

INTRODUCED BY: Ronald D. Smith  
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ORDINANCE NO. 01-04

An Ordinance to amend the Kent County Code, Volume I, Chapter 105 - Building Construction by adopting the International One- and Two-Family Dwelling Code/1998 and the Kent County Supplement to the International One- and Two-Family Dwelling Code/1998.

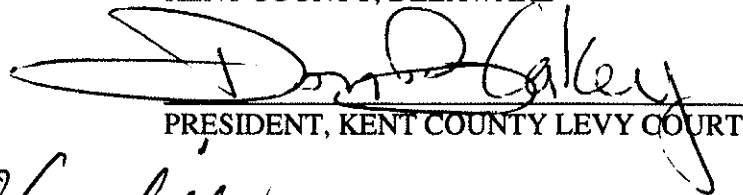
Section 1. Amend Kent County Code, Chapter 105 - Building Construction, Article II, Section 105-4 - Adoption of Standards, by deleting the section in its entirety and replacing with the following underlined language:

Kent County hereby adopts the International One- and Two-Family Dwelling Code/1998 and the Kent County Supplement to the One- and Two-Family Dwelling Code/1998 to be the standard to which residential structures are constructed.

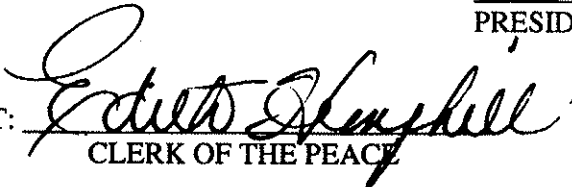
Section 2. Amend Kent County Code, Chapter 105 - Building Construction, Article II, Section 105-6 by deleting it in its entirety and incorporating herein, by reference, the Kent County Supplement to the International One- and Two-Family Dwelling Code/1998. Copies of the supplement are available in the county offices.

Section 3. Provisions of this Ordinance are severable and if any of its provisions or any sentence, clause, or paragraph shall be held unconstitutional or violative of the Laws of the State of Delaware by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

ADOPTED BY LEVY COURT OF  
KENT COUNTY, DELAWARE

  
PRESIDENT, KENT COUNTY LEVY COURT

ATTEST:

  
CLERK OF THE PEACE

**SYNOPSIS**

An amendment to replace the 1995 CABO One- and Two-Family Dwelling Code with the International One- and Two-Family Dwelling Code/1998 and the supplement thereto as the standards to which residential structures are constructed in Kent County.

Building Code Supplement to the  
1998 International  
One- and Two-Family Dwelling Code



Kent County, Delaware

March, 2001

# Kent County Supplement to the International One- and Two- Family Dwelling Code 1998 Edition

The 1998 International One- and Two- Family Dwelling Code has been adopted to ensure building compliance for those buildings classified in the R-4 Use Group. It has been adopted in its entirety with the following exceptions. (Any additions or revisions to the original text are underlined).

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## CHAPTER 1 GENERAL ADMINISTRATION

Delete in its entirety – Refer to 1996 BOCA, Chapter 1, Administration.

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## CHAPTER 2 BUILDING DEFINITIONS

Adopted as written

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## CHAPTER 3 BUILDING PLANNING

Insert the following underlined language to Table 302.2(1):

Table **301.2(1) Climatic and Geographic Design Criteria**

Roof Live Load (psf) .....	<u>20</u>
Roof Snow Load (psf) .....	<u>15</u>
Wind Pressure (psf) .....	<u>24</u>
Seismic Condition by Zone .....	<u>0</u>
Subject to damage from:	
Weathering .....	<u>Severe</u>
Frost Line Depth .....	<u>24"</u>
Termite Infestation.....	<u>Yes</u>
Decay .....	<u>Yes</u>
Winter Design Temp. for Heating Facilities .....	<u>15</u>
Radon-Resistant Construction Required .....	<u>No</u>

Delete Section **314.2 Treads and risers** in its entirety and replace with following underlined language:

**314.2 Treads and risers.** The maximum riser height shall be 8 ¼ inches and the minimum tread depth shall be 9 inches. The riser height shall be measured vertically between leading edges of the adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2 % slope). The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm.). The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm.).

Delete Section **314.2.1 Profile** and insert the following underlined language:

**314.2.1 Profile.** The radius of curvature at the leading edge of the tread shall be no greater than 9/16 inch (14.3 mm). A nosing not less than ¼ inch (19.1 mm) but not more than 1 ¼ inch (32 mm) shall be provided on stairways with solid risers. Beveling of nosing shall not exceed ½ inch (12.7 mm). Risers shall be vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad.) from the vertical.

