

CITY OF SHERWOOD, OREGON

ORDINANCE NO. 598

AN ORDINANCE AMENDING ORDINANCE NO. 546 AS ENACTED BY THE CITY COUNCIL ON JANUARY 11, 1967, WITH RESPECT TO SECTION 18 OF THE BUILDING CODE FOR SMALL CITIES, 1964 REVISION, AS ADOPTED AND ENACTED BY ORDINANCE NO. 546; PRESCRIBING THE AMOUNT OF FINES AND PENALTIES FOR VIOLATIONS AND DECLARING AN EMERGENCY

THE CITY OF SHERWOOD DOES ORDAIN AS FOLLOWS:

Section 1: That Section 18 of the Building Code for Small Cities, 1964 Revision, as incorporated by reference and adopted by Section 2, of Ordinance No. 546, as enacted by the City Council and approved by the Mayor on January 11, 1967, be, and the same is hereby, amended to read as follows:

"Section 18: Any person, firm, or corporation that violates or refuses to comply with this code shall be deemed guilty of a misdemeanor and be punished by a fine of not more than \$1,000.00, by imprisonment of not more than 90 days, or by both such fine and imprisonment, for each provision violated. The offender shall promptly abate the violation. Each day that the violation continues shall constitute a separate offense."

Section 2: Inasmuch as it is necessary for the health and safety of the people of Sherwood and the effective administration of the City's Building Code that the amount of fines and penalties for code violations be established without delay, an emergency is hereby declared to exist and this ordinance shall become effective upon its passage by the City Council and approval by the Mayor.

PASSED: By the Council, by unanimous vote of all Council members present, after being read by caption three times, and in body once, this 17th day of June, 1970.

Margorie Stewart
Recorder - City of Sherwood

APPROVED: By the Mayor, this 17th day of June, 1970.

[Signature]
Mayor - City of Sherwood

Office Copy - Do Not Remove

PROPOSED

BUILDING CODE *for City of Sherwood*

**FOR SMALL
CITIES...**

Sherwood Ordinance # 546

1964 Revision

BUREAU OF MUNICIPAL RESEARCH AND SERVICE

University of Oregon

in cooperation with

THE LEAGUE OF OREGON CITIES

PROPOSED

BUILDING CODE

**FOR SMALL
CITIES...**

First Publication, 1946

First Revision, 1947

Second Revision, 1953

Third Revision, 1964

PRICE: \$2.00

BUREAU OF MUNICIPAL RESEARCH AND SERVICE

University of Oregon

in cooperation with

THE LEAGUE OF OREGON CITIES

FOREWORD

This building code was originally prepared in 1946 to meet a need that had long been expressed by the officials of small cities in Oregon. The code represents an attempt to make building regulation available to the small city that has failed to undertake this function largely because of the lack of an enforcement official qualified to adapt a comprehensive building code to the needs of the community. The code deals primarily with residences and one-story business buildings on the assumption that these constitute most of the construction in the small city. To provide regulations for the larger buildings which may occasionally be built in these communities, the more technical and inclusive code of the International Conference of Building Officials is adopted by reference.

The purpose of a building code is to protect the public health and safety by requiring that the construction of buildings meets minimum standards. Every city has authority under the police power, and with it the implied responsibility, to provide this protection to the community and to the individual occupants and owners of buildings.

Fire is one of the most dangerous hazards threatening any community. Its prevention, important both to the public and to the owners and occupants of buildings, can be promoted most effectively by requiring certain precautions in the construction of buildings. Proper construction also minimizes possible health and structural hazards.

The requirements proposed in this code are based on experience and standard tests. They are no more than the minimum which an experienced builder would voluntarily impose for construction that he intended to occupy permanently for either business or residential purposes. The code is flexible in order to allow for the use of new materials and new methods of construction. The code does not restrict or dictate the type of construction or the use or form of buildings. Its purpose is to set up minimum standards for the safe use of materials.

The original preparation of this code for small cities was a cooperative project sponsored jointly by the League of Oregon Cities and the Bureau of Municipal Research and Service. At the invitation of the League, various agencies and organizations designated representatives to work with selected city officials and with staff members of the Bureau in developing the code.

Karl J. Belser, Bureau planning consultant at that time, served as secretary of the committee, coordinated the work of cooperating individuals and groups, and had major responsibility for preparation of the code in its original form. Following its publication in June, 1946, the code was adopted by a number of small cities in Oregon.

To keep the code up to date with new standards and practices and to improve and clarify certain of its provisions, the code was revised slightly in 1947 and was again revised and republished in 1953.

The current revision includes significant editorial and drafting changes. Arnóld M. Westling, Bureau planning and public works consultant, has directed the current review and revision. Mr. Westling solicited and received the advice of a number of individuals and organizations whose assistance is hereby gratefully acknowledged. Orval Etter, Bureau research attorney, assisted in making drafting and style changes and revisions. Special recognition is also due Gerald L. Hoard, building inspector, Corvallis, and M. C. Loughridge, building inspector, Grants Pass, for their assistance as technical advisers in this revision. Mrs. Jan Rianda has been responsible for final editing and for production of the report.

In view of changes in standards and practices since the previous revision, it is recommended that all cities having an earlier version of the code in effect should now adopt the 1964 revision.

Respectfully submitted,

HERMAN KEHRLI
Director,
Bureau of Municipal Research and
Service, University of Oregon

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A Proposed Building Code for Small Cities

Ordinance No.

An ordinance regulating the construction, alteration, repair, and moving of buildings and other structures within the city of and repealing all ordinance provisions in conflict herewith.

(Insert here the ordaining clause specified by charter or ordinance, or if none is specified, the one commonly used by the city.)

Part I—Administration

Section 1.

This ordinance shall be known and cited as "The Building Code of the City of Sherwood, Oregon."

TITLE

Section 2.

The purpose of this code is to establish and enforce minimum standards of safe design and construction for structures hereafter constructed, altered, repaired, or moved within the limits of the city. The code is intended to promote the public health, welfare, and safety and to invoke the police power of the city. The code shall be liberally construed to effect these purposes. It is intended to supplement the laws of the state and the ordinances, rules, and regulations of the city pertaining to the use, occupancy, fire hazard, safety, and sanitation of buildings and other structures.

PURPOSE

Section 3.

MEANING OF TERMS

In this code the term:

(1) "Alteration" means a change or addition in construction or arrangement.

(2) "Building" means a structure for the shelter of persons, animals, or property.

(3) "Building official" means the officer charged with the administration and enforcement of this code, or his authorized deputy.

(4) "Dwelling" means a building or part of a building arranged or occupied as the home or sleeping place of one or more persons.

(5) "Grade," a term used to determine the number of stories or height of a building, generally means an established or finished ground elevation and more particularly means, in case a building wall is built up to or within five feet of a street lot line, the sidewalk elevation at the center of the length of the wall fronting on the sidewalk; in case a building has two or more such walls, the average of the sidewalk elevations at such center points; and in case the walls of a building are more than five feet from the street lot line, the average of the finished ground elevation at each wall of the building, measured at the center point of the length of the wall.

(6) "Habitable room" means a room intended for living, eating, or sleeping for a family unit or individual household, including a kitchen but not including a bath or toilet room, laundry, pantry, corridor, or recreation room.

(7) "Live load" means the load carried by a structure additional to

Section 3-5

the weight of the structure, but does not include any load caused by wind, earthquake, or laterally exerted pressure of earth or other solid, liquid, or gas.

(8) "Dead load" means the weight of roof, walls, floors, partitions, and other permanent parts of a structure.

(9) "Masonry" means units of brick, stone, concrete, tile, gypsum, or terracotta laid in mortar, and includes monolithic concrete.

(10) "Repair" means the reconstruction or renewal of a part of a structure for the purpose of its maintenance and does not mean a change of construction. (See "Alteration.")

(11) "Story" means that part of a building between the upper surface of a floor and the upper surface of the floor next above, except that the top story is that part between the upper surface of the top floor and the ceiling above, or, if there is no ceiling, the underside of the roof.

(12) "Structure" means something constructed or built, having a fixed base on, or fixed connection to, the ground or another structure.

(13) "Wall" means one of the vertical members of a building which enclose it, form its courts, or divide it into areas or rooms.

(14) "Bearing wall" means a wall that carries a dead load other than its own weight.

(15) "Fire wall" means a wall of not less than four-hour, fire-resistive construction that divides a building or separates buildings for the purpose of restricting the spread of fire and that starts at the foundation and extends continuously through all stories to and above the roof or, in case of a fire-proof or semi-fire-proof roof, carries up tightly against the underside of the slab of the roof.

(16) "Nonbearing wall" means a wall that supports no load other than its own weight.

(17) "Party wall" means a wall that separates two or more buildings or is built to be used jointly by buildings that adjoin one another.

Section 4.

No building, other structure, or part thereof shall be constructed, altered, repaired, or moved until a building permit therefor has been granted by the building official. Structures hereafter constructed, repaired, altered, or moved shall be subject to inspection by the building official. He shall have, for the purpose of enforcing the code, the right to inspect a structure at any convenient time.

Section 5.

The office of building official is hereby created. The building official shall be appointed by the mayor with the consent of the city council. He shall have charge of the administration and enforcement of this code.

SCOPE OF
CODE

BUILDING
OFFICIAL

Section 6.

Application for a building permit may be filed with the building official by the owner of the structure to which the permit pertains or by his agent upon a form provided by the city. The application shall give such information as the building official requires and shall be accompanied by two complete sets of plans and specifications for the proposed structure, including plot plans showing the relationship of the structure to adjacent property lines and structures. If, in the opinion of the building official, the character of the work to be done pursuant to the permit is sufficiently described in the application for the permit, he may waive the filing of the plans, provided the cost of the work does not exceed \$1,000.

APPLICATION
FOR BUILDING
PERMIT

Section 7.

