charlotte on April 29-30, 1957. Members of the Dwelling Code Committee were as follows: Mr. Bernard Manley, former City Building Inspector, Asheville and Mr. A. R. Strange, City Building Inspector, High Point, Co-Chairmen; Mr. J. B. Bell, Assistant Chief Building Inspector, Charlotte; Mr. Carl Johnson, City Building Inspector, Hickory; Mr. E. H. Johnson, City Building Inspector, Durham; Mr. W. B. Gunter, Assistant City Building Inspector, Durham; and Mr. K. E. Church, Engineer, North Carolina State Insurance Department.

A preliminary draft of the Code was mailed to all members of the Association and representatives of the North Carolina League of Municipalities, North Carolina Chapter American Institute of Architects, Carolinas Branch of Associated General Contractors, the National Lumber Manufacturers Association, National Board of Fire Underwriters, National Bureau of Standards, North Carolina Fire Insurance Rating Bureau, Brick and Tile Service, North Carolina Concrete Masonry Association, and other Associations and Agencies interested in construction of dwellings for their comments prior to the final draft being submitted to the Association at their annual meeting.

Acknowledgement is made of valuable suggestions and information which were contributed by the technical staffs of the above Agencies and Associations. The Association is also indebted to the cities of High Point, Durham and Charlotte for the material used contained in their Dwelling Codes and the valuable assistance rendered by the City of Asheville in preparing copies of the preliminary draft.

This Building Code is recommended for adoption by all cities and towns in North Carolina by the following Agencies and Organizations: North Carolina Building Inspectors' Association, North Carolina Building Code Council, North Carolina League of Municipalities, North Carolina Department of Insurance, North Carolina Chapter of American Institute of Architects,

Carolinas Branch of Associated General Contractors, North Carolina Fire Insurance Rating Bureau, and North Carolina Society of Engineers. Please notify North Carolina Department of Insurance if you adopt this Code so that record of cities and towns adopting same may be kept.

Officers of the North Carolina Building Inspectors' Association are:

President, J. B. Bell, Assistant Chief Building Inspector, Charlotte.

Secretary-Treasurer, K. E. Church, Engineer, North Carolina Insurance Department.

Directors:

Cedric Boyd, City Building Inspector, New Bern
Robert L. Byrum, City Building Inspector, Greensboro
H. D. Leary, City Building Inspector, Reidsville
Raymond Wallace, City Building Inspector, Gastonia
Past-President E. H. Johnson, City Building Inspector,
Durham

**NORTH CAROLINA UNIFORM (MINIMUM) RESIDENTIAL
BUILDING CODE**

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ARTICLE I. GENERAL

SECTION 1. Citation of code; to what structures applicable.

The following provisions shall constitute and be known as the uniform residential building code and may be cited as such, and provides for matters relating to construction, alteration, repair or removal of buildings or structures, erected or to be erected in the city. The provisions of this code shall apply only to residence buildings, duplexes, or structures hereafter erected, and to any alterations to existing buildings but does not apply to apartment or multifamily houses constructed, altered, repaired or used as a residence for three or more families.

SECTION 2. Application, plans and permits.

Before the erection, construction or alteration of any building or structure, or part of same, there shall be submitted to the Building Inspector, by the owner or authorized agent, an application on appropriate blanks to be furnished by the Building Inspector, containing a detailed statement of the specifications, and accompanied by a full and complete copy of all necessary plans of such proposed work. Each application for a building permit shall be accompanied by a plat, drawn to scale, showing accurate dimensions of the lot to be built upon, accurate dimensions of the building to be erected and its location on the lot. If it shall appear to the Building Inspector that the provisions of this code and the State building laws have been complied with, and all requirement of fees has been paid, he will then issue the building permit. A copy of the plans as approved by the Building Inspector shall be kept at the building during the progress of the work and shall be open to inspection by the Building Inspector. Plans and specifications submitted to the Building Inspector shall be kept in files in his office or returned to the owner. It shall be within the discretion of the Building Inspector to issue permits for minor construction work without plans and specifications.

SECTION 3. Schedule of Building Permit Fees.

Schedule for building permit fees to be regulated by each City or Town.

SECTION 4. Contractor's Bond or Liability Insurance.

Contractor's Bond or Liability insurance to be regulated by each City or Town.

SECTION 5. Power of Building Inspector.

The Building Inspector shall have the power to enforce the provisions of this code.

Sections 6—7—8—9 Dwelling Code

Erection, construction or alteration of any building, structure or part thereof shall not be commenced until a written permit is issued, and the work shall conform strictly to the application and plans, and the Building Inspector shall have power to revoke any permit, in case any false statement or representation as to a material fact, relating to the erection, alteration or removal of the building has been made.

SECTION 6. Unsafe buildings condemned.

Section 160-151 of the N. C. General Statutes.

"UNSAFE BUILDINGS CONDEMNED. Every building which shall appear to the Inspector to be especially dangerous to life because of its liability to fire or in case of fire by reason of bad conditions of walls, overloaded floors, defective construction, decay or other causes shall be held to be unsafe, and the Inspector shall fix a notice of the dangerous character of the structure to a conspicuous place on the exterior wall of said building. No building now or hereafter built shall be altered, repaired or moved, until it has been examined and approved by the Inspector as being in good and safe condition to be altered as proposed, and the alteration, repair or change so made shall conform to the provisions of the law."

SECTION 7. Punishment for allowing unsafe building to stand.

Section 160-152 of the North Carolina General Statutes.

Punishment for allowing unsafe building to stand. If the owner of any building which has been condemned as unsafe and dangerous to life by any local inspector, after being notified by the inspector in writing of the unsafe and dangerous character of such building, shall permit the same to stand or continue in that condition, he shall be guilty of a misdemeanor and shall pay a fine of not less than ten nor more than fifty dollars for each day such building continues after such notice.

SECTION 8. Frame buildings within fire limits.

Section 160-128 of the North Carolina General Statutes.

Frame buildings within fire limits. Within the fire limits of cities and towns where this article applies, as established and defined, no frame or wooden building shall be hereafter erected, altered, repaired, or moved except upon the permit of the building inspector, approved by the Insurance Commissioner.

SECTION 9. Minimum Room Sizes.

Living or principal room shall not be less than 150 square feet; the first bedroom 100 square feet, and all other bedrooms not less than 70 square feet.

Kitchen and dining room combination shall be not less than 100 square feet.

(This section applies only to towns of 5,000 population or more. Chapter 160, Article 15 of the North Carolina General Statutes.)

SECTION 10. Light and Ventilation.

All habitable rooms shall be provided with sufficient light and ventilation. Window area for each habitable room, shall be at least 10 square feet of glazed area so arranged that opening will equal one-half of the glazed area, unless otherwise properly ventilated.

In bathrooms window area shall be at least 3 square feet of glazed area. Where adequate windows cannot be provided, metal ducts extending from ceiling through roof at least 72 square inches in open area, shall be provided.

(Enforcement same as Section 9 GS Chapter 160, Article 15.)

ARTICLE II. RESIDENTIAL CONSTRUCTION

SECTION 11. Excavation.

(1) Excavation for all foundations shall extend to solid ground. Upon excavation, if other than solid ground is encountered, the footings shall be redesigned, and details of same shall be submitted to the Building Inspector for approval.

(2) Depth of excavation for trench walls and piers shall be carried below the frost line, but in no case less than 12 inches below original grade.

(3) Basementless Spaces. Ground level shall be at least 18 inches below bottom of floor joists and girders. Where it is necessary to provide access for maintenance and repairs in the under-floor space, ground level shall be not less than 2 feet below bottom of joists. Where the interior ground level is below outside finish grade, adequate precautionary measures shall be taken to assure positive drainage at all times. Remove all debris, sod, tree stumps and other organic materials and provide a smooth surface free of pockets.

(4) Foundation wall vents. Space under first floor joists, except in such space as is occupied by a basement or cellar, shall be provided with openings to insure ventilation. Such ventilating openings shall be proportioned on the basis of not less than one and one-half ($1\frac{1}{2}$) Sq. Ft. net opening for each fifteen (15) lineal feet or major fraction thereof of exterior wall. Vents shall be so placed as to provide ventilation at all points and prevent dead air pockets; they need not be placed in the front of the building.

Such openings shall be screened with not more than one-half ($\frac{1}{2}$) inch mesh galvanized hardware cloth.

SECTION 12. Footings.

(1) General: The area of footings shall be sufficient to distribute the superimposed loads uniformly and shall bear on undisturbed earth or piles; or shall be adequately reinforced where they cross or bear on filled trenches or other similar disturbed soil conditions. When soil conditions prevent sharp cut trenches side forms shall be used.

- (2) Materials. a. Construct footings of poured concrete or solid masonry.
b. Pile foundations: See State Building Code, Section 906.

(3) Dimensions: Footing dimensions shall be limited as follows:

- a. Minimum Thickness:

Material:	1-1½ Story:		2-3 Story:	
	Wall	Pier	Wall	Pier
Poured Concrete	6 in.	8 in.	8 in.	12 in.
Solid Masonry	8 in.	12 in.	12 in.	12 in.

Column, Post and Chimney footings same as pier footings.

- b. Width or Area:

Project footing at least 3 inches from face of loadbearing wall*, pier, column, post or chimney and in no case more than one-half the footing thickness unless reinforced. (*Curtain wall footing may be poured integral with pier footing).

Minimum area 2.5 square feet under free standing piers, columns, post or chimney.

(4) Modifications of the above requirements may be made if such modifications are fully detailed and noted on drawings and are approved by the Building Inspector.

(5) Around Basement Walls (containing habitable rooms) where hydrostatic pressure is expected, "Footing Drain Tile" shall be used and shall be covered with 12 inches of porous material such as gravel, etc. with provision for draining water away from the building by connecting tile to dry well, storm sewer or by other approved means.

SECTION 13. Concrete and Masonry.

- (1) General:

a. Second hand material shall not be used unless such material conform to these requirements and have been thoroughly cleaned.

b. All masonry including veneer shall be supported on masonry, concrete or steel.

c. Whenever the temperature of the surrounding air is below 40°, all concrete when placed in the forms shall have a temperature of between 40 and 90 degrees F. and shall be maintained at a temperature of not less than 50 degrees F. for at least 72 hours for normal concrete and 24 hours for high-early strength concrete, or for as much time as is necessary to secure proper rate of curing and designed compressive strength.

d. Protect concrete and masonry to prevent too rapid drying. Concrete shall be wet cured for at least 72 hours after pouring.

e. All new masonry shall be protected against freezing for at least 48 hours. Masonry exposed to weather shall not be laid when temperature is below 32 deg. Fahrenheit.

f. Concrete forms shall be tight, straight and plumb, and shall be rigidly braced to assure proper support of the concrete until set. Forms shall not be removed until concrete has thoroughly set.

g. Load shall not be placed on walls until sufficient strength has developed to support such loads.

h. The design, materials, metal reinforcement, limitations and other requirements for reinforced concrete work shall comply with the recommendations of the building regulations for Reinforced Concrete of the American Concrete Institute Building Code A.C.I.-318 or redesigned by registered engineer or registered architect.

i. Reinforced brick masonry shall be accepted in lieu of and under the same restrictions as reinforced concrete when designed and reinforced in accordance with RBM Lateral Force Design Handbook.

j. Masonry and concrete walls that meet or intersect shall be adequately bonded together.

