

**WEST VIRGINIA  
SECRETARY OF STATE  
BETTY IRELAND  
ADMINISTRATIVE LAW DIVISION**

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OFFICE WEST VIRGINIA  
SECRETARY OF STATE

Form #1

**NOTICE OF A PUBLIC HEARING ON A PROPOSED RULE**

AGENCY: WV STATE FIRE COMMISSION TITLE NUMBER: 87

RULE TYPE: LEGISLATIVE CITE AUTHORITY: 29-3-5b

AMENDMENT TO AN EXISTING RULE: YES X NO    

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 4

TITLE OF RULE BEING AMENDED: STATE BUILDING CODE

IF NO, SERIES NUMBER OF RULE BEING PROPOSED:    

TITLE OF RULE BEING PROPOSED:    

DATE OF PUBLIC HEARING: JUNE 21, 2005 TIME: 1:00 PM

LOCATION OF PUBLIC HEARING: WV STATE FIRE COMMISSION

1207 QUARRIER STREET, 2ND FLOOR  
CHARLESTON, WV 25301

COMMENTS LIMITED TO: ORAL    , WRITTEN    , BOTH X  
COMMENTS MAY ALSO BE MAILED TO THE FOLLOWING ADDRESS:

The Department requests that persons wishing to make  
comments at the hearing make an effort to submit written  
comments in order to facilitate the review of these comments.

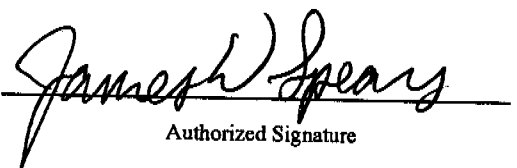
The issues to be heard shall be limited to the proposed rule.

ATTACH A **BRIEF** SUMMARY OF YOUR PROPOSAL

WV STATE FIRE COMMISSION

1207 QUARRIER STREET, 2ND FLOOR

CHARLESTON, WV 25301

  
Authorized Signature

#6, 40

**WEST VIRGINIA  
STATE BUILDING CODE**

**Title 87, Series 4**

**Rules  
Of the West Virginia  
State Fire Commission**

Approved by Secretary, Department of Military Affairs and Public Safety

James W. Spears

18 May 05  
Date

Approved by State Fire Commission

Sterling Lewis Jr.

5-18-2005  
Date

**STATE FIRE COMMISSION  
1207 Quarrier Street, 2<sup>nd</sup> Floor  
Charleston, WV 25301**

## SUMMARY OF PROPOSED RULE

The West Virginia State Fire Commission promulgates the State Building Code in accordance with West Virginia Code, Chapter 29, Article 3, Section 5b which references the International Building Codes.

**STATE BUILDING CODE**  
**STATEMENT OF CIRCUMSTANCES**

The State Fire Commission promulgates the rules for the State Building Code for adoption and enforcement by the various local jurisdictions. The International Building Codes, as referenced in these rules, provides the latest changes to the nationally recognized model building codes. Adoption of these revised rules will permit construction in West Virginia to be completed under the latest technology and professional standards.

APPENDIX B

**FISCAL NOTE FOR PROPOSED RULES**

Rule Title: State Building Code

Type of Rule:  Legislative  Interpretive  Procedural

Agency: State Fire Commission

Address: 1207 Quarrier Street, 2nd Floor  
Charleston, WV 25301

Phone Number: (304) 558-2191 Email: \_\_\_\_\_

**Fiscal Note Summary**

Summarize in a clear and concise manner what impact this measure will have on costs and revenues of state government.

This proposed rule will provide the State Fire Commission with updated technology on building safety procedures and requirements. The initial cost for filing the International Building Codes has been waived by the International Code Council, therefore, there is no cost to the State for filing this rule.

**Fiscal Note Detail**

Show over-all effect in Item 1 and 2 and, in Item 3, give an explanation of Breakdown by fiscal year, including long-range effect.

FISCAL YEAR			
Effect of Proposal	2005 Increase/Decrease (use "-")	2006 Increase/Decrease (use "-")	Fiscal Year (Upon Full Implementation)
1. Estimated Total Cost	0.00	0.00	0.00
Personal Services	0.00	0.00	0.00
Current Expenses	0.00	0.00	0.00
Repairs & Alterations	0.00	0.00	0.00
Assets	0.00	0.00	0.00
Equipment	0.00	0.00	0.00
Other	0.00	0.00	0.00
2. Estimated Total Revenues	0.00	0.00	0.00

Rule Title: State Building Code

3. **Explanation of above estimates (including long-range effect):**  
Please include any increase or decrease in fees in your estimated total revenues.

