



Virginia Housing Development Authority 2012¹ Minimum Design and Construction Requirements

Requirements for All Developments

The following requirements are designed to address issues related to the design, construction, maintenance, marketing, life cycle costs and aesthetic concerns for developments utilizing low income housing tax credits (LIHTC), and/or developments financed by the Virginia Housing Development Authority (VHDA). Submittal requirements for VHDA loan applications are listed on page 12. Submittal requirements for the LIHTC program are contained in the tax credit application.

Drawings, specifications and scope of work are to comply with the latest applicable issue of the *Virginia Uniform Statewide Building Code (USBC)*², *International Building Code (IBC)*³, other referenced codes, requirements of localities, prevailing design and construction practices and the Minimum Design and Construction Requirements of VHDA. Installation of materials, equipment, products, and building systems are to be per the manufacturers' requirements, specifications, and recommendations. All developments are to comply with accessibility requirements of *USBC*.

Requirements for New Construction

SITE WORK

1. Finished floor elevations of buildings are to be a minimum of 8 inches higher than the adjoining finished grade. When achieving an 8 inch height separation is not feasible, due to accessibility requirements or other conditions, provide an alternate solution acceptable to VHDA.
2. Areas around buildings are to be graded to have a minimum 5% slope away from foundation walls for a minimum distance of 10 feet, per *IBC*. Install yard drains, storm inlets, or drainage pipes under concrete walks to drain properly if the space between foundation walls and concrete walks is less than 10 feet. Drainage systems are to be designed to avoid water drainage over sidewalks. Provide an alternate drainage solution acceptable to VHDA:
 - a. when buildings are closer than 10 feet to concrete walks
 - b. when a minimum 5% slope is not feasible
 - c. to avoid water draining over sidewalks
 - d. at accessible entrances, when applicable
3. Install seamless gutters and downspouts for all buildings. When discharging on grades steeper than 20%, or less than 1%, water from gutters and downspouts is to be piped underground to a storm sewer system, or to daylight at grades that will avoid soil erosion.
4. Paving designs are to be based upon the soil report, California Bearing Ratio (CBR) of the soil, traffic count, and loading. Drive lanes of parking lots are to be designed for dumpster trucks. Parking bays may have lighter paving than the drive lanes of parking lots.

¹ The 2012 VHDA Minimum Design and Construction Requirements apply only to VHDA loans received in the 2012 calendar year as well as developments receiving Federal Low-Income Housing Tax Credit allocations for year 2012.

² (USBC 2009) *Uniform Statewide Building Code* (Latest applicable edition as referenced by the *USBC*)

³ (IBC 2009) *International Building Code* (Latest applicable edition as referenced by the *IBC*)

5. Extend concrete dumpster pads at least 12 feet into the asphalt so that the load bearing wheels of trucks rest on concrete while emptying the dumpsters. Thickness of concrete is to be a minimum of 6 inches with reinforcement. Dumpsters and/or compactors are to meet accessibility requirements. Install a privacy screen on at least three sides of all dumpster and/or compactor pads.
6. Minimum width of sidewalks is to be 3 feet. Sidewalks that are located perpendicular to parking spaces are to be a minimum of 5 feet wide or 3 feet wide with 2 feet of space between the sidewalks and curbs. Provide gravel and sand base under walks when required by the soil report. Provide control and expansion joints.
7. Pole lights are to be located so that site lighting is not blocked by trees.
8. Finish grade, seed, and landscape all barren and disturbed areas. Provide a smoothly graded transition from disturbed to undisturbed areas. Provide ground cover materials or sod for slopes steeper than 20%. Provide foundation plantings in the front of the buildings. Clean site and dispose of all construction debris.

