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Building Code

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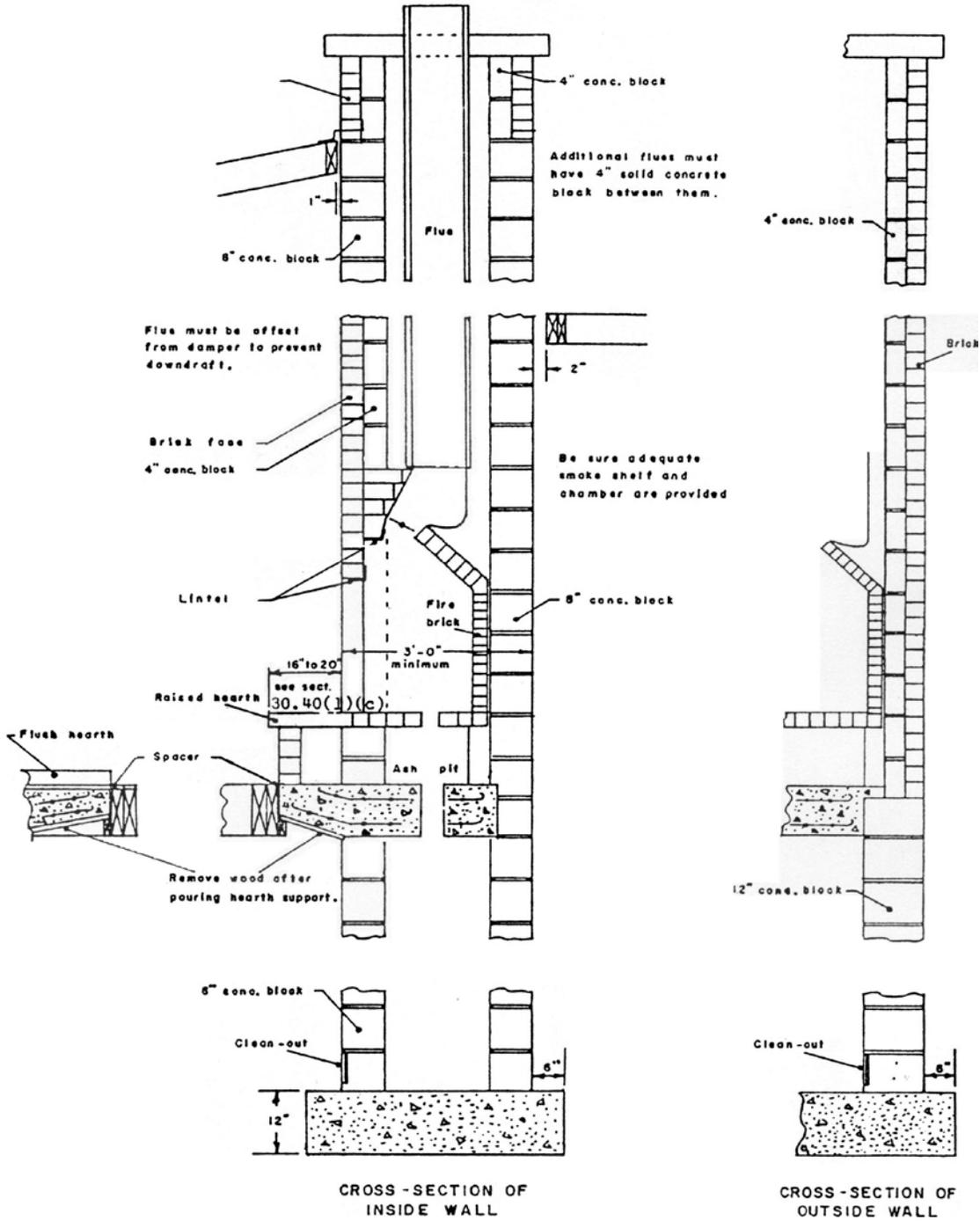
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CROSS-SECTION OF
 INSIDE WALL

CROSS-SECTION OF
 OUTSIDE WALL

DETAIL (C)
TYPICAL DETACHED GARAGE PERMIT APPLICATION
SEE CHAP. XI

DATE ISSUED _____ PERMIT NO. _____

DEPARTMENT OF BUILDING INSPECTION

TO THE INSPECTOR OF BUILDINGS:

PART I. GENERAL INFORMATION

NAME OF OWNER _____ ADDRESS _____
 LOCATION OF BUILDING _____ PHONE _____ LOT _____ BLOCK _____
 SUBDIVISION _____ NAME OF BUILDER _____
 ADDRESS _____ PHONE _____

PART II. ZONING

USE DISTRICT _____ INNER LOT _____ CORNER LOT _____ SIZE OF GARAGE _____

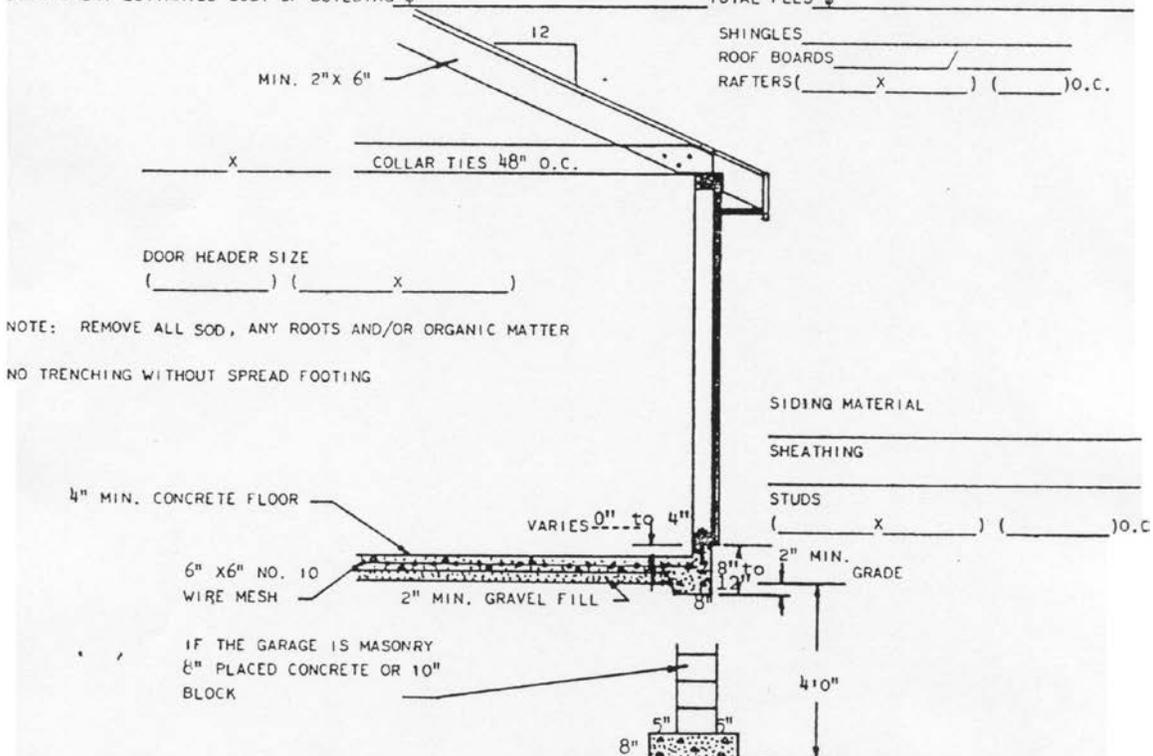
PART III. BUILDING CODE

TYPE OF CONSTRUCTION: FRAME _____ VENEER _____ OTHER _____ TYPE OF FOUNDATION _____
 SIZE _____ TYPE OF ROOFING: HIP _____ GABLE _____ ROOF PROJECTION _____

PART IV. REMARKS, REQUIREMENTS AND DATA

OWNERS ESTIMATE OF COST \$ _____
 DEPARTMENT ESTIMATED COST OF BUILDING \$ _____ TOTAL FEES \$ _____

SHINGLES _____
 ROOF BOARDS _____
 RAFTERS (_____ X _____) (_____) O.C.



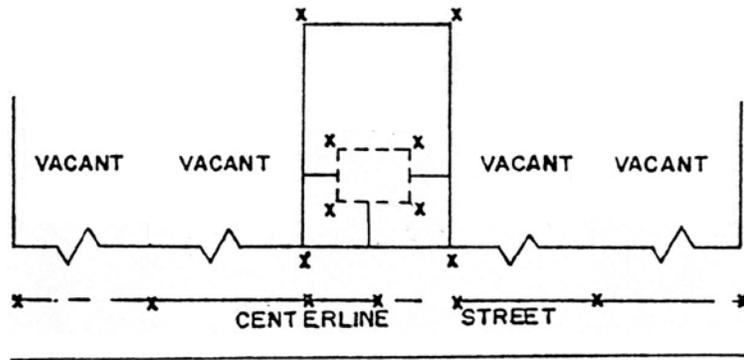
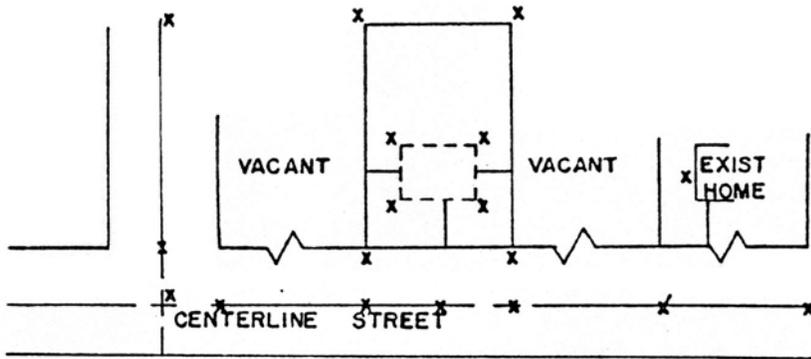
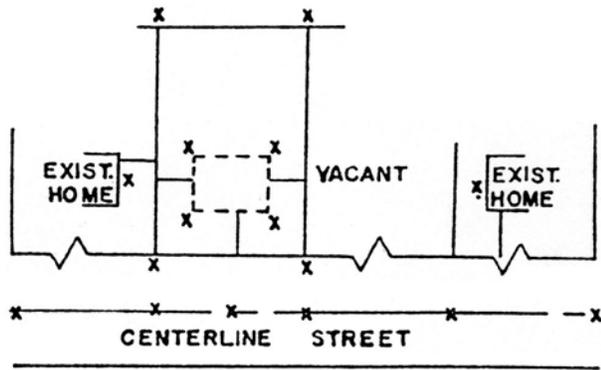
NOTE: REMOVE ALL SOIL, ANY ROOTS AND/OR ORGANIC MATTER
 NO TRENCHING WITHOUT SPREAD FOOTING

IT IS HEREBY AGREED TO CONSTRUCT, ERECT, ALTER, OR INSTALL THIS STRUCTURE IN STRICT COMPLIANCE WITH THE ORDINANCES OF THE MUNICIPALITY, AND TO OBEY ANY AND ALL LAWFUL ORDERS OF THE BUILDING INSPECTOR OF THE MUNICIPALITY, AND ALL STATE LAWS RELATING TO THE CONSTRUCTION, ALTERATION, REPAIRS, REMOVAL AND SAFETY OF BUILDINGS AND OTHER STRUCTURES AND PERMANENT BUILDING EQUIPMENT.

NAME _____ ADDRESS _____
 PER: _____ ADDRESS _____

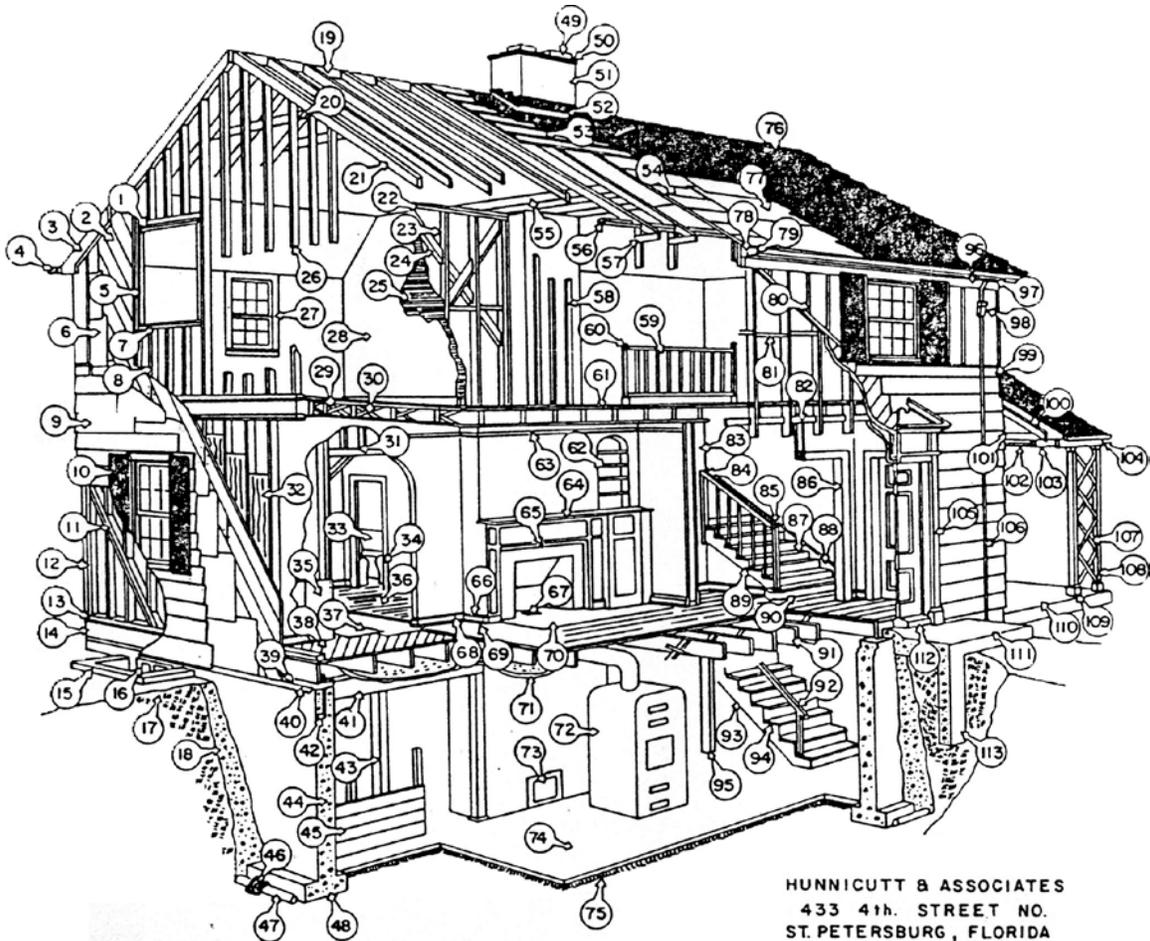
NOTE: A FINAL INSPECTION IS REQUIRED. ANY ELECTRICAL WORK REQUIRES AN ELECTRICAL PERMIT.

DETAIL (d)



- x Elevation Required to City Datum
- Indicate Proposed Grade
- To Be Submitted With Building Permit Application

**BUILDING
INSPECTION
DEPARTMENT**



HUNNICUTT & ASSOCIATES
 433 4th. STREET NO.
 ST. PETERSBURG, FLORIDA

KEY TO CONSTRUCTION DETAILS

- | | | | |
|-------------------------------|---|--|--|
| 1. Window Head Frame | 32. Insulation, Batts | 60. Stair Landing Newel | 88. Wall Stair Stringer |
| 2. Wall Sheathing, Diagonal | 33. Dining Nook | 61. Finish Flooring Over Felt
Over Sub-flooring on
Wood Joists | 89. Face Stringer & Moulds |
| 3. Verge Board | 34. Interior Door Trim | 62. Book Shelves | 90. Starting Riser & Tread |
| 4. Gutter | 35. Plaster Base, Rock Lath | 63. Picture Mould | 91. First Floor Joists |
| 5. Window Jamb Trimmer | 36. Finish Floor | 64. Mantel and Trim | 92. Basement Stair Rail &
Post |
| 6. Wall Building Paper | 37. Floor Lining Felt | 65. Damper Control | 93. Basement Stair Horses |
| 7. Window Sill Frame | 38. Sub-Flooring, Diagonally | 66. Base Top Mould | 94. Basement Stair Treads
& Risers |
| 8. Cripple Stud | 39. Sill Plate | 67. Ash Dump | 95. Basement Post |
| 9. Wall Siding | 40. Termite Shield | 68. Baseboards | 96. Facia Board |
| 10. Window Shutters | 41. Girder | 69. Shoe Mould | 97. Cornice Bed Mould |
| 11. Corner Bracing 45° | 42. Plate Anchor Bolt | 70. Hearth | 98. Leader Head or
Conductor Head |
| 12. Corner Studs, Double | 43. Post | 71. Plaster Ceiling | 99. Bell Course |
| 13. Sole Plate | 44. Foundation Wall | 72. Boiler or Furnace | 100. Porch Rafter |
| 14. Box Sill | 45. Frame Partition | 73. Cleanout Door | 101. Porch Ceiling Joists |
| 15. Basement Areaway | 46. Tarred Felt Joint Cover | 74. Basement Concrete Floor | 102. Porch Ceiling Soffit |
| 16. Basement Sash | 47. Drain Tile | 75. Cinder Fill | 103. Porch Roof Beam |
| 17. Grade Line | 48. Footing | 76. Roof Cover (Shingles) | 104. Porch Beam Facia |
| 18. Gravel Fill | 49. Flue Liner Tops | 77. Roofing Felts | 105. Entrance Door Trim |
| 19. Ridge Board | 50. Chimney Cap | 78. Soffit of Cornice | 106. Leader, Downspout or
Conductor |
| 20. Collar Beam | 51. Brick Chimney | 79. Facia of Cornice | 107. Porch Trellice |
| 21. Roof Rafters | 52. Flashing & Counter
Flashing | 80. Vert. Board & Batten
Siding | 108. Porch Column |
| 22. Interior Partition Plates | 53. Spaced 1" x 4" Sheathing
(Wood Shingles) | 81. Fire Stops | 109. Porch Column Base |
| 23. Interior Studs | 54. Tight Roof Sheathing (All
Other Coverings) | 82. Ribbon Plate | 110. Concrete Porch Floor |
| 24. Cross Bracing | 55. Ceiling Joists | 83. Stair Wall Partition | 111. Concrete Stoop |
| 25. Plaster Base, Lath | 56. Exterior Wall Plates | 84. Stair Rail or Easing | 112. Entrance Door Sill |
| 26. Gable Studs | 57. Lookouts | 85. Starting Newel | 113. Stoop Foundation |
| 27. Interior Window Trim | 58. Furring Strips | 86. Cased Opening Trim | |
| 28. Plaster Walls | 59. Stair Rail & Balusters | 87. Main Stair Treads &
Risers | |
| 29. Cross Bridging | | | |
| 30. Second Floor Joists | | | |
| 31. Arch Framing | | | |

Chapter I. General

- 3.00 SCOPE.** The provisions of this Code shall govern the design, construction, alteration, demolition, and moving of all buildings and structures.
- 3.01 TITLE.** These regulations shall be known and cited as Municipal Building Code”; and shall be construed to secure their expressed intent to ensure public safety, health, and welfare insofar as they are depended upon building construction.
- 3.02 APPLICATION OF “WISCONSIN ADMINISTRATIVE BUILDING AND HEATING, VENTILATING AND AIR CONDITIONING CODE”.** The Wisconsin Administrative Building and Heating, Ventilating and Air Conditioning Code, Chapters IND. 50 through 57, both inclusive and all amendments thereto are hereby made a part of this Code by reference with respect to those classes of buildings to which such provisions apply. A copy of said code is on file in the office of the Municipal Clerk.
- 3.025 APPLICATION OF “WISCONSIN UNIFORM DWELLING CODE”.**
- (1) The Wisconsin Uniform Dwelling Code, Chapters 20 through 25 inclusive, and all amendments thereto, are hereby made a part of this Code by reference and shall apply to all one and tow family dwellings and alterations and additions thereto, the initial construction of which was commenced after the effective dates of the various Chapter of the Wisconsin Uniform Dwelling Code. A copy of said code is on file in the office of the Municipal Clerk.
- 3.03 APPLICATION OF “WISCONSIN UNIFORM BUILDING CODE”.** All buildings and structures hereafter erected, altered, repaired, moved, or demolished that are used or designed to be used for the purpose herein defined shall comply in full with the requirements of this Code.
- (1) **Zoning Laws.** No provision of this Code shall be construed to repeal, modify, or constitute an alternative to any lawful zoning regulations.
- (2) **New Buildings.** The construction requirements shall also apply to buildings and conditions described in this section.
- (3) **Existing Buildings.** This Code shall also apply to buildings and conditions described in this Section.
- (a) An existing building to be occupied as a one or two family dwelling, which building was not previously so occupied.
- (b) An existing structure that is altered or repaired, when the cost of such alterations or repair during the life of the structure exceeds 50% of the equalized value of the structure, said value to be determined by the Assessor of the municipality.
- (c) Additions and alternations, regardless of cost, made to an existing building, shall comply with the requirements of this Code. The provisions of subsection (4) of this Section shall also apply.
- (d) Roof Coverings. Whenever more than 25% of the roof covering of a building is replaced in any 12-month period, all roof covering shall be in conformity with applicable sections of this Code.

- (e) Additions and Alterations. Any addition, or alteration, regardless of cost, made to a buildings, hall be made in conformity with applicable Sections of this Code.
- (4) **Alterations and Repairs.** The following provisions shall apply to buildings altered or repaired.
 - (a) Alterations. When not in conflict with any regulations, alterations to any existing building or structure, accommodating a legal occupancy and use but of nonconforming type of construction, which involves either the structural members of floors or roofs, beams, girders, columns, bearing, or other walls, room, heating, and air conditioning systems, arrangements, light, and ventilation changes in location of exist stairways or exits or any or all of the above, then such existing construction shall be made to conform to the minimum requirements of this Code applicable to such occupancy and use and given type of construction.
 - (b) Repairs. Repairs for purposes of maintenance, or replacements in any existing building or structure which do not involve the structural portions of the building or structure, or which do not affect room arrangement, light, and ventilation, access to or efficiency of any exit stairways or exits, fire protection, or exterior aesthetic appearance and which do not increase a given occupancy and use, shall be deemed minor repairs.
 - (c) Alternations When Not Permitted. When any existing building or structure, which for any reasons whatsoever does not conform to the regulations of this Code, has deteriorated from any cause whatsoever to an extent greater than 50% of the equalized value of the building or structure, no alterations or moving of such building or structure shall be permitted. Any such building or structure shall be considered a menace to public safety and welfare and shall be ordered vacated and thereafter demolished and debris removed from the premises.
 - (d) Alterations and Repairs Required. When any of the structural members of any building or structure have deteriorated from any cause whatsoever to less than their required strength, the owner of such a building or structure shall cause such structural members to be restored to their required strength; failing in which the building or structure shall be considered a menace to public safety and shall be vacated and thereafter no further occupancy of use of the same shall be permitted until the regulations of this Code are complied with.
 - (e) Extent of Deterioration. The amount and extent of deterioration of any existing building or structure shall be determined by the Building Inspector.
 - (f) Use of Unsanitary Building. It shall be unlawful to occupy or use or permit the occupancy or use of any building or structure that is unsanitary or dilapidated, or deteriorated, or out of repair, thereby being unfit for human habitation, occupancy, or use until the regulations of this Code have been complied with.

Chapter II. Building Inspector and Permits

3.04 BUILDING INSPECTOR. There is hereby created the Department of Building Inspection. The Building Inspector appointed by the Municipality shall act as head of this Department.

- (1) **Duties.** The Building Inspector is vested with the authority and responsibility to enforce all laws controlling safe building construction. He shall make periodic inspection of existing public buildings to determine their safety. He shall make inspections at the site

of buildings damaged by any cause whatsoever to determine the safety of buildings affected thereby.

- (2) **Rights.** The Building Inspector or his authorized agent shall have the power and authority at all reasonable hours, for any proper purpose, to enter upon any public or private premises and make inspection thereof and to require the production of the permit for any building, plumbing, electrical, or heating work being done or the required license therefore. No person shall interfere with or refuse to permit access to any such premises to the above described representatives of the municipality while in the performance of their duties.
- (3) **Records.** There shall be kept in the Department of Building Inspection a record of all applications for building permits in a book for such purpose and each permit shall be regularly numbered in the order of its issue. Also, a record showing the number, description, and size of all buildings erected indicating the kind of materials used and the cost of each building and aggregate cost of all buildings in the various classes, shall be kept. There shall be kept in the Department of Building Inspection, a record of all inspections made and of all removal and condemnation of buildings, and a record of all fees collected showing the date of their receipt. The Building Inspector shall make a written annual report to the governing body of the municipality relative to these matters.

3.05 PERMITS.

- (1) **Permits Required.** No building or structure or any part thereof shall hereafter be built, enlarged, altered, or demolished within the municipality or moved into, within, or out of the municipality except as hereinafter provided, unless a permit therefore shall first be obtained by the owner or his agent from the Building Inspector. Permits required are as follows:
 - (a) Building.
 - (b) Air Conditioning "Section 3.38(1)(b)".
 - (c) Wrecking or razing.
 - (d) Heating.
 - (e) Moving of Buildings.
 - (f) Occupancy.
 - (g) Other permits as required by governing municipality.
- (2) **Application for Permits.** Application for a building permit shall be made in writing upon a blank form to be furnished by the Building Inspector and shall state the name and address of owner of the building and the owner of the land on which it is to be erected, the name and address of the designer, and shall set forth a legal description of the land on which the building is to be located, the location of the building, the house number thereof, and such other information as the Building Inspector may require. With such application, there shall be submitted to the Building Inspector three (3) complete sets of plans, specifications, and three (3) copies of a survey.
 - (a) **Survey.** The survey shall be prepared and certified by a surveyor registered by the State of Wisconsin; shall be made in no case prior to one (1) year prior to the issuance of a building permit; and shall bear the date of the survey. The certified survey shall also show the following:
 1. Location and dimension of all buildings on the lot, both existing and proposed.
 2. Dimensions of the lot.

3. Dimensions showing all setbacks of all buildings on the lot.
 4. Proposed grade of proposed structure, to City of Village datum.
 5. Grade of lot and of road opposite lot.
 6. Grade and setback of adjacent buildings. If adjacent lot is vacant, submit elevation of nearest buildings on same side of road.
 7. Type of monuments at each corner of lot.
 8. Water courses or existing drainage ditches.
 9. Seal and signature of surveyor.
- (b) Plans and Specifications. All plan shall be drawn to a scale not less than one-fourth inch per foot, on paper or cloth in ink, or by some other process that will not fade or obliterate, and shall disclose the existing and proposed provisions for water supply, sanitary sewer connections, and surfacing water drainage. All dimensions shall be accurately figured. Drawings that do not show all necessary detail shall be rejected. A complete set of plans for residential construction shall consist of:
1. All elevations.
 2. All floor plans.
 3. Complete construction details.
 4. Fireplace details (3/4 inch per foot) showing cross section of fireplace and flues.
 5. Plans of garage when garage is to be built immediately, or location of garage when it is to be built at a later date.
- All plans shall remain on file in the office of the Building Inspector until at least one (1) year after the completion of the building, after which time the Building Inspector may return the same to the owner, may keep them for public record, or may destroy them.

(3) **Waiver of Some Requirements.** At the option of the Building Inspector, plans, data, specifications, and survey need not be submitted with an application for permit to execute minor alterations and repairs to any building, structure, or equipment, provided the proposed construction is sufficiently described in the application for permit.

(4) **Seal of Registered Engineer or Architect.** All plans, data, and specifications for the construction of any building or structure or for any construction in connection with existing buildings and structures, other than one and two family residences, containing more than 50,000 cubic feet, total volume, submitted with an application for permit, shall bear the seal of the registered architect or registered engineer. The plans shall also be stamped as approved as required by the Department of Industry, Labor, and Human Relations of the State of Wisconsin. Such building or structure shall be constructed under the supervision of an architect or engineer who shall be responsible for its erection in accordance with the approved plans. No permit shall be granted for such structure unless such construction will be under the supervision of an architect or engineer, as required by the Wisconsin Statutes. A written statement to this effect shall be filed by the architect or engineer, with the Building Inspector with the application for permit.

(5) **Drainage.**

- (a) Grading of Lots. The plans shall show the present and proposed grades of the lot on which it is proposed to erect the building for which a building permit is sought and of the immediately adjoining property insufficient detail to indicate the surface water drainage before and after the completion of grading. No permit shall be issued if the erection of the building and the proposed grades shall

unreasonably obstruct the natural flow of water from the surface of adjoining property or obstruct the flow of any existing ravine, ditch, drain, or storm water sewer draining neighboring property, unless suitable provision for such flow by means of an adequate ditch or pipe, which shall be shown on the plans and shall be constructed so as to provide continuous drainage at all times.

- (b) Storm Water Drains. No dwelling shall be erected nor shall existing provisions for conveyance of water from the roof of any dwelling be altered or replaced unless provision is made to convey water from the roof of the dwelling in such a manner that such water will not, directly or indirectly, pass thence into the sanitary sewer system. No storm water or surface water drains may be connected with the sanitary sewer system, whether installed above or below the surface of the ground.
- (c) Sump Pump Collection System. Where there is a Village-approved sump pump collection system or a pipe to a storm sewer system located between the near edge of pavement and the subject property, the applicant for a newly constructed residence shall include on the plans the proposed connection to such drainage system, and the final inspection of the Building Inspector shall require completion of such connection. Such plan shall not permit connection of roof drainage to such collection system.

(6) **Building Inspector to Issue Permit.**

- (a) If the Building Inspector finds that the proposed building will comply in every respect with this Code, other municipal ordinances, and all laws of the State of Wisconsin, and lawful orders issued pursuant thereto, he shall issue a building permit. After being approved, the plans and specifications shall not be altered in any respect which involves any of the abovementioned ordinances, laws, or order, or which involves the safety of the building, except with the written consent of the Building Inspector filed with such application.
- (b) In case adequate plans are presented, the Building Inspector, at his discretion, may issue a permit for a part of the building before receiving the plans and specifications of the entire building. It shall be unlawful to commence work on any building or alteration before the building permit has been issued. The issuance of a permit upon the plans and specifications shall not prevent the Building Inspector from thereafter requiring the correction of errors in said plans and specifications or from preventing building operations being carried on thereunder when in violation of any ordinances of the municipality or laws of the State of Wisconsin or lawful orders issued pursuant thereto.
- (c) For the construction of building requiring approval of the Department of Industry, Labor, and Human Relations of the State of Wisconsin, no permit shall be issued until such approved plans are received by the Building Inspector.

(7) **Inspector May Revoke Permits.**

- (a) The Building Inspector may revoke any permit, certificate of occupancy, or approval issued under the regulations of this Code, and may stop construction or use of approved new materials, equipment, methods of construction, devices, or appliances for any of the following reasons:
 - 1. Whenever there is a violation of any regulation of this Code or any other ordinance, law, or lawful orders or Wisconsin Statute relating to the same subject matter.
 - 2. Whenever the continuance of any construction becomes dangerous to life or property.