(2) Concrete:

a. Assumed strength of Concrete Mixes:

Water-Content, U. S. Gallons per 94-lb. Sack of Cement	Assumed Compressive Strength at 28 days-psi
5	3750.
6	3000.
6¾	2500.
7½	2000.

b. Aggregate shall be clean and free from loam and other foreign matter.

(3) Mortar:

a. Classification of Mortar:

Type:	Comprehensive strength of 2-inch cubes at 28 days- pounds per square inch.
A-----	2,500 or above.
B-----	600 to 2,500
C-----	200 to 600
D-----	75 to 200

b. Proportions: (By Types)

Mortar Type	Cement	Hydrated Lime or Lime Putty	Aggregate, measured in a damp & loose condition
A.	1 (Portland)	0 to $\frac{1}{4}$	Not over 3 parts
B.	1 (Portland)	1 to $1\frac{1}{4}$	Not over 6 parts
B.	1 (Masonry Type II)*	0	Not over 3 parts
C.	1 (Portland)	2 to $2\frac{1}{2}$	Not over 9 parts
C.	1 (Masonry Type I)*	0	Not over 3 parts
D.	0 to $\frac{1}{2}$ (Portland)	1 to $1\frac{1}{4}$	Not over 3 parts

*As defined in Federal Specification SS-C-181 b, Masonry Cement.

c. Type of Mortar Required:

Masonry shall be laid in Type A, Type B or Type C mortar, except as follows:

Type A mortar shall be used in foundation walls of hollow masonry units.

Type A or Type B mortar shall be used in footings, foundation walls of solid masonry units, isolated piers, load bearing or exterior walls of hollow masonry units, hollow walls and cavity walls.

Type D mortar may be used in solid masonry walls, other than parapet walls or rubble stone walls, not in contact with the soil and not less than 12 inches thick nor more than 35 feet in height, provided the walls are laterally supported at intervals not exceeding 12 times the thickness of wall.

Gypsum partition tile and block shall be laid in gypsum mortar. Non-bearing partitions and fireproofing of structural clay tile may be laid in gypsum mortar. Fire brick shall be laid in fire clay mortar.

(4) Masonry Units:

a. Solid units shall meet ASTM C 62-50 for common brick. Grade SW when below ground level. Grade MW when exposed to exterior above ground level.

- b. Hollow units shall meet the following:
- (a) Load-bearing wall tile ASTM C 34-52
 - (b) Non-load bearing tile ASTM C 56-52
 - (c) Concrete hollow load-bearing units ASTM C 90-52
 - (d) Concrete hollow non-load bearing units ASTM C 129-52
- c. Stone
- (a) Cast Stone AC I 704-44
 - (b) Natural stone shall be sound, free from friable inclusions and have sufficient strength, durability, resistance to impact and abrasion for the proposed use.

SECTION 14. Foundation Walls.

(1) Wall Thickness: Foundation walls shall not be less in thickness than 8 inches or the wall supported with the following exceptions and height limitations.

a. Solid masonry unit walls 8 inches thick shall not extend more than 5 feet below adjacent finished grade.

b. Cavity walls 10 inches thick and hollow masonry walls 8 inches thick shall not extend more than 4 feet below adjacent finished grade.

c. The combined height of 8 inch bonded foundation wall and the wall supported shall not exceed 30 feet at eaves and 35 feet at ridge in gable ends.

d. Foundation walls supporting brick veneer or cavity walls. Foundation walls of 8-inch thickness and conforming to the provisions of this section may be used as foundations for dwellings with walls of brick veneer on frame walls, or with 10-inch cavity walls; provided that the dwelling is not more than 1½ stories in height and the total height of the wall, including the gable, is not more than 20 feet. Foundation walls of 8-inch thickness supporting brick veneer or cavity walls shall be corbelled with solid units to provide a bearing the full thickness of the wall above unless adequate bearing is provided by a concrete floor slab. The total projection shall not exceed two inches with individual corbels projecting not more than ⅓ the depth (height) of the unit. The top corbel course shall be not higher than the bottom of floor joists and shall be a full header course of headers at least 6 inches in length.

e. Plain Concrete. Foundation walls of cast-in-place concrete shall be at least 8 inches thick; provided that when the basement floor does not exceed 4 feet below average grade level, such walls may be 6 inches thick.

f. Rubble Stone. Foundation walls of rubble stone shall be at least 12 inches thick. Rough or random rubble shall not be used as foundations for walls exceeding 35 feet in height.

(2) Construction:

a. Walls or piers supporting frame construction shall extend so that the wood construction is not less than 8 inches above outside finished grade.

b. Walls and piers of hollow masonry units shall be capped with minimum of 4 inches of solid masonry or poured concrete for dwellings not over 1½ stories; and not less than 8 inches for dwellings over 1½ stories.

c. When constructed of hollow masonry jamb closure units shall be used at all openings and the sill shall be solid masonry or poured concrete.

(3) Pier and Curtain Walls.

a. Curtain walls 4 inch (Nominal) Minimum thickness between and bonded into piers supported on concrete footings poured integrally with pier footing may be used for frame construction not more than 2 stories in height and for masonry veneer frame construction not more than 1½ stories in height subject to the following limitations:

1. Maximum height above footing:
Hollow Masonry: 18 times thickness of curtain wall.
Solid Masonry: 20 times thickness of curtain wall.
2. Unbalanced fill placed against 4 inch curtain wall shall not exceed 24 inches for solid masonry or 16 inches for hollow masonry.
3. Maximum pier Spacing: Under girder or sill supporting floor joist, 8 ft. on centers; under wall sill in line parallel to joist, 12 feet on centers.

(4) Piers shall be Masonry or Poured Concrete.

1. Hollow Masonry: See Section 14 (2) a. and b. this Code.
2. Maximum unsupported height shall not exceed 10 times least dimension for solid masonry or poured concrete and 4 times least dimension for hollow masonry.
3. Minimum Pier Sizes.
 - a. Solid Masonry 8 x 12 inches*
 - b. Hollow Masonry 8 x 16 inches
 - c. Poured Concrete 8 x 12 inches or 10 inch round

*When solid masonry units are of sufficient strength to permit the maximum working stress (300 p.s.i. for Type B mortar) shown in the Table for "Brick and other Solid Masonry," Section

907-4 (a) of the N. C. Building Code, minimum pier size may be reduced to nominal 8 x 8 inches.

(5) Basement retaining walls when constructed inside the main foundation walls shall have the top at least flush with the adjacent inside grade and shall be not less than 6 inches thick for poured concrete; 8 inches thick for masonry units. The distance from the interior face of the main foundation walls to the interior face of the basement retaining walls shall be not less than the height of the basement retaining wall but in no case less than 3 feet 6 inches. The top of the adjacent grade shall not be below the top of the main foundation wall footings.

(6) All foundation walls for porches or terraces, containing earth fill, shall be not less than 8 inches thick for masonry units, or not less than 6 inches thick for poured concrete with footing at least 6 inches thick with 3 inch projection on either side.

(7) All masonry chimneys shall have foundations of concrete or solid masonry which shall rest on solid ground, shall extend down to the level of footing of main foundation walls surrounding the area where the chimney is located, and where chimneys occur in outside walls or inside bearing walls, the footing shall be bonded with the wall footing.

(8) Poured concrete or solid masonry bases extending not less than 8 inches above finish grade shall be constructed under columns or post.

(9) Slab on Grade Floors.

a. General: Construction shall be such that water or dampness will not penetrate slab.

Remove all debris, sod, tree stumps and other vegetation or organic material and provide a smooth surface free of pockets under slab area.

Fill under slab shall be thoroughly tamped. Provide 1/2 inch expansion around all slab edges.

b. Solid Concrete Slab.

(a) Bed under slab shall be gravel, sand or crushed rock not less than 4 inches thick.

(b) Cover bed with 55 pound roll roofing or equivalent with edges lapped and sealed and extend up to top of slab.

(c) Wire mesh reinforcing minimum weight 20 pounds per 100 sq. ft.

(d) Minimum concrete thickness 4 inches.

c. Tile and Concrete Slab.

(a) Place 3" partition tile flat on a level sand bed not to exceed 1" with adjacent tile units touching but with no mortar between.

- (b) Wet tile thoroughly immediately before pouring concrete cap.
- (c) Cap with 2 inches concrete.
- (d) Cover sand bed with 55 pound roll roofing or equivalent, with edges lapped and sealed and extend up to top of slab.

(10) Foundation Wall Vents:

Space under first floor joists, except in such space as is occupied by a basement or cellar, shall be provided with openings to insure ventilation. Such ventilating openings shall be proportioned on the basis of not less than one and one-half ($1\frac{1}{2}$) Sq. Ft. net opening for each fifteen (15) lineal feet or major fraction thereof of exterior wall. Vents shall be so placed as to provide ventilation at all points and prevent dead air pockets; they need not be placed in the front of the building. Such openings shall be screened with not more than one-half ($\frac{1}{2}$) inch galvanized hardware cloth.

SECTION 15. Exterior Masonry Walls.

(1) a. Walls of Residence Buildings. In residence buildings not more than three stories in height, walls other than coursed or rough or random rubble stone walls, may be of 8-inch thickness when not over 35 feet in height and the roof is designed to impart no horizontal thrust. Such walls in 1-story residence buildings, and 1-story private garages, may be of 6-inch thickness when not over 9 feet in height, except that the height to the peak of a gable may be 15 feet.

b. Hollow Walls (Cavity or Masonry Bonded). Hollow walls shall not exceed 35 feet in height except that 10-inch cavity walls shall not exceed 25 feet in height above the support of such walls. The facing and backing of cavity walls shall each have a thickness of at least 4 inches and the cavity shall be not less than 2 inches (actual) nor more than 4 inches in width.

(2) Masonry veneer applied to masonry walls shall be tied to the wall by one full-length header every $4\frac{1}{2}$ square feet of wall surface or by non-corrodible metal wall ties spaced every sixth course or 16 inches vertically and not more than 32 inches horizontally.

NOTE: In no case shall veneer be considered part of the required wall thickness unless bonded by full length headers as required in (2) above.

(3) Proper provision shall be made for adequate bonding and anchoring together of all intersecting concrete and masonry walls.