ARCHITECTURAL

1. ROOFING

- a. Roof sheathing thickness is to be a minimum of $\frac{1}{2}$ inch nominal thick plywood or $\frac{1}{2}$ inch nominal OSB. Install sheathing with clips.
 - b. Install drip edge on all sides of the roof.
 - c. Install ice-dam membrane extending from eave's edge to a point 24 inches inside the exterior wall of buildings.
 - d. Roof shingles are to be a minimum 25-year, anti-fungal product, and are to be nailed (not stapled).
 - e. Flat roofs to have a minimum 20-year manufacturer's warranty.
2. Provide roofs over the front entrance doors to all units that are accessed directly from the outside.
 3. Stairs to apartment units where stair halls are not enclosed are to be protected against rain and snow by design features, such as, setting back stairs a minimum 5 feet from the exterior wall and/or installing a roof overhang at the second floor level, projecting a minimum of 5 feet beyond the first riser.
 4. Do not use Fire-Retardant-Treated (FRT) wood for framing, sheathing, decks, balconies, or for any other use even if it is allowed for non combustible type III construction by *USBC*.
 5. Install waterproofing on exterior walls up to finished grade where finished floor elevations of apartment units or public spaces are below adjoining finished grades. Provide a 10-year material/manufacturer's warranty.
 6. Install weep holes in brick veneer at foundation walls, over lintels, and relief angles.
 - a. Weep holes at foundation walls are to be a minimum 6 inches above finished grade.
 - b. Use mortar mesh to prevent blockage of weep holes.
 - c. Use continuous flashing at the locations of weep holes.
 7. Provide a minimum $\frac{3}{4}$ inch slope for brick window sills and caps for brick veneer walls that do not terminate under roofs.

8. All sill plates in contact with concrete or masonry are to be of treated wood. Provide sill sealer for sill plates at all exterior walls.
9. All siding, such as vinyl and HardiePlank™, is to have solid backing of plywood, OSB, gypsum, structural insulated sheathing, or similar material. Siding is to be installed over an appropriate drainage plane, such as Tyvek® or equal. Install mounting blocks for all penetrations in siding such as electrical, plumbing, HVAC, etc.
10. The bottom of all siding is to be a minimum height of 6 inches above the finished grade or mulch beds.
11. All exhaust ducts are to discharge to the exterior of the building. Exterior wall caps for bath and kitchen exhaust ducts are to be of a quality that will minimize repair and replacement.
12. Exterior wood, such as trim, fascia, rake boards and columns, is to be clad with vinyl, vinyl coated aluminum, or similar materials. Use materials designed for cladding with a minimum thickness of 0.019 inch or thicker and provide a stiffening crimp when trim and fascia boards are more than 8 inches wide. VHDA recommends the use of low maintenance composite/manufactured materials instead of wood for exterior use.
13. Use vinyl, aluminum, or steel for railings, handrails, guard rails, posts and pickets instead of wood. Provide a minimum 10-year warranty for finishes on steel products. Steel is to be primed and painted prior to placement in concrete.
14. Windows and sliding glass doors are to have a minimum ½ inch insulated glass. Provide a minimum 10-year material warranty for windows and sliding glass doors. Insulating glass is to have a minimum 10-year warranty for breakage of seal. Provide thermal break for aluminum frames.
15. All apartment exterior doors, except sliding glass doors, are to be of insulated fiberglass or insulated metal. Solid core wood doors may be used where entrances are through interior conditioned corridors. Use fiberglass or metal doors for outside storage or mechanical closets.
16. Install hard surface flooring at the interior of all entrance doors, except for doors entered through carpeted interior hallways. Hard surface area is to be approximately 3 foot by 4 foot using flooring materials such as VCT, sheet vinyl, hardwood, or tile.
17. Flooring such as sheet vinyl, VCT or ceramic is to be installed over minimum ¼ inch underlayment grade plywood, cementitious board, or similar underlayment materials. Flooring may be installed over concrete, provided concrete is finished smooth and uniform. When installed over Gypcrete, or a similar material, apply manufacturer approved sealer.
18. Carpets are to have a minimum number of seams. Seams are not to be located in heavily trafficked areas. T-seams are not acceptable except in closets.
19. All interior doors are to be side hinged. Bifold, pocket, or sliding doors are not acceptable. Install or undercut doors a minimum of ¾ inch clear to prevent dragging and to provide ventilation. Paint bottom, top and all other sides of doors.
20. All windows are to have blinds, shutters, or other similar products, and sliding glass doors are to have vertical blinds.