Non-applicable

### MEMORANDUM

Please identify any areas of vagueness, technical defects, reasons the proposed rule would not have a fiscal impact, and/or any special issues not captured elsewhere on this form.

The use of this technology will provide the necessary building safety features for the improved safety in building construction. Requests for updating the code have been made by building officials, architects, business and industry.

Date: 18 May 05

Signature of Agency Head or Authorized Representative

James W. Spears

TITLE 87  
LEGISLATIVE RULE  
STATE FIRE COMMISSION  
SERIES 4  
STATE BUILDING CODE

**87-4-1 GENERAL**

1.1 Scope: This rule establishes the standards considered necessary by the State Fire Commission for the safeguarding of life and property and to ensure the quality of construction of all structures erected or renovated throughout this state.

1.2 Authority: West Virginia Code 29-3-5b

1.3 Filing Date:

1.4 Effective Date:

1.5 Incorporation of other Documents: This rule does not include a reprinting of all the requirements imposed by statute or by the incorporation of various nationally recognized standards and codes cited in Subsection 4.1 of this rule. For ascertaining these additional standards and requirements, it is necessary to make reference to the other documents.

**87-4-2 DEFINITIONS**

2.1 "ANSI" means "American National Standards Institute, 11 West 42<sup>nd</sup> St., New York, NY 10036.

2.2 "ASTM" means American Society of Testing and Materials.

2.3 "BOCA" - refers to the "Building Officials & Code Administrators International", 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795.

2.4 "Building code" - includes all aspects of safe building construction and mechanical operations and all safety aspects related to building construction and mechanical operations.

2.5 "CABO" - refers to the "Council of American Building Officials", 5203 Leesburg Pike, Suite 708, Falls Church, Virginia 22041.

2.6 "Fire Commission" - means the thirteen (13) appointed members of the West Virginia State Fire Commission.

2.7 "Fire marshal" - means the West Virginia State Fire Marshal and/or his or her designated representatives.

2.8 "Local jurisdiction" - means municipal or county level government.

2.9 "ICC" or "International" means "International Code Council", 5203 Leesburg Pike, Suite 708, Falls Church, Virginia 22041-3401.

2.10 "NFPA" means "National Fire Protection Association", 1 Batterymarch Park, P. O. Box 9101, Quincy, MA 02269-9101.

2.11 "State Building Code" - means the entire contents of this rule and the referenced national codes.

#### 87-4-3 CONFLICTS

3.1 Whenever there is a conflict between the State Fire Code and the State Building Code, the State Fire Code takes precedence.

3.2 Whenever there is a conflict between the International Plumbing Code section of the State Building Code and the rules of the West Virginia State Department of Health and Human Resources, the rules of the Department of Health and Human Resources take precedence.

3.3 Whenever there is a conflict between the State Building Code and statutory laws of the State of West Virginia, the West Virginia Code takes precedence.

#### 87-4-4 NATIONAL STANDARDS AND CODES

4.1 The standards and requirements as set out and as published by the International Code Council, and American Standards Institute, as listed below, have the same force and effect as if set out verbatim in this rule, Except that any and all references to *ICC Electrical Code* mean NFPA 70, National Electric Code/4999- 2005

4.1.1 The 2003 International Building Code, Sixth Printing, ~~First Edition~~, 2000, with the following exceptions:

4.1.1.A. Provided; that the section entitled "Fire Prevention" and identified as Section 101.4.6 is deleted and not considered to be a part of this rule.

4.1.1.B. Further provided that the section entitled "Duties and Powers of Building Official" and identified as Section 104.1 General is modified to read as follows:

"The building official shall enforce the provisions of this code. The building official may render interpretations of this code and adopt policies and procedures in order to clarify the application of its provisions. The interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. The policies and procedures shall not have the effect of waiving requirements specifically provided for in this code."

4.1.1.C. Further provided that the entire section entitled "Board of Appeals" and identified as Section 112 is deleted and replaced with the following:

4.1.1.C. 1 Appeals Board: The current State Building Code establishes stringent qualifications for appeals board members. The 1996 BOCA National Building Code, Section 121.2.1 reads "The board of appeals shall consist of five individuals, one from each of the following professions or disciplines, with three forming a quorum at any appeal hearing.

A registered design professional who is a registered architect, or a builder or superintendent of building construction with at least ten years experience, five of which shall have been in responsible charge of work;

A registered design professional with structural engineering or architectural experience;

A registered design professional with mechanical or plumbing engineering experience; or a mechanical or plumbing contractor with at least ten years experience, five of which shall have been in responsible charge of work;

A registered design professional with electrical engineering experience; or an electrical contractor with at least ten years experience, five of which shall have been in responsible charge of work; and

A registered design professional with fire protection engineering experience; or a fire protection contractor with at least ten years experience, five of which shall have been in responsible charge of work.