If the building official finds that the proposed structure would comply with this code and the laws of the state, he shall issue a building permit therefor, and shall write "approved" on one set of the plans and specifications, which shall be kept at the site of the proposed structure. After issuance of the building permit, the plans and specifications shall not be altered, except by approval of the building official and in conformity with this code.

ISSUANCE OF
PERMIT

Section 8.

The building official shall order stoppage of work for which a permit is required, at any time that he finds that the work does not comply with this code or plans and specifications for the work approved under this code. He shall post a copy of this order at the site of the work and shall serve another copy upon the permittee or his agent. Upon receipt of the order the permittee or agent and all persons working under his supervision shall promptly cease the work. The building official shall not lift the order until supplied with satisfactory evidence that the non-compliance has been corrected. Upon lifting the order, the building official shall serve written notice upon the permittee or his agent that the order has been lifted. Not until the notice has been so served may the work be resumed. Stop-work orders shall be in addition to other penalties provided for violations of this code.

STOP-WORK
ORDERS

Section 9.

A building permit shall become void unless operations authorized by the permit are commenced within six months from the date the permit is issued, or within the additional time the building official allows.

LAPSE OF
PERMIT

Section 10.

The building official shall be notified by the permittee, and the building official shall inspect the structure to which the permit pertains,

INSPECTION

- (1) when the foundations are ready to be placed,
- (2) when the structural frame is complete, and
- (3) when the structure is completed.

CHANGE IN USE

Section 11.

No change in the type of use of a structure shall be made without a building permit therefor. Upon application for such a permit, the building official shall inspect the structure. He shall issue the permit only if the structure complies with the provisions of this code and the laws of the state for the new use, or if proposed alterations in the structure will result in such compliance. A change in type of use means a new use of an existing structure which either changes its classification from Group I to Group II within the meaning of Sections 21 and 22 of this code or increases the design loading requirements for the structure within the meaning of Section 23.

A permit may be issued for a change in type of use even though the use does not comply completely with the above requirements, provided the change is determined by the city council to be less hazardous from the standpoint of life and fire risk than the existing use.

BOARD OF APPEALS

Section 12.

A building board of appeals is hereby created. It shall consist of three members who are qualified by experience and training to pass on matters pertaining to building construction. The board shall be appointed by the mayor with the consent of the council and shall hold office at the pleasure of the mayor. The building official shall act as secretary of the board and shall keep a record of its decisions.

APPEALS, DECISIONS, RECOMMENDATIONS TO COUNCIL

Section 13.

A person aggrieved by an order or ruling of the building official may appeal therefrom to the board of appeals by filing a written notice of appeal with the building official within ten days after receipt of the order or ruling. Decisions of the board shall be limited to interpretations of this code. It shall adopt rules of procedure for considering matters before it and may act by majority vote. It shall render its findings and decisions in writing. One copy thereof shall be filed with the building official and one copy delivered to the appellant. The decisions of the board shall be conclusive, except in case of mistake or fraud. The board may recommend to the city council amendments to this code and other new legislation.

FEEES

Section 14.

Before a building permit for a Group I or Group II structure is issued a fee therefor shall be paid to the city recorder as follows:

No fee for work the valuation of which is less than \$50. *1.00*
\$ *1.00* for work the valuation of which is more than ~~\$50~~ but less than ~~\$500~~. *50.00*
\$ *10.00* for work the valuation of which is more than ~~\$500~~ but less than \$1,000. *50.00*

Section 14-20

- \$3.00 for each additional \$1,000 or fraction thereof of total valuation up to ~~\$~~15,000.
- \$..... for each additional \$1,000 or fraction thereof of total valuation over \$15,000.
- \$..... for moving a building.

The city, county, state, and the United States shall be exempt from paying fees for building permits.

Section 15.

Materials, systems of construction, and devices other than those required by this code may be approved by the building official when they are determined to be the equal of those required in this code. In such approval the building official shall consider tests conducted by testing laboratories such as the U. S. Bureau of Standards, the Underwriters' Laboratories, Inc., and by any other testing agency that he deems competent to conduct such tests.

APPROVAL OF NEW MATERIALS

Section 16.

An alteration of a structure shall conform to the requirements of this code. Structures now existing or hereafter erected shall be maintained in a safe condition.

ALTERATION, MAINTENANCE

Section 17.

An application for a permit to move a structure shall designate the site from which and the site to which the structure is to be moved. Permission to use streets for this purpose shall be obtained from the proper authority.

MOVING A STRUCTURE

Section 18.

Any person, firm, or corporation that violates or refuses to comply with this code shall be deemed guilty of a misdemeanor and be punished by a fine of not more than \$1,000.00, by imprisonment of not more than 90 days, or by both such fine and imprisonment, for each provision violated. The offender shall promptly abate the violation. Each day that the violation continues shall constitute a separate offense.

PENALTIES

Section 19.

Should a provision of this code be held by a court of competent jurisdiction to be invalid, the decision shall not affect the validity of the code as a whole or any part thereof other than the part held invalid.

VALIDITY

Section 20.

All ordinance provisions in conflict with this code are hereby repealed.¹

REPEAL

¹ If the city has a zoning ordinance, the following should be added: "The restrictions of the zoning ordinance of the city shall not be deemed, however, to be modi-

Part II—Classification

**CLASSES OF
STRUCTURES**

Section 21.

For the purposes of this code structures are classified into the following two groups:

(1) Group I. Structures classified as Group I are structures whose construction is completely covered by this code and are as follows:

(a) *Residential*—Buildings used as single or two-family dwellings and of frame construction not more than two stories high or of ordinary masonry construction not more than one story high.

(b) *Commercial*—Buildings without basements, used for stores, offices, shops, or warehouses, not exceeding one story in height, and not more than 20 feet high from floor to ceiling.

(c) *Accessory*—Private garages not exceeding one story in height, of frame or ordinary masonry construction, with capacity of not more than four cars; woodsheds; chicken houses; and other similar buildings accessory to residential or commercial buildings.

(2) Group II. Structures not included in Group I are classified as Group II. A dry cleaning establishment, place of assembly or detention, or building that has ground area in excess of 4,000 square feet is a Group II building. A building in the construction of which structural reinforced concrete, structural steel, heavy mill construction, or one or more roof trusses are used is also a Group II building. Incidental use may be made in a Group I building, however, of one or more steel beams, columns, lintels, and hangars or reinforced concrete slabs, and the use of any such structural device shall not remove any building from Group I to Group II.

Section 22.

Group II structures, except as this code prescribes to the contrary, shall conform to the provisions of the 19..... Edition of the *Uniform Building Code*, Volume I, prepared by the International Conference of Building Officials, except Part I (Administrative) and Part IV (Requirements Based on Location in Fire Zones). One copy of that code shall be kept on file in the office of the building official for public use and inspection and shall be marked "Official Copy."²

fied by this code, and shall be controlling except that, insofar as this code imposes greater restrictions, this code shall prevail."

If identifiable ordinances conflict with or are superseded by this code, they should be specifically identified by number and date of enactment and repealed in this section.

²The State Fire Marshal's Code and all his regulations pertaining to the construction and maintenance of buildings are statewide in scope and take precedence over any less restrictive regulations established by a municipality. Care has been exercised in drafting this code to eliminate any provisions which are in conflict with the state law. Such provisions may appear, however, in the *Uniform Building Code*.

**SPECIAL
PROVISIONS
FOR GROUP II
STRUCTURES**

Group II structures shall be designed, and their construction supervised, by an architect or engineer registered in the state of Oregon. Upon the completion of such a structure, the architect or engineer shall file with the building official an affidavit that the provisions of this code have been complied with in the design and construction of the structure.³

³ In the event that the affidavit contains a false statement, it is the policy of the city to prefer charges with the state board with which the architect or engineer is registered.

Part III—Standards of Design and Construction

DESIGN LOADS

Section 23.

Floors and roofs shall be capable of supporting live loads as follows:

- (1) Floor load in pounds per square foot
 - In private dwellings, dormitories, hotels, guest rooms, apartments, hospital rooms, and school classrooms..... 40
 - In offices and assembly rooms with fixed seats..... 50
 - In public rooms, corridors, balconies, and public stairways.... 100
 - Other floors shall be designed for actual loads, but in no case less than..... 100
- (2) Roof load in pounds per square foot of horizontal projection⁴
 - Slope less than 4" in 12"..... 20
 - Slope 4" in 12" or greater..... 16

WOOD FRAME CONSTRUCTION—GENERAL

Section 24.

- (1) Dimensions of materials given in this code are nominal.
- (2) In frame construction, sills shall be anchored to the foundation walls at intervals of 16 feet or less by bolts not less than $\frac{1}{2}$ inch in diameter embedded at least 7 inches in the foundation walls.
- (3) Wood shingles shall be nailed firmly with corrosion resistant nails of at least No. 14 gauge, long enough to penetrate into the sheathing $\frac{3}{4}$ inch, or through the sheathing, whichever is less. Each shingle shall be nailed with two nails driven substantially into the supporting roof construction.

The maximum exposed length of wood shingles shall be:

| | <i>Roof Slope 4 in 12</i> | <i>Roof Slope 5 in 12</i> |
|-----------------------|---------------------------|---------------------------|
| 16 inch shingle | 4 $\frac{1}{2}$ " | 5" |
| 18 inch shingle | 5 $\frac{1}{4}$ " | 5 $\frac{1}{2}$ " |
| 24 inch shingle | 7" | 7 $\frac{1}{2}$ " |

WOOD FRAME CONSTRUCTION—JOISTS, RAFTERS, BEAMS, AND GIRDERS

Section 25.

- (1) The minimum thickness of floor and roof beams, joists, and rafters shall be 2 inches.
- (2) The maximum allowable spans and spacings for joists, rafters, and girders shall be determined on the basis of the material and the loading of the members in accordance with nationally recognized standards. Without additional evidence of compliance with national standards, the joist, rafter, and girder spans indicated in Tables 1 to 5 may be used

⁴ A load of 20 pounds per square foot can be caused by a depth of water or ice of about four inches or a depth of snow, after normal packing, of between two and three feet. Cities in areas subject to heavy snow may wish to give special consideration to the roof load requirements, particularly for roofs with parapets.

for material equivalent to or better than the grades of material specified in the tables, provided the maximum allowable live loads do not exceed those specified in the tables. If flooring is to be installed over ceiling joists, they shall be considered as floor joists.