3. Whenever there is any violation of any condition or provisions of the application for permit, or of the permit.
 4. Whenever in the opinion of the Building Inspector there is inadequate supervision provided on the job site.
 5. Whenever any false statement or misrepresentation has been made in the application for permit, plans, drawings, data specifications, or certified lot or plot plan on which the issuance of the permit or approval was based.
 6. Whenever there is a violation of any of the conditions of an approval or occupancy given by the Building Inspector for the use of any new materials, equipment, methods of construction, devices, or appliances.
- (b) The notice revoking a permit, certificate of occupancy, or approval shall be in writing and may be served upon the applicant for the permit, owner of the premises, and his agent, if any, and on the person having charge of construction.
 - (c) A revocation placard shall also be posted upon the building, structure, equipment, or premises in question by the Building Inspector.
 - (d) After the notice is served upon the persons as aforesaid and posted, it shall be unlawful for any person to proceed thereafter with any construction operation whatsoever on the premises, and the permit which has been so revoked shall be null and void, and before any construction or operation is again resumed, a new permit, as required by this Code, shall be procured and fees paid therefore, and thereafter the resumption of any construction or operation shall be in compliance with the regulations of this Code.
- (8) **Fees.** Before receiving a permit, the owner or his agent shall pay the fee specified in Table 1. In applying the provisions of this Code in respect to new work, existing buildings, alterations, and repairs, the physical value of the work shall be determined by the Building Inspector on the basis of current costs, or as otherwise provided in the local ordinances.

Table No. 1 Building Permit Fee Schedule	
MINIMUM FEES	
Building Permit	\$50.00
Electrical Permit	\$60.00
Plumbing Permit	\$60.00
HVAC Permit	\$50.00
Occupancy Permit – Commercial	\$150.00
Occupancy Permit – Residential	\$50.00 + \$25/unit
OTHER FEES	
<i>Residence</i>	
1-2 Family, accessory building, garage	\$0.26/sf
3 or more units, institutional building	\$0.26/sf
Additions	\$0.26/sf
Businesses or additions thereto	\$0.24/sf
Manufacturing or Industrial	\$0.19/sf
Construction of Footings & Foundations	
Multifamily & Industrial/Commercial	\$150.00
1 & 2 family units	\$100.00

All others per \$1,000 valuation	\$8.00
Heating & Incinerator Units	\$50.00 per unit + \$10.00/50,000
Air Conditioner other than wall unit	\$50.00
Air Conditioner wall unit	\$50.00
Wrecking or Razing Minimum	\$50.00 + \$0.05/sf
Fences, Swimming Pools, Decks, Sheds Plus Per \$1,000 valuation	\$50.00 \$8.00
Moving Building over Public Ways	\$150.00 + \$0.05/sf
Reinspections	\$35.00
<i>Plan Examinations</i>	
Commercial/Industrial & Additions to same	\$150.00
Wisconsin Uniform Building Permit Seal (State Charge)	\$10.00
<i>Plumbing Permit Fees</i>	
Street Repair to 50% of width	\$750.00
Street Repair over 50% of width	\$1,000.00
Connection with Public or Private Sewer	\$60.00
Water Connection 2" or under	\$50.00
Water Connection over 2"	\$60.00
Relay of Existing Sewer or Drain Field	\$50.00
Each Fixture	\$9.00
Well Pump	\$50.00
Building Drain	\$45.00
Plumbing Survey	\$50.00
Sprinkler Main Connection	\$75.00
Sprinkler Head (each)	\$0.35
Reinspection Fee	\$35.00
Minimum Permit Fee	\$60.00
<i>Electrical Permit Fees</i>	
Light Switch & Outlet	\$0.70
Light Fixture and Florescent Tube	\$0.60
Mercury, HPS, LPS, Metal Halide Fixtures	\$3.00
Range and Clothes Dryer	\$8.00
Garbage Disposal	\$7.00
Dishwasher	\$7.00
Water Heater, Gas Burner, Oil Burner	\$11.00
Refrigeration and Air Cooling - .25 per HP	\$11.00
Feeders – N.4 AWG or Larger	\$14.00
Temporary Service	\$25.00
Service Conductor and Switch 0-400 amps	\$25.00

401-1,000 amps	\$35.00
Each additional 1,000 amps	\$35.00
Ventilation Fan	\$5.00
Motor over ¼ HP	\$1.00/HP
Fuel Dispensing Pump	\$10.00
Transformer, Rectifier, Generator	\$0.50/KW
Space Heating System	\$5.00/circuit
Miscellaneous Heating Device	\$6.00
Dimmer – 1,000 watts or more	\$4.00
Power Receptacles – 230 volts or more	\$8.00
Wireway, Busway, Raceway, Gutter	\$0.40/ft.
Strip Lights, Plug-in Strip, Trol-E-Duct	\$0.50/ft.
X-ray Machine, Motion Picture Machine	\$80.00
Hot Tubs	\$60.00
Minimum Permit Fee	\$60.00

3.06 APPROVED PLANS.

- (1) A weatherproof card signed by the Building Inspector indicating the permit has been issued shall be posted at the job site during construction. After issuance of a building permit, the approved plans shall not be altered unless any proposed change is first approved by the Building Inspector as conforming to the provisions of this Code.
- (2) The building permit shall become void unless operations are commenced within four (4) months from the date thereof, or if the building or work authorized by such permit is suspended at any time after work is commenced, for a period of 60 days. The period of time may be extended by the Building Inspector if the delay was due to conditions beyond the control of the applicant.
- (3) Before any work is commenced or recommenced after the permit has lapsed, a new permit shall be issued at the regular fee rate. In any event, all work shall be completed within 18 months from the date of issuance of the permit.

3.07 REGULATIONS FOR MOVING BUILDINGS.

- (1) **General.** No person shall move any building or structure upon any of the public ways of the municipality without first obtaining a permit therefor from the Building Inspector and upon the payment of the required fee. Every such permit issued by the Building Inspector for the moving of a building shall designate the route to be taken, the conditions to be complied with, and shall limit the time during which said moving operations shall be continued.
- (2) **Moving Damaged Buildings.** No building shall be repaired, altered, or moved within or into the municipality that has deteriorated or has been damaged by any cause (including such moving and separation from its foundation and service connections in case of moved buildings), 50% or more of its equalized value, and no permit shall be granted to repair, alter, or move such building within or into the municipality.
- (3) **Continuous Movement.** The movement of buildings shall be a continuous operation during all the hours of the day, and day by day and at night, until such movement is fully completed. All of such operations shall be performed with the least possible obstruction

to thoroughfares. No building shall be allowed to remain overnight upon any street crossing or intersection or so near thereto as to prevent easy access to any fire hydrant or any other public facility. Lighted lanterns shall be kept in conspicuous places at each end of the building during the night.

- (4) **Street Repair.** Every person receiving a permit to move a building shall within one (1) day after said building reaches its destination, report the fact to the Building Inspector, who shall thereupon in the company of the municipal highway commissioner, inspect the streets and highways over which said building has been moved, and ascertain their condition. If the removal of said building has caused any damage to any street or highway, the person to whom the permit was issued shall forthwith place them in good repair as they were before the permit was granted. On the failure of the said permittee to do so within 10 days thereafter to the satisfaction of the governing body, said body shall repair the damage done to such streets and hold the person obtaining such permit and the sureties on his bond responsible for the payment of same.
- (5) **Conforming with Code.** No permit shall be issued to move a building within or into the municipality and to establish it upon a location within the said municipality until the Building Inspector has made an investigation of such building at the location from which it is to be moved, and is satisfied from such investigation that said building is in a sound and stable condition and of such construction that it will meet the requirements of this Building Code in all respects. A complete plan of all further repairs, improvements, and remodeling with reference to such building shall be submitted to the Building Inspector, and he shall make a finding of fact to the effect that all such repairs, improvements, and remodeling are in conformity with the requirements of this Building Code, and that when same are completed, the building as such will so comply with said Building Code. In the event a building is to be moved from the municipality to some point outside the boundaries thereof, the provisions with respect to the furnishing of plans and specifications for proposed alterations to such building may be disregarded.
- (6) **Bond.**
 - (a) Before a permit is issued to move any building over any public way in this municipality, the party applying therefore shall give a bond to the municipality in a sum to be fixed by the Building Inspector and which shall not be less than \$1,000.00; said bond to be executed by a corporate surety or two personal sureties to be approved by the governing body or designated agent conditioned upon, among other things, the indemnification to the municipality for any costs or expenses incurred by it in connection with any claims for damages to any persons or property, and the payment of any judgment together with the costs and expenses incurred by the municipality in connection therewith, arising out of the removal of the building for which the permit is issued.
 - (b) Unless the Building Inspector, upon investigation, shall find it to be a fact that the excavation exposed by the removal of such building from its foundation shall not be so close to a public thoroughfare as to permit the accidental falling therein of travelers or the location, nature, and physical characteristics of the premises and the falling into such excavation of children under 12 years of age unlikely, the bond required by (a) shall be further conditioned upon the permittee erecting adequate barriers and within 48 hours, filling in such excavation or adopting and employing such other means, devices, or methods approved by the Building Inspector and reasonably adopted or calculated to prevent the occurrences set forth herein.

- (7) **Insurance.** The Building Inspector shall require in addition to said bond above indicated, public liability insurance covering injury to one person in the sum of not less than \$100,000.00, and for one accident in the sum of not less than \$200,000.00, together with property damage insurance in a sum not less than \$50,000.00, or such other coverages deemed necessary.
- (8) **Plan Commission or Other Assigned Board or Commission.**
- (a) No such permit shall be issued unless it has been found as a fact by the Plan Commission of the municipality by at least a majority vote, after an examination of the application for the permit which shall include exterior elevations of the building and accurate photographs of all sides and views of the same, and in case it is proposed to alter the exterior of said building, plans and specifications of such proposed alterations and after a view of the building proposed to be moved and of the site at which it is to be located, that the exterior architectural appeal and functional plan of the building to be moved or moved and altered, will not be so at variance with either the exterior architectural appeal and functional plan of the buildings already constructed or in the course of construction in the immediate neighborhood, of the character of the applicable district established by the zoning ordinances of the municipality, or any ordinance amendatory thereof or supplementary thereto, as to cause a substantial depreciation on the property value of said neighborhood within said applicable district. In case the applicant proposes to alter the exterior of said building after moving the same, he shall submit with his application papers complete plans and specifications for the proposed alterations. Before a permit shall be issued for a building to be moved and altered, the applicant shall give a bond to the municipality's Plan Commission, which shall not be less than \$1,000.00 to be executed in the manner provided in subsection (6) hereof to the effect that he will within a time to be set by the Plan Commission, complete the proposed exterior alterations to said building in the manner set forth in his plans and specifications. This bond shall be in addition to any other bond or surety which may be required by other applicable ordinances of the municipality. No occupancy permit shall be issued for said building until the exterior alterations proposed to be made have been completed.
- (b) Upon application being made to the Building Inspector, he shall request a meeting of the Plan Commission to consider applications for moving permits which he has found comply in all respects with all other ordinances of the municipality. The Plan Commission may, if it desires, hear the applicant for the moving permit in question and/or the owner of the lot on which it is proposed to locate the building in question, together with any other persons, either residents or property owners, desiring to be heard, giving such notice of hearing as they may deem sufficient. Such hearing may be adjourned for a reasonable length of time, and within 48 hours after the close of the hearing, the Plan Commission shall, in writing, make or refuse to make the finding required in subsection (8) hereof, and file it in the office of the Clerk, who shall send a copy of it to the Building Inspector.
- (9) **Board of Appeals.**
- (a) On an appeal to the Board of Appeals, in the absence of proof to the contrary adduced before the Board of Appeals, a refusal to grant the moving permit because of refusal of the Plan Commission to make the finding required by

subsection (8) thereof, such refusal shall be deemed to be passed upon facts supporting a conclusion that the exterior architectural appeal and functional plan of the building to be moved, or to be moved and altered, for which a permit was refused, would, when moved or altered, be so at variance with all of the exterior architectural appeal and functional plan of buildings already constructed or in the course of construction in the immediate neighborhood, or the character of the applicable district, as to cause substantial depreciation in the property values of the neighborhood within said applicable district.

- (b) Any person entitled to appeal from the grant of or refusal of the Building Inspector to grant said moving permit may appeal to the Board of Appeals in the same manner and with the same force and effect as if this ordinance had not been adopted and the Building Inspector had taken such action independently of the Plan Commission.

3.08 RAZING OF BUILDINGS.

- (1) **Razing of Buildings.** The Building Inspector is hereby authorized to act for the municipality under the provisions of §66.05, Wis. Stats., relating to the razing of buildings and all acts amendatory thereof and supplementary thereto. The municipal treasurer is authorized to place the assessment and collect the special tax as therein provided.
- (2) Before a building can be demolished or removed, the owner or agent shall notify all utilities having service connections within the building, such as water, electric, gas, sewer, and other connections. A permit to demolish or to remove a building shall not be issued until it is ascertained that service connections and appurtenant equipment, such as meters and regulators, have been removed or sealed and plugged in a safe manner. Excavations shall be filled with solid fill to match lot grade within five (5) days of removal of the structure. Any excavation shall be protected with appropriate fences, barriers, and/or light.

3.09 INSPECTIONS.

- (1) **Notification.** Upon notification from the permit holder or his agent, required inspections of the construction of any buildings, structures, or equipment shall be made as follows:
 - (a) Inspection to determine if the location on the premises is in compliance with approved certified lot or plot plan of the premises and the terms of the permit.
 - (b) Inspection to determine if the construction of footings as to thickness, width, placing of reinforced steel, if required, and foundation walls is in compliance with applicable plans, data, and terms of the permit. Recertification of the footings and foundation location and elevation shall be provided to the Building Inspector prior to pouring concrete.
 - (c) Inspection of all wall, floor, and roof framing, fire stopping, and bracing when completed, and of all pipes, chimneys, ventilating and other ducts, shafts, and equipment when in place, but before any such work is covered, enclosed, or concealed by other construction.
 - (d) Inspection prior to laying concrete for basement floor to inspect subgrade, drain tile, and forms.
 - (e) Final Inspection. Upon completion of any building, structure, equipment, or construction for which a permit was issued and before the same is occupied or used, a final inspection shall be made by the Building Inspector, and until such

building, structure, or equipment is in compliance with all the requirements of this Code and terms of the permit, no occupancy shall be maintained. If the construction conforms to the requirements of this Code, a certificate of occupancy shall be issued.

- (2) **Coordinated Inspections.** All provisions of the laws and regulations of the municipality, and of legally adopted rules of local fire and health officials in respect to the operation, equipment, housekeeping, fire protection, handling and storage of flammable materials, liquids, and gases, and the maintenance of safe and sanitary conditions of use in occupancy in all buildings shall be strictly enforced by the administrative officials to whom such authority is delegated. Whenever inspection by any authorized enforcement officer discloses any violation of the provisions of this Code, or of any other rules, regulations, or laws, he shall immediately notify the administrative official having jurisdiction of the violation.
- (3) **Certified Report.** The Building Inspector may require a certified report of all required inspections as regulated by this Code from the registered architect or registered engineer supervising the construction of any building, structure, or equipment requiring their supervision. Such certified report shall state in detail that all construction work has been executed in accordance with all of the regulations of this Code, approved plans, specifications, terms of the permit; and further, that such construction work was executed in accordance with accepted architectural and engineering standard procedures.
- (4) **Board of Appeals or Other Assigned Board or Commission.** Any person feeling himself aggrieved by any order or ruling of the Building Inspector may appeal from such ruling to the Board of Appeals within 20 days after written notice of such ruling shall have been delivered to him. Such appeal is to be in writing, setting forth the order appealed from, and the respects in which said person feeling himself aggrieved claims that said order or ruling is erroneous or illegal. Said notice of appeal shall be filed with the Clerk, who shall thereupon notify the Building Inspector of said appeal, and the appeal shall be heard at the next meeting of the Board of Appeals. The said Board of Appeals, after consideration thereof, shall affirm, reverse, or modify said ruling as is just in the premises. The ruling or order of the inspection shall be enforced until changed by said Board of Appeals.

3.10 STOP WORK ORDER. Whenever the provisions of this Code or of the plans approved thereunder are not complied with, a stop work order shall be served on the owner or his representative, and a copy thereof shall be posted at the site of the construction. Such stop work order shall not be removed except by written notice of the Building Inspector after satisfactory evidence has been supplied that the violation has been corrected.

3.11 CERTIFICATE OF OCCUPANCY.

- (1) **Inspections.**
 - (a) The Building Inspector shall make a final inspection of all new buildings, additions, and alterations. If no violations of this or any other ordinance be found, the Building Inspector shall issue a certificate of occupancy, stating the purpose for which the building is to be used.
 - (b) No building nor part thereof shall be occupied until such certificate has been issued, nor shall any building be occupied in any manner which conflicts with the conditions set forth in the certificate of occupancy.

- (2) **Use Discontinued.**
- (a) Whenever any building or portion thereof is being used or occupied contrary to the provisions of this Code, the Building Inspector shall order such use or occupancy discontinued, and the building or portion thereof vacated, by notice served on any person using or causing such use or occupancy to be continued, and such person shall vacate such building or portion thereof within 10 days after receipt of the notice, or make the building or portion thereof comply with the requirements of this Code.
 - (b) Any building, structure, or premises, or any part thereof, hereafter vacated or damaged by any cause whatsoever so as to jeopardize public safety or health, shall not hereafter be occupied or used under an existing certificate of occupancy or without the same, until an application has been filed and a new certificate of occupancy issued.
- (3) **Change.** It shall be unlawful to change the use of any building, structure, premises, or part thereof without first obtaining from the Building Inspector an approval of such change in the occupancy or use, and a certificate of occupancy therefore.
- (4) **Hardship.** The Building Inspector shall have the authority and power to permit the occupancy of any building or structure in the municipality, prior to issuance of an occupancy certificate, in all such cases of hardship as in his judgment and discretion warrant occupancy before final stage of completion as set forth in this Code. Before granting such permission, the Building Inspector shall first examine the premises and determine if it safe and sanitary. The Building Inspector shall determine the time within which such building or structure can be complete, such time not to exceed 120 days.

Chapter III. Definitions

- 3.14 GENERAL.** For purposes of this Code, the following words and phrases shall have the meanings assigned to them in this section. Words and phrases are herein otherwise defined shall have the meaning accepted by common usage.
- (1) **Accessory Building.** A part of a principal building, or a supplemental building located on the same lot with a principal building and generally used for storage, private garage, or other use customarily incident to a residence use.
 - (2) **Addition.** Any new construction whereby an existing building or structure, or building or structure in course of construction, is increased in area, or cubical content.
 - (3) **Adjoining Lot Line.** The line between adjoining lots, plots of land, or parcels of land of different or same ownership.
 - (4) **Alley.** A right-of-way which affords a secondary means of vehicular access to abutting properties. A street shall not be considered an alley.
 - (5) **Alteration.** Any change or modification in construction or occupancy.
 - (6) **Apartment.** A room or suite of rooms which is occupied or which is intended or designed to be occupied by one family for living and sleeping purposes.

- (7) **Approved.** As to materials and types of construction refers to approval by the Building Inspectors Association as the result of investigation and tests conducted by said association or by reason of accepted principals or tests by national authorities or technical or scientific organizations.
- (8) **Area.** As applied to dimensions, means the maximum horizontal projected area of a building, structure, room, apartment, or open space, not including overhangs.
- (9) **Attic.** A space, not suitable for human occupancy, under the roof and above the ceiling of the topmost story of any building or part thereof.
- (10) **Basement.** That portion of a building the floor line of which is below lot grade and the ceiling of which is not more than four (4) feet above lot grade. Same for cellar.
- (11) **Bearing.** That area of any structural unit of a building or structure which is in direct contact with the supports which receive the loads from that unit.
- (12) **Building.** Any structure built for the support shelter or enclosure of persons, animals, chattels, or property of any kind.
- (13) **Building, Existing.** A building erected prior to the adoption of this Code or one for which a legal building permit has been issued.
- (14) **Building Inspector.** The officer charged with the administration and enforcement of this Code or his regularly authorized deputy. Same for Building Official.
- (15) **Cement or Cement Lime Mortar.** See Section 3.24.
- (16) **City.** Any political subdivision which adopts this Code for regulation within its jurisdiction.
- (17) **Cubic Contents.** The actual cubic space enclosed within the outer surfaces of the outside or enclosed walls, outer surfaces of the roof, and finished surfaces of the lowest floors of a building or structure. Does not include the contents of courts which are open to the sky.
- (18) **Dwelling.** A building which is designed to be used or which is intended to be used as a residence or place of abode.
- (19) **Equipment.** As specifically regulated by this Code, includes heating, cooling, air conditioning, and ventilating systems; plumbing and sanitary systems; electric light and power systems; telephone, electronic, and radio signal and annunciator systems; dry cleaning, dyeing, and washing machines; elevators and dumb waiters; gas pipe systems; standpipes; sprinkler systems; fire protection apparatus, fire extinguishers, and pumps; oil burners, stokers, and conveyors; refrigerating systems; devices; machinery and apparatus of every description; furnaces; boilers; high or low pressure steam systems; gasoline pumps; all movable or portable containers of every description; all air pressure or other tanks; and all other self-contained systems used in conjunction with buildings or structures.

- (20) **Established Grade.** A grade of the street as established by ordinance at the center line of the street.
- (21) **Existing.** A building, structure, equipment, or premises completed or in course of construction or used or occupied, and for which a legal permit has been issued prior to the effective date of this Code.
- (22) **Family.** An individual or two or more persons related by blood or marriage, or a group of not more than two (2) persons (excluding servants) who need not be related by blood or marriage living together in a dwelling unit.
- (23) **Fire District.** Zoned areas of the city within which wood frame construction is prohibited except otherwise provided for in this Code.
- (24) **Floor Area.** The net area of any floor space, enclosed by exterior walls, fire walls, or absolute fire separation exclusive of open spaces.
- (25) **Footings.** That portion of the foundation of a structure which spreads and transmits loads directly to the soil or the piles.
- (26) **Foundation.** The supporting structure as a whole, below the lowest floor upon which rests the superstructure of a building or structure.
- (27) **Garage.** A building or portion thereof in which a motor vehicle containing gasoline, distillate, or other volatile, flammable liquid in its tank is stored, repaired, or kept.
- (28) **Garage, Private.** A building or a portion of a building in which only motor vehicles used by the tenants of the building or buildings on the premises are stored or kept.
- (29) **Grade, Building.** Elevation of ground adjacent to the structure.
- (30) **Grade, Lumber.** The classification of lumber in regard to stress and grade.
- (31) **Habitable Rooms.** Rooms for human occupancy; for example, but not confined to the following:
- (a) **Bedroom.** A habitable room in a dwelling unit intended for the use primarily for sleeping purposes.
 - (b) **Kitchen.** A habitable room or space in a dwelling unit in which meals are cooked or prepared.
 - (c) **Living Room.** The principal habitable room in a dwelling unit designed for or appropriated to the general occupancy or use of a family or household.
- (32) **Lintel.** The beam or girder placed over an opening in a wall which supports the wall construction above.
- (33) **Loads.**
- (a) **Dead Load.** The weight of the walls, floors, partitions, roofs, and other structural parts of a building or structure.
 - (b) **Live Load.** All imposed, transient, moving loads, or loads due to impact, and including movable partitions in a building or structure other than dead loads.

- (34) **Lot.** A parcel of land in a single ownership occupied or to be occupied by not more than one principal or main building and the accessory buildings or uses customarily incident to it, including such open spaces as are required by this or other codes, and having its principal frontage upon a street.
- (35) **Lot Line.** A line or lines dividing one lot, plot of land, or parcel of land from an adjoining lot, plot of land, or parcel of land.
- (36) **Masonry.** A construction composed of separate units such as brick, block, hollow tile, stone, or approved similar units or a combination thereof, laid up or building unit by unit and bonded by mortar.
- (37) **Masonry, Solid.** Masonry built without hollow spaces.
- (38) **Nonconforming Buildings, etc.** A lawfully existing building, premises, structure, use, materials, or equipment which do not conform to the requirements of this Code.
- (39) **Occupancy or Use.** The purpose for which a building, structure, equipment, materials, or premises or part thereof is used or intended to be used as regulated by this Code.
- (40) **Person.** The word “person” shall mean any individual, persons, partnerships, firm, organization, association, or corporation, their agents, heirs, or assigns.
- (41) **Pilaster.** A projection of masonry, or other construction being an integral part of a wall to provide bearing for concentrated loads or to compensate for a reduction of wall section by openings or to stiffen a wall against lateral forces.
- (42) **Principal Building.** A single main building or structure on a lot for specific use or occupancies.
- (43) **Repair.** The reconstruction or renewal of any part of an existing building for the purpose of its maintenance. The word “repair” or “repairs” shall not apply to any change of construction.
- (44) **Required.** Mandatory by provisions of this Code.
- (45) **Room.** A space within a building or structure completely enclosed with walls, partitions, floor, and ceiling except for necessary openings for light, ventilation, ingress, and egress.
- (46) **Shall.** As used herein is mandatory. Same for must.
- (47) **Stairway.** Three (3) or more risers shall constitute a stairway.
- (48) **Story.** The space in a building included between the surface of any floor and the surface of the next above or below, or roof next above.
- (49) **Structure.** As specifically regulated by this Code, anything which is constructed, erected, and framed of component parts and which is fastened, anchored, or rests on any permanent foundation or on the ground for any occupancy or use whatsoever, excluding fencing.

- (50) **Walls.** Walls shall be defined as follows:
- (a) **Bearing Wall.** A wall which supports any load in addition to its own weight.
 - (b) **Cavity Wall.** 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 facing and backing (inner and outer parts) of the wall are tied together with metal ties.
 - (c) **Curtain Wall.** A nonbearing wall between columns or piers.
 - (d) **Exterior Wall.** An outer enclosing wall of a building or structure.
 - (e) **Faced Wall.** A wall in which the masonry facing and backing are so bonded as to exert common action under load.
 - (f) **Nonbearing Wall.** A wall which supports no load other than its own weight.
 - (g) **Panel Wall.** A nonbearing wall in skeleton construction, built between columns or piers and wholly supported at each story.
 - (h) **Partition.** An interior vertical structure usually of light construction serving to enclose an area, room, space, or division, extended from the floor to ceiling, and having wall surfaces of approved materials as permitted by this Code.
 - (i) **Retaining Wall.** Wall used to resist laterally imposed pressures.
 - (j) **Veneered Wall.** Wall having masonry facing which is attached to the backing but not so bonded as to exert common action under load; also having outer facing for the purpose of providing ornamentation, protection, or insulation.
- (51) **Square Footage of Building.** The actual area in square feet enclosed by the exterior perimeter of the building walls on each separate floor level.
- (52) **Unusual Construction.** Any construction methods or materials not covered in this Code.

Chapter IV. Design

3.15 GENERAL. See detail (a) Typical House Section.

- (1) **Application.** All one and two family dwelling shall conform to the requirements of this Chapter. A building which contains a use or occupancy other than one and two family units shall follow the applicable requirements of the Wisconsin Administrative Building Code.
- (2) **Repairs.** Every building and all parts thereof shall be kept in good repair and the roof shall be maintained to prevent leakage. All rainwater shall be so drained and conveyed therefrom to prevent dampness in the walls and ceilings.
- (3) **Cleanliness.** Every building shall be kept reasonably clean and shall also be kept reasonably free from any accumulation of dirt, filth, rubbish, garbage, or other matter in or on the same, or in the yards, courts, passages, areas, or alleys connected with or belonging to the same.
- (4) **Street Exposure.** Every building shall front on at least one (1) street, unless otherwise permitted by local regulations.
 - (a) Existing buildings not fronting on a street shall be provided with an unobstructed fire access land not less than 15 feet in width from a public thoroughfare.

- (5) **Room Areas.** Room sizes for one and two family dwelling shall be equal to or greater than those listed in Table No. 2. Multiple family buildings shall have room sizes as approved by the municipality.
- (a) Minimum dimension of living rooms shall be 11 feet, and of kitchens six (6) feet. Minimum room areas shall not include areas used for storage or closet purposes.
 - (b) Rooms and spaces not herein regulated as to area shall be connected to a living or other habitable room. Rooms and spaces not herein regulated and of areas less than the minimum areas herein required shall not be used for living, dining, sleeping, or kitchen purposes.
 - (c) No habitable rooms shall be permitted in basements unless ceiling line of the room is at least four (4) feet above grade line.
 - (d) No additional dwelling units shall be created or maintained by rearranging room suites, by subdividing rooms, or by alterations in any existing building or structure unless such dwelling units have been authorized by permit and comply with this and other applicable regulations.
- (6) **Ceiling Heights.**
- (a) Except as otherwise permitted by local requirements the minimum clear ceiling height of all habitable rooms in one and two family homes shall have a minimum ceiling height of seven (7) feet six (6) inches. Basement ceiling height shall be a minimum of six (6) feet 10 inches under joists.
 - (b) Sloping roofs may penetrate rooms provided that any portion of any room under a sloping roof having a height of less than five (5) feet shall not be considered as part of the floor area in computing areas or volume of such rooms. Rooms under a sloping roof shall have a minimum ceiling height of seven (7) feet six (6) inches for not less than one-half of the required area.
 - (c) Rooms in any building or structure having ceiling heights or areas which do not conform to the regulations of this section shall not be used for human habitation (For ceiling heights of bath and toilet rooms, see 3.15(9)(d).)
- (7) **Light and Ventilation.**
- (a) Every room in which one or more persons live, sleep, work, or congregate shall have a window or windows with sash areas which shall be at least 10% of all the floor area of the room. Such windows shall be constructed so as to permit a window area of at least five percent of the floor area of the room to be open to the outside, unless ventilation is provided by louvers, other openings, or artificial means.
 - (b) Windows shall be provided in all basements having a minimum openable total area of not less than one (1) percent of the basement floor area, excluding crawl space area.
- (8) **Stairways, Landings, Platforms, and Roof Decks.** Every exit stairway shall be not less than three (3) feet in width and not more than four (4) inches on one side may be used for handrails. Every platform shall be at least as wide as the stairway, measured at right angles to the direction of travel. Whenever a door opens onto a stairway, a platform shall be provided extending at least the full width of the door in the direction of travel.
- (a) If stairways are provided in addition to those required by this Code, such additional stairways need not conform to the width requirements of this Code.
 - (b) All stairway landings, platforms, roof decks, or similar elevations or depressions more than two (2) feet above or below adjacent grade or floor level shall have a guard rail on the open sides thereof, at least 32 inches in height, with an

intermediate rail at midheight or vertical rails at 11 inches maximum spacing on center.

- (c) Stairways on the outside of buildings and an integral part thereof, having more than three (3) risers, shall have a handrail on each side.
 - (d) Risers and Treads. All stairways and steps shall have a uniform rise of not more than eight (8) inches, and a minimum tread width of nine (9) inches. Risers shall be measured from tread to tread, and treads shall be measured from rise to rise. There shall be no more than 18 risers in any one run.
 - (e) The continuous clear head room measured perpendicularly from the nosing shall be not less than six (6) feet eight (8) inches, except that for basement stairways such head room may be six (6) feet four (4) inches.
 - (f) Windows may be used provided that such winders are designated so the tread width 18 inches from the converging end will not be less than nine (9) inches.
 - (g) Handrails. All stairways and steps of more than three (3) risers shall have at least one (1) handrail. The handrail around stairways shall not be less than two (2) feet eight (8) inches high, measured above the stair nosing. The handrail shall be installed on the open side, if any, and this shall meet the minimum requirements.
- (9) **Toilets, Bathrooms, and Kitchens.**
- (a) In every dwelling there shall be provided in each dwelling unit and connected to a plumbing system at least one kitchen sink, one water closet, one bathtub or shower, and one lavatory.
 - (b) Wherever public water supply is not available, there shall be provided on the premises, for each dwelling unit, means for a sanitary disposal of sewerage without health hazards or nuisances, and in conformity with general accepted standards.
 - (c) Plumbing fixtures as stated above shall be smooth, nonabsorbent, resistive to detrimental action of conveyed wastes, and free from concealed fouling surfaces.
 - (d) Bathrooms for required toilets, tubs or showers, or lavatories shall have a minimum floor area of not less than 12 square feet for each water closet and each tub, and 10 square feet for each shower, lavatory, or other sanitary plumbing fixture or equipment installed therein. The ceiling height of the required bathroom shall not be less than seven (7) feet. Powder room or second baths are not subject to the above, but shall have a minimum floor area of 14 square feet with a minimum dimension of three (3) feet in one direction.
 - (e) Each bathroom or toilet room shall be provided with a door. No bathroom or toilet room shall open directly into a kitchen, nor shall such room provide sole access to any other room.
 - (f) Bathrooms and toilet rooms shall be provided with means of ventilation as required by this Code for habitable rooms, or positive mechanical ventilation, providing one air change every five minutes.
- (10) **Exits and Openings.**
- (a) Exterior stairways other than to the first floor and basement shall not be allowed. Every residential home shall have two (2) exits on the first floor. Duplexes shall have two (2) separate stairways or one stairway and an outside porch not more than 10 feet above the ground.
 - (b) Access to each dwelling unit shall be provided without passing through any parts of any other dwelling unit. In dwelling units, every habitable room shall have access to every other habitable room without passing through a bathroom or toilet room.