4.1.1.C.2 Time of Appeal: The Appeals Board shall render a decision within 30 days of receipt of the appeal.

4.1.2 The 2003 International Plumbing Code, Fifth Printing, ~~First Edition~~, 2000

4.1.3 The 2003 International Mechanical Code, Fourth Printing, ~~First Edition~~, 2000

4.1.4 The 2003 International Fuel Gas Code, Fifth Printing, ~~First Edition~~, 2000, with the following exception:

Section 404.9 Underground piping systems shall be installed a minimum depth of 12 inches (305 mm) below grade. If the minimum depth cannot be maintained, the piping system shall be installed in conduit or shielded in an approved manner.

4.1.5 The 2003 International Property Maintenance Code, Second Printing, ~~First Edition~~, 2000. This Code may be rejected at the option of the local jurisdiction.

4.1.6 The 2003 International Energy Conservation Code, Fifth Printing, ~~First Edition~~, 2000.

4.1.7 The 2003 International Residential Code, Seventh Printing, ~~First Edition~~, 2000, with the following exceptions:

Section G2414.9 Underground piping systems shall be installed a minimum depth of 12 inches (305 mm) below grade. If the minimum depth cannot be maintained, the piping system shall be installed in conduit or shielded in an approved manner.

Section R303.4.1 Light Activation – The control for activation of the required interior stairway lighting shall be accessible at the top and bottom of each stairway without traversing any steps. The illumination of exterior stairways shall be controlled from inside the dwelling unit. Exceptions: 1. Lights that are continuously illuminated or automatically controlled. 2. Interior stairways consisting of less than three steps.

Section R312.1.1 Landings at doors – Where a stairway of two or fewer risers is located on the exterior side of a door, other than the required exit door, a landing is not required for the exterior side of the door.

Section R314.2 Stair Geometry – CABO One & Two Family Dwelling Code/1995 dimensions; maximum riser height of eight and one quarter (8 ¼) inches, minimum tread depth on nine (9) inches.

Section R315.1 Handrails – Handrails shall be provided on at least one side of stairways consisting of three or more risers. Handrails shall have a minimum height of 34 inches (864 mm) and a maximum height of 38 inches (96 mm) measured vertically from the nosing of the treads. All required handrails shall be continuous the full length of the stairs from a point directly above the top riser to a point directly above the lowest riser of the stairway. The ends of the handrail shall be returned into a wall or shall terminate in newel posts or safety terminals. A minimum clear space of 1 ½ inches (38 mm) shall be provided between the wall and the handrail.

Section R403.1.7.1: Building Clearances From Ascending Slopes is not applicable to this rule.

Section R403.1.7.1: Footings Setbacks From Descending Slope Surfaces is not applicable to this rule.

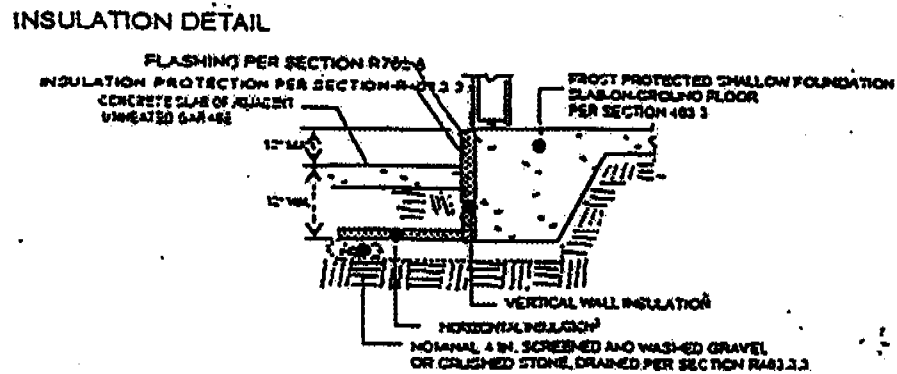
Section R403.3 Frost Protected Shallow Foundations – Frost protected shallow foundations shall not be used for unheated spaces such as porches, utility rooms, garages and carports, and shall not be attached to basements or crawl spaces that are not maintained at a minimum monthly mean temperature of 64 degrees F (18C).

NEW SECTIONS: R403.3.1.1 Foundations adjoining frost protected shallow foundations. Foundations that adjoin frost protected shallow foundations shall be protected from frost in accordance with Section R403.1.4.