Exception: A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).

### **Section 315 Handrails and Guardrails**

Delete Section **315.4 Guardrail opening limitations** and insert the following underlined language:

**315.4 Guardrail opening limitations.**  
Required guardrails on open sides of stairways, raised floor areas, balconies, and porches shall have intermediate rails or ornamental closures which do not allow the passage of an object 4 inches (102 mm) or more in diameter. Any installed guardrail constructed with intermediate rails, spindles, or ornamental closures shall comply with the requirements of this section.

Exception: The triangular openings formed by the riser, tread, and bottom rail of a guard at the open side of a stairway shall not allow passage of a sphere 6 inches (153 mm).

### **Section 316 Smoke Detectors**

Delete Section **316.1. Alterations, repairs and additions** and insert the following underlined language:

**316.1. Alterations, repairs and additions.**  
When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in an existing dwelling, the entire building shall be provided with smoke detectors located as required for a new dwelling. The smoke detectors are not required to be hardwired.

### **Section 323 Protection Against Termites**

Delete in entirety Sections **323.3.1 Field treatment** and **323.4 Foam plastic protection**.

## **CHAPTER 4 FOUNDATIONS**

### **Section 403 Foundations**

Delete **403.1 and 403.1.2 Footings** in their entirety and insert the following underlined language:

**403.1 General.** All exterior walls shall be supported on continuous solid masonry or concrete footings, wood foundations, or other approved structural systems that shall be of sufficient design to safely support the loads imposed as determined from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill.

#### **403.1.1 Minimum size.**

Minimum thickness of a footing shall be the nominal width of the wall but not less than 8 inches. The nominal width of the footing shall be twice the nominal thickness of the wall. Two-story sections of a building shall have a minimum footing width of 24 inches and a minimum footing depth of 10 inches.

#### **Exceptions:**

1. Footings for single story decks shall be three (3) times the nominal width of the vertical support posts in width, shall extend 24 inches below grade and have 8 inches of concrete to support the each post.
2. Footings for pole buildings shall be three times the nominal width of the vertical support member in width, shall extend 36 inches below grade, and have 8 inches of concrete to support each post.
3. Decks having vertical members spaced 6 feet on center may be placed on a 4 inch concrete pad provided that the vertical members are placed 1 foot inside the perimeter of the pad and are anchored on 4 corners with approved anchoring devices.

4. Residential accessory structures 300 square feet in area or less, with the exception of a pole building and garage, shall be leveled and secured with tie down or equivalent of manufactured home fastening devices, one (1) on each corner. Structures 20 feet or more in length shall have two additional anchors installed one on each side mid-span. All lumber and wood siding is to be pressure treated from grade to 8 inches above finished grade.
5. Prefabricated room enclosures are to be placed on an approved support system or foundation per the manufacturer's installation instructions.
6. A garage and/or similar structures containing room(s) above grade or slab shall be considered a single story in terms of footing design. Additional floors with weight bearing on exterior walls shall have the footing design for two story structures.

**403.1.2 Minimum depth.** All exterior footings and foundation systems shall extend to 24 inches below the final grade.

**403.1.3 Slope.** The top surface of the footings shall be level. The bottom surface of the footings may have a slope not exceeding 1 unit in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the slope of the bottom surface of the footing will exceed 1 unit in 10 units horizontal (10-percent slope).

Delete Section 403.1.5 **Seismic reinforcing** and insert the following

underlined language:

**403.1.5 Footing Reinforcement.**

Footings shall be reinforced with a minimum of two #4 rebar wired together with a minimum of 15 inch overlap. Pier and column footings shall be 24" x 24" x 12" concrete. Column footings shall be reinforced with 3 pieces of #4 rebar wired together and supported in two directions.

**403.1.6 Grade stakes.** Grade stakes, wood or metal, no larger than ¾ inch square may be used. Wooden stakes shall not be used to support reinforcing bars

**403.2 Footings for wood foundations.**

Footings for wood foundations shall be in accordance with Figures 403.1.1(2) and 403.1.1(3). Gravel shall be washed and well graded. Gravel shall be free from organic, clayey or silty soils. Sand shall be coarse, not smaller than 1/16 inch (1.6 mm) and shall be free from organic, clayey or silty soils. **Crushed stone shall have a maximum size of ½ inch (12.7 mm). . The maximum size stone shall not exceed ¾ inch (19 mm).**

**403.3 Insulated footings.** For heated building with slab-on-grade foundations, footings are not required to extend below the frost line where protected from frost by insulating in accordance with Table 403.3. Materials used below grade for the purpose of insulating foundations against frost shall be labeled as complying with ASTM C 578.