- (c) **Doors or Openings.**
1. **Exterior Doors.** The minimum size for at least one main entrance door to a residence shall be three (3) feet wide by six (6) feet eight (8) inches high. The rear or side door shall be two (2) feet eight (8) inches wide, by six (6) feet eight (8) inches high.
 2. **Interior Doors.** Minimum size door serving as exit from any habitable rooms shall be two (2) feet six (6) inches wide by six (6) feet six (6) inches high. Bathrooms and closets other than linen and broom closets can be served by a door a minimum of two (2) feet wide.
 3. An opening used without a door shall be the same size as the required minimum size of door.
- (d) Corridors and hallways between rooms shall be not less than 36 inches wide.
- (11) **Attics, Access Thereto.** In every building and structure having an attic, there shall be provided permanent access thereto by means of a scuttle, disappearing or permanently installed stairway; minimum size opening shall be 24 inches by 20 inches.
- (12) **Vents in Attics.** Unheated space above heated spaces must be ventilated. Such vents shall be located to provide proper circulation of air. The area of the clear openings of the vents shall total at least one five hundredth (1/500) of the projected ceiling area of the heated spaces below.

Chapter V. Soils, Excavations

3.16 SOILS.

- (1) **Loads.** The permissible loads in tons per square foot on natural earth shall not exceed the bearing capacity shown in the following table:

TABLE A	
Type of Soil or Rock	Bearing Capacity Tons/Square Foot
Quicksand, alluvial, and filled soils, determined by test but not more than	½
Soft clay, sandy loam, or silt	1
Ordinary clay	2
Clay or fine sand, firm and dry	3
Sand, compact, and well cemented; dry hard clay	4
Gravel and coarse sand, well packed	5
Hard pan or shale	6
Rock	Not more than 20% of the ultimate crushing strength of such rock

- (2) **Borings and Tests.**
- (a) **When Required.** In the absence of satisfactory data from immediately adjacent areas, the owner or applicant shall make borings, test pits, or other soil investigations at such locations and to sufficient depths of the bearing materials to the satisfaction of the Building Inspector.

- (b) Soil Samples. Samples of the strata penetrated in test borings or test pits, representing the natural disposition and conditions at the site, shall be available for examination of the Building Inspector.
 - (c) Varying Soil Values. When test borings indicate non-uniformity of bearing materials, a sufficient number of additional borings shall be made to establish strata levels of equal bearing capacity.
 - (d) Cost of Tests. When the safe sustaining power of the soil is in doubt, the Building Inspector shall direct that the necessary borings or test be made by and at the expense of the applicant and under the supervision of the Building Inspector to determine the safe value.
- (3) **Soil test Procedure.**
- (a) Soil Test Method. The test procedure and testing apparatus shall be approved by the Building Inspector before they are used; and a complete record of the tests together with a record of the soil profile shall be filed by the licensed engineer or architect.
 - (b) Loaded Area. If results of soil tests by boring are in doubt as to safe sustaining power, the Building Inspector may require tests by loaded area method. The loaded area shall be approximately four (4) square feet for all bearing materials; except that when the footing overlies wet clay or other soft materials, the test load shall be applied to an area of not less than 10 square feet.
 - (c) Recorded Settlements. Loads shall be applied in continuous increments of not more than one-quarter (1/4) of the proposed safe load. When the proposed load has been reached, it shall remain undisturbed and reading shall be recorded to determine the rate of settlement until the settlement in eight (8) consecutive hours is less than one-hundredth (.01) inches. A 50% excess load shall then be applied and allowed to remain in place until the rate of settlements is less than one-hundredth (.01) inches in 24 hours.
 - (d) Accuracy of Loading. Test loads applied by mechanical devices shall be automatically controlled so as to insure not more than five (5) percent variation in applied load. Such devices shall be calibrated prior to the test.
 - (e) Test Acceptance. The load settlement shall be represented diagrammatically, and no test shall be deemed satisfactory if the net settlement after removal of the test loads exceeds one-hundredth (.01) inches per ton of gross load applied.

3.17 EXCAVATIONS.

(1) **General.**

- (a) All excavations for buildings and structures and parts thereof shall be protected and guarded against danger to life or injury to persons or property.
- (b) No trench for sewer or other excavations shall be made below any foundation wall nearer than three (3) feet to any corner of said foundation. No trench for sewer or other excavations shall be made nearer to any column or pier footing than one and one-half (1½) times the depth of the excavation below the footing.
- (c) When the owner of any lot or plot of land or the municipality in making improvements is about to excavate or cause an excavation to be made, which excavation in any way affects any building or structure on any adjoining lot, a notice shall be given to all owners of adjoining lots at least 10 days prior to commencing the excavation. Such notice shall describe the extent and character of the excavation work about to be done, and the adjoining owners shall

thereafter be given a reasonable opportunity to protect their property in compliance with the regulations of this Code.

- (d) Whenever an excavation or foundation for building purposes has remained open for a period of 30 days with no work having been done at the site for said period, the Building Inspector shall serve a notice upon the owner of the property that work at the site be commenced forthwith or that the excavation be filled to grade. The order shall be served upon the owner or his agent and upon the holder of any encumbrance of record as provided in §66.05, Wis. Stats. If the owner fails to comply with the order within 15 days after the service thereof, upon him, the Building Inspector shall cause the excavation to be filled to grade and the cost charged against the real estate as a special charge as provided by §66.05(2), Wis. Stats. In addition to filling the excavation, any person who violates this section is subject to the provisions of 3.49.

Chapter VI. Footings and Foundations

3.18 FOOTINGS. See Detail (a) Typical House Section.

(1) General.

- (a) Concrete footings for load bearing walls shall be of adequate dimensions to distribute the load. Minimum thickness shall be eight (8) inches. Footing width shall extend six (6) inches on each side of the wall above. All footings shall be cast in forms upon undisturbed earth, unless the design of the footings and foundation is approved by the Building Inspector.
- (b) Pier and Column Footings. Concrete footings for piers and columns shall be a minimum of two (2) feet square and a minimum thickness of 12 inches, and shall be designed to carry the superimposed load. Columns shall be centered on column footings.
- (c) Chimney Footings. Concrete chimney footings shall have a minimum projection of six (6) inches beyond the chimney foundation and a minimum thickness of 12 inches, and shall be designed to carry the superimposed load.

- (2) **Drain Tiles.** All foundation walls of basements/cellars or other occupied spaces shall have drain tiles on each side of such walls. (See Section 3.21(2)(c) for basementless spaces.) Bleeder tiles shall be placed in the foundation footing at not more than eight (8) foot centers. Tiles shall be connected to a sump pit provided with a pump to discharge the water at grade or be connected to the storm sewer house drain. Drain tiles shall be covered with 12 inches of #2 washed stone or other approved porous material. Tile and stone shall be in place prior to starting the fourth foundation block course.

- (3) **Stepped Footings.** Where variations in the elevations of the bottom of wall footings are necessary, the vertical connection between the footings at the step shall be constructed of concrete eight (8) inches thick and of the same width as the footing, if there is less than two (2) foot difference in elevation. If over two (2) foot difference in elevation, span with an approved lintel.

3.19 FOUNDATIONS.

- (1) **General.** Foundation walls shall be continuous under all habitable areas of principal buildings. Overhanging bays and projected floors are permitted provided that such cantilevered floors are adequately returned to sustain such loads as they may carry.

- (a) The top of foundation walls of any building or structure of wood frame construction shall be at least four (4) inches above lot grade at all exterior walls and no exterior wood construction shall be exposed less than three (3) inches above grade. Where the elevation of the lot grade adjoining the exterior walls of such buildings or structure varies and the four (4) inch requirement above such grade cannot be maintained, the joist skirt shall be protected with waterproof building paper or flashing.

In no case shall joists be lower than the grade. All footings shall set at least 24 hours before foundation wall or wall forms shall be built.

(2) **Foundation Wall Thickness.**

- (a) Foundation walls for one and two story frame buildings and which are constructed of brick and solid or hollow concrete masonry units shall be of the following thickness:

TABLE B			
		Minimum Thickness (inches)	
Foundation Wall Construction	Maximum Height Unbalanced Fill in Feet	Frame	Masonry or Masonry Veneer
Masonry	3	10	10
	5	10	12
	7½	10	12
Plain Concrete	3	8	8
	5	8	10
	7½	8	10

**When foundation wall is balanced with fill on both sides, foundation wall thickness may be reduced by two (2) inches but shall not be less than eight (8) inches in thickness. All masonry foundation walls shall be capped with solid masonry units.*

- (b) Foundation walls of poured monolithic concrete shall be eight (8) inches thick whether reinforced or not. IF the superstructure is to be of solid brick or masonry construction, the foundation wall shall be 10 inches thick.

(3) **Pilasters.**

- (a) When a girder whose span exceeds 12 feet frames into a masonry wall, pilasters of a minimum size of four (4) by 12 inches built integrally with the wall shall be provided.
- (b) Pilasters shall be required where the unsupported length of any foundation wall exceeds 30 T, where T is the thickness of the foundation wall. Such pilasters shall be not less than 16 inches wide and at least one and one-third (1 1/3) times the thickness of the wall of which it is a part. Except pilasters shall not be required in poured monolithic plain or reinforced concrete foundations walls of buildings.

- (4) **Girder Bearing.** Four (4) inches of end bearing shall be provided for girders framing into foundation walls and when wood girders are used, an air space shall be provided between the foundation walls and the ends and sides of the girders.

- (5) **Dampproofing.** Masonry foundation walls of basements and crawl spaces shall be made dampproof by the application to the exterior surfaces thereof of a continuous coat of three-eighths (3/8) inch thick waterproof cement mortar or portland cement mortar plus a coat of bituminous dampproofing material over the parging from top of stone to final grade. One coat of bituminous dampproofing material shall be applied to concrete foundations walls from top of stone to finish grade.
- (6) **Storage and Materials.** Cement and aggregates shall be stored in such a manner as to prevent deterioration or the intrusion of foreign matter. Any material which has deteriorated or which has been damaged shall be removed completely from the premises.

Chapter VII. Masonry and Concrete Construction

6.20 MASONRY AND HALLOW MASONRY UNITS.

- (1) **Building Brick.** By building brick is meant a structural unit of burned clay or shale, sand lime, or concrete.
 - (a) All building brick shall be free from cracks, laminations, or other defects which may interfere with proper laying of the brick or impair the strength or permanence of the structure.
 - (b) Concrete building brick shall be manufactured from a mixture of Portland cement and approved aggregates, such as sand, gravel, crushed stone, bituminous or anthracite cinders, burned clay or shale, or blast furnace slag.
 - (c) All building brick shall be of a distinctive design or appearance, or marked so that the identity of the manufacturer may be known at any time.
 - (d) The strength and absorption of all building brick manufactured from burned clay or shale shall conform to the minimum requirements of Section IND 53.05(5)(a), Wis. Admin. Code.
- (2) **Hollow Building Units.**
 - (a) Hollow tile are the product of surface clay, shale, fireclay, or admixtures thereof, molded to permanent hollow form for use as masonry units in building construction.
 - (b) Hollow concrete masonry units are the products of Portland cement and suitable aggregates such as sand, gravel, crushed stone, bituminous or anthracite cinders, burned clay, or shale or blast furnace slog, molded to permanent hollow form for use as masonry units in building construction.
 - (c) All hollow concrete masonry units and all hollow tile shall conform to the provisions of IND 53.06, Wis. Admin. Code.

3.21 BASEMENTS AND BASEMENTLESS BUILDINGS.

- (1) **General.** All basements/cellars shall be provided with a minimum of three (3) inch concrete floor placed on a minimum of three (3) inches of three-quarters (3/4) inch crushed road gravel. An inspection shall be called for and made prior to laying concrete to construct the basement floor.
- (2) **Basementless Spaces.** Basementless spaces may be used or constructed according to the following specifications:
 - (a) The ground level shall be at least two (2) feet below any part of the wood construction.

- (b) In such spaces all debris, sod, tree stumps, and other organic materials shall be removed and smooth surfaces free of pockets shall be provided. A minimum two (2) inches thick concrete slab shall be installed.
 - (c) Where the floor level within the foundation walls is below the outside grade, drain tile shall be provided around the exterior of the walls and connected to the house drain tile. Special consideration shall be given by the Building Inspector if water conditions exist that would require an interior drain tile.
 - (d) Foundation wall vents shall be provided located near the corner of such space. Such vents shall have an aggregate free ventilation area equal to two (2) square feet per 100 lineal feet of wall enclosing such space or a minimum aggregate area of two (2) square feet. All basementless spaces shall be provided with a minimum access opening of four (4) square feet. If access opening is in basement wall and is kept clear and open except for screening which allows for air movement, this opening may be substituted for the above required ventilation area.
- (3) **Slab Construction.** The entire area shall consist of a base of three (3) inches in thickness of gravel or other approved material well tampered in place, over which there shall be placed a vapor barrier covered with a layer consisting of four (4) inches in thickness of concrete.

3.22 CONCRETE CONSTRUCTION.

- (1) **General.** All building materials shall be of good quality conforming to general accepted standards, including the following:
- (a) Portland Cement shall conform to the “Standard Specifications for Portland Cement” (A.S.T.M. Designation C150-62.) Air-Entraining Portland Cement shall conform to “Standard Specifications for Air-Entraining Portland Cement” (A.S.T.M. Designation C175-61).
 - (b) Concrete aggregates, except light weight aggregates, shall conform to the “Tentative Specifications for Concrete Aggregates” (A.S.T.M. Designation C33-61T) including the methods of sampling and testing.
 - (c) Lightweight aggregate for concrete shall conform to the “Tentative Specifications for Light Weight Aggregates (A.S.T.M. Designation C300-60T), including the methods of sampling and testing.
 - (d) The maximum size of the aggregates shall not be larger than one-fifth (1/5) of the narrowest dimension between sides of the forms of the member for which the concrete is to be used nor larger than three-fourths (3/4) of the minimum clear spacing between reinforcing bars.
 - (e) Water used in mixing concrete shall be clean, and free from injurious oil, acid, organic matter, or other harmful substances.
 - (f) Metal reinforcements shall conform to the requirements of the “Tentative Specifications for Billet-Steel Bars for Concrete Reinforcement” (A.S.T.M. Designation A15-62T), or for “Tentative Specification for Rail-Steel Bars for Concrete Reinforcement” (A.S.T.M. A16-62T).
- (2) All A.S.T.M. Designation or other standards mentioned herein shall mean that standard or its current succeeding standards or designation.
- (3) **Air Entrained Cement.** Air entrained cement shall be used when concrete is to be exposed to the elements.

3.23 MASONRY CONSTRUCTION.

- (1) **General.** All masonry walls above grade shall be of the type as specified in Wisconsin Administrative Code, Building Code, Section IND 53.03 through and including Section IND 53.07.
- (2) **Masonry Veneers.**
 - (a) Materials used for masonry veneering shall have minimum dimensions as shown in the following table:

TABLE C	
Materials	Minimum Dimension in Inches
Stone	3
Celular Architectural Terra Cotta	3
Architectural Terra Cotta Slabs	1¼
Brick (Clay, concrete, or sand-lime)	2¼
Cast Stone	1½
Structural Clay Tile	1¾
Other Approved Masonry or Thin Veneers	As approved by the Building Inspector

In no case shall any type of veneering be considered a part of the required thickness of any masonry wall or be considered a part of the wall in computing the strength of bearing walls. Masonry veneer shall carry no weight except its own.

Such veneering on masonry shall be bonded into the masonry backing by a full header for every 300 square inches of wall surfaces, or by approved substantial noncorrodible metal tiles space no farther apart than 15 inches vertically and 32 inches horizontally. When sheathing, other than wood is used, the tiles shall be secured through to the studs. When veneering is used, special care shall be taken to fill all joints flush with mortar around all openings.

No veneering in masonry shall exceed a height of 35 feet above foundation walls or other approved support.

3.24 MORTAR AND CONCRETE MIXES.

- (1) **General.** All masonry shall be laid up in mortar with cement, lime, and aggregates mixed to a workable consistency in the proportions by volume herein specified. Materials used in preparing gypsum mortar shall be measured by weight.
 - (a) Cement Mortar. Cement mortar shall be composed of one (1) part masonry cement to three (3) parts of approved sand aggregates, or one (1) part of approved Portland cement and a maximum of three (3) parts of approved sand aggregates to which may added hydrated lime or lime putty not to exceed 15% of the cement content by volume. All foundations and other masonry in contact with the ground and cavity walls shall be laid up in cement mortar or masonry mortars approved for this purpose.
 - (b) Cement-Lime Mortar. Cement-lime mortar shall be composed of one (1) part of approved Portland cement to nor more than one (1) part of approved lime putty or hydrated lime and a maximum of six (6) parts of approved sand aggregate or shall be an approved masonry mortar.

- (c) **Lime Mortar.** Lime mortar shall be composed of one (1) part of approved lime putty or hydrated lime and a maximum of three (3) parts of approved aggregate. Cement may replace equal volumes of lime in lime mortar, provided the cement gaging is uniformly distributed by approved methods of mixing. Lime mortar may be used in bearing walls not more than 35 feet in height.
- (d) **Gypsum Mortar.** Gypsum mortar shall be composed of one (1) part unfibered calcined neat gypsum plaster, and not more than three (3) parts of approved sand aggregate. Gypsum mortar shall be used in all gypsum block masonry partitions.

3.25 MASS CONCRETE PROPORTIONS. Concrete for all construction shall contain as a minimum five (5) bags of cement per cubic yard of concrete mix or design to produce a minimum compressive strength of 3,000 pounds per square inch at 28 days. Concrete exposed to weathering elements shall be air entrained. Concrete shall conform to the latest edition of "Guide Specifications for Ready-Mixed Concrete Section of Concrete Specifications" as developed by the Construction Specifications Institute, Inc., Milwaukee, Wisconsin.

3.26 LINTELS AND ARCHES. All openings in masonry walls shall be spanned by plain or reinforced arches, steel lintels, or other approved noncombustible supports with not less than four (4) inch bearing on the wall at each end. Plain stone lintels shall not be used on spans greater than four (4) feet nor to support load concentrations on the wall less than two (2) feet above the top of the lintel unless supplemented by structural lintels or arches. All lintels shall be sufficient strength to support the superimposed load with a deflection of not more than one three-hundred sixtieth (1/360) of clear span; and arches shall be signed to support the load with provisions to resist the lateral thrust.

3.27 CORBELING, PROJECTING MASONRY, PILASTERS, OR PIERS.

- (1) **Limiting Projections.** No masonry wall less than 12 inches thick shall be corbelled except to support fire stopping around combustible door framing. The maximum horizontal projection of corbels shall be not more than one-third (1/3) the thickness of the wall nor shall the projection of any single course of masonry exceed one-third (1/3) the height of the masonry unit.
- (2) **Hollow Walls.** Corbeling of hollowing masonry or masonry built of hollow units shall be supported on one full course of solid masonry not less than 12 inches deep.
- (3) **Changes in Block Size.** In hollow masonry construction, if the size of the masonry unit is decreased as the wall is constructed, the block course supporting the smaller unit must be solid or filled with concrete.
- (4) **Pilasters and Piers.** All wall pilasters and piers shall be built into the wall with a masonry bond.
 - (a) Isolated piers shall be not less than 12 inches square nor more than 12 times the least dimension in height when of solid masonry construction nor more than four (4) times the least dimension when of hollow masonry unless filled solidly with approved concrete.
 - (b) Isolated masonry piers shall be bonded as required for solid walls of the same thickness and shall be provided with a cap stone or bearing plate of the full dimension of the pier or with other adequate means for distributing the load on the top.

- (c) Pilasters shall be not less than four (4) inches thicker than the supported wall.
- (5) **Bearing and Anchorage of Structural Members.** All structural beams and girders producing concentrated loads shall have a bearing on solid masonry of not less than four (4) inches thickness and shall project not less than four (4) inches into masonry walls with adequate wall bearing plates provided.
- 3.28 **ERECTION PRECAUTIONS.** All masonry shall be protected against freezing for not less than 48 hours after installation and shall not be constructed below 28 degrees F. on rising temperatures or below 36 degrees F on falling temperatures without temporarily heated enclosures or without heating materials or other approved precautions necessary to prevent freezing. No frozen materials shall be used or shall frozen materials be built upon. In warm weather, all clay or shale units of high absorption characteristics shall be thoroughly wet before laying in the wall. All other masonry units, except gypsum units, laid in other than lime mortar, shall be wetted before laying in the wall if the absorption resulting from partial immersion in one-eighth (1/8) inch of water for one (1) minute is less than one (1) percent. All masonry construction shall be adequately braced and supported to insure its stability during construction.

Chapter VIII. Frame Construction

- 3.29 **GENERAL.** Wood frame construction shall be of either balloon, post and beam, platform, or other approved system. (See Detail a.)
 - (1) **Grades and Sizes.** All lumber and timber used in local bearing members shall be sound, free from rot and large or loose knots, and damaging diagonal or spiral grain; and shall be of the structural grade corresponding to the stresses used in design. When the grade of lumber is not identified in accordance with national design specifications for stress grade lumber, the maximum allowable working stress for the species of lumber used shall not exceed the lowest stress value given for that specie. All lumber sizes herein specified are nominal sizes; and American Standard Lumber for dress sizes shall be accepted as the corresponding minimum net dimensions on which all structural designs shall be based. Except as herein provided for composite or built-up integrated units, or when approved after test as specified in Section IND. 50.12, Wis. Admin. Code, no wood floor beam, roof beam, joist, rafter, or framing timber shall be less than two (2) inches in nominal thickness.
 - (2) **Stress and Loading Requirements.** For ordinary conditions of use and live loads, the spans of joists and rafter shall be limited by Tables J-1, J-4, R-8, and R-10. See Section 3.29(3).
 - (a) Allowable Stresses. Allowable lumber stresses used in construction shall not exceed the allowable stresses as established by the Department of Industry, Labor, and Human Relations.
 - (b) Live Loads. The following live load shall be used in the design of structural members for one and two family residential constructions:
 - Floor Joists – 40 pounds per square foot
 - Rafters – 30 pounds per square foot (slope 3 in 12 or less), 20 pounds per square foot (slope over 3 in 12)
 - (c) Structural members shall not be spliced between bearing points. Where structural strength is impaired by cutting, drilling, or inherent defects, such member shall be reinforced in a manner acceptable to the Building Inspector.

- (d) **Girders.** Girders may be of structural steel, reinforced concrete, solid wood, or built-up wood members. Joints of girders shall be made over pier or column supports only. Girder spans shall not be more than that allowed in Table No. 5.
- (3) **Wood Structural Design Data.**
- (a) The information contained in "Span Tables for Joists and Rafters", American Softwood Lumber Standard Sizes, PS 20-70, by National Forest Products Association, Washington, DC, is an acceptable design authority under the provisions of this Code.
- (b) **Plywood.** All plywood when used structurally, including among others used for siding, roof and wall sheathing, subflooring, diaphragm, and built-up members, shall conform to the performance standards for its type in U.S. Products Standards PS 1-74 for softwood plywood construction and industrial. Each panel member shall be identified for grade and the type of grade mark of an approving testing grading agency. In addition, all plywood when permanently exposed, shall be of the exterior type.
- (4) **Stress, Grade Materials.** Working stresses must conform to those established by the Department of Industry, Labor, and Human Relations, State of Wisconsin.
- (5) **Bridging.** In all ceilings, floors, attic, and flat roof joist framing, there shall be not less than one line of bridging for each eight (8) feet of span and the bridging shall not be less than one by three (1x3) inch lumber double-nailed at each end, or equivalent metal lateral bracing of equal rigidity secured at the intersections. A line of bridging shall also be required at supports where adequate lateral stiffness is not otherwise provided. Solid bridging is also acceptable. Where two by six (2x6) inch ceiling joist are used, a minimum two by four (2x4) inch stay-lathe may be substituted for required bridging. Such stay-lathe shall be spiked securely at each joist and at each end to either stud or rafter.
- (6) **Cutting and Notching.** Bore holes in joists, girders, or beams shall be no greater than two and one-half (2½) inches in diameter, and shall be located in the end one-quarter (1/4) of span, and shall not be more than one-quarter (1/4) of joist depths. The top or bottom edges of joists may be notched in the outer one-quarter (1/4) of the length not to exceed one-sixth (1/6) of the joist depth. Notching the top or bottom edge of joists will not be permitted in the middle half of the length of any joist. In studs of walls or partitions, holes and notches made to receive piping or duct work, or for other fabrication purposes, shall be cut not more than one-half (1/2) the depth of the stud. No more than two (2) successive studs shall be so cut or bored unless they are doubled or otherwise reinforced as required by the Building Inspector.
- (7) **Construction and Fastenings.** All structural member shall be connected and fastened at their junctions with connectors, bolts, lag screws, spikes, nails, straps, or other approved devices or by approved gluing and in accordance with the recommended nailing schedule in Table No. 4.
- (8) **Plates and Ribbon Boards.** All walls shall be provided with a single bottom plate and double top plate. Top plates shall be lapped no closer than 32 inches and at all intersecting walls and corners. Plates shall be of the same width as the supporting stud and each not less than two (2) inches thick. Plates shall be spliced above studs. Ribbon boards which support floor or roof joists shall not be less than one by four (1x4) inches in

size, and shall be notched into the studs and nailed thereto as required by the nailing schedule.

- (9) **Roof Rafters.** Roof rafters shall be vertically supported at the ridge when the slope of the roof is less than four (4) inches per foot. When the slope is more than four (4) inches per foot roof rafters shall be vertically supported at the ridge or shall be adequately trussed or tied together with not less than one by six (1x6) inch collar beams spaced not more than 32 inches on centers and each rafter shall be fastened to the wall plate or special plate provided. Roof rafter shall be framed opposite each other on the ridge.
- (a) When collar beams are above the lower third of the rafters and ties are not provided at the plate line, provision shall be made for tying the lower end of the rafters to ceilings or wall construction.
 - (b) Ridge Boards. The depth of ridge boards shall not be less than the cut end of the rafter.
 - (c) The depth of valley or hip rafters shall not be less than the cut end of the rafter. The thickness of valley or hip rafters shall not be less than two (2) inches.
 - (d) Where dormers or gables are over six (6) feet in width the valley rafters shall run through the ridge of the main roof. Where the ridge of the dormer or gable is below the ridge of the main roof, one valley rafter shall run through the ridge of the main roof.
 - (e) Factory constructed trusses approved by the State of Wisconsin Department of Industry, Labor, and Human Relations may be used as an approved roof framing system. The building plans shall indicate the approval number assigned by the Department of Industry, Labor, and Human Relations.

The maximum spacing of trusses shall be two (2) feet on centers.

Roof sheathing shall be as specified in Section 3.30.

Ceiling finish shall be as specified in Section 3.34.

- (10) **Multiple Joists and Rafters.** Floor joists under terrazzo, tile, bathtubs, or other unusual loading conditions shall be doubled or otherwise reinforced to support the load. Floor joists under partitions running parallel thereto shall be doubled or formed of built-up sections or may be replaced by a solid section of adequate strength to support the loads. Dormer windows and other opening in roofs shall be framed with double rafters and headers. Valley rafters on spans over 12 feet, measured horizontally, shall be doubled.
- (11) **Bearings and Anchorage.** Floor joists framing into walls or girders shall be anchored, tied, or nailed to secure continuity. The ends of all beams or joist resting on walls or girders shall bear not less than four (4) inches or shall be supported in approved metal stirrups or on wood clips or ribbon strips not less than two by two (2x2) inches in size. Beams or joists framing from opposite sides shall either lap not less than six (6) inches nor more than 12 inches and be securely bolted or spiked together. When framing end to end, all joists, beams, and girders shall be secured together by approved metal ties, straps, or scabs. Anchorage of wood joist into masonry walls shall be in accordance with IND 53.28, Wisconsin State Building Code.
- (12) **Joints in Girders and Beams.** The joints of solid or built-up beams or girders shall be made over columns or pier supports.

- (13) **Hung Ceiling.** Ceiling joists when parallel to roof joists shall be two by four (2x4) inches at the same spacing as the joists above and hung by not less than one by four (1x4) inch hangers spaced at not more than six (6) feet. Ceiling joists, when at right angles to roof joist, shall be two by four (2x4) inches spaced 16 inches on center and hung by not less than two by two (2x2) inch hangers spaced at not more than six (6) feet.
- (14) **Joist Headers and Trimmers.** All joist headers more than four (4) feet in length and their trimmers shall be doubled. All tail beams or joists which are more than six (6) feet in length shall be hung, in approved joist or beam hangers, or shall be fastened by approved metal connectors. All double trimmer joists shall be spiked together. A minimum two by two (2x2) inch ledger strip may be used in lieu of hangers or connectors.
- (15) **Walls, Partitions, and Posts.** The load-bearing value of the frame walls and partitions or isolated post or struts shall be limited by "Wood Structural Design Data", N.L.M.A. All wood posts used in basements or cellars shall have concrete bases which extend not less than three (3) inches above the finished floor and bear directly on the post footing. In cellars or basements, all wall plates or stair stringers shall rest on top of the finished concrete floor.
- (a) **Studs.** All walls and partitions shall be constructed using studs of continuous length. Such studs shall not be less than two by four (2x4) inches in size, not more than 20 feet in length, and not more than 16 inches on center and a minimum two (2) inch fire stopping shall be provided for every eight (8) feet of height or at all floor levels. Nonbearing partitions only may be constructed with the smaller dimension perpendicular to the wall.
- Studs cut so as to impair their structural strength shall be reinforced as required by the Building Inspector.
- (16) **Bracing.** Corner posts shall be the equivalent of not less than three (3) pieces of two by four (2x4) inch studs braced with not less than one (1) piece of one by four (1x4) inch diagonal let into the studs. Diagonal bracing may be omitted when one-half (1/2) inch plywood sheathing is provided in four by eight (4x8) foot sheets, or when one (1) inch board sheathing is placed diagonally.
- (17) **Framing of Opening.** All windows and door openings shall have double studs for the full height of the door opening at jambs, with double headers or truss construction over the opening, or by other approved methods or connection devices to support the superimposed loads. The jamb studs shall be minimum two by four (2x4) inch studs double with the inner stud extending in one piece from header to bearing securely spiked to the outer stud.

Lintels over openings in bearing walls or partitions shall consist of double joists on edge not less than herein specified or truss construction bearing on jack studs or other approved construction affording adequate strength.

Spans less than four (4) feet	two 2" x 4"
Spans four (4) feet to five feet-six inches (5'6")	two 2" x 6"
Spans five feet-six inches (5'6") to seven (7) feet	two 2" x 8"
Spans seven (7) feet to eight feet-six inches (8'6")	two 2" x 10"
Spans eight feet-six inches (8'6") to 10 feet	two 2" x 12"

Where headers support greater or lesser uniform or concentrated loads, or are subject to other unusual loading conditions, calculations shall be submitted to prove acceptable performance.