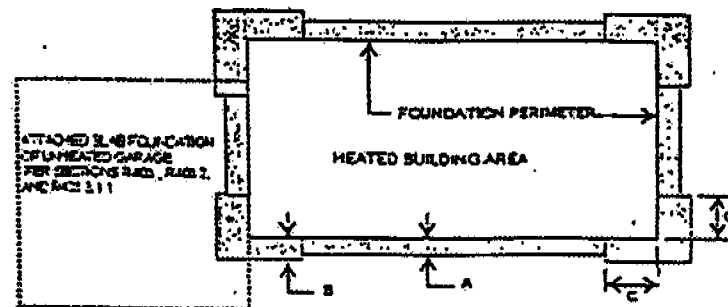
R403.3.1.2 Attachment to unheated garage. Vertical wall insulation and horizontal insulation of frost protected shallow foundations that adjoin a garage that does not have a monthly mean temperature maintained at a minimum of 64 degrees F (18 C), shall be in accordance with Figure R403.3(3) and Table R403.3. Vertical wall insulation shall extend between the frost protected shallow foundation and the adjoining slab foundation. Required horizontal insulation shall be continuous under the adjoining slab foundation and through any foundation walls adjoining the frost protected shallow foundation.

R403.3.1.3 Attachment to heated structure. Where a frost protected shallow foundation abuts a structure that has a monthly mean temperature maintained at a minimum of 64 degrees F (18 C), horizontal insulation and vertical wall insulation shall not be required between the frost protected shallow foundation abuts the heated structure, the horizontal insulation and vertical wall insulation shall extend along the adjoining foundation in accordance with Figure R 403.3(4) a distance of not less than Dimension A in Table R403.3.,

Exception: Where the frost protected shallow foundation abuts the heated structure to form an inside corner, insulation extending along the adjoining foundation is not required.



**HORIZONTAL INSULATION PLAN**



For SI: 1 inch = 25.4 mm

a. See Table R403.3 for required dimensions and R-values for vertical and horizontal insulation.

**FIGURE R403.3(3)**  
**INSULATION PLACEMENT FOR FROST-PROTECTED FOOTINGS ADJACENT TO UNHEATED GARAGE**

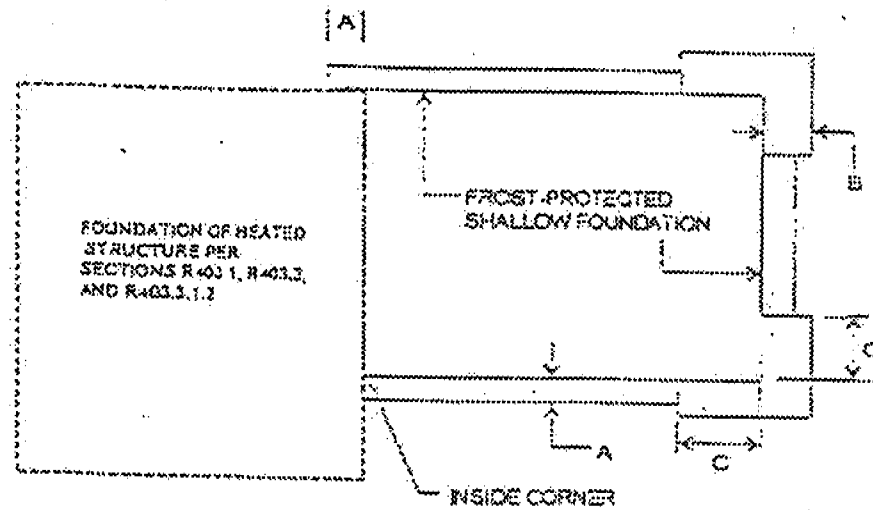


FIGURE R403.3(4)  
INSULATION PLACEMENT FOR FROST-PROTECTED FOOTINGS ADJACENT TO  
HEATED STRUCTURE

R5502.3.3 Floor cantilevers. NEW SECTION: Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.3.3 shall be permitted when supporting a light-frame bearing wall and roof only. The ratio of backspan to cantilever span shall be at least 3 to 1.