21. Provide a minimum of 1 ½ bathrooms (one full bathroom and one half bathroom) in all two bedroom units and a minimum of 2 full bathrooms in all three or more bedroom units.
22. Concealed blocking is to be provided for all items such as handrails, towel bars, tissue paper holders, grab bars, and medicine cabinets
23. Tub and shower surrounds built of ceramic tile, marble, or similar materials are to be installed over minimum ½ inch cementitious board.
24. Provide a pass-through opening with counter space when kitchen and dining/living areas are separated by a wall.
25. Kitchen cabinets and bathroom vanities are to comply with *Virginia Housing Development Authority's Minimum Cabinet Requirements*:
 - a. All cabinets are to be factory/manufacturer assembled.
 - b. Kitchen cabinets and bathroom vanities are to abut the side walls or provide a minimum spacing of 12 inches between wall and cabinets. Wall cabinets are to abut the ceiling/soffits or provide minimum of 12 inches between cabinet and ceiling/soffits.
 - c. Kitchen wall cabinets are to be screwed to studs or blocking with a minimum of four screws; two in each upper and lower nailer strips for each wall cabinet.
 - d. Plastic laminate counter tops are to be post formed or have back splashes that are factory attached to the counter top and sealed.
 - e. A side splash is to be installed when the kitchen base cabinets or bathroom vanities are located in a corner.
 - f. Holes in cabinet backs for plumbing are to be drilled, sealed, and completely covered by escutcheon plates.
26. Install a cleanable surface, such as plastic laminate, metal, or ceramic tile on the sidewall next to the cooking range when it is located in a corner. Materials such as plastic laminate or metal are to be installed with adhesive.
27. APPLIANCES
 - a. Provide 30 inches wide ranges in all units except studio/efficiency apartments, which may have a 20 inches wide range. Provide maximum 24 inches wide ranges hood for 20 inches wide ranges.
 - b. Provide vented range hoods or combination vented range hood-microwaves over all cooking ranges. All range hoods and over the range microwaves are to be ducted/vented to the outside.
 - c. Provide a 24 inch wide dishwasher in all units, except for studio/efficiency apartments, which may have 18 inch wide dishwashers.
 - d. All refrigerators are to be frost free. The refrigerators are to have separate doors for freezer and refrigerator compartments. Minimum sizes of refrigerators are to be 12 cubic feet for studio/efficiency apartments, 14 cubic feet for 1 and 2 bedroom apartments, and 16 cubic feet for 3 and 4 bedroom apartments.
 - e. Provide clothes washing machines and dryers or hookups for full-size side-by-side or full-size stack type washers and dryers in all units. Otherwise, provide on site laundry facilities. (See “Plumbing” section for washing machine pan requirements.)
 - f. All appliances in an apartment unit are to match in color.

MECHANICAL

1. Use Heating, Ventilation, and Air Conditioning (HVAC) equipment with R-410A coolant (i.e. Puron® type). All coolant and condensate lines are to be concealed within the walls.

2. For all HVAC systems, including self-contained “packaged system”, sizes of HVAC equipment, ducts and diffusers are to be designed per heat gain/loss calculations:
 - a. Air supply diffusers are to be located near windows in living rooms, dens and bedrooms.
 - b. Provide HVAC diffusers for kitchens and all full baths.
 - c. Provide standard size air filters.
 - d. Seal air duct penetrations in unheated spaces.
3. Through-the-wall heat pump units are to have a self-dissipating condensate, or are to discharge condensate to grade through a pipe concealed within the exterior wall system. When installing through-the-wall heat pumps, install separate units for bedroom and living room. Units with more than one bedroom are to have a ducted system serving all rooms including full baths. Provide a heater with a thermostat or timer controlled heat lamp for all full baths in units containing through the wall heat pumps.
4. Install walk pads that provide access to all roof condenser units.
5. Do not install condenser units in front of windows.

