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RESIDENTIAL R-5 CONSTRUCTION INFORMATION LIST FOR THE 2018 VRC CODE

Chesapeake VIRGINIA

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Purpose: This form is intended to identify some the significant 2018 code changes and design requirements for the City of Chesapeake.

*** Red Font Indicates Significant 2018 Code Changes (Please Note – Changes provided are Not all inclusive) ***

Climatic and Geographic Design Criteria

Ground Snow Load	*Wind Speed (mph)	Seismic Design	Weathering Concrete	Frost Line Depth	Termites	Ice Barrier Underlayment	Air Freezing Index	Mean Annual Temp	Heating Degree Days
10 PSF	117/123 Vult 91/96 Vasd MPH	A	Moderate	12 inches	Moderate to heavy	None Required	1500 or less	50 – 65 Degrees	3,421 Days

Winter Design	Summer Design	AE Flood Zone	Decay Wood	Rainfall Design	Radon Areas	Shrink Swell	Noise Zones	Manufactured Housing Code
22 Degrees	91 dry 78 wet	Several different areas Design flood height includes 1.5 feet of freeboard above base flood height.	Moderate to Severe	3.4 inches Per Hour	No NA	Limited Based on oil Reports	Yes Fentress Airfield Area	Wind Zone: Zone II – 27 PSF Snow Load Ground: 10 PSF Climate Zone 4 Non-Marine

See the last page for instructions and requirements

Building Codes and 2018 Building Code Changes

Design Criteria

Building Code Used:	**2018 VRC (Mandatory as of July 1, 2022)**
Occupancy Use Group:	**R-5**
Construction Type:	**5B**

CHAPTER 1 - SCOPE AND ADMINISTRATION

113.1 Minimum Inspections: The following minimum inspections shall be conducted by the Building Official when applicable to the construction or Building Code requirements.

1. Inspection of footing excavations and reinforcement material for concrete footings prior to placement of concrete.
2. Inspection of foundation systems during phases of construction necessary to assure compliance with this code.
3. Inspection of preparatory work prior to placement of concrete.
4. Inspection of structural members prior to concealment.
5. Inspection of electrical, mechanical, and plumbing materials, equipment and systems prior to concealment.
6. Inspection of energy conservation material prior to concealment.
7. Final inspection.

NOTE-If structure is in a Flood Zone- an Elevation Certificate must be submitted by an engineer for the "Building Under Construction" category and be approved prior to any further vertical construction beyond the box or slab construction phase.

Building Codes and 2018 Building Code Changes

3. Final grading inspection of surface drainage outside of and within 10 feet of the exterior walls or roof covered areas of the home. **Impervious surfaces within 10 feet of the building shall be sloped a minimum of 1% slope away from the building (1/8 of an inch per foot). The previous code required a minimum of a 2% slope.**
Pervious area within 10 feet of the home must slope away from the home 5% slope or 6-inch drop in 10 feet in compliance with the 2018 Virginia Residential Building Code.

NOTE: Insulation: Must not be installed until after the framing (performed by a building inspector) and rough-in inspections (performed by electrical, mechanical, gas, and plumbing inspectors) have been approved. The structure may be insulated only after the approval of the required rough-in inspection by each discipline (building, plumbing, mechanical, gas and electrical). The building contractor must request a separate inspection for insulation prior to concealment. The building inspector may inspect the crawl space and blown attic insulation during the final building inspection if the area is accessible.

CHAPTER 3 – BUILDING PLANNING

R301.2.1. Wind Design Criteria:

Buildings and portions thereof shall be constructed in accordance with this Code using the Ultimate design wind speed in Table R301.2 (1). The extreme eastern part of the City 123MPH and 117MPH in the extreme western part. The component and cladding loads adjusted for height and exposure Table R301.2 (2). Example: A 3 story home located on the Elizabeth River; the wind speed would be 119MPH approximately. The roof uplift for a 3/12 slop roof on the corners near the ridge would be = to -42.7 PSF approximately.

