Rhode Island Building Code Standards Committee

PUBLIC NOTICE CONCERNING PROPOSED REGULATORY CHANGE

Pursuant to provisions of Chpater23-27.3-109.1 of the General Laws of Rhode Island as amended, and in accordance with the Administrative Procedures Act Chapter §42-35-2.3 of the General Laws, The Building Code Commission, Building Code Standards Committee propose amendments to the Rhode Island Building Codes and gives notice of intent to hold a public hearing to afford interested parties the opportunity for public comment.

Public comment will be solicited on the following proposals:

1) Amendments to SBC-1 Rhode Island Building Code
2) Amendments to SBC-2 Rhode Island One and Two Family Dwelling Code
3) Amendments to SBC-3 Rhode Island State Plumbing Code
4) Amendments to SBC-4 Rhode Island State Mechanical Code
5) Amendments to SBC-6 Rhode Island Property Maintenance Code
6) Amendments to SBC-8 Rhode Island Energy Conservation Code
7) Amendments to RISBC-19 Rhode Island Fuel Gas Code

The public hearing will commence at 10:00 AM on **Wednesday, May 15, 2013** at the Department of Administration, Second Floor Conference Room A. Interpreter services for the hearing impaired will be provided if such services are requested at least three (3) business days prior to the hearing. Request for such services will be made by Building Code Commission Staff. Request for such services may be made in writing or by calling (401) 222-1129. A recording of the hearing will be made by the Recording Secretary for the Building Code Standards Committee.

A copy of the proposed regulations will be available for examination from April 15, 2013 through May 15, 2013 at the office of the Building Code Commission located at One Capitol Hill, Second Floor, Providence Rhode Island 02908. Electronic Copies of the proposed regulations will also be available on the Building Code Commission web site www.ribcc.ri.gov.

John P. Leyden, CBO
Building Code Commissioner

Date Posted: 4/11/13

RHODE ISLAND
STATE BUILDING CODE
SBC-2
Rhode Island One and Two Family Dwelling Code

Effective **July 1, 20~~10~~13**

Replaces **SBC-2010**

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Administration
BUILDING CODE STANDARDS COMMITTEE

One Capitol Hill
Providence, Rhode Island 02908-5859
(401) 222-3033
FAX NO (401) 222-2599

www.ribcc.ri.gov

~~10~~ 11th EDITION

Regulation SBC-2
Rhode Island One & Two Family Dwelling Code
July 1, 20~~10~~13

The Building Code Standards Committee, in accordance with the rule making authority of Title 23, Chapter 23-27.3, Section 109.1, paragraphs a through c inclusive, has formally adopted and promulgated as the Rhode Island State Building Code, the provisions of the International Building Code, 20~~09~~12 edition, as published by the International Code Council, Inc. (I.C.C.), together with amendments thereto hereinafter set forth to the articles and sections of this code:

The provisions of Title 23, Chapter 27.3 of the General Laws of Rhode Island establishing administration and enforcement are hereby incorporated by reference. Regulatory Administration Chapter 1 immediately follows and is supplemental to the General Laws.

Editorial Note: Code users please note:
When purchasing or using the IRC 20~~09~~12 code, please take note of the particular printing edition. Errata to that printing edition is available on-line directly at no charge at *www.iccsafe.org/cs/codes/pages/errata.aspx* or call the office of the State Building Code Commissioner at 401-222-1129 for further information.

Printed copies of the administrative and enforcement provisions of Title 23, Chapter 27.3 are available at the Office of the State Building Code Commission or on-line at http://www.rilin.state.ri.us/Statutes/TITLE23/23-27.3/INDEX.HTM

The International Residential Code, 20~~09~~12 Edition, is protected by the copyright that has been issued to the ICC. As a result, the State Building Code is not available in complete form to the public in an electronic format. The International Residential Code 20~~09~~12 edition that is referred to within is contained in a printed volume and is also in an electronic format that have been published by the ICC under an exclusive license.

The Office of the State Building Code Commissioner has purchased volumes of these codes and they shall be distributed to Rhode Island cities and towns during the month of June 20~~10~~13 so that local officials will have access to the code prior to the implementation of these rules on July 1, 20~~10~~13.

In order to assure public access to this code the Office of the State Building Code Commissioner shall provide a copy of this code to the Rhode Island State Library, which is located on the second floor of the State House. In addition, all codes may be viewed during business hours at the Department of Administration's Library which is located on the fourth floor of the William E. Powers Building, One Capitol Hill, Providence.

The Legislative Regulation Committee approved adoption of this code on ~~March 4, 2010~~.

By:
John P. Leyden
Executive Secretary
Rhode Island Building Code Standards Committee

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BUILDING CODE STANDARDS COMMITTEE

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Executive Secretary

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Minimum Housing Inspector

Thomas Coffey
Legal Counsel

STATE BUILDING CODE REGULATIONS

The following list includes all regulations promulgated by the State Building Code Standards Committee. All regulations are available for a fee at the State Building Commission.

SBC	REGULATION	
1.	Building Code	SBC-1-20~~10~~13
2..	One and Two Family Dwelling Code	SBC-2-20~~10~~13
3.	Plumbing Code	SBC-3-20~~10~~13
4.	Mechanical Code	SBC-4-20~~10~~13
5.	Electrical Code	SBC-5-20~~18~~11
6.	Property Maintenance Code	SBC-6-20~~10~~13
7.	Reserved	
8.	Energy Conservation Code	SBC-8-20~~10~~13
9	Enforcement and Implementation Procedures for Projects Under the Jurisdiction of The State of Rhode Island	SBC-9
10.	Code Interpretations	SBC-10
11.	Certification of Building Officials, Building, Electrical, Plumbing and Mechanical Inspectors	SBC-11-2010
12.	New Materials and Methods of Construction	SBC-12
13.	State Building Code for Existing Schools	SBC-13
14.	Reserved	
15.	Reserved	
16.	Reserved	
17.	Public Buildings Accessibility Meeting Standards	SBC-17
18.	Native Lumber	SBC-18
19.	Fuel Gas Code	SBC-19-20~~10~~13
20.	The State of Rhode Island Rehabilitation Building and Fire Code for Existing Buildings and Structures	SRC-1-2002

Chapter 1

R101.1 Delete and substitute the following:

R101.1Title.
These provisions shall be known as the Rhode Island One and Two Family Dwelling Code SBC-2-20~~10~~13 and shall be cited as such and will be referred to herein as "this code".

R101.2 Delete and substitute the following:

R101.2 Scope.
The provisions of this code shall apply to the construction, alteration, enlargement, replacement, repair, equipment, use and occupancy and location of detached one-and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress, and their accessory structures.

Exception: Existing one and two family buildings undergoing a change of use shall comply with the provisions of the State Building Code SBC-1 or State Rehabilitation Code SRC-1 as applicable.

R101.3 Delete and Substitute the following

R101.3 Intent.
The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment.

R102.5 Delete and substitute the following:

R102.5Appendices
Appendices A, B, C, D, F, N, P, and R are informative only and not part of this code. Appendices E, G, H, J, K, M and O apply. Appendices I, L, and Q are deleted.
New RI Appendix AA and RP is added.

R102.7 Delete and substitute the following:

R102.7 Existing structures.
The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as specifically covered in this code or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

R105.2 Delete R105.2 and substitute the following:

R105.2 Work exempt from permit.
Permits shall not be required for the following.
Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures provided the floor area does not exceed 64 square feet (18.58 m^2).
2. Fences not over 6 feet (1829 mm) high.
3. Retaining walls that are not over 32" in height measured from the lower finished grade to the top of the wall, unless supporting a surcharge.
   Exception
   1. All cast-in-place concrete retaining walls greater than 24" in height shall require a permit.
   2. All engineered masonry retaining wall systems shall be installed in accordance with manufacturer's installation instructions
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallon (18 927L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade and not over any basement or story below.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. Prefabricated swimming pools that are less than 24 inches (610mm) deep, and man-made landscape ponds of any depth.
8 Swings and other playground equipment, and play structures less than 64 square feet.
9. Window awnings supported by an exterior wall.
10. Replacement window sash installations.
    Exception
    Replacement window installations that include a frame and sash(es) require a permit.

Electrical:
Maintenance: A permit shall not be required for replacement of lamps, receptacles, devices, or fixtures, including the connection of portable electrical equipment to approved permanently installed receptacle.

Gas:

1. Replacement of any minor part or appliance that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation appliances.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.

Plumbing:

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

R105.3.1.1 Delete and substitute the following:

R105.3.1.1 Substantially improved or substantially damaged existing buildings or structures.

For application for reconstruction, rehabilitation, addition, or other improvement of existing buildings or structures located in an area prone to flooding as established by Table R301.2 (1) and community FIRM documents, the value of the proposed work or repair shall be provided by the owner or authorized agent and reviewed by the Building Official. If the Building Official determines that the proposed work equals or exceeds 50% of the market value of the building or structure, shall comply with the new code.

R107 Delete section R 107 in its entirety and substitute the following new section R107 Fabric Structures.

Section R107 Fabric Structures

R107.1 Fabric Structures:

Fabric structures shall be located in accordance with applicable local zoning code provisions. Permits shall be required for any structure over 200 sq. ft. in area and shall be installed in accordance with manufacturer's installation instructions. Fabric structures over 200 sq. ft. in area but less than 400 sq. ft in area shall have engineered wind anchors installed to withstand design wind loads and shall not remain in place for more than 6 months in any 12 consecutive month period. All structures over 400 sq. ft. and/or intended to be in place for more than a 12 month period, shall only be approved pending a satisfactory decision by the local Building Code Board of Appeals, unless full code

compliance for permanent structures in all respects is demonstrated to the satisfaction of the local building official.

R110.2 Delete R110.2 and substitute the following:

R110.2 Change of Use.
Change of use shall only be made in accordance with the provisions of the State Building Code SBC-1.

Delete R110.3 #8 without substitution

Add the following section R115:

R115 Other

R115.1 Other Administrative issues.
The Administrative provisions of RI GL 23-27.3-100 et al are included herein into the balance of this Chapter 1 Administration.

Delete the following IRC 2009 sections and refer to appropriate Sections of Article 1 GL 23-27.3-100 et al.

R103.1, R103.2, R103.3, R104.6, R104.7, R104.8, R105.2.2, R105.3.1, R105.3.2, R105.4, R105.5, R105.6, R105.7, R106.3.1, R106.3.2, R106.3.3, R106.5, R107.1, R107.2, R107.3, R107.4, R108.1, R108.2, R108.3, R108.4, R108.5, R108.6, R112.1, R112.2, R112.2.1, R112.2.2, R112.3, R112.4, R113.1, R113.2, R113.3, R113.4, R114.1, R114.2.

Retain the following IRC 2009 Sections:
R101.3, R102.1, R102.2, R102.3, R102.4, R102.6, R104.10, R102.7.1, R104.1, R104.2, R104.3, R104.4, R104.5, R104.9, R104.9.1, R104.10.1, R104.11, R104.11.1, R105.1, R105.2.1, R105.2.3, R105.3, R105.8, R106.1, R106.1.1, R106.1.2, R106.1.3, R106.2, R106.3, R106.4, R109.1, R109.1.1, R109.1.2, R109.1.3, R109.1.4, R109.1.5, R109.1.5.1, R109.1.6, R109.2, R109.3, R109.4, R110.1, R110.3, R110.4, R111.1, R111.2, R111.3.

Chapter 2

To Chapter 2 Definitions. Delete and Substitute the following

ACCESSORY STRUCTURE.
In one- and two-family dwellings not more than three stories high with separate means of egress, a building, the use of which is incidental to that of the main building and which is located on the same lot.

To Chapter 2 Definitions add the following:

FABRIC STRUCTURE:
Structures utilizing wood, metal or plastic frames and covered with cloth, canvas, or plastic material, excluding tents, agricultural greenhouses, and furnishings such as umbrellas, awnings or portable shade canopies, and accessory to the residential use of the primary structure. If used for non-residential accessory use, see State Building Code SBC-1-20~~10~~12.