**Section 406**

**Foundation Waterproofing and Dampproofing**

Delete Section **406.3.3 Porous fill** in its entirety.

Delete Section **406.3.5 Final grading** in its entirety and insert the following underlined language:

**406.3.5 Final grading.** Final grading shall provide a down-ward slope away from the dwelling along all foundation walls. The final grade way from the foundation walls shall fall a minimum of 6 inches (153 mm) within the first 10 feet (3048 mm).

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## CHAPTER 5 FLOORS

### Section 502 Wood Floor Framing

Delete **Section 502.3.2.1 Sleeping areas and attic joists** and **Tables 502.3.2(1) and 502.3.2(2)** in their entirety and insert the following underlined language:

**502.3.2.1 Sleeping areas and attic joists.** Table 502.3.2.1 shall be utilized to determine the maximum allowable span of floor joists that support sleeping areas and attics that are accessed by means of a fixed stairway provided that the design live load does not exceed 30 pounds per square foot (psf) (1436 Pa.) and the design dead load does not exceed 10 psf (479 Pa.). The allowable span of ceiling joists that support attics utilized for limited storage or no storage shall be determined in accordance with Section 802.4.

**Tables 502.3.2(1) and 502.3.2(2) can be found at the back of the supplement.** Add the following table: **Table 502.3.4(3) and 502.3.4(4) which provides girder sizes for conventional framed structures.** Refer to back of supplement.

**502.3.5 Allowable spans for cantilevered floor joists.** The maximum span of the cantilevered

portion of a floor joist shall not exceed 1/4 of the depth of the nominal length of the lumber. (For example: Maximum allowable cantilever of a 2 x 12 would be 3 feet; 2 x 10 = 2.5 feet; 2 x 8 = 2 feet). Cantilevered floor joists shall support only the first floor and roof loads. Any additional load and/or span will require the design and seal of a Delaware registered structural engineer or architect. Refer to diagram on page 14 of the supplement.

### 502.6 Drilling and notching.

Delete **Sections 502.6.1 Sawn lumber** and **506.2 Engineered wood products** in their entirety and insert the following underlined language:

**502.6.1 Solid lumber joists.** Notches in solid lumber joists, rafters and beams shall not exceed one-sixth of the depth of the member, shall not be longer than one-third of the depth of the member and shall not be located in the middle one-third of the span. Notch depth at the ends of the member shall not exceed one-fourth of the depth of the member. Holes bored or cut into solid lumber joists, rafters, or beams shall not be closer than 2 inches (51 mm) to the top or bottom of the joist, or to any other hole located in the member. Where the members are notched, the hole shall not be closer than 2 inches (51 mm) to the notch. The diameter of the hole in joists shall not exceed one-third the depth of the member.

#### **Exceptions:**

1. A notch over the support is permitted to extend the full width of the support.
  2. Notches on cantilevered portions of the member are permitted to extend the full length of the cantilever if the strength and deflection of the cantilever is calculated based on the reduced member section.
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3. The tension side of beams, joists and rafters, which are 4 inches or greater in nominal thickness, shall not be notched, except at ends of members.

**502.6.2 Engineered wood products.** Cuts, notches and holes bored in trusses, laminated veneer lumber, glue-laminated members, or I-joists shall be based on research and investigation in accordance with Section 502.6.3.

**506.2.3 Research and investigation.** Sufficient technical data shall be submitted to substantiate the proposed use of any material or assembly. If it is determined that the evidence submitted is satisfactory proof of performance for the use intended, the code official shall approve the use of the material or assembly subject to the requirements of this code. The cost of all tests, reports and investigations required under these provisions shall be paid by the permit applicant.

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## CHAPTER 6 WALL CONSTRUCTION

Adopted as written.

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## CHAPTER 7 WALL COVERING

Adopted as written.

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## CHAPTER 8 ROOF-CEILING CONSTRUCTION

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## Section 802 Wood Roof Framing

Delete **802.9.1 Truss live loads** and **802.9.2 Truss dead loads** in their entirety.

Delete **Tables 802.4.2(1) through 802.4.2(19) Allowable Spans for Ceiling Joists and Allowable Spans for Low- or High-Slope Rafters** in their entirety and replace with **Tables 802.4.2(1), 802.4.2(2), and 802.4.2(3) Allowable Spans for Ceiling Joists and Tables 802.4.3(1), 802.4.3(2), 802.4.3(3) Allowable Spans for Rafters.** Tables to be located in the back of the supplement.