Table 1—Ceiling Joist Spans—No Loading

| Size | Spacing | Span | |
|-------|---------|-----------------------------------|---|
| | | Construction Grade Douglas Fir | Standard Grade Douglas Fir or No. 1 Grade Pine |
| 2"x4" | 12" | 11'-6" | 9'-6" |
| | 16" | 10'-6" | 8'-6" |
| 2"x6" | 12" | 18'-0" | 15'-6" |
| | 16" | 16'-0" | 14'-6" |
| 2"x8" | 12" | 24'-0" | 21'-0" |
| | 16" | 21'-6" | 19'-0" |

The spans indicated in Table 1 are the maximum spans for joists carrying no live load (no attic storage), made of the grades of materials specified, and supporting ordinary lath and plaster ceilings.

Table 2—Rafter Spans—Roofs Sloping 4" in 12" or Greater

| Size | Spacing | Span | |
|--------|---------|-----------------------------------|---|
| | | Construction Grade Douglas Fir | Standard Grade Douglas Fir or No. 1 Grade Pine |
| 2"x 4" | 12" | 10'-0" | 7'-0" |
| | 16" | 8'-6" | 6'-0" |
| | 24" | 7'-0" | 5'-0" |
| 2"x 6" | 12" | 17'-6" | 12'-6" |
| | 16" | 15'-6" | 11'-0" |
| | 24" | 12'-6" | 9'-0" |
| 2"x 8" | 12" | 23'-6" | 17'-6" |
| | 16" | 20'-6" | 15'-0" |
| | 24" | 16'-6" | 12'-6" |
| 2"x10" | 12" | 30'-0" | 23'-0" |
| | 16" | 26'-0" | 20'-0" |
| | 24" | 21'-0" | 16'-0" |

The spans indicated in Table 2 are the maximum spans for rafters made of the grades of materials specified and measured along the rafters. If a

Section 25

rafter is part of a complete truss and is braced to a ceiling joist, the span is the distance between points of trussing. Rafters constructed in compliance with this table support live loads of 16 pounds per square foot of horizontal projection, plus the weight of shingle, tar-and-gravel, or other roofing of no greater weight.

Table 3—Rafter Spans—Semi-Flat Roofs Sloping Less Than 4" in 12"

| Size | Spacing | Span | | | |
|--------|---------|--------------------------------|------------------------|--|------------------------|
| | | Construction Grade Douglas Fir | | Standard Grade Douglas Fir or No. 1 Grade Pine | |
| | | Supporting Ceiling | Not Supporting Ceiling | Supporting Ceiling | Not Supporting Ceiling |
| 2"x 4" | 12" | 7'-0" | 9'-6" | 5'-6" | 6'-6" |
| | 16" | 6'-6" | 8'-0" | 4'-6" | 5'-6" |
| | 24" | 5'-6" | 6'-6" | 4'-0" | 4'-6" |
| 2"x 6" | 12" | 11'-6" | 16'-6" | 10'-0" | 11'-6" |
| | 16" | 10'-0" | 14'-0" | 8'-6" | 10'-0" |
| | 24" | 9'-0" | 11'-6" | 7'-0" | 8'-0" |
| 2"x 8" | 12" | 15'-0" | 22'-0" | 13'-0" | 16'-0" |
| | 16" | 13'-6" | 19'-0" | 12'-0" | 14'-0" |
| | 24" | 12'-0" | 15'-6" | 10'-0" | 11'-6" |
| 2"x10" | 12" | 19'-0" | 27'-6" | 17'-0" | 21'-6" |
| | 16" | 17'-6" | 24'-0" | 15'-6" | 18'-6" |
| | 24" | 15'-0" | 19'-6" | 13'-0" | 15'-0" |
| 2"x12" | 12" | 23'-0" | 33'-6" | 20'-6" | 28'-0" |
| | 16" | 21'-0" | 29'-0" | 18'-6" | 24'-0" |
| | 24" | 18'-6" | 23'-6" | 16'-0" | 19'-6" |

The spans indicated in Table 3 are the maximum spans for rafters made of the grades of materials specified and measured along the rafters. Rafters constructed in compliance with this table support live loads of 20 pounds per square foot of horizontal projection, plus the weight of tar-and-gravel or other roofing of no greater weight.

Table 4—Floor Joist Spans

| Size | Spacing | Span | | | |
|--------|---------|--------------------------------|-------------------|--|-------------------|
| | | Construction Grade Douglas Fir | | Standard Grade Douglas Fir or No. 1 Grade Pine | |
| | | Plastered Below | Unplastered Below | Plastered Below | Unplastered Below |
| 2"x 6" | 12" | 10'-0" | 10'-6" | 7'-6" | 8'-0" |
| | 16" | 9'-0" | 9'-6" | 6'-6" | 7'-0" |
| | 24" | 7'-6" | 8'-0" | 5'-6" | 6'-0" |
| 2"x 8" | 12" | 13'-6" | 14'-0" | 10'-6" | 11'-6" |
| | 16" | 12'-0" | 13'-0" | 9'-0" | 10'-0" |
| | 24" | 10'-0" | 11'-0" | 7'-6" | 8'-0" |
| 2"x10" | 12" | 17'-0" | 18'-0" | 14'-0" | 15'-0" |
| | 16" | 15'-6" | 16'-6" | 12'-0" | 13'-0" |
| | 24" | 13'-0" | 14'-0" | 10'-0" | 10'-6" |
| 2"x12" | 12" | 20'-6" | 22'-0" | 18'-0" | 19'-0" |
| | 16" | 19'-0" | 20'-0" | 15'-6" | 17'-0" |
| | 24" | 15'-6" | 16'-6" | 13'-0" | 14'-0" |

The spans indicated in Table 4 are the maximum spans for support of live loads of 40 pounds per square foot by joists made of the grades of materials specified, provided the floor panels that the joists support are ordinary double-wood floor construction or other construction of no greater weight.

Table 5—Girder Spans—Supporting Floor Joists or Plank Decking

| Size | Spacing | Span | | | |
|-------|---------|--------------------------------|---------------------------|--|---------------------------|
| | | Construction Grade Douglas Fir | | Standard Grade Douglas Fir or No. 1 Grade Pine | |
| | | Supporting Partitions | Not Supporting Partitions | Supporting Partitions | Not Supporting Partitions |
| 4"x4" | 6' | 2'-6" | 4'-0" | 2'-0" | 2'-6" |
| | 8' | 2'-6" | 3'-6" | 1'-6" | 2'-6" |
| 4"x6" | 6' | 5'-0" | 7'-0" | 3'-6" | 5'-0" |
| | 8' | 4'-0" | 6'-0" | 3'-0" | 4'-0" |
| | 10' | 3'-6" | 5'-6" | | |
| 4"x8" | 6' | 6'-6" | 9'-0" | 5'-0" | 6'-6" |
| | 8' | 5'-6" | 8'-0" | 4'-0" | 6'-0" |
| | 10' | 4'-6" | 7'-0" | | |
| | 12' | 4'-0" | 6'-6" | | |

The spans indicated in Table 5 are the maximum spans for support of live loads of 40 pounds per square foot by girders made of the grades of material specified.

Section 25-26

(3) The ends of joists, beams, rafters, and girders entering masonry walls shall be beveled 3 inches in 12 inches from the vertical, shall have $\frac{1}{2}$ inch air space on each side and on top, and shall bear not less than 3 inches upon solid masonry not less than 4 inches thick.⁵

(4) The maximum spacing of floor joists shall be 16 inches center to center, unless the floor panel is designed for wider spacing. No joist span shall exceed 8 feet between supports without crossbridging equivalent to 1" x 4" wooden members being installed at least every 8 feet of span.

(5) Joists supporting and parallel to partitions or supporting unusual loads shall be doubled.

(6) Joists and rafters not resting on masonry shall be supported by bearing partitions or by beams, girders, hangers, or trusses, except that where loads do not exceed 50 pounds per square foot, a wooden strip at least 2" x 4", strongly spiked to the girder, may be used to support the joist or rafter.⁶

(7) Joists and rafters may be notched at the support, but the cut for the notch shall not exceed one-fifth of the total depth of the joist or rafter.

(8) Header joists over 6 feet long and tail joists over 12 feet long shall be hung in joist or beam hangers or secured by other devices affording equivalent support. Trimmer and header joists more than 4 feet long shall be doubled.

(9) Over an unexcavated area joists shall have a clearance of not less than 18 inches above the surface of the ground, and beams a clearance of not less than 12 inches.

WOOD FRAME CONSTRUCTION— BEARING PARTITIONS

Section 26.

(1) The minimum size of an exterior-wall or bearing-partition stud shall be 2" x 4".

(2) The maximum spacing between centers of studs shall be 24 inches.

(3) Flat studs shall not be used in an exterior or bearing wall unless the wall is constructed double to receive a sliding door.

(4) The exterior stud walls of wood frame buildings more than one story in height shall be diagonally braced at the corners by notching into the studs a 1" x 4" brace at an angle of 45 degrees,⁷ extending from plate to plate. The braces shall not be required where the studs are covered with boards applied diagonally or with plywood not less than $\frac{3}{8}$ inch thick.

⁵ See figure 8 in Part VI.

⁶ See figure 6A in Part VI.

⁷ See figure 2A in Part VI.

Section 26-28

(5) Partitions shall be framed solid at the corners,⁸ so that no lath extends from one room to another.

(6) Frame buildings may be veneered with masonry, but the veneer shall be not less than 4 inches thick and shall be anchored to the wood frame or backing at intervals not exceeding 18 inches vertically and 16 inches horizontally by approved galvanized wall ties. The height of veneer construction shall in no case be more than 20 feet above the grade of the building, and shall be carried on the foundation wall.