SLEEPING UNIT:
A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

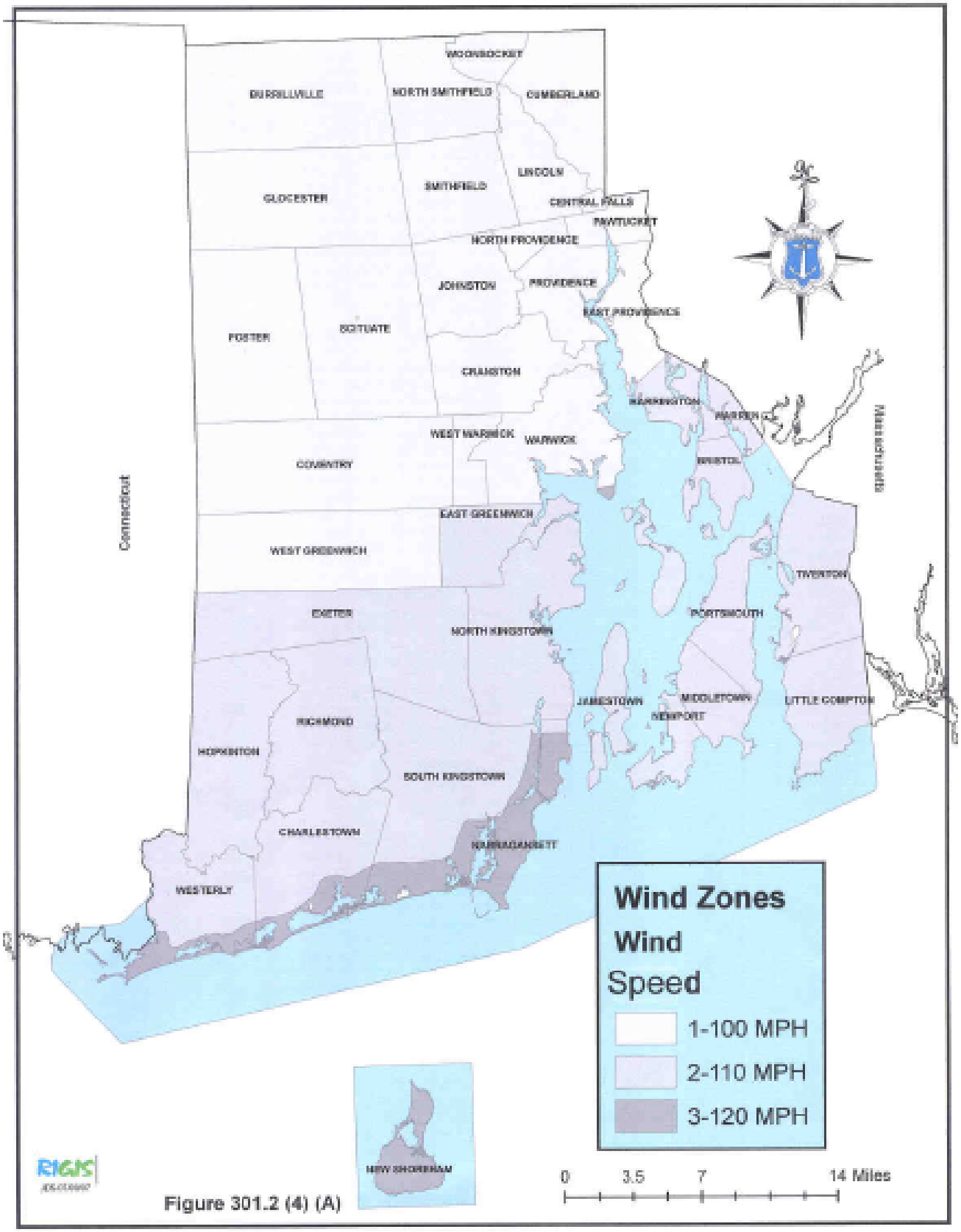

Figure 301.2 (4) (A)

Delete IRC Figures R301.2(4) and substitute the following

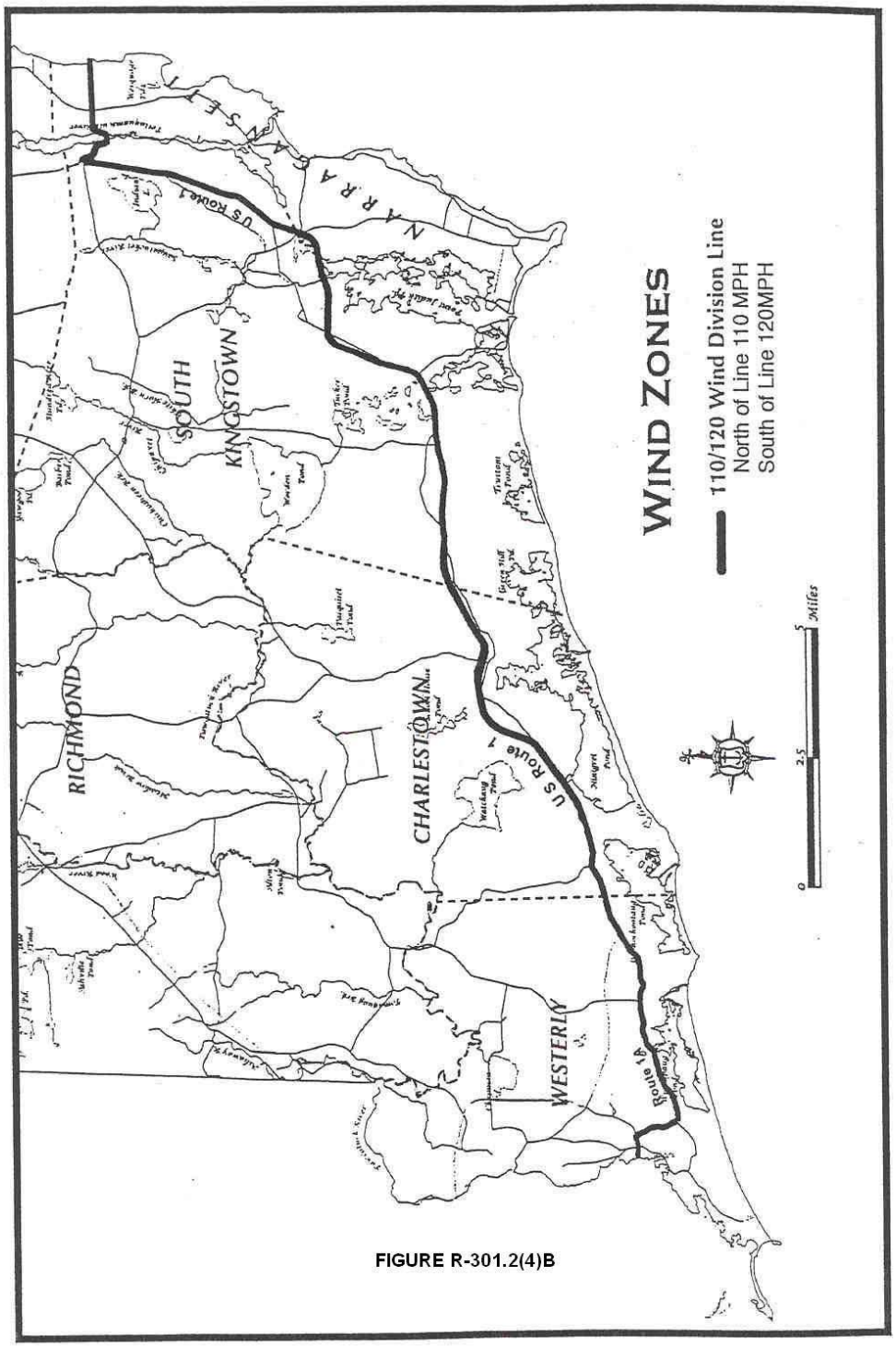

FIGURE R-301.2(4)B

Chapter 3

R301.2 Delete and substitute the following:

R301.2 Climatic and geographic designs criteria.
Buildings shall be constructed in accordance with the provisions of this code. Additional criteria is established and set forth in Table R301.2 (1)

Table R301.2(1) Delete and substitute the following:

Table R301.2(1)				
Ground Snow Load	Wind	Topographic Effects	Seismic Design Criteria	
30psf[1, 2]	See figure R301.2(4)	No	None[4]	
Weathering	Frost line depth[2,3]	Termite	Decay	
Severe	40"	Moderate to Heavy	Slight to Moderate	
Winter design Temp	Ice Shield Underlayment Required	Flood Hazards	Air Freezing Index	Mean Temperature Annual
0° F in Prov County 5° All Other	Yes	Yes (See Community FIRMS)	1200 ° Days B.F.	50 ° F

NOTES:
1. Roof live load and roof snow load are not additive
2. New Shoreham frost depth is 30" and Ground Snow Load is 25 psf.
3. Requirements for frost depth footings for accessory attached and detached structures are as follows:
   a. Structures and detached accessory buildings of 0-199 sq. feet do not require any frost depth foundations or footings. Two ground screw anchors or other means approved by the building official shall be provided to resist overturning.
   b. Accessory attached structures such as decks, platforms or landings shall have footings extending to 3'-4" below grade. Exterior stairs and steps off decks, balconies and platforms greater than 30" above grade shall have stringer supports extending to 12" below grade, and shall be supported and secured to prevent lateral displacement or vertical collapse due to grade changes.
4. Seismic design criteria is not required for buildings and structures regulated by this code.

R301.2.1 Delete and substitute the following:

R301.2.1 Wind limitations.
Buildings and portions thereof shall be limited by wind speed, as defined in Table R301.2(1), and construction methods in accordance with this code. Basic wind speeds shall be determined from Table R301.2(1) and Figure R301.2(4) A & B. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this sections for each portion shall apply. Where loads for windows, skylights and exterior doors are not otherwise specified, the loads listed in Table R301.2(2) adjusted for height and exposure per Table R301.2(3), shall be used to determine design load performance requirements for windows and doors.

Exception: All accessory structures less than 200 sq. ft. in area.

R301.2.1.1 Delete and substitute the following:

R301.2.1.1 Design criteria.
Construction in regions where the basic wind speeds from Figure R301.2(1) equal or exceed 110 miles per hour (177.1 km/h) shall be designed in accordance with one of the following.

1. American Forest and Paper Association (AF&PA) Wood Frame Construction Manual for One- and Two-Family Dwellings (WFCM); or
2. Southern Building Code Congress International Standard for Hurricane Resistant Residential Construction (SSTD 10); or
3. International Code Council (ICC) Standard for Residential Construction in High Wind Regions (ICC-600); or
4. Hurricane Resistant Residential Construction (SSTD 10); or Minimum Design Loads for Buildings and Other Structures (ASCE-7);
5. Cold-formed steel construction shall be designed in accordance with the provisions of this code.
6. Concrete construction shall be designed in accordance with the provisions of this code.
7. Structural insulated panel (SIP) walls shall be designed in accordance with the provisions of this code.
8. For all communities located in the 110 MPH and 120 MPH wind zones, the prescriptive criteria in Appendix AA may be used for buildings and structures in lieu of items 1-3 above:

   Exceptions to item 8:
   1. Buildings and structures of any size in 110 MPH or 120 MPH wind zones located in a V zone as determined by community FIRMS.
   2. Two or more story buildings and structures of any size located in 120 MPH wind zone with more than 20% exterior fenestration.
   3. Two or more story structures with a building height greater than 33’ as measured from Grade Plane to the average height of the highest roof surface.

4. Any two or more story structure or building with opening fenestration greater than 40% on any one wall.

R301.2.1.2 Delete section R301.2.1.2 and substitute the following:

301.2.1.2 Protection of openings.
Windows in buildings located in Wind Zone 3 shall have glazed openings protected from windborne debris or the building shall be designed as a partially enclosed building in accordance with the International Building Code. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and of ASTM E 1886 referenced therein.

Exception: Wood structural panels with a minimum of thickness of 7/16 inch (11.1 mm) and a maximum span of 8 feet (2438 mm) shall be permitted for opening protection in one- and two-story buildings. Panels shall be precut to cover the glazed openings with attachment hardware provided. Attachments shall be provided in accordance with Table R301.2.1.2 or shall be designed to resist the components and cladding loads determined in accordance with the provisions of the International Building Code. And shutter systems approved by Building Code Standards Committee.

Delete without substitution R301.2.1.5 thru R301.2.2.4

Delete and substitute the following

R302.1 Exterior walls. Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in guidance with Appendix RP2904 shall comply with Table R302.1(2).

Delete section R302.2 exceptions

Add the following section R302.2 exception and substitute the following:

Exception: A common 2- hour fire-resistance-rated wall assembly tested in accordance with ASTME 119 or UL 263 is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Rhode Island Electrical Code SBC-5. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycombed-core steel doors not less than 1 3/8 inhces (35 mm) thick, or 20-minute fire-rated doors,~~equipped with a self-closing device.~~

Add the following section R303.1 Habitable rooms.

Exceptions:

1. The glazed areas need not be openable where the opening is not required by Section R310 and an *approved* mechanical *ventilation* system capable of producing 0.35 air change per hour in the room is installed or a whole-house mechanical *ventilation* system is installed capable of supplying outdoor *ventilation* air of 15 cubic feet per minute (cfm) (78 L/s) per occupant computed on the basis of two occupants for the first bedroom and one occupant for each additional bedroom.

Delete without substitution R303.4 Mechanical ventilation

~~**R303.4 Mechanical ventilation.** Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch w.c (50Pa) in accordance with Section N1102.4.1.2, the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3.~~

Delete without substitution R303.~~4~~5.2

~~R303.6~~ 303.7 Delete section R303.~~6~~ 7 and substitute the following.

~~**R303.6**~~ 303.7 **Stairway illumination.**
~~Except for bulkhead-covered stairs from basements,~~ All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway.

Exception: An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section.

~~R303.8~~303.9 ~~Delete without substitution~~

R305.1 Delete R305.1 and substitute the following:

R305.1 Minimum Height.
Habitable rooms, except kitchens, shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) for at least 50 per cent of their required areas. Not more than 50 percent

of the required area may have a sloped ceiling less than 7 feet 6 inches (2286 mm) in height with no portion of the required area less than 5 feet (1524 mm) in height. If any room has a furred ceiling, the prescribed ceiling height is required for at least 50 percent of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm)

Exceptions:

1. Beams and girders spaced not less than 4 feet (1219 mm) on center may project not more than 6 inches (153 mm) below the required ceiling height.
2. All other rooms including kitchens, baths and hallways may have a ceiling height of not less than 7 feet (2134 mm) measured to the lowest projection from the ceiling.
3. Ceiling heights in basements without habitable spaces may not be less than 6 feet 8 inches (2032 mm) clear except for under beams, girders, ducts or other obstructions where the clear height shall be 6 feet 4 inches (1931mm).
4. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches (2036mm) over the fixture and at the front clearance area for fixtures as shown in Figure R307.2. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches (2036 mm) above a minimum area 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
5. Habitable basements used only as recreation rooms shall have a ceiling height of not less than 7 feet, except for under beams, girders, ducts and soffits, etc. where the clear height shall be not less than 6'-4".
6. Existing basements renovated for habitable rooms except sleeping areas shall have a minimum ceiling height of 6'-8" except for under beams, girders, ducts, soffits where the clear height shall be not less than 6'-4". The required ceiling height of 6'-8" shall occur over a minimum of 50% of the actual room area.

R307 Add the following new subsection

R-307.3 Privacy required.
Every water closet, bathtub or shower required by this code shall be installed in a room which will afford privacy to the occupant.

R309.1 Delete IRC R309.1 and substitute 309.1 as follows:

R309.1 Floor Surface:
Garage and carport floor surfaces shall be of approved noncombustible material. That area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids toward the main vehicle entry doorway. Where approved by the building official, other means of dispersing spilled liquids from the area may be used to prevent the flow of liquids through doorways into adjoining enclosed areas of dwelling.