(4) In walls constructed of hollow masonry units, that portion of the walls occurring under ends of girders shall be of solid masonry under the girder. Solid masonry material equivalent to at least 2 courses of brick shall be used under the ends of lintels over openings. At least 4 inches of solid masonry construction or other suitable bearing anchored to masonry walls shall be provided under all ceiling joists and roof rafters framing into masonry walls.

(5) Masonry veneer applied to wood frame walls shall have a thickness of not less than 4 inches and a height of not more than 35 feet; and veneer shall be anchored to the wood frame with noncorrodible metal ties spaced every sixth course or 16 inches vertically and not more than 32 inches o.c. horizontally. Provide a one-inch space between the veneer and the storm sheathing. In all cases, the wood construction shall be covered with waterproof building paper or saturated asphalt felt.

(6) Cavity walls must be tied with 3/16" round "Z" bars non-corrosive every 4½ square feet.

(7) Joints between masonry units shall not be over ¾ inch thick. All masonry joints in walls built of solid units shall be filled solid. Where hollow units are used, the mortar shall not be continuous through the joint. All outside joints on the surface of the walls shall be weathered or tooled unless approved otherwise by the Building Inspector.

(8) Supporting lintels or properly designed masonry arches which will adequately support the loads will be required in the heads of all openings in masonry and masonry veneered walls. This requirement applies to lintels for fireplaces. Lintels shall be installed before the masonry above is laid.

(9) In masonry buildings, all exterior walls except cavity walls above basement which are to be plastered shall be furred with 2 inch thick furring tile or with one inch wood furring strips spaced 24 inches o.c. If the surface of exterior masonry walls is completely covered with an approved dampproofing material, the furring may be omitted.

SECTION 16. Chimneys, Flues and Vents.

(1) Definitions:

(a) Flue means a passageway for removing products of combustion solid, liquid or gas fuels.

(b) Chimney means a vertical shaft of masonry enclosing one or more flues from heat producing equipment and fireplaces.

(c) Smoke pipe means a pipe or breaching connecting a heating appliance and a flue.

(d) Gas vent means a flue from gas appliances but not suitable for other fuels, constructed of non-combustible materials, insulated, with sealed joints; of a type approved by the Underwriter's Laboratories for Type B vents or the American Gas Association and should be labeled "This vent for use with appliances which burn gas only."

(e) Draft hood means an indirect connection to a gas burning appliance that will prevent back-draft or excessive draft and allow escape of products of combustion in the event of stoppage of draft.

(2) Chimneys are required for fireplaces, and equipment burning solid and liquid fuels. They shall be constructed with fire-clay flue linings encased in not less than 4 inches of solid masonry. Flues for equipment burning solid or liquid fuels shall be not less than nominal 8 inch flue, square or round. Flues from fireplaces shall be not less than 1/12 of the face area of the fireplace opening or the combined areas of fireplaces with 2 or more faces.

(a) Masonry and mortar materials and construction shall conform to the other sections of this Code.

(b) Not more than two flues may be grouped together. Separate each flue or groups of flues with not less than 4 inches of solid masonry. Adjacent flues shall have their joints staggered.

(c) Chimneys and gas vents shall be not less than 2 feet higher than any roof surface within 10 feet distance.

(d) Cap chimneys with brick, concrete, stone, terra cotta, or other non-combustible weather proof material.

(e) Flues shall extend not less than 12 inches below bottom of breachings entering flues.

(3) Gas vents shall have a cross sectional area of one square inch per 7,500 BTU input per hour but with a minimum diameter of 3 inches.

(a) Support vents rigidly to prevent settlement or disruption physical damage.

(b) Provide proper clearances from combustible materials.

(c) Provide Weathertight connections at roof and with hood above vent.

(4) Breachings or smoke pipes from equipment burning solid or liquid fuels shall be not less than 18 inches from combustible materials, 12 inches from lath and plaster surfaces.

(a) Uninsulated stoves or heaters require the above clearances.

(b) In case of greater hazards the Building Inspector may also require the use of asbestos board to protect the construction.

(5) Fireplaces shall have back wall and side walls of 8 inches thickness solid masonry or ~~reinforced~~ concrete, with lining of not less than 2 inch thickness firebrick or other refractory material, except when walls are of 12 inch thickness lining is not required.

(a) Hearths of non-combustible materials shall be supported upon a fireproof slab or brick arch providing a total thickness of not less than 6 inches. Extend hearth not less than 20 inches beyond face of fireplace and not less than 6 inches on each side of fireplace opening. Combustible formwork under hearths must be removed.

(b) Fireplaces shall have a minimum depth of 16 inches, constructed with smoke shelf, smoke chamber full width of opening tapering up to the flue.

(c) Ash dumps, when used, shall empty into fireproof compartment or pit which shall have a metal cleanout door. The cleanout door shall have a diameter of at least 5 inches.

(6) Prefabricated Flues and Chimneys.

(a) Prefabricated flues and chimneys bearing the Underwriters' Laboratories label may be used under the conditions specified in the Laboratories listing provided such installation is made in accordance with the manufacturer's recommendation and is protected against mechanical injury.

(b) Chimneys specified in Section 16.2 or prefabricated chimneys with Underwriters' Laboratories label as specified above are required for: (1) all incinerators; (2) all appliances which may be converted readily to the use of solid or liquid fuel; (3) all boilers and furnaces except where the authority having jurisdiction approves the use of Type B Gas Vents; (4) all other appliances except approved appliances which produce flue gas temperatures not in excess of 550° F. at the outlet of the draft hood when burning gas at the manufacturer's input rating.

NOTE: Where authorities approve the use of Type B Gas Vents, the Type B Vents and boilers and furnaces attached thereto shall bear approval of the American Gas Association or Underwriters Laboratories.

(In determining whether to permit the use of type B gas vents for venting boilers and furnaces having flue gas

temperatures within the limit above specified, building officials should give consideration to the possibility of a change to solid or liquid fuel, and to the possibility of getting an approved chimney installed in case such a change is made. Where local conditions with respect to gas supply are such that change to other fuel is considered unlikely, or where arrangements can be made so that the building official will be notified of the change from gas to other fuel and so that the requirement for a chimney can then be enforced, it is suggested that the building official may safely permit the use of type B gas vents for venting heating boilers and furnaces having flue gas temperatures within the limit above specified).

SECTION 17. Dampproofing and Waterproofing.

In buildings hereafter erected, if by reason of dampness in the ground, the building inspector shall deem it necessary to do so, foundation walls below the adjacent ground level shall be rendered waterproof or dampproof as conditions require by some approved process (Section 905-3 of the N. C. Building Code).

Note: This section can be changed by each City or Town to better meet local conditions.

SECTION 18. Structural Steel and Iron.

(1) All structural steel and iron shall be designed, fabricated and erected in accordance with the requirements of the "Steel Construction Manual of the American Institute of Steel Construction (A.I.S.C.)."

(2) Connections shall be riveted, bolted or welded and shall be so designed as to develop fully the strength of the structural members. Bearings of steel beams and girders on masonry walls shall extend at least 4 inches into the wall and shall be solidly bedded in Portland cement mortar. Bearing plates shall be designed to carry the load and shall have a minimum thickness of 5/16 inch.

(3) All steel or cast iron columns shall have flanged bases and caps. Loose shims between column caps and beams or girders will not be acceptable. Caps shall be securely anchored to beams and girders. Bases shall be securely anchored by anchor bolts or by embedding in concrete.

SECTION 19. Wood Framing (Structural Members).

(1) The structural properties of lumber sizes and spacing hereafter tabulated is based upon Southern Shortleaf pine having a fiber stress of 1200 pounds per square inch, air dried to a moisture content of 19 percent. When Lumber of better or lessor quality is used the values tabulated may be increased or decreased accordingly. Capacities for timber shall be in accordance with "Wood Structural Design Data" prepared by the National Lumber Manufacturers Association.

(2) Splicing of structural wood framing members between bearing points will not be permitted. In all cases, regardless of location, where the structural strength of framing members is definitely impaired by cutting, drilling or by inherent defects, such members shall be replaced or reinforced, as required by the Building Inspector.

SECTION 20. Wood Floors, Ceilings and Roofs.

(1) All wood structural framing members shall be kept at least 2 inches away from the chimney masonry and all other wood shall be kept at least one inch away.

Note: In no case shall wood framing members bear on the masonry of chimneys, except on piers which are built integral with the chimney masonry.

(2) Girders may be steel, solid wood, built-up wood, reinforced concrete or reinforced clay tile.

(3) All joints of solid and the outside members of built-up wood girders shall be made over pier or column supports.

(4) Wood posts when used as columns in the basements shall bear on a cement base which shall extend not less than 3 inches above the finish floor. The base shall bear directly on the post footing. A sheet of noncorrodible sheet metal shall separate the end of the post from the cement base and be suitably anchored.

(5) The distance between supports under wood girders shall not exceed the following:

MAXIMUM SPAN FOR WOOD GIRDERS AND SILLS

Nominal Size in inches	Maximum Clear Span	
	1 story dwelling	1 ½ to 2 Story Dwelling
4 x 6	5 ft.	4 ft.
4 x 8	6 ft. 4 in.	5 ft. 6 in.
6 x 8	8 ft.	7 ft.
4 x 10	8 ft.	7 ft.
6 x 10	9 ft.	8 ft.

Note: This table is based upon normal conditions for the readily available timber sizes. For other loadings consult the attached Appendix A.

(6) Where floor joists frame into the side of wood girders, the joists shall be supported on metal joist hangers or on a bearing strip or ledger board on the side of the girders. Size of ledger shall be at least 2 x 2 inches. The notch in the end of the joist shall be not more than $\frac{1}{4}$ of the joist depth.

(7) Ends of floor joists framing into masonry walls shall have not less than 4-inch bearing and shall have at least a 3-inch bevel or fire cut.

(8) Each fourth joist in wood floor construction framing into masonry walls shall have a metal strap anchor applied on the side and near the bottom of the joist and shall extend into the masonry wall. Masonry walls running parallel to the floor joists above the first floor shall be tied to the floor construction with metal strap anchors spaced not over 6 feet apart and extending over and secured to at least 3 joists.

(9) Floor joists shall be doubled under all partitions which run parallel to the floor joists.

(10) Headers and trimmers shall be doubled except that headers 4 feet or less in length may be of single thickness provided the header is supported on not less than a 2 x 2 inch ledger boards and header is secured by spikes driven through one thickness of the trimmers into the ends of the header. Headers receiving more than four joists shall have ends supported in metal joist hangers.

(11) Ends of lapped joists shall rest on girders or on bearing partitions and shall be securely nailed to plate and to each other.

(12) Where second story is framed out over the wall below and the second floor joists run parallel to the supporting wall, the supporting members of the overhang shall carry back at least 30 inches and frame into doubled floor joists. The maximum projection of the overhang shall be 15 inches. Where framing is at right angle to the supporting wall, the joists shall extend continuous in one piece to form the overhang.