Section 27.

Fire stops shall be provided to cut off concealed draft openings both vertical and horizontal, and to form an effective barrier between stories and between a top story and the roof space. Fire stops, when of wood, shall be two inches thick. If width of opening is such that more than one piece of lumber is necessary, there shall be two thicknesses of one-inch material with joints broken. No fire stop shall be covered or concealed until inspected by the building official.

FIRE STOPS

Fire stops shall be located⁹ as follows:

(1) In stud walls and partitions, including furred spaces, and in furred masonry walls at ceiling and floor levels, so that the dimension of any concealed span is not over 8 feet.

(2) Between stair stringers, at least once in the middle portion of each run, at the top and bottom, and between studs, along and in line with a run of stairs adjoining a partition.

(3) Around tops, bottoms, sides, and ends of sliding door pockets.

(4) In spaces between chimneys and wood framing, which shall be solidly filled with mortar, loose cinder, or other incombustible material resting on incombustible supports.

(5) At access points to clothes chutes, wood hoists, and similar devices, by self-closing doors.

(6) At the end of floor joists and over joist supports for the full depth of the joists.

(7) At any other location not specifically mentioned above, such as holes for pipes, shafting, etc., which could afford passage for flames.

Section 28.

(1) Flue linings shall be manufactured from fire clay or other suitable refractory clays. A flue lining shall have a minimum thickness of $\frac{5}{8}$ inch. Flue linings shall be carefully bedded upon one another in mortar with

CHIMNEY CONSTRUCTION

⁸ See figure 5 in Part VI.

⁹ See figures 2, 3, and 4 in Part VI.

Section 28

joints left smooth on the inside. Fire brick at least 2 inches thick may be used in place of flue lining.

Masonry shall be laid up with mortar around each successive length of lining as it is set. Joints and spaces between masonry and lining shall be completely filled as each course of masonry is laid. No defective lining shall be used.

A lining shall start 8 inches below the smokepipe intake or, in the case of a fireplace, from the throat of the fireplace, and shall be continuous to a point above the enclosing masonry walls. No smokepipe intake shall be cut into a flue lining which is already set in place.

(2) Mortar shall consist of ingredients in accordance with the following table:

| | <i>Cement</i> | <i>Ratio by volume Lime</i> | <i>Sand</i> |
|-----------------------------|---------------|---------------------------------|-------------|
| Cement Lime Mortar..... | 1 | 1 | 6 |
| Portland Cement Mortar..... | 1 | 1/4 | 3 |

Mortar used between joints of flue lining and in portions of the chimney above the roof or otherwise exposed to the weather shall be Portland cement mortar.

Firebrick used for the lining of flues or facing of fireplaces shall be laid in fire clay mortar. Other parts of the chimney shall be laid up in cement lime mortar.

(3) Brick shall be laid with full, push-filled cross and bed mortar joints and shall be struck smooth where exposed to the weather.

(4) A chimney in a dwelling or a building of like heating requirements shall be constructed of solid masonry units or of reinforced concrete at least 4 inches in thickness, if lined, and 6 inches if not lined. In other buildings the thickness shall be not less than 8 inches, and the chimney shall be lined.

(5) Stone chimneys may be used if lined, but a dressed stone chimney shall be at least 8 inches thick, and other stone chimneys shall be at least 12 inches thick.

(6) A masonry or concrete wall of a building may form part of a chimney when the chimney walls are securely bonded into the wall of the building and when the flue is lined the same as in independent chimneys. A flue in a party wall shall not extend beyond the center of the wall.

(7) A chimney not entirely within a building framework shall be anchored laterally at the ceiling line and at each floor line more than 6 feet above grade.

(8) A chimney shall extend at least 2 feet higher than any part of a building within 10 feet of the chimney.¹⁰

¹⁰ In altitudes more than 2,000 feet above sea level the specified height may not provide adequate draft.

Section 28

(9) Chimneys shall be built from the ground up and shall rest on concrete or solid masonry foundations. The footing of an exterior chimney shall start below the frost line, rest on undisturbed soil, be at least 8 inches thick, and extend at least 6 inches beyond the face of the chimney wall.¹¹

(10) Corbeled chimneys shall be supported by solid masonry walls at least 12 inches thick, and the corbeling shall not project more than 1 inch per course nor more than 6 inches in total.

(11) No flue shall incline more than 30° from the vertical.

(12) When more than two flues are enclosed in the same chimney, they shall be separated in pairs or singly by masonry at least 4 inches thick and bonded into the chimney walls.

(13) Fireplace walls shall be not less than 8 inches thick, and if built of stone, not less than 12 inches thick. The faces of all such minimum thickness walls exposed to fire shall be lined with firebrick, soapstone, cast iron, or other fire-resistive material. Lining of firebrick, if 4 inches or more in thickness, shall constitute part of the required minimum thickness.

Fireplaces shall have trimmer arches, reinforced concrete cantilever slabs, or other generally approved fire-resistive construction supporting the hearth. The hearth shall extend not less than 18 inches from the face of the fireplace opening and shall be not less than 12 inches wider than the fireplace opening on either side.¹²

(14) Minimum flue sizes shall be as follows:

| | <i>Rectangular lined flue</i> | <i>Rectangular unlined flue</i> | <i>Circular flue</i> |
|---|-----------------------------------|-------------------------------------|--------------------------|
| For stoves, ranges, and room heaters | 8"x 8" | 10"x10" | 8" dia. |
| For warm air furnaces, steam and hot water boilers..... | 8"x12" | 12"x12" | 10" dia. |
| For fireplaces (flue area as fraction of fireplace opening) | 1/10 | 1/8 | 1/12 |

(15) A smokepipe shall enter the side of a chimney through a fire clay or metal thimble or flue-ring of masonry. The top of the smokepipe shall be at least 18 inches below the ceiling or joists. No woodwork shall be placed within 6 inches of a thimble. No intake pipe or thimble shall extend into the flue.

(16) No combustible material shall be placed within 2 inches of a chimney wall built inside a structure or within 1 inch of a chimney not

¹¹ See figure 1 in Part VI.

¹² See figure 1 in Part VI.

Section 28-29

inside a structure. Space between a chimney and members of a wood frame shall be firestopped with incombustible material supported by strips of sheet metal or metal lath set in the brick work and nailed to the wooden members.¹³

(17) A gas appliance burning more than 5,000 B.T.U.'s per hour shall be connected to a flue or outlet pipe affording ready escape to the outer air of fumes produced by the appliance. The flue shall be either a lined chimney or an outlet pipe of incombustible, noncorrodible material, with bell and spigot or other generally accepted joints. Such a pipe, when located inside a frame wall, shall have 1 inch clearance from all wood construction and shall be encased in an incombustible jacket.

(18) Porcelain enamel and other types of flues that are approved by the Underwriters' Laboratories, Incorporated, may be used, subject to the limitations imposed upon their use by the Underwriters' Laboratories, Incorporated.

Section 29.

MASONRY

(1) The minimum thickness of exterior walls and bearing walls of masonry shall be as follows:

- (a) Stone masonry (Ashlar)..... 12"
- (b) Stone masonry (Rubble)..... 16"
- (c) Solid masonry walls other than stone used in one-story dwellings or in buildings accessory to dwellings and not over 9 feet in height or 15 feet in height when gable construction is used 6"
- (d) All other masonry walls..... 8"

(2) The minimum thickness of interior non-bearing partitions of masonry shall be 2 inches.

(3) The maximum height of exterior walls and of bearing walls between horizontal lateral supports, such as floors and roofs, shall be 10 feet for cavity walls and stone masonry walls and 12 feet for other masonry walls of minimum thickness unless lateral support is provided by securely bonded cross-walls, piers, or buttresses at intervals not exceeding 12 feet.

(4) Masonry walls shall be securely anchored to all tiers of wood joists, beams, and girders bearing on them, other than the first floor tier at a maximum interval of 4 feet. Masonry walls parallel to wood joists or beams shall be securely anchored to them at maximum intervals of 8 feet, with all anchors engaging three joists or beams.

(5) Walls of hollow masonry units shall be capped with a minimum of 4 inches of solid masonry or poured concrete.

¹³ See figure 1 in Part VI.

Section 29-30

(6) In plain brick masonry, stretcher courses shall be bonded by making the vertical joints in the course next above over the centers of the stretchers. At least every sixth course shall be a header course. In no case shall there be less than one header in every 72 square inches of wall surface. If the thickness of the wall is greater than the length of one header, each header shall be covered by another header that breaks joints with the header below.

(7) In plain stone masonry, the bond stones shall be uniformly distributed throughout the wall and shall comprise not less than 20 per cent of the wall surface. There shall be at least one bond stone for every five stretchers, and each bond stone shall extend through the wall.

Section 30.

(1) The space beneath a building other than a detached building accessory to a dwelling shall be enclosed by a concrete or masonry wall resting on a footing. The space shall be ventilated by at least one screened opening within 3 feet of each corner of the building. The area of the opening shall be not less than 2 square feet for each 25 lineal feet of exterior wall or fraction of that distance.

(2) A footing shall be constructed of solid masonry or of reinforced concrete and shall extend 6 inches below the frost line measured from the finished grade and to undisturbed soil, except that a reinforced concrete footing may rest on fill when installed according to generally accepted standards.

A footing shall be acceptable without computation of the unit pressure under it if it has a minimum projection of 4 inches from all faces of the wall, column, or pedestal that it supports and if its depth is at least equal to its projection and never less than 6 inches.

(3) A foundation or basement wall shall be at least as thick as the wall immediately above, except that a masonry veneer wall may project not more than $\frac{3}{4}$ inch beyond the outside face of the supporting wall. A foundation or basement wall shall be not less than 8 inches thick, except that a 6-inch wall may be used to support a one-story wood frame dwelling if the wall is of poured concrete.