Exception: Floor drains must discharge to open finish grade only.

The sills of all door openings between the garage and adjacent interior spaces shall be raised not less than two inches from above the garage floor, or the garage floor shall be installed at a lower elevation so as to provide a minimum four inch step into the adjacent space.

Remove without Substitution R309.5

~~**R309.5 Fire sprinklers**. Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), Footnote a. Sprinklers in garages shall be connected to an automatic sprinkler system that complies with Section P2904. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft^2. Garage doors shall not be considered obstructions with respect to sprinkler placement.~~

R310.1 Delete R310.1 and substitute the following:

R310.1 Emergency escape and rescue required.
Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening for emergency escape and rescue.
Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement.
Where openings are provided as a means of escape and rescue they shall have a sill height of not more than 44 inches (1118 mm) above the floor.
Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3 .
The net clear opening dimensions required by this section shall be obtained by the normal operation of the window or door opening from the inside.
Escape and rescue window openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.

> **Exception:** Basements with habitable space not used for bedrooms shall not require an emergency escape under any one of the following two conditions:
>
> 1. Residential sprinkler systems conforming to NFPA 13D or RP 2904 latest edition shall be installed throughout all areas of the basement or cellar, or
> 2. Fuel-fired equipment shall be separated from the habitable room and means of egress with one (1) hour rated construction and 20 minute rated opening protectives.

R310.1.1 Delete R310.1.1 and substitute the following:

R310.1.1 Minimum opening area.
All emergency and rescue openings shall have a minimum net clear opening of 4.4 square feet. Where the net clear opening dimensions specified below can be met only with

window sashes easily removable without the use of keys, tools or excessive force, the net clear opening area shall be 5.7 square feet.

R310.6 Add the following new section R310.6

R310.6 Basement or Cellar Windows:
Except as may be otherwise provided for habitable or occupiable rooms, at least two (2) operable windows 12" x 32" nominal size shall be installed reasonably remote from each other. Security devices shall not unreasonably impede the use of these windows for light, ventilation or firefighting purposes.

Delete R311.3 and substitute the following: R311.3

R311.3 Landings at doors.
There shall be a floor or landing on each side of each exterior door.

> **Exception:** 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.

The floor or landing at the exit door required by Section R311.3.1 shall not be more than 1.5 inches (38 mm) lower than the top of the threshold.
The floor or landing at exterior doors other than the exit door required by Section R311.3.1 shall not be required to comply with this requirement but shall have a rise no greater than that permitted in Section R311.7.4 .

> **Exception:** the landing at an exterior doorway shall not be more than 8-1/4 inches (210 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door does not swing over the landing.

The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914mm) measured in the direction of travel.

Delete R311.6 and substitute the following:

R311.6 Hallways.
The minimum width of a hallway shall be not less than 3 feet. Baseboard, casings and other trim shall not reduce the required width to less than 34-1/2".

Delete IRC R311.7.4.1 and R311.7.4.2 and substitute the following:

R311.7.~~4~~5.1 Riser height.
The maximum riser height shall be 8-1/4 inches (210 mm).
The riser shall be measured vertically between leading edges of the adjacent treads.
The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

R311.7.~~4~~5.2 Tread depth.
The minimum tread depth shall be 9 inches (229 mm).

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 greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).
Winder treads shall have a minimum tread depth of 9 inches (229 mm) measured as above at a point 12 inches (305) mm from the side where the treads are narrower.
Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point.
Within any flight of stairs, the greatest winder tread depth at the 12 inches (305 mm) walk line shall not exceed the smallest by more than 3/8 inch (9.5 mm).

Delete IRC R311.7.4.3 and replace with the following:

311.7.~~4~~5.3.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 ¾ inch (19.1 mm) but not more than 1-1/4 inches (32 mm) shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5mm) between two stories, including the nosing at the level of floors and landings. 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 from the vertical. Open risers are permitted.

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

R311 Add the following new section:

R311.7.~~9~~10.3 Attic and other Pull-Down Types of Stairs
Pull-down types of stairs shall not be required to meet the provisions of sections R311.7.~~4~~5.1, R311.7.5.2 and R312.

Delete IRC R311.8.1 and replace with the following:

R311.8.1 Maximum Slope
Ramps shall have a maximum slope of one unit vertical in eight units horizontal (12.5 percent slope).

R312 Add new section as follows:

R312.~~5~~3 Seat or Bench Elements.
Guardrails which incorporate seat or bench elements shall have a guardrail system complying with R312.3 to a height of 36" measured from the seat surface. The guardrail system shall also extend to the floor surface below the bench or seat element.
Exception:
1. Porches, balconies or raised floors 30" or less above the floor or grade below.
2. Freestanding moveable seat and bench elements

R313.1 Delete R313.1 and 313.2 and substitute the following

R 313.1 General.
Automatic fire sprinkler if installed at the applicants option will be in conformance with Appendix RP

R314 Delete R314 Smoke Alarms and substitute the following:

R 314 Provisions for Fire Detection Systems
Provisions for Fire Detection Systems are contained within the Rhode Island Uniform Fire Safety Code.

R315 Delete Entirely

R 315 Provisions for Fire Detection Systems
Provisions for Fire Detection Systems are contained within the Rhode Island Uniform Fire Safety Code.

Delete R317.1.3 and substitute the following:

R317.1.3 Geographical areas.
Approved naturally durable or pressure-treated wood shall be used for those portions of wood members which form the structural supports of buildings, balconies, porches, or similar permanent building appurtenances when such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering which would prevent moisture or water accumulation on the surface or at joints between members. Depending on local experience, such members may include:

1. Horizontal members such as girders, joists and decking.
2. Vertical members such as posts, poles and columns.
3. Both horizontal and vertical members.

Delete R321.1and substitute the following:

R321.1 Elevators.
Where provided, passenger elevators, limited-use/limited-application elevators or private residence elevators shall comply with R.I. Elevator Code.

Delete R321.2 and substitute the following:

R321.2 Platform Lifts.
Where provided platform lifts shall comply with R.I. Elevator Code.

R322.1 Add the following new section:

R322.1 General.
Buildings and structures constructed in whole or in part in flood hazard areas (including A or V Zones) as established in table R301.2(1) shall be designed and constructed in accordance with ASCE 24. Buildings and structures located in whole or in part in identified flood ways shall be designed and constructed in accordance with ASCE 24.

R322.3.6.1 Add the following new section:

R322.3.6.1 Flood Hazard Certificates
The following certifications shall be submitted to the building official:

1. For construction in flood hazard areas not subject to high-velocity wave action:

1.1 As part of the lowest floor elevation requirements of Section R324.2.1, certification of the elevation of the lowest floor, including basement.

1.2 For fully enclosed areas below the design flood elevation where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.6.1.1, ASCE 24-05, certification by a registered design professional that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.6.1.2, ASCE 24-05.

2. For construction in flood hazard areas subject to high-velocity wave action:

2.1 As part of the lowest floor elevation requirements Section R323.3.2, a certification of the elevation of the lowest horizontal structural member.

2.2 A certificate prepared by a registered design professional that the building is designed in accordance with ASCE 24-05, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of R324.3.3.

2.3 For breakaway walls designed to resist a nominal load of less than 10 pounds per square foot (0.48 kN/m^2) or more than 20 pounds per square foot (0.96 $kN/m^{2)}$, a certificate prepared by a registered design professional that the breakaway wall is designed in accordance with ASCE 24-05.

R322.4 Add the following new Section:

R322.4 Variances and appeals.
The Board of Appeals after examining the applicant's hardships shall approve or disapprove a variance request and shall hear and decide appeals from the requirements of these regulations, in accordance with the procedures of Section 23-27.3-127.0 of the Rhode Island State Building code and following:

(A) Board of Appeals

The local (or state) Board of Appeals shall hear and decide appeals when it is alleged there is an error in any requirement, decision or determination made by the Building Official in the enforcement or administration of these regulations.

(B) Conditions of Acceptance:

(1) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of the State Inventory of Historic Places, without regard to the procedures set forth in this Section.

(2) Variances may be issued for new construction and substantial improvements to be erected on a lot of one half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level in conformance with the procedures of paragraphs B (3) (4) (5) and (6) of this Section.

(3) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

(4) Variances shall only be issued upon

(1) A showing of good and sufficient cause,
(2) A determination that failure to grant the variance would result in exceptional hardship to the applicant, and
(3) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances.

(5) Any applicant to whom a variance is granted shall be given notice in the written decision from the Board of Appeals that the structure will be permitted to be built with a lowest floor elevation X feet below the base flood elevation.

(6) The Board of Appeals shall notify the applicant in the written decision that

(1) The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurances up to amounts as high as $25 for $100 of insurance coverage and
(2) Such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variances actions, including justification for their issuance. All such variances issued shall be reported in the community's Annual Report to the Federal Insurance Administration.

(7) Variances shall not be issued by a community within any designated regulatory floodway, if any increase in flood levels during the base discharge would result. (For communities which must meet the requirements of Section 60.3 (d) of the National Flood Insurance Program regulations).

(8) Upon receipt of an application for a variance the Chairman of the Board of Appeals shall forward a copy of the application to the Rhode Island Emergency Management Office, Statewide Flood-Plain Coordinator.

Chapter 4

R401.3 Delete IRC R401.3 and substitute the following:

R401.3 Drainage.
Lots shall be graded so that additional accumulation of surface water does not occur across adjoining property. Surface drainage shall be diverted to a storm sewer conveyance or other point of collection so as not to create a hazard. Lots shall be graded so as to drain surface water away from foundation walls. The grade away from foundation walls shall fall a minimum of 6" (inches) (153 mm) within the first 10 feet (3048 mm).

> **Exception.** Where lot lines, walls, slopes or other physical barrier prohibit 6 inches (153 mm) of fall within 10 feet (3048 mm), drains or swales shall be provided to ensure drainage away from the structure.

Table R401.4.1 Delete IRC Table R401.4.1 and substitute the following:

Table R401.4.1 Presumptive Load-Bearing Values of Foundation Materials	
Type of Soil	Load Bearing Pressure psf
Crystalline Bedrock	12,000-20,000 psf
Sedimentary and Foliated Rock	8,000-12,000 psf
Medium Dense-to-Dense Sandy Gravel and Gravel	4,000 psf
Medium Dense-to-Dense well-graded Sand, Silty Sand and Silty Gravel	3,000 psf
Firm Fine Sand, Silty Sand and Silty Gravel	1,500 psf
Loose Fine Sand, Silty Sand, organic soils, clay And areas suspected at being filled	1,000 psf

Table R402.2 Delete Table R402.2 and substitute the following:

TABLE NO R-402.2	
MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE	
LOCATION	MINIMUM f'_c OF CONCRETE AT 28 DAYS
Basement and foundation walls, continuous and isolated footings, basement and garage slabs	2500 psi
*Exterior slabs, walks and steps exposed to weather	3000 psi
*Exterior slabs shall be air-entrained concrete	

Delete IRC Table 403.1 and substitute the following:

TABLE R403.1				
MINIMUM WIDTH OF CONCRETE OR MASONRY FOOTINGS (Inches)[a])				
	LOAD BEARING VALUE OF SOIL (psf 0			
	1.500	2,000	3,000	≥4,000
Conventional light-frame construction				
1-story	12	12	10	10
2-story	15	12	10	10
3-story	23	17	12	12
4-inch brick veneer over light frame or 8-inch hollow concrete masonry				
1-story	12	12	12	12
2-story	21	16	12	12
3-story	32	24	16	12
8-inch solid or fully grouted masonry				
1-story	16	12	12	12
2-story	29	21	14	12
3-story	42	32	21	16
For SI: 1 inch = 25.4 mm. 1 pound per square foot = 0.0479 kN/m^2. a.) Where minimum footing width is 12 inches, a single wythe of solid or fully grouted 12 inch nominal concrete masonry units is permitted to be used				

.

Delete R403.1.4.1 Frost Protection and substitute the following:

R403.1.4.1 Frost Protection.
Except where otherwise protected from frost, foundation walls, piers and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending below the frost line specified in Table R301.2.(1)
2. Constructing in accordance with Section R403.3
3. Constructing in accordance with ASCE32-01;
4. Erected on solid rock.

Exceptions:

1. Freestanding accessory structures with an area of 200 square feet (18.5 m^2) or less and an eave height of 10 feet (3048 mm) or less shall not be required to be protected.
2. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

Footings shall not bear on frozen soil unless such frozen condition is of a permanent character.

R403.1.6 Delete R403.1.6 and R403.1.6.1 and substitute the following:

R403.1.6 General Foundation Anchorage.
Foundation sill plates at exterior walls shall be anchored to the foundation as follows:

1 + 2story buildings	½” @ 48” o/c or	5/8” @ 72” o/c
3 story building	½” @ 24” o/c or	5/8” @ 36” o/c

Bolts shall be spaced not more than 12” from the corners.
Bolts shall extend a minimum of 15” into masonry or 7” into concrete.
Sill plates shall be protected from decay in accordance with Section R323.
Nuts and washers shall be tightened on each bolt to the plate and shall not be recessed or countersink into the first plate.
Bolts shall be high enough to allow for full engagement of the nut and nuts shall be left exposed for inspection at the framing stage of construction.

Exception:
Foundation anchor straps, spaced as required to provide equivalent anchorage to ½” diameter anchor bolts.

R403.1.6.1 Braced Panel Anchorage.
Shear walls shall be anchored to the foundation in accordance with Appendix AA or the reference standards in R301.2.1.1.
The shear wall connections shall be in addition to general foundation anchorage requirements.

R403.3 Delete R403.3 and substitute the following:

R403.3 Frost protected shallow foundations.
For buildings where the monthly mean temperature of the building is maintained at a minimum of 64o (18 oc), footings are not required to extend below the frost line when protected from frost by insulation in accordance with Figure R403.3(1) and Table R403.3.(1). The air freezing index (oF-days) is 1200 for the entire State of Rhode Island.