Delete Section **802.4.2 Allowable ceiling joist spans** in its entirety and insert the following underlined language:

**802.4 Allowable ceiling joist spans.**  
The unsupported span of ceiling joists shall not exceed the values set forth in Table 802.4.2(1) and shall be utilized to determine the maximum allowable span of ceiling joists that support attics with limited or no storage that are not accessed by means of a fixed stairway and to which a gypsum board ceiling is attached, provided that the design live load does not exceed 20 pounds per square foot (psf) (958 Pa.) and the design dead load does not exceed 10 psf (479 Pa.). Table 802.4.2 shall be utilized to determine the maximum allowable span of joists that support attic spaces that are accessed by means of a fixed stairway.

Delete **Tables 802.4.2(5) through 802.4.2(19) Allowable rafter spans** in their entirety and replace with **Tables 802.4.3(1), 802.4.3(2), 802.4.3(3) Allowable rafter spans.** Tables to be located in the back of the supplement.

Delete Sections **802.4.3 Allowable rafter spans, 802.4.3.1 Cathedral-type ceiling**

**rafter spans, 802.4.3.2 Attic-type rafter spans, and 802.4.3.2.1**

**Purlins** in their entirety and replace with the following underlined language:

**802.4.3 Allowable rafter spans.**

The unsupported span of rafters shall not exceed the values set forth in Tables 802.4.3(1) through 802.4.3(3). The span of each rafter shall be measured along the horizontal projection of the rafter. Table 802.4.3(1) shall be utilized to determine the maximum allowable span of low-slope rafters utilized in attic-type construction that are placed at a slope of three units vertical in 12 units horizontal (25-percent slope) or less with no finished ceiling, provided that the design roof live load does not exceed 20 pounds per square foot (psf) (958 Pa.) Table 802.4.3(2) shall be utilized to determine the maximum allowable span of high-slope rafters utilized in attic-type construction that are placed at a slope greater than 3:12 with no finish ceiling and light roof coverings, including asphalt and wood shingles, provided that the design roof live load does not exceed 20 psf. Table 802.4.3(3) shall be utilized to determine the maximum allowable span of high-slope rafters utilized in attic-type construction that are placed at slope greater than 3:12 with no finish ceiling and heavy roof coverings, including cement tiles, clay tiles, and slate, provided that the design roof live load does not exceed 20 psf.

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**CHAPTER 9  
ROOF COVERINGS**

Delete **910.3 Recovering vs. replacement** and insert the following underlined language:

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**910.3 Recovering vs. replacement.**

New roof covering shall not be installed without first removing existing roof coverings when any of the following conditions occur:

1. When the existing roof or roof covering is water soaked or deteriorated to the point of being unacceptable as a base for additional roofing.
2. When the existing roof covering is wood shake, slate, clay or cement tile; except when the new roof covering is installed in accordance with approved industry standards.
3. When the existing roof has **two** or more layers of any type of roofing.

Exception: The removal of existing roof coverings shall not be required where complete and separate roofing systems are provided which transmit all roof loads directly to the structural system of the building and which do not bear upon the existing roof.

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**CHAPTER 10  
CHIMNEYS AND FIREPLACES**

Delete Sections 1003.3 **Seismic reinforcing, 1003.3.1 Vertical reinforcing, 1003.2 Horizontal reinforcing, 1003.4 Seismic anchorage, 1003.4.1 Anchorage** in their entirety and replace with the following underlined language:

**1003.3 Anchorage.** Anchoring shall be required in single family dwellings of two or more stories. Install one wall tie for every 16 inches in width of the chimney; placed one every 12 vertical courses. Each wall tie shall be anchored into a wall stud every 16 inches on center.

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**CHAPTER 11  
MECHANICAL ADMINISTRATION**

Adopted as written.

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**CHAPTER 12  
MECHANICAL DEFINITIONS**

Adopted as written.

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**CHAPTER 13  
GENERAL MECHANICAL SYSTEMS  
REQUIREMENTS**

**SECTION 1307**

**APPLIANCE INSTALLATION**

Delete Section 1307.2 Anchorage of appliances in its entirety and insert following underlined language:

**1307.2 Anchoring of appliances.**

Appliances designed to be fixed in position shall be securely fastened in place.

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**CHAPTER 14  
HEATING AND COOLING EQUIPMENT**

Adopted as written.

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**CHAPTER 15  
ELECTRIC RESISTANCE HEATING**

Adopted as written.