Masonry in foundations or in walls in contact with the earth shall be laid with Portland cement mortar.

A foundation wall supporting wood or light steel structural members shall extend at least 6 inches above the finished ground level.

(4) Driveway slabs and concrete floor slabs installed on the ground shall be not less than 4 inches thick.

**FOOTINGS,
FOUNDATION
WALLS, AND
RELATED ITEMS**

Part IV—Fire and Safety

Section 31.

FIRE ZONE

There is hereby established a fire zone, which shall embrace that portion of the city of described as follows:

.....
.....
.....

Section 32.

OLD AND DAMAGED BUILDINGS

A structure within the fire zone which is damaged by fire or decay or otherwise to an extent of 50 per cent of the replacement value on the date of determination of the damage, shall not be rebuilt unless the entire structure when rebuilt conforms to this code. When the damage is less than 50 per cent of the replacement value, the structure may be rebuilt but not to extend beyond the exterior surfaces of the original structure, and the reconstruction shall provide only for the replacement of damaged portions of the structure, with no basic improvement over its original condition, unless the entire structure, when rebuilt, conforms to this code.

When necessary to reach agreement as to the extent of the damage that has been done to a structure by fire or decay or otherwise, the damage shall be determined by three disinterested residents of the city, one of whom shall be selected by the owner of the structure or his agent, the second by the city council or its authorized representative, and the third by the two so chosen. The three shall fairly and impartially estimate the damage, and their decision shall be final and binding upon all parties concerned.

Whenever a structure is found to be damaged by fire or decay or otherwise, to an extent of 50 per cent of the replacement value, notice of the finding shall be served in writing by the city council or its authorized representative on the owner of the structure or his agent, and thereafter the structure shall be a public nuisance and shall be abated. Failure of the owner to abate the nuisance within 30 days after receipt of the notice of finding shall be a violation of this ordinance. In addition, if the owner fails to remove or otherwise abate the nuisance within 60 days after receiving the notice, the city shall remove the structure or otherwise abate the nuisance.

The council shall determine the cost of doing so, and shall assess the cost against the property upon which the structure is situated. The assessment shall be declared by resolution, shall be a lien against the property, and shall be entered in the docket of city liens.

The procedure prescribed in this section is in addition to other remedies available to the city for correcting a dangerous building nuisance.¹⁴

Section 33.

(1) A building hereafter erected, constructed, moved into, or moved so that more than one-third of its floor area is within the fire zone, shall conform to the following minimum requirements:¹⁵

(a) Fire walls and party walls shall be of *four-hour* fire-resistive construction.

(b) Exterior walls shall be of *two-hour* fire-resistive construction, except that exterior walls fronting on a street having a width of at least 50 feet may be of incombustible construction with all structural members affording one-hour fire protection.

(c) Floors, roofs, stairs, shafts, inner bearing walls, inner courts, and permanent partitions separating tenants shall be of *one-hour* fire-resistive construction.

(d) *Roof coverings* shall be fire-retardant.¹⁶

(2) Notwithstanding the foregoing requirements, the following types of structures shall be allowed in the fire zone:

(a) Buildings of one-hour fire-resistive construction or of all metal construction not exceeding 2,500 square feet in area or one story in height and used as gasoline service stations, provided no exterior wall is closer than 10 feet to another building or to any property line other than one abutting a street or alley 20 feet or more in width.

(b) Dwellings in compliance with other sections of this code, if not over two stories in height and arranged for no more than two family living units, if no exterior wall thereof is closer than 10 feet from any property line other than one abutting a street or alley 20 feet or more in width, and if not roofed with wood shingles. Exterior walls of such a dwelling may be placed within 5 feet of the property line if all parts of the walls between 5 and 10 feet of the property line are of one-hour fire-resistive construction and have no openings therein.¹⁷

(c) Buildings in compliance with other sections of this code and not over one story in height or 500 square feet in area that serve as accessory buildings to dwellings, provided no exterior wall thereof is closer than

¹⁴ Many cities have special ordinances providing for abatement of building nuisances that are not limited to the fire zone. Section 32 provides a minimum abatement procedure for the fire zone and is not intended to replace more complete ordinances on this subject. See *Abatement of Building Nuisances*, Legal Bulletin No. 1, League of Oregon Cities.

¹⁵ For standards of fire-resistive wall and roof construction, see Appendix A.

¹⁶ For fire-resistive characteristics of roof coverings, see Appendix A.

¹⁷ The exception for dwellings has been included because many small cities have existing dwellings in the fire zone that otherwise create practical problems. Fire safety will be improved if this exception is omitted.

Section 33-35

5 feet to any property line other than one abutting a street or alley 20 feet or more in width, and provided further that the buildings are not roofed with wood shingles.

**DISTANCE FROM
PROPERTY LINE**

Section 34.

(1) In the fire zone, the distance between an exterior wall of specified fire resistance and the nearest property line other than a street or alley 20 feet or more in width shall be not less than the following:

- One-hour fire-resistive or less..... Not permitted other than exceptions in Section 33 (2)
- Two-hour fire-resistive..... 3 feet
- Three-hour fire-resistive..... 2 feet
- Four-hour fire-resistive..... No restriction

(2) In the fire zone, there shall be no opening in a fire wall or party wall, or in an exterior wall that is within 5 feet of a property line other than one abutting a street or alley. Openings in an exterior wall between 5 and 20 feet of a property line or within 20 feet of the centerline of a street or alley shall not exceed a total width of 50 per cent of the total length of the wall, and the openings shall be protected by fire doors or fire windows approved by the Underwriters' Laboratories, Incorporated, or other nationally recognized testing agencies.

(3) For a building located entirely outside the fire zone, an exterior wall within five feet of an adjacent property line other than one abutting a street or alley shall have no opening therein and shall be of not less than one-hour fire-resistive construction.

Section 35.

Electrical wiring shall comply with the minimum safety standards now or hereafter established by the Electrical Safety Act of the State of Oregon or by the applicable rules and regulations of the State Labor Commissioner.¹⁸

¹⁸ See ORS 479.510-479.850.

**ELECTRICAL
WIRING**

Part V—Sanitation and Health

Section 36.

Plumbing and sewer cesspool work shall comply with the minimum standards now or hereafter established by the plumbing code of the State of Oregon or by the state and local board of health rules and regulations.¹⁹

PLUMBING

Section 37.

Every dwelling unit shall be provided with not less than one water closet, one bathtub or shower, one lavatory, and one kitchen sink. No room with a water closet shall open into a room in which food is prepared or stored.

**SANITARY
FIXTURES**

Section 38.

Every habitable room shall have windows of an aggregate area not less than one-eighth of the floor area of the room. At least one-half of the required window area shall be openable.

**VENTILATION
AND LIGHT**

Windows shall face unobstructed, uncovered, horizontal areas of at least the extent of the glass of all windows opening thereon. No dimension of such an area shall be less than 5 feet.

Every bathroom or water closet compartment shall be provided with an outside window with an area of not less than one-eighth of the floor area, with not less than 45 per cent of the area openable, but in no case shall the window sash area be less than 3 square feet. A mechanical ventilation system capable of producing a change of air every five minutes may be substituted for the windows if connected directly with the outside.

Section 39.

ROOMS

(1) *Minimum Areas*

Every dwelling unit shall have at least one habitable room not less than 120 square feet in area or not less than 150 square feet when cooking space is included. The area of a kitchen shall be not less than 50 square feet. The area of a bedroom shall be not less than 90 square feet.

(2) *Minimum Height*

A habitable room or a service room shall have a clear height of not less than 7 feet 6 inches, except that a room with sloping ceiling shall have a clear height of 7 feet 6 inches for at least one-half its horizontal area. In computing the area of a room with a sloping ceiling, portions less than 5 feet in height shall be disregarded.

¹⁹ See ORS 447.010-447.140.

Section 39

(3) *Minimum Width*

Habitable rooms shall be not less than 7 feet wide in every part. Water closet space shall be at least 30 inches wide. There shall be a clear space of 2 feet 6 inches in front of each water closet.

(4) *Rooms Below Grade*

No room which has less than 50 per cent of its height above the average adjoining finished grade shall be occupied as a habitable room.

Part VI—Construction Details

Section 40.

Material shall be securely fastened with nails, bolts, or other generally accepted fastening devices. Fastenings of joints in ordinary framing shall be equivalent to that described in Table 6.

FASTENINGS

Table 6—Nailing Schedule

| | <i>Number or Spacing of Nails</i> | <i>Size of of Nails</i> |
|--|---------------------------------------|-----------------------------|
| Joist to sill or girder, toe nail | 2 | 16d |
| Bridging to joist, toe nail at each end | 2 | 8d |
| 1"x6" subflooring to joist, face nail | 2 | 8d |
| 1"x8" subflooring to joist, face nail | 3 | 8d |
| 2 inch subflooring to joist or girder | 2 | 16d |
| Sole plate to joist or blocking | 16"o.c. | 16d |
| Stud to plate, end nail | 2 | 16d |
| Stud to plate, toe nail | 3 | 16d |
| | or 4 | 8d |
| Doubled studs, corner studs and angles | 30"o.c. | 16d |
| Top plates, spiked together | 24"o.c. | 16d |
| Top plates, laps, and intersections | 2 | 16d |
| Ceiling joist to plate, toe nail | 2 | 16d |
| Ceiling joist, laps over partitions | 3 | 16d |
| Ceiling joist to parallel alternate rafters..... | 3 | 16d |
| Rafter to plate..... | 3 | 16d |
| 1 inch diagonal brace to each stud and plate | 2 | 8d |
| 1"x8" sheathing or less, to bearing | 2 | 8d |
| Sheathing wider than 1"x8", to bearing | 3 | 8d |
| Plywood sheathing, panel edges | 6"o.c. | 6d |
| Plywood sheathing, intermediate supports..... | 12"o.c. | 6d |

Section 41.