PLUMBING

1. Clothes washing machines or hook-ups for clothes washing machines are to have a pan with a drain connected to the sewer system per applicable plumbing code.
2. The bottoms of bath tubs are to have slip resistant/textured finish.
3. All tubs/showers and shower diverters are to have internal shut-off-valves or external shut-off-valves with access panels.
4. Bathrooms which include a roll-in shower shall have either:
 - a. a minimum of 3'-0" of the bathroom floor outside of the shower opening slope back towards the shower drain at approximately 2%, and a zero height transition between the bathroom floor and the shower floor, or
 - b. a secondary floor drain located outside of the shower connected to a trap primer. The bathroom floor shall slope towards the secondary floor drain.
5. When installing wall-hung sinks, provide concealed hangers.

ELECTRICAL

1. Provide fluorescent light fixtures in all apartment kitchens and public common areas, such as offices, multipurpose rooms, laundry rooms, hallways, and stairs. The kitchens are to have a minimum of one fluorescent light fixture 4 feet long with a minimum of two bulbs.
2. Pre wire telephone, cable TV, and internet outlets for all bedrooms, living rooms, family rooms, and dens. All wiring for the interior and exterior of the building is to be concealed within the walls.
3. Exterior fixtures are to be fluorescent, metal halide, high or low pressure sodium, or mercury vapor. Provide exterior lighting to illuminate all parking areas and dumpster pads with a minimum of one foot candle of illumination. Provide illumination so that the building numbers and apartment numbers are legible at night.

Requirements for Rehabilitation

All additions, adaptive reuse, and renovation work that require a permit are to be built as new construction to comply with the *Uniform Statewide Building Code (USBC)*, the *Virginia Housing Development Authority's Minimum Design and Construction Requirements: New Construction*, and other applicable codes.

All rental offices, public areas, and associated parking and routes are to meet the latest USBC accessibility requirements for new construction. Developments that have accessible units are to provide accessible routes, parking, and common areas.

Identify any hazardous materials including radon or recalled drywall on site and in buildings. Address or abate all hazardous materials per applicable regulations. Submit abatement certification to Virginia Housing Development Authority if requested.

SITE WORK

1. Identify areas that require grading to drain water away from buildings and areas where adjoining grades are higher than finished floor of buildings:
 - a. Provide a minimum distance of 6 inches between bottom of siding and finished grade or mulch beds.
 - b. Provide a minimum of 5% slope away from foundation walls, up to a minimum distance of 10 feet.
 - c. Provide alternate solutions acceptable to VHDA when required grades, slopes, or other site conditions make the above requirements infeasible.
2. Provide seamless gutters and downspouts for all buildings. When discharging on grades steeper than 20%, or less than 1%, water from gutters and downspouts is to be piped underground to a storm sewer system, or to daylight at grades that will avoid soil erosion. Avoid water drainage over sidewalks.
3. Extend concrete dumpster pads at least 12 feet into the asphalt so that the load bearing wheels of trucks rest on concrete while emptying the dumpsters.
 - a. Thickness of concrete is to be a minimum of 6 inches with reinforcement.
 - b. Dumpsters and/or compactors are to meet accessibility requirements, if accessible units are provided.
 - c. Install a privacy screen on at least three sides of all dumpster and/or compactor pads.
4. Concrete that is cracked, crumbling, spalling, heaving or settling, or may be a safety issue is to be repaired or replaced. Provide a solution acceptable to VHDA if any of these conditions exist.
5. When installing new sidewalks, minimum width of sidewalks is to be 3 feet. Sidewalks that are located perpendicular to parking spaces are to be a minimum of 5 feet wide or 3 feet wide with 2 feet of space between the sidewalks and curbs.
6. Asphalt that has cracking, alligating, or a deteriorating sub-base is to be repaired or replaced. Provide a solution acceptable to VHDA if any of these conditions exist.
7. Video all sewer lines connecting buildings with public sewer if lines are constructed of galvanized iron, terra cotta or clay. Repair or replace all corroded, damaged, or settled underground sewer lines. Provide report of video findings to VHDA and include repair/replacement costs.