Note: This construction shall also apply to all projections carrying floor and roof loads which are not supported directly by a foundation.

(13) Floor, including attic floor, and flat roof joists shall be bridged solid or cross-bridged with 1 x 3 inch bridging at intervals not to exceed eight feet and double-nailed at each end.

(14) Hung Ceiling—In flat roof construction where the ceiling joists are hung from roof joists, the requirement for the roof joists shall be the same as for floor joists, and spacing shall not exceed 16 inches o.c. Ceiling joists shall be a minimum of 2 x 6's of same spacing as roof joists and shall be supported from the roof joists with 1 x 4 inch hangers, spaced not more than 6 feet o.c. and securely nailed to sides of roof and ceiling joists.

(15) The spans in the following table are based upon maximum deflection of 1/360 of the span based upon the live and dead loads noted, uniformly distributed:

MAXIMUM SPANS FOR FLOOR JOISTS

Assumed live loads, 40 pounds per square foot, plaster dead loads 10 lbs. per square foot ceiling.

Floor Joists with Plastered Ceiling (50#)

Lumber Size Nominal	Actual	Maximum Clear Span		
		Inches O.C.	Ft.	Inches
2 x 8	1 ⁵ / ₈ x 7 ¹ / ₂	16	12	1
		12	13	3
3 x 8	2 ⁵ / ₈ x 7 ¹ / ₂	16	14	
		12	15	4
2 x 10	1 ⁵ / ₈ x 9 ¹ / ₂	16	15	3
		12	16	8
3 x 10	2 ⁵ / ₈ x 9 ¹ / ₂	16	17	8
		12	19	3
2 x 12	1 ⁵ / ₈ x 11 ¹ / ₂	16	18	5
		12	20	1

Lumber Size Nominal	Actual	Maximum Clear Span		
		Inches O.C.	Ft.	Inches
2 x 8	1 $\frac{5}{8}$ x 7 $\frac{1}{2}$	16	12	11
		12	14	
3 x 8	2 $\frac{5}{8}$ x 7 $\frac{1}{2}$	16	14	11
		12	16	4
2 x 10	1 $\frac{5}{8}$ x 9 $\frac{1}{2}$	16	16	3
		12	17	9
3 x 10	2 $\frac{5}{8}$ x 9 $\frac{1}{2}$	16	18	9
		12	20	5
2 x 12	1 $\frac{5}{8}$ x 11 $\frac{1}{2}$	16	19	6
		12	21	4

(16) Cutting of floor joists to facilitate the installation of piping and duct work will be permitted with the following limitations:

(a) The top or bottom edges of joists may be notched not to exceed 1/6 of the joist depth but notching the top or bottom edge of joists will not be permitted in the middle third of any joist span.

(b) If cutting of floor joist more than 1/6 of its depth is found necessary, a header the full depth of the joist shall be cut in to support the end of the joist.

(c) Where location of pipes necessitates passing through the joists, holes shall be drilled to receive the pipes. The diameter of the holes shall not be more than 1/2 inch greater than the outside diameter of the pipe and in no case greater than 2 1/2 inches. The edge of the holes shall not be located near than two inches from the top or bottom edge of the joists.

(17) Subflooring . . . Used as a base for wood finish flooring.

(a) Wood boards used as a base for wood finish flooring shall be square edge, at least one inch nominal thickness and not more than 8 inches in width. Boards shall be laid diagonally and the ends cut over and parallel to the joist. Boards less than 8 inches in width shall be double nailed; 8 inch boards shall be triple-nailed.

(b) T & G Boards may be used for subflooring provided each board bears on at least two joists.

(c) Plywood used as subflooring for wood finish floors to comply with the following table:

Minimum Thickness subfloor (5 ply): 1/2 inch

Minimum thickness Finish Flooring: 25/32-inch wood strip if laid at right angles to joists.

Maximum Joist Spacing (Inches): 12 & 16

(18) All subflooring shall be covered with building paper or deadening felt before laying the finish floor.

(19) Finished floor not less than 25/32 inches thick T & G may be used without a subfloor, provided the ends of the flooring boards are cut over the joists.

(20) Floor coverings of linoleum, composition, or rubber tile on wood construction may be applied over T & G wood flooring or plywood not less than 5/8 inch in thickness nor more than 4 inches in width or equal and either sanded or scraped smooth before covering is applied.

(21) The spans in the following table are based upon maximum deflection of 1/360 of the Span based upon a plaster dead load of 10# per square foot of ceiling uniformly distributed:

MAXIMUM SPANS FOR CEILING JOISTS

(Live Load, None; Dead Load, 10 pounds per square foot)

Southern Yellow Pine		Maximum Clear Span		
Lumber Size	Actual	Inches	Feet	Inches
Nominal				
2 x 4	1 5/8 x 3 5/8	*24	8	11
		16	10	
		12	11	
2 x 6	1 5/8 x 5 5/8	*24	13	8
		16	15	4
		12	16	7
2 x 8	1 5/8 x 7 1/2	*24	18	
		16	20	2
		12	21	8

*For Wood Ceiled Finish Only.

Note: Where the attic space above ceiling joists is unfinished but is usable for storage space, or if the space is suitable for finishing into future habitable rooms, the spans for the ceiling joists shall be figured the same as the floor joists.

(22) Ceiling joists shall, wherever possible, serve as ties for rafters and shall be securely nailed to the rafters.

(23) A clear opening of 14" x 24" for access into each attic space shall be provided to allow for inspection and repair.

(24) Collar beams of 1 x 6's or 2 x 4's shall be installed on at least each third pair of roof rafters and shall be double-nailed to the rafters. Maximum spacing of collar beams, 5 ft. o.c. Other approved methods of bracing roof may be used.

(25) Where ceiling joists serve as collar beams and occur above the midpoint of the rafter, adequate provision shall be

made for tying the lower end of the rafter to the floor construction. Where the installation of this tie is not possible because of structural conditions, the rafter size shall be increased sufficiently to support the roof load without thrust or undue bending in the lower end and the size of the collar beams shall be not less than that of rafters.

(26) Maximum spans for wood roof rafters shall be as listed. Clear span shall mean the distance measured horizontally from plate to a point directly beneath the ridge. The actual rafter length will depend on the roof slope and must be determined accordingly. Spans may be reduced by continuous bracing when the loads are transferred to the foundation thru bearing walls.

MAXIMUM CLEAR SPANS OF RAFTERS

Asphalt shingle roof, not ceiled on underside of rafters.

Lumber Size Nominal	Actual	Maximum Clear Span		
		Inches O.C.	Feet	Inches
2 x 4	1 $\frac{5}{8}$ x 3 $\frac{5}{8}$	12	10	4
		16	9	
		20	8	
		24	7	5
2 x 6	1 $\frac{5}{8}$ x 5 $\frac{5}{8}$	12	15	9
		16	13	10
		20	12	4
		24	11	5
2 x 8	1 $\frac{5}{8}$ x 7 $\frac{1}{2}$	12	20	9
		16	18	3
		20	16	6
		24	15	1

Built-up Roof, Not Ceiled on Underside of Rafters.

Nominal	Actual	Inches O.C.	Feet	Inches
2 x 4	1 $\frac{5}{8}$ x 3 $\frac{5}{8}$	12	9	5
		16	8	3
		20	7	5
		24	6	9
2 x 6	1 $\frac{5}{8}$ x 5 $\frac{5}{8}$	12	14	5
		16	12	7
		20	11	3
		24	10	5
2 x 8	1 $\frac{5}{8}$ x 7 $\frac{1}{2}$	12	19	7
		16	16	
		20	14	11
		24	13	9

(27) Rafters shall be securely spiked to the wall plate. Opposing rafters shall be framed directly opposite each other at the ridge. There shall be a ridge board at all ridges and a valley rafter at all valleys. The depth of the ridge board and valley rafters shall be not less than at the cut end of the abutting rafters. Valley and hip rafters shall be not less than 2 inches thick.

(28) All openings in roof construction for dormer windows where there are no supporting partitions shall be framed double.

(29) Requirements for headers and trimmers for roof framing around chimneys shall be same as required for floors except that for a sloping roof where headers are less than 4 feet in length and the chimney is either at the ridge or the eaves, the trimmers may be single.

(30) Roof rafters shall be covered with one inch T & G roof sheathing not more than 8 inches in width, laid closed for tile, slate, asbestos-cement or asphalt shingles. All roof sheathing shall be securely nailed to rafters at each bearing

Note: Endmatched (T & G) boards may be used for roof sheathing, provided no two adjoining boards break joists over the same rafter space and each board shall bear on at least two rafters. Approved sheathing other than wood may be used.

(31) Plywood sheathing:

(a) Roofing Material	Rafter Maximum Spaces (Inches)	Plywood minimum Thickness (Inches)
Asphalt	16	5/16
	24	3/8
Slate, Tile & Asbestos-cement	16	1/2
	20	1/2
	24	3/8
Flat Roofs (Built-up)	16	3/8
	24	1/2

(b) Application: Apply grain of outer plys at right angles to rafters.

(c) Protection: Plywood roof sheathing, unless of exterior type, shall have no surface or edge exposed to the weather.

(32) Trussed Roof Construction: 2" x 4" construction spaced 24" o.c. will be permitted if T & G #2 Kiln Dried or 1/2" plywood sheathing is used.

(33) Crickets or chimney saddles shall be installed on the upper side of all chimneys that are not in contact with the ridge.

SECTION 21. Exterior Walls.