Exceptions:

1. No foundation not so protected may be attached to frost-protected shallow foundations.
2. Unheated garages, porches, utility rooms and carports shall not be permitted to be attached to dwelling units with frost-protected shallow foundations.
3. The use of frost-protected shallow foundations shall be limited to 1 story buildings a maximum of 16' from average grade to topmost part of main roof.

   Materials used below grade for the purpose of insulating footings against frost shall be labeled as complying with ASTM C578.

Delete R403.3.1, R403.3.1.1, Figure R403.3(3), Figure R403.3(4), and R403.3.1.2.

R403.3.2 Delete and substitute the following:

R403.3.2 Protection of vertical and horizontal insulation.
Vertical insulation shall be protected from damage for its full height from above grade to below grade by use of cementitious board, plywood rated for below ground use or other approved impact-resistant materials attached directly to the surface of the insulation.
A continuous metal flashing termite barrier shall be installed under the sill plate at the top of the concrete slab and wall and vertical insulation edge and left exposed at the exterior.
All anchor bolt penetrations shall be sealed.

Note D. Steel reinforcing clearance shall be 1-1/2" minimum to face of wall and 3" to bottom of footing

TABLE R404.1.2(1)
MINIMUM HORIZONTAL REINFORCEMENT FOR CONCRETE BASEMENT WALLS[A,B]

MAXIMUM UNSUPPORTED HEIGHT OF BASEMENT WALLS (feet)	LOCATION OF HORIZONTAL REINFORCEMENT
~~≤ 8~~	~~One No. 4 bar within 12 inches of the top of the wall story and one No. 4 bar near mid-height of the wall story~~
> 8	One No.4 bar within 12 inches of the top of the wall story and one No.4 bar near third points in the wall story

Chapter 5

Delete R501.3 without substitution

Chapter 6

R602.10 Delete R602.10 and substitute the following:

R602.10 Wall bracing.
Walls shall be braced in accordance with this section.

> **Exception:** Structures subject to the scope limitations of Appendix AA shall be permitted to be braced in accordance with Appendix AA in lieu of the provisions of this section.

R612.6 Wind-~~borne debris~~ Zone 3 protection. Protection of exterior windows and glass doors in buildings located in wind-~~borne debris~~ Zone 3 per Figures 301.2(4) (A) or (B). regions shall be in accordance with Section R301.2.1.2.

Chapter 7

R703.13 Add the following:

R 703.13 Re-siding Exterior Walls.
Materials and methods of application used for residing or replacing an existing wall covering shall comply with the requirements of Section R-703. New exterior side wall covering shall not be installed without first removing existing wall coverings when any of the following conditions occur:

1. When the existing wall or wall covering is water-soaked or has deteriorated to the point that the existing wall or wall covering is not acceptable as a base for additional covering.
2. When the existing wall has three (3) or more applications of any wall covering.

Exception: The total number of wall coverings shall not be limited when any of the existing wall coverings consist of asbestos cement board or asbestos cement shingles or any protective encapsulating or protective siding/layer immediately over the asbestos material.

Asbestos cement board or asbestos cement shingles and any protective encapsulating layer thereupon shall not be required to be removed unless the existing wall is unacceptable for use as a base for additional layers of wall covering.

Any disturbance, repair or removal of existing asbestos cement board or asbestos cement shingles shall be in accordance with all State and Federal regulations.

Chapter 8

R802.6 Bearing. The ends of each rafter or ceiling joist shall have not less than 1 ½ inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on masonry or concrete. ~~The bearing on masonry or concrete shall be direct, or a sill plate of 2-inch (51 mm) minimum nominal thickness shall be provided under the rafter or ceiling joist. The sill plate shall provide a minimum nominal bearing area of 48 square inches (20 865 mm).~~

R802.11.1.3 Delete and substitute the following:

> **R802.11.1.3 Rafters:**
> Rafters shall have ties at the wall plate and ridge bearing points in accordance with Appendix AA

R807.1 Add the words "or closet" after the word "hallway" on line 3 paragraph 2.

Chapter 9

R905.2.6 Delete R905.2.6 and substitute the following:

R905.2.6 Attachment.
Asphalt strip shingles shall have a minimum of six fasteners per shingle.

Exceptions:

1. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special fastening details may be required by the manufacturer.
2. Fastening systems tested by the manufacturer to ASTM D3161 modified to use a wind speed of 110 MPH shall be permitted to be installed in any wind zone.

R905.2.8.2 #3 Delete and substitute the following:

R905.2.8.2 #3

3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D224 Type II or Type III and at least 36 inches (914 mm) wide or valley lining as described in Items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D 1970 may be used in lieu of the lining material. Other valley lining systems and techniques acceptable to the shingle manufacturer shall be approved by the Building Official.

Chapter 10

Add the following new section R-1007 Room Heater

R-1007.0 Room Heaters (Wood/Coal/Pellet Stoves)

1007.1 General:
Solid-fuel-burning room heaters shall be tested in accordance with UL 1482 listed in Appendix A of this Code.

1007.2 Multiple fuel-flue installations
A solid-fuel-burning room heater shall not connect to a chimney passageway venting another appliance.

1007.3 Used or antique stoves and room heaters:
The Building Official shall permit the installation and use of non-listed or tested stoves and heaters when installed in accordance with the provisions of Table 1007.3 as follows:

Table 1007.3 CLEARANCE REDUCTION METHODS

TYPE OF PROTECTIVE ASSEMBLY [a] .	REDUCED CLEARANCE WITH PROTECTION (inches) [a]							
	Horizontal combustible assemblies located above the heat source				Horizontal combustible assemblies located beneath the heat source and all vertical combustible assemblies			
	Required clearance to combustibles without protection (inches) a				Required clearance to combustibles without protection (inches) a			
	36	18	9	6	36	18	9	6
Galvanized sheet metal, minimum nominal thickness of 0.024 inch (No. 24 Gage), mounted on 1-inch glass fiber or mineral wool batt reinforced with wire on the back, 1 inch off the combustible assembly	18	9	5	3	12	6	3	3
Galvanized sheet metal, minimum nominal thickness of 0.024 inch (No. 24 Gage), spaced 1 inch off the combustible assembly.	18	9	5	3	12	6	3	2
Two layers of galvanized sheet metal, minimum nominal thickness of 0.024 inch (No. 24 Gage), having a 1-inch airspace between layers, spaced 1 inch off the combustible assembly	18	9	5	3	12	6	3	3
Two layers of galvanized sheet metal, minimum nominal thickness of 0.024 inch (No. 24 Gage), having 1 inch of fiberglass insulation between layers, spaced 1 inch off the combustible assembly.	18	9	5	3	12	6	3	3
0.5-inch inorganic insulating board, over 1 inch of fiberglass or mineral wool batt, against the combustible assembly	24	12	6	4	18	9	5	3
3.5-inch brick wall, spaced 1 inch off the combustible wall					12	6	6	6
3.5 inch brick wall, against the combustible wall					24	2	6	5

For SI: 1 inch = 25.4 mm, oC = [(oF)-32]/1.8, 1 pound per cubic foot = 16.02 kg/m3 , 1.0 Btu x in/ft2 .h. oF=0.144 W/m 2 . oK.
a. Mineral wool and glass fiber batts (blanket or board) shall have a minimum density of 8 pounds per cubic foot and a minimum melting point of 1,500o F. Insulation material utilized as part of a clearance reduction system shall have a thermal conductivity of 1.0 Btu x in/(ft2 .h. oF) or less.
Insulation board shall be formed of noncombustible material.

Chapter 11

N~~1101.2~~ 1101.1 Delete N1101.2 and substitute the following:

N~~1101.2~~ 1101.1.1 Compliance Methods

Compliance shall be demonstrated by either:

1. Meeting the requirements of the Rhode Island Energy Conservation Code SBC-8-2010.
2. Meeting the requirements of this chapter using the criteria for climate zone 5 from Figure N 1102A or table 1102.1.2.
3. Compliance submission of Res-Check for Zone 5 & Chapter 11

Delete Table N1101.8 without substitution

Delete Table N1101.10.2(1) without substitution

Delete Table N1101.10.2(2) without substitution

Add the following to ~~1101.8~~N1101.16, Certificate:

Figure ~~110.1.8~~ N1101.16 A certificate similar to this shall be attached to or near the electrical panel board		
ENERGY CERTIFICATE		
Street Address		
City / Town		
Predominant Values		
R-Value Ceiling / Roof		
R- Value Walls		
R- Value Ducts (outside conditioned space)		
U Factor Fenestration		
SHGC Fenestration		
Gas Fired Un-vented Room Heater		
Baseboard Electric Heater		
Electric Furnace		
U Factor Skylight / SHGC		
AFUE Value Boiler / Furnace		
Efficiency and type of heating equipment		
Efficiency and type of cooling equipment		
Efficiency and type of service water heater		
Contractor or Design Professional		
Address		
Registration		
	Signature	

N1102 Rhode Island shall be considered as climate zone A with the following design conditions.

Add the following Table

Table N1102 Exterior Design Conditions.		
See Figure 1102 A	Value	Value
Climate zone	Providence County	All others
Winter, design dry-bulb (degree F)	0	5
Summer, design dry-bulb	87	89
Summer design wet-bulb	71	73
Degree days heating	6831	5950
Degree days cooling	371	811

Delete and substitute table N1102.1

TABLE ~~N1102.1.2~~ N1102.1.1
INSULATION AND FENESTRATION REQUIRMENTS BY COMPONENT [a]

CLIMATE ZONE	FERNESTRATION *U*-FACTOR [b]	SKYLIGHT [b] *U*-FACTOR	GLAZED FERNESTRATION SHGC [b]	CEILING *R*-VALUE [i]	WOOD FRAME WALL *R*-VALUE [g]	MASS WALL *R*-VALUE	FLOOR *R*-VALUE	BASEMENT [C] WALL *R*-VALUE	SLAB [d] *R*-VALUE & DEBTTH	CRAWL SPACE [e] WALL
5	0.35	0.60	NR	38	20 or 13+5 [f]	13/17	30 [e]	10/13	*R*-10 for 2 ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 × 6 framing cavity such that the *R*- value is reduced by R-1 or more shall be marked with the compressed batt *R*-value in addition to the full thickness *R*-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the homeor R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the entire slab and the required slab edge *R*-values for heated slabs
e. Or insulation sufficient to fill the framing cavity, R-19 minimum.
f. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
g. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.

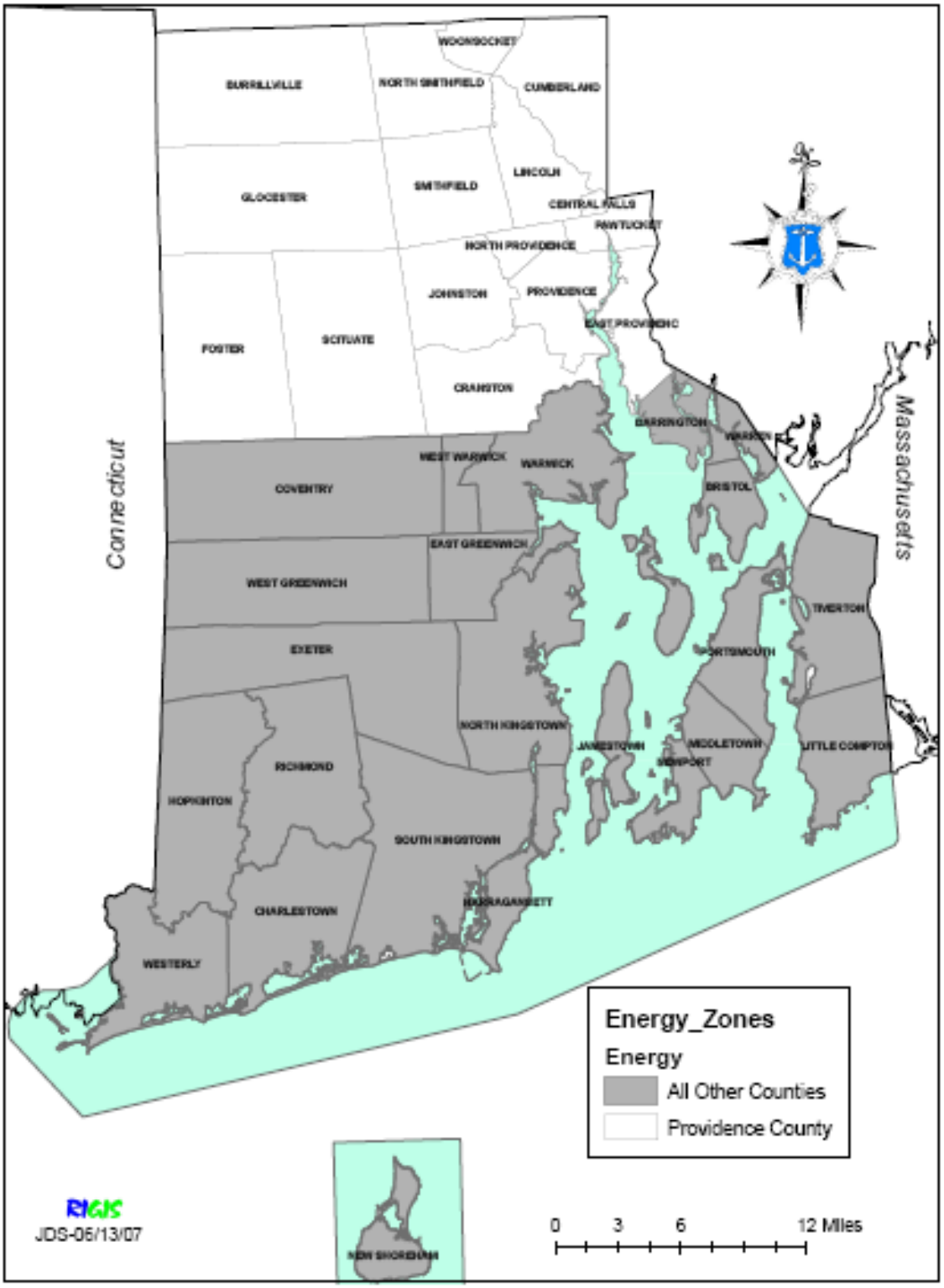

Figure 1102A

TABLE N1102.1.3

EQUIVALENT *U*-FACTORS[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	CEILING *U*-FACTOR	FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASSEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
5	0.32	0.55	0.026	0.057	0.082	0.033	0.050	0.055

N1102.4.1.2 Testing. The building or dwelling unit shall be tested and ~~verified as having an air leakage rate of not exceeding 5 air changes per hour in Zones 1 and 2, and 3 air changes per hour in Zones 3 through 8~~ Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the *building official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *building official*. Testing shall be performed at any time after creation of all penetrations of the building *thermal envelope*.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures;

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;

3. Interior doors, if installed at the time of the test, shall be open.

4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;

5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and

6. Supply and return registers, if installed at the time of the test, shall be fully open.

N1103.2.2 (R403.2.2) Sealing (Mandatory). Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comly with Section M1601.4.1 of this code.