3.30 WALL AND ROOF SHEATHING, BUILDING PAPER, AND EXTERIOR WALL WEATHERPROOF COVERING.

- (1) **Wood Boards.** Except as otherwise regulated herein, the outside of all exterior wall and roof structural framing of all buildings and structures shall be covered with wood board sheathing one (1) inch in thickness and not more than eight (8) inches wide, over studs and rafters spaced not more than 16 inches on centers. Wider sheathing may be used if triple nailed to studs and rafters. All joints of such wood sheathing shall be centered on studs and rafters unless end matched, tongued and grooved wood sheathing is used, in which case no two (2) vertical joints of adjoining boards shall occur in the same space between studs or rafters. All board shall be applied with tight joints except that under wood shingles one by three (1x3) or one by four (1x4) inch board spaced center to center according to shingle exposure may be used. Boards shall be tongue and groove, shiplapped, or square edge with ends cut parallel to and over center of studs, rafters, or roof joists with not more than two (2) adjacent boards breaking joints over the same supported except at ends and at openings.
- (2) **Other Sheathing.** In lieu of wood board sheathing on exterior walls and roofs of buildings and structures as herein regulated, materials as shown in Tables D and E may be used.

TABLE D – WALLS		
Exterior Wall Sheathing	Minimum Thickness (inches)	Maximum Stud Spacing on Centers (inches)
(No edge blocking required) Plywood	3/8	16
Approved Fiber Board	1/2	16
Gypsum	1/2	16
Expanded Polystyrene	1	16

TABLE E – ROOFS		
Roof Covering and Type of Roof	(No edge blocking required) Plywood Roof Sheathing Minimum Thickness (inches)	Maximum Rafter Spacing on Centers (inches)
Wood & Asphalt Shingles	1/2	16
Slate, Tile, & Asbestos Cement Shingles	1/2	16
Flat Roofs (under 2 1/2 : 12 pitch)	5/8	16
Truss Roofs (over 2 1/2 pitch)	1/2	24

- (3) Building paper shall be used on all sheathing not water resistant, including plywood, wood boards, and gypsum. All water resistant sheathing shall be identified with the manufacturer's label on each board and shall be approved by the Building Inspector. In

all other cases, sheathing papers, such as minimum 15 pound saturated felt or paper, or other approved water resistant material shall be applied over all exterior surfaces of exterior wall sheathing. Sheathing papers of high vapor resistance shall not be used as a covering on exterior walls unless a material of high vapor resistance is used on the inside of such exterior walls.

Building papers shall be applied with a lap of four (4) inches.

3.31 ROOF DECKING.

(1) Wood Roof Decking.

- (a) Planks shall be tongue and groove or splined, minimum thickness shall be two (2) inches. Maximum width shall be eight (8) inches.
- (b) Planks shall be continuous over at least two (2) spans. All joints shall be cut parallel to an over center of roof beams with not more than two (2) adjacent planks breaking joints over the same support except at ends and at openings.
- (c) Maximum span of two (2) inch plank shall not exceed the following:
 - 1. Planks continuous over two supports eight (8) feet.
 - 2. Planks over single span, six (6) feet.
 - 3. Other spans or thicknesses may be used when calculated according to standard engineering practice. Deflection shall be limited to 1/240 of span.
- (d) Tongue and groove planks having end matched end joints may be used to break joints between roof beams provided:
 - 1. Each plank bears upon at least two supports.
 - 2. End joints between supports shall not occur in adjacent planks.
- (e) Roof deck shall be bled and face nailed to roof beams in accordance with the nailing schedule – Table No. 5.
- (f) When roof deck is also the finished ceiling surface, an approved vapor barrier shall be installed between deck and roof insulation.

(2) Fiberboard Roof Deck.

- (a) Thickness and joist spacing shall comply with manufacturer's specifications and be designed in accordance with roof loads designated therein.
- (b) End joint shall be staggered and shall occur over supports at least three (3) inches in width. Side joints shall be supported at eaves, ridge, and openings. Nails shall penetrate supporting member at least one and one-half (1½) inches and shall be spaced maximum five (5) inches apart.

3.32 SUB-FLOORING.

(1) Boards, Supporting Wood Strip Flooring.

- (a) Minimum thickness, one (1) inch (nominal) for joists spaced a maximum of 16 inches o.c.
- (b) Maximum width eight (8) inches.
- (c) Subfloor may be installed diagonal to or at right angles to joists. If installed at right angles to joists, finish floor shall be installed across subfloor.
- (d) Board shall have ends cut parallel to and over center of joists with not more than two adjacent boards breaking joints on same joist except at ends and at openings. End matched T and G boards may break joints between joists provided two end

joins do not occur in same joist space in adjoining boards and each board bears on at least two joists.

- (e) Where header joist is not used, installed blocking between ends of joists at wall for nailing ends of diagonal subfloor. Blocking shall also be provided where subfloor is cut away for plumbing and heating.
- (f) Provide at least one-half (1/2) inch clearance between subflooring and masonry or concrete walls.

(2) **Boards Supporting Other Flooring.**

- (a) Subfloor used as a base for wood block flooring applied by nailing shall comply with paragraph (1) of this section.
- (b) Subfloor used as a base for ceramic tile applied over concrete setting bed shall comply with paragraph (1) of this section. Floor joists may be beveled and ledger strips used to support subfloor as support for concrete setting bed.
- (c) Resilient flooring, wood block flooring applied by adhesive and ceramic tile applied by adhesive shall be installed over an underlayment in compliance with paragraph (4) of this section. Board subfloor when used shall comply with paragraph (1) of this section.

(3) **Plywood.**

- (a) Material shall be at least Structural-Interior C-D or Exterior C-C sheathing grade. Exterior type shall be used when any surface or edge is exposed to weather.
- (b) Minimum thickness and maximum joist spacing shall comply with Table F.
 - 1. Exterior C-C or Structural-Interior C-D sheathing grades only.
- (c) Plywood shall be installed with outer plies at right angles to joists, and be staggered so that end joints in adjacent panels break over different joists.
- (d) Provide at least one-half (1/2) inch clearance between subfloor and masonry or concrete wall.

TABLE F			
		Minimum Joist Spacing (Inches O-O)	
Species of Plywood	Minimum Thickness (inches)	Woodstrip & Block flooring with T&G edges	Woodstrip & block flooring with square edges & resilient flooring
Douglas fir, Western Larch, Southern Pine, & Groups 1, 2, 3 Western Softwood	½ minimum 5 Ply	16	16

(4) **Underlayment for Resilient Flooring.**

- (a) Underlayment shall be minimum one-half (1/2) inch structural-interior type or exterior type plywood, or hardboard. Particle board may not be used for underlayment except under carpeting. Other materials may be used as underlayment when determined suitable by the Building Inspector.
- (b) Top ply of plywood shall be at least “C plugged” grade.
- (c) Hardboard shall be installed with smooth surface up.
- (d) Nail to subfloor using the type of nail and spacing recommended by the underlayment manufacturer.

- (5) **Plank Subfloor.**
- (a) Planks shall be T and G or splined; minimum thickness two (2) inches. Maximum width eight (8) inches. Square edge planks may be used where strip flooring with T and G edges is installed at right angles to plank or where a separate underlayment is provided.
 - (b) Where practicable, planks shall be continuous over at least two spans. All joints shall be cut parallel to and over center of floor beams with not more than two adjacent planks breaking joints over same support except at ends and at openings.
 - (c) Maximum span of two (2) inch plank deck shall not exceed the following:
 - 1. Planks continuous over two spans, seven (7) feet.
 - 2. Planks over single span only, five (5) feet.
 - 3. Other spans may be used when calculated according to standard engineering practice. Deflection shall be limited to 1/360 of span.
 - (d) Plank deck shall be blind and face nailed to floor beams in accordance with the nailing schedule, Table 4.
 - (e) Loads from bearing partitions, interior columns, or other concentrated loads shall be supported independent from plank deck.
- (6) **Finished Floor.** Subfloor shall be covered with a minimum of one-half (1/2) inch thick approved finished flooring material.
- (7) **Combination Subfloor-Underlayment.** Plywood designed for a single floor system, three quarters (3/4) of an inch thick may be used under the following conditions:
- (a) Stamp indicating use of exterior glue.
 - (b) Tongue and groove provided.
 - (c) Nailing as per code schedule.
 - (d) Maximum joist spacing 16 inches on center.
 - (e) Outer plys laid at right angle to joists.

Chapter IX. Exterior Coverings, Roofing, Interior Finishings

3.33 EXTERIOR COVERINGS.

- (1) **General Requirements.** All exterior wall coverings shall be of approved moisture and weather-resisting materials of sufficient stiffness and properly attached to resist rain and wind. All exterior intersections between wood or metal and masonry veneer shall be caulked with elastic waterproofed material, except where metal flashed.

The bottom edge of the exterior siding immediately over any exterior wall opening shall be so located as to permit the headflashing to extend under the siding and to be turned up behind the siding.

- (2) **Types of Weather Wall Coverings.** The following materials shall be accepted as approved weather coverings of nominal minimum thickness specified:

Brick Masonry Veneers	4 inches
Stone Veneers	2 inches
Clay Tile Veneers	3/8 inch
Stucco or Exterior Plaster	3/4 inch
Wood Siding – Bevel	1/2 inch at the butt
Wood Siding – Board	1 inch

Pre-cast Stone Facing	5/8 inch
Protected Combustible Siding	Required Approval
Wood Shingles and Shakes	3/8 inch at the butt
Exterior Plywood	3/8 inch
Asbestos Shingles	5/32 inch
Asbestos Cement Boards	1/8 inch
Formed Metal Siding	28 gauge

- (3) **Aluminum Siding.** Aluminum siding shall be allowed subject to the following conditions:
- (a) Such siding shall have a minimum thickness of .025 inch; provided however, where insulation board is used as backing, the minimum thickness shall be .020 inch. Furthermore, the minimum thickness shall be .002 inch less to allow for rolling tolerance.
 - (b) All siding or material being covered by such aluminum siding shall be in sound condition.
 - (c) Horizontal aluminum siding shall not exceed nine (9) inches in width.
 - (d) All aluminum siding not backed shall be coated on both sides.
- (4) **Nailing Weather Boarding, Wall and Roof Covering.** All weather boarding and wall and roof covering shall be securely nailed with aluminum, copper, zinc, zinc coated, or other approved corrosion-resistive nails into the supporting structure in accordance with the recommended nailing schedule or the approved manufacturer's standards. Shingles and other weather covering attached directly to sheathing less than one (1) inch thick shall be secured with barbed or other mechanically bonding nails of approved type; or other common nails on furring strips attached to studs.
- (5) **Exterior Stucco.** All stucco work shall be reinforced with approved metal lath or wire fabric as herein specified; except when applied directly to a masonry base. The reinforcing fabric shall be coated with zinc or other approved rust-resistive coating, or shall be manufactured from corrosion-resistive alloys.

Type of Reinforcement	Minimum U.S. Gauge	Minimum Mesh Inches	Minimum Weight Pounds per Square Yard
Metal Lath	-	-	1.80
Expanded Metal	-	-	3.40
Woven Wire	18	1	1.74
Woven Wire	17	1½	1.41
Woven Wire	16	2	1.47
Welded Wire	18	4 square inches	0.67
Welded Wire	17	4 square inches	0.82
Welded Wire	16	4 square inches	1.10

- (6) **Roof, Slope, and Covering.**
- (a) **Roofing.** All roofs shall be covered with wood, asphalt, asbestos, cement, tile, or slate shingles; or with a built-up asphalt; or tar coating with gravel or capped with a mineral surface cap sheet; or with sheet metal. All roofing shall be placed and nailed in approved manner. Plain tar paper roll roofing shall not be permitted.

- (b) Slope: Rise. The sloe of all roofs of buildings and structures when tile, asphalt, or slate shingles are used shall be not less than four (4) inches rise to 12 inches run, except as provided below.

Where built-up roofing with gravel slag or mineral cap sheet is used, the maximum rise shall be three (3) inches to 12 inches run.

Self-sealing or interlocking asphalt shingles may be used when the slope of the roof is a minimum of two and one-half (2½) inches rise to 12 inch run, providing a double layer of 15 pound asphalt saturated felt underlayment is hot-mopped on the roof overhang and extends up to a point at least 24 inches inside of the exterior building wall.

- (c) Wood Shingle Roofing. If wood shingles are used, they shall be No. 1 grade, edge grain, and shall be of such length, thickness, and exposure as shown in Tables G and H. Wood singles not be used on roofs having a slope of less than four (4) inch rise per 12 inch run.

TABLE G	
Wood Shingle Roof Covering	
Minimum Length Inches	Minimum Thickness
16	5 butts in 2 inches
18	5 butts in 2¼ inches
24	4 butts in 2 inches

TABLE H			
Wood Shingle Roof Covering			
	Maximum Exposure for Shingle Length - Inches		
Slope of Roof to 12 inches run	16	18	24
Rise 4 inches and over	5	5½	7½

- (d) Asphalt Shingles.
1. Asphalt shingles shall be approved Class “C” label (Underwriters’ Laboratories, Inc.) square butt strip shingles weighing not less than 235 pounds per square, or hexagonal strip shingles weighing not less than 180 pounds per square, or individual shingles weighing no less than 250 pounds per square laid over asphalt felt or similar felt of not less than 15 pounds per 100 square feet.
 2. Starting row of all asphalt shingles shall be doubled. Such shingles shall be nailed with aluminum, copper, or hot dipped galvanized nails. Nail according to manufacturer’s recommendations.
- (e) Asbestos Cement Shingles. Asbestos cement shingles with approved Class “A” or “B” label (Underwriters’ Laboratories, Inc.) and tile and slate shingles of durable quality shall be laid in approved manner over asphalt felt or similar approved felt of not less than 30 pounds per 100 square feet.
- (f) Flat Roof Covering. Built-up roof covering for flat roofs, having a pitch of not more than two and one-half (2½) inches rise to 12 inches run, shall be approved Class “B” (Underwriters’ Laboratories, Inc.) minimum three (3) ply roofing consisting of three(3) layers of asphalt or tar saturated felt, each layer of not less than 15 pounds per 100 square feet. Where tar o asphalt coating is used, the roof shall be surfaced with pea gravel. All layers of felt shall be mopped solid.

- (g) All other types of roof covering and manner of application shall be approved by the Building Inspector.

3.34 WALL AND CEILING FINISH. Every room used for living, sleeping, dining, cooking, or bathing purposes shall have the walls and ceiling of approved materials, or finished in an approved manner as regulated by this code. Approved materials shall include plaster, tile, wood, gypsum wallboard, and masonry units. All wall and ceiling finishing materials shall have a minimum composite thickness of one-half (1/2) inch, except that one-quarter (1/4) inch plywood or hardboard paneling is acceptable.

(1) **Lathing.**

- (a) General Regulations. All lath shall be nailed in accordance with the nailing schedule, Table No. 5, tied, laced, clipped, or otherwise effectively secured. Internal angles, coves, arches, and junctures between wood, fiber insulation, gypsum lath, and other plaster bases shall be reinforced with cornerites of metal lath or other similar approved material, except where metal or wire lath is carried around such intersections. No interior lath shall be applied until all exterior framing of buildings or structures is covered.
- (b) Gypsum Lath.
 1. Gypsum lath shall be nailed to wood supports or attached to metal supports by means of clips in an approved manner. Such supports shall be spaced not to exceed 16 inches on centers for three-eighths (3/8) inch gypsum lath and 24 inches on centers for one-half (1/2) inch gypsum lath.
 2. Joints of gypsum lath abutting walls and ceilings shall be staggered. Gypsum lath shall be applied with the long dimension at right angles to supporting members, with joints broken in each course and shall not be abutted tightly together, nor be more than one-quarter (1/4) inch apart.
- (c) Fiber Insulation Lath. Fiber insulation lath, when used as a plaster base, shall have a rough, fibrous texture to insure mechanical and suction bond, and shall be nailed in an approved manner to wood supports spaced not to exceed 16 inches on centers. Such nails shall be placed not less than three-eighths (3/8) inch from the ends and not less than one-half (1/2) inch from shiplapped, tongued and grooved, or interlocking edges. End joints, except in interlocking type lath, shall be not less than three-sixteenths (3/16) inch, nor more than one-quarter (1/4) inch wide. Shiplapped, tongued and grooved, or interlocking edges shall be fitted to contact.
- (d) Metal and Wire Lath.
 1. The dimensions, sizes, and application of expanded, ribbed, and sheet metal lath, and all types of wire lath shall comply with accepted engineering practice. Expanded, ribbed, and sheet metal lath shall provide a key sufficient to retain the plaster and shall weigh not less than two and one-half (2½) pounds per square yard. Such lath shall be fabricated from steel sheets, copper-bearing steel, or other approved corrosion-resistive metals, and shall be pierced to provide a mechanical key to retain the plaster by slitting, punching, expansion, and shall be given a protective coating of rust-inhibitive paint after fabrication, or shall be made from galvanized sheets.
 2. Wire lath shall be not lighter than number 19 W. & M. gauge wire, two and one-half (2½) meshes per inch coated with zinc or rust-inhibitive paint.

3. Stiffened wire lath shall not be lighter than number 20 W. & M. gauge wire, two and one-half (2½) meshes per inch, with number 24 U.S. gauge V-rib stiffeners spaced not to exceed eight (8) inches apart coated with zinc or rust-inhibitive paint.
- (e) Paper-backed Lath. Expanded metal or wire fabric lath backed with integral approved paper shall be fabricated from not lighter than number 24 U.S. gauge zinc-coated metal sheets with maximum opening one and one-eighth by two and one-half (1-1/8 x 2½) inches or number 16 W. & M. gauge zinc-coated wire with not more than two by two (2x2) inch mesh.
- (f) Lathing Accessories. All metal lathing accessories including corner beads, base screeds, picture molds, metal casing, and similar accessories shall be fabricated from not less than number 26 U.S. gauge zinc-coated steel sheets, and shall be provided with prefabricated or expanded deformations or otherwise formed to insure complete embedment and keying of the plaster.

(2) **Plastering.**

- (a) Number of Coats. Plastering with gypsum hard-wall, lime, or Portland cement plaster shall be applied in not less than three (3) coats when applied over metal or wire lath and in not less than two (2) coats when applied over other plaster bases permitted in this Code. Lime or Portland cement plaster shall not be applied directly to fiber insulation lath or gypsum lath.
- (b) Thickness. Grounds shall be installed to provide for the following thicknesses of interior plaster, from face of plaster base to finished plaster surfaces, as regulated in Table I.

TABLE I	
Thickness of Plaster (inches)	
Type of Base	Residential
Metal or Wire Lath	3/8 inch minimum
Other Approved Types of Lath	3/8 inch minimum
Unit Masonry and Concrete Walls	½ inch minimum
Monolithic Concrete Ceiling	1/8 inch minimum, 3/8 inch maximum

If monolithic concrete ceiling surfaces require more than three-eighths (3/8) inch of plaster to produce desired lines or surfaces, metal or wire lath shall be attached thereto.

- (c) Application to Masonry or Concrete Base. When masonry walls are plastered they shall be stripped, lathed, and plastered to protect against moisture.
 - (d) Weather Protection. When interior plastering work is in progress, adequate ventilation shall be provide, and in freezing weather the enclosure shall be heated. Plaster shall not be applied to surfaces that contain frost.
- (3) **Drywall.** All drywall shall be a minimum of one-half (1/2) inch gypsum board applied and jointed per manufacturer's specifications.

3.35 NAILING TO CONNECTING WOOD MEMBERS.

- (1) **General Requirements.** The number of nails at each bearing and connecting wood member shall be not less than the number shown in Table No. 5. A coated sinker or cooler nail may be used in lieu of a common nail.

- (a) Staples. Power-driven, divergent chisel point galvanized wire staples may be used for fastening plywood, fiberboard, or gypsum wall sheathing, plywood or hardboard underlayment, plywood roof sheathing, plywood subflooring, gypsum lath, asphalt roof shingles, and the first ply only of two-ply system gypsum drywall finish, provided that the gauge, crown, length, and spacing of the staples for a particular material and condition of use are in compliance with accepted standards and as regulated herein. Except that the gauge of staples used for fastening structural wall sheathing, roof sheathing, and subflooring shall be not less than No. 14.
- (b) Power-driven, divergent chisel point galvanized wire staples or equivalent nails not less than two (2) inches long, may be used in lieu of nails for fastening wood boards one (1) inch (nominal) in thickness to studs, joists, or rafters, provide that gauge of such staples is not less than No. 14. The number of staples to be used at each stud, joist, or rafter shall be determined on the basis of one (1) staple for each required nail.

Chapter X. Heating, Flammable Liquid Storage, Air Conditioning, Chimneys, Fireplaces, Gas Vents, and Incinerators

3.36 HEAT PRODUCING APPARATUS FOR HEATING, INCINERATION, AND ALLIED APPURTENANCES.

(1) General.

- (a) Permit Required. Before proceeding with the construction, installation, erection, alteration, or remodeling of any boiler, furnace, incinerator, or other heat producing apparatus, a permit shall first be obtained from the Building Inspector by the heating contractor. An application shall be filed by said contractor specifying in detail the work to be done and by accompanied by the fee as set forth in Table No. 1.
- (b) Accessibility. The installation of heat producing appliances shall in all cases be such as to make them accessible for cleaning, operation, and maintenance.
- (c) Design Temperature. Heating systems for one and two family residences shall be capable of heating the dwelling to 70°F when the temperature outdoors is -15°F with a 15 mph wind. Manual J. Calculating Heat Losses, Second Edition, 1964, National Warm Air Heating and Air Conditioning Association, or its succeeding publication shall be an acceptable design standard for purposes of determining heating requirements.
- (d) Air for Combustion. Suitable provision shall be made where necessary for intake of air needed for combustion of fuel burning appliances.
- (e) Unsafe Heating Appliances. The Building Inspector shall have the authority to seal any heating appliance regulated herein which has been installed in violation of the regulations of this code, or which is found upon inspection to be in an unsafe condition an to be a life, health, or fire hazard. It shall be unlawful for any unauthorized person to break such seal.

(2) Heating Furnaces and Boilers.

- (a) Definitions.
 - 1. Heating furnaces and boilers shall include central furnaces, hot water boilers operating at not in excess of 250°F, and steam boilers operating at not in excess of 15 pounds gauge pressure.

2. Central furnace means a self-contained, flue connected appliance intended primarily to supply heated air through ducts to spaces remote from or adjacent to the appliance located as well as to the space in which it is located.

(b) Mounting.

1. Furnaces and boilers fired by combustible fuel shall be mounted on floors of fire-resistive construction with noncombustible flooring and surface finish, and with no combustible material against the unit. Where solid fuel is used, fire-resistive construction shall extend not less than 18 inches at the front or side where ashes are removed.
2. Furnaces and boilers that are approved specifically for installation on a floor or wall constructed of combustible material may be mounted in accordance with the conditions of such approval.
3. Furnaces and boilers fired by combustible fuel located on the same floor as sleeping quarters shall be isolated by at least a one (1) hour fire-resistive separation.

(c) Clearances.*

1. Clearance between the heat producing apparatus supply ducts and combustible materials shall not be less than those recommended for use by National Fire Protection Association Booklet 90B, a copy of which is on file in the office of the Building Inspector. Listed clearances can be reduced through a use of protection specified by the National Fire Protection Association Booklet 90B.
2. Heating furnaces and boilers fired by combustible fuel shall not be installed in confined spaces such as alcoves or closets unless they have been approved specifically for such installation and are installed in accordance with the conditions of such approval. Installation clearances for furnaces and boilers in confined spaces shall not be reduced by protection methods. Combustion air shall be provided.
3. Minimum clearance from supply ducts, risers, boots, and register boxes shall be as recommended by the National Board of Underwriters.

*Clearance for gas appliances shall be as per current AGA or ASA Standards.

(3) **Gas Appliances.**

- (a) Scope. The regulations of this section shall apply to all gas appliances utilizing natural, manufactured, or mixed gas, and the gas utilization equipment shall be installed in accordance with American Standard Association Code ASA 721.30 – 1969, which is also referred to as National Fire Protection Association Pamphlet No. 54 of the same date and entitled “Installation of Gas Appliances and Piping” or revisions thereto or as otherwise regulated by this Code.

- (b) Definitions. The following definitions shall apply to this section, to-wit:

1. Draft Hood. A device built into a gas appliance or made part of the flue or vent connector from a gas appliance which is designed for the following purposes:
 - a. Insure the ready escape of the products of combustion in the event of no draft, back draft, or stoppage beyond the draft hood.
 - b. Prevent a back draft from entering the appliance.
 - c. Neutralize the effect of stack action of the flue or vent upon the operation of the gas appliance.
2. Flue or Vent Concealer. The pipe connecting a gas appliance with the flue or vent.

3. Gas Appliance. Any device utilizing gas fire, and especially designed to provide space heating.
 4. Gas Conversion Burner. A burner designed to supply gaseous fuel to a boiler or furnace which was originally designed to utilize another fuel.
 5. Gas Regulator. A device for maintaining and controlling a uniform gas pressure.
 6. Space Heater. A direct fired heating device mounted on or near the floor for heating the room in which the device is located without external heating pipes or ducts.
 7. Wall Heater or Furnace. A space heater which is supported from or recessed in the wall of the room being heated.
- (c) Venting. All gas appliances regulated herein which require vents shall be vented to an approved flue or vent.
- (d) Description. All gas appliances shall be labeled with the manufacturer's identification mark, the maximum hourly input rate in BUT per hour, the type of gas the burner is designed to use, and the symbol of the testing agency which approved the appliance.
- (e) Operating Instructions. The installer of any gas fired furnace or boiler, or gas conversion burner shall post in a conspicuous place near the appliance, complete operating instructions for such appliances, including the installer's name and business address.
- (f) Safety Measures.
1. All gas appliances shall be provided with a quarter-turn shut-off valve with an attached lever handle, so constructed that the valve can be easily and quickly closed.
 2. The main shut-off valve shall shut off the entire supply of gas to the appliance, except where a pilot burner is used, a separate manual shut-off shall be used to shut off the supply of gas to the pilot burner. Such pilot shut-off shall be installed between meter and main shut-off valve and shall be close to main shut-off valve.
 3. All automatically controlled gas appliances shall be provided with an automatic safety pilot device so constructed and adjusted that no gas can flow through the main burner unless the pilot light is burning. The operation of such device shall not depend on the closing of an electric circuit to shut off the main gas supply.
 4. Automatic safety pilot devices shall be so adjusted that the main gas supply is shut off within three (3) minutes after the pilot flame has been extinguished, except that on gas conversion burners with inputs in excess of 400,000 BTU per hour such time shall be reduced to five (5) seconds.
- (g) Gas Burners.
1. Gas burners in gas appliances shall be properly installed and supported to prevent twisting, sliding, or dropping out of proper position.
 2. All burners shall be so located that they will be readily accessible for operation, adjustment, or repair.
 3. Baffles, when necessary, shall not interfere with proper combustion and shall be locked in position.
 4. Where a gas space heating appliance is connected to a chimney or gas vent, the flue gas temperature at the inlet of the draft hood shall be set at not less than 350°F for interior chimneys, and not less than 425°F for exterior chimneys.
- (h) Automatic Control.

1. All gas fired furnaces, and hot water boilers, including those converted to gas firing, shall have automatic thermostatic control to close the automatic gas valve in the event that excessive high temperatures develop in the furnace or hot water boilers.
2. Such devices shall be provided for all gas fired steam boilers, as outlined above, in the event excessive pressures develop in the boiler or the water level in the boiler drops dangerously low.
3. Electrically operated safety controls shall not depend on the closing of an electrical circuit to shut off the gas supply to the appliance.

(i) Gas Conversion Burners.

1. Before any gas conversion burner is installed, the combustion chamber flue passages, smoke pipe, and the chimney, shall be thoroughly cleaned of all rust, soot, and dirt. All rust and scale shall be scraped from the edges of the firing clinker or cleanout doors, and the door jambs to obtain a tight fit. Leaky joints on cast iron furnaces shall be re-cemented. A smoke or other test shall be used to determine the effectiveness of the repairs. All doors on the boiler or furnace, except the firing door, shall be tightly sealed. The slots in the firing door shall be sealed. The fire brick in steel warm air furnaces shall be removed except where it is the only material that forms the sides of the fire pot.
2. The firing door on the furnace or boiler shall be arranged to open easily to relieve pressure by filling or removing the door catch and providing a spring device to hold the door closed.
3. Where a horizontal (in-shot) type gas conversion burner is installed in the ash pit of a dry base boiler or gravity warm air furnace, the ash pit shall be lined on the bottom of the sides up to the grate level with two (2) inches of insulating firebrick or other approved insulation.
4. Movable smoke pipe dampers shall be removed. Other dampers which are on integral part of the boiler or furnaces shall be removed or permanently locked in a position which does not interfere with the operation of the burner.
5. In down draft or revertible flue type furnaces or boilers in which the flue passage turn downward after leaving the combustion chamber, the top of the combustion chamber, or flue passage shall be vented to the smoke pipe by a one (1) inch diameter or larger pipe. The relief opening of a vertical or horizontal draft diverter should be at least one (1) foot higher than the highest flue passage.
6. Where a bypass to the smoke pipe is provided in the construction of the furnace or the boiler at the point where the flue turns downward, the damper in the bypass may be partially opened and locked in place in lieu of the required one (1) inch pipe.
7. The cross-section area of the flue or vent connector shall be not less than one (1) square inch per 7,500 BTU per hour input of the gas conversion burner. An orifice plate or neutral pressure point adjuster shall be inserted in the flue or the vent connector to make necessary adjustment of the burner. This orifice plate shall be located between the unit and the diverter.
8. The draft diverter shall be located in the same room as the appliance.

(j) Gas Fired Space Heater. (Room Heaters)

1. Gas fired space heaters shall not be installed in bathrooms or shower rooms.

2. Gas fired space heaters may be installed in individual offices and in individual apartments, if such installation is in compliance with the following:
 - a. Space heater installed in normally closed rooms having a volume of less than 400 cubic feet shall be provided with an air intake to supply outside air for combustion purposes
 - b. Space heaters shall be provided with an automatic safety pilot device.
 - c. The burner of the space heater shall be enclosed with a metal housing so arranged that there will be no open flame. The arrangement space heater shield shall be such that there will be no possibility of personal contact or combustible material contact with the flame or the housing enclosing the burner.
 - d. Space heater installed in sleeping rooms shall be provided with automatic safety pilot devices, and combustion air shall be drawn directly from the outside.
 - e. Space heater shall be installed with clearances to combustible construction as shown in the following table:

Required Clearance from Combustible Construction (Inches)		
Type of Space Heater	Jacket, Sides, & Rear	Projected Flue Box or Draft Hood
Circulation or Radiating Space Heater	6	2
Wall Heaters (Wall Furnaces)	None	-
Gas Steam or Hot Water Radiators	6	2

- f. Space heaters shall be placed so as not to cause a hazard to walls, floors, curtains, furniture, open doors, or to the free movement of persons within the room.
- g. Gas fired space heaters which have been approved for mounting on combustible floors shall be mounted in accordance with such approval. Other types of gas fired space heaters shall be mounted on noncombustible floors or on combustible floors as regulated in this code.

(4) **Oil Burners.**

- (a) Scope. The regulations of this section shall apply to all oil-burning equipment and shall include all equipment connected thereto including tanks, piping, pumps, control devices, and all accessories.
- (b) Fuel Oil. Fuel oil used in connection with such burners to which these regulations apply shall have a flash point of not less than 100°F as determined by the Tag close cup tester and shall be a hydrocarbon oil free from acid, grit, fibrous, or other foreign matter likely to clog or injure the burners or valves.
- (c) Installation of Oil Burners.
 1. All oil burners shall be installed in an approved and workmanlike manner. Combustion chambers, etc., shall be cleaned in accordance with the requirements of Section 3.36(3)(i).
 2. Where oil burners are installed in boilers or furnaces originally designed for other fuels, the ash door of the boiler or furnaces shall be removed, or bottom ventilation otherwise provided to prevent an accumulation of

vapors in the ash pit, unless the burner is of a type which mechanically purges the ash pit.