The drawings on the following pages are illustrative and are not to be construed as limiting building practices to the methods shown. Other methods and procedures which are commonly recognized by qualified persons as being satisfactory practice are acceptable, provided they do not conflict with the provisions of this code. In any event, construction shall be fabricated in a workmanlike manner, so that the structure, while being erected and when completed, will withstand expected loadings and other reasonably foreseeable hazards.

APPLICATION OF DRAWINGS

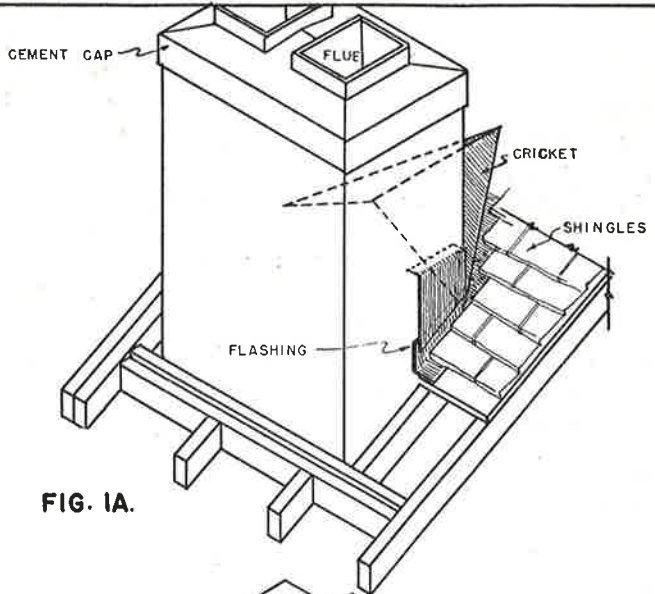


FIG. 1A.

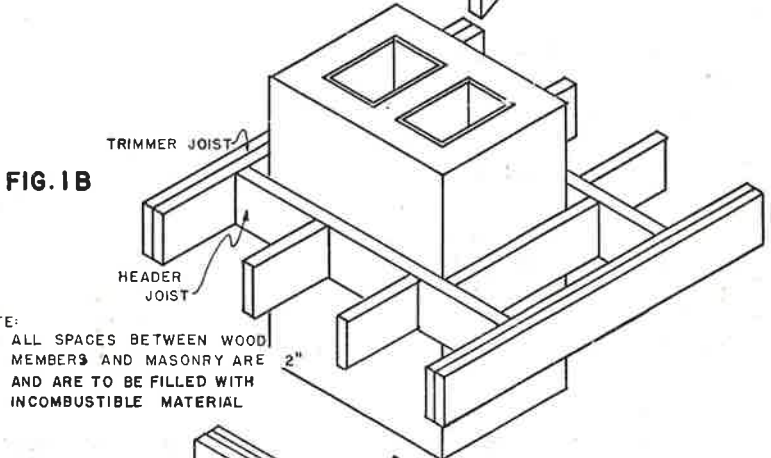
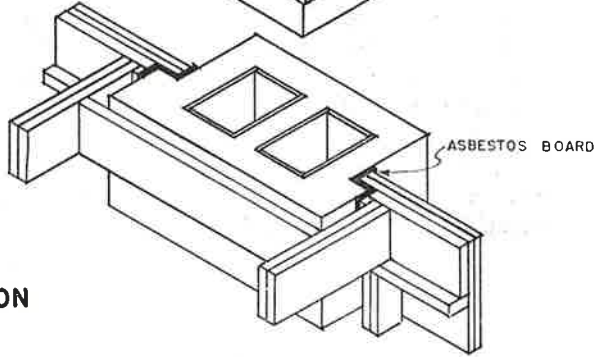


FIG. 1B

NOTE:
ALL SPACES BETWEEN WOOD
MEMBERS AND MASONRY ARE
AND ARE TO BE FILLED WITH
INCOMBUSTIBLE MATERIAL

FIG. 1C



**CONSTRUCTION
DETAILS**

NOTE:
ALL SPACES BETWEEN WOOD FRAME
AND MASONRY TO BE FILLED WITH
INCOMBUSTIBLE MATERIAL

FIG. 1D

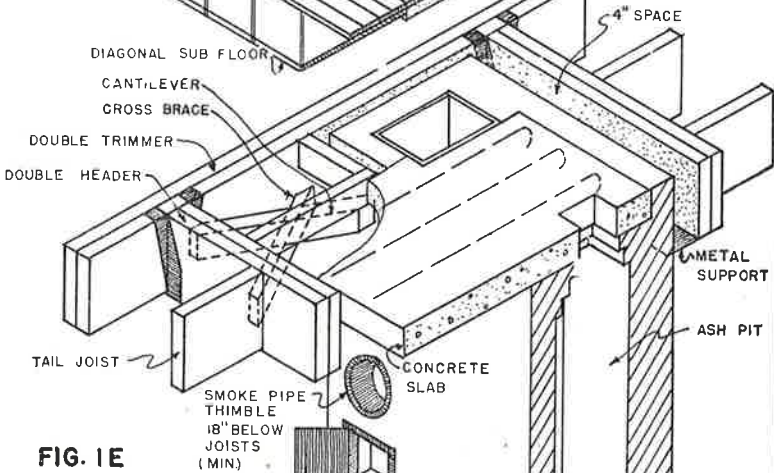
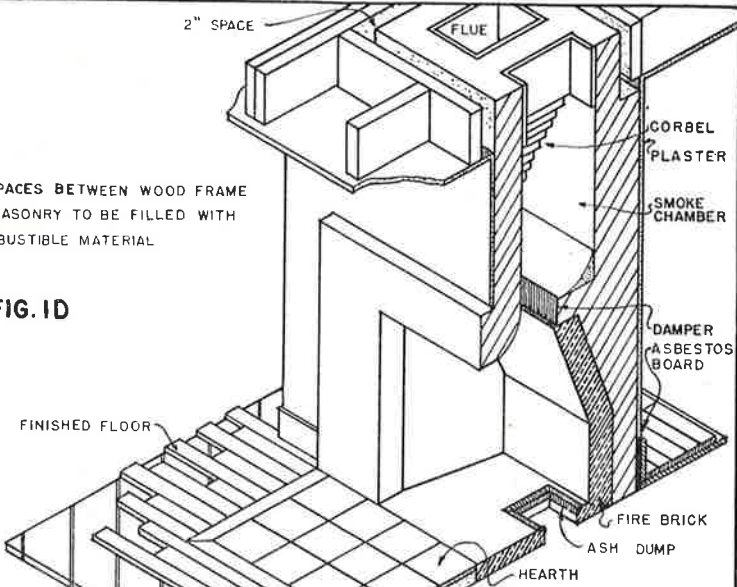
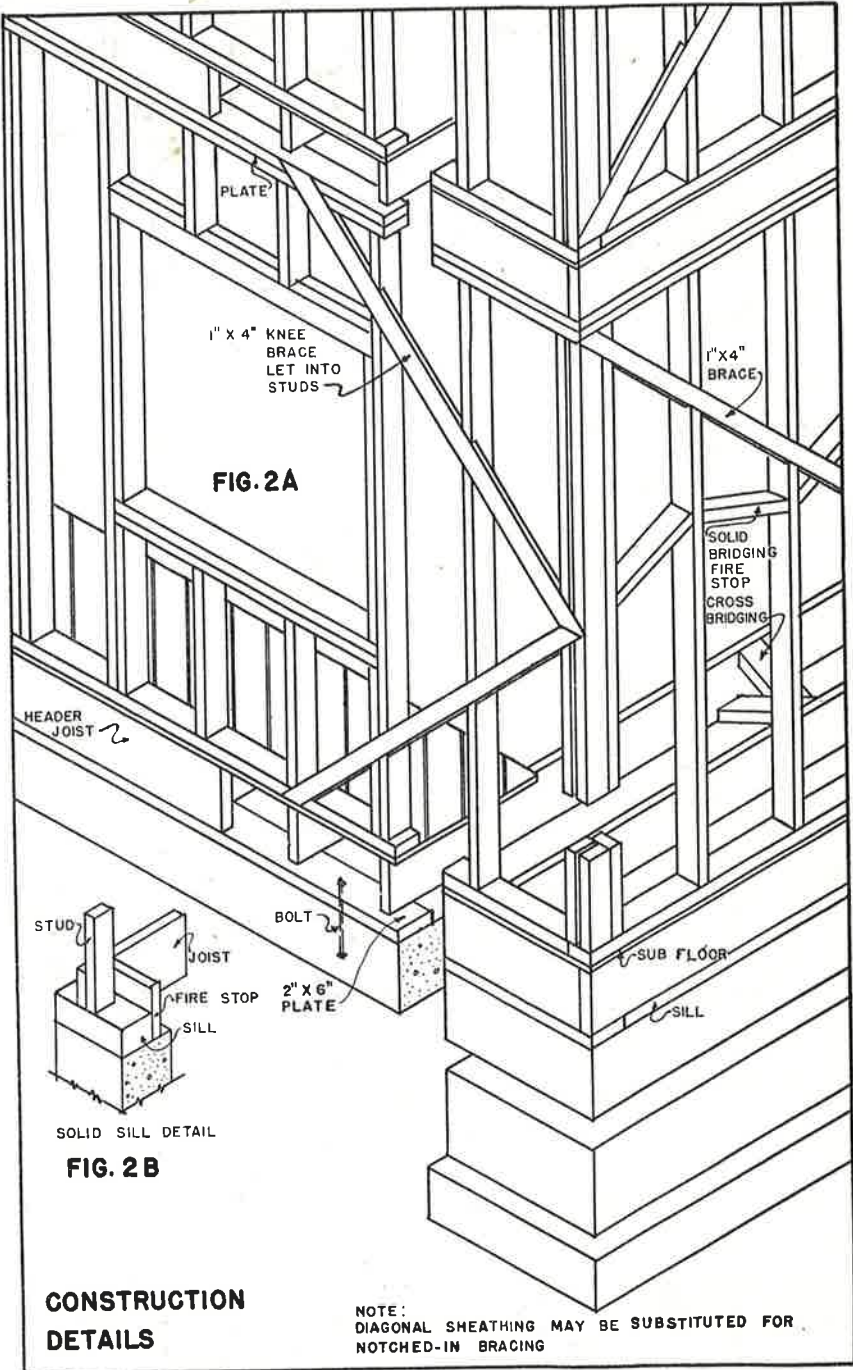
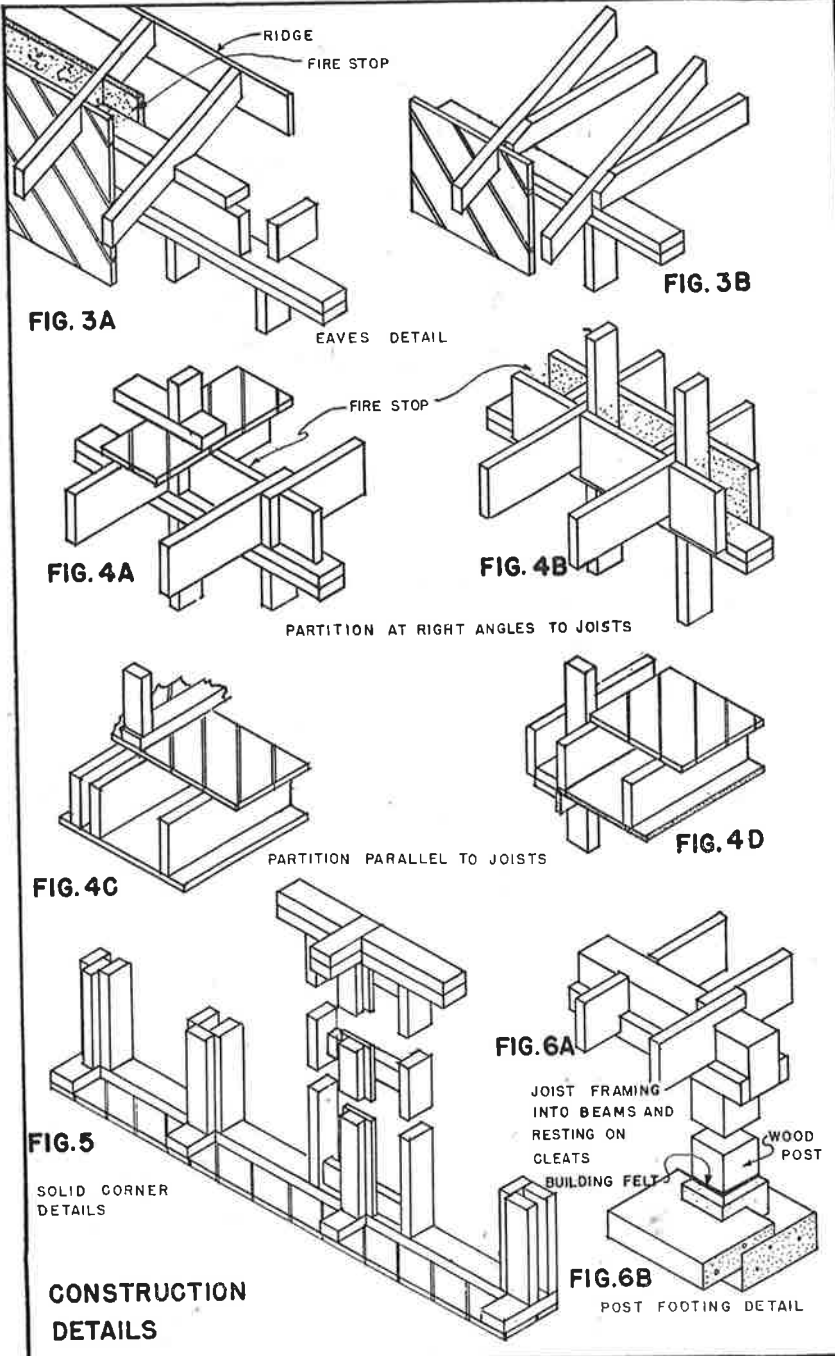