Table R502.3.3 NEW TABLE (attached)

**TABLE R502.3.3  
CANTILEVER SPANS FOR FLOOR JOISTS  
SUPPORTING LIGHT-FRAME EXTERIOR BEARING WALL AND ROOF ONLY a, b, c, f, g, h  
(Floor Live Load ≤ 40 psf, Roof Live Load ≤ 20 psf)**

Member & Spacing	Maximum Cantilever Span (Uplift Force at Backspan Support in Lbs.) <sup>4, e</sup>											
	Ground Snow Load						Roof Live Load					
	≤ 20 psf		30 psf		50 psf		70 psf		Roof Width		Roof Width	
	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.
2 x 8 @ 12"	20° (177)	15° (227)	15° (227)	18° (209)	18° (209)	18° (209)	20° (375)	20° (375)	20° (375)	19° (356)	19° (356)	19° (356)
	29° (220)	21° (297)	16° (364)	26° (271)	18° (354)	18° (354)	26° (271)	26° (271)	26° (271)	19° (356)	19° (356)	19° (356)
2 x 10 @ 16"	36° (166)	26° (219)	20° (270)	34° (198)	22° (263)	18° (324)	26° (277)	26° (277)	26° (277)	19° (356)	19° (356)	19° (356)
	32° (287)	32° (287)	25° (356)	36° (263)	29° (345)	21° (420)	29° (367)	29° (367)	29° (367)	23° (471)	23° (471)	23° (471)
2 x 12 @ 12"	42° (209)	42° (209)	31° (283)	37° (253)	37° (253)	27° (317)	36° (271)	36° (271)	36° (271)	31° (348)	31° (348)	31° (348)
	48° (136)	48° (136)	45° (169)	48° (164)	48° (164)	38° (206)	40° (233)	40° (233)	40° (233)	29° (304)	29° (304)	29° (304)
2 x 12 @ 8"	48° (136)	48° (136)	45° (169)	48° (164)	48° (164)	38° (206)	40° (233)	40° (233)	40° (233)	29° (304)	29° (304)	29° (304)
	48° (136)	48° (136)	45° (169)	48° (164)	48° (164)	38° (206)	40° (233)	40° (233)	40° (233)	29° (304)	29° (304)	29° (304)

For Sli: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m<sup>2</sup>

**Notes:**

- Tabulated values are for clear-span roof supported solely by exterior bearing walls.
- Spans are based on No. 2 Grade lumber of Douglas fir-larch, hem-fir, southern pine, and spruce-pine-fir for repetitive (3 or more) members.
- Ratio of backspan to cantilever span shall be at least 3:1.
- Connections capable of resisting the indicated uplift force shall be provided at the backspan support.
- Uplift force is for a backspan to cantilever span ratio of 3:1. Tabulated uplift values are permitted to be reduced by multiplying by a factor equal to 3 divided by the actual backspan ratio provided (3/backspan ratio).
- See Section R301.2.2.7.1 for additional limitations on cantilevered floor joists for detached one- and two-family dwellings in Seismic Design Categories D1 and D2.
- A full-depth rim joist shall be provided at the cantilevered end of the joists.
- Linear interpolation shall be permitted for building widths and ground snow loads other than shown.

Section N1101

N1101.1 Performance Objective

To provide cost-effective, energy-related requirements for design and construction of the building thermal envelope and heating-ventilating-air conditioning (HVAC) systems for one- and two-family dwellings.

N1101.2 Building Thermal Envelope

The minimum required installed R-value or maximum required U-value for all elements in the building thermal envelope (fenestration, roof/ceiling, opaque wall, floor, slab edge, crawl space wall, and basement wall) shall be determined by Table N1101, based on the building type and the climate zone where the building is located. Alternative compliance based on heat loss/gain calculations or systems analysis shall comply with Section N1101.

TABLE N1101  
PRESCRIPTIVE BUILDING ENVELOPE REQUIREMENTS

BUILDING LOCATION		MAXIMUM U-VALUE	MINIMUM INSULATION						
ZONE	HDD	FENESTRATION	ROOF/CEILING	FRAME WALLS	MASS WALLS	FLOOR OVER OUTDOOR AIR OR UNCONDITIONED SPACE	SLAB EDGE WIDTH/DEPTH	CRAWL SPACE WALL	BASEMENT WALL
1	0-1,499	ANY	R-19	R-11	R-4	R-11	R-0	R-0	R-0
2	1,500 - 2,999	0.90	R-22	R-13	R-5	R-13	R-0	R-4	R-0
3	3,000-3,999	0.75	R-26	R-13	R-6	R-13	R-4, 2 FT	R-5	R-0
4	4,000-4,999	0.65	R-26	R-13	R-7	R-13	R-4 2 FT	R-8	R-4
5	5,000-6,999	0.55	R-30	R-13	R-8	R-19	R-4, 2 FT	R-8	R-4
6	7,000-8,999	0.45	R-30	R-13	R-8	R-19	R-5, 2 FT.	R-8	R-8
7	9,000-12,999	0.40	R-38	R-19	R-14	R-19	R-8, 4 FT.	R-10	R-8

**NOTES:**

1. Building envelopes must also meet the air infiltration requirements of Section N1101.
2. Insulation materials shall be installed in accordance with the manufacturers instructions.
3. The sum of the R-values of cavity insulation and sheathing shall be used to determine the installed R-value.
4. For slabs that incorporate heating ducts or pipes in climates above 1,000 HDD, add R-2 to the table values.
5. The required R-value shall extend down to design frost depth in Zones 4 and 5, and down to the basement floor in zones 6 and 7.