Table R301.5

Minimum Uniformly Distributed Live Loads
(In pounds per square foot)

Use	Live Load	Use	Live Load
Uninhabitable attics without storage	10 psf.	Guardrails and handrails	200 plf. In.-fill 50 psf.
Uninhabitable attics w/ limited storage	20 psf.	Rooms other than sleeping rooms	40 psf.
Attics with fixed stairs	30 psf.	Habitable Attics	30 psf.
Wood Decks and Balconies	40 psf.	Sleeping rooms	30 psf.
		Stairs	40 psf.
		Garage	50 psf. Elevated floor 2000lbs load over 20 square inches

Table R301.2 (2) – Component & Cladding - Loads in PSF

Chesapeake Wind Speed: 117- 123 MPH Vult (Ultimate Wind Speed)

The pressures listed on the approved drawings must be in compliance with **revised Table R301.2 (2)**, adjust for height and exposure. All structural components and exterior components are required to meet the design pressures for the structure and the approved plans. This includes siding, roofing, windows and doors.

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 accordance with Section P2904 shall comply with Table R302.1 (2).
Exceptions: #2. Walls of individual dwelling units and their accessory structures located on the same lot.

R302.2.1 Double walls. Each townhouse shall be separated by a two 1- hour fire-resistance-rated wall assemblies tested in accordance with ASTM E119, UL 263 or Section 703.3 of the International Building Code.

R302.2.2 Common Walls. Common walls separating townhouses shall have a fire resistance rating in accordance with Item 1or 2. The common wall shared by two townhouses shall be assigned a fire resistance rating in accordance with Item 1or 2. The common wall shared by the two townhouses shall be constructed without plumbing or mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping, in 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. Where a fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than 1 hour fire resistance-rated.

R302.4.2.4 Membrane Penetration- Exceptions #4 Ceiling membrane penetrations by listed luminaires or by luminaires protected with listed materials that have been tested for use in fire resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

R308.4.2 Glazing adjacent to doors: The code has been amended to add #2. Hazardous Location- Where glazing is on a wall less than 180 degrees from the plane of the door in the closed position and is within 24 inches of the hinge side of an in-swing door.

R308.4.4 Structural glass baluster panels. Unless laminated glass is used, panels in guards now require an attached top rail or guard.

R308.4.7 Glazing adjacent to bottom stair landing- Provides a clarification to Figure R308.4.7

R309.3 Flood hazard areas. Garages and carports located in flood hazard areas shall be constructed in accordance with Section R322 flood resistance construction.

R311.7.3: Vertical rise: The maximum rise between landings has increased from 147 inches to 151 inches.

R311,7,5,3 Stair Nosing- Revised text clarifies that nosing must be consistent throughout the stairway.

R311.7.8.2 Handrail projection: Exception added that allows the distance to be increased to 6.5 inches.

R312.1 Guards- Guard requirement only applies to specific portions of a walking surface that exceeds 30 inches above grade.

R314.6 Smoke Alarm Power Source – Exception now requires a minimum 10-year battery where installed in buildings without commercial power.

R315.5 Interconnectivity- If multiple CO alarms are installed, must be interconnected.

R317.3.1 Fasteners for pressure treated wood: Staples used on pressure treated wood must be stainless steel.

R324 Solar Energy systems: Section revised for requirements to roof-top mounted panels.

R325.6 Habitable attic: A habitable attic shall not be considered a story where complying with all the following requirements.

1. The occupiable floor area is not less than 70 square feet, in accordance with R304.
2. The occupiable floor area has a ceiling height in accordance with Section R305, 7 feet.
3. The occupiable space is enclosed by a roof assembly above, knee walls on the sides and floor-ceiling assembly below.
4. The floor of the occupiable space shall not extend beyond the exterior walls of the floor below.

Section R327 Stationary Storage Battery System- entire section revised

R330.1 Kitchen areas: In dwellings without an *approved* fire sprinkler system, a fire extinguisher having a rating of 2-A:10-B:C shall be installed in the kitchen area.