Exceptions:

1. Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. Continuously welded and locking –type longitudinal joints and seams in ducts operating at a static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

Duct tightness shall be verified by either of the following:

1. Postconstruction test: Total leakage shall be less than or equal to ~~4~~ 8 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.
2. Rough-in test: Total leakage shall be less than or equal to ~~4~~ 6 cfm (113.3 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure diferential of 0.1 inches w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test. Total leakage shall be less than or equal to ~~3~~ 4 cfm (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

Exception: The total leakage test is not required for ducts and air handlers located entirely within the building envelope.

N1103.2.3 Building cavities (Mandatory). ~~Building framing cavities shall bot be used as ducts or plenums.)~~ Interior building framing cavities shall be permitted to be used as return ducts or plenums. (BP)

Delete Table N1103.6.1 without substitutions
~~shall be Add the following section:~~

~~N1103.6.1 Minimum equipment performance.~~
~~Heating and cooling equipment shall have minimum equipment performance as indicated in Table N1103.6.1~~

~~Add the following table~~
~~TABLE N1103.6.1~~

~~MINIMUM EQUIPMENT PERFORMANCE~~				
~~EQUIPMENT CATEGORY~~	~~SUBCATEGORY~~	~~REFERENCED STANDARD~~	~~MINIMUM PERFORMANCE~~	~~Maximum Electricity Ratio~~
~~Natural Gas and propane fired furnaces~~		~~DOE 10CFR Part 430 Subpart B Appendix N~~	~~AFUE 90%[b]~~	~~2%~~
~~Oil Fired Furnace <94,00 BTU/hr~~		~~DOE 10CFR Part 430 Subpart B Appendix N~~	~~AFU 83%[b]~~	~~2%~~
~~Oil Fired Furnace >94,000 BTU/hr~~		~~DOE 10CFR Part 430 Subpart B Appendix N~~	~~AFU 83%[b]~~	~~2.3%~~
~~Natural Gas, Oil and Propane Fired Steam Boilers~~		~~DOE 10CFR Part 430 Subpart B Appendix N~~	~~AFU 82%[b]~~	~~NA~~
~~Air-cooled heat pumps, Heating mode<65,000 Btu/h cooling capacity~~	~~Split systems~~ ~~Single package~~	~~ARI 210/240~~	~~8 HSPF[a,b]~~ ~~7.6 HSPF[a,b]~~	
~~Gas-fired or oil-fired furnace <225,000 Btu/h~~		~~DOE 10 CFR Part 430, Subpart B, Appendix N~~	~~AFUE 85%[b]~~	
~~Gas-fired or oil fired steam and hot-water boilers <300,000 Btu/h~~		~~DOE 10 CFR Part 430, Subpart B, Appendix N~~	~~AFUE 80%[b, c]~~	
~~Air-cooled air conditioners and heat pumps, Cooling mode <65,000 Btu/h cooling capacity~~	~~Split systems~~ ~~Single package~~	~~ARI 210/240~~	~~13.0 SEER[b]~~ ~~12.0 SEER[b]~~	

~~For SI: 1 British thermal unit per hour = 0.2931 W.~~

~~a. For multi-capacity equipment, the minimum performance shall apply to each capacity step provided. Multi-capacity refers to manufacturer-published ratings for more than one capacity mode allowed by the product's controls.~~

~~b. This is used to be consistent with the National Appliance Energy Conservation Act (NAECA) of 1987 (Public Law 100-12).~~

~~c. Except for gas-fired steam boilers for which the minimum AFUE 75 percent.~~

Chapter 14

M 1401.3 Delete M1401.3 and substitute the following:

M 1401.3 Sizing.
Heating and cooling equipment shall be sized based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling methodologies. To recognize equipment sizing availability and to provide for future additions, equipment shall be sized so as not to exceed 150% of the submitted building load calculations.

Chapter 15

M 1502.4.5 Delete and substitute the following:

M 1502.4.5 Length identification.
The maximum length of dryer duct may exceed 25'35' when a permanent placard, measuring a minimum 5" wide, 3" high, and 1/8" thick, and constructed of either wood, metal, or rigid plastic, and bearing raised or embossed lettering stating the following:

"WARNING: THE EFFECTIVE LENGTH OF THIS DRYER DUCT IS xxx FEET. ANY DRYER CONNECTED TO THIS EXHAUST DUCT MUST BE RATED TO USE AN EXHAUST DUCT OF THIS LENGTH, PER THE MANUFACTURERS SPECIFICATIONS; SEVERE RISK OF FIRE MAY RESULT FOR NONCOMPLIANCE WITH THIS NOTICE."

The provisions of M102.4 shall be used in establishing the effective length of the ductwork installed and noted on the placard. The placard shall be permanently attached to the wall or floor within 6" of the terminus of the duct.

M 1503.4 Delete without substitution

M1506.2 Delete without substitution

Chapter 16

M1601.4.1 Add the following exceptions to M1601.4.1

Exceptions

4. Flexible air ducts shall be permitted to be joined with or without tapes using approved mechanically fastened tension straps or flex-ties installed with a tensioning gun or other similar technologies.

M1601.6 Delete M1601.6 without substitution:

M 1602.2 Add the following to exception #4 M1602.2.4

Exception #4 continued

Return air shall be permitted to be taken from locations such as a kitchen which is provided its own separate and individual system providing 100% of the supply air for that space.

Chapter 18

To M1801.3.1 Size add the following exception:

Exception:
Installation of replacement appliances below an 85% AFUE rating shall be exempt from the requirement of installing a new chimney liner and must meet the manufacturer's recommendations for installation in an unlined chimney.

Chapter 19

Delete M1901.3 without substitution

~~M1901.3 Prohibited location. Cooking appliances designed, tested, listed and labeled for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur.~~

Chapter 22

Add the following exception to M2201.1 Materials.

> **Exception:**
> Non-metallic storage tanks shall meet the requirements of UL subject 2258 and shall be installed in accordance with manufacturer's instructions.

Delete M2201.2 and Substitute the following.

M2201.2 Above ground tanks.
The maximum amount of fuel oil stored any above ground or inside of a building shall be 1320 gallons (2498L) and the maximum amount of oil connected to any one (1) appliance shall be 660 gallons. When capacity exceeds 660 gallons the tanks shall be double walled and sized so that they can be removed from the building without dismantling of the tank.

M2203.8 Add the following code section:

M2203.8 Emergency Disconnect Switch.
When an oil fired heating appliance is located inside a structure, a remote means of shutting off power to the oil pump and firing circuit in addition to the serviceman's switch shall be provided as follows:

1. When the appliance is located in an unfinished basement or cellar, an additional shutdown switch shall be installed at the entrance to the basement at the top of the stairs.
2. When the appliance is located in a separately dedicated utility room, the switch shall be located outside the room immediately adjacent to its entrance.
3. When the appliance is located in a crawl space or attic, the switch shall be located immediately outside the entrance to the crawl space or attic area.

The switch shall be located on a wall mounted between 60" and 80" above the floor surface and be identified with a red cover plate suitably identified as to its purpose.

Chapter 24

G2406.2 (303.3) Add the following new exception:

(6) Gas fired appliances may be installed in loft or open efficiency type apartments when there is a sleeping area not a sleeping room. The installation of appliances must comply with section 304.5 for combustion air required volume and the manufacturers' installation instructions.

G2411.1.1 Delete and substitute the following:

G2411.1.1 **310.1.1 CSST** CSST gas piping systems shall be bonded to the electrical service grounding electrode system. The bonding jumper shall connect to a metallic pipe or fitting between the point of delivery and the first downstream CSST fitting. The bonding jumper shall be copper and not smaller than 6AWG. The bonding jumper shall not exceed 40' in length. CSST system with a conductive jacket deemed to be equivalent to a direct bonded CSST system by an approved listing agency shall only be required to be bonded in accordance with section Residential Code 2411.1 or Fuel Gas Code 310.1. The installation of the bonding jumper shall be by an electrician with an electrical permit and inspected by the electrical inspector.

G2415.~~1~~3 Delete G2415.~~1~~3 and substitute the following:

G2415.~~1~~3 (401.1) Prohibited locations.
Piping shall not be installed in or through a ducted supply, return or exhaust, or a clothes chute, chimney or gas vent, dumbwaiter or elevator shaft. Piping installed downstream of the point of entry may extend through any townhouse unit other than the unit served by such piping.

G2415.~~4~~6 Delete and substitute the following:

G2415.~~4~~6 (404.4) Piping through foundation wall.
Underground piping, where installed below grade through the outer foundation or basement wall of a building, shall be encased in a protective pipe sleeve.
The annular space between the gas piping and the sleeve shall be sealed.

G2425.15 Add the following exception to G2425.15.1:

Exception:
Installation of replacement appliances below an 85% AFUE rating shall be exempt from the requirement of installing a new chimney liner and must meet the manufacturer's recommendations for installation in an unlined chimney.

G2439.5.6 Delete and substitute the following:

G2439.5.6 Length identification.
The maximum length of dryer duct may exceed 35' when a permanent placard, measuring a minimum 5" wide, 3" high, and 1/8" thick, and constructed of either wood, metal, or rigid plastic, and bearing raised or embossed lettering stating the following:
"WARNING: THE EFFECTIVE LENGTH OF THIS DRYER DUCT IS xxx FEET. ANY DRYER CONNECTED TO THIS EXHAUST DUCT MUST BE RATED TO USE AN EXHAUST DUCT OF THIS LENGTH, PER THE MANUFACTURERS SPECIFICATIONS; SEVERE RISK OF FIRE MAY RESULT FOR NONCOMPLIANCE WITH THIS NOTICE."
The provisions of G2439.5.5.1 shall be used in establishing the effective length of the ductwork installed and noted on the placard. The placard shall be permanently attached to the wall or floor within 6" of the terminus of the duct.

Chapter 25

P-2501.1 Delete 2501.1 and substitute the following.

P2501.1 Scope.
The provisions of this chapter shall govern the installation of plumbing not specifically covered in other chapters applicable to plumbing systems

P2503.4 Delete P2503.4 Building Sewer Testing without substitution.

Delete Section 2503.5.1 & Substitute the following

P2503.5.1 Rough plumbing. DWV systems shall be tested on completion of the rough piping installation by water or air with no evidence of leakage. Either test shall be applied to the drainage system in its entirety or in sections after rough piping has been installed, as follows:

1. Water test. Each section shall be filled with water to a point not less than 10 feet (3048 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.
2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.

P2503.5.2 Delete P2503.5.2 Finished Plumbing and substitute the following:

P2503.5.2 Finished Plumbing.
After the plumbing fixtures have been set and the in traps filled with water, their connections shall be tested and proved water tight by filling and then draining each fixture and their traps and fixture connections proven tight by visual inspection.

Chapter 26

P2603.~~5~~4 Add the following exception to P2603.~~5~~ 4Pipes through footings or foundation walls:

Exception:
PVC schedule 40 minimum pipe shall not be required to be sleeved or be provided with a relieving arch.

P2603.~~6~~5 Add the following exception to P2603.~~6~~5 Freezing:

Exception:
Soil and vent stacks located within exterior walls and vent pipes in attics shall not be required to be insulated.

P2603.~~6~~5.1 Delete P2603.~~6~~5.1 and substitute the following

P2603.~~6~~5.1 Sewer Depth.
Building sewers that connect to private sewage disposal systems shall meet the requirements of the Department of Environmental Management's Regulations for on site waste water treatment systems.
Building sewers connecting to a public sewer shall be a minimum of 36 inches below grade.

Delete without substitution

Chapter 29

P2902.7 Protection of individual water supplies. An individual water supply shall be located and constructed so as be safeguarded against contamination in accordance with Section P2902.7.1 through P2902.7.8.

P2902.7.1 Well locations. A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table P2902.7.1. In the event the underlying rock structure is limestone or gragmented shale, the local or state health department shall be consulted on well site location. The distances in Table P2902..1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of ground water is from sources of contamination toward the well.

TABLE P2902.7.1
DISTANCE FROM SOURCES OF CONTAMINATION TO PRIVATE WATER SUPPLIES AND PUMP SUCTION LINES

Source of Contamination	Distance (feet) [a, b]
Sewer	50
Septic Tank	50
Pasture	100
Sewer (leaded or mechanical joints or approved plastic)	10
Subsurface pits	100[c]
Seepage pits	100
Cesspools	100
Barnyard	100
Farm silo	25
Pump house floor drain of cast iron draining to ground surface	2

Note a. 1 foot=304.8mm

P2902.7.2 Elevation. Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination.