**N1101.3 Floors**

**N1101.3.1 Floors Over Outdoor Air or Unconditioned Areas** – Floors over outdoor air or unconditioned areas shall meet the minimum R-value for Floor Over Outdoor Air or Unconditioned Space in Table N1101, based on the climate zone where the building is located.

**N1101.3.2 Slabs-on-Ground** – Slabs-on-ground, or slabs 12 inches or less below finished grade, shall meet the minimum R-value and depth/width dimension for Slab Edge in Table N1101, based on the climate zone where the building is located. The required R-value shall be applied to the exterior or interior of the foundation wall. Exterior insulation shall extend downward from the top of the slab and/or horizontally outward until the distance indicated in Table N1101 is reached. Interior insulation shall extend from the top of the slab downward and/or horizontally inward until the distance indicated in Table N1101 is reached. All horizontal insulation extending outward from the slab shall be covered by at least 10 inches of soil. The top edge of insulation installed between the exterior wall and the interior slab shall be permitted to be cut at a 45° angle to allow the concrete surface to extend to the wall. Slab edge insulation shall not be required in areas of "very heavy" termite infestation probability, in accordance with the Termite infestation Probability Map in Appendix A.

**N1101.4 WALLS**

**N1101.4.1 Wall Insulation** – Opaque walls and band joists exposed to outside air or to unconditioned space shall meet the minimum R-value for Frame Wall or Mass Wall in Table N1101, based on the wall type and the climate zone where the building is located. For Frame walls, the sum of the R-values of cavity insulation and insulated sheathing shall be used to determine the installed R-value. Walls exposed to unconditioned space shall have an R-value of R-13 when the minimum required R-value for the wall type in Table N1101 exceeds R-13.

**N1101.4.2 Wood Frame Walls** – Where insulated sheathing is used on wood frame walls in areas not otherwise required to have structural sheathing, the entire opaque wall shall be considered to be covered with the insulated sheathing for purposes of determining compliance with the minimum R-value for Frame Wall in Table N1101.

**N1101.4.3 Steel Frame Walls** – When steel framing is used, insulated sheathing with an R-value not less than R-2.5 in Zones 3 and 4 (3,000 – 4,999 HDD), R-5 in Zone 5 (5,000 – 6,999 HDD) and R-10 in Zones 6 and 7 (7,000 – 12,999 HDD) shall be installed in addition to the minimum required R-value for Frame Wall in Table N1101.

**N1101.4.4 Mass Walls** – Masonry or concrete walls having a mass greater than or equal to 30 pounds per cubic foot (pcf), solid wall walls having a mass greater than or equal to 20 pcf, and any other walls having a heat capacity greater than or equal to 6 Btu/ft<sup>2</sup> 2° shall be considered mass walls. Mass walls with exterior insulation or mass walls with integral insulation (insulation and mass mixed, such as log walls) shall be permitted to meet the Mass Wall criteria in Table N1101 based on the building type and the climate zone where the building is located. The R-value of mass walls with integral insulation shall be based on consideration of all elements of the wall assembly. Other mass walls shall meet the frame wall criteria for the building type and the climate zone where the building is located, based on the sum of the R-values of interior and exterior insulation.

**N1101.4.5 Crawl Space Walls** – All walls enclosing crawl spaces where the floor above the crawl space is not insulated in accordance with Table N1101 shall meet the minimum R-value for Crawl Space Wall in Table N1101, based on the climate zone where the building is located. The required R-value shall be applied to the inside or outside of the crawl space wall. The insulation shall extend downward from the sill plate to the level of the inside ground surface.

**N1101.4.6 Basement Walls** – All basement walls enclosing conditioned space shall meet the minimum R-value for Basement Wall in Table N1101, based on the climate zone where the building is located. The required R-value shall be applied on the inside or outside of the basement wall from the sill plate down to the design frost depth in Climate Zones 4 and 5, and to the basement floor in Zones 6 and 7. Buildings having basement walls with a maximum average exposure not greater than 12 inches above the adjacent grade, and having high efficiency equipment meeting the requirements specified in Table N1101.4.6 based on the climate zone where the building is located, are not required to meet the minimum R-value for Basement Wall in Table N1101.