- (1) Wood stud walls shall have corner posts built up using:
- (a) A 4 x 6 solid post with a 2 x 4 piece to form the interior corner.
 - (b) Two 2 x 4 pieces with a 2 x 6 member between; or
 - (c) Three 2 x 4 pieces arranged to form the interior lathing corner.
- (2) Studs shall be not less than 2 x 4's spaced not more than 16 inches o.c. for plaster finish or 24 inches o.c. for wood ceiled or $\frac{3}{8}$ " laminated wood finish in one story dwellings or 20 inches o.c. for wood ceiled finish in 1½ story and 2 story dwellings.
- (3) All window and door openings shall have studs doubled on jambs. The inner stud shall be cut to receive the lintel or header over the opening and shall extend in one piece from lintel or header to bearing, except that at window, the sill plate shall be cut into the inner stud. Lintels or headers over all openings shall be 2 inch thick members, doubled set on edge, or solid timber.
- (4) Spans for lintels or headers shall not exceed the following:
- | | |
|--------------------|---------------------------|
| Spans up to 3'6" | two 2 x 4's set on edge. |
| Spans 3'6" to 5'8" | two 2 x 6's set on edge. |
| Spans 5'8" to 7'6" | two 2 x 8's set on edge. |
| Spans 7'6" to 9'6" | two 2 x 10's set on edge. |
| Spans 9'6" to 11' | two 2 x 12's set on edge. |
- (5) In lieu of lintels, trussed construction may be used.
- (6) All bearing plates for roof rafters framing into masonry wall shall be bolted to the masonry walls with $\frac{1}{2}$ " bolts 12" long which shall be bedded firmly in the masonry and spaced not more than 6 feet apart.
- (7) All sills and girders on top of foundation walls and piers shall be leveled, shimmed up with slate chips or brick, and thoroughly bedded in cement mortar.
- (8) Top plates on wood frame construction shall be not less than 2 x 4's doubled and shall lap at the corners. Cut the top members of the plate at all intersecting partitions to permit partition plate to lap and tie to exterior plate. All such laps shall be double-spiked.
- (9) When exterior walls are wood-sheathed diagonally with solid wood, the sheathing shall be applied at approximately 45 degrees and extend in opposite directions on each side adjoining at the corner and corner bracing will not be required.
- (10) Except when plywood or diagonal sheathing is used, all external corners shall have diagonal 1 x 4 inch braces let into

the face of the studs at approximately 45 degrees and wherever possible shall extend from sill to plates. Braces shall be securely nailed to each stud and to sill and plate. Where openings occur near the corner, 1 x 4 inch knee braces shall be installed above and below the openings at approximately 45 degrees extending across not less than 3 stud spaces and shall be let into the face of the studs.

(11) Wood sheathing boards shall be not less than one inch nominal thickness not more than 8 inches wide, applied solid with each board drawn up tight and double-nailed at each stud or bearing point, for 8" boards triple nail. Jointing shall occur over the center of, and parallel to, the studs.

Note: Endmatched (T & G) boards may be used for sheathing, provided no two adjoining boards break joints over the same stud space, and each board shall bear on at least two studs.

(12) Wood sheathing used in connection with stucco finish shall be applied horizontally and the frame shall be braced as described in Paragraph 10 above.

(13) Where shingles are applied over other than wood sheathing boards, 1 x 2 inch nailing strips shall be used, nailed to studs over the building paper, and spaced according to the shingle exposure.

(14) All exterior finish shall be backed up with water-resisting building paper or saturated asphalt felt. Each lap shall be not less than 4 inch lap on the waterproof material around all openings.

(15) All exterior openings in frame walls shall have a strip of waterproof paper or saturated asphalt felt installed behind the exterior trim.

(16) Studs in exterior frame walls may run from sill to roof line, except where the length of stud exceeds 20 feet, in which case a 4 x 4 inch plate shall be provided at the second floor level or at the attic floor level. Studs shall be in continuous lengths without splicing. Floor joists supported on exterior frame walls shall bear on doubled 2 x 4 inch plates properly framed into studs or they shall bear on 1 x 6 inch ledger boards let into the face of the studs. Joists bearing on ledger boards shall be securely nailed to face of studs.

SECTION 22. Interior Partitions.

(1) All partition studs shall be not less than 2 x 4's spaced not more than 16 inches o.c. for plaster finish or 24 inches o.c. for wood ceiled or $\frac{3}{8}$ laminated wood finish in one story dwellings or 20 inches o.c. for wood ceiled finish in 1½ and 2 story dwellings, set the 4 inch way.

Note: Nonbearing partitions may be set the 2 inch way, around closets and chimneys and in other locations where they contain no openings.

(2) All openings in interior bearing partitions shall have jambs and head double-framed same as required for exterior openings. Jambs and heads of openings in nonbearing partitions shall be 2 x 4's doubled.

(3) The top plates of all bearing partitions shall be doubled. All partition plates shall lap at all intersecting partitions and at outside walls and shall be securely spiked.

(4) When partitions frame on top of the joists or subfloor, the studs shall bear on a sole plate at least 2 inches nominal thickness.

(5) Where nonbearing partitions run parallel to the second floor joists, a lathing member shall be placed above the partition plate and shall be wide enough to provide nailing surface for ceiling lath.

(6) Wood bearing partitions in cellars or basements will not be acceptable.

(7) No stud shall be cut more than half its depth to receive piping and duct work. If more depth is required, the partition studs shall be increased accordingly. Where the running of piping and duct work necessitates the cutting of plates, proper provision, acceptable to the Building Inspector shall be made for tying together and supporting all structural members affected by such cutting.

(8) Corners for all rooms shall be framed solid for lath or other interior finish.

(9) All interior partitions connecting to masonry walls shall have the end stud anchored to the masonry with not less than three 1/2 inch bolts in each story height.

SECTION 23. Prefabricated Structures.

A prefabricated structure is one having floors, walls, ceilings, or roof composed of sections or panels of a varying size which have been fabricated prior to erection on the building foundation.

Where materials used in and the design of prefabricated structures are tested for strength and durability and the Building Inspector finds from such tests and otherwise that the strength of the materials used is sufficient to bear as great or greater loads and stresses as the dimensions of materials required in Sections 19, 20, 21, 22 of this code, then the said Building Inspector shall have authority to issue a permit for the erection and construction of such prefabricated structures.

SECTION 24. Stairs.

(1) Main stairways shall have not less than 6 ft. 8 in. continuous clear head room measured vertically from the front edge of the tread to a line parallel to the stair run.

(2) In figuring the main stair run, the treads shall be not less than 9 inches wide. Risers shall not be more than $8\frac{1}{4}$ inches high, and tread shall be so proportioned to riser that an easy run is obtained. The width of tread, including nosing, shall be not less than $10\frac{1}{4}$ inches.

(3) Cutting and framing of all structural members such as stringers and landings shall be such that development of their full strength will not be impaired. Stringers shall have solid bearing at top and bottom. The minimum effective depth of wooden stair stringers shall be $3\frac{1}{2}$ inches.

(4) If winders are used, the width of treads at 18 inches from the converging end shall be not less than the tread width on the straight stair run. All risers shall be the same height for each story.

(5) Open basement stairs shall have stringers not less than 2 inches thick. If treads are less than $1\frac{1}{8}$ inches thick, a third stringer shall be installed.

SECTION 25. Miscellaneous construction requirements.

(1) Caulking will be required around all exterior openings in masonry or masonry veneer walls and at other intersections of wood and masonry where considered necessary to make weather-tight.

(2) Firestopping.

(a) Exterior walls of wood frame construction shall be properly firestopped at each floor level, at the top story ceiling level, at the roof level in the case of flat roofs, and at the foot of roof rafters in the case of sloping roofs.

(b) Joists shall be firestopped at the ends and over supports for the full depth of the joists.

(c) Interior stud partitions shall be firestopped at the floors and ceiling of each story by a 2-inch nominal dimension, wood plate, the width of the stud or the equivalent.

(d) When sliding doors are pocketed in partitions, such pockets shall be completely firestopped at the top, bottom and ends.

(e) Firestopping shall be of noncombustible material or of wood not less than 2 inches in thickness, nominal dimension. No firestopping shall be covered or concealed until inspected by the city building inspector.

(3) Where showers occur over bathtubs, the walls above the tubs for a height of at least 6 feet from the bathroom floor shall be finished with a waterproof material. Recessed bathtubs shall be supported at the rim on metal supports or wood blocks securely anchored to the stud frame.

(4) Main entrance doors shall be not less than 3 feet wide. All other exterior doors shall be not less than 2 ft. 8 in. wide. All interior doors which provide access to habitable rooms shall be not less than 2 ft. 6 in. wide.

SECTION 26. Roof Coverings.

(1) A double starting row will be required on all shingle applications.

(2) Asphalt saturated felt underlay shall be:

(a) Approximately 30 lbs. per 100 square feet under tile, asbestos cement shingle or slate roofs.

(b) Approximately 15 lbs. per 100 square feet under asphalt shingles or in lieu thereof, an asphalt saturated and coated building paper, weight approximately 10 lbs. per 100 square feet.

(c) No felt will be required under asphalt shingles when:

1. On roof slopes of 7 in 12 or more, when package containers are stamped by the manufacturer showing approximate shipping weight of not less than 210 pounds per square; or
2. When triple shingle thickness is obtained at all points.

(3) Asphalt shingles shall bear Fire Underwriters' Class C label; shall be a size, including headlap and exposure, which when correctly applied, will provide a minimum of double thickness at all points.

(4) Cutouts or vertical spacing not over $\frac{3}{4}$ inch in width may be disregarded in determining the number of shingle thicknesses obtained.

(5) Wood shingles will not be permitted on any roof.

(6) Tile and asbestos-cement shingles shall be applied in accordance with recommendations of the manufacturer.

(7) Slate shingles shall have an exposure not exceeding the following:

14-inch slate	not over $5\frac{1}{2}$ inches to weather
16-inch slate	not over $6\frac{1}{2}$ inches to weather
18-inch slate	not over $7\frac{1}{2}$ inches to weather

(8) For Flat roofs install built-up asphalt or "pitch" and gravel covering, including flashing, shall comply with require-

ments of the Underwriters' Laboratories, Inc. for Class B 3-ply covering, and shall be applied according to the manufacturers' directions. The minimum weight of each ply of felt shall be 14 lbs. per 100 square feet. Such roofs shall be surfaced with approximately 400 lbs. of roofing gravel or crushed stone or with 300 lbs. of crushed slag per 100 square feet of finished roof.

(9) The top ply of felt and crushed stone or slag surfacing may be replaced with one layer of mineral surfaced cap sheet weighing not less than 85 lbs. per square.

(10) Roofs will be considered flat, if the pitch is less than 3 inches in 12 inches.

(11) Other types of roof coverings such as sheet metal, metal shingles, canvas, etc. may be used when the type and weight of the material and methods of application are approved by the Building Inspector.

SECTION 27. Sheet Metal Roofing and Flashing Material.

(1) All built-in flashings and counter flashings where used over heads of openings, around chimneys, at intersection of roofs and walls, valleys and at horizontal and vertical intersections of stucco with other material shall be of corrosion-resisting metal.

(2) All metals other than copper, lead and zinc shall be painted both sides before installation.

Note: For valleys in connection with asphalt shingle roofs, two thicknesses of mineral surface roll-roofing material cut from rolls weighing not less than 85 lbs. per square may be used. Strips shall be not less than 18 inches wide.

(3) The weight or gauge of sheet metal depends upon the use to which it is put.

The following minimums shall apply:

- (a) Copper: flashing, gutters and downspouts 16-ounce.
- (b) Tin: 30 lbs. block tin coating.
- (c) Galvanized Sheet Metal: 28 gauge sheet with 1.25 ounce (total weight both sides) zinc coating per square foot.
- (d) Zinc: As recommended by manufacturers.
- (e) Lead: Sheet lead, 2½ pounds per square foot.

(4) Flashing and counterflashing at parapet walls in connection with flat roofs may be of same material as roof covering. All flat roofs shall have a 45 degree cant strip at all roof intersections with parapet and vertical walls. Minimum width of face of cant strip shall be 2¼ inches.