CHAPTER 4 - FOUNDATIONS

R403.1.6- Foundation Anchorage- This section has been modified to specify "steel" bolts to align with the IBC language.

R408.1 Moisture Control – Improved format for vented and unvented under floor spaces.

R408.2 Openings for Under-Floor Ventilation- Clarifies the requirements for vented floor spaces.

R408.3 Unvented Crawl space- added new option #4 for dehumidification.

R408.6 Crawl Finish Grade: The crawl space finish grade must be equal to or greater than the exterior grade level in Chesapeake due to the high-water table and the amount clay in the soil.

CHAPTER 5 – FLOORS

R507- Exterior Decks- A complete reorganization of the section to include:

R507.2.1 Wood Materials for exterior decks- Wood materials shall be No.2 grade or better lumber, pressure treated in accordance with Section R317, or a naturally durable lumber, and termite protected where required per R317 or a naturally durable species as per R318. Cuts notches and drilled holes shall be treated with preservative per section R317.1.1.

R507.2.2.1 Labeling- Plastic composite deck boards, stair treads and their packaging shall indicate compliance with ASTM D7032.

R507.2.2.2 Flame spread index: **Plastic composites deck boards, guards & handrails shall exhibit a flame spread index not exceeding 200 as per ASTM E84 or UL 723. Exception: Plastic composite determined to be noncombustible.**

R507.2.3 Fasteners and connections: **Metal fasteners and connectors used for all decks shall be in accordance with Section R317.3 and Table R507.2.3.**

R507.2.4 Flashing: **Flashing shall be corrosion resistant metal of a nominal thickness of not less than 0.019 inch or "approved" non-metallic that is compatible with the substrate of the structure and decking materials.**

See Table R507.2.3 - For fasteners and connectors for all parts of decks.

See Figure R507.3 Deck Footings- **New section on minimum footing size.**

R507.4.1 Deck post to deck footing connection: **Where post bear on concrete footings as per Section R403 and Figure R507.3 lateral restraint shall be provided by manufactured connectors or a minimum post embedment of 12 inches in the surrounding soils or concrete piers. Exception: This section applies to most of Chesapeake: "Where expansive, compressible, shifting, or questionable soils are present, surrounding soils shall not be relied on for lateral support. "**

Table R507.5 Deck Beams- **Table now includes single-ply beams. Beam bearing and connections are clarified.**

R507.6 Deck Joist- **Maximum joist span and total span length have been clarified. Includes maximum cantilever.**

R507. 6.2 Deck joist lateral restraint- **Joist ends and bearing locations shall be provided with lateral resistance to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall equal not less than 60 percent of the joist depth.**

R507.7 Decking – **Material options and fasteners systems are clarified.**

R507.8 Vertical and lateral supports: **Where supported by an attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads. Such attachment shall not be accomplished using toe- nails or nails subject to withdrawal. For deck with cantilevered framing members, connections to exterior walls or other framing members shall be designed to resist uplift resulting from the full live load.**

R507.9.2 Lateral connection: **Lateral loads shall be transferred to the ground or a structure capable of transmitting them to the ground. Lateral load connectors must be capable of transferring not less than 1500 pounds to the structure. Hold down tension devices shall be installed in not less than 4 locations. Each device shall have an allowable stress design capacity of not less than 750lbs.**

CHAPTER 6 – Wall Construction

R602.3.1. Stud size, height and spacing: Stud size, height and spacing. Exterior load bearing studs not exceeding 12 feet in height provided in accordance with Table R602.3(6).

Tables R602.7 and Table R602.7.(1) & (2) - Girder spans and header spans for exterior walls have changed.

R602.3.1(3) Stud size, height and spacing- Provides an exception #3 regarding exterior load-bearing studs not exceeding 12 feet in height.

Table R602.3(6) Alternate Wood Bearing Wall Stud Size, Height and Spacing: New table allowing 11-to-12-foot studs alternate exterior wall framing stud heights for 2x4 and 2x6 studs size and spacing. Where the wind speed exceeds 115 MPH studs shall be attached to the top and bottom plates with connectors having a minimum of 300-pound lateral capacity.