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**CHAPTER 16  
VENTED FLOOR, WALL AND ROOM  
HEATERS**

Adopted as written.

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**CHAPTER 17  
VENTILATION AIR SUPPLY**

Adopted as written.

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**CHAPTER 18  
EXHAUST SYSTEMS**

Adopted as written.

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**CHAPTER 19  
DUCT SYSTEMS**

Adopted as written.

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**CHAPTER 20  
COMBUSTION AIR**

Adopted as written.

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**CHAPTER 21  
CHIMNEYS AND VENTS**

Adopted as written.

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**CHAPTER 22  
SPECIAL FUEL-BURNING EQUIPMENT**

Adopted as written.

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**CHAPTER 23  
BOILERS/WATER HEATERS**

Adopted as written.

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**CHAPTER 24  
REFRIGERATION**

Adopted as written.

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**CHAPTER 26  
FUEL-GAS PIPING**

Adopted as written.

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**CHAPTER 27  
SPECIAL PIPING AND STORAGE  
SYSTEMS**

Adopted as written.

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**CHAPTER 28  
SOLAR SYSTEMS**

Adopted as written.

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**CHAPTER 29  
PLUMBING ADMINISTRATION**

Delete Chapter 29 in its entirety and replace with the following underlined language:

**2901.1 Scope.** The design and installation of plumbing systems, including sanitary and drainage, sanitary facilities, water supplies and sewage disposal in buildings, shall comply with the requirements of this chapter and to the current additions of the applicable codes enforced by the State of Delaware Department of Health and Social Services, Division of Public Health, and the State of Delaware Department of Natural Resources and Environmental Control.

**2902 Permits and Certificates of Approval**

**2902.1 Plumbing Permit.** Plumbing work requiring a permit, as determined by the Plumbing Code of the State of Delaware, shall not commence until a permit has been obtained from the Division of Public Health.

**2902.2 Well Permit.** Before a permit is issued for the construction, placement or occupancy of a dwelling, the property owner or authorized representative, shall obtain the necessary permit for the withdrawal of ground water from the Department of Natural Resources and Environmental Control.

**2902.3 Septic Permit.** Before a permit is issued for the construction, placement or

occupancy of a dwelling, the property owner or authorized representative, shall obtain the necessary permit for the underground discharge of wastewater from the Department of Natural Resources and Environmental Control.

**Section 2903 Inspections and Tests**

**2903.1 During installation.** During the installation of plumbing systems, including sanitary drainage, sanitary facilities, water supplies and sewage disposal systems, the appropriate inspection agencies shall be contacted to perform necessary inspections to insure code compliance.

**2903.2 Concealing work.** Work in connection with any installation of plumbing systems, including sanitary drainage, sanitary facilities, water supplies and sewage disposal systems, shall not be covered or concealed until such work has been inspected and approved.

**2903.3 Final inspection.** Upon completion of work a final inspection shall be performed and approval granted prior to a final inspection of the building and issuance of a Certificate of Occupancy.

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Delete the following Chapters in their entirety:  
**Chapter 30 Plumbing Definitions**  
**Chapter 31 General Plumbing Requirements**  
**Chapter 32 Plumbing Fixtures, Faucets and Fixture Fittings**  
**Chapter 33 Water Heaters**  
**Chapter 34 Water Supply and Distribution**  
**Chapter 35 Sanitary Drainage**  
**Chapter 36 Vents**  
**Chapter 37 Traps**  
**Chapter 38 Private Sewage Disposal**

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Delete **Chapter 39 General Requirements** in its entirety and insert the following underlined language:

**CHAPTER 39  
ELECTRICAL GENERAL REQUIREMENTS**

**Section 3901 Inspection and Approval**

3901.1 Approval. Electrical systems, materials, components and equipment shall be inspected and approved in compliance with applicable code during the installation by third party inspection agencies authorized by the State of Delaware.

3901.2 Concealing of work. Work in connection with an electrical system shall not be covered or concealed until such work has been inspected and approval to conceal has been given.

3902.3 Final inspection. Upon completion of work a final inspection shall be made and approval given prior to the building final inspection and issuance of Certificate of Occupancy.

Delete the following chapters in their entirety:

- Chapter 40 Electrical Definitions**
- Chapter 41 Services**
- Chapter 42 Branch Circuit and Feeder Requirements**
- Chapter 43 Wiring Methods**
- Chapter 44 Power and Lighting Distribution**
- Chapter 45 Devices and Lighting Fixtures**
- Chapter 46 Appliance Installation**
- Chapter 47 Swimming Pools**
- Chapter 48 Class 2 Remote-Control, Signaling and Power- Limited Circuits**

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**CHAPTER 49  
STANDARDS**

Adopted as written.