P2902.7.3 Depth. Private potable well supplies shall not be developed from a water table less than 10 feet (3048mm) below the ground surface

P2902.7.4 Water-tight casings. Each well shall be provided with a water-tight casing extending to not less than 10 feet (3048mm) below the ground surface. Casings shall extend not less than 6 inches (152 mm) above the well platform. Casings shall be large

enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

P2902.7.5 Drilled or driven well casings. Drilled or driven well casings shall be of steel or other *approved* material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a depth of not less than 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

P2902.7.6 Dug or bored well casings. Dug or bored well casings shall be of water-tight concrete, tile, or galvanized pr corrugated metal pipe extending to not less than 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile, or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the sassing and the ground and extending not less than 10 feet (3048) below the ground surface.

P2902.7.7 Cover. Potable water wells shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward not less than 2 inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.

P2902.7.8 Drainage. Potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring

P2903.3 Delete P2903.3 Minimum Pressure and substitute the following:

P2903.3 Minimum Pressure.
Minimum static pressure shall be 40 psi measured before any meter, or a booster pump shall be installed after the meter providing 40 psi minimum static pressure.
For private wells, 40 psi minimum shall be provided at the outlet of any storage tank or pump.

Delete Section P2904 and substitute the following:

R2904.1 General.
Automatic fire sprinkler if installed at the applicants option will be in conformance with Appendix RP

Chapter 30

P3007.1 Building subdrains. Building subdrains that cannot be discharged to the sewer by gravity flow shall be discharged into a ~~tightly covered and vented~~ sump from which the liquid shall be lifted and discharged into the building gravity drainage system by automatic pumping equipment or other *approved* method. In other than existing structures, the sump shall not receive drainage from any piping within the building capable of being discharged by gravity to the *building sewer*.

P 3008.1 Delete section P3008.1 and substitute the following

P3008.1 Mandatory installation of check valves.
All new residential construction that will connect to a sanitary sewer system and any residential construction where the existing sewer connection will be substantially altered shall have a check valve installed that is automatically activated, on the main building sewer line for purposes of protecting residents from the possible backflow of, and exposure to, untreated sewage.

Chapter 32

Traps

P3201.2 Delete and substitute the following:

P3201.2 Trap seals and trap seal protection.
Traps shall have a liquid seal not less than 2 inches (51 mm) and not more than 4 inches (102 mm). Traps for floor drains shall be fitted with a trap primer or shall be of the deep seal design. Alternative seals that are in conformance with ASSE 1018 or ASSE 1044 are acceptable.

Chapter 34

Delete without substitution

Part VIII Electrical Chapters 34 through 43 and reference Rhode Island Electrical Code RI-SBC-5 most recent edition.

Appendices

Add the Following

APPENDIX RP – RESIDENTIAL SPRINKLERS

Appendix R is Informative only and is not part of this code

SECTION R-P2904 DWELLING UNIT FIRE SPRINKLER SYSTEMS

R-P2904.1 General.
Where installed, residential fire sprinkler systems, or portions thereof, shall be in accordance with NFPA
13D or Section P2904, which shall be considered equivalent to NFPA 13D. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall supply domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. A backflow flow preventer shall not be required to separate a stand-alone sprinkler system from the water distribution system.

R-P2904.1.1 Required sprinkler locations.
Sprinklers when installed shall protect all areas of a *dwelling unit*.
Exceptions:
1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In *attics*, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m^2) in area, with the smallest dimension not greater than 3 feet (915mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1m^2) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

R-P2904.2 Sprinklers.
Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the sprinkler
manufacturer's installation instructions.

R-P2904.2.1 Temperature rating and separation from heat sources.
Except as provided for in Section P2904.2.2, sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 170°F (77°C). Sprinklers shall be separated from heat sources as required by the sprinkler manufacturer's installation instructions.

R-P2904.2.2 Intermediate temperature sprinklers.
Sprinklers shall have an intermediate temperature rating not less than 175°F (79°C) and not more than 225°F (107°C) where installed in the following locations:
1. Directly under skylights, where the sprinkler is exposed to direct sunlight.
2. In *attics*.
3. In concealed spaces located directly beneath a roof.
4. Within the distance to a heat source as specified in
Table P2904.2.2

R-P2904.2.3 Freezing areas.
Piping shall be protected from freezing as required by Section P2603.6. Where sprinklers are required in areas that are subject to freezing, dry-sidewall or dry-pendent sprinklers extending from a nonfreezing
area into a freezing area shall be installed.

TABLE P2904.2.2
LOCATIONS WHERE INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED

HEAT SOURCE	RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED[a,b] (inches)
Fireplace, side of open or recessed fireplace	12 to 36
Fireplace, front of recessed fireplace	36 to 60
Coal and wood burning stove	12 to 42
Kitchen range top	9 to 18
Oven	9 to 18
Vent connector or chimney connector	9 to 18
Heating duct, not insulated	9 to 18
Hot water pipe, not insulated	6 to 12
Side of ceiling or wall warm air register	12 to 24
Front of wall mounted warm air register	18 to 36
Water heater, furnace or boiler	3 to 6
Luminaire up to 250 watts	3 to 6
Luminaire 250 watts up to 499 watts	6 to 12

For SI: 1 inch = 25.4 mm.
a. Sprinklers shall not be located at distances less than the minimum table distance unless the sprinkler listing allows a lesser distance.
b. Distances shall be measured in a straight line from the nearest edge of the heat source to the nearest edge of the sprinkler

R-P2904.2.4 Sprinkler coverage.
Sprinkler coverage requirements and sprinkler obstruction requirements shall be in accordance with Sections P2904.2.4.1 and P2904.2.4.2.

R-P2904.2.4.1 Coverage area limit.
The area of coverage of a single sprinkler shall not exceed 400 square feet (37 m^2) and shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions.

R-P2904.2.4.2 Obstructions to coverage.
Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Sprinkler separation from obstructions shall comply with the minimum distances specified in the sprinkler manufacturer's instructions.

R-P2904.2.4.2.1 Additional requirements for pendent sprinklers.
Pendent sprinklers within 3 feet (915 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

R-P2904.2.4.2.2 Additional requirements for sidewall sprinklers.
Sidewall sprinklers within 5 feet (1524mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

R-P2904.2.5 Sprinkler installation on systems assembled with solvent cement.
The solvent cementing of threaded adapter fittings shall be completed and threaded adapters for sprinklers shall be verified as being clear of excess cement prior to the installation of sprinklers on systems assembled with solvent cement.

R-P2904.2.6 Sprinkler modifications prohibited.
Painting, caulking or modifying of sprinklers shall be prohibited. Sprinklers that have been painted, caulked, modified or damaged shall be replaced with new sprinklers.

R-P2904.3 Sprinkler piping system.
Sprinkler piping shall be supported in accordance with the requirements for cold water distribution piping. Sprinkler piping shall comply with all requirements for cold water distribution piping. For multipurpose
piping systems, the sprinkler piping shall connect to and be a part of the cold water distribution piping system.

R-P2904.3.1 Nonmetallic pipe and tubing.
Nonmetallic pipe and tubing, such as CPVC and PEX, shall be listed for use in residential fire sprinkler systems.

R-P2904.3.1.1 Nonmetallic pipe protection.
Nonmetallic pipe and tubing systems shall be protected from exposure to the living space by a layer of not less than 3/8 inch (9.5 mm) thick gypsum wallboard, 1/2 inch thick plywood (13 mm), or other material having a 15 minute fire rating.

Exceptions:

1. Pipe protection shall not be required in areas that do not require protection with sprinklers as specified in Section P2904.1.1.
2. Pipe protection shall not be required where exposed piping is permitted by the pipe listing.

R-P2904.3.2 Shutoff valves prohibited.
With the exception of shutoff valves for the entire water distribution system, valves shall not be installed in any location where the valve would isolate piping serving one or more sprinklers.

R-P2904.3.3 Single dwelling limit.
Piping beyond the service valve located at the beginning of the water distribution system shall not serve more than one *dwelling*.

R-P2904.3.4 Drain.
A means to drain the sprinkler system shall be provided on the system side of the water distribution shutoff valve.

R-P2904.4 Determining system design flow.
The flow for sizing the sprinkler piping system shall be based on the flow rating of each sprinkler in accordance with Section P2904.4.1 and the calculation in accordance with Section P2904.4.2.

R-P2904.4.1 Determining required flow rate for each sprinkler.
The minimum required flow for each sprinkler shall be determined using the sprinkler manufacturer's published data for the specific sprinkler model based on all of the following:

1. The area of coverage.
2. The ceiling configuration.
3. The temperature rating.
4. Any additional conditions specified by the sprinkler manufacturer.

R-P2904.4.2 System design flow rate.
The design flow rate for the system shall be based on the following:

1. The design flow rate for a room having only one sprinkler shall be the flow rate required for that sprinkler, as determined by Section P2904.4.1.
2. The design flow rate for a room having two or more sprinklers a shall be determined by identifying thesprinkler in that room with the highest required flow rate, based on Section P2904.4.1, and multiplying that flow rate by 2.
3. Where the sprinkler manufacturer specifies different criteria for ceiling configurations that are not smooth, flat and horizontal, the required flow rate for that room shall comply with the sprinkler manufacturer's instructions.
4. The design flow rate for the sprinkler system shall be the flow required by the room with the largest flow rate, based on Items 1, 2 and 3.
5. For the purpose of this section, it shall be permissible to reduce the design flow rate for a room by subdividing the space into two or more rooms, where each room is evaluated separately with respect to the required design flow rate. Each room shall be bounded by walls and a ceiling. Openings in walls shall have a lintel not less than 8 inches (203 mm) in depth and each lintel shall form a solid barrier between the ceiling and the top of the opening.

R-P2904.5Water supply.
The water supply shall provide not less than the required design flow rate for sprinklers in accordance with Section P2904.4.2 at a pressure not less than that used to comply with Section P2904.6.

R-P2904.5.1Water supply from individual sources.
Where a *dwelling unit* water supply is from a tank system, a private well system or a combination of these, the available water supply shall be based on the minimum pressure control setting for the pump.

R-P2904.5.2 Required capacity.
The water supply shall have the capacity to provide the required design flow rate for sprinklers for a period of time as follows:

1. 7 minutes for *dwelling units* one *story* in height and less than 2,000 square feet (186 m^2) in area.
2. 10 minutes for *dwelling units* two or more stories in height or equal to or greater than 2,000 square feet (186 m^2) in area. Where a well system, a water supply tank system or a combination thereof is used, any combination

of well capacity and tank storage shall be permitted to meet the capacity requirement.

R-P2904.6 Pipe sizing.
The piping to sprinklers shall be sized for the flow required by Section P2904.4.2. The flow required to supply the plumbing fixtures shall not be required to be added to the sprinkler design flow.

R-P2904.6.1Method of sizing pipe.
Piping supplying sprinklers shall be sized using the prescriptive method in Section P2904.6.2 or by hydraulic calculation in accordance with NFPA 13D. The minimum pipe size from the water supply source to any sprinkler shall be 3/4 inch (19 mm) nominal. Threaded adapter fittings at the point where sprinklers are attached to the piping shall be a minimum of 1/2 inch (13 mm) nominal.

R-P2904.6.2 Prescriptive pipe sizing method.
Pipe shall be sized by determining the available pressure to offset friction loss in piping and identifying a piping material, diameter and length using the equation in Section P2904.6.2.1 and the procedure in Section P2904.6.2.2.

R-P2904.6.2.1 Available pressure equation.
The pressure available to offset friction loss in the interior piping system (P_t) shall be determined in accordance with the Equation 29-1.
$P_t = P_{sup} - PL_{svc} - PL_m - PL_d - PL_e - P_{sp}$ **(Equation 29-1)**
where: P_t = Pressure used in applying Tables P2904.6.2(4) through P2904.6.2(9).
P_{sup} = Pressure available from the water supply source.
PL_{svc} = Pressure loss in the water-service pipe.
PL_m = Pressure loss in the water meter.
PL_d = Pressure loss from devices other than the water meter.
PL_e = Pressure loss associated with changes in elevation.
P_{sp} = Maximum pressure required by a sprinkler.

R-P2904.6.2.2 Calculation procedure.
Determination of the required size for water distribution piping shall be in accordance with the following procedure:

Step 1–Determine P_{su} Obtain the static supply pressure that will be available from the water main from the water purveyor, or for an individual source, the available supply pressure shall be in accordance with Section P2904.5.1.

Step 2–Determine PL_{svc} Use Table P2904.6.2(1) to determine the pressure loss in the water service pipe based on the selected size of the water service.

Step 3–Determine PL_m Use Table P2904.6.2(2) to determine the pressure loss from the water meter, based on the selected water meter size.

Step 4–Determine PL_d Determine the pressure loss from devices other than the water meter installed in the piping system supplying sprinklers, such as pressure-reducing valves, backflow preventers, water softeners or water

filters. Device pressure losses shall be based on the device manufacturer's specifications. The flow rate used to determine pressure loss shall be the rate from Section P2904.4.2, except that 5 gpm (0.3 L/S) shall be added where the device is installed in a water-service pipe that supplies more than one *dwelling*.
As alternative to deducting pressure loss for a device, an automatic bypass valve shall be installed to divert flow around the device when a sprinkler activates.

Step 5–Determine PL_e Use Table P2904.6.2(3) to determine the pressure loss associated with changes in elevation. The elevation used in applying the table shall be the difference between the elevation where the water source pressure was measured and the elevation of the highest sprinkler.

Step 6–Determine P_{sp} Determine the maximum pressure required by any individual sprinkler based on the flow rate from Section P2904.4.1. The required pressure is provided in the sprinkler manufacturer's published data for the specific sprinkler model based on the selected flow rate.

Step 7–Calculate P_t Using Equation 29-1, calculate the pressure available to offset friction loss in water-distribution piping between the service valve and the sprinklers.

Step 8–Determine the maximum allowable pipe length Use Tables P2904.6.2(4) through P2904.6.2(9) to select a material and size for water distribution piping. The piping material and size shall be acceptable if the *developed length* of pipe between the service valve and the most remote sprinkler does not exceed the maximum allowable length specified by the applicable table. Interpolation of P_t between the tabular values shall be permitted. The maximum allowable length of piping in Tables P2904.6.2(4) through P2904.6.2(9) incorporates an adjustment for pipe fittings, and no additional consideration of friction losses associated with pipe fittings shall be required.