Table R602.7 (1) and Table R602.7(2) Girder Spans and Header spans for Exterior wall and Interior walls: The span tabled have changed.

R602.10.4.1 Mixing Wall Bracing Methods: Mixing of continuous sheathing methods with an intermittent method is clarified.

R602.10.4.4.3: Blocking in horizontal joints shall not be required in wall segments that are not counted as braced wall lines. Where Method GB panels are installed, horizontal blocking of horizontal joints is not required.

R609.4.1 Garage doors: Garage doors shall be labeled with a permanent label affixed to the garage door by the manufacture. The label shall identify the garage door manufacture, the garage door model/series, number, the positive and negative wind design pressure rating, the installation instructions drawing reference number, and the applicable standard.

CHAPTER 7 – Wall Covering

R703 Exterior Covering- Requirements for weather resistant materials are clarified.

R703.2 Cladding Vapor Barrier: An *approved* vapor barrier must be applied to the exterior sheathing behind all exterior cladding.

R703.7.6 Brick or masonry weepholes: Weepholes must be provided in the outside wythe of masonry above the flashing and a maximum spacing of 33 inches on center and a minimum of 3/16 diameter.

CHAPTER 8 - ROOF/CEILING CONSTRUCTION

Chapter 8 Span Tables-Roof-Ceiling Construction: Changes were made to ceiling joist and rafter span tables to reflect revisions to Southern Pine strength values.

R802 Wood Roof Framing- Design and construction of roofs has been clarified by dividing the content into three sections: roof ridges, rafters and ceiling joist.

R802.1.5.4 Labeling- Fire retardant treated lumber and panels shall be labeled.

R802.10.2 Design for Wood Trusses: Wood Trusses must comply with ANSI/ TPI 1 requirements, which requires the designer of the plans to review the truss drawings for compliance with his/her design and approve, deny, or make changes to their drawings to accommodate the gravity, horizontal and uplift loads. Gable Ends must be braced per the Truss Industries B-3 Bracing Sheet that is provided with the truss package**. As such,** where diagonal bracing is shown on the gable end trusses on the B-3 sheet, it must be installed as per the B-3 sheet. This is to tie the gable end to the roof diaphragm and not the ceiling drywall diaphragm.

R802.10.3 Bracing: Truss bracing and restraint bracing method must be shown on the designer's plans. The truss engineering sheets show which truss webs require bracing, it's the designers or contractors' responsibility to show how the bracing is restrained.

CHAPTER 9 – ROOF ASSEMBLIES

R903.2.1 & R905.2.8.3 Sidewall Flashing: Flashing shall divert water away from the vertical sidewall at the eave.

Table R905.2.4.1(2) Wind resistance for asphalt shingles: Asphalt shingles must be classified as compliant with ASTM D 3161 class A, D or F, or ASTM D 7158 D, G or H (**123Vult 93asd MPH**) for use in Chesapeake.

Tables R905.1.1(1) and R905.1.1(2) Underlayment requirements for Photovoltaic Shingles- revised for consistency

R905.17 Building Integrated Photovoltaic Panel (BIPV)- New section addresses installation and attachment of these types of roof panels.

CHAPTER 10 – CHIMNEY AND FIREPLACES

R1005.8 Insulation Shield- New section details requirements of the insulation shield.

CHAPTER 11 – ENERGY EFFICIENCY

Table N1102.1.2

Insulation and Fenestration Requirements by Component Minimum Climate Zone 4 Except Marine

Fenestration U-Factor	Skylight U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement Wall R-Value	Slab R-Value and Depth	Crawl Space Wall R-Value
0.32	.055	0.40	**49**	**R15 or R13+1**	8/13	19	10/13	10, 2ft	10/13

N1101.13 (R401.2) Compliance- All projects shall comply with all the provisions of Chapter 11 labeled "mandatory" and one of the following:

1) Sections N1101.14 through N1104
2) Section N1105
3) Section N1106
4) The most recent version of REScheck, keyed to the **2018 IECC.**

N1101.14 Certificate – A permanent IECC Energy Efficiency Certificate shall be posted listing the predominant R-value, the U-factors and SHGC.