FIG. 1E

**CONSTRUCTION
DETAILS**





ALTERNATE METHODS OF BRACING LONG RAFTERS

FIG. 7A

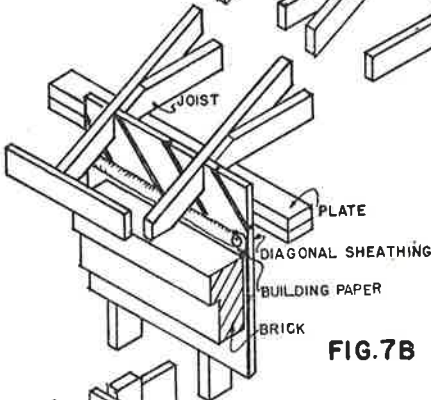
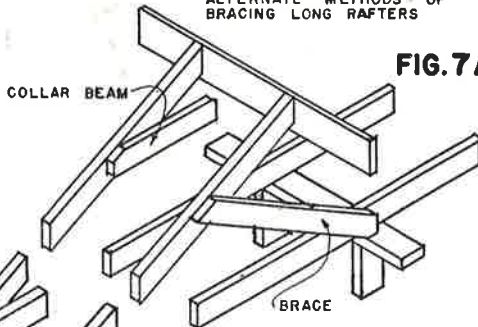


FIG. 7B

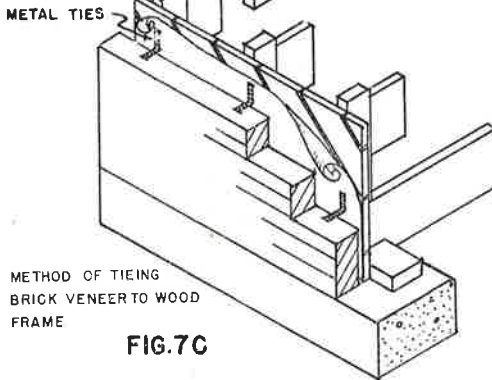
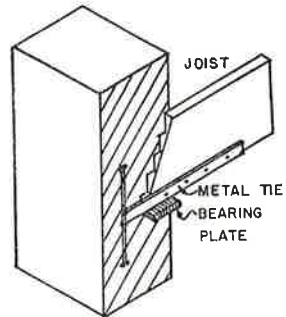


FIG. 7C

FIG. 8



**CONSTRUCTION
DETAILS**

METHOD OF FRAMING WOOD JOISTS INTO MASONRY WALLS

Appendix

Appendix A

Fire-Resistance Standards

Standards of fire-resistive construction are to be based, as to materials and methods, on the standards and results of fire tests published by the Underwriters' Laboratories, Incorporated, the National Bureau of Standards, and other nationally recognized agencies expert in matters of fire protection. The fire-resistance of walls, floors, and roofs, as commonly determined by standard tests, depends upon a number of factors, particularly where combinations of materials are used. The tables on the following pages are based primarily on information in the publication of the National Board of Fire Underwriters entitled *Fire Resistance Ratings*, but are condensed in form and do not cover all satisfactory materials and types of construction. For more detailed tables, see other nationally recognized publications, including those listed in Appendix C.

WALL CONSTRUCTION

The minimum thickness of some types of wall construction for specified hourly fire-resistance ratings are listed in Tables A-1 and A-2.

Table A-1—Fire-Resistance Ratings

Thickness²⁰ of Walls in Inches for Specified Hourly Ratings

| Material | Details of Wall Construction | Thickness if Combustible Members Are Framed Into the Walls | | | | Thickness if Incombustible or no Members Are Framed Into the Walls | | | |
|--|--|--|------|------|----|--|----|----|----|
| | | Hours of Resistance | | | | Hours of Resistance | | | |
| | | 4 | 3 | 2 | 1 | 4 | 3 | 2 | 1 |
| Brick (concrete, clay, shale or sand-lime) | Solid, unplastered Solid, plaster both sides | 12 | 12 | 8 | 8 | 8 | 8 | 8 | 4* |
| | | 12 | 8 | 8 | 8 | 8 | 8 | 4 | 4* |
| Solid Concrete Masonry Units | Volume of core space not over 25% | ---- | ---- | ---- | 8 | 8 | 8 | 8 | 4* |
| Plain Concrete | Solid | 12 | 12 | 8 | 8 | 7½ | 6½ | 5½ | 4* |
| Stone Masonry | Solid | 16 | 16 | 12 | 12 | 12 | 12 | 12 | 8 |
| Hollow Concrete Masonry Units | See TABLE A-2, next page | | | | | | | | |
| Wood Studs | Each side of 2"x4" wood studs covered with one of the following—one hour protection: ¾" gypsum or 1" wood fiber plaster on metal ½" gypsum plaster on ¾" perforated gypsum lath Two layers of ⅜" gypsum wallboard with joints staggered Drop siding over ½" gypsum sheathing | | | | | | | | |

²⁰ The thicknesses given do not include plaster. The minimum thickness of a plaster surface is ½" of gypsum or Portland cement plaster.

* Non-bearing.

FLOOR AND ROOF CONSTRUCTION

Some of the types of floor and roof construction suitable for specified hourly fire-resistance ratings are listed in Table A-3.

ROOF COVERINGS

Roof coverings are classified as "Fire-Retardant" and "Ordinary" roof coverings as follows:

Fire-Retardant Roof Coverings:

- (1) A roof covering meeting the requirements of Class A and Class B specifications of the Underwriters' Laboratories, Incorporated.
- (2) Roof coverings of asbestos shingles, slate, tile, concrete, or metal.
- (3) A built-up composition roof covering whose component parts have a total fire-retardant value of not less than 15 as given in Table A-4, with the top covering selected from either B, C, or D of the table and with bituminous compound mopped solid between each layer of roofing.

Ordinary Roof Covering:

A roof covering of asphalt or wood shingles and built-up roof coverings which do not meet the requirements of a fire-retardant roof covering.