(5) All chimneys shall have corrosion-resisting metal counterflashing built in on all sides.

(6) Where gutters and downspouts are installed, they shall be of corrosion-resisting metals. Solid wood gutters will be acceptable if inside surface is properly protected by two coats of pitch or three coats of lead and oil. Crickets shall be covered with corrosion-resisting sheet metal.

SECTION 28. Lathing.

(1) Metal lath shall not be less than the following:

(a) Expanded metal lath—

1. For stud walls, studs 16 inches o.c. or less; 2.5 pounds per square yard.
2. For ceilings, joists spacing up to 20 inches; 3.4 pounds per square yard or flat ribbed metal lath 2.75 lbs. per sq. yd.
3. For exterior stucco: 3.4 lbs. per square yard.

Note: Expanded metal lath used as base for interior plaster shall be either painted or galvanized.

(b) Woven galvanized wire lath, #18 gauge wire, weight 3.2 lbs. per square yard.

(c) Paper backed galvanized wire lath; Maximum wire spacing 2 inches o.c.

1. For interior plaster: Weight 2.3 lbs. per square yard.
2. For exterior stucco: Weight 3.1 lbs. per square yard.

Note: All metal lath used as base for exterior stucco shall be cut from zinc-coated sheet metal or fabricated from zinc-coated wire.

(2) All external angle corners for interior plaster work shall have galvanized iron corner beads and all intersections of walls at corners and of walls with ceilings shall be lathed with metal lath corner strips not less than 6 inches wide - 3 inches on each surface.

(3) Where metal lathing is used as base for stucco, the lath shall be held at least $\frac{3}{8}$ inch away from sheathing by use of furring nails, wood furrings, or self-furring lath.

(4) Where metal lath, except paper backed metal lath, is applied to solid wood surfaces such as wood beams, lintels, girders, etc. the surface shall be covered with waterproofed paper before the metal lath is applied. Furring nails or strips shall be provided for fastening of metal lath. All other lath shall be applied according to manufacturer's specifications.

SECTION 29. Plaster Work.

(1) All interior plaster work when applied to metal lath base shall be 3-coat work and shall have a minimum thickness of $\frac{3}{8}$ -inch over the lath base.

NOTE—Work which provides for the scratch coat and brown coat to be applied as separate coats, but in one operation, shall be considered 3-coat work.

(2) The scratch or first coat may be omitted when plaster is applied directly to masonry or gypsum lath.

(3) All plaster shall be mixed and applied exactly according to manufacturer's directions.

(4) All lime used for plastering shall be thoroughly slaked.

(5) If hydrated lime or patent plasters are used, they shall be mixed and applied according to manufacturer's directions.

(6) All walls and corners shall be plumb and straight.

SECTION 30. Stucco.

NOTE—See "Lathing" for application of stucco on metal lath.

(1) Stucco shall have a base of Portland cement or other approved material.

(2) First and second coats shall be composed of: 1 part Portland cement, 3 parts sand and hydrated lime equal to 10 per cent of cement. First coat shall be applied to a minimum thickness and scratched. Keep damp for at least three days, then allow to dry. After scratch coat is dry, moisten thoroughly and evenly and immediately apply the second coat to at least $\frac{1}{2}$ inch thickness and rod straight and true in every direction. Keep second coat damp for at least three days and then allow to dry thoroughly.

(3) Third coat shall be applied of sufficient thickness to obtain desired finish texture and shall be protected from too rapid drying for at least three days.

(4) Stucco applied to wood lath will not be acceptable.

(5) No stucco shall be applied when the temperature is less than 40 degrees Fahrenheit.

SECTION 31. Plumbing facilities.

(1) Every residence or tenement hereafter erected shall contain at least one kitchen sink, one water closet, one lavatory and one bath tub or shower stall for each family and provision shall

Sections 32—33—34 Dwelling Code

be made for furnishing hot water by the installation of approved heaters and storage tanks.

NOTE—Applicable to cities of 5,000 population or more. Reference: Chapter 160, Article 15 of the N. C. General Statutes.

SECTION 32. Regulatory Codes and Ordinances.

The regulatory codes or ordinances enumerated in this section governing plumbing, electrical, heating, gas and air conditioning installations are hereby adopted as the minimum regulations for such installations within one and two family residences constructed, altered, or repaired and all plumbing, electrical, heating, gas and air conditioning installations for one and two family residences shall comply with the applicable codes cited below:

Example:

(1) Plumbing Code	Title	Ordinance Number and Date
(2) Electrical Code	Title	Ordinance Number and Date
(3) Heating Code	Title	Ordinance Number and Date
(4) Gas Code	Title	Ordinance Number and Date
(5) Air Conditioning	Title	Ordinance Number and Date
(6) Other	Title	Ordinance Number and Date

“A copy of the above codes which have been adopted and all amendments thereto shall be kept on file in the office of the Building Inspector along with a copy of this Residential Building Code.”

SECTION 33. Interpretation of the Code.

In interpreting the requirements or provisions of this Building Code, the decision of the Building Inspector shall be final. An appeal from the decision of the Building Inspector may be taken to the courts as provided by law.

“The Building Inspector shall have the authority to permit the use of materials or methods of construction not specifically set forth within the Code. Provided however, any such alternate materials or methods of construction is proved to the satisfaction of the Building Inspector to be at least the equivalent of the requirements prescribed by this Code for safety, strength, quality and effectiveness including fire resistance.”

SECTION 34. Validity: Penalty.

(1) *Validity.* If any section or part of section of this chapter shall be declared unconstitutional for any reason, the remaining sections or parts of sections shall not be affected thereby.

(2) *General Penalty.* To be established by each City.

ARTICLE III. DEFINITIONS

1. Unless otherwise expressly stated, the following terms shall, for the purpose of this code, have the meaning indicated in this section.

2. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

3. Where terms are not defined in this section, they shall have their ordinarily accepted meanings or such as the context may imply.

Alteration as applied to a building or structure, means a change or re-arrangement in the structural parts or in the exit facilities; or an enlargement, whether by extending on a side or by increasing in height; or the moving from one location or position to another; the term "alter" in its various moods and tenses and its participial forms, refers to the making of an alteration.

Apartment means a room, or a suite of two or more rooms, in a residence building occupied as the home or residence of an individual, family or household.

Approved, as applied to a material, device or mode of construction, means approved by the city building inspector under the provisions of this code, or by other authority designated by law to give approval in the matter in question.

Area, as applied to a form of construction, means an uncovered subsurface space adjacent to a building.

Area, as applied to the dimensions of a building, means the maximum horizontal projected area of the building at grade.

A. C. I. means American Concrete Institute.

A. I. A. means American Institute of Architects.

A. I. S. C. means the American Institute of Steel Construction.

A. S. A. means the American Standards Association.

A. S. T. M. means the American Society for Testing Materials.

Basement means a story with 40 per cent or more of its cubical contents below finished grade.

Brick means a solid masonry unit having a shape approximating a rectangular prism, usually not larger than 12 by 4 by 4 inches. A brick may be made of burned clay or shale, of lime and sand, of cement and suitable aggregates, or of fire clay or other approved materials.

Building Line means the line, established by law, beyond which a building shall be not extend, except as specifically provided by law.

Building Inspector means the officer or other designated authority charged with the administration and enforcement of this code, or his duly authorized representative.

Concrete means a mixture of Portland Cement, fine aggregate, coarse aggregate, and water.

Average Concrete—Concrete made from average materials, where no preliminary tests of the materials to be used are made, the water content per sack of cement shall not exceed the values outlined in Section 13, (2)-a.

Controlled Concrete means a concrete where the materials are scientifically selected, graded and proportioned to give specified results;

Reinforced Concrete means a portland cement concrete in which steel is embedded in such a manner that the two materials act together in resisting forces.

Dead Load means the weight of walls, partitions, floors, roofs, and all other permanent construction of a building.

Fire Resistance Rating means the time in hours that the material or construction will withstand the standard fire exposure as determined by a fire test made in conformity with the "Standard Methods of Fire Tests of Building Construction and Materials," ASTM E 119-47.

Gypsum Mortar when used in the laying of unit construction means a mixture of one part neat gypsum and not more than three parts of clean, sharp, well-graded sand by weight.

Habitable Room means a room occupied by one or more persons for living, eating or sleeping; and includes kitchens serving apartments or individual households, but does not include bathrooms, toilet compartments, laundries, serving and storage pantries, corridors, basement and other spaces that are not used frequently or during extended periods.

Height, as applied to a story, means the vertical distance from top to top of two successive tiers of floor beams or finished floor surfaces;

Height, as applied to a wall, means the vertical distance to the top measured from the foundation wall, or from a girder or other immediate support of such wall.

Hereafter means after the time that this code becomes effective.

Hollow Masonry Unit means a masonry unit whose net cross-sectional area in any plane parallel to the bearing surface is less than 75 per cent of its gross cross-sectional area measured in the same plane.

Live Load means all loads except dead load.

Masonry means brick, stone, plain concrete, hollow block, solid block or other similar building units or materials, or combinations of them, bonded together with mortar. Reinforced concrete is not classed as masonry.

Multifamily House means a building occupied as the home or residence of individuals, families or households living independently of each other, of which three or more are doing cooking within their apartments; including tenement house, apartment house, flat.

Municipality means the governmental unit which has adopted this code under due legislative authority.

N.L.M.A. means the National Lumber Manufacturers Association.

Noncombustible as applied to a building construction material means a material which, in the form in which it is used, falls in one of the following groups (a) through (d). No material shall be classed as noncombustible which is subject to increase in combustibility or flame spread rating beyond the limits herein established, through the effects of age, moisture or other atmospheric conditions as, for example, various types of treated wood. Flame spread rating as used herein refers to rating obtained according to the method for fire hazard classification of Underwriters Laboratories, Inc. For data on such ratings see Underwriters' Laboratories Fire Protection Equipment List under the heading Building Materials—Hazard Classification (Fire) (40 U8).

(a) Materials no part of which will ignite and burn when subjected to fire. Examples asbestos fiber, brick, clay tile, concrete, glass, gypsum, iron, portland cement, slate, steel, stone.

(b) Materials having a structural base of noncombustible material, as defined in (a), with a surfacing not over $\frac{1}{8}$ -inch thick which has a flame spreading rating not higher than 50. Examples: certain types of protected steel sheets gypsum wall board.

(c) Materials made up of noncombustible materials as defined in (a) together with combustible components in such form that cross-sections of the material in any plane present a similar composition, and having a surface flame spread rating not higher than 25 without evidence of continued progressive combustion. Examples: certain insulation materials as, blocks of cellular glass, boards of glass fiber, slabs of wood excelsior impregnated with portland cement.