N1102.2.1 (R402.2.1) Ceilings with attic spaces: R-49 insulation is required.

- **Allowance**: Where Section N1102.2.1 would require R-49 insulation in the ceiling, installing R-38 over a 100% of the ceiling area that requires insulation to be installed, shall be deemed to satisfy the requirement for R-38 wherever the full height of uncompressed R-38 insulation extends fully over the wall top plate at the eaves.

N1102.2.4 Access hatches and doors: Access hatches and doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weather stripped and insulated as follows.

- Hinged doors must have an R-5 insulation value and be weather stripped.
- Hatches and scuttle hole covers must be insulated to a level equivalent to the insulation on the surrounding surfaces.
- Pull down stairs shall have a minimum of R-5 ridged insulation for 75% of the panel area.

N1102.4.1.2 Testing (Blower Door Test) – A visual inspection of the thermal envelope tightness is no longer an option in lieu of a blower door test.

The building shall be tested and verified as having an air leakage rate not exceeding five air changes per hour in Climate Zone 4.

Testing shall be conducted in accordance with RESNET/ICC380, ASTM E 779, or ASTM E 1827 and reported at a pressure of 0.2 inches w.g. (50 Pa).

A written report of the result of the test shall be signed by the party conducting the test and provided to the building official.

See Section N1102.4.1.2 for a list of those persons allowed to perform the testing.

See Section 1102.4.1.2 for the six criteria that are required during testing.

N1103.3.3 (R403.3.3) Duct Testing (Mandatory): The duct visual testing option was removed under the 2015 code.

Ducts shall be pressured tested to determine air leakage by one of the following methods:

1. Rough-in Test: Total leakage shall be measured with a pressure differential of 0.1-inch w. g. (25 Pa) across the system, including the manufacture's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.
2. Post construction test: Total leakage shall be measured with a pressure differential of 0.1 inch w. g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

Exception: A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. The licensed mechanical contractor installing the mechanical system shall be permitted to perform the duct testing. The contractor shall have been trained on the equipment used to perform the test.

NOTE! Test must be received and approved before the issuance of the Certificate of Occupancy.

N1104.1 Lighting Equipment: Now requires 90% of lamps to be high efficacy.

N1103.4 and P2603.5: **Protect hot** water piping with a minimum of thermal resistance insulation of R-3 shall be applied to the following:

- Piping larger than ¾ nominal diameter.
- All Piping hot and cold including fire sprinkler piping located outside of the thermal envelope including garages, attics and crawl spaces.

- Piping from a water heater to a distribution manifold.

- Hot Water Piping located under a floor slab.
- Hot water buried piping.
- **Air conditioning condensation piping when installed in an unconditioned attic above a finished areas must be insulated with an R-3 insulation.**
- Furnace condensation piping, when installed outside of the thermal envelope including all attics, garages, and crawl spaces. Condensation must terminate in an *approved manor* so as to prevent freezing in extreme cold weather.

N1103.7 & M1401.3: Equipment and appliance Sizing: Heating and cooling equipment and appliances shall be sized in accordance with ACCA manual S or other approved sizing methodologies based upon building loads calculated in accordance with ACCA Manual J or other approved heating and cooling methodologies.

CHAPTER 13 – GENERAL MECHANICAL SYSTEM REQUIREMENTS

M1305.1.3.2 Pit locations- Requirements are expanded to provide more detail and to be more consistent with the mechanical and fuel gas codes. Appliances installed in pits or excavations shall not come in direct contact with the surround soil and shall be installed not less than 3 inches above the pit floor. The sides shall be held back 12 inches from the appliance. Where the depth of the pit exceeds 12 inches the wall shall be lined with concrete or masonry and shall extend not less than 4 inches above the adjoining grade.