R-P2904.7 Instructions and signs.
An owner's manual for the fire sprinkler system shall be provided to the owner. A sign or valve tag shall be installed at the main shutoff valve to the water distribution system stating the following: "Warning, the water system for this home supplies fire sprinklers that require certain
flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shut off the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."

R-P2904.8 Inspections.
The water distribution system shall be inspected in accordance with Sections P2904.8.1 and P2904.8.2.

R-P2904.8.1 Pre-concealment inspection.
The following items shall be verified prior to the concealment of any sprinkler system piping:

1. Sprinklers are installed in all areas as required by Section P2904.1.1.
2. Where sprinkler water spray patterns are obstructed by construction features, luminaries or ceiling fans, additional sprinklers are installed as required by Section P2904.2.4.2.
3. Sprinklers are the correct temperature rating and are installed at or beyond the required separation distances from heat sources as required by Sections P2904.2.1 and P2904.2.2.
4. The pipe size equals or exceeds the size used in applying Tables P2904.6.2(4) through P2904.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section P2904.6.1, the size used in the hydraulic calculation.
5. The pipe length does not exceed the length permitted by Tables P2904.6.2(4) through P2904.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section P2904.6.1, pipe lengths and fittings do not exceed those used in the hydraulic calculation.
6. Nonmetallic piping that conveys water to sprinklers is listed for use with fire sprinklers.
7. Piping is supported in accordance with the pipe manufacturer's and sprinkler manufacturer's installation instructions.
8. The piping system is tested in accordance with Section P2503.7.

R-P2904.8.2 Final inspection.
The following items shall be verified upon completion of the system:

1. Sprinkler are not painted, damaged or otherwise hindered from operation.
2. Where a pump is required to provide water to the system, the pump starts automatically upon system water demand.
3. Pressure-reducing valves, water softeners, water filters or other impairments to water flow that were not
part of the original design have not been installed.
4. The sign or valve tag required by Section P2904.7 is installed and the owner's manual for the system is present.

TABLE P2904.6.2(1)
WATER SERVICE PRESSURE LOSS (PL_{svc})[a,b]

FLOW RATE[c] (gpm)	$^3/_4$ INCH WATER SERVICE PRESSURE LOSS (psi)				1 INCH WATER SERVICE PRESSURE LOSS (psi)				$1^1/_4$ INCH WATER SERVICE PRESSURE LOSS (psi)			
	Length of water service pipe (feet)				Length of water service pipe (feet)				Length of water service pipe (feet)			
	40 or less	41 to 75	76 to 100	101 to 150	40 or less	41 to 75	76 to 100	101 to 150	40 or less	41 to 75	76 to 100	101 to 150
8	5.1	8.7	11.8	17.4	1.5	2.5	3.4	5.1	0.6	1.0	1.3	1.9
10	7.7	13.1	17.8	26.3	2.3	3.8	5.2	7.7	0.8	1.4	2.0	2.9
12	10.8	18.4	24.9	NP	3.2	5.4	7.3	10.7	1.2	2.0	2.7	4.0
14	14.4	24.5	NP	NP	4.2	7.1	9.6	14.3	1.6	2.7	3.6	5.4
16	18.4	NP	NP	NP	5.4	9.1	12.4	18.3	2.0	3.4	4.7	6.9
18	22.9	NP	NP	NP	6.7	11.4	15.4	22.7	2.5	4.3	5.8	8.6
20	27.8	NP	NP	NP	8.1	13.8	18.7	27.6	3.1	5.2	7.0	10.4
22	NP	NP	NP	NP	9.7	16.5	22.3	NP	3.7	6.2	8.4	12.4
24	NP	NP	NP	NP	11.4	19.3	26.2	NP	4.3	7.3	9.9	14.6
26	NP	NP	NP	NP	13.2	22.4	NP	NP	5.0	8.5	11.4	16.9
28	NP	NP	NP	NP	15.1	25.7	NP	NP	5.7	9.7	13.1	19.4
30	NP	NP	NP	NP	17.2	NP	NP	NP	6.5	11.0	14.9	22.0
32	NP	NP	NP	NP	19.4	NP	NP	NP	7.3	12.4	16.8	24.8
34	NP	NP	NP	NP	21.7	NP	NP	NP	8.2	13.9	18.8	NP
36	NP	NP	NP	NP	24.1	NP	NP	NP	9.1	15.4	20.9	NP

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 0.063 L/s, 1 pound per square inch = 6.895 kPa.

NP - Not permitted. Pressure loss exceeds reasonable limits.

a. Values are applicable for underground piping materials listed in Table P2905.4 and are based on an SDR of 11 and a Hazen Williams C Factor of 150.

b. Values include the following length allowances for fittings: 25% length increase for actual lengths up to 100 feet and 15% length increase for actual lengths over 100 feet.

c. Flow rate from Section P2904.4.2. Add 5 gpm to the flow rate required by Section P2904.4.2 where the water-service pipe supplies more than one dwelling.

TABLE P2904.6.2(2)
MINIMUM WATER METER PRESSURE LOSS (PL_m)[a]

FLOW RATE (gallons per minute, gpm)[b]	5/8-INCH METER PRESSURE LOSS (pounds per square inch, psi)	3/4-INCH METER PRESSURE LESS (pounds per square inch, psi)	1-INCH METER PRESSURE LOSS (pounds per square inch, psi)
8	2	1	1
10	3	1	1
12	4	1	1
14	5	2	1
16	7	3	1
18	9	4	1
20	11	4	2
22	NP	5	2
24	NP	5	2
26	NP	6	2
28	NP	6	2
30	NP	7	2
32	NP	7	3
34	NP	8	3
36	NP	8	3

For SI: 1 inch = 25.4 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.
NP - Not permitted unless the actual water meter pressure loss is known.
a. Table 2904.6.2(2) establishes conservative values for water meter pressure loss or installations where the water meter loss is unknown. Where the actual water meter pressure loss is known, P_m shall be the actual loss.
b. Flow rate from Section P2904.4.2. Add 5 gpm to the flow rate required by Section P2904.4.2 where the water-service pipe supplies more than one dwelling.

TABLE P2904.6.2(3)
ELEVATION LOSS (PL_e)

ELEVATION (feet)	PRESSURE LOSS (psi)
5	2.2
10	4.4
15	6.5
20	8.7
25	10.9
30	13
35	15.2
40	17.4

For SI: 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

TABLE P2904.6.2(4)
ALLOWABLE PIPE LENGTH FOR $^3/_4$-INCH TYPE M COPPER WATER TUBING

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_s (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	$^3/_4$	217	289	361	434	506	578	650	723	795	867
9	$^3/_4$	174	232	291	349	407	465	523	581	639	697
10	$^3/_4$	143	191	239	287	335	383	430	478	526	574
11	$^3/_4$	120	160	200	241	281	321	361	401	441	481
12	$^3/_4$	102	137	171	205	239	273	307	341	375	410
13	$^3/_4$	88	118	147	177	206	235	265	294	324	353
14	$^3/_4$	77	103	128	154	180	205	231	257	282	308
15	$^3/_4$	68	90	113	136	158	181	203	226	248	271
16	$^3/_4$	60	80	100	120	140	160	180	200	220	241
17	$^3/_4$	54	72	90	108	125	143	161	179	197	215
18	$^3/_4$	48	64	81	97	113	129	145	161	177	193
19	$^3/_4$	44	58	73	88	102	117	131	146	160	175
20	$^3/_4$	40	53	66	80	93	106	119	133	146	159
21	$^3/_4$	36	48	61	73	85	97	109	121	133	145
22	$^3/_4$	33	44	56	67	78	89	100	111	122	133
23	$^3/_4$	31	41	51	61	72	82	92	102	113	123
24	$^3/_4$	28	38	47	57	66	76	85	95	104	114
25	$^3/_4$	26	35	44	53	61	70	79	88	97	105
26	$^3/_4$	24	33	41	49	57	65	73	82	90	98
27	$^3/_4$	23	30	38	46	53	61	69	76	84	91
28	$^3/_4$	21	28	36	43	50	57	64	71	78	85
29	$^3/_4$	20	27	33	40	47	53	60	67	73	80
30	$^3/_4$	19	25	31	38	44	50	56	63	69	75
31	$^3/_4$	18	24	29	35	41	47	53	59	65	71
32	$^3/_4$	17	22	28	33	39	44	50	56	61	67
33	$^3/_4$	16	21	26	32	37	42	47	53	58	63
34	$^3/_4$	NP	20	25	30	35	40	45	50	55	60
35	$^3/_4$	NP	19	24	28	33	38	42	47	52	57
36	$^3/_4$	NP	18	22	27	31	36	40	45	49	54
37	$^3/_4$	NP	17	21	26	30	34	38	43	47	51
38	$^3/_4$	NP	16	20	24	28	32	36	40	45	49
39	$^3/_4$	NP	15	19	23	27	31	35	39	42	46
40	$^3/_4$	NP	NP	18	22	26	29	33	37	40	44

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.
NP - Not permitted
a. Flow rate from Section P2904.4.2.

TABLE P2904.6.2(5)
ALLOWABLE PIPE LENGTH FOR 1-INCH TYPE M COPPER WATER TUBING

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_t (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	1	806	1075	1343	1612	1881	2149	2418	2687	2955	3224
9	1	648	864	1080	1296	1512	1728	1945	2161	2377	2593
10	1	533	711	889	1067	1245	1422	1600	1778	1956	2134
11	1	447	586	745	894	1043	1192	1341	1491	1640	1789
12	1	381	508	634	761	888	1015	1142	1269	1396	1523
13	1	328	438	547	657	766	875	985	1094	1204	1313
14	1	286	382	477	572	668	763	859	954	1049	1145
15	1	252	336	420	504	588	672	756	840	924	1008
16	1	224	298	373	447	522	596	671	745	820	894
17	1	200	266	333	400	466	533	600	666	733	799
18	1	180	240	300	360	420	479	539	599	659	719
19	1	163	217	271	325	380	434	488	542	597	651
20	1	148	197	247	296	345	395	444	493	543	592
21	1	135	180	225	270	315	360	406	451	496	541
22	1	124	165	207	248	289	331	372	413	455	496
23	1	114	152	190	228	267	305	343	381	419	457
24	1	106	141	176	211	246	282	317	352	387	422
25	1	98	131	163	196	228	261	294	326	359	392
26	1	91	121	152	182	212	243	273	304	334	364
27	1	85	113	142	170	198	226	255	283	311	340
28	1	79	106	132	159	185	212	238	265	291	318
29	1	74	99	124	149	174	198	223	248	273	298
30	1	70	93	116	140	163	186	210	233	256	280
31	1	66	88	110	132	153	175	197	219	241	263
32	1	62	83	103	124	145	165	186	207	227	248
33	1	59	78	98	117	137	156	176	195	215	234
34	1	55	74	92	111	129	148	166	185	203	222
35	1	53	70	88	105	123	140	158	175	193	210
36	1	50	66	83	100	116	133	150	166	183	199
37	1	47	63	79	95	111	126	142	158	174	190
38	1	45	60	75	90	105	120	135	150	165	181
39	1	43	57	72	86	100	115	129	143	158	172
40	1	41	55	68	82	96	109	123	137	150	164

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.963 L/s.
a. Flow rate from Section P2904.4.2.

TABLE P2904.6.2(6)
ALLOWABLE PIPE LENGTH FOR $^3/_4$-INCH CPVC PIPE

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_s (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	$^3/_4$	348	465	581	697	813	929	1045	1161	1278	1394
9	$^3/_4$	280	374	467	560	654	747	841	934	1027	1121
10	$^3/_4$	231	307	384	461	538	615	692	769	845	922
11	$^3/_4$	193	258	322	387	451	515	580	644	709	773
12	$^3/_4$	165	219	274	329	384	439	494	549	603	658
13	$^3/_4$	142	189	237	284	331	378	426	473	520	568
14	$^3/_4$	124	165	206	247	289	330	371	412	454	495
15	$^3/_4$	109	145	182	218	254	290	327	363	399	436
16	$^3/_4$	97	129	161	193	226	258	290	322	354	387
17	$^3/_4$	86	115	144	173	202	230	259	288	317	346
18	$^3/_4$	78	104	130	155	181	207	233	259	285	311
19	$^3/_4$	70	94	117	141	164	188	211	234	258	281
20	$^3/_4$	64	85	107	128	149	171	192	213	235	256
21	$^3/_4$	58	78	97	117	136	156	175	195	214	234
22	$^3/_4$	54	71	89	107	125	143	161	179	197	214
23	$^3/_4$	49	66	82	99	115	132	148	165	181	198
24	$^3/_4$	46	61	76	91	107	122	137	152	167	183
25	$^3/_4$	42	56	71	85	99	113	127	141	155	169
26	$^3/_4$	39	52	66	79	92	105	118	131	144	157
27	$^3/_4$	37	49	61	73	86	98	110	122	135	147
28	$^3/_4$	34	46	57	69	80	92	103	114	126	137
29	$^3/_4$	32	43	54	64	75	86	96	107	118	129
30	$^3/_4$	30	40	50	60	70	81	91	101	111	121
31	$^3/_4$	28	38	47	57	66	76	85	95	104	114
32	$^3/_4$	27	36	45	54	63	71	80	89	98	107
33	$^3/_4$	25	34	42	51	59	68	76	84	93	101
34	$^3/_4$	24	32	40	48	56	64	72	80	88	96
35	$^3/_4$	23	30	38	45	53	61	68	76	83	91
36	$^3/_4$	22	29	36	43	50	57	65	72	79	86
37	$^3/_4$	20	27	34	41	48	55	61	68	75	82
38	$^3/_4$	20	26	33	39	46	52	59	65	72	78
39	$^3/_4$	19	25	31	37	43	50	56	62	68	74
40	$^3/_4$	18	24	30	35	41	47	53	59	65	71

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.
a. Flow rate from Section P2904.4.2.