8. Remove all dead bushes, trees, tree-stumps, and their above-ground roots. Remove all portions of tree branches that overhang roofs and all branches that come within 10 feet of roofs.
9. Finish grade, seed, and landscape all barren and disturbed areas. Provide a smoothly graded transition from disturbed to undisturbed areas. All seeded areas which are barren and/or have dead grass are to be tilled, fertilized, and seeded to have established grass. Provide ground cover materials or sod for slopes steeper than 20%. Provide foundation plantings in the front of the buildings. Clean site and dispose of all construction debris.

ARCHITECTURAL

1. Install waterproofing up to finished grades for all perimeter walls of finished and unfinished spaces which are below grade and where evidence of water, moisture, or mildew is present. Waterproofing may be installed on the exterior or interior sides of the wall. The waterproofing system is to have a minimum 10 year manufacturer's warranty.
2. All debris and wood are to be cleaned from crawl spaces.
 - a. Install sump pump or drain tile discharging to daylight for any area accumulating water.
 - b. Install a minimum 6 mil vapor barrier on floor of crawl spaces and provide adequate crawl space ventilation.
3. Structural deficiencies are to be identified and corrected. If requested by VHDA, corrective measures to be designed, inspected, and certified by a structural engineer.
4. Install minimum of R-19 in crawl spaces and unheated basements and R-38 insulation in attic.
5. Roof inspection reports are required for all roofs more than 5 years old. Report to include age and remaining life of roofs and areas that need repairs. Replace all roofs with a remaining life of less than 5 years. Repair or replace all roofs with damage or leaks. When replacing roofs:
 - a. Repair or replace all damaged sheathing, rafters, and/or trusses.
 - b. Replace all $\frac{3}{8}$ inch sheathing with a minimum of $\frac{1}{2}$ inch nominal plywood or $\frac{1}{2}$ inch nominal OSB. Install sheathing with clips.
 - c. Roof shingles are to be a minimum 25 year, anti-fungal product, and are to be nailed (not stapled). Do not install new shingles over existing shingles.
 - d. Install drip edge on all sides of the roof.
 - e. Install ice-dam membrane extending from eave's edge to a point 24 inches inside the exterior wall of buildings.
6. When replacing flat roofs, remove and dispose of existing roofing, wet insulation, damaged vents and other items not in good condition. Add insulation to achieve a minimum of R-38. New roofing to have a minimum 20-year manufacturer's warranty.
7. Do not use Fire-Retardant-Treated (FRT) wood for framing, sheathing, decks, balconies or for any other use even if it is allowed for non combustible type III construction by *USBC*.
8. Stairs to apartment buildings, where stair halls are not enclosed and have weather damage to existing stairs, are to be protected by design features. Install awnings, a roof overhang at the second floor level, or a roof at the stair hall entrance. Provide a minimum overhang of 5 feet from first tread. All similar buildings in a development are to have similar design features. Historic buildings may be exempt.