CHAPTER 14- HEATING EQUIPMENT AND APPLIANCES

M1401.3: Heating and cooling *equipment* shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies. See Exceptions 1, 2 and 3.

CHAPTER 15 – EXHAUST SYSTEMS

M1501.2 Transfer Air: Air transferred from occupiable spaces other than kitchens, baths, and toilet rooms, shall not be prohibited from serving as makeup air for exhaust systems. Transfer openings between spaces shall be of the same cross-sectional area as the free area of the makeup air openings. Where louvers and grills are installed, the required size of openings shall be based on the net free area of each opening. Where the design and free area of the louvers and grilles are not known, it shall be assumed that wood louvers will have 25% free area and metal louvers and grills will have 75% free area.

M1502.3.1 Exhaust termination outlet and passageway- The code now addresses the size of dryer exhaust terminals. The passageway shall be undiminished in size and shall provide an open area on not less than 12.5 square inches.

M1502.4.2 Duct Installation – Wall and ceiling cavities must provide sufficient space that the duct is not squeezed out of its round shape.

M1503 Hood Domestic Cooking Exhaust Equipment- Section is reorganized and labeled. Note that the Va. Amendment requirements for hoods 400+ CFM are moved to Section M1503.6

CHAPTER 16 – DUCT SYSTEMS

M1601.1 Duct Design: *Duct systems* serving heating, cooling and *ventilation equipment* shall be fabricated in accordance with the provisions of this section and ACCA Manual D or other *approved* methods.

M1601.1.2 Underground Duct Systems- direct burial ducts and those enclosed in concrete require sealing and testing.

Manual S, J and D calculations: Must be submitted with permit applications or must be available on-site during the mechanical rough-in inspection (applicable to single family residences, townhouses, and residential additions)**.**

CHAPTER 18 – CHIMNEYS AND VENTS

M1801.1.1 Equipment Changes- Upon the replacement or new installation of any fuel burning appliances or equipment in existing buildings, an inspection or inspections shall be conducted to ensure that the connected vent or chimney system complies with the following.

1. **Vent or chimney system are sized in accordance with this code.**
2. **Vent or chimney systems are clean, free of any obstruction or blockages, defects or deterioration and are in operable condition.**

Where not inspected by Chesapeake D&P, persons performing such changes or installations shall certify to the Building Official that the requirements of item 1. & 2. as listed above are met.

CHAPTER 19 – SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS

M1901.1 Ranges and Ovens- Provisions for reduced clearances have been clarified. The listing requirements (UL923) for microwave ovens has been added.

CHAPTER 21- HYDRONIC PIPING

M2101.9 Pipe support – Spacing requirements for PEX tubing 1 ¼ inch has been added.

M2101.10 Tests- Compressed air testing for PEX hydronic piping is now allowed when testing is in accordance with the manufacturer's instruction. Previous code only water testing of hydronic piping.

M2103.2 Thermal Barrier Required- The minimum R-value have been replaced by reference to the energy provisions of Chapter 11

CHAPTER 23 – SOLAR THERMAL ENERGY SYSTEMS

M2301 Solar Thermal Energy Systems- Requirements for access and freeze protection have been expanded. Section now references a new Standard- ICC900/SRCC 300.

CHAPTER 24 – FUEL GAS

G2406.2 Appliance Location- New exception allows gas fired clothes dryer in a toilet room subject to having a permanent opening with an area not less than 100 square inches.

G2414.4.2 G2414.10.1 Piping Material- The code now allows Schedule 10 steel pipe for fuel gas service if listed to the appropriate standards. Requires the correct gaskets for the gas fitting and proper pipe protection.

G2415.11 Protection against Corrosion- Code now lists three distinct prescriptive methods for protection from corrosion for steel pipe underground.

G2420.5.1 Shut-Off Valves/Located within the same room- Code clarifies that shut-off valves located behind movable appliances meet the code intent for access.