3. Manually operated dampers shall be such that they cannot close off more than 80% of the internal cross-sectional area of the smoke pipe.
4. Rooms in which oil burners are located shall be provided with adequate ventilation to assure continuous complete combustion of the oil. Where the oil burner is located in a room which does not have windows or doors to the outside air, such room shall be provided with an opening or duct to the outside air, or to a room which has windows or doors to the outside air.
5. Operating Instructions. The installer of any oil fired furnace or burner or oil conversion burner shall post in a conspicuous place near the appliance, complete operating instructions for such appliances, including the installer's name and business address.

(d) Oil Burner Construction and Control.

1. All oil burners shall be of an approved type.
2. All oil burners shall be arranged to prevent abnormal discharge of oil in the event of ignition failure or premature flame extinguishment by automatic means specifically approved for the burner with which used.
3. Oil burning space heaters shall be provided with such controls only if they are connected to an oil storage tank which is not an integral part of the space heater.
4. All oil burners shall be provided with an approved method for manually stopping the flow of oil to the burner from a point at a safe distance from the burner.
5. Automatically controlled oil burners used in connection with hot water, steam, or warm air heating systems shall be equipped with approved automatic devices to stop the burner or reduce the fuel supply in the event of excessively high pressure or low water in the steam boiler or overheating in the hot water boiler or warm air furnace.
6. Oil burners which are supplied by gravity feed shall be equipped with an approved constant level valve. Such constant level valve if not a part of the burner or the oil tank shall be installed in the oil feed line of the tank or as close thereto as possible.

(5) **Recessed Heater and Wall Heaters.**

(a) Definition. Recessed heaters and wall heaters mean self-contained heating appliances designed for incorporation in or permanent attachment to a wall, partition, floor, or ceiling of the room being heated.

(b) Installation.

1. Recessed heaters and wall heaters shall not be installed in or attached to walls, partitions, floors, or ceilings constructed of combustible material unless approved specifically for such installation and installed in accordance with the conditions of such approval.
2. Recessed heaters and wall heaters shall be so located as not to cause a fire hazard to walls, floors, curtains, furniture, and doors.
3. Panels, grilles, and access doors which must be removed for normal servicing operations of recessed heaters and of wall heaters shall not be attached to the building construction.

4. Wall heaters installed in sleeping rooms shall be provided with automatic safety pilot devices, and all combustion air shall be drawn directly from the outside.

(6) **Connections to Chimneys or Vents.**

(a) Appliances required to be flue connected or vented:

1. Every heat producing appliance burning solid, liquid, or gaseous fuel shall be connected to a chimney or vent that is suitable and safe for such use except those appliances approved specifically for use without a flue or vent connection. The main central heating devices shall be connected only to masonry chimneys, or other approved chimney.
2. Gas burning ranges, hot plates, laundry stoves, and domestic clothes dryers that are approved specifically for use without a vent may be installed in accordance with the conditions of such approval.
3. Gas burning water heaters with inputs not over 5,000 BTU per hour, gas refrigerators, counter appliances, room heaters except when installed in sleeping quarters, and other gas burning appliances not provided with flue collars that are approved specifically for unvented use may be installed in conditions of such approval. Gas burning devices requiring venting, other than central heating devices, shall be vented through an approved vent and such vent shall terminate in the outside air in accordance with the conditions of approval.

(b) Flue Pipes and Vent Connectors.

1. Materials. Flue pipes and vent connectors shall be made of noncombustible material capable of withstanding the flue gas temperatures of the appliances and of 24 gauge minimum thickness to withstand physical damage. The material of vent connectors shall also be resistant to corrosion.
2. Support. Flue pipes and vent connectors shall be securely supported, and joints fastened with sheet metal screws or rivets.
3. Pitch. Flue pipes and vent connectors shall maintain a pitch or rise of at least one-quarter (1/4) inch to the foot (horizontal length) from the appliance to the chimney or vent.
4. Length. Connections to the chimney shall be as direct as possible and in no case shall the horizontal vent exceed 75% of the vertical height of the chimney above the flue connection.
5. Size. The flue pipe or vent connector shall not be smaller than: 1) the size of the flue collar of the appliance, 2) the size recommended by the appliance manufacturer, or 3) the size of the outlet of the draft hood that is supplied by the manufacturer of the gas burning appliance. When house heating gas conversion burners are installed the flue size shall be that suggested by American Standard Z-21-8-1958, Table 1, Page 13.
6. Damper. No manually operated damper shall be placed in such flue or vent connector.
7. Passage through Floors or Ceilings. No flue pipe or vent connector shall pass through any floor or ceiling.
8. Flue pipes of liquid or solid fuel burning appliances shall not pass through walls or partitions constructed of combustible material unless they are guarded at the point of passage by:
 - a. Metal ventilated thimbles not less than 12 inches larger in diameter than the flue pipe or vent connector; or

- b. Metal or burned fire clay thimbles built in brickwork or other approved fireproofing materials extending not less than eight (8) inches beyond all sides of the thimble; or
 - c. In lieu of such protection, all combustible material in the wall or partition shall be cut away from the flue pipe or vent connector a sufficient distance to provide the clearance required from such flue pipe or vent connector. Any material used to close up such opening shall be noncombustible.
9. Not more than one opening shall be allowed in each chimney flue, other connections be made by means of an approved junction box. One additional opening for an incinerator may be made provided it does not open into the same section of flue liner.

(7) **Steam and Hot Water Pipes.**

(a) Clearance.

- 1. Steam and hot water pipes shall be installed with a clearance of at least one (1) inch to all combustible material except as specified in paragraphs 2 and 3 of this section.
- 2. At points where pipes carrying steam or hot water at not over 15 pounds per square inch gauge pressure, or hot water at not over 250°F, emerge from a floor, wall, or ceiling boards may be less than one (1) inch, but shall not be less than one-half (1/2) inch. Each opening shall be covered with a plate of noncombustible material.
- 3. Hot water pipes on a system with automatic firing and with limit control such that water temperature at the boiler or furnace cannot rise above 180°F may be installed without clearance to combustible material.

(b) Protection.

- 1. Coverings or insulation used on steam or hot water pipes shall be of noncombustible material.
- 2. Where steam pipes and hot water pipes pass through a floor, wall, or ceiling of fire-resistive construction, the openings around them shall be filled with noncombustible material to prevent the passage of fire.

(8) **Air Ducts.**

(a) Warm Air Supply Ducts.

- 1. All warm air supply registers shall be connected to the furnace or other heating unit by means of fittings and ducts which are continuous and substantially airtight throughout. Warm air supply ducts shall be constructed entirely of metal or other noncombustible material equivalent in structural strength and durability. The minimum thickness of metal used for warm air ducts shall be of the U.S. Standard Sheet Metal Gauges shown in the following table:

Round Ducts Diameter in Inches	Gauge	Rectangular Ducts Width in Inches	Gauge
Less than 12	30	14 or Less	28
12 or More	28	Over 14	26

- 2. Joints and seams of such ducts shall be securely fastened. Slip joints shall have a lap of at least one (1) inch and the units shall be securely fastened together. Ducts shall be securely supported by metal hangers,

straps, lugs, or brackets. No nails, conduit, wiring, or pipe shall penetrate through the duct walls.

3. Single wall ducts when passing through or contained in combustible walls, floors, or ceilings shall have fire-sixteenths (5/16) inch clearance to combustible construction, and shall be covered with one thickness of asbestos paper weighing not less than 12 pounds per 100 square feet, except that five-sixteenth (5/16) inch clearance and the asbestos paper may be omitted on ducts from automatically fired forced air furnaces.
4. Ducts located in closets shall be covered with one-quarter (1/4) inch approved noncombustible insulation and shall be protected from mechanical injury.
5. Any open space around vertical ducts where such ducts enter walls, floors, or ceilings shall be tightly filled with asbestos cement or other approved noncombustible insulating material.
6. Warm air ducts in gravity systems and risers in forced air installation shall be installed so that the same ducts or riser shall not serve both the bathroom and any other room.
7. Warm air supply ducts shall not be terminated in any garage area.

(b) Cold Air Return Ducts.

1. All cold air return registers shall be connected to the furnace by means of fittings and ducts which are continuous and substantially air tight throughout.
2. Portions of cold air return ducts within three (3) feet of the furnace shall conform to the regulations of subsection 8-A-1 for warm air supply ducts. The remaining portion of cold air return ducts may be constructed of metal or other approved material, provided, however, that no material more flammable than one (1) inch thick (nominal) wood boards shall be used.
3. Spaces between structural framing members may serve as return ducts provided such spaces are substantially air tight or are made tight with heavy asbestos paper secured to such framing member. When spaces between joists are used for this purpose, such spaces shall be closed with metal, dense composition board, cement asbestos board, or similar approved rigid material.
4. The interior of combustible return ducts shall be lined with metal at points where there is danger of incandescent particles being dropped through the register, such as directly under floor registers and at bottom of vertical ducts.
5. Cold air return ducts from bathroom or garages shall not be permitted.

- (c) Warm Air Registers. Where warm air registers are installed in combustible construction the register box shall be covered with one thickness of asbestos paper weighing not less than 12 pounds per 100 square feet and shall have a clearance of five-sixteenth (5/16) inch from combustible construction, except that five-sixteenth (5/16) inch clearance to combustible construction may be omitted where an automatically fired forced air furnace is used.

3.37 FLAMMABLE LIQUIDS, STORAGE, AND EQUIPMENT. The rules and regulations of the Industrial Commission of the State of Wisconsin, as incorporated in the Flammable Liquids Code adopted by said Commission, and all amendments thereof and supplements thereto shall prevail except where stricter requirements are hereinafter provided.

- (1) **Fuel Oil Feed Systems for Heating Purposes.** In the construction and installation of fuel oil systems for heating purposes, only pump suction feed systems having anti-syphon devices shall be used. The storage tanks to be used in connection with such systems shall be located underground, outside the building, with the following exceptions:
 - (a) Not more than two (2) tanks shall be permitted in the basement. When two (2) tanks are installed, there shall be installed a straight thru head valve in each tank, in connection with the outlet arrangement approved by the Building Inspector. A tank shall be not less than 220 gallons nor more than 300 gallons in capacity, and shall be at least 14 gauge sheet steel. The fill pipe shall be at least two (2) inches in diameter, and shall terminate outside of building at least three (3) feet from any opening such as a door or window. The vent pipe shall be one (1) inch in diameter and shall terminate outside of building at least two (2) feet from any opening such as a door or window. The tank or tanks shall be mounted on an incombustible stand and shall be at least nine (9) inches from the floor. Where applicable, the requirements for inside tanks shall also apply to outside tanks.
 - (b) Fuel oil storage tanks of 1,000 gallons capacity or less may be installed under the basement floors of all buildings which are not places of public assemblage. The top of each fuel oil storage tank installed under this exception shall be at least two (2) feet below the top of the basement floor. This subsection shall not be construed to prohibit the use of auxiliary supply tanks as described in the following subsection.
- (2) **Auxiliary Supply Tanks for Fuel Oil Heating Systems.**
 - (a) Auxiliary supply tanks of the gravity or pressure type may be used if suitable automatic safeguards are installed to prevent abnormal discharges of oil at the burners. No such tank shall have a capacity in excess of 60 gallons. If more than one auxiliary tank is installed in a single building, the total capacity of such tanks shall not exceed 60 gallons.
 - (b) Where an auxiliary supply tank of the pressure or gravity type is located within a building, the tank shall be not less than five (5) feet if of the gravity type, and if of the pressure type, not less than 10 feet distant measured horizontally, from any fire or flame. The tank shall be substantially and rigidly supported and otherwise protected against mechanical injury.
 - (c) Tanks for systems under pressure shall be designed for six (6) times the maximum working pressure and be tested and proven tight at twice the maximum working pressure. The maximum working pressure shall not exceed 50 pounds per square inch. All such tanks shall be provided with a reliable pressure gauge, an air relief valve, and a suitable device to vent the tank in case of fire, both discharging outside of the building.
 - (d) The use of gauging devices or test wells, the breakage of which would permit the escape of oil or vapor within the building is hereby prohibited.
 - (e) Auxiliary tanks shall be filled by pumping from the storage tank except that where the entire storage is contained in an auxiliary tank located inside the building, a fill pipe shall extend from such auxiliary tank to a location outside of the building. The fill pipe shall be so installed that in case of overflow, none of the overflow will enter the building.
- (3) **Overflow Oil Return.** The overflow pipe of auxiliary gravity type tanks shall not be provided with valves or other obstructions, but in pressure type tanks the overflow and supply pipes shall be provided with interconnection valves so designed that the opening

or closing of the overflow pipe shall likewise open and close the supply pipe. Where a reducer is not used on the supply pipe at the pump, the overflow pipe shall be one size larger than the supply pipe.

- (4) **Piping Used in Fuel Oil Heating Systems.** Pipes shall be of black malleable pipe or of copper tubing bearing the approval of recognized authorities. Suitable fittings of galvanized cast iron or brass shall be used in connecting the piping and other fuel oil equipment. All piping within the building extending in any position other than vertical shall be laid under or within the concrete floor of the basement, and shall have a coverage of concrete of not less than one (1) inch.

- (5) **Permits for the Installation of Flammable Liquid Storage Tanks or Other Equipment Pertaining to the Use of Flammable Liquids.**

(a) Before proceeding with the construction, erection, alteration, remodeling, or replacement of storage tanks or other equipment pertaining to the use of flammable liquids, a permit shall first be obtained from the Building Inspector. Before the Building Inspector shall issue such permit, an application shall be filed with said Building Inspector by the contractor or builder, specifying the location, size, use, and capacity of such storage tanks or equipment, together with the estimated cost of the work. If the application shows that the installation, remodeling, altering, repairing, or replacements are to be performed in compliance with the provisions of this Code, the Building Inspector shall approve the same and shall issue a permit to the applicant for which a fee shall be charged in accordance with Table 1 of this Code.

- (b) Flammable Liquids Shall Include Liquefied Petroleum Gas.

1. Liquefied petroleum gas shall mean and include any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them: propane, propylene, butanes (normal butane or isobutane), and butylenes.
2. The term storage tanks or equipment shall be construed to include all devices, piping, storage tanks, cylinder, installations for the use of removable cylinders, and equipment pertinent to the use of liquefied petroleum gas.
3. All installations of liquefied petroleum gas storage tanks or equipment shall be in conformity with the provisions of this Code, with the Statutes of the State of Wisconsin and with any orders, rules, or regulations issued by the Industrial Commission of the State of Wisconsin, conformity with the standards for the design, installations, and construction of containers and pertinent equipment for the storage and handling of liquefied petroleum gases as recommended by the National Fire Protection Association shall be prima facie evidence of conformity with generally recognized standards for safety to persons and property.
4. A storage tank or installation for the use of removable cylinders erected above the surface of the ground shall be considered a building within the meaning of this Code, and the Zoning Code, particularly the building setback provisions for yards.

- (6) **Underground Tanks, Abandoned, Out of Service, Removal.**

(a) Temporarily Out of Service. Tanks shall be rendered “temporarily out of service” only when it is planned that they will return to active service at the location within 90 days. The following steps shall be carried successively:

1. Removal of a flammable liquid which can be pumped out with a service pump.
 2. Cap or plug the fill line, gauge opening, and pump suction, using appropriate sealing compound on pipe fittings. If fill line and gauge opening are equipped with caps which can be properly locked, the secure locking of these caps are sufficient.
 3. Leave the vent line open.
- (b) Abandoned Tanks. Tanks which are no longer in service may be rendered “temporarily out of service” pending their removal in accordance with the procedure outline in Section 3.37(6).
- (c) Leaking Tanks. All tanks found to be leaking shall be removed as per Section 3.37(6)(e).
- (d) Change in Use. Whenever there is a change in use of a premises which no longer requires the use of existing underground tanks, they shall be removed as per Section 3.37(6)(e). This shall apply to all premises where the use has already changed and all future changes in use.
- (e) Removal of Tanks. Tanks shall be removed according to the following successive steps:
1. Remove all flammable liquid from connecting lines and tank.
 2. Disconnect and remove insofar as possible the suction, inlet, gauge, and vent lines.
 3. Cap or plug open ends of remaining lines.
 4. Close all openings in the tank with pipe plugs before the tank is removed from the ground.
 5. Remove the tank from the premises within 72 hours from the time the tank is uncovered.
 6. Keep the tank tightly sealed with plugs or caps until it is removed from the premises and during transportation upon its removal.

3.38 AIR CONDITIONING AND REFRIGERATION SYSTEMS.

(1) Permit Requirements.

- (a) Permit Required. Except as hereinafter provided, before proceeding with the construction, erection, or installation of any air-cooled, water-cooled, or mechanically-cooled air conditioning or refrigeration system or unit in or to serve any building, a permit shall first be obtained from the Building Inspector.
- (b) Permits shall not be required for the installation of any air conditioning or refrigeration system or unit that does not use water for cooling and where the source of operating power is obtained by plugging in an electrical cord connection to an electrical outlet. This paragraph shall be applicable to portable units.
- (c) Application for a permit shall be made by the installing contractor upon a form provided by the Building Inspector, shall be filled out completely, and shall provide the following information:
1. Name and address of contractor.
 2. Location of premises where installation is proposed.
 3. Name and address of owner.
 4. Location of unit on premises, including distance to lot lines for exterior apparatus.
 5. Manufacturer’s identification, classification, and size of unit.
 6. Nature of coolant.

7. If water-cooled, source of water and method of discharging waste water. (Refer to Plumbing Inspection Department.)
 8. Where water conservation devices are required, manufacturer's name, identification, classification, and size of equipment.
 9. Such additional information as shall be required by the Building Inspector.
- (2) **Exterior Structures.** Where any unit of an air conditioning or refrigeration system is located outside of the structure, said unit shall comply with setback requirements as set forth in the Zoning Ordinance and said location shall be subject to approval of the Building Inspector. Said location shall not by noise or sight be detrimental to adjoining property.

3.39 CHIMNEYS.

(1) **General Requirements.**

- (a) Height. Chimneys shall extend at least three (3) feet above a flat roof and at least two (2) feet above any portion of the building within 10 feet.
- (b) Corbeling. No chimney shall be corbeled from a wall more than six (6) inches; nor shall chimney be corbeled from a wall which is less than 12 inches in thickness unless it projects equally on each side of the wall; provided that in the second story of two story buildings corbelling of chimneys on the exterior of the enclosing walls may be equal the wall thickness. Corbeling shall not exceed one (1) inch projection for each course of brick projected.
- (c) Change in Size or Shape at Roof not Permitted. No change in the size or shape of chimney, where the chimney passes through the roof, shall be made within a distance of six (6) inches above or below the roof joists or rafters.
- (d) Chimney Foundation. All masonry chimneys shall rest on a foundation located on permanently undistributed soil at least four (4) feet below established grades, or shall be supported on fireproof construction. No masonry chimney shall rest on or be hung or otherwise supported from combustible floor or wall construction.

(2) **Construction.**

- (a) Masonry chimneys shall be constructed of masonry units or of reinforced concrete and shall have walls not less than four (4) inches nominal thick.
- (b) Masonry chimneys shall be self-supporting and shall support no weight but their own.
- (c) Water leakage around chimneys shall be prevented by flashing and counter flashing. Saddles shall be built on the high side of chimneys on sloping roofs.
- (d) The roof, floors, and walls shall be framed around chimneys so that no combustible material shall be within two (2) inches of the masonry. Such space shall be filled with noncombustible material at all floor and ceiling levels.

(3) **Liners.**

- (a) Masonry chimneys for domestic heating plants shall be lined with approved fire clay flue liners not less than five-eighth (5/8) of an inch thick or with other approved liner materials that will resist without softening or cracking a temperature of 1,800°F.

- (b) Fire clay flue liners shall be installed ahead of the construction of the chimney as it is carried up, carefully bedded one on the other in approved mortar with close fitting joints left smooth on the inside.
 - (c) In masonry chimneys with walls less than eight (8) inches thick, liners shall be separate from the chimney wall and the space between the liner and the masonry shall not be filled; only enough mortar shall be used to make a good joint and hold the liners in position.
 - (d) Flue liners shall start from the base of the chimney, or, in the case of fireplaces, from the throat of the fireplace. They shall extend, as nearly vertically as possible, for the entire height of the chimney.
 - (e) Where two (2) or more flues adjoin each other in the same chimney a four (4) inch masonry wythe shall be provided between the adjacent flues. The cross sectional area of flues shall be not less than 63 square inches. In no case shall any fuel burning equipment hereafter installed be connected to any flue unless the cross-sectional area of the draft intensity produced by the flue is adequate for such fuel burning equipment which may be connected to such flue.
- (4) **Masonry Chimneys for Incinerators.** Masonry chimneys for domestic type incinerators shall be constructed in accordance with the requirements for masonry chimneys. All flues shall terminate in a substantially constructed spark arrester with openings not greater than one-half (1/2) inch, or be provided with other suitable means for avoiding discharge of fly particles.
- (5) **Cleanouts.** Cleanouts or other approved devices shall be provided at the base of all chimneys or ash pits to enable the flues to be maintained clean and so constructed that they remain tightly closed with not in use.

3.40 FIREPLACES.

- (1) **General Requirements.**
- (a) Fireplaces shall be constructed of masonry or of reinforce concrete with back and sides of the thickness specified herein. Firebrick at least two (2) inches thick or other approved lining shall be provided. The total thickness of back and sides including the lining shall be not less than eight (8) inches. See fireplace detail (b) for typical construction.
 - (b) Factory-built fireplaces that are approved as a result of tests and listing by a nationally recognized testing laboratory may be approved for installation. A factory built solid fuel burning fireplaces shall be vented into an approved class A chimney.
 - (c) Fireplace hearth extensions shall be provided of approve noncombustible material for all fireplaces. Where the fireplace opening is less than six (6) square feet, the hearth extension shall extend at least 16 inches in front of and at least eight (8) inches beyond each side of the fireplace. Fireplace openings over six (6) square feet shall be provided with a hearth extension of 20 inches in front of, and 12 inches beyond each side of the fireplace opening. All combustible materials shall be kept a minimum of eight (8) inches from the fireplace opening.
 - (d) Fireplaces constructed of masonry or reinforce concrete shall have hearth extension of brick, concrete, stone, tile, or other approved noncombustible material properly supported and with no combustible material against the underside thereof. Wooden forms or centers used during the construction of hearth and hearth extensions shall be removed when the construction is complete.

- (e) Spaces between fireplaces and combustible material shall be firestopped by placing noncombustible material to a depth of one (1) inch at the bottom of such spaces.
- (f) Clearances from Combustible Construction. All wooden beams, headers, and joists shall be trimmed away from fireplaces for distance of not less than two (2) inches at all sides thereof. Headers supporting trimmer arches shall be not less than 16 inches from the face of the chimney breast and trimmers shall be not less than six (6) inches from the inside faces of nearest flue.

3.41 GAS VENTS.

(1) General Requirements.

- (a) Type of Vents Which May be Used. Gas appliance vents that do not conform to the requirements of this article for chimneys shall be of one of the following types installed as required by this section.
 - 1. Type B Gas Vents. Vent piping of noncombustible corrosion resistant material approved as a result of tests and listing by a nationally recognized testing laboratory for venting of gas appliances.
 - 2. Type BW Gas Vents. Vent piping of noncombustible corrosion resistant material approved as a result of test and listing by a nationally recognized testing laboratory for venting recessed gas heaters.
 - 3. Type C Gas Vents. Vent piping of single wall galvanized iron shall not be less than No. 24 gauge or of other approved noncombustible corrosion resistant material.
- (b) Height. Vent shall extend at least two (2) feet above the point of departure from the roof and two (2) feet above any portion of the building closer than 10 feet. Gas vents need not comply with this provision when equipped with an approved device that assures proper and effective venting as installed. Through the wall, vents shall terminate not less than 18 inches from any openable door or window, and 18 inches above exterior grade.
- (c) Use Limits.
 - 1. Type B gas vents shall be used only with approved gas appliances which produce flue gas temperatures not in excess of 550°F. They shall not be used for venting the following:
 - a. Incinerators;
 - b. Appliances which may be converted readily to the use of solid or liquid fuel;
 - c. Boilers and furnaces, other than attic furnaces, except where specific approval is obtained from the Building Inspector for the use of Type B gas vents.
 - 2. Type BW gas vents shall be used only with approved recessed gas heaters.
 - 3. Type C gas vents shall be used only for runs directly from the spaces in which the appliance is located through the roof to the outer air.

3.42 DOMESTIC TYPE INCINERATORS.

(1) Application.

- (a) This section applies to direct-fed incinerators having a fire-box or charging compartment of not over five (5) cubic feet in capacity when used in dwellings.

- (2) **Gas Burner Connections.** Where a gas burner is used, a shut-off cock shall be provided at an accessible location in the gas line to the burner. Incinerators furnished with means for automatic ignition of the gas at the main burner shall be equipped with a device which will automatically shut off the main gas supply in the event the means of ignition becomes inoperative, or the means of keeping the valve of the device becomes inoperative, or both.
- (3) **Mounting.**
- (a) Domestic type incinerators, except as hereinafter provided shall be mounted on floors of fire-resistive construction with noncombustible flooring or surface finish and with no combustible material against the underside thereof. Such construction shall extend not less than 12 inches beyond the incinerator base on all sides, except that at the front or side where ashes are removed, it shall extend not less than 18 inches beyond the incinerator.
 - (b) Domestic type incinerators that are specifically approved for installation on a combustible floor may be mounted in accordance with the conditions of such approval.
- (4) **Clearances.**
- (a) Domestic type incinerators, except as provided herewith, shall be installed to provide clearances between the unit and woodwork or other combustible material, of not less than 36 inches at the sides and top, and not less than 48 inches at the front, and in no case the clearance above the charging door be less than 48 inches.
 - (b) Domestic type incinerators that are specifically approved for installation with clearance less than specified above may be installed in accordance with the conditions of such approval, provided that in any case, the clearances shall be sufficient to afford ready accessibility for firing, cleanout, and any necessary servicing, and with a minimum clearance of three (3) inches between the sides and combustible material.
 - (c) Domestic type incinerators may be installed in rooms, but not in confined spaces such as alcoves, with reduced clearances to woodwork or other combustible material, provided that the combustible material is protected with an approved protective material, but in no case shall this clearance be less than three (3) inches to the protection.
- (5) **Chimneys for Incinerators.**
- (a) Domestic type incinerators shall be connected to a chimney suitable for solid fuel burning appliances.
 - (b) Chimneys used for incinerators shall be provided with a heavy, galvanized screen on top for fire protection or be provided with other suitable means of avoiding discharge of fly particles. Such screen shall be kept in repair at all times.
- (6) **Flue Pipes for Incinerators.**
- (a) Domestic type incinerator flue pipes, except as herein provided shall be installed to provide clearance of not less than 18 inches to woodwork or other combustible material.
 - (b) Domestic type incinerator flue pipes may be installed in rooms, but not in confined spaces such as alcoves, with reduced clearances to woodwork or other combustible material provided the combustible material is protected with an approved protective material.

- (c) Domestic type incinerator flue pipes shall not pass through any combustible wall or partition unless protected at the point of passage in accordance with Section 3.36(6)(b) 7 and 8.
- (7) **Refuse Chutes.** Refuse chutes shall not feed directly into incinerators.

Chapter XI. Garages

3.43 GENERAL REQUIREMENTS (See Detail (a).)

(1) **Definitions.**

- (a) An attached private garage shall mean a private garage attached directly to the principal building, or attached by means of an enclosed or open breezeway, porch, terrace, or vestibule, or a private garage so constructed as to form an integral part of the principal building.
- (b) A detached private garage shall mean a private garage entirely separated from the principal building.
- (c) One-hour fire-resistive construction shall include the following assemblies and materials:
 - 1. Two (2) inch brick or stone veneer.
 - 2. Metal lath or perforated rock lath and three-fourths (3/4) inch of plaster.
 - 3. Five-eighths (5/8) inch of vermiculite plaster board.
 - 4. Five-eighths (5/8) inch fire code gypsum plaster board.

(2) **Locations – Detached Garages.** Detached garages shall be governed by the following unless otherwise provided for in appropriate zoning codes.

- (a) Garages of wood frame construction shall be located not less than 10 feet from any residence building, except that such distance may be reduced to not less than five (5) feet when the adjacent wall is protected with not less than one (1) hour fire resistive construction.
- (b) Garages of masonry wall construction shall not be located less than five (5) feet from any residence building.

(3) **Area.** All private garages shall be limited in area as regulated in this section.

- (a) Ordinary construction (masonry walls), 1,200 square feet.
- (b) Unprotected noncombustible frame construction, 720 square feet.
- (c) Wood frame construction, 720 square feet.

(4) **Foundations and Footings.** Attached private garages shall be provided with the same type footings and foundations as required herein for the principal building. Detached private garages may be built with a continuous floating slab of reinforced concrete not less than four (4) inches in thickness. Reinforcement shall be a minimum of six by six (6 x 6) inches No. 10 x 10 wire mesh. The slab shall be provided with a thickened edge all around, eight (8) inches wide and eight (8) inches below top of slab. Exterior wall curbs shall be provided not less than four (4) inches above the finished ground grade adjacent to the garage. Bolts three-eighths (3/8) inches in diameter with nuts and washers attached, six (6) inches long, shall be embedded three (3) inches in the concrete curb of detached garages eight (8) feet on centers.

(5) **Floor Surfaces.** The floor in all private garages shall be of concrete construction. No openings or pits in the floor shall be permitted, except for drainage.

- (6) **Construction.** Private garages shall be constructed as follows (See detail (c) for detached garages):
- (a) Load bearing foundation walls and piers, masonry walls, and partitions shall be constructed as regulated herein except as stated above.
 - (b) Detached private garages of wood frame construction shall be constructed with the following minimum requirements:
 1. Studs may have a maximum spacing of 24 inches on centers.
 2. Diagonal corner bracing may be applied on the inside surface of studs.
 3. Corner posts may consist of two (2) two by four (2 x 4) inch studs or a single four by four (4 x 4) inch stud.
 4. Horizontal bracing and collar beams may be two by six (2 x 6) inch with a maximum spacing of four (4) foot on centers.
 - (c) Attached private garage shall be of the same type of construction as that of the principal building and as further regulated in this Code.
- (7) **Attached Private Garages.** Private garages may be attached to or made a part of residence buildings when in compliance with the following regulations:
- (a) All walls in common with a principal building and attached private garage shall be of not less than one (1) hour fire-resistive construction on garage interior.
 - (b) Where a private garage is part of a building having habitable rooms over such garage, there shall be provided a horizontal and vertical separation between the two (2) occupancies of not less than two (2) hour fire resistive construction, except that in lieu thereof, the spaces between the joists and studs of the floor and wall shall be filled with approved noncombustible material four (4) inches in thickness and protected with one (1) hour fire resistive construction.
 - (c) An attached private garage may have a door connecting directly into the principal building, provided that floor of such garage is at least eight (8) inches below the floor of such principal building. Such door shall be a self-closing metal clad door or solid wood door not less than one and three quarter (1³/₄) inches in thickness. A maximum 100 square inches of one-quarter (1/4) inch stationary wire glass window may be permitted in such door.
 - (d) All open flame equipment shall be effectively separated by not less than one (1) hour fire resistive wall, floor, or ceiling; however, suspended furnaces or direct fired units that are fired with a liquid fuel or gas may be used without an enclosure, provided that they are located at least seven (7) feet above the floor and at least six (6) inches from any combustible wall or ceiling. All units shall be supported by noncombustible brackets or hangers.

Chapter XII. Miscellaneous and Violations

- 3.44 NEW MATERIALS AND METHODS.** All new materials, methods of construction, devices, and equipment shall be approved by the Building Inspector for use in buildings by the procedure herein provided when they are provided to be the equal of those specifically required by this Code; or he may adopt the recommendations and approvals of the Department of Industry, Labor, and Human Relations, State of Wisconsin, or such other committee as may be established by this or other local ordinances.
- 3.45 TESTS.** Unless based on accepted engineering design, all new building materials, appliances, equipment, systems, or methods of construction not provided for in this Code shall be subjected to tests that simulate the actual conditions which occur in normal use.