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**APPENDIX A  
MANUFACTURED HOUSING USED AS  
DWELLINGS**

Delete in entirety. Refer to Kent County  
Manufactured Home Code.

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**APPENDIX B  
SWIMMING POOLS, SPAS AND HOT  
TUBS**

Adopted as written.

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**APPENDIX C  
ENERGY CONSERVATION**

Adopted as written.

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**APPENDIX D  
RADON CONTROL METHODS**

Deleted in its entirety.

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International One- and Two-Family Dwelling  
Code Electrical Provisions/National Electrical  
Code Cross Reference

Retained as reference material.

**SPAN TABLES**

The following tables have been prepared for the most common species of lumber available locally – SPF #2. If the lumber species being used is a species other than SPF #2, please consult Table 502.3.1c for the appropriate values.

**DESIGN VALUES FOR DIMENSIONAL LUMBER – VISUAL GRADING**

<b>SPRUCE – PINE – FIR</b>					
<b>Grade</b>	<b>Size</b>	<b>Normal Duration</b>	<b>Snow Loading</b>	<b>7-Day Loading</b>	<b>Modulus of Elasticity "E"</b>
No. 1/No. 2	2" x 4"	1,510	1,735	1,885	1,400,000
No. 1/No. 2	2" x 6"	1,310	1,505	1,635	1,400,000
No. 1/No. 2	2" x 8"	1,210	1,390	1,510	1,400,000
No. 1/No. 2	2" x 10"	1,105	1,275	1,385	1,400,000
No. 1 No. 2	2" x 12"	1,005	1,155	1,260	1,400,000

**Floor Joists**

<b>ALLOWABLE SPANS FOR FLOOR JOISTS</b>				
<b>40 lbs. per sq. ft.</b>				
<b>(All rooms except those used for sleeping areas and attic floors)</b>				
	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>	<b>2" X 12"</b>
12.0" o.c.	10'-3"	13'-6"	17'-3"	20'-6"
13.7" o.c.	9'-10"	12'-11"	16'-6"	19'-1"
16.0" o.c.	9'-4"	12'-3"	15'-3"	17'-7"
19.2" o.c.	8'-9"	11'-3"	14'-0"	16'-0"
24.0" o.c.	8'-2"	10'-2"	12'-3"	14'-4"
32.0" o.c.	7'-5"	8'-9"	10'-9"	12'-7"

<b>ALLOWABLE SPANS FOR FLOOR JOISTS</b>				
<b>30 lbs. per sq. ft.</b>				
<b>(All rooms used for sleeping areas and attic floors)</b>				
	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>	<b>2" X 12"</b>
12.0" o.c.	11'-3"	14'-11"	19'-0"	22'-6"
13.7" o.c.	10'-10"	14'-3"	18'-2"	21'-0"
16.0" o.c.	10'-3"	13'-6"	16'-10"	19'-11"
19.2" o.c.	9'-8"	12'-9"	15'-5"	17'-8"
24.0" o.c.	8'-11"	11'-6"	13'-11"	15'-10"
32.0" o.c.	8'-2"	9'-11"	11'-10"	13'-10"

**CEILING JOISTS**

<b>ALLOWABLE SPANS FOR CEILING JOISTS</b> <b>10 lbs. per sq. ft. live load</b> <b>(No attic storage and roof slope not steeper than 3 in 12)</b> <b>Gypsum Ceiling</b>				
	<b>2" X 4"</b>	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>
12.0" o.c.	11'-10"	18'-8"	24'-7"	31'-4"
13.7" o.c.	11'-4"	17'-10"	23'-6"	30'-0"
16.0" o.c.	10'-9"	16'-11"	22'-4"	27'-9"
19.2" o.c.	10'-2"	15'-11"	21'-0"	25'-5"
24.0" o.c.	9'-5"	14'-9"	18'-6"	23'-8"

<b>ALLOWABLE SPANS FOR CEILING JOISTS</b> <b>20 lbs. per sq. ft. live load</b> <b>(Limited attic storage where development of future room is not possible)</b> <b>Gypsum Ceiling</b>				
	<b>2" X 4"</b>	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>
12.0" o.c.	9'-5"	14'-9"	18'-6"	22'-3"
13.7" o.c.	9'0"	13'-10"	17'-2"	21'-3"
16.0" o.c.	8'-7"	12'-9"	15'-10"	19'-6"
19.2" o.c.	7'-10"	11'-8"	14'-5"	17'-8"
24.0" o.c.	7'-1"	10'-6"	12'-10"	15'-8"