G2420.6 Shut-off Valves in Tubing Systems- Requires rigid support separate from the tubing to prevent damage at the valve connection.

G2447.2 Cooking Appliances- Commercial cooking appliances are now permitted in dwelling units when installed per an engineered design and the manufacturer's installation instructions.

CHAPTER 25 – PLUMBING ADMINISTRATION

P2503.7. Water–supply system testing- Exception allows compressed air testing of PEX water-supply piping when testing is in accordance with the manufacturer's instructions.

CHAPTER 26 – GENERAL PLUMBING REQUIREMENTS

P2605(4) Support – Text clarifies that sway bracing provisions only apply to horizontal drainage piping.

CHAPTER 27 – PLUMBING FIXTURES

P2706. Waste Receptors; technical changes: shall not be installed in plenums, attics, crawlspaces, interstitial spaces above ceilings and below floors. See entire section.

CHAPTER 28 – WATER HEATERS

P2801.6 Required Pan- Code adds minimum thickness for aluminum and plastic. Aluminum and plastic are approved drain pan materials. Plastic pans are not allowed under gas-fired water heaters.

resistant.

CHAPTER 29 – WATER SUPPLY AND DISTRIBUTION

P2902.6 Location of Backflow Preventers- **Code adds additional height installation requirements and specifies access requirements.**

P2912 Rainwater Non-Potable Water Systems- **Provides an alternative compliance path through CSA 805/**

ICC 805 for collection and use of non-potable rainwater applications.

P2913 Reclaimed Water Systems: This section deleted under the 2012 Codes

CHAPTER 30 – SANITARY DRAINAGE

P3002.2.2 Tracer Wire: Nonmetallic water service and sewer piping that connects to public systems shall be locatable. An insulated copper tracer wire, 18 AWG minimum in size and suitable for direct burial or an equivalent product, shall be utilized. The wire shall be installed in the same trench as the water service piping and within 12 inches of the pipe and shall be installed to within five feet of the building wall to the point where the building water service pipe intersects with the public water supply. At a minimum, one end of the wire shall terminate above grade to provide access to the wire in a location that is resistant to physical damage, such as with a meter vault or at the building wall.

P3003.2 Joints and Connections- **One joint between ABS piping PVC piping may be solvent cemented with the proper cement (ASM D3138). One and only one joint is allowed.**

P3005.1.6 Drainage piping size reduction in the direction of flow- **This section has been expanded to list three specific options that would not be considered to reduce flow.**

P3012 Relining building sewers and building drains- **Virginia adopts this section verbatim from the 2021 IPC.**

CHAPTER 31 – VENTS

P3103.1 Vent pipes terminating outdoors – **This section has been reorganized and a fourth option for terminating the vent has been added.**

P3111 Combination waste and vent system- **Food waste disposers are now permitted to connect to a combination waste and vent system.**

P3114.8 Air Admittance Valves – Prohibited Locations- **Shall not be installed on outdoor vent terminals for the sole purpose of reducing clearances to gravity or mechanical air intakes.**

CHAPTER 33 – STORM DRAINAGE

CHAPTER 34 – GENERAL REQUIREMENTS (ELECTRICAL)

CHAPTER 36 – SERVICES

E3611.5.1.2 Concrete encased electrode: When footings or foundations are structurally re-enforced with # 4 (1/2 inch) rebar at least 20 feet long, turn up a short length out of the foundation and expose near the service panel for an electrical connection. Rebar shall not be in contact with the earth.

CHAPTER 37 – BRANCH CIRCUIT AND FEEDER REQUIREMENTS

CHAPTER 39 – POWER AND LIGHTING DISTRIBUTION

E3901.4.3 Peninsular Countertop Spaces- Measurement has changed to the "connected perpendicular wall". Change is intended to reduce or eliminate the need for receptacles at the end and sides of peninsulas for safety reasons.

E3902 Arc-Fault Protection- Change expands the requirement for AFCI throughout the dwelling unit. New Exception- Not required where GFCI protection is required in accordance with E3902 and NEC 210.8(A).