TABLE N1101.4.6  
 EQUIPMENT TRADE-OFF FOR BASEMENT WALL INSULATION

BUILDING LOCATION		GAS FURNACE WITH CENTRAL AIR CONDITIONING	AIR SOURCE HEAT PUMP
Zone	HDD	Minimum AFUE	Minimum HSPF
1-3	0-3,999	---	---
4-5	4,000 – 6,999	88	7.8
6-7	7,000 – 12,999	90	8.0

N1101.4.5 Masonry Veneer – When insulation is placed on the exterior of a slab edge, crawl space wall, or basement wall supporting masonry veneer, the horizontal surface supporting the veneer shall not be required to be insulated.

N1101.4.6 Protection of Foundation Insulation – Exposed insulating materials applied to the exterior of foundation walls shall be protected to prevent degradation of thermal performance. The protection shall extend at least 6 inches below finished grade. Plastic foam insulation used below grade shall comply with ASTM C578.

**N1101.5 FENESTRATION**

N1101.5.1 Labeling – The U-value of fenestration products (windows and glazed doors) shall be indicated on a label affixed to these products by the manufacturer or, where such values are not indicated, the U-value shall be determined in accordance with Table N1101.5.1.

TABLE N1101.5.1  
 ASSUMED U-VALUE FOR WINDOWS AND GLAZED DOORS

FRAME MATERIAL AND PRODUCT TYPE	SINGLE GLAZED	DOUBLE GLAZED
Metal Without Thermal Break	1.13	0.70
Metal with Thermal Break	1.07	0.63
Reinforced Vinyl/Metal-Clad Wood/ Wood/Vinyl Fiberglass	0.90	0.55

N1101.5.2 Windows – For elements within the building thermal envelope, up to 6 square feet of glazed areas is exempt from the maximum required U-value in Table N1101.5.1

N1101.5.3 Skylights – Minimum skylight requirements will be as follows:

Zone 1 (0-1, 499 HDD): Any skylight is permitted.

Zones 2 3 (1,500 – 3,999 HDD): Any double glazed skylight is permitted; and

Zones 4 and above (4,000 HDD and above): Any double glazed skylight with a wood, vinyl or fiberglass frame. Metal clad frames will be permitted.

N1101.5.4 Opaque Doors – Opaque doors shall have a maximum U-value of 0.39 or minimum R-value of 2.5. When the U-value of the door is not provided by the manufacturer, it shall be determined in accordance with Table N1101.5.1. One opaque door per dwelling unit shall be permitted to be exempt from this U-value requirement.

DOOR CONSTRUCTION	WITH FOAM CORE	WITHOUT FOAM CORE
Steel Doors (1 ¾ inches thick)	0.35	0.60
Wood Doors (1 ¾ inches thick)	Without Storm Door	With Storm Door
Panel	0.54	0.36
Hollowcore flush	0.46	0.32
Solid core flush	0.40	0.26

**N1101.6 ROOFS AND CEILINGS**

Roof/ceiling assemblies, including ceilings below unconditioned attics and cathedral ceilings, shall meet the minimum R-value for Roof/Ceiling in Table N1101, based on the climate zone where the building is located. Insulation can be compressed or reduced at eaves to accommodate roof framing or ventilation.

Exception: R-30 shall be required for cathedral ceilings whenever the required R-value for Roof/Ceiling in Table N1101 exceeds R-30.

**N1102 MOISTURE CONTROL**

In all framed walls, floors and roof/ceilings comprising elements of the building thermal envelope, an approved vapor retarder having a maximum rating of 1.0 perm shall be installed on the warm-in-winter side of the insulation.

Exception:

1. Where the insulated cavity of space is ventilated to allow moisture to escape.
2. In hot and humid climate areas as shown in Appendix A.

### N1103 AIR INFILTRATION

The building envelope shall be designed and constructed to limit air infiltration to the conditioned area of the dwelling. All elements comprising the building thermal envelope, including all exterior joints, seams, or penetrations, shall be caulked, gasketed, taped or covered with moisture vapor permeable sheathing paper or house wrap on the exterior. All windows and doors installed in the building thermal envelope shall be weatherstripped, gasketed, or caulked.

### N1104 HVAC SYSTEMS

#### N1104-1 HVAC AND WATER HEATING APPLIANCES

HVAC and service water heating appliances shall be labeled as complying with minimum efficiency requirements specified by the National Appliance Energy Conservation Act of 1987 and regulations adopted thereunder by the U. S. Department of Energy.