<b>ALLOWABLE SPANS FOR CEILING JOISTS</b> <b>30 lbs. per sq. ft. live load</b> <b>(Attic storage)</b> <b>Gypsum Ceiling</b>				
	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>	<b>2" X 12"</b>
12.0" o.c.	11'-3"	14'-11"	19'-0"	22'-6"
13.7" o.c.	10'-10"	14'-3"	18'-2"	21'-0"
16.0" o.c.	10'-3"	13'-6"	16'-10"	19'-11"
19.2" o.c.	9'-8"	12'-9"	15'-5"	17'-8"
24.0" o.c.	8'-11"	11'-6"	13'-11"	15'-10"

**RAFTERS**

<b>ALLOWABLE SPANS FOR LOW SLOPE RAFTERS</b> Slopes 3 in 12 or less – 20 lbs. per sq. ft. live load (No finished ceiling)				
	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>	<b>2" X 12"</b>
12.0" o.c.	14'-9"	19'-6"	24'-10"	29'-1"
13.7" o.c.	13'-10"	18'-11"	23'-3"	27'-2"
16.0" o.c.	13'-3"	17'-6"	21'-6"	25'-2"
19.2" o.c.	12'-7"	16'-7"	19'-8"	23'-0"
24.0" o.c.	11'-7"	14'-10"	17'-7"	20'-6"

<b>ALLOWABLE SPANS FOR HIGH SLOPE RAFTERS</b> Slope over 3 in 12 – 20 lbs. per sq. ft. live load (Light Roof Covering)				
	<b>2" X 4"</b>	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>
12.0" o.c.	10'-3"	16'-2"	21'-4"	26'-2"
13.7" o.c.	9'-7"	15'-1"	19'-11"	24'-6"
16.0" o.c.	9'-3"	14'-6"	19'-1"	22'-8"
19.2" o.c.	8'-8"	13'-8"	17'-5"	20'-9"
24.0" o.c.	8'-0"	12'-3"	15'-7"	18'-6"

<b>ALLOWABLE SPANS FOR HIGH SLOPE RAFTERS</b> Slope over 3 in 12 – 20 lbs. per sq. ft. live load (Heavy roof covering)				
	<b>2" X 4"</b>	<b>2" X 6"</b>	<b>2" X 8"</b>	<b>2" X 10"</b>
12.0" o.c.	10'-3"	15'-2"	19'-5"	23'-0"
13.7" o.c.	9'-7"	14'-2"	18'-2"	21'-6"
16.0" o.c.	8'-10"	13'-2"	16'-9"	19'-11"
19.2" o.c.	8'-1"	12'-0"	15'-4"	18'-2"
24.0" o.c.	7'-3"	10'-9"	13'-8"	16'-3"

**Table 502.3.4(3) BUILT UP BEAM OR GIRDER SPANS (SPRUCE-PINE-FIR #2)  
For Single Story Structures Constructed Without Truss Roof Framing**

<b>Single Story Structure (without roof trusses)</b> <b>40 Pound Live Load - 10 Pound Dead Load (Floor)</b> <b>20 Pound Live Load - 10 Pound Dead Load (Ceiling)</b>				
Width of Structure	24 feet 12 ft. trib. load 960 lb. ft.	28 feet 14 ft. trib. load 1120 lb. ft.	32 feet 16 ft. trib. load 1280 lb. ft.	36 feet 18 ft. trib. load 1440 lb. ft.
Girder Size	Maximum Pier Spacing			
3 - 2 x 8	5' - 6"	5' - 4"	4' - 11"	n/a
4 - 2 x 8	6' - 8"	6' - 2"	5' - 8"	5' - 5"
3 - 2 X 10	7' - 0"	6' - 6"	5' - 0"	N/A
4 - 2 X 10	8' - 0"	7' - 6"	7' - 0"	6' - 7"
3 - 2 X 12	8' - 2"	7' - 6"	7' - 0"	6' - 4"
4 - 2 X 12	9' - 4"	8' - 8"	8' - 2"	7' - 8"

**Table 502.3.4(4) BUILT UP BEAM OR GIRDER SPANS (SPRUCE-PINE-FIR #2)  
For Two Story Structures Constructed Without Truss Roof Framing**