Such tests shall be made at the expense of the applicant at an independent testing laboratory and copies of the test results shall be kept on file in the office of the Building Inspector.

The Building Inspector may accept duly authenticated reports from recognized authoritative sources in respect to the use of any new materials, methods, or systems of construction complying with applicable specifications and standards of accepted engineering practices or any such new materials, methods, or systems of construction approved by the Department of Industry, Labor, and Human Relations, State of Wisconsin.

- 3.46 PREFABRICATED DWELLINGS OR ACCESSORY BUILDINGS.** Prefabricated assemblies not capable of design by accepted engineering analysis shall be subjected to tests. When prefabricated assemblies are not readily accessible for inspection at the site, a registered engineer or architect of the State in which the assembly is manufactured shall furnish a certified report of inspection. All tests and inspection records shall be accessible to the Building Inspector at all times during fabrication and erection of the building or assembly unit or such records as he may designate shall be filed with him.
- 3.47 IDENTIFICATION OF PRODUCTS.** All materials shall be identified by the approved label, the grade mark, the trademark, or by other approved manufacturer's identification.
- 3.48 INVALIDITY OF PART.** In any section, subsection, paragraph, clause, or provision of this Code shall be adjudged invalid, such adjudication shall apply only to the provisions so adjudged, and the rest of this Code shall remain valid and effective.
- 3.49 VIOLATIONS.** It shall be unlawful for any person to erect, use, occupy, or maintain any building or structure in violation of any provisions of this Code, or to cause, permit, or suffer any such violation to be committed. Any person violating any of the provisions of this Chapter shall, upon conviction, be subject to a forfeiture of not less than \$1.00 or more than \$200.00, together with the costs of prosecution and, in default of payment thereof, shall be imprisoned for a period of not less than one (1) day or more than six (6) months or until such forfeiture and costs are paid. It shall be the responsibility of the offender to abate the violation as expeditiously as possible, and each day that such violation is permitted to continue shall constitute a separate offense.
- If, in any action, a permit was issued, it shall not constitute a defense, nor shall any error, oversight, or dereliction of duty on the part of the Building Inspector constitute a defense.
- 3.50 FAILURE TO OBTAIN PERMIT.** It shall be unlawful to commence work prior to obtaining a permit therefore. Double fees shall be charged if work is commenced prior to the issuance of a permit.

TABLE NO. 2
Room Areas
(Reference 3.15(5))

Category	Requirement	Minimum Dimension
Living Room	160 square feet	11 feet
Living Room with Dining Space	180 square feet	
Dining Room	80 square feet	
Kitchen-Usable Floor Area	60 square feet	6 feet
Bedroom	100 square feet	
Other Habitable Room	70 square feet	
Bathroom	See Section 3.15(9)(d)	

TABLE J
FLOOR JOISTS
Lbs. So. F Live Load
and attic floors

DESIGN CRITERIA:
Direction: For 40 lbs. per sq. ft. live load.
Span: Joists to span in inches divided by 360.
Strength: Live Load of 40 lbs. per sq. ft. plus
dead load of 10 lbs. per sq. ft. determines the
required fiber stress value.

JOIST SIZE SPACING (IN)	Modulus of Elasticity, "E", in 1,000,000 psi																			
	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	
2x6	6.9	7.3	7.9	8.2	8.6	8.10	9.2	9.6	9.9	10.0	10.3	10.6	10.9	10.11	11.2	11.4	11.7	11.11	12.3	
	4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	
	6.6	7.0	7.5	7.9	8.2	8.6	8.9	9.1	9.4	9.7	10.0	10.3	10.6	10.9	11.2	11.4	11.7	11.11	12.3	
	4.70	5.50	6.20	6.90	7.50	8.10	8.70	9.30	9.80	10.40	10.90	11.40	11.90	12.40	12.80	13.40	13.80	14.70	15.60	
	6.2	6.7	7.0	7.5	7.9	8.0	8.4	8.7	8.10	9.1	9.4	9.6	9.9	10.1	10.2	10.4	10.6	10.10	11.2	
5.9	6.3	6.7	7.0	7.3	7.7	7.10	8.1	8.4	8.7	8.9	9.0	9.2	9.4	9.6	9.8	10.0	10.2	10.6	11.2	
5.30	6.10	6.90	7.70	8.40	9.10	9.70	10.40	11.00	11.60	12.20	12.80	13.30	13.90	14.40	15.00	15.50	16.50	17.50	18.80	
5.4	5.9	6.2	6.6	6.9	7.0	7.3	7.6	7.9	7.11	8.2	8.4	8.6	8.8	8.10	9.0	9.2	9.6	9.9	11.80	
5.70	6.60	7.50	8.30	9.00	9.80	10.50	11.20	11.90	12.50	13.10	13.80	14.40	15.00	15.50	16.10	16.70	17.80	18.80	20.60	
6.2	6.5	6.7	6.10	7.0	7.3	7.5	7.7	7.9	7.11	8.0	8.2	8.4	8.7	8.10	8.8	9.0	9.2	9.6	11.80	
10.90	12.30	13.00	13.90	14.50	15.20	15.90	16.60	16.90	17.60	18.40	19.50	20.60	21.70	22.80	23.90	25.00	26.10	27.20	28.30	
8.11	9.7	10.2	10.9	11.3	11.8	12.1	12.6	13.0	13.2	13.6	13.10	14.2	14.5	14.8	15.0	15.3	15.9	16.2	16.2	
4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	16.2	
8.6	9.2	9.9	10.3	10.9	11.2	11.7	11.11	12.3	12.7	13.1	13.3	13.6	13.10	14.1	14.4	14.7	15.0	15.6	16.2	
4.70	5.50	6.20	6.90	7.50	8.10	8.70	9.30	9.80	10.40	10.90	11.40	11.90	12.40	12.80	13.40	13.80	14.70	15.60	16.2	
8.1	8.9	9.3	9.9	10.2	10.7	11.0	11.4	11.8	12.0	12.3	12.7	12.10	13.1	13.4	13.7	13.10	14.2	14.8	16.40	
5.00	5.80	6.50	7.20	7.90	8.50	9.20	9.80	10.40	10.90	11.50	12.00	12.50	13.10	13.60	14.10	14.60	15.50	16.40	18.00	
7.7	8.2	8.9	9.2	9.7	10.0	10.4	10.8	11.0	11.3	11.7	12.0	12.4	12.7	12.10	13.0	13.3	13.5	13.10	13.10	
5.30	6.10	6.90	7.70	8.40	9.10	9.70	10.40	11.00	11.60	12.20	12.80	13.30	13.90	14.40	15.00	15.50	16.50	17.50	18.80	
7.1	7.7	8.1	8.6	8.11	9.3	9.7	9.11	10.2	10.6	10.9	11.0	11.3	11.5	11.8	11.11	12.1	12.6	12.10	12.10	
5.70	6.60	7.50	8.30	9.00	9.80	10.50	11.20	11.90	12.50	13.10	13.80	14.40	15.00	15.50	16.10	16.70	17.80	18.80	20.60	
8.1	8.5	8.9	9.0	9.3	9.6	9.9	10.0	10.2	10.5	10.7	10.10	10.2	10.5	10.7	10.10	11.0	11.4	11.8	11.8	
1.080	1.170	1.230	1.300	1.370	1.460	1.520	1.570	1.650	1.700	1.790	1.840	1.950	2.070	2.180	2.290	2.400	2.510	2.620	2.730	
11.4	12.3	13.0	13.8	14.4	14.11	15.5	15.11	16.5	16.10	17.3	17.8	18.0	18.5	18.9	19.1	19.5	20.1	20.8	20.8	
4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	16.2	
10.10	11.8	12.5	13.1	13.8	14.3	14.9	15.3	15.8	16.1	16.5	16.11	17.3	17.7	17.11	18.3	18.7	19.2	19.9	19.9	
4.70	5.50	6.20	6.90	7.50	8.10	8.70	9.30	9.80	10.40	10.90	11.40	11.90	12.40	12.80	13.40	13.80	14.70	15.60	16.2	
10.4	11.1	11.10	12.5	13.0	13.6	14.0	14.6	14.11	15.3	15.8	16.0	16.5	16.9	17.0	17.4	17.8	18.3	18.9	18.9	
5.00	5.80	6.50	7.20	7.90	8.50	9.20	9.80	10.40	10.90	11.50	12.00	12.50	13.10	13.60	14.10	14.60	15.50	16.40	18.00	
9.9	10.6	11.1	11.8	12.3	12.8	13.2	13.7	14.0	14.5	14.9	15.1	15.5	15.9	16.0	16.4	16.7	17.2	17.8	17.8	
5.30	6.10	6.90	7.70	8.40	9.10	9.70	10.40	11.00	11.60	12.20	12.80	13.30	13.90	14.40	15.00	15.50	16.50	17.50	18.80	
8.0	8.9	10.4	10.10	11.4	11.10	12.3	12.8	13.0	13.4	13.8	14.0	14.4	14.7	14.11	15.2	15.5	15.11	16.5	16.5	
5.70	6.60	7.50	8.30	9.00	9.80	10.50	11.20	11.90	12.50	13.10	13.80	14.40	15.00	15.50	16.10	16.70	17.80	18.80	20.60	
8.1	8.5	8.9	9.0	9.3	9.6	9.9	10.0	10.2	10.5	10.7	10.10	10.2	10.5	10.7	10.10	11.0	11.4	11.8	11.8	
1.080	1.170	1.230	1.300	1.370	1.460	1.520	1.570	1.650	1.700	1.790	1.840	1.950	2.070	2.180	2.290	2.400	2.510	2.620	2.730	
11.4	12.3	13.0	13.8	14.4	14.11	15.5	15.11	16.5	16.10	17.3	17.8	18.0	18.5	18.9	19.1	19.5	20.1	20.8	20.8	
4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	16.2	
10.10	11.8	12.5	13.1	13.8	14.3	14.9	15.3	15.8	16.1	16.5	16.11	17.3	17.7	17.11	18.3	18.7	19.2	19.9	19.9	
4.70	5.50	6.20	6.90	7.50	8.10	8.70	9.30	9.80	10.40	10.90	11.40	11.90	12.40	12.80	13.40	13.80	14.70	15.60	16.2	
10.4	11.1	11.10	12.5	13.0	13.6	14.0	14.6	14.11	15.3	15.8	16.0	16.5	16.9	17.0	17.4	17.8	18.3	18.9	18.9	
5.00	5.80	6.50	7.20	7.90	8.50	9.20	9.80	10.40	10.90	11.50	12.00	12.50	13.10	13.60	14.10	14.60	15.50	16.40	18.00	
9.9	10.6	11.1	11.8	12.3	12.8	13.2	13.7	14.0	14.5	14.9	15.1	15.5	15.9	16.0	16.4	16.7	17.2	17.8	17.8	
5.30	6.10	6.90	7.70	8.40	9.10	9.70	10.40	11.00	11.60	12.20	12.80	13.30	13.90	14.40	15.00	15.50	16.50	17.50	18.80	
8.0	8.9	10.4	10.10	11.4	11.10	12.3	12.8	13.0	13.4	13.8	14.0	14.4	14.7	14.11	15.2	15.5	15.11	16.5	16.5	
5.70	6.60	7.50	8.30	9.00	9.80	10.50	11.20	11.90	12.50	13.10	13.80	14.40	15.00	15.50	16.10	16.70	17.80	18.80	20.60	
8.1	8.5	8.9	9.0	9.3	9.6	9.9	10.0	10.2	10.5	10.7	10.10	10.2	10.5	10.7	10.10	11.0	11.4	11.8	11.8	
1.080	1.170	1.230	1.300	1.370	1.460	1.520	1.570	1.650	1.700	1.790	1.840	1.950	2.070	2.180	2.290	2.400	2.510	2.620	2.730	
11.4	12.3	13.0	13.8	14.4	14.11	15.5	15.11	16.5	16.10	17.3	17.8	18.0	18.5	18.9	19.1	19.5	20.1	20.8	20.8	
4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	16.2	
10.10	11.8	12.5	13.1	13.8	14.3	14.9	15.3	15.8	16.1	16.5	16.11	17.3	17.7	17.11	18.3	18.7	19.2	19.9	19.9	
4.70	5.50	6.20	6.90	7.50	8.10	8.70	9.30	9.80	10.40	10.90	11.40	11.90	12.40	12.80	13.40	13.80	14.70	15.60	16.2	
10.4	11.1	11.10	12.5	13.0	13.6	14.0	14.6	14.11	15.3	15.8	16.0	16.5	16.9	17.0	17.4	17.8	18.3	18.9	18.9	
5.00	5.80	6.50	7.20	7.90	8.50	9.20	9.80	10.40	10.90	11.50	12.00	12.50	13.10	13.60	14.10	14.60	15.50	16.40	18.00	
9.9	10.6	11.1	11.8	12.3	12.8	13.2	13.7	14.0	14.5	14.9	15.1	15.5	15.9	16.0	16.4	16.7	17.2	17.8	17.8	
5.30	6.10	6.90	7.70	8.40	9.10	9.70	10.40	11.00	11.60	12.20	12.80	13.30	13.90	14.40	15.00	15.50	16.50	17.50	18.80	
8.0	8.9	10.4	10.10	11.4	11.10	12.3	12.8	13.0	13.4	13.8	14.0	14.4	14.7	14.11	15.2	15.5	15.11	16.5	16.5	
5.70	6.60	7.50	8.30	9.00	9.80	10.50	11.20	11.90	12.50	13.10	13.80	14.40	15.00	15.50	16.10	16.70	17.80	18.80	20.60	
8.1	8.5	8.9	9.0	9.3	9.6	9.9	10.0	10.2	10.5	10.7	10.10	10.2	10.5	10.7	10.10	11.0	11.4	11.8	11.8	
1.080	1.170	1.230	1.300	1.370	1.460	1.520	1.570	1.650	1.700	1.790	1.840	1.950	2.070	2.180	2.290	2.400	2.510	2.620	2.730	
11.4	12.3	13.0	13.8	14.4	14.11	15.5	15.11	16.5	16.10	17.3	17.8	18.0	18.5	18.9	19.1	19.5	20.1	20.8	20.8	
4.50	5.20	5.90	6.60	7.20	7.80	8.30	8.80	9.40	9.90	10.40	10.90	11.40	11.90	12.30	12.80	13.20	14.10	14.90	16.2	
10.10	11.8	12.5	13.1	13.8	14.3	14.9	15.3	15.8	16.1	16.5	16.11	17.3	17.7	17.11	18.3	18.7	19.2	19.9	19.9	

AB J-4
IN JOISTS
20 Lbs. Per Sq. Ft. Live
range where development of full
(Drywall Ceiling)

DESIGN AREA:
Deflection for 20 lbs. per sq. ft. live load.
Limited span in inches divided by 240.
Strength live load 20 lbs. per sq. ft. plus dead
load of 10 lbs. determines required

JOIST SIZE SPACING (IN)	Modulus of Elasticity, "E", in 1,000,000 psi																			
	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	
12.0	6-2	6-8	7-1	7-6	7-10	8-1	8-5	8-8	8-11	9-2	9-5	9-8	9-10	10-0	10-3	10-5	10-7	10-11	11-3	
	5-11	6-5	6-9	7-2	7-6	7-9	8-1	8-4	8-7	8-9	9-0	9-3	9-5	9-7	9-9	10-0	10-2	10-6	10-9	
	5-8	6-1	6-5	6-9	7-1	7-5	7-8	7-11	8-1	8-4	8-7	8-9	8-11	9-1	9-4	9-6	9-8	9-11	10-3	
	5-4	5-9	6-1	6-5	6-8	6-11	7-2	7-5	7-8	7-10	8-1	8-3	8-5	8-7	8-9	8-11	9-1	9-4	9-8	
	4-11	5-4	5-8	5-11	6-2	6-5	6-8	6-11	7-1	7-3	7-6	7-8	7-10	7-10	8-0	8-1	8-3	8-5	8-8	
13.7	9-9	10-6	11-2	11-9	12-3	12-9	13-3	13-8	14-1	14-5	14-9	15-2	15-6	15-9	16-1	16-4	16-8	17-2	17-8	
	8-10	9-6	10-2	10-8	11-2	11-7	12-0	12-5	12-9	13-1	13-5	13-9	14-1	14-4	14-7	14-11	15-2	15-7	16-1	
	8-4	9-0	9-6	10-0	10-6	10-11	11-4	11-8	12-0	12-0	12-4	12-8	13-1	13-6	13-9	14-0	14-3	14-8	15-2	
	7-9	8-4	8-10	9-4	9-9	10-2	10-6	10-10	11-2	11-5	11-9	12-0	12-3	12-6	12-9	13-0	13-3	13-8	14-1	
	7-0	7-10	8-30	9-30	10-30	11-30	12-30	13-10	14-00	14-80	15-60	16-40	17-20	17-90	18-70	19-40	20-10	20-80	22-20	
16.0	12-10	13-10	14-8	15-6	16-2	16-10	17-5	18-0	18-6	19-0	19-6	19-11	20-5	20-10	21-2	21-7	21-11	22-8	23-4	
	12-3	13-3	14-1	14-10	15-6	16-1	16-8	17-2	17-9	18-2	18-8	19-1	19-6	19-11	20-3	20-8	21-0	21-8	22-4	
	11-8	12-7	13-4	14-1	14-8	15-3	15-10	16-4	16-10	17-3	17-9	18-2	18-6	18-11	19-3	19-7	19-11	20-7	21-2	
	11-0	11-10	12-7	13-3	13-10	14-5	14-11	15-5	15-10	16-3	16-8	17-1	17-5	17-9	18-2	18-5	18-9	19-5	19-11	
	10-2	11-0	11-8	12-3	12-10	13-4	13-10	14-3	14-8	15-1	15-6	16-0	16-2	16-6	16-10	17-2	17-5	18-0	18-6	
19.2	16-5	17-8	18-9	19-9	20-8	21-6	22-3	22-11	23-8	24-3	24-10	25-5	26-0	26-6	27-1	27-6	28-0	28-11	29-9	
	15-8	16-11	17-11	18-11	19-9	20-6	21-3	21-11	22-7	23-3	23-9	24-4	24-10	25-5	26-10	26-4	26-10	27-8	28-6	
	14-11	16-0	17-0	17-11	18-9	19-6	20-2	20-10	21-6	22-1	22-7	23-2	23-8	24-1	24-7	25-0	25-5	26-3	27-1	
	14-0	15-1	16-0	16-11	17-8	18-4	19-0	19-7	20-2	20-9	21-3	21-9	22-3	22-8	23-7	23-11	24-9	25-5	26-3	
	13-0	14-0	14-11	15-8	16-5	17-0	17-8	18-3	18-9	19-3	19-9	20-2	20-8	21-1	21-6	21-10	22-3	22-11	23-8	

The req. fiber each

TABLE R-8
LOW SLOPE RAFTERS
 Slope 3 in 12 or less - 30 Lbs. Per Sq. Ft. Live Load
 (No Finished Ceiling)

DESIGN CRITERIA:
 Strength - 10 lbs. per sq. ft. dead load plus 30 lbs. per sq. ft. live load determines required fiber stress.
 Deflection - For 30 lbs. per sq. ft. live load. Limited to span in inches divided by 240.

RAFTER SIZE SPACING (IN) (IN)		Allowable Extreme Fiber Stress In Bending, "F _b " (psi).										
		300	400	500	600	700	800	900	1000	1100	1200	1300
2x6	12.0	6-2 0.15	7-1 0.23	7-11 0.32	8-8 0.43	9-5 0.54	10-0 0.66	10-8 0.78	11-3 0.92	11-9 1.06	12-4 1.21	12-10 1.36
	13.7	5-9 0.14	6-8 0.22	7-5 0.30	8-2 0.40	8-9 0.50	9-5 0.61	10-0 0.73	10-6 0.86	11-0 0.99	11-6 1.13	12-0 1.27
	16.0	5-4 0.13	6-2 0.20	6-11 0.28	7-6 0.37	8-2 0.47	8-8 0.57	9-3 0.68	9-9 0.80	10-2 0.92	10-8 1.05	11-1 1.18
	19.2	4-10 0.12	5-7 0.18	6-3 0.26	6-11 0.34	7-5 0.43	7-11 0.52	8-5 0.62	8-11 0.73	9-4 0.84	9-9 0.95	10-1 1.08
	24.0	4-4 0.11	5-0 0.16	5-7 0.23	6-2 0.30	6-8 0.38	7-1 0.46	7-6 0.55	7-11 0.65	8-4 0.75	8-8 0.85	9-1 0.96
2x8	12.0	8-1 0.15	9-4 0.23	10-6 0.32	11-6 0.43	12-5 0.54	13-3 0.66	14-0 0.78	14-10 0.92	15-6 1.06	16-3 1.21	16-10 1.36
	13.7	7-7 0.14	8-9 0.22	9-9 0.30	10-9 0.40	11-7 0.50	12-5 0.61	13-2 0.73	13-10 0.86	14-6 0.99	15-2 1.13	15-9 1.27
	16.0	7-0 0.13	8-1 0.20	9-1 0.28	9-11 0.37	10-9 0.47	11-6 0.57	12-2 0.68	12-10 0.80	13-5 0.92	14-0 1.05	14-7 1.18
	19.2	6-5 0.12	7-5 0.18	8-3 0.26	9-1 0.34	9-9 0.43	10-6 0.52	11-1 0.62	11-8 0.73	12-3 0.84	12-10 0.95	13-4 1.08
	24.0	5-9 0.11	6-7 0.16	7-5 0.23	8-1 0.30	8-9 0.38	9-4 0.46	9-11 0.55	10-6 0.65	11-0 0.75	11-6 0.85	11-11 0.96
2x10	12.0	10-4 0.15	11-11 0.23	13-4 0.32	14-8 0.43	15-10 0.54	16-11 0.66	17-11 0.78	18-11 0.92	19-10 1.06	20-8 1.21	21-6 1.36
	13.7	9-8 0.14	11-2 0.22	12-6 0.30	13-8 0.40	14-9 0.50	15-10 0.61	16-9 0.73	17-8 0.86	18-6 0.99	19-4 1.13	20-2 1.27
	16.0	8-11 0.13	10-4 0.20	11-7 0.28	12-8 0.37	13-8 0.47	14-8 0.57	15-6 0.68	16-4 0.80	17-2 0.92	17-11 1.05	18-8 1.18
	19.2	8-2 0.12	9-5 0.18	10-7 0.26	11-7 0.34	12-6 0.43	13-4 0.52	14-2 0.62	14-11 0.73	15-8 0.84	16-4 0.95	17-0 1.08
	24.0	7-4 0.11	8-5 0.16	9-5 0.23	10-4 0.30	11-2 0.38	11-11 0.46	12-8 0.55	13-4 0.65	14-0 0.75	14-8 0.85	15-3 0.96
2x12	12.0	12-7 0.15	14-6 0.23	16-3 0.32	17-9 0.43	19-3 0.54	20-6 0.66	21-9 0.78	23-0 0.92	24-1 1.06	25-2 1.21	26-2 1.36
	13.7	11-9 0.14	13-7 0.22	15-2 0.30	16-8 0.40	18-0 0.50	19-3 0.61	20-5 0.73	21-6 0.86	22-6 0.99	23-6 1.13	24-6 1.27
	16.0	10-11 0.13	12-7 0.20	14-1 0.28	15-5 0.37	16-8 0.47	17-9 0.57	18-10 0.68	19-11 0.80	20-10 0.92	21-9 1.05	22-8 1.18
	19.2	9-11 0.12	11-6 0.18	12-10 0.26	14-1 0.34	15-2 0.43	16-3 0.52	17-3 0.62	18-2 0.73	19-0 0.84	19-11 0.95	20-8 1.08
	24.0	8-11 0.11	10-3 0.16	11-6 0.23	12-7 0.30	13-7 0.38	14-6 0.46	15-5 0.55	16-3 0.65	17-0 0.75	17-9 0.85	18-6 0.96

Note: The required modulus of elasticity, "E", in 1,000,000 pounds per square inch is shown below each span.

TABLE R-8 (cont.)

RAFTERS: Spans are measured along the horizontal projection and loads are considered as applied on the horizontal projection.

Allowable Extreme Fiber Stress in Bending, "F _b " (psi).										RAFTER SPACING SIZE (IN)	
1400	1500	1600	1700	1800	1900	2000	2100	2200	2400		
13-3 1.52	13-9 1.69	14-2 1.86	14-8 2.04	15-1 2.22	15-6 2.41	15-11 2.60					12.0
12-5 1.42	12-10 1.58	13-3 1.74	13-8 1.90	14-1 2.08	14-6 2.25	14-10 2.43					13.7
11-6 1.32	11-11 1.46	12-4 1.61	12-8 1.76	13-1 1.92	13-5 2.08	13-9 2.25	14-1 2.42	14-5 2.60			16.0
10-6 1.20	10-10 1.33	11-3 1.47	11-7 1.61	11-11 1.75	12-3 1.90	12-7 2.05	12-10 2.21	13-2 2.37			19.2
9-5 1.08	9-9 1.19	10-0 1.31	10-4 1.44	10-8 1.57	10-11 1.70	11-3 1.84	11-6 1.98	11-9 2.12	12-4 2.41		24.0
17-6 1.52	18-2 1.69	18-9 1.86	19-4 2.04	19-10 2.22	20-5 2.41	20-11 2.60					12.0
16-5 1.42	16-11 1.58	17-6 1.74	18-1 1.90	18-7 2.08	19-1 2.25	19-7 2.43					13.7
15-2 1.32	15-8 1.46	16-3 1.61	16-9 1.76	17-2 1.92	17-8 2.08	18-2 2.25	18-7 2.42	19-0 2.60			16.0
13-10 1.20	14-4 1.33	14-10 1.47	15-3 1.61	15-8 1.75	16-2 1.90	16-7 2.05	16-11 2.21	17-4 2.37			19.2
12-5 1.08	12-10 1.19	13-3 1.31	13-8 1.44	14-0 1.57	14-5 1.70	14-10 1.84	15-2 1.98	15-6 2.12	16-3 2.41		24.0
22-4 1.52	23-2 1.69	23-11 1.86	24-7 2.04	25-4 2.22	26-0 2.41	26-8 2.60					12.0
20-11 1.42	21-8 1.58	22-4 1.74	23-0 1.90	23-8 2.08	24-4 2.25	25-0 2.43					13.7
19-4 1.32	20-0 1.46	20-8 1.61	21-4 1.76	21-11 1.92	22-6 2.08	23-2 2.25	23-8 2.42	24-3 2.60			16.0
17-8 1.20	18-3 1.33	18-11 1.47	19-6 1.61	20-0 1.75	20-7 1.90	21-1 2.05	21-8 2.21	22-2 2.37			19.2
15-10 1.08	16-4 1.19	16-11 1.31	17-5 1.44	17-11 1.57	18-5 1.70	18-11 1.84	19-4 1.98	19-10 2.12	20-8 2.41		24.0
27-2 1.52	28-2 1.69	29-1 1.86	29-11 2.04	30-10 2.22	31-8 2.41	32-6 2.60					12.0
25-5 1.42	26-4 1.58	27-2 1.74	28-0 1.90	28-10 2.08	29-7 2.25	30-5 2.43					13.7
23-6 1.32	24-4 1.46	25-2 1.61	25-11 1.76	26-8 1.92	27-5 2.08	28-2 2.25	28-10 2.42	29-6 2.60			16.0
21-6 1.20	22-3 1.33	23-0 1.47	23-8 1.61	24-4 1.75	25-0 1.90	25-8 2.05	26-4 2.21	26-11 2.37			19.2
19-3 1.08	19-11 1.19	20-6 1.31	21-2 1.44	21-9 1.57	22-5 1.70	23-0 1.84	23-6 1.98	24-1 2.12	25-2 2.41		24.0

Note: The required modulus of elasticity, "E", in 1,000,000 pounds per square inch is shown below each span.

TABLE R-10
HIGH SLOPE RAFTERS
 Slope over 3 in 12 - 20 Lbs. Per Sq. Ft. Live Load
 (Heavy Roof Covering)

DESIGN CRITERIA:
 Strength - 15 lbs per sq. ft. dead load plus 20 lbs. per sq. ft. live load determines required fiber stress.
 Deflection - For 20 lbs. per sq. ft. live load. Limited to span in inches divided by 180.

RAFTER SIZE SPACING (IN)		Allowable Extreme Fiber Stress in Bending, "F _b " (psi).											
		200	300	400	500	600	700	800	900	1000	1100	1200	1300
2x4	12.0	3-5 0.05	4-2 0.09	4-10 0.14	5-5 0.20	5-11 0.26	6-5 0.33	6-10 0.40	7-3 0.48	7-8 0.56	8-0 0.65	8-4 0.74	8-8 0.83
	13.7	3-2 0.05	3-11 0.09	4-6 0.13	5-1 0.19	5-6 0.24	6-0 0.31	6-5 0.38	6-9 0.45	7-7 0.52	7-6 0.61	7-10 0.69	8-2 0.78
	16.0	2-11 0.04	3-7 0.08	4-2 0.12	4-8 0.17	5-1 0.23	5-6 0.28	5-11 0.35	6-3 0.41	6-7 0.49	6-11 0.56	7-3 0.64	7-6 0.72
	19.2	2-8 0.04	3-4 0.07	3-10 0.11	4-3 0.16	4-8 0.21	5-1 0.26	5-5 0.32	5-9 0.38	6-0 0.44	6-4 0.51	6-7 0.58	6-11 0.66
	24.0	2-5 0.04	2-11 0.07	3-5 0.10	3-10 0.14	4-2 0.18	4-6 0.23	4-10 0.28	5-1 0.34	5-5 0.40	5-8 0.46	5-11 0.52	6-2 0.59
2x6	12.0	5-4 0.05	6-7 0.09	7-7 0.14	8-6 0.20	9-4 0.26	10-0 0.33	10-9 0.40	11-5 0.48	12-0 0.56	12-7 0.65	13-2 0.74	13-8 0.83
	13.7	5-0 0.05	6-2 0.09	7-1 0.13	7-11 0.19	8-8 0.24	9-5 0.31	10-0 0.38	10-8 0.45	11-3 0.52	11-9 0.61	12-4 0.69	12-10 0.78
	16.0	4-8 0.04	5-8 0.08	6-7 0.12	7-4 0.17	8-1 0.23	8-8 0.28	9-4 0.35	9-10 0.41	10-5 0.49	10-11 0.56	11-5 0.64	11-10 0.72
	19.2	4-3 0.04	5-2 0.07	6-0 0.11	6-9 0.16	7-4 0.21	7-11 0.26	8-6 0.32	9-0 0.38	9-6 0.44	9-11 0.51	10-5 0.58	10-10 0.66
	24.0	3-10 0.04	4-8 0.07	5-4 0.10	6-0 0.14	6-7 0.18	7-1 0.23	7-7 0.28	8-1 0.34	8-6 0.40	8-11 0.46	9-4 0.52	9-8 0.59
2x8	12.0	7-1 0.05	8-8 0.09	10-0 0.14	11-2 0.20	12-3 0.26	13-3 0.33	14-2 0.40	15-0 0.48	15-10 0.56	16-7 0.65	17-4 0.74	18-0 0.83
	13.7	6-7 0.05	8-1 0.09	9-4 0.13	10-6 0.19	11-6 0.24	12-5 0.31	13-3 0.38	14-0 0.45	14-10 0.52	15-6 0.61	16-3 0.69	16-10 0.78
	16.0	6-2 0.04	7-6 0.08	8-8 0.12	9-8 0.17	10-7 0.23	11-6 0.28	12-3 0.35	13-0 0.41	13-8 0.49	14-4 0.56	15-0 0.64	15-7 0.72
	19.2	5-7 0.04	6-10 0.07	7-11 0.11	8-10 0.16	9-8 0.21	10-6 0.26	11-2 0.32	11-10 0.38	12-6 0.44	13-1 0.51	13-8 0.58	14-3 0.66
	24.0	5-0 0.04	6-2 0.07	7-1 0.10	7-11 0.14	8-8 0.18	9-4 0.23	10-0 0.28	10-7 0.34	11-2 0.40	11-9 0.46	12-3 0.52	12-9 0.59
2x10	12.0	9-0 0.05	11-1 0.09	12-9 0.14	14-3 0.20	15-8 0.26	16-11 0.33	18-1 0.40	19-2 0.48	20-2 0.56	21-2 0.65	22-1 0.74	23-0 0.83
	13.7	8-5 0.05	10-4 0.09	11-11 0.13	13-4 0.19	14-8 0.24	15-10 0.31	16-11 0.38	17-11 0.45	18-11 0.52	19-10 0.61	20-8 0.69	21-6 0.78
	16.0	7-10 0.04	9-7 0.08	11-1 0.12	12-4 0.17	13-6 0.23	14-8 0.28	15-8 0.35	16-7 0.41	17-6 0.49	18-4 0.56	19-2 0.64	19-11 0.72
	19.2	7-2 0.04	8-9 0.07	10-1 0.11	11-3 0.16	12-4 0.21	13-4 0.26	14-3 0.32	15-2 0.38	15-11 0.44	16-9 0.51	17-6 0.58	18-2 0.66
	24.0	6-5 0.04	7-10 0.07	9-0 0.10	10-1 0.14	11-1 0.18	11-11 0.23	12-9 0.28	13-6 0.34	14-3 0.40	15-0 0.46	15-8 0.52	16-3 0.59

Note: The required modulus of elasticity, 'E' in 1,000,000 pounds per square inch is shown below each span.