E3903.3.1Stairway lighting outlet control- The use of dimmer switch is allowed only if they provide the full range of dimming control at each location.

CHAPTER 40 – DEVICES AND LUMINARIES

E4001.15 Grounded Conductor at Switch Location- The seven allowed conditions have been reduced to five. Now prohibits the use of Equipment Grounding Conductor as the Grounded Conductor for Electronic Devices.

NEC REQUIREMENTS

NEC 210.11(C)(4) Garage Branch Circuits- A new code section was added to require a 20-amp circuit for a dwelling unit garage. Applies to attached or detached garages.

NEC 210.52(b)(1) Appliance branch Circuit- Any dwelling unit kitchen appliance is now permitted (by the exception) to be supplied by an individual branch circuit rated 15 amperes or greater.

NEC 210.52(G)(1) Dwelling unit garage receptacles- At least one receptacle outlet is required to be installed "in each vehicle bay and not more than 5 and ½ feet above the floor".

NEC 250.52(B)(3) Swimming Pools Not Permitted for Use as a Grounding Electrode- The structure and structural reinforcement of an in-ground swimming pool is now prohibited from being used as a grounding electrode.

NEC 555 and 555.10- Marinas, Boatyards and Commercial/Non-Commercial Docking Facilities – Article has been rewritten and expanded the location of ground fault protection is to be used. New requirement for precautionary signage related to electric shock hazard.

NEC 690.7 Maximum Voltage of PV Systems- For 1 and 2 family dwellings- Maximum voltage is 600 Volts DC.

NEC 690.12 Rapid Shutdown of PV Systems on Buildings- Switch must be located outside for 1 and 2 family dwellings.

NEC 690.56(C)- Identification of Power Source- Identification labels are revised extensively.

FLOOD ZONE

Flood Zone AE: In accordance with the Chesapeake Floodplain Management Ordinance, the lowest finished floor elevation of all new construction or substantial improvement of residential structures (including manufactured homes) must be a minimum of 1.5 feet (18 inches) above the base flood elevation (BFE) per the Flood Ordinance. This elevation is called the design flood elevation (DFE).

- **Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service equipment, including duct work, shall be located one and one-half feet above the base flood elevation.**
- **All mechanical equipment stands must be elevated to the DFE and be anchored to resist flotation. Equipment located on the exterior of the structure, must be anchored to the stand to resist both wind and flood loads. The stand must be made of flood resistant materials per ASCE-24.**
- **Flood vents are required on all homes located in a flood zone, regardless of the elevation of the enclosed area. Flood openings must be installed on at least two different exterior wall sides of each enclosed area, such as crawl spaces, attached garage areas or lowest floor of a shed or similar utility building.**
- **Flood vents must be installed not more than twelve (12) inches above the highest adjacent grade on an exterior wall.**
- **The crawl grade must be at or above the highest adjacent exterior grade.**
- **All construction materials including wood studs, sheathing, insulation, and drywall must not be installed below the BFE unless the material is flood resistant as per ASCE-24, the IBC and IRC. For more details, see FEMA Technical Bulletin 2.**
- **Sheds, utility buildings and detached garages may be installed at grade in a flood hazard area but must be anchored to resist flotation and all materials below the BFE must be water-resistant.**

A FEMA flood elevation certificate, prepared by a licensed surveyor, must be submitted at two occasions during the construction process

1) **Elevation Certificate must be submitted by an engineer for the "Building Under Construction" category and be approved prior to any further vertical construction beyond the box or slab.**
2) **Elevation Certificate must be submitted by an engineer for the "Finished Construction" category and be approved by this department before issuance of a certificate of occupancy.**

NOISE ZONES

Fentress Airfield Noise Zone area: Dwelling units constructed in the Fentress noise zone area, as determined by Chesapeake Zoning Ordinance, must submit a noise attenuation test, conducted by a registered design professional before a certificate of occupancy is issued. The test must indicate a noise level no greater than 45 Ldn over a 24-hour period.