Table A-2—Fire-Resistance Ratings

Hollow Concrete Masonry Units

| CONSTRUCTION | MINIMUM BLOCK THICKNESS IN INCHES AND FACE SHELL THICKNESS FOR HOURS GIVEN | | | |
|---|---|--------|--------|--------|
| | 4-hour | 3-hour | 2-hour | 1-hour |
| Pumice or Expanded Slag Aggregate | | | | |
| Unplastered | 8-1½ | 8-1¼ | 6 -1½ | 3*-1 |
| Plaster one side | | | 6 -1¼ | |
| Plaster both sides | | | 3*-1 | |
| Burned Clay, Cinders or Limestone Aggregate | | | | |
| Unplastered | 12-1½ | 8-1½ | 8 -1¼ | 4*-1¼ |
| Plaster one side | | 8-1¼ | | |
| Plaster both sides | 8-1½ | | 4*-1¼ | |
| Gravel Aggregate | | | | |
| Unplastered | 12-1¾ | 8-1¾ | 8 -1½ | 6 -1¼ |
| Plaster both sides | | 8-1½ | | 4*-1 |

* Non-bearing.

The above table considers only some of the common sizes of material. To determine the fire-resistance of other sizes, the method of equivalent thickness suggested by the National Board of Fire Underwriters can be used as illustrated below.

Table A-2—Fire-Resistance Ratings—continued

HOLLOW CONCRETE MASONRY UNITS—EQUIVALENT
THICKNESS OF WALL IN INCHES FOR SPECIFIED
HOURLY RATINGS

| Type of Course Aggregate Used in the Block | Minimum Equivalent Thickness ²¹ | | | |
|---|--|--------|--------|--------|
| | 4-hour | 3-hour | 2-hour | 1-hour |
| Expanded slag or pumice | 4.7 | 4.0 | 3.2 | 2.1 |
| Expanded clay or shale | 5.7 | 4.8 | 3.8 | 2.6 |
| Limestone, cinders or unexpanded slag | 5.9 | 5.0 | 4.0 | 2.7 |
| Calcareous (calcite, dolomite) gravel | 6.2 | 5.3 | 4.2 | 2.8 |
| Siliceous (quartz, chert, flint) gravel | 6.7 | 5.7 | 4.5 | 3.0 |

²¹ Equivalent thickness is the average thickness of the solid material in the wall. It may be found by taking the total volume of a wall unit, subtracting the volume of core spaces and dividing this by the area of the face of the unit. Where walls are plastered or faced with brick, the thickness of plaster or brick may be included in determining the equivalent thickness.

Where combustible members are framed into the wall, the wall must be of such thickness or be so constructed that the thickness of solid material between the end of each member and the opposite face of the wall, or between members set in from opposite sides, will be not less than 93% of the thickness shown in the table of equivalent thickness.

Table A-3—Fire-Resistance Ratings

*Specified Hourly Ratings for Some Types of Floor
and Roof Construction*

| Type of Construction | Hours of Resistance |
|---|------------------------|
| Reinforced concrete slab 4½ inches thick | 2 hours |
| Reinforced concrete slab 3½ inches thick | 1 hour |
| Any of the following have a ceiling below plastered with at least ¾ inch of gypsum or Portland cement-asbestos fiber plaster on expanded metal lath or on perforated gypsum lath with all joints reinforced with 3 inch strips of metal lath: | |
| Solid masonry slabs or arches 2½ inches thick, adequately supported | 2 hours |
| Hollow masonry slabs or arches 3 inches thick with a top covering or 1½ inches of solid masonry, adequately supported | 2 hours |
| Wood joist construction, fire stopped, with double board flooring having building paper between the boards | 1 hour |

Appendix A

Table A-4—Fire-Retardant Value of Roofing Materials

| Type of Material | Weight in lbs. per 100 sq. feet | Fire Retardant Value |
|--|---------------------------------------|----------------------------|
| <i>A. Base Sheets</i> | | |
| Asphalt saturated felt | 14 | 3 |
| Asphalt saturated asbestos felt | 14 | 5 |
| Asphalt saturated and coated dampcourse | 18 | 4 |
| Asphalt saturated felt | 28 | 6 |
| Asphalt smooth surfaced roofing | 37 | 6 |
| <i>B. Base or Cap Sheets</i> | | |
| Asphalt saturated asbestos felt (2 layers minimum) | 14 (each) | 10 |
| Asphalt saturated asbestos felt (Black Top) | 41 | 9 |
| Asphalt saturated asbestos felt (Black Top) | 50 | 10 |
| <i>C. Cap Sheets Only</i> | | |
| Asphalt saturated asbestos roofing (White Top) | 37 | 9 |
| Asphalt saturated asbestos roofing (White Top) | 52 | 10 |
| Ilmenite surfaced roofing | 55 | 7 |
| Smooth surfaced cap sheet | 50 | 6 |
| Smooth surfaced cap sheet | 60 | 7 |
| Smooth surfaced cap sheet | 68 | 9 |
| Mineral surfaced asphalt cap sheet | 83 | 10 |
| Split sheet roofing (2 layers minimum) | 53 (each) | 12 |
| <i>D. Gravel and Ceramic Material</i> | 400 | 6 |

A total fire-retardant value of 15 for a built-up roofing is necessary for classification as a fire-retardant roof covering.

Definitions:

Asphalt Saturated Felt is roofing felt made of fibers saturated with bituminous compound.

Base Sheets are one or more layers of asphalt saturated felt over which is placed a cap sheet, asbestos shingles, composition shingles, or mineral surfacing.

Cap Sheets are made up of fibers saturated and coated on both sides with a bituminous compound and surfaced with mineral granules, mica, talc, ilmenite, asbestos fibers, or similar materials, except on the unexposed portions of split cap sheets.

Appendix B Application for a Building Permit

City of Oregon
Date..... 19..... Application No.....

Application is hereby made to do work according to the following description:
Location of Premises: Lot..... Block..... Subdivision.....
Street Address
Dimensions of Lot..... x..... x..... Size of Building..... x..... Height.....
Depth of Front Yard..... Width of Side Yards (....) (....) Depth of Rear Yard...
Type of Occupancy..... Type of Construction.....
The work is to consist of (mention auxiliary buildings if any).....

The cost of the work is estimated to be..... The Permit Fee is.....

Owner Address..... Phone.....
Architect Address..... Phone.....
Builder Address..... Phone.....

The undersigned agrees to execute the work in conformity to the above description and the accompanying plans and specification and the Building Code of the City of

Signed.....

Application approved 19..... by.....
Permit No. issued 19..... by.....

Building Permit

City of Oregon
Date..... 19..... Permit No.....

Permission is hereby granted to.....
(owner's name and address)

for the construction described in application No..... to be located at
..... in the city of..... Oregon.
(address of new building)

.....
(Building Inspector)

Inspection Record: By.....

Foundations..... Frame..... Final.....

Note: Notify the Building Inspector by permit number when the building is ready for inspection.

Appendix C

Selected List of References and Agencies

Selected references which will be helpful to the building official in administering the *Proposed Building Code for Small Cities* are:

State of Oregon Publications

1. *Oregon State Fire Marshal Laws*. Office of the State Fire Marshal, Salem, Oregon 97310.
2. *Plumbing Code*. Chief Plumbing Inspector, Oregon State Board of Health, State Office Building, Portland, Oregon 97201.
3. *Electrical Code*. Chief Electrical and Safety Inspector, Oregon State Bureau of Labor, State Office Building, Portland, Oregon 97201.

United States Government Publications. Order from Superintendent of Documents, Washington, D. C.

National Bureau of Standards, U. S. Department of Commerce, Washington, D. C.

American Standard Building Code Requirements for Masonry, M211. Price 20¢.

Forest Products Laboratory, U. S. Department of Agriculture, Madison 5, Wisconsin

Wood Handbook, 1955. Price \$2.25.

National Housing Agency, U. S. Federal Housing Administration, Portland, Oregon

Minimum Property Standards for One and Two Living Units. Price \$2.00.

International Conference of Building Officials, 50 South Los Robles, Pasadena, California

1. *Uniform Building Code*, Volume I, 1964 Edition. Price \$7.50
2. *Uniform Building Code*, Volume III, 1964 Edition. Price \$13.80
3. *Uniform Building Code Short Form*, 1964 Edition. Price \$2.30
4. *Dwelling House Construction Pamphlet*, 1964 Edition. Price \$1.15
5. *Training Manual in Field Inspection of Buildings and Structures*, 1956 Edition. Price \$10.00

National Board of Fire Underwriters, 85 John Street, New York 38, New York (All publications are available on request.)

1. *Fire Resistance Ratings of Beams, Girders and Truss Protections, Ceiling Constructions, Column Protections, Floor and Ceiling Constructions, Roof Constructions, Walls and Partitions*.
2. *Fire Resistance Ratings of Less Than One Hour*.
3. *Standards for Fire Doors and Windows*.
4. *Recommended Method for Laying Out Fire Limits*.
5. *National Building Code*.

National Lumber Manufacturers Association, Washington, D. C.

1. *National Design Specifications for Stress Grade Lumber and Its Fastenings*. Revised, 1962.
2. *Wood Construction Data Series*.

Appendix C

Other agencies engaged in setting standards for the use of building materials include:

1. American Concrete Institute, 22400 W. 7 Mile Road, Detroit, Michigan.
2. American Iron and Steel Institute, 150 East Forty-Second Street, New York, N. Y.
3. American Society for Testing Materials, 1916 Race Street, Philadelphia, Pennsylvania.
4. American Standards Association, 10 E. 40th Street, New York, N. Y.
5. Underwriters' Laboratories, Incorporated, 207 E. Ohio Street, Chicago, Illinois.
6. West Coast Lumbermen's Association, 1410 S. W. Morrison Street, Portland, Oregon.
7. American Institute of Steel Construction, 101 Park Avenue, New York, N. Y.