WEST VIRGINIA
SECRETARY OF STATE
BETTY IRELAND
ADMINISTRATIVE LAW DIVISION

Do Not Mark In This Box

FILED

2006 MAR 26 P 2:26

OFFICE OF
SECRETARY OF STATE

Form #6

NOTICE OF FINAL FILING AND ADOPTION OF A LEGISLATIVE RULE AUTHORIZED BY THE WEST VIRGINIA LEGISLATURE

AGENCY: State Fire Commission TITLE NUMBER: 87

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: ____

THE ABOVE RULE HAS BEEN AUTHORIZED BY THE WEST VIRGINIA LEGISLATURE.

AUTHORIZATION IS CITED IN (house or senate bill number) HB 4192

SECTION 64-6-1(b), PASSED ON March 11, 2006

THIS RULE IS FILED WITH THE SECRETARY OF STATE. THIS RULE BECOMES EFFECTIVE ON THE FOLLOWING DATE: May 15, 2006

James W Spears

Authorized Signature

#14.60

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 compliance with the minimum standards of safe construction of all structures erected or renovated throughout this state.

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

1.3 Filing Date: April 26, 2006

1.4 Effective Date: May 15, 2006

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, 25 West 43rd St., Fourth Floor, New York, NY 10036.

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

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

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

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

2.6 "ICC" or "International" means "International Code Council", 5203 Leesburg Pike, Suite 600, Falls Church, Virginia 22041-3401.

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

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

2.9 "State Fire Code" means the entire contents of State Fire Commission, State Fire Code, 87CSR1, and the referenced standards and 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 requirements 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 laws of the State of West Virginia take 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 National Standards Institute, and the National Fire Protection Association as listed in this subsection, have the same force and effect as if set out verbatim in this rule.

4.1.1 The 2003 edition, International Building Code, Sixth Printing, 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 entire section entitled "Board of Appeals" and identified as Section 112 is deleted and replaced with the following:

Section 112 Board of Appeals
112.3 Qualifications. The board of appeals shall consist of five members, with up to three alternates, who are qualified by experience and training to

pass on matters pertaining to building construction and are not employees of the jurisdiction. They may include, but are not limited to, a WV Registered Professional Architect or Engineer, or a WV Licensed General Building, Residential, Electrical, Piping, Plumbing, Mechanical or Fire Protection Contractor, with at least 10 years experience, five of which shall be in responsible charge of work.

4.1.2 The 2003 edition of the International Plumbing Code, Fifth Printing.

4.1.3 The 2003 edition of the International Mechanical Code, Fourth Printing.

4.1.4 The 2003 edition of the International Fuel Gas Code, Fifth Printing, 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 edition of the International Property Maintenance Code, Second Printing. This Code may be rejected at the option of the local jurisdiction.

4.1.5.A This code may be adopted by the local jurisdiction without requiring adoption of the other national codes and standards listed in this section.

4.1.6 The 2003 edition of the International Energy Conservation Code, Fifth Printing.

4.1.7 The 2003 edition of the International Residential Code for One and Two Family Dwellings, Seventh Printing, with the following exceptions:

Section G2415.9 (404.9) Minimum Burial Depth. 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 R303.6. 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 R 311.4.3 Landings at doors – Where a stairway of two or fewer risers is located on the exterior side of a door, other that the required exit door, a landing is not required for the exterior side of the door.

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

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

4.1.7.A Chapter 11 of the 2003 edition of the International Residential Code for One and Two Family Dwellings, Seventh Printing, entitled "Energy Efficiency", is deleted and not considered to be a part of this rule. In lieu thereof, the following standards are adopted and made a part of this rule:

Chapter 11
Energy Efficiency

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 WALLS3	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 Figure R-301.2 (6).

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/ftY 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.

TABLE N1101.5.4
ASSUMED R-VALUE FOR NON-GLAZED DOORS

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 Hollowcore flush Solid core flush	0.54 0.46 0.40	0.36 0.32 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.

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 American National Standards for Accessibility & Usable Buildings & Facilities, First Printing.

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

4.1.9.A Omit reference to International Fire Code and substitute NFPA Life Safety Code 2003 Edition.

4.1.10 The 2005 edition of the National Electric Code, NFPA 70.

87-4-5 EXCEPTIONS

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 AVAILABILITY OF CODE BOOKS

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 International Code Council, 4051 West Flossmoor Road, Country Club Hills, Illinois 60478-5795, 1-888-422-7233, or the ICC Store, 1-800-786-4452.

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 or amendments which require further action by the adopting local jurisdiction in order to adapt these codes to various local conditions. The appendices are not a part of the code and must also be adopted by the local jurisdiction to be enforceable. 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" and any of the appendices the local jurisdiction wishes to adopt.

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.