TABLE P2904.6.2(7)
ALLOWABLE PIPE LENGTH FOR 1-INCH CPVC PIPE

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_1 (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	1	1049	1398	1748	2098	2447	2797	3146	3496	3845	4195
9	1	843	1125	1406	1687	1968	2249	2530	2811	3093	3374
10	1	694	925	1157	1388	1619	1851	2082	2314	2545	2776
11	1	582	776	970	1164	1358	1552	1746	1940	2133	2327
12	1	495	660	826	991	1156	1321	1486	1651	1816	1981
13	1	427	570	712	854	997	1139	1281	1424	1566	1709
14	1	372	497	621	745	869	993	1117	1241	1366	1490
15	1	328	437	546	656	765	874	983	1093	1202	1311
16	1	291	388	485	582	679	776	873	970	1067	1164
17	1	260	347	433	520	607	693	780	867	954	1040
18	1	234	312	390	468	546	624	702	780	858	936
19	1	212	282	353	423	494	565	635	706	776	847
20	1	193	257	321	385	449	513	578	642	706	770
21	1	176	235	293	352	410	469	528	586	645	704
22	1	161	215	269	323	377	430	484	538	592	646
23	1	149	198	248	297	347	396	446	496	545	595
24	1	137	183	229	275	321	366	412	458	504	550
25	1	127	170	212	255	297	340	382	425	467	510
26	1	118	158	197	237	276	316	355	395	434	474
27	1	111	147	184	221	258	295	332	368	405	442
28	1	103	138	172	207	241	275	310	344	379	413
29	1	97	129	161	194	226	258	290	323	355	387
30	1	91	121	152	182	212	242	273	303	333	364
31	1	86	114	143	171	200	228	257	285	314	342
32	1	81	108	134	161	188	215	242	269	296	323
33	1	76	102	127	152	178	203	229	254	280	305
34	1	72	96	120	144	168	192	216	240	265	289
35	1	68	91	114	137	160	182	205	228	251	273
36	1	65	87	108	130	151	173	195	216	238	260
37	1	62	82	103	123	144	165	185	206	226	247
38	1	59	78	98	117	137	157	176	196	215	235
39	1	56	75	93	112	131	149	168	187	205	224
40	1	53	71	89	107	125	142	160	178	196	214

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.963 L/s.
a. Flow rate from Section P2904.4.2.

TABLE P2904.6.2(8)
ALLOWABLE PIPE LENGTH FOR $^3/_4$-INCH PEX TUBING

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_1 (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	$^3/_4$	93	123	154	185	216	247	278	309	339	370
9	$^3/_4$	74	99	124	149	174	199	223	248	273	298
10	$^3/_4$	61	82	102	123	143	163	184	204	225	245
11	$^3/_4$	51	68	86	103	120	137	154	171	188	205
12	$^3/_4$	44	58	73	87	102	117	131	146	160	175
13	$^3/_4$	38	50	63	75	88	101	113	126	138	151
14	$^3/_4$	33	44	55	66	77	88	99	110	121	132
15	$^3/_4$	29	39	48	58	68	77	87	96	106	116
16	$^3/_4$	26	34	43	51	60	68	77	86	94	103
17	$^3/_4$	23	31	38	46	54	61	69	77	84	92
18	$^3/_4$	21	28	34	41	48	55	62	69	76	83
19	$^3/_4$	19	25	31	37	44	50	56	62	69	75
20	$^3/_4$	17	23	28	34	40	45	51	57	62	68
21	$^3/_4$	16	21	26	31	36	41	47	52	57	62
22	$^3/_4$	NP	19	24	28	33	38	43	47	52	57
23	$^3/_4$	NP	17	22	26	31	35	39	44	48	52
24	$^3/_4$	NP	16	20	24	28	32	36	40	44	49
25	$^3/_4$	NP	NP	19	22	26	30	34	37	41	45
26	$^3/_4$	NP	NP	17	21	24	28	31	35	38	42
27	$^3/_4$	NP	NP	16	20	23	26	29	33	36	39
28	$^3/_4$	NP	NP	15	18	21	24	27	30	33	36
29	$^3/_4$	NP	NP	NP	17	20	23	26	28	31	34
30	$^3/_4$	NP	NP	NP	16	19	21	24	27	29	32
31	$^3/_4$	NP	NP	NP	15	18	20	23	25	28	30
32	$^3/_4$	NP	NP	NP	NP	17	19	21	24	26	28
33	$^3/_4$	NP	NP	NP	NP	16	18	20	22	25	27
34	$^3/_4$	NP	NP	NP	NP	NP	17	19	21	23	25
35	$^3/_4$	NP	NP	NP	NP	NP	16	18	20	22	24
36	$^3/_4$	NP	NP	NP	NP	NP	15	17	19	21	23
37	$^3/_4$	NP	NP	NP	NP	NP	NP	16	18	20	22
38	$^3/_4$	NP	NP	NP	NP	NP	NP	16	17	19	21
39	$^3/_4$	NP	NP	NP	NP	NP	NP	NP	16	18	20
40	$^3/_4$	NP	NP	NP	NP	NP	NP	NP	16	17	19

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.
NP - Not permitted.
a. Flow rate from Section P2904.4.2.

TABLE P2904.6.2(9)
ALLOWABLE PIPE LENGTH FOR 1-INCH PEX TUBING

SPRINKLER FLOW RATE[a] (gpm)	WATER DISTRIBUTION SIZE (inch)	AVAILABLE PRESSURE - P_1 (psi)									
		15	20	25	30	35	40	45	50	55	60
		Allowable length of pipe from service valve to farthest sprinkler (feet)									
8	1	314	418	523	628	732	837	941	1046	1151	1255
9	1	252	336	421	505	589	673	757	841	925	1009
10	1	208	277	346	415	485	554	623	692	761	831
11	1	174	232	290	348	406	464	522	580	638	696
12	1	148	198	247	296	346	395	445	494	543	593
13	1	128	170	213	256	298	341	383	426	469	511
14	1	111	149	186	223	260	297	334	371	409	446
15	1	98	131	163	196	229	262	294	327	360	392
16	1	87	116	145	174	203	232	261	290	319	348
17	1	78	104	130	156	182	208	233	259	285	311
18	1	70	93	117	140	163	187	210	233	257	280
19	1	63	84	106	127	148	169	190	211	232	253
20	1	58	77	96	115	134	154	173	192	211	230
21	1	53	70	88	105	123	140	158	175	193	211
22	1	48	64	80	97	113	129	145	161	177	193
23	1	44	59	74	89	104	119	133	148	163	178
24	1	41	55	69	82	96	110	123	137	151	164
25	1	38	51	64	76	89	102	114	127	140	152
26	1	35	47	59	71	83	95	106	118	130	142
27	1	33	44	55	66	77	88	99	110	121	132
28	1	31	41	52	62	72	82	93	103	113	124
29	1	29	39	48	58	68	77	87	97	106	116
30	1	27	36	45	54	63	73	82	91	100	109
31	1	26	34	43	51	60	68	77	85	94	102
32	1	24	32	40	48	56	64	72	80	89	97
33	1	23	30	38	46	53	61	68	76	84	91
34	1	22	29	36	43	50	58	65	72	79	86
35	1	20	27	34	41	48	55	61	68	75	82
36	1	19	26	32	39	45	52	58	65	71	78
37	1	18	25	31	37	43	49	55	62	68	74
38	1	18	23	29	35	41	47	53	59	64	70
39	1	17	22	28	33	39	45	50	56	61	67
40	1	16	21	27	32	37	43	48	53	59	64

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.
a. Flow rate from Section P2904.4.2.

Appendix AA

Add the following new Appendix AA

AA 100 HIGH WIND PRESCRIPTIVE DESIGN

AA 101.1 General.
This appendix contains prescriptive solutions for compliance on wind path load transfer requirements, and shall be used only within the limitations of section AA101.2.

AA 101.2 Conditions of use.
The prescriptive solutions specified in the following sections shall not be permitted to be used in the following conditions:

1. Buildings and structures of any size in 110 MPH or 120 MPH wind zones located in a V zone as determined by community FIRMS.
2. Two or more story buildings and structures of any size located in 120 MPH wind zone with more than 20% exterior fenestration.
3. Two or more story structures with a building height greater than 33' as measured from Grade Plane to the average height of the highest roof surface.
4. Any two or more story structure or building with opening fenestration greater than 40% on any one wall.

AA 202 Roofs

AA 202.1 Scope.
The following applies to structures conventionally framed or to truss-type roofs.

AA 202.2 Roof Sheathing.
Roof sheathing shall be not less than 7/16" finished thickness.

AA 202.3 Roof nailing.
Roof attachment shall be accomplished with minimum 8d nails as follows:

1. In the 4 foot perimeter edge zone along the edges: 6" o/c
2. To the intermediate supports within the 4 foot perimeter edge zone: 6" o/c
3. Along the gable end wall or rake: 4" o/c
4. All other areas: 6" o/c edge; 12" o/c intermediate.

All sheathing edges within the 4-foot perimeter edge zone shall be blocked with 2x3 minimum including the ridge line and soffit/fascia area. Provisions for ventilation air shall be maintained.

Exception:
2 x 3 intermediate blocking can be eliminated provided all sheathing is 5/8" nominal tongue and groove structural panels.

AA 202.4 Ridge Straps.
Ridge straps 1-1/4" x 20 gage shall be attached to each pair of opposing rafters with 5-8d nails at each end into the framing member.

Exceptions:

1. Ridge straps are not required when collar ties of nominal 1 x 6 or 2 x 4 lumber are located within the upper third of the attic space and attached to each rafter with 3-10 d nails
2. Trusses without a framed ridge connection.
3. Plywood gussets of equivalent cross section.
4. Other engineered connections.
5. At hips, straps shall be installed so each hip jack is connected across the hip line with at least 1-8d into an opposite framing member.

AA 202.5 Rake and eave overhangs.
Overhangs shall be limited to 24". Ladder style rake overhangs attached to the gable end walls shall be limited to 12". Cantilevered rake overhangs at gable end walls shall be limited to 24".

AA 202.6 Roof assembly to wall assembly.
See Section R802.11.

Exception:
Roof truss to wall connection shall be designed to withstand either the load requirements of Table R802.11 or the connection loads indicated on the truss design shop drawings, whichever is greater.

AA 203 Walls

AA 203.1 Wall sheathing.
Wall sheathing shall be a minimum 7/16" structural panel. Nailing shall be in accordance with Table R602.3 (1) and the following:

1. At the top plate or plates, the sheathing shall extend from the top of the top plate to a minimum of 16" beyond the stud-to-bottom of the top plate connection. A minimum of 4 nails shall be used at each stud fastening, and edge-nailed to each plate at 6" o/c.

   Alternate: prefabricated and pre-engineered connection straps approved by the Building Official.

2. If the studs are not continuous to the foundation plate such as at an intermediate floor, the wall sheathing shall be continuous and uninterrupted for a distance of 16" beyond from top of bottom wall plate to 16" beyond bottom of bottom wall top plate below, with a minimum of 4 nails at each stud, and field-nailed at 6" o/c to floor joist header framing.

   Alternate: Prefabricated and pre-engineered connection anchors or fasteners approved by the Building Official.

3. At the bottom of the wall assembly to the foundation sill plate, the wall sheathing shall be continuous from a point 16" above the top of the bottom wall plate to the bottom of the foundation sill, with a minimum of 4 nails at

each stud, 6” field nailed and edge nailed to the foundation sill plate at 6” o/c.

Alternate: Prefabricated pre-engineered connection anchors or fasteners approved by the Building Official.

AA 203.2 Shear Walls. A 4’ segment of wall sheathing shall be designated as a shear wall at each corner of the structure at each floor, and no more than 24’ apart along a wall length. The following additional requirements apply:

1. No openings are permitted within this 4’ section.
   Exception:
   Window openings are allowed no closer than 2’ to corner providing the length of that shear panel is increased to 8’.

2. All edges shall be blocked and nailed at 6” o/c, and field-nailed at 6” o/c.
3. Studs shall be doubled at each end of the shear wall panel.

AA 203.2.1 Shear wall hold-downs.
1st story shear walls shall be connected to the foundation below with connection anchoring capable of 3500 lb. hold-down capacity, in addition to conventional foundation anchor bolt requirements in the remainder of the panel. The hold downs shall be fastened to each end of the shear wall at the double stud.

Exceptions

1 Shear wall hold-downs shall not be required in wind zones I or II (100 mph or 110 mph).

2: Shear wall anchors shall not be required provided ½” anchor bolts at 48” o/c max are installed with the top of the bolts anchored through the floor system to the bottom plate of the exterior wall frame for the entire foundation perimeter.

AA 203.3 Foundation anchor bolts.
Anchor bolts shall be installed in accordance with section R403.1.6 and the following:

1 + 2 story buildings	½” @ 48” o/c or	5/8” @ 72” o/c
3 story building	½” @ 24” o/c or	5/8” @ 36” o/c

Alternate
Prefabricated and pre-engineered connections in design and quantity sufficient to equal strength of anchor bolt specification above.

Exception.
See Exception #2 to AA 203.2.1 above.

AA 203.4 Wall Framing.

AA203.4.1. Wind Zone

For wind zone 2 (110 mph) and zone 3 (120 mph) the following conditions apply:

Exterior bearing and non-bearing walls greater than 10' in height shall be 2 x 6 @ 16" o/c min.
Walls with a total height greater than 10' shall be permitted to use 2 x 4 @ 16" o/c providing the wall is limited to 10' in length and the individual studs are not greater than 9' in length.

AA203.4.2 Garage doors.

In wind zone 3 (120) mph garage doors shall be limited to 9' x 8' nominal.

AA204 Deviations.

AA204.1 Deviations.

Deviations from the above prescriptive requirements shall only be permitted if stamped calculations and drawings are provided by a Rhode Island registered professional engineer for alternative connections.