TABLE R-10 (cont.)

RAFTERS: Spans are measured along the horizontal projection and loads are considered as applied on the horizontal projection.

Allowable Extreme Fiber Stress in Bending, "F _b " (psi).												RAFTER SPACING SIZE (IN)	
1400	1500	1600	1700	1800	1900	2000	2100	2200	2400	2700	3000		
9-0 0.93	9-4 1.03	9-8 1.14	9-11 1.24	10-3 1.36	10-6 1.47	10-10 1.59	11-1 1.71	11-4 1.83	11-10 2.09	12-7 2.49		12.0	
8-5 0.87	8-9 0.96	9-0 1.06	9-4 1.16	9-7 1.27	9-10 1.37	10-1 1.48	10-4 1.60	10-7 1.71	11-1 1.95	11-9 2.33		13.7	
7-10 0.80	8-1 0.89	8-4 0.98	8-7 1.08	8-10 1.17	9-1 1.27	9-4 1.37	9-7 1.48	9-10 1.59	10-3 1.81	10-10 2.16	11-5 2.53	16.0	2x4
7-2 0.73	7-5 0.81	7-8 0.90	7-10 0.98	8-1 1.07	8-4 1.16	8-6 1.25	8-9 1.35	8-11 1.45	9-4 1.65	9-11 1.97	10-5 2.31	19.2	
6-5 0.66	6-7 0.73	6-10 0.80	7-0 0.88	7-3 0.96	7-5 1.04	7-8 1.12	7-10 1.21	8-0 1.29	8-4 1.48	8-10 1.76	9-4 2.06	24.0	
14-2 0.93	14-8 1.03	15-2 1.14	15-8 1.24	16-1 1.36	16-7 1.47	17-0 1.59	17-5 1.71	17-10 1.83	18-7 2.09	19-9 2.49		12.0	2x6
13-3 0.87	13-9 0.96	14-2 1.06	14-8 1.16	15-1 1.27	15-6 1.37	15-11 1.48	16-3 1.60	16-8 1.71	17-5 1.95	18-5 2.33		13.7	
12-4 0.80	12-9 0.89	13-2 0.98	13-7 1.08	13-11 1.17	14-4 1.27	14-8 1.37	15-1 1.48	15-5 1.59	16-1 1.81	17-1 2.16	18-0 2.53	16.0	
11-3 0.73	11-7 0.81	12-0 0.90	12-4 0.98	12-9 1.07	13-1 1.16	13-5 1.25	13-9 1.35	14-1 1.45	14-8 1.65	15-7 1.97	16-5 2.31	19.2	
10-0 0.66	10-5 0.73	10-9 0.80	11-1 0.88	11-5 0.96	11-8 1.04	12-0 1.12	12-4 1.21	12-7 1.29	13-2 1.48	13-11 1.76	14-8 2.06	24.0	
18-9 0.93	19-5 1.03	20-0 1.14	20-8 1.24	21-3 1.36	21-10 1.47	22-4 1.59	22-11 1.71	23-6 1.83	24-6 2.09	26-0 2.49		12.0	2x8
17-6 0.87	18-2 0.96	18-9 1.06	19-4 1.16	19-10 1.27	20-5 1.37	20-11 1.48	21-5 1.60	21-11 1.71	22-11 1.95	24-4 2.33		13.7	
16-3 0.80	16-9 0.89	17-4 0.98	17-10 1.08	18-5 1.17	18-11 1.27	19-5 1.37	19-10 1.48	20-4 1.59	21-3 1.81	22-6 2.16	23-9 2.53	16.0	
14-10 0.73	15-4 0.81	15-10 0.90	16-4 0.98	16-9 1.07	17-3 1.16	17-8 1.25	18-2 1.35	18-7 1.45	19-5 1.65	20-7 1.97	21-8 2.31	19.2	
13-3 0.66	13-8 0.73	14-2 0.80	14-7 0.88	15-0 0.96	15-5 1.04	15-10 1.12	16-3 1.21	16-7 1.29	17-4 1.48	18-5 1.76	19-5 2.06	24.0	
23-11 0.93	24-9 1.03	25-6 1.14	26-4 1.24	27-1 1.36	27-10 1.47	28-7 1.59	29-3 1.71	29-11 1.83	31-3 2.09	33-2 2.49		12.0	2x10
22-4 0.87	23-2 0.96	23-11 1.06	24-7 1.16	25-4 1.27	26-0 1.37	26-8 1.48	27-4 1.60	28-0 1.71	29-3 1.95	31-0 2.33		13.7	
20-8 0.80	21-5 0.89	22-1 0.98	22-10 1.08	23-5 1.17	24-1 1.27	24-9 1.37	25-4 1.48	25-11 1.59	27-1 1.81	28-9 2.16	30-3 2.53	16.0	
18-11 0.73	19-7 0.81	20-2 0.90	20-10 0.98	21-5 1.07	22-0 1.16	22-7 1.25	23-2 1.35	23-8 1.45	24-9 1.65	26-3 1.97	27-8 2.31	19.2	
16-1 0.66	17-6 0.73	18-1 0.80	18-7 0.88	19-2 0.96	19-8 1.04	20-2 1.12	20-8 1.21	21-2 1.29	22-1 1.48	23-5 1.76	24-9 2.06	24.0	

Note: The required modulus of elasticity, "E", in 1,000,000 pounds per square inch is shown below each span.

TABLE NO. 4		
Building Element	Nail Type	Number and Distribution
Stud to plate	Common-toe nail	4-8d
Stud to plate	Common-direct	2-16d
Double studs	Common-direct	16d 30" o.c.
Corner studs	Common-direct	16d 30" o.c.
Sole plate to joist or blocking	Common	16d 16" o.c.
Double cap plate	Common-direct	16d 24" o.c.
Cap plate laps	Common-direct	2-16d
Ribbon strip – 6" or less	Common-direct	2-10d each bearing
Ribbon strip – over 6"	Common-direct	3-10d each bearing
Roof rafter to plate	Common-toe nail	3-16d
Roof rafter to ridge	Common-direct	2-16d each rafter
Jack rafter to hip/valley	Common-toe nail	3-10d
Floor joists to studs	Common-direct	5-10d or 3-16d
Ceiling joists or studs	Common-direct	4-10d or 2-16d
Floor joist to sill or girder	Common-toe nail	2-16d
Ledger strip	Common-direct	2-16d at each joist
Ceiling joists to plate	Common-toe nail	2-16d
Ceiling joists to rafters	Common-direct	3-16d
Ceiling joists (laps over partition)	Common-direct	3-16d
Collar beam – 1" thick	Common-direct	4-10d
Collar beam – 2" thick	Common-direct	2-16d
Bridging to joists	Common-direct	2-8d each end
Diagonal brace (to stud and plate)	Common-direct	2-8d each bearing
Tail beams to headers	Common-end nail	3-16d
Header beams to trimmers	Common-end nail	3-16d each header
1" sub-flooring 6" or less	Common-direct	2-8d each joist
1" sub-flooring 8" or more	Common-direct	3-8d each joist
2" sub-flooring	Common-direct	2-16d each joist
1" sheathing – 6" or less	Common-direct	2-8d each stud or rafter
1" sheathing – over 6"	Common-direct	3-8d each stud or rafter
Plywood sheathing	Common-direct	8d 5" o.c. exterior edges
Plank roof decking and sub-floor	Common-direct	4" or 6" wide 2-10d 8" wide 3-10d
Roof sheathing – 6" or less	Common-direct	2-8d each rafter
Roof sheathing – over 6"	Common-direct	3-8d each rafter
Fiber Board sheathing	Large head	7-No. 11gx1¾" per bearing
Polystyrene	Large head	Under shingles 6" o.c.
Gypsum sheathing	Large head	
Shingles – wood 8" or less	Corrosion-resistive	2-length to penetrate sheathing
Shingles – over 8"	Corrosion-resistive	3-length to penetrate sheathing
Weather boarding	Corrosion resistive	2-8d each bearing
	Corrosion resistive roofing	6 per shingle length to

Shingles – asphalt	nail	penetrate sheathing
Plywood subfloor	Common-direct	8d panel edges 6” o.c. Intermediate 10” o.c.
Gypsum lath	Common-direct For 3/8” – 13 Ga. 1 1/8”, 19/64” Dia. Head-Flat For 1/2” – 13 Ga. 1 1/4”, 19/64” Dia. Head-Flat	3d blue lathing nail 16” width require 4 nails per lath each support 24” width require 5 nails per lath each support

Shingle nails shall penetrate not less than 3/4” into nailing strips, sheathing, or supporting construction except as otherwise provided in paragraph 3.41(4)

TABLE NO. 5			
Minimum Girder Size			
A36 Steel – F = 22,000 PSI			
A. Girders Supporting First Floor Joists, One Story Building – No Roof Loading.			
Assumed Load	Span C to C of Bearing	Width of Floor Tributary to Beam	Size of Steel Beam
LL = 44 PSF	7'	10'-12'	4 WF 13
Partitions = 10 PSF	7'	12'-18'	6 B 12
DL Floor = 20 PSF	8'	10'-12'	6 B 12
DL Ceiling = 10 PSF	8'	12'-18'	8 B 13
LL Attic = 20 PSF	9'	10'-12'	6 B 12
100 PSF	9'	12'-18'	8 B 15
	10'	10'	6 B 12
	10'	10'-14'	8 B 13
	10'	14'-18'	8 WF 17
	11'	10'	8 B 13
	11'	10'-14'	8 WF 17
	11'	14'-18'	8 WF 20
	12'	10'	8 B 15
	12'	10'-14'	8 WF 17
	12'	14'-18'	8 WF 24
B. Girders Supporting First Floor Joists, Two Story Building – No Roof Loading			
Assumed Load	Span C to C of Bearing	Width of Floor Tributary to Beam	Size of Steel Beam
LL 1 st = 40 PSF	7'	10'-12'	6 B 12
Partitions 1 st = 10 PSF	7'	12'-18'	8 B 15
DL 1 st = 20 PSF	8'	10'-12'	8 B 15
LL 2 nd = 40 PSF	8'	12'-18'	8 WF 17
Partitions 2 nd = 10 PSF	9'	10'	8 B 15
DL 2 nd = 20 PSF	9'	10'-14'	8 WF 17
Ceiling = 10 PSF	9'	14'-18'	8 WF 20
LL Attic = 20 PSF	10'	10'	8 B 15
170 PSF	10'	10'-14'	8 WF 20
	10'	14'-18'	10 WF 21
	11'	10'-12'	8 WF 20
	11'	12'-16'	10 WF 25
	11'	16'-18'	10 WF 25
	12'	10'-12'	10 WF 21
	12'	12'-16'	12 WF 27
	12'	16'-18'	12 WF 27
NOTE: Where Girders support greater or lesser uniform or concentrated loads, or are subject to other unusual loading condition, calculations shall be submitted to prove acceptable performance.			

Chapter XX. Provisions Applicable to Hales Corners

3.100 SCOPE. Where the provisions of Chapter XX conflict with provisions of preceding chapters of Chapter 3, the provisions of Chapter XX shall prevail.

3.101 BUILDING SITE AREA.

(1) The required building site area for a new building shall be as follows:

SQUARE FOOTAGE REQUIREMENTS			
Families	Basement	Bedrooms	Required Square Feet
1	Yes	1	900
1	No	1	1,000
1	Yes	2	1,000
1	No	2	1,100
1	Yes	3	1,100
1	No	3	1,200
1	Yes	4	1,200
1	No	4	1,300

TRI-LEVEL HOMES		
Families	Bedrooms	Required Square Feet
1	1	900
1	2	1,000
1	3	1,100
1	4	1,200

MULTIPLE FAMILY UNITS		
Basement	Bedrooms	Required Square Feet per Family Unit
Yes	1	700
No	1	800
Yes	2	900
No	2	1,000
Yes	3	1,000
No	3	1,100

ONE AND ONE-HALF AND TWO STORY SINGLE FAMILY HOMES			
Basement	Bedrooms	First Floor Required Square Feet	Total Required Square Feet
Yes	2	900	1,100
No	2	1,000	1,200
Yes	3	900	1,300
No	3	1,000	1,400

- (2) Before the second floor area can be considered as square footage for building size requirements for one and one-half and two-story single family homes, the following conditions must be met:
 - (a) A finished stairway to the second floor must be provided.
 - (b) Rough flooring must be installed on the second floor.
 - (c) The plan must be approved for finished ceiling height of seven (7) feet six (6) inches in the livable portion of the second floor area, and only such second floor area as provides such seven (7) foot six (6) inches ceiling height shall be considered as area for the minimum square feet building requirements.
 - (d) Initial construction shall provide for finished roof lines and window openings.
 - (e) The first floor ceiling joist shall be two (2) feet by eight (8) feet minimum.
- (3) **Measuring.** In measuring square footage for a split-level residence, all areas without a living area beneath shall be used in computing the first floor area. Garages and breezeways shall not be included in any computation. When the structure shall be composed of living quarters as well as a business area attached thereto the gross floor space of said living quarters shall contain an area of at least 1,100 square feet and the business portion of said structure shall contain an additional 300 square feet, and the arrangement of said space shall be subject to the approval of the Building Inspector and the Building Board.

3.102 FIRE LIMITS: CLASSES OF CONSTRUCTION.

- (1) **State Code.** The Definitions and Standards of the Department of Industry, Labor, and Human Relations, Chapter IND 51, Wis. Admin. Code, so far as applicable, are adopted by reference and made part of this Section. A violation of the standards imposed by IND 51 shall be a violation of this Section.
- (2) **Fire Limits in Areas Zoned B-1, B-2, and M-1.** Those parcels within the Village of Hales Corners zoned B-1, B-2, and M-1 are hereby declared to be included within the Fire limits. Nothing herein contained shall be construed as permitting or authorizing the erection, construction, alteration, or moving of any building or structure as defined in Chapter IND 51, Wis. Admin. Code, within said Fire Limits of the Village of Hales Corners except as hereinafter provided. All new buildings within the Fire Limits shall be of Fire Resistive Type A (No. 1); Fire Resistive Type B (No. 2); Metal Frame Protected (No. 3); Heavy Timbers (No. 4); Exterior Masonry (No. 5); Metal Frame Unprotected (No. 6) except as permitted on those parcels Zoned B-2 meeting the setback requirements of 3.102(3) listed below.
- (3) **New Buildings: B-2: Requirements.** All new buildings within the Village of Hales Corners zoned B-2, having minimum side yards of 15 feet for interior lots, and having a minimum side yard of 10 feet toward the street and 15 feet toward the interior side for corner lots, shall be of Wood Frame Unprotected (No. 8) or better.
- (4) **Buildings: B-1 Requirements.** Any new building constructed in B-1 which meets the setback requirements of 3.102(3) above, or any remodeling of existing buildings in B-1, which contain or install a sprinkler system throughout, in accordance with Section 6.31, Village Fire Code, shall be permitted to build or alter in accordance with construction requirements of Wood Frame Unprotected (No. 8) or better. It is the intent of this subsection that any new building of frame construction in B-1 must have a setback in accordance with 3.102(3) and must have an automatic sprinkler system throughout as

defined in 6.31(1); and any remodeling of an existing building irrespective of class of construction may be remodeled using said Wood Frame construction if the entire building is automatically sprinkled throughout as defined in 6.31(1). These requisites shall apply to all buildings of 2,500 square feet or more.

(5) **Classes of Construction.**

- (a) Fire Resistive Type A (No. 1). A building is of fire resistive construction if all the walls, partitions, piers, columns, floors, ceilings, roof, and stairs are built of noncombustible material with a fire resistive rating as specified in table 51.03-A, Wis. Admin. Code.
- (b) Fire Resistive Type B (No. 2). A building is of fire resistive construction if all the walls, partitions, piers, columns, floors, ceilings, roof, and stairs are built of noncombustible material, with a fire resistive rating as specified in table 51.03-A, Wis. Admin. Code.
- (c) Metal Frame – Protected (No. 3). A building is of metal frame protected construction if the structural parts and enclosing walls are of metal, or metal in combination with other noncombustible materials, with the resistance ratings as set forth in table 51.03-A, Wis. Admin. Code.
- (d) Heavy Timber (No. 4). A building is of heavy timber construction if the structural frame consists of heavy timber or heavy timber in combination with metal, reinforced concrete, or masonry. The structural and enclosing wall shall be as set forth in table 51.03-A, Wis. Admin. Code.
- (e) Exterior Masonry (No. 5). A building is of exterior masonry construction if all enclosing walls are constructed of masonry or reinforced concrete with fire resistive ratings as set forth in table 51.03-A, Wis. Admin. Code.
- (f) Metal Frame Unprotected (No. 6). A building is of a metal frame unprotected construction if the enclosing walls are of unprotected metal or unprotected metal in combination with other noncombustible materials and all building elements are as set forth in table 51.03-A, Wis. Admin. Code, unless otherwise exempted.
- (g) Wood Frame Protected (No. 7). A building is of wood frame protected construction if the structural parts and enclosing walls are of protected wood, or protected wood in combination with other materials, with fire resistive ratings as set forth in table 51.03-A, Wis. Admin. Code. If such enclosing walls are veneered, or encased or faced with stone, brick, tile, concrete, plaster, or metal, the building is also termed a wood frame protected building.
- (h) Wood Frame Unprotected (No. 8). A building is of wood frame unprotected construction if the structural parts and enclosing walls are of unprotected wood, or unprotected wood in combination with other materials. If such enclosing walls are veneered, encased, or faced with stone, brick, tile, concrete, plaster, or metal, the building is also termed a wood frame unprotected building. Whenever “frame construction” is used in subsections (7) or (9) of Section 3.102, it shall refer to Wood Frame Unprotected (No. 8).
- (i) Doubtful Classifications. If there is doubt as to the classification within which a given dwelling of other structure falls, the Building Inspector shall determine such classification.

(6) **Wooden Shingle or Shake Roofing.** Wooden shingle or shake roof may be used in the Fire Limits if rated as “Class B Fire Retardant” as defined by Underwriters Laboratory and Installation is made in accordance with the specifications of the manufacturer.

(7) **Alterations within Fire Limits.**

- (a) No building or structure of frame construction shall be increased in height after October 14, 1963.
 - (b) After October 14, 1963, no building or structure of frame construction within the Fire Limits shall be extended on any side unless the construction of such extension conforms to the requirements of this Code for new construction. No building or structure of nonconforming construction shall be extended, repaired, r remodeled at a cost in excess of 50% of the fair market value of the existing structure (not deducting from such value any loss caused by fire or any other casualty) unless said existing structure shall be made conforming in its entirety.
 - (c) Subject to the limitations herein contained, nothing in this Section shall prohibit other alterations within the Fire Limits. Minor alterations, repairs, and changes not covered herein may be made with the same materials of which the building is constructed.
- (8) **Moving Frame Construction in the Fire Limits.** No building of frame construction shall be moved into the Fire Limits nor from place to place within the Fire Limits, nor relocated on the same lot within the Fire Limits.
- (9) **Exceptions.** Nothing herein shall prohibit within the Fire Limits, and subject to the specified limitation, the erection of new buildings or structures, nor the extension or enlargement of existing buildings or structures, of frame construction as follows:
- (a) Piazzas or balconies on dwelling not exceeding 10 feet in width or extending more than three (3) feet above the second story floor beams; provided that no such structure shall extend to a lot line or be joined to a similar structure of another building.
 - (b) Fences.
 - (c) Display signs, which shall be governed by the Sign Control Code.
- (10) **Specific Requirements – New Buildings.**
- (a) Enclosing Walls. All enclosing walls of new buildings or structures within the Fire Limits shall be of incombustible material.
 - (b) Roofs. All roofs of new buildings shall be covered with fire resistive materials. A roof covering shall be considered fire resistive if made of three (3) or more thicknesses, or ply, of approved asphalt saturated asbestos felt, or three (3) thicknesses, or ply, of approved asphalt or tar saturated rag-felt with gravel, or equal surfacing, or if made of approved asphalt composite shingles, approve asbestos shingles, tin sheet iron, clay tile, concrete, or other approved incombustible material.
 - (c) Partitions. In new buildings of more than one story, all floors and roof joists shall be supported by incombustible bearing walls or partitions or by semi-fireproof partitions as defined in section IND 51.05, Wis. Admin. Code, or by columns and girders. If a bearing partition is supported by a steel girder, the portion of such girder which projects below the ceiling shall be covered with metal lath and plastering or other approved fireproofing.
 - (d) Exceptions. This subsection shall not apply to frame residences within the Fire Limits when such buildings do not exceed two (2) stories in height and are occupied by not more than two (2) families nor to private garages when such garages are erected as accessory buildings to the frame residences excepted hereunder.

- (11) **Existing Buildings Partially Destroyed by Fire or Decay.** It shall be unlawful to repair any existing structure or building within the Fire Limits when such structure or building shall have been damaged by fire or decay to the extent of 50% of the fair market value of such structure or building, and any structure or building so damaged shall be subject to condemnation under section 30.111(1) f this Code. When such a structure or building shall have been damaged by fire or decay to any extent of less than such value, no repairs shall be made upon the same without the permission of the Building Inspector.

3.103 ADJACENT BUILDINGS. No permit shall be issued for the construction of adjacent dwellings unless by proper design of the front elevation, selection of materials in walls and roof, a substantial degree of variation in the appearance of such adjacent dwelling is obtained.

3.104 STREET REQUIRED. No permit shall be issued unless the building shall be constructed on a site abutting a publicly dedicated and accepted street without the approval of the Village Board. Persons who wish to build on a private road shall petition for such approval to the Village Board, who shall fix a reasonable time for the hearing of the matter, and give a public notice thereof, as well as due notice to the parties in interest, and decide the same within a reasonable time. Upon receipt of the petition, the matter shall be referred to the Plan Commission for its recommendation. Provided, however, the Building Inspector may issue a permit where, prior to April 2, 1958:

- (1) There is a recorded easement to a public street form the building side,
- (2) There is an improved and completed private thoroughfare connected to a public street from the building site, or
- (3) There is a group housing plan as defined in Section 8.14(3)(1) of the Zoning Code already approved by the Plan Commission and the Village Board.

3.105 PERMIT NOT NECESSARY FOR MINOR REPAIRS. This code shall not be construed to require a permit for any repairs or minor alterations which do not change the occupancy, area, structural strength, fire protection, exists, light, or ventilation of the building.

3.106 VILLAGE-OWNED BUILDING. No inspection fee is to be charged for any building or buildings owned by the Village. Permits shall be procured for such work.

3.107 CURB, DRIVEWAY, AND SIDEWALKS – PERMITS.

- (1) **Permit.** Prior to cutting any curb, a permit for such work shall be obtained from the Building Inspector who will furnish detailed information as to just how this work is to be accomplished.
- (2) **Manner of Making Cut.** Where it is necessary to cut through an existing concrete curb of a Village street to install a driveway, the old concrete pavement and curb for its full depth and for the full width of flared driveway shall be removed to a point flush with the street side of the curb. Flare shall be neatly made and to a radius of approximately two (2) feet. Entire portion of curbing removed for purpose of flaring driveway shall be within the confines of the lot which the driveway serves unless agreeable to the adjacent property owners to extent the flare over the lot line. The exact manner of cutting and

replacing the curb is shown on a sketch furnished by the contractor at the time the curb permit is issued.

- (3) **Driveways.** Driveways from the curb to a point flush with the inside edge of the main walk shall be seven and one-half (7½) inches thick and shall be composed of one (1) part cement, two (2) parts fine aggregate, and three and one-half (3½) parts coarse aggregate, aggregates to be as hereinabove specified.
- (4) **Expansion Joints.** Where cement walks or driveways are built to the curbs, either at crosswalks or in front of private property, an expansion joint made up of two (2) one-half-inch strips of asphalted felt shall be inserted.
- (5) **Cement Walks.** Public walks shall be of Portland cement concrete and built to specifications on file in the office of the Village Engineer. All contractors building public walks in this Village shall conform to these specifications and to the grades for same as given by the Village Engineer. A permit shall be obtained from the Building Inspector before beginning such work. Public walks, except those built by the Village, shall be inspected by said Village, and the builder thereof shall pay the inspection charges of \$3.00.

3.108 YARD FOR ATTACHED PRIVATE GARAGE. Notwithstanding the provisions of Section 3.43(2)(a), no attached private garage shall be erected nearer than 10 feet from any adjoining property.

3.109 AIR CONDITIONING UNITS. Unless a preponderance of proof is submitted to the satisfaction of the Inspector that the water capacity within the immediate vicinity will not be materially depleted, no water-cooled air conditioning units shall be allowed within the Village.

3.110 FURTHER REGULATIONS FOR MOVING BUILDINGS.

- (1) **Applicant to be Owner.** Every applicant to move a building to a new location shall be the owner of the structure to be moved, and shall have an interest in the site of the proposed new location.
- (2) Upon receipt of an application to move a building to a new location within the Village, the Building Inspector shall cause to be sent written notice to the neighboring property owners in the vicinity of the new location informing them of the time and place for the hearing thereon by the Plan Commission.

3.111 CONDEMNATION OF UNSAFE STRUCTURES.

- (1) **Building Inspector to Act.** The Building Inspector shall act for this Village under the provisions of §66.05(5), Wis. Stats., relating to the razing of buildings. The Building Inspector shall act for this Village under said statutory provision except as to the assessment and collection of the special tax therein provided for.
- (2) **Official Newspaper.** The Tri Town Hub shall be the official newspaper for publication of notices required in §66.05(1)(a), Wis. Stats.

- (3) **Circuit Court Action.** Anyone affected by any such order may apply to the Circuit Court for an order restraining the Building Inspector from razing and removing such building or part thereof.
- (4) **Appeal to Arbitration.** If any order made by the Building Inspector in pursuance to this Section is not acceptable to the owner or tenant affected thereby, such owner or tenant shall have the right to appeal, to-wit; the objections to and the necessity for the reasonableness of such order may be submitted to three (3) reputable builders, one (1) to be chosen by the owner or the tenant to which said order of the Building Inspector applies, one (1) chosen by the Village Board, and the third by the other two (2) who shall act as arbitrators. If the builders so chosen are unable to agree, the vote of a majority shall be the decision of the arbitrators. The arbitrators herein provided for shall affirm or modify the order of the Building Inspector and shall submit their decision within five (5) days from the date of their appointment unless such time be extended by mutual agreement of such owner or tenant and the Village Board and such decision as reported in writing to the Village Board shall be endorsed by said Board in the manner provided for in this Section. Until the rendering of such report by the arbitrators changing or modifying the order of the Building Inspector, the order of the Building Inspector as first issued shall be in full force and effect. An election to proceed by arbitration under this subsection shall be construed as a waiver of the right to proceed by an appeal under the following subsection. When the owner or tenant request the appointment of such arbitrators, he shall deposit with the Village Treasurer the sum of \$12.00. If the decision of the arbitrators shall be favorable to the owner or tenant, such \$12.00 shall be returned to him and in said event, the Village shall pay each member of the Board of Arbitrators the sum of \$4.00. If the decision is against the owner, the \$12.00 paid by him shall be paid to the Board of Arbitrators in equal shares.
- (5) **Owner May Appeal to Court.** Any owner or tenant dissatisfied with any order or regulation of the Building Inspector under the provisions of this Section may commence an action within 30 days after the service of such order or regulation in the Circuit Court of Milwaukee County against the Village to vacate and set aside any such order or regulation on the ground that such order is not necessary for the protection of the public as herein provided, which said action shall proceed as all other actions commenced in the Circuit Court.

3.112 REMOVAL OF BUILDING RUBBISH. No person owning, controlling, managing, or occupying any building, structure, or premises in this Village, whether holding a permit issued under Section 3.05 or not, shall permit building rubbish or waste materials from the construction, remodeling, or the making of major or minor repairs upon any building, structure, or premises to accumulate, but shall promptly remove the same from such building, structure, or premises or from any street, alley, or public grounds upon which such building rubbish or waste material is located.

3.113 SANITARY SEWER.

- (1) If the public sewer system is available to the applicant for any permit required by this Code, no permit shall be issued unless the Building Inspector is satisfied that the applicant will connect to the public sewer system.
- (2) No person shall make any provision for carrying into the public sewer system water from the street, gutters, lawns, areaways, down spouts, roofs of any building, overflow from

cisterns, or water from any house or building foundation drain. The Building Inspector and the Plumbing Inspector shall enforce the provisions of this Section.

3.114 UNIFORM NUMBERING SYSTEM.

- (1) **System Established.** There is hereby established a uniform system of number all houses and buildings fronting on all streets in the Village of Hales Corners. All even number shall be placed upon houses and buildings on the north side and on the east side of said streets; all odd numbers shall be placed upon houses and buildings on the south side and on the west side of said streets.
- (2) **Assigning and Placing Numbers.** The Building Inspector, with the advice and assistance of the Village Engineer, has made the necessary survey and has assigned to each house and building located on the streets its respective number under this uniform system. The owner, occupant, or agent shall place or cause to be placed upon each house or building controlled by him the number assigned by the Building Inspector.
- (3) **Size and Location of Numbers.** All numbers placed on house and buildings in accordance with this Section shall be of ceramic material contained with an aluminum frame or durable equivalent and shall be not less than three and one-quarter ($3\frac{1}{4}$) inches, including background, in height and not less than two (2) inches in width. Such number shall be distinctly legible and shall be posted in a conspicuous place on the front of each house or building, so as to be easily seen and read from the public way.
- (4) **Village Clerk to Have Numbers Available: New Construction.** The Village Clerk shall have numbers available in conformance with the specifications of this Section at a cost to the applicant of \$4.00 for a four (4) digit number, \$5.00 for a five (5) digit number, and \$1.00 for a one (1) digit number. Applicants for permits for new buildings shall purchase such numbers from the Village Clerk prior to the issuance of a building permit by the Building Inspector.
- (5) **Maintaining Numbers.** It shall be unlawful to maintain any number other than the new number as designated by the Building Inspector.
- (6) **Duty of Policeman.** All policemen of the Village shall report violations of any provisions of this Section.
- (7) **Compliance.** Any owner, occupant, or agent of any house or building, who has receive at least 10 days notice from a municipal official demanding compliance with this Section, who fails or refuses to comply shall be guilty of a violation of this Chapter.