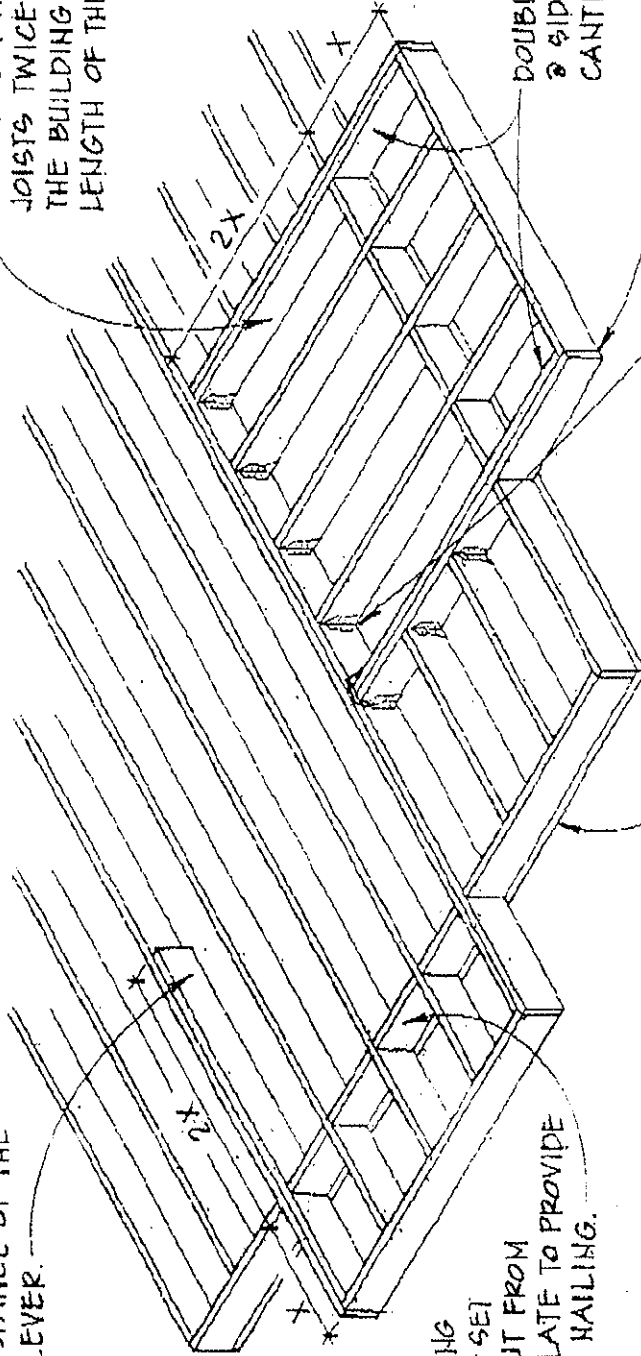
<b>Two Story Structure (without roof trusses)</b> <b>40 Pound Live Load - 10 Pound Dead Load (First Floor)</b> <b>30 Pound Live Load - 10 Pound Dead Load (Second Floor)</b> <b>20 Pound Live Load - 10 Pound Dead Load (Ceiling)</b>				
Width of Structure	24 feet 12 ft. trib. load 960 lb. ft.	28 feet 14 ft. trib. load 1120 lb. ft.	32 feet 16 ft. trib. load 1280 lb. ft.	36 feet 18 ft. trib. load 1440 lb. ft.
Girder Size	Maximum Pier Spacing			
3 - 2 x 8	n/a	n/a	n/a	n/a
4 - 2 x 8	6' - 1"	n/a	n/a	n/a
3 - 2 X 10	n/a	n/a	n/a	n/a
4 - 2 X 10	6' - 6"	6' - 2"	n/a	n/a
3 - 2 X 12	n/a	n/a	n/a	n/a
4 - 2 X 12	7' - 8"	7' - 2"	6' - 8"	n/a

**40 JOIST SYSTEMS**

**FLOORS**

DOUBLE SIDE JOISTS FOR TWICE THE DISTANCE OF THE CANTILEVER.

EXTEND CANTILEVERED JOISTS TWICE AS FAR INTO THE BUILDING AS THE LENGTH OF THE CANTILEVER.



RIM BLOCKING MAY BE SET 1 IN. OUT FROM SOLE PLATE TO PROVIDE SOFFIT HAILING.

NOTE:

MAXIMUM CANTILEVER EQUALS RATED SPAN OF JOIST SYSTEM DIVIDED BY FOUR. CANTILEVERS THAT CARRY SIGNIFICANT ROOF LOADS OR MORE THAN ONE FLOOR LOAD MUST BE ENGINEERED.

**A**

**FLOOR CANTILEVERS**

II & I TO JOIST SYSTEM