(d) Materials, other than as described in (b), made up of layers with no layer having a surface flame spread rating higher than 25 without evidence of continued progressive combustion. Examples: certain sandwich type materials.

Occupied, as applied to a building, shall be construed as though followed by the words "or intended, arranged or designed to be occupied."

Prefabricated means composed of sections or panels fabricated prior to erection on the building foundation.

Required means required by some provision of this code.

Roof means the roof slab or deck with its supporting members.

Roofing means the covering applied to the roof for weather resistance, fire resistance, or appearance.

Solid Masonry means masonry consisting of solid masonry units laid continuously with the joints between the units filled with mortar, or consisting of plain concrete.

Solid Masonry Unit means a masonry unit whose net cross-sectional area in every plane parallel to the bearing surface is 75 per cent or more of its gross cross-sectional area measured in the same plane.

Stairway means one or more flights of stairs and the necessary landings and platforms connecting them to form a continuous and uninterrupted passage from one story to another in a building or structure.

Story means that part of a building comprised between a floor and the floor or roof next above.

Structural Clay Tile means a hollow masonry unit composed of burned clay, shale, fireclay or mixture thereof and having parallel cells.

Structure means anything constructed or erected, the use of which requires location on the land, or attachment to something having a permanent location on the land.

WALLS:

Bearing Wall means a wall which supports any vertical load in addition to its own weight;

Cavity Wall means a wall built of masonry units or of plain concrete, or a combination of these materials, so arranged as to provide an air space within the wall, and in which the inner and outer parts of the wall are tied together with metal ties;

Curtain Wall means a non-bearing wall between columns or piers and which is not supported by girders or beams;

Faced Wall means a wall in which the masonry facing and backing are so bonded as to exert common action under load;

Foundation Wall means a wall below the first floor extending below the adjacent ground level and serving as support for a wall, pier, column or other structural part of a building.

Hollow Wall of Masonry means a wall built of masonry units so arranged as to provide an air space within the wall, and in which the inner and outer parts of the wall are bonded together with masonry units;

Non-bearing Wall means a wall which supports no load other than its own weight;

Panel Wall means a non-bearing wall built between columns or piers and wholly supported at each story;

Party Wall means a wall used or adapted for joint service between two buildings;

Veneered Wall means a wall having a facing which is not attached and bonded to the backing so as to form an integral part of the wall for purposes of load bearing and stability.

Written Notice shall be considered to have been served if delivered in person to the individual or to the parties intended, or if delivered at or sent by registered mail to the last address known to the party giving the notice.

Yard means a court that extends along the entire length of a lot line.

Zoning means the reservation of certain specified areas within a community or city for buildings and structures for certain purposes with other limitations such as height, lot coverage and other stipulated requirements.

APPENDIX A

1. The tables included in this Code are based upon the following live and dead loads. Design for other conditions should likewise use these values.

A. Live Load Assumptions:

(a) Live loads on floors shall be assumed as 40 pounds uniformly distributed. Allowance shall be made for concentrated loads.

(b) Wind loads on pitched roof surfaces shall be assumed as 10 pounds per square foot. Localities that are subjected to sustained wind velocities greater than 50 MPH the wind load shall be increased proportionately at the following rates:

60 MPH	Add	5 Pounds
70 MPH	Add	10 Pounds
80 MPH	Add	15 Pounds
90 MPH	Add	23 Pounds
100 MPH	Add	30 Pounds

(c) Snow loads on roof surfaces shall be assumed as 10 pounds per square foot on roof surfaces. Localities subjected to more or less than 8 inches of snow shall be increased or decreased at the rate of 1.5 pounds per square foot.

(d) Minimum combined loads on roof surfaces shall be assumed as 20 pounds per square foot; with allowances made for greater snow or wind loads and any other loads superimposed upon roof.

B. Dead Load Assumptions:

The following average weights of various materials were used as the basis for the dead loads in computing the span lengths in the tables:

Finished floor	2.5	lbs. per sq. ft.
Rough Floor	2.5	lbs. per sq. ft.
Roof sheathing	2.5	lbs. per sq. ft.
Plaster and lath	10.0	lbs. per sq. ft.

Group 1—Assumed as 2.5 lbs. per sq. ft. including:

Shingles	2.5	lbs. per sq. ft.
Copper sheets	1.5	lbs. per sq. ft.
Copper tile	1.75	lbs. per sq. ft.
Three-ply ready roofing	1.00	lb. per sq. ft.

Group 2—Assumed as 8 lbs. per sq. ft. including:

Five-ply felt and gravel	7.00	lbs. per sq. ft.
Slate, 3/16 inch	7¼	lbs. per sq. ft.
Roman tile	8	lbs. per sq. ft.
Spanish tile	8	lbs. per sq. ft.
Ludowici tile	8	lbs. per sq. ft.

Joists

The weight of the joists were based on assumed average weight of wood of 40 lbs. per cu. ft.

Appendix II

APPENDIX II

NOTE: These Appendices are not considered a part of the North Carolina State Building Code, but are included in this volume for informational purposes only for the users of the Building Code in accordance with Section 143-138b G. S.

The State Board of Health has the responsibility of enforcing laws and regulations regarding the sanitation of public eating

places, lodging places, summer camps, meat markets, abattoirs, poultry processing plants, frozen food lockers, institutions, such as hospitals, nursing homes, colleges, etc. These regulations do not specifically specify construction materials; but, the materials used in food handling establishments and other places where cleanliness is important and necessary must be such as to provide proper surfaces to facilitate the maintenance of sanitation.

Plans should include construction materials, electrical, plumbing details and ventilating facilities as they apply. Before proceeding with construction, equipment layouts and all facilities should be approved on the basis of the capacity and type of establishment being planned.

Copies of the regulations governing the places listed above may be secured either from the local health departments in each county or from the Sanitary Engineering Division of the State Board of Health. State Statutes involved may be found in Article II, Section 130-11, item 10 and Articles 14 and 15 of Chapter 130 of the General Statutes. Statutes relating to sanitation of establishments providing food and lodging may be found in Article 5, Chapter 72 of the General Statutes.

Plans and specifications for the development of construction of water supplies and sewage disposal facilities should be presented to the State Board of Health for approval.



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APPENDIX III

NORTH CAROLINA DEPARTMENT OF LABOR

FRANK CRANE, *Commissioner*
Raleigh, N. C.

SAFETY CODE

FOR

**ELEVATORS, DUMBWAITERS
AND ESCALATORS**

DIVISION OF STANDARDS AND INSPECTIONS

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SAFETY CODE

FOR

ELEVATORS, DUMBWAITERS AND ESCALATORS

AUTHORITY FOR RULES

Under Sub-section (f) of Section 7310h, Consolidated Statutes of North Carolina, the Division of Standards and Inspections of the Department of Labor is authorized and directed "to conduct such research and carry out such studies as will contribute to the health, safety and general well being of the working classes of the State. The findings of such investigations, with the approval of the Commissioner of Labor and the Governor —shall be promulgated as rules and regulations governing work places and working conditions." Under this authority the following rules have been promulgated to regulate the installation, alteration and maintenance of elevators, dumbwaiters and escalators and to safeguard the lives and limbs of workers.

PENALTY

Under Chapter 398, Public Laws of North Carolina, Session of 1939, it is provided:

"Section 1. That Chapter three hundred twelve of the Public Laws of one thousand nine hundred thirty-one be, and the same is hereby amended, by inserting a new section to be designated as Section thirteen (a) as follows:

"Sec. 12 (a). In the event any person, firm or corporation shall, after notice by the Commissioner of Labor, violate any of the rules or regulations promulgated under the authority of this Act or any laws amendatory hereof relating to safety devices, or measures, the Attorney General of the State, upon the request of the Commissioner of Labor, may take appropriate action in the civil courts of the State to enforce such rules and regulations. Upon request of the Attorney General, any solicitor of the State of North Carolina in whose district such rule or regulation is violated may perform the duties hereinabove required of the Attorney General."

RULE 1—DEFINITIONS

Administrative

Authority

—Wherever in this Code the words "Administrative Authority" are used, they shall mean the North Carolina Department of Labor or its legally constituted representative.

Alteration

—An "Alteration" of an elevator, dumbwaiter, or escalator is any change in the use, classification, operation, control, motor, brake, character of power supply, capacity, dead weight of car or

SAFETY CODE FOR ELEVATORS, DUMBWAITERS AND ESCALATORS

counterweights, car travel, speed, sizes or number of hoist or counterweight ropes, guide rails, car or counterweight safety devices, or safety governor, application for which is filed in the Department under the provisions of this article.

Amusement Device

—An "Amusement Device" is any manually or power operated device used to convey persons in any direction as a form of amusement.

Existing Installation

—An "Existing Installation" of an elevator, dumbwaiter, escalator, amusement device, or special equipment is an installation, the application for which was filed with the Administrative authority before this Code became effective.

New Installation

—A "New Installation" of an elevator, dumbwaiter, escalator, amusement device, or special equipment is a complete elevator, dumbwaiter, escalator, amusement device, or special equipment installation, the application for which is filed with the Administrative Authority after this code became effective.

Special Equipment

—"Special Equipment" is any permanently or semi-permanently located device, manually or power operated, used for moving or lifting materials or persons, but not considered as an elevator, dumbwaiter, escalator or amusement device. Special equipment shall include: Devices inclined at an angle for carrying one (1) or two (2) persons but which are not included under elevators or escalators; manhoists; lift bridges; elevators which are used only for handling building material and workmen during construction; elevators of a capacity exceeding thirty thousand (30,000) pounds and a platform area exceeding three hundred (300) square feet where suspended by ropes near each corner of the hoistways and at additional positions; stage and orchestra lifts; belt, bucket, scoop, roller or similarly inclined or vertical freight conveyors; telescopic ash hoists; tiering or piling machines; skip hoists and wharf ramps; or similar apparatus.

The terms defined in the American Standard Safety Code for Elevators shall have the meanings given in that Code.

RULE 2—GENERAL REQUIREMENTS**a. Application:**

The requirements of this Chapter shall apply to all installations of elevators, dumbwaiters, escalators, as hereinafter specified.

b. Supplementary Code:

The following supplementary code shall be considered a portion of this Chapter: "American Standards Safety Code for Elevators, Dumbwaiters and Escalators, Third Revision, 1937," hereafter referred to as the Elevator Safety Code, as approved by the American Standards Association, and as hereafter amended or revised by the American Standards Association, and as hereafter approved by the Administrative Authority except as follows:

Hoistway gates specified in 124d may be 66" high in place of the full height of the opening as specified.

c. Responsibility:

Responsibility for the care, operation and maintenance of elevators, dumbwaiters, escalators, special equipment and amusement devices shall be as follows:

Equipment Manufacturer:

The manufacturers of elevators, dumbwaiters, and escalators shall be responsible for the failure of the equipment or any part thereof, until the installation has been approved by the Administrative Authority, but shall not be responsible for the safe operation or proper maintenance of elevators, dumbwaiters and escalators during the time when any limited certificate, as defined in Rule 5e hereof, shall be in effect. The manufacturer also shall be responsible for all tests of new and altered equipment until the installation has been approved by the Administrative Authority.