3.115 EXCAVATIONS, FILLING, AND GRADING.

- (1) No person shall make any excavation or do any filling or grading or change water flow which shall adversely affect neighboring properties. Reference Section 15.03(8). Compliance inspection shall be conducted upon reference.
- (2) **Permit Required.** A permit shall be required when filling or excavating consists of one (1) cubic yard per 1,000 square feet of property, or results in an elevation change of 12 inches or more over an area of 500 square feet or more. The permit fee shall be \$20.00. Said permit is not required for grading related to new building construction.

- (3) **Information to be Filed.** No permit for any excavation or grading shall be granted unless the applicant shall first file with the Building Inspector:
- (a) In the case of an excavation, a statement of the purpose and a plan showing the dimensions of the excavation.
 - (b) In the case of grading, a topographic survey showing grade and elevation of property before and after completion of proposed grading of the applicant's property and immediately abutting properties.
- (4) **Alternating Grades.**
- (a) The proposed alteration or modification of grade shall not damage or depreciate the value of adjacent lots or parcels of land.
 - (b) The natural flow of surface water toward or away from adjacent property shall not be affected by the alteration or modification of the grade.
- (5) **Permit to State.** The permit granted shall state in the case of an excavation, the location and size of the excavation, and, in the case of grading, the proposed grade when the grading authorized by the permit is completed.
- (6) **Underpinning.** Whenever an excavation shall be carried to such a depth that adjoining walls will have to be underpinned, it shall be the duty of the general contractor to give adjoining property owners written notification of the fact. All excavations for building shall be property guarded and protected by the excavator and shall be close sheathed wherever it may be necessary to prevent the adjoining soil from caving it.
- (7) **Dropping Frost Breakers Prohibited.** The dropping of heavy weights or frost breakers within 20 feet of another building to facilitate the excavation for substructures or for general demolition purposes is prohibited.

3.116 SWIMMING POOLS.

- (1) **Definitions.** "Swimming Pool" as used in this Section is defined as any artificial body of water used or intended to be used for wading or swimming, having a depth at any point greater than 24 inches or with a surface area exceeding 200 square feet, constructed, installed, or maintained in the ground or on top of the ground outside or as an accessory to a residential building on private property within the Village.
- (2) **Construction and Maintenance.**
- (a) Every swimming pool shall be so designed and constructed as to facilitate cleaning and shall be maintained and operated in such a manner as to be clean and sanitary at all times.
 - (b) Every swimming pool shall be so designed, constructed, and maintained so that it will not create a hazard to health, safety, or the general welfare, and will not be detrimental to the neighborhood or to the residents thereof.
 - (c) All buildings or structures to be erected under the provisions of this Section shall conform to the requirements of the Building Code for setbacks and area requirements for accessory structures.
 - (d) Any lights illuminating such swimming pool be so erected as to eliminate direct rays and minimize reflected rays of light on adjoining premises.
 - (e) A substantial tight fence with minimum height of 48 inches shall completely surround all swimming pools and have a self-latching and self-enclosing gate.

Such fences shall be erected in such manner that there shall be an apron of level surface at least three (3) feet in width surrounding all sides of the pool. For all above ground pools, if the side walls are 48 inches in height above the nearest ground level, and if such pool has no permanent ladder or access to the pool, the side walls can be used as a fence.

- (f) All swimming pools must be equipped with an adequate self-contained filtration and re-circulating system detached from any portable water supply or waste disposal system.
 - (g) Pools shall not drain into sanitary sewers or neighbors' property. Pool waste water may be used for irrigation by surface or subsurface spreading providing no hazard, nuisance, or unsanitary condition will occur in the opinion of the Health Officer or the Superintendent of Public Works.
- (3) **Permit.** All private swimming pools shall require a building permit with a fee of \$5.00 and a zoning permit with an additional fee of \$5.00 from the Building Inspector. Application for permits shall be accompanied by plans before construction commences, showing plot plan, dimensions, depths, volume in gallons, type and size of filtration system, and waste disposal system.
- (4) **Appeal from Inspector's Ruling.** Any person feeling himself aggrieved by any order or ruling of the Building Inspector may appeal in writing to the Board of Appeals of the Village within 30 days of the alleged act or omission of said inspector pursuant to §62.23, Wis. Stats., and the rules and regulations of the Board.
- (5) **Duty to Comply.** Compliance with this Section shall be the duty of the person owning, controlling, or managing any building or premises wherein or whereon there shall be placed or there exists a swimming pool subject to this Section.

3.117 LIABILITY NOT ON VILLAGE. This Code shall not be construed as placing any liability on the Village for damages to anyone injured or to any property damaged or destroyed as a result of the improper location of any building, or any defect in any building or any defect in any equipment in any building. The Village assumes no liability for anyone injured or claiming to be injured or for any property loss suffered or claimed to be suffered by anyone under the provisions of this Chapter.

3.118 APPEAL FROM INSPECTOR'S RULING. Any person feeling himself aggrieved by any order or ruling of the Building Inspector may appeal in writing to the Board of Appeals of the Village within 30 days of the alleged act or omission of said Inspector pursuant to §62.23, Wis. Stats., and to the rules and regulations of the Board. The appellant shall, annex to the notice of appeal such plats, surveys, plans, or specifications which are of probative value in the determination of the appeal together with the name and address of the appellant. Upon the filing of such notice with the Clerk, the appellant shall receive a copy of the Rules of the Board of Appeals. Upon the filing of notice of appeal, an appeal shall stay all legal proceedings in furtherance of the action appeal from, unless the Inspector certifies to the Board of Appeals that, by reason of the facts stated in a certificate a stay, would, in his opinion, cause imminent peril to life or property. Upon the filing of such notice of appeal, the Board of Appeals shall fix a time and place for the hearing of the appeal not less than 10 nor more than 30 days from the date of such filing.

3.119 BUILDING BOARD.

- (1) **Architectural Appeal.** No building permit for any structure for which a building permit is required shall be issued unless it has been found as a fact by the Building Board by at least a majority vote, after a view of the site of the proposed structure whenever practicable, and after an examination of the application for a building permit, which shall include:
 - (a) Exterior elevations of the proposed structure,
 - (b) Existing finished grade lines of abutting improved properties,
 - (c) Location of the proposed structure drawn to scale on a plot plan of the land owned by the applicant, that the exterior will, when erected, not be so at variance with nor so similar to either exterior architectural appeal and functional plan of the structures already constructed or in the course of construction in the immediate neighborhood or the character of the applicable district established by the Zoning Code, as to cause a substantial depreciation in the property values of said neighborhood within said applicable district. Building permits shall only be issued in conformance with the exterior elevations and the location of the proposed structure as filed with the Building Board. The Building Inspector shall issue a stop order in the manner provided in Section 3.12 of this Code for failure to conform with the filed exterior elevations and location of the proposed structure, and such nonconformance shall subject the applicant to the penalties provided in Section 3.200.

- (2) **Hearing.** The Building Board may, if it desires, hear the applicant for the building permit in question and the owner of the lot on which it is proposed to erect the structure in question, together with any other persons, whether residents or property owners, desiring to be heard, Rule II of the Rules of the Zoning Board of Appeals shall apply to such hearing. At no time shall the Building Board concern itself with deed restrictions.

- (3) **Presumption of Finding.** On an appeal to the Board of Appeals, in the absence of proof to the contrary adduced before the Board of Appeals, a refusal to grant the building permit because refusal of the Building Board to make the finding required by Subsection (1) shall be deemed to be based upon facts supporting the conclusion that the exterior architectural appeal and functional plan of the proposed structure for which a building permit was refused would, when erected, be so at variance with or so similar to all of the exterior architectural appeal and functional plan of structures already constructed or in the course of construction in the immediate neighborhood, or the character of the applicable district, as to cause a substantial depreciation in the property values of said neighborhood within said applicable district.

3.120 WHEN A USE OR OCCUPANCE SHALL BE DISCONTINUED AND A BUILDING OR PORTION THEREOF VACATED. Whenever any building or portion thereof is being used or occupied contrary to the provisions of this Code, the Building Inspector shall order such use of occupancy discontinued and the building or portion thereof vacated, by notice served on any person using or causing such use or occupancy to be continued and such person shall vacate such building or portion thereof within 10 days after receipt of the notice or make the building or portion thereof comply with the requirements of this Code on use and occupancy.

3.121 CERTIFICATE OF OCCUPANCY BY FIRE CHIEF. The Fire Chief shall have dual authority with the Building Inspector in the issuance of certificates of occupancy under Section 3.13 of the Building Code for multi-family and commercial structures, places of

public assembly, and schools. All authority and power granted therein to the Building Inspector equally is herein granted to the Fire Chief for such buildings.

3.122 ACCESSORY BUILDINGS.

- (1) **Accessory Buildings (100 Square Feet or Less).**
 - (a) A building permit and Building Board approval are required.
 - (b) Building to be anchored in such manner as to make it safe.
 - (c) The construction approval to be made by the Building Inspector.
- (2) **Accessory Buildings (Over 100 Square Feet).**
 - (a) Requires Building Board approval.
 - (b) Requires same construction as a garage.

3.123 STATE UNIFORM DWELLING CODE ADOPTED.

- (1) **Certified Inspector.** For purposes of issuance of permits, inspection, and enforcement of said uniform building code for one and two family dwellings, the Inspector shall be that person or independent agency certified by the Wisconsin Department of Industry, Labor, and Human Relations under Chapter IND 26, Wis. Admin. Code.
- (2) **Definitions for One and Two Family Dwelling Code.**
 - (a) Addition. “Addition” means a new construction performed on a dwelling which increases the outside dimensions of the dwelling.
 - (b) Alteration. “Alteration” means a substantial change or modification other than an addition or minor repair to a dwelling or to systems involved within a dwelling.
 - (c) Cubic Content. “Cubic Content” means that volume of dwelling enclosed by the outer surface of exterior walls from the top of the footing to the roof.
 - (d) Department. “Department” means the Department of Industry, Labor, and Human Relations.
 - (e) Dwelling. “Dwelling means:
 1. Any building, the initial construction of which is commenced on or after the effective date of this ordinance, which contains one or two dwelling units; or
 2. An existing structure, or that part of an existing structure, which is used, or intended to be used, as a one or two family dwelling.
 - (f) Minor Repair. “Minor Repair” means repair performed for maintenance or replacement purposes on any existing one or two family dwelling which does not affect room arrangement, light and ventilation, access to or efficiency of any exist stairways or exits, fire protection, or exterior aesthetic appearance and which does not increase a given occupancy and use. No building permit is required for work to be performed which is deemed minor repair.
 - (g) One or Two Family Dwelling. “One or Two Family Dwelling” means a building structure which contains one or separate households intended to be used as a home, residence, or sleeping place by an individual or by two or more individuals maintaining a common household to the exclusion of others.
 - (h) Person. “Person” means an individual, partnership, firm, or corporation.
 - (i) Uniform Dwelling Code. “Uniform Dwelling Code” means those Administrative Code provisions, and any future amendments, revisions, or modifications thereto, contained in the following chapters of the Wisconsin Administrative Code:

- Chapter IND 20 – Administration and Enforcement
- Chapter IND 21 – Construction Standards
- Chapter IND 22 – Energy Conservation Standards
- Chapter IND 23 – Heating, Ventilating, and Air Conditioning Standards
- Chapter IND 24 – Electrical Standards
- Chapter IND 25 – Plumbing and Potable Water Standards

3.124 INSTALLATION AND OPERATION OF HEATING UNITS ADJUNCT TO WARM AIR FURNACES.

- (1) **Application.** This Section shall apply to all supplemental heating units installed. No person may install or cause to be installed a supplemental heating unit which fails to meet the requirements of this Section.
- (2) **Definitions.**
 - (a) “Supplemental Heating Units” includes all devices described as energy converters, stoves, or supplemental heating devices using wood, coal, or other solids as fuel and attached to the existing warm air furnace and using the furnace ducts for distribution of heat.
 - (b) “Horizontal Slide Damper” is a horizontal piece of sheet metal used to divide the warm air plenum of the existing furnace into two (2) approximately equal airtight parts.
- (3) **Permit.** No person may install or cause to be installed a supplemental heating unit without first obtaining a permit from the Building Inspection Division. The Building Inspection Division shall give each permit application the following information: It is recommended that: (1) The wood burned in the units should be dry wood, preferably dry hardwoods; (2) The chimney flue should be checked periodically to be sure the flue is open; and (3) The chimney flue should be cleaned at least once a year.
- (4) **Permit Fee.** A permit fee of \$10 shall be paid by the applicant for each unit installed.
- (5) **Plan and Data Approval.** Plans and data for each supplemental heating unit shall be submitted to the Building Inspection Division for approval before a permit may be issued. The following data is required to be submitted with each application: (1) The manufacturer’s installation and maintenance/operations instructions; (2) Proposed chimney flue and/or new chimney flue sizes; and (3) The number and size of existing vent connectors to the chimney flue.
- (6) **Inspections.** No person may operate or permit the operation of supplemental hearing devices without first calling for an inspection and receiving final approval from the Building Inspection Division.
- (7) **Installation Clearance.** The clearances from combustibles for the installation of all supplemental heating units shall conform to the following requirements:
 - (a) Table A

TABLE A		
Required Clearance in Inches from Combustibles for Supplemental Heating Units		
From Front of Unit	From Top, Sides, & Rear of Unit	Chimney or Vent Connector

48"	36"	18"
-----	-----	-----

(b) Table B

TABLE B			
Required Minimum Clearances, in Inches, from Combustibles with Specified Forms of Protection			
Types of Protection:	Where the Required Clearance with No Protection is:		
Applied to the combustible material unless otherwise specified and covering all surfaces with the distance specified as the required clearance with no protection. Thicknesses are minimum.	36 Inches Above	36 Inch Sides and Rear	18 Inch Chimney or Vent Connector
1. ¼ inch asbestos millboard spaced out 1 inch (Note 2)	30	18	12
2. 0.013 inch (28 gauge) sheet metal on ¼ inch asbestos millboard	24	18	12
3. 0.013 inch (28 gauge) sheet metal spaced out 1 inch (Note 2)	18	12	9
4. 0.013 inch (28 gauge) sheet metal on 1/8 inch asbestos millboard spaced out 1 inch (Note 2)	18	12	9
5. 1½ inch asbestos cement covering on heating appliance	18	12	18
6. ¼ inch asbestos millboard on 1 inch mineral fiber bats reinforced with wire mesh or equivalent	18	12	6
7. 0.027 inch (22 gauge) sheet metal on 1 inch mineral fiber bats reinforced with wire or equivalent	18	12	3
8. ¼ inch asbestos millboard	36	36	18
9. ¼ inch cellular asbestos	36	36	18

Note 1: Except for the protection described in 5, all clearances should be measured from the outer surface of the supplemental heating unit to the combustible material disregarding any intervening protection applied to the combustible material.

Note 2: Spaces shall be of incombustible material.

Note 3: Asbestos millboard referred to above is a different material from cement board. It is not intended that asbestos cement board be used in complying with these requirements when asbestos millboard is specified.

(8) **Mounting of Unit.**

- (a) On incombustible floors, all units shall be mounted on a firm, level base of brick, cement, concrete, or other incombustible material.
- (b) On combustible floors, all units shall be mounted on a four (4) inch thick concrete block base with circular or rectangular holes or equivalent incombustible material so arranged that the holes will parallel the small dimension and be covered with sheet metal of not less than No. 2 U.S. gauge. The above specified floor protection shall extend not less than 18 inches around the perimeter of the unit.
- (c) Units with Legs on Combustible Floors. All units which have 18 inches or more of open space under the base of the unit may be mounted on combustible floors provided that the floor under the unit is protected with not less than one-fourth (1/4) inch of asbestos millboard and covered with sheet metal of not less than No. 24 U.S. gauge. The above specified floor protection shall extend not less than 18 inches above the perimeter of the unit. If there is less than 18 inches of open space under the base of the unit, the unit shall be mounted on two (2) inches of concrete block, brick, or other incombustible material and equally covered with sheet metal of not less than No. 24 U.S. gauge. The above specified floor protection shall extend not less than 18 inches around the perimeter of the unit.

(9) **Type and Size of Chimney.** An approved all-fuel chimney shall be used for solid fuel burning equipment. The chimney shall be sized so that the cross-sectional area of this chimney is not smaller than the cross-sectional area of the flue collar of the equipment to be connected to it. No other equipment shall be connected to the flue serving the solid fuel burning equipment. All masonry chimneys constructed according to the requirements of Section 6.10 of the Fire Code and factory-built chimneys bearing a listing by a nationally recognized testing laboratory such as Underwriters Laboratories will be considered as approved.

(10) **Chimney Connector or Stovepipe.** The chimney connector or stovepipe shall comply with the following table:

Minimum Chimney Connector Gages for Oil, Wood, & Coal		
Diameter of Connector	Galvanized Steel Gage Minimum Thickness (inches)	Number Gage
Less than 6 inches	.019	26
6 inches to less than 10 inches	.024	24
10 inches to 13 inches	.030	22
14 inches to 16 inches	.036	20
Greater than 16 inches	.058	16

(11) **Damper.** The chimney connector shall have a cast iron damper to control the draft.

(12) **Warm Air Supply Duct.**

- (a) Size and Material. The area of the warm air supply duct shall not be less than the area of the collar or plenum opening of the unit to which it is connected. The warm air supply duct and horizontal slide damper shall be constructed entirely of incombustible material equivalent in structural strength and durability to the following table:

TABLE C		
Ducts		
Width or Diameter Inches	Minimum Thickness Galvanized Iron U.S. Gauge	Minimum Thickness Aluminum B & S Gauge
0 through 12	26	24
Over 12	24	22

- (b) Connection to Furnace Without Horizontal Slide Damper. The connection of the warm air supply duct from the unit to the furnace should be centered on the front, rear, or sides of the plenum of the furnace. A back draft damper shall be installed in the warm air duct as close to the furnace plenum as possible. Full air flow shall be maintained. (See Figure 1 or Figure 2.)

FIGURE 1 – TYPICAL APPROVED DESIGN

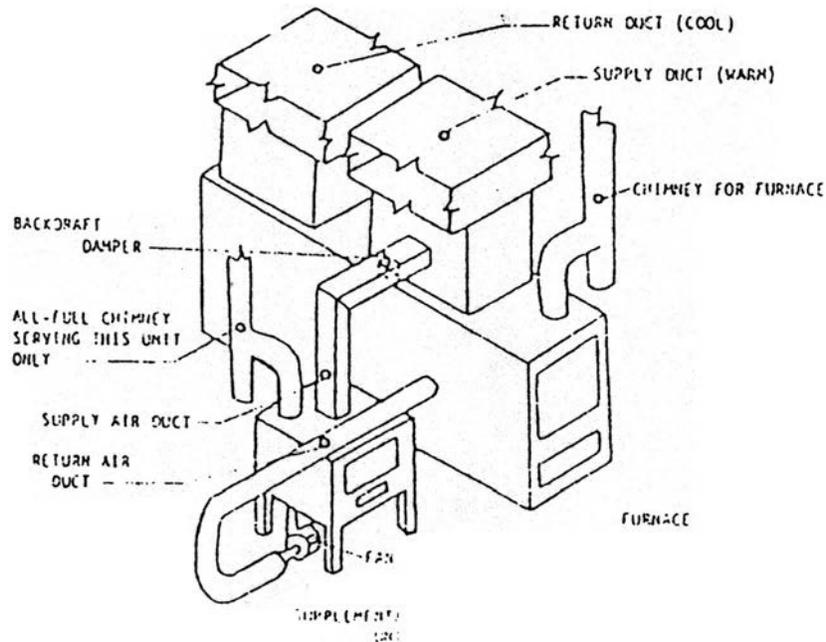
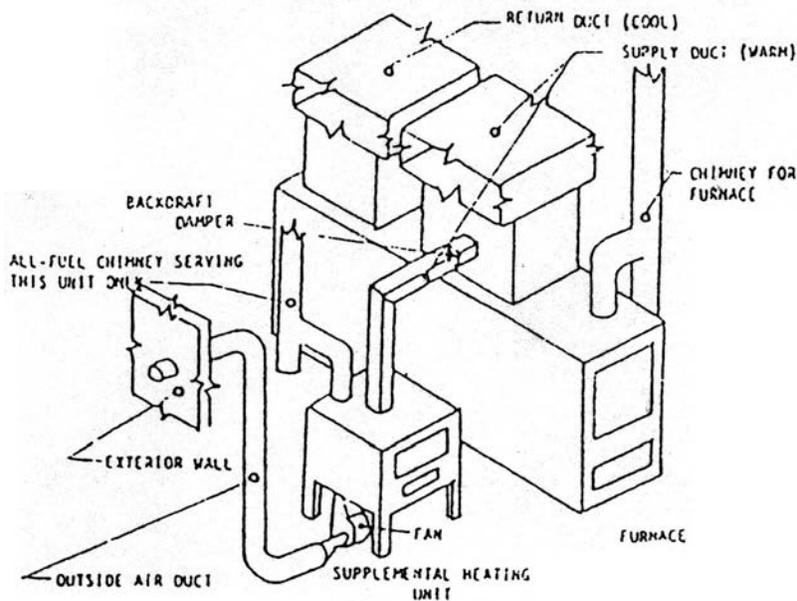
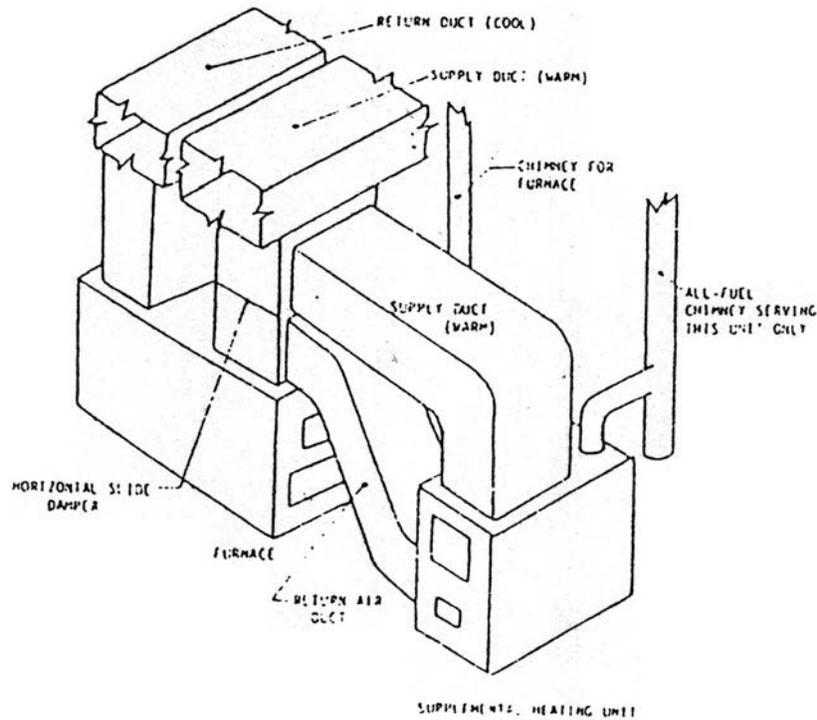


FIGURE 2 -- TYPICAL ALTERNATIVE DESIGN



- (c) Connections to Furnace with Horizontal Slide Damper. The connection of the warm air supply duct from the unit to the furnace plenum should be centered both horizontally and vertically above the horizontal slide damper. Full air flow shall be maintained. (See Figure 3.)

FIGURE 3 – TYPICAL APPROVED DESIGN



(13) **The Return Air Duct.**

(a) Supplemental Heating Unit Without Horizontal Slide Damper.

1. Connection to Furnace. When the return air for the unit is taken from the furnace return air, the connection shall be made on the filtered air side of the filter and connected to the blower intake of the unit. (See Figure 1 in Subsection (12)(b)1.) When the return air for the unit is taken from the outside, it shall be taken from a weatherproof louver with a one-fourth (1/4) inch wire mesh hardware cloth and connected to the blower air intake of the unit. (See Figure 2 in Subsection (12)(b)2.) Dampers shall not be installed in the return air duct regardless of which method is used.
2. Size and Material. The area of the return air duct shall not be less than the area of the warm air supply duct. The return air duct shall be of the same material as specified in Table C in Subsection (12)(a) above.

(b) Supplemental Heating Unit with Horizontal Slide Damper.

1. Connection to Furnace. The connection of the return air ducts to the furnace should be centered both horizontally and vertically below the horizontal slide damper. Full air flow shall be maintained. (See Figure 3 in Subsection (12)(c).)
2. Size and Material. The area of the return air duct shall not be less than the area of the collar of the plenum opening of the unit to which it is connected. The material shall conform to Table C in Subsection (12)(a) above.

(14) **Blower on Furnace When Used With Horizontal Slide Damper in Plenum.** The blower on the furnace shall be adequate to maintain the manufacturer's specifications for CFM and static pressure when measured above the horizontal slide damper when the damper is closed.

- (15) **Fresh Air Intake Connected to Furnace Return Air System.** The size of the fresh air intake where used shall not be less than the cross-sectional area of the area of a four (4) inch (12.6 square inch) round duct. The material shall conform to Table C in Subsection (12)(a) above. The fresh air intake shall be connected to the return plenum of the furnace. A volume damper of the locking type shall be placed in the duct for the fresh air intake.
- (16) **Combustion Air.** If the Heating Inspector, after examination of the supplemental heating unit and the furnace, deems it necessary to add combustion air, the size of the opening shall not be less than the cross-sectional area of the flue collar size of the supplemental heating unit.
- (17) **Electrical Connections and Controls.**
- (a) For Units Without Horizontal Slide Dampers. All electrical connections, controls, and wiring shall conform to the Wisconsin State Electrical Code.
 - (b) For Units With Horizontal Slide Dampers. The electrical connections shall conform with the Wisconsin State Electrical Code. A fan control shall be installed in the plenum of the solid fuel burning unit and wired in parallel to the existing fan control on the furnace. The fan control in the plenum of the solid fuel burning unit shall activate the furnace blower motor at a temperature of 100 degrees Fahrenheit to 120 degrees Fahrenheit.
- (18) **Thermostat Control.** The thermostat control where used on the supplemental heating unit shall activate the blower motor at a temperature of 100 degrees Fahrenheit to 120 degrees Fahrenheit.
- (19) **Outdoor Wood Furnaces Prohibited.** Notwithstanding anything to the contrary set forth in this Section or this Code, no person shall construct, install, operate, or use or suffer to construct, install, operate, or use an or any outdoor wood furnace to provide heat to any building or structure or equipment upon any property in the Village.

3.125 INSTALLATION AND OPERATION OF ROOM HEATERS, STOVES, AND FREE STANDING FIREPLACES.

- (1) **Application.**
- (a) This section shall apply to all radiant heating units installed. No person may install a radiant heating unit which fails to comply with the requirements of this Section.
- (2) **Definitions.** “Radiant Heating Unit” is a room heater, stove, or free standing fireplace not intended for duct connections used to heat a room(s) using the combustion of a solid fuel such as wood or coal as a source of heat.
- (3) **Permit.** No person may install or cause to be installed a radiant heating unit without first obtaining a permit from the Building Inspection Division. The Building Inspection Division shall give to each permit applicant the following information. It is recommended that: (1) The wood burned in the units should be dry wood, preferably dry hardwoods; (2) The chimney flue should be checked periodically to be sure the flue is open; and (3) The chimney flue should be cleaned at least once a year.

- (4) **Permit Fee.** A permit fee of \$10 shall be paid by the applicant for each unit installed.
- (5) **Plan and Data Approval.** Plans and data for each radiant heating unit installation shall be submitted to the Building Inspection Division for approval before a permit may be issued. The following data is required to be submitted with each application: (1) The manufacturer's installation and maintenance/operation instructions; (2) Proposed chimney flue and/or new chimney flue sizes; and (3) The number and size of existing vent connectors to the chimney flue.
- (6) **Inspection.** No person may operate or permit the operation of a radiant heating unit without first calling for an inspection and receiving final approval from the Building Inspection Division.
- (7) **Installation Clearance.** The clearances from combustibles for the radiant heating units shall conform to Table A in Section 3.124(7)(a) and Table B in Section 3.124(7)(b)
- (8) **Mounting of the Unit.**
 - (a) On incombustible floors, the units shall be mounted on a firm, level base of brick, cement, concrete, or other incombustible materials.
 - (b) On combustible floors, the units shall be mounted on a four (4) inch concrete block base with circular or rectangular holes or equivalent incombustible material so arranged that the holes will parallel the smaller dimension and be covered with sheet metal of not less than N. 24 U.S. gauge. The above specified floor protection shall extend not less than 18 inches beyond the perimeter of the unit.
 - (c) Units with Legs on Combustible Floors. Units which have 18 inches or more of open space under the base of the unit may be mounted on combustible floors provided that the floor under the unit is protected with not less than one-fourth (1/4) inch of asbestos millboard and covered with sheet metal of not less than No. 24 U.S. gauge. THE above specified floor protection shall extend not less than 18 inches beyond the perimeter of the unit. If there is less than 18 inches of open space under the base of the unit, the unit shall be mounted on two (2) inches of concrete block, brick, or other incombustible material and equally covered with sheet metal of not less than No. 24 U.S. gauge. The above specified floor protection shall extend not less than 18 inches beyond the perimeter of the unit.
- (9) **Size and Type of Chimney.** An approved all fuel chimney shall be used for solid fuel burning equipment. The chimney shall be sized so that the cross-sectional area of the chimney is not smaller than the cross-sectional area of the flue collar of the equipment to be connected to it. Other equipment shall not be connected to the flue serving the solid fuel burning equipment. Masonry chimneys constructed according to the requirements of Section 6.10 of the Hales Corners Fire Code and factory-built chimneys bearing a listing by a nationally recognized testing laboratory such as Underwriters Laboratories will be considered as approved.
- (10) **Chimney connector or Stovepipe.** The chimney connector shall conform to Section 3.124(10) of the Hales Corners Code.
- (11) **Damper.** The chimney connector shall have a cast iron damper to control the draft.

- (12) **Combustion Air.** If the Heating Inspector, after examination of the radiant heating unit and the furnace, deems it necessary to add combustion air, the size of the opening shall not be less than the cross-sectional area of the flue collar size of the unit.
- (13) **Blower.** A blower where used shall have adequate protection such as a screen or other material to prevent material to be inserted in the blower assembly.
- (14) **Electrical Connections.** The electrical connections, controls, and wiring where used shall conform to the Wisconsin State Electrical Code.
- (15) **Thermostat Control.** The thermostat control where used shall activate the blower motor at a temperature of 100 degrees Fahrenheit to 120 degrees Fahrenheit.

Chapter XXL. Penalties.

3.200 VIOLATIONS; PENALTIES.

- (1) Any person holding a permit issued under this Chapter covering any premises wherein or whereon there shall be placed or there exists anything in violation of any provision of this Chapter; or any person owning, controlling, or managing any building or premises wherein or whereon there shall be placed or there exists anything in violation of any provision of this Chapter; or any person who shall assist in the committing of any violation of any of the provisions of this Chapter or who shall build contrary to the plans or specifications submitted to and approved by the Building Inspector; or any person who shall omit, neglect, or refuse to do any act required by this Chapter shall be subjected to a penalty as provided in Section 19.04 of this Village Code, provided that the accumulated penalties recoverable in any one action shall not exceed \$2,000.00.
- (2) **Enforcement by Injunction.** Compliance with the provisions of this Chapter may also be enforced by injunctive order at the suit of the Village, or one or more owners of real estate situated within an area affected by the regulations of this Chapter.
- (3) **Declared Nuisances.** Any building or structure erected or structurally altered in violation of the provisions of this Chapter is hereby declared to be a nuisance per se, and the Village may apply to any court or competent jurisdiction to restrain or abate such nuisance.