#### N1104-2 CONTROLS

Each heating, cooling, or combination heating and cooling system shall be provided with at least one adjustable thermostat for the regulation of temperature.

#### N1104-3 AIR HANDLING DUCT SYSTEM

N1104-3.1 DUCT SEALING – All supply and return ducts located outside the building thermal envelope shall have joints sealed with gaskets, mastics, tapes installed in accordance with the manufacturers instructions, or by other approved methods.

N1104-3.2 DUCT INSULATION – Minimum required duct insulation for all supply and return ducts located in unconditioned space shall be R-5 in all climatic zones.

#### N1104-4 HEATING AND COOLING PIPING INSULATION

All HVAC system piping carrying fluids with a temperature less than 55°F or greater than 120°F shall have minimum insulation thickness of ½ inch.

## N1105 ALTERNATIVE COMPLIANCE

### N1105-1 HEAT GAIN/HEAT LOSS CALCULATIONS

Alternative compliance with the requirements of Table N1101 shall be permitted to be determined through a heat gain or heat loss calculation as follows: the required R-value or U-value of an element in the building thermal envelope in Table N1101 may be increased or decreased, provided the total heat gain or loss for the entire building does not exceed the total resulting from conformance to the values specified in Table N1101.

### N1105-2 SYSTEMS ANALYSIS

Alternative compliance with the requirements of this chapter shall be permitted to be determined through the use of a systems analysis using a standard design in accordance with Table N1101, and Section N1104. A proposed design complies with this chapter if it has a projected annual energy use for heating, cooling and service water heating not greater than the energy use of the standard design, calculated in accordance with accepted engineering practices. Energy use for both homes shall be calculated based on the same assumptions and building location. The standard design shall have the same floor area, envelope component areas, building orientation, glazing orientation, door areas, and building geometry as the proposed design.

4.1.8 The 2003 ICC/ANSI A117.1 Standards for Accessibility & Usable Buildings & Facilities, First Printing Edition, 1998.

4.1.9 The 2003 International Existing Building Code, Third Printing, with the following exception:

Omit reference to International Fire Code and substitute NFPA Life Safety Code ~~2000~~ 2003 Edition.

87-4-5 The following structures are not subject to inspection by local jurisdictions:

Group U utility structures and storage sheds comprising an area not more than 150 sq. ft. which have no plumbing or electrical connections and are used only for residential storage purposes. (Examples include sheds that are for the residential storage of lawnmowers, tools, bicycles or furniture.) Not included are those utility structures and storage sheds which have plumbing or electrical connections are a non-residential use or for the storage of explosives or other hazardous or explosive materials.

87-4-6. A copy of the codes listed in Subsection 4.1 of this rule have been filed with the Secretary of State. These code books, collectively or separately, may be obtained by contacting the Building Officials & Code Administrators International, 4051 West Flossmoor Road, Country Club Hills, Illinois 60477-5795, telephone 708/799-2300; or BOCA Mid-East Regional Office, 1245 South Sunbury Road, Suite 100, Westerville, OH 43081-9308, telephone (614) 890-1064.

#### 87-4-7 ADOPTION BY LOCAL JURISDICTION

7.1 Each local jurisdiction adopting the State Building Code shall notify the State Fire Commission in writing. The local jurisdiction shall send a copy of the ordinance or order to the State Fire Marshal, West Virginia State Fire Commission, 1207 Quarrier Street, 2nd floor, Charleston, West Virginia 25301, within thirty (30) days of adoption.

7.2 Each local jurisdiction which adopts the State Building Code is responsible for the enforcement of the building code as provided in West Virginia Code 7-1-3n and 8-12-13.

7.3 Throughout the national codes, adopted in subsection 4.1 of this rule, there are discretionary provisions which require further action by the adopting local jurisdiction in order to adapt these codes to various local conditions. It is therefore the intent of this rule to further authorize each local jurisdiction to further complete, by order or ordinance, those respective areas which are indicated to be completed by the adopting "jurisdiction".

7.4 Within the penalty sections of each of the national codes, adopted in Section 4.1 of this rule, there is a penalty for imprisonment. The provision of imprisonment for any violation of this rule is optional with each adopting local jurisdiction.

7.5 Each of the national codes, adopted in subsection 4.1 of this rule, provides for a separate appeals board. However, the intent and requirements for an appeal board may be met with the creation by the local jurisdiction of a single appeals board for the entire "State Building Code."

#### 87-4-8 EXISTING BUILDING CODES

8.1 All building codes which have been adopted by local jurisdictions prior to the passage of West Virginia Code 29-3-5b, in 1988, are null and void.