The Owner:

The owner or his duly appointed agent shall be responsible for the safe operation and proper maintenance of the elevators, dumbwaiters, and escalators, after the installation has been approved by the Administrative Authority and also during the period of effectiveness of any limited certificate as defined in Rule 5e hereof. The owner shall also make and be responsible for all routine tests, which the Administrative Authority may require in accordance with paragraph 6 "Routine Tests and Inspections."

d. Exceptions and Special Devices:

Only the Administrative Authority shall have power to grant exceptions from the requirements of this code and to permit the use of other devices and methods at its discretion within the limitations stated in Elevator Safety Code.

e. Numbering of Elevators:

all new elevators, dumbwaiters and escalators shall be designed ministrative Authority painted on or attached to the elevator car in

plain view and also to the driving mechanism. This serial number shall be shown on all required certificates.

f. **Permits:**

A permit shall be obtained from the Administrative Authority before erecting or constructing new elevators, dumbwaiters and escalators, moving such apparatus from one hoistway to another or before making alterations to existing equipment.

The owner or his authorized agent shall submit an application for a permit accompanied by plans and drawings showing the proposed construction, equipment and mode of operation in such form as the Administrative Authority may prescribe.

RULE 3—DESIGN, INSTALLATION AND ALTERATIONS OF ELEVATORS, DUMBWAITERS AND ESCALATORS

a. **New Installations:**

All new elevators, dumbwaiters and escalators shall be designed and installed in accordance with the requirements of the Elevator Safety Code.

b. **Alterations and Relocations:**

All alterations to and relocations of elevators, dumbwaiters, and escalators, installed after the adoption of this code shall meet the requirements of the Elevator Safety Code.

c. **Existing Installations:**

Elevators, dumbwaiters and escalators legally installed before the adoption of this code may be used without being reconstructed to comply with the requirements of the Elevator Safety Code, ("except that existing installations shall comply with such of the requirements of Section 12, 'Landings' which, in the opinion of the Administrative Authority are necessary to insure reasonable safety.")

All existing installations shall be maintained in a safe operating condition and shall be subject to inspections and tests required by Rule 6, "Routine Inspections and Tests."

d. **Moving of Elevators, Dumbwaiters and Escalators:**

Elevators, dumbwaiters and escalators moved from one shaft or location to another shall conform to the requirements of the Elevator Safety Code.

e. **Alterations:**

Existing installations may be altered to obtain the advantage of any provisions of the Elevator Safety Code, provided the safety requirements covering such provisions are met.

Where alterations are made to existing installations, any part of the installation which is directly affected as to safety due to the alteration shall comply with the requirements of the Elevator Safety Code, subject also to the following:

f. **Change in Contract Load:**

Where an increase is made in the contract load, the installation shall meet the requirements of the Elevator Safety Code for car and counterweight safeties, interlocks and terminal stopping devices.

g. Change in Contract Speed:

Where an increase is made in the contract speed, the installation shall meet the requirements of the Elevator Safety Code for car and counterweight safeties, buffers, speed governor, interlocks and terminal stopping devices. The pull-out of the governor rope need not meet the requirements of the Elevator Safety Code.

h. Change in Method of Operation or Type of Control:

Where any change is made in the method of operation or type of control, the installation shall meet the requirements of the Elevator Safety Code for interlocks and terminal stopping devices.

i. Change in Classification:

Where any change is made in the classification, the installation shall meet all of the requirements of the Elevator Safety Code.

j. Change in Power Supply (General):

Where a change is made in the electric power supply involving:

- (a) Change in voltage, frequency, or number of phases of an alternating current supply; or
- (b) Change from direct current to alternating current or alternating current to direct current; or
- (c) Change to a combination of direct current and alternating current;

only such electrical equipment or parts thereof as are adjusted or altered to operate safely and properly in the opinion of the Administrative Authority may be retained.

k. Change from Direct to Alternating Current:

(a) Brakes:

Where the change of power supply is from direct current to alternating current, existing electric brakes, if inadequate in the opinion of the Administrative Authority, shall be replaced with electrically released brakes of sufficient capacity to meet the operating and test requirements of the Elevator Safety Code.

Where elevators and escalators are not equipped with electrically-operated brakes, such equipment shall be provided in accordance with the Elevator Safety Code.

(b) Motors:

Where the change of power supply is from direct to alternating current, the motor and control shall be of a type which will provide at least one slowdown step having a stable speed of not more than one-half the contract speed, except as follows:

- (1) If the contract speed is one hundred and ten (110) feet per minute or less, one (1)-speed motor and control may be used.
- (2) If the contract speed is two hundred (200) feet per minute or less, and the overhead car and counterweight clearances are at least as great as required by the Elevator Safety Code for the contract speed, one (1)-speed motor and control may be used.

(c) Terminal Stopping Devices:

Where the change in power supply is from Direct to Alternating current, terminal stopping devices shall be provided to conform to the requirements of the Elevator Safety Code.

l. Repairs:

Damaged or defective parts shall be wholly or partly replaced at the discretion of the Administrative Authority: Broken parts subject to bending, tension or torsional stresses, and parts upon which the support of the car depends shall not be welded.

Ordinary repairs or replacements on existing installations may be made with parts equivalent in material, strength and design to those replaced. Such repairs and replacements need not conform to the requirements of this code:

m. Special Equipment:

Special equipment shall be permitted only where the design, materials, construction and method of operation are, from the viewpoint of safety, approved by the Administrative Authority.

RULE 4—INSPECTION AND TESTS OF NEW, MOVED OR ALTERED INSTALLATIONS:

a. Tests and Certificates Required:

The operation or use of any new, altered or moved elevator, dumb-waiter or escalator is prohibited until such equipment has passed tests and inspection as required by this article and a certificate to this effect has been issued in accordance with Rule 5 "Certificates."

b. Elevators, Dumbwaiters and Escalators:

The person or firm installing, moving or altering elevators, dumb-waiters or escalators shall notify the Administrative Authority, in writing, at least three (3) days before completion of the work and shall, in the presence of a representative of the Administrative Authority, subject the new, moved, or altered portions of the equipment to tests required to show that such equipment meets the requirements of this code.

Where the Administrative Authority or his representative cannot be present within two (2) days after the designated completion date, the Administrative Authority may accept a certified copy of such tests and inspections.

RULE 5—CERTIFICATES

a. Issuing of Certificates:

A certificate shall be issued by the Administrative Authority where inspections and tests, required by Rule 4, "Inspections and Tests of New, Moved or Altered Installations," shows that elevators, dumb-waiters and escalators are installed in accordance with the requirements of this code.

b. Framing of Certificates:

The certificate furnished by the Department of Labor shall be maintained in a suitable frame under glass cover.

c. Numbering of Certificates:

Certificates shall show the serial number of the elevator for which it is issued, as required in Rule 2e, "Numbering of Elevators."

d. Posting of Certificates:

The required certificate shall be posted in a conspicuous location in the elevator car and on, near or plainly visible from the dumbwaiter or escalator.

e. Limited Certificates:

The Administrative Authority may permit the temporary use of any elevator, dumbwaiter or escalator for passenger or freight service during the installation or alteration, under the authority of a limited certificate, issued by him for each class of service. Such limited certificate shall not be issued until the elevator shall have been tested under contract load, and the car safety and terminal stopping equipment have been tested to determine the safety of the equipment for construction purposes.

(1) Life of Limited Certificates:

Limited certificates shall be issued for a period not to exceed thirty (30) days. Such certificates may be renewed at the discretion of the Administrative Authority.

(2) Posting of Limited Certificates:

Where a limited certificate is issued, a notice bearing the information that the equipment has not been finally approved shall be conspicuously posted on, near, or visible from each entrance to such elevator, dumbwaiter or escalator.

RULE 6—ROUTINE INSPECTIONS, TESTS AND MAINTENANCE

a. Elevators:

At least once for every year in service all hoisting and drum counterweight ropes of winding drum type elevators shall be properly re-socketed by the owner at the car and counterweight ends of such ropes.

Passenger and freight elevators shall be inspected by the Administrative Authority and tested by the owner in the presence of the Administrative Authority as often as practical.

Inspections shall consist of the following:

Inspection of hoistway doors, car gates, interlocks, contacts, control apparatus, controller, normal and final terminal stopping devices, car and counterweight ropes, guide shoes, guide rails, safety governor and governor rigging, elevator machines, lighting of car and machine room, visible working parts and sliding contacts of car and counterweight safeties and oil buffers.

Oil in bearings, buffers and gear casings shall be inspected as to oil levels.

Car safeties shall be inspected and tested to determine the condition of the sliding surfaces and working parts.

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These tests shall be made at contract speed (not necessarily with contract load) to determine whether the device is in operating condition.

Note: This test should be made with 150 lb load in the car.

Plunger shoes, by-passes and piston rods of hydraulic elevators shall be exposed and thoroughly cleaned by the owner and inspected by the Administrative Authority. Pressure and discharge tanks of hydraulic elevators shall be thoroughly cleaned by the owner and internally inspected by the Administrative Authority.

b. Escalators and Dumbwaiters:

Speed, reversal and broken-chain device tests shall be made without load in accordance with the requirements of the Elevator Safety Code. Miscellaneous safety devices, such as machine brakes, emergency stop buttons or switches shall be tested for proper functioning. Oil in bearings and gear casings shall be inspected as to oil level.

c. Notice of Required Repairs:

Whenever the Administrative Authority shall, from inspection of any elevator, escalator, dumbwaiter, or special equipment, determine that in the interest of the public safety such elevator, escalator, dumbwaiter, or special equipment, or any part or appliance thereof, is out of order and in an unsafe condition contrary to the requirements of this code, he shall have the power to order the discontinuance of the use of any such elevator, escalator, dumbwaiter, or special equipment and to compel the person, firm or corporation having control or possession or use thereof to discontinue such use until such elevator, escalator, dumbwaiter, or special equipment, or part or appliance thereof has been satisfactorily repaired or replaced so that the said elevator, escalator, dumbwaiter, or special equipment is in a safe and proper condition as required by this code.

d. Certification of Inspection:

The Administrative Authority shall certify the inspection of each elevator, dumbwaiter or escalator, which, after inspection, is judged to be in conformity with the requirements of this code.

APPROVAL OF CODE

In accordance with the law the "Safety Code for Elevators, Escalators and Dumbwaiters" is hereby approved, to become effective ninety days from date.

CLYDE R. HOEY,
Governor of North Carolina.

FORREST H. SHUFORD,
Commissioner of Labor.

Raleigh, North Carolina, August 8, 1939.