9. Exterior wood such as trim, fascia, rake boards, and columns is to be clad with vinyl, vinyl coated aluminum, or similar materials. Use materials designed for cladding with a minimum thickness of 0.019 inch or thicker and provide a stiffening crimp when trim and fascia boards are more than 8 inches wide. Replace all damaged wood prior to cladding. VHDA recommends the use of composite/manufactured materials instead of wood for exterior use. Exceptions may be considered for historic buildings.
10. Use vinyl, aluminum, or steel for railings, handrails, guard rails, posts and pickets instead of wood. Provide a minimum 10-year warranty for finishes on steel products.
11. When replacing siding:
 - a. New siding is to have solid backing of plywood, OSB, gypsum, structural insulated sheathing, or similar material. Siding is to be installed over an appropriate drainage plane, such as Tyvek® or equal.
 - b. Do not install new siding over materials such as vinyl siding, Thermo-ply®, or other flexible materials.
 - c. Material such as T1-11, wood siding, or hardboard lap-siding may be used as backing for new siding, provided it is in good condition.
 - d. Repair, replace, and re-nail all sections of damaged siding or sheathing to provide a uniform and flat surface.
 - e. Nail siding to studs with nails long enough to penetrate a minimum $\frac{3}{4}$ of an inch inside studs.
 - f. Install drainage surface such as Tyvek® or $\frac{1}{4}$ inch Amocor® board over existing siding.
 - g. Install mounting blocks for all penetrations in siding such as electrical, plumbing, HVAC, and ductwork etc.
12. Replace or repair rowlocks for window sills that do not have a slope to drain water away from building. Repair all damaged masonry walls having cracks and/or settlement. Power wash/clean exterior of buildings. Prime and paint all metal lintels which are not painted or show corrosion.
13. Replace single glazed windows with insulated glass in all single and multifamily dwelling units.
 - a. When window replacement is not permitted in historic buildings, repair or replace existing windows and install triple track operable storm sashes, with screens, over existing single glazed windows.
 - b. When conditions make storm sashes not feasible, provide an alternative solution acceptable to VHDA.
14. When replacing windows and/or sliding glass doors,
 - a. provide a minimum $\frac{1}{2}$ inch thick insulated glass.
 - b. provide a minimum 10 year material warranty.
 - c. insulating glass is to have a minimum 10 year warranty for breakage of seal.
 - d. provide thermal break for aluminum frames.
15. All windows are to have blinds, shutters, or other similar products, and sliding glass doors are to have vertical blinds. Replace all blinds that are damaged and/or do not match in color.
16. Repair or replace all damaged or dented exterior doors.
 - a. When replacing exterior apartment doors, except sliding glass doors, replacement doors are to be insulated fiberglass or insulated metal.
 - b. Solid core wood doors may be used where entrances are located in interior conditioned corridors.
 - c. Use fiberglass or metal doors for outside storage and mechanical closets.
 - d. Use fire rated doors for fire rated walls.

- e. Repair/replace damaged jambs, locks, and hardware.
17. All entry doors to apartment units are to have weather stripping and threshold to provide a tight seal around the door and to minimize heat loss/gain due to air infiltration.
 18. Replace all damaged Gypcrete, or similar material, floor sheathing and floor joists.
 19. Install an area approximately 3 feet by 4 feet using materials such as VCT, sheet vinyl, hardwood flooring, or tile at the interior of all entrance doors, except for doors entered through carpeted interior hallways.
 20. Repair or replace all damaged or mismatched flooring. Vinyl composite tile (VCT) in rooms or other spaces is to match in color and design.
 21. Flooring such as sheet vinyl, VCT or ceramic is to be installed over minimum ¼ inch underlayment grade plywood, cementitious board, or similar underlayment material. Flooring may be installed over concrete provided concrete is finished smooth and uniform. When installed over Gypcrete, or a similar material, apply manufacturer approved sealer.
 22. Carpets are to have a minimum number of seams. Seams are not to be located in heavy traffic areas. T-seams, except in closets, are not acceptable. Remove shoe molding/quarter-round molding before installing carpet.
 23. Provide a pass-through opening with counter space when kitchen and dining/living areas are separated by a wall.
 24. Interior finishes: doors, moldings, paint, and drywall.
 - a. Repairs, replacements, painting, and drywall finishes inside a specific unit are to match that unit's intended finish.
 - b. Replace all interior bifold, pocket, or sliding doors with side hinged doors.
 - c. Repair or replace all damaged doors and trim.
 - d. All doors, door trim, and door hardware in a unit are to match in design and finish.
 - e. Install or undercut doors a minimum of 3/4 inch clear to prevent dragging and to provide ventilation.
 - f. Paint bottoms, tops, and all other sides of new doors.
 - g. All base and base moldings in a unit are to be wood and are to match in design and finish.
 25. Check the condition of all drywall and repair or refinish to include the following:
 - a. All repairs and refinishing of defects (including previous repairs) are to be flat and smooth.
 - b. Type and thickness of drywall to match existing.
 - c. Patch holes, repair damages, and refinish uneven, cracked, and peeling taped joints.
 - d. Re-screw drywall that has nail pops or settlement.
 - e. Replace all drywall that has mold, mildew, or signs of moisture.
 - f. Paint and retexture drywall to match existing finish and color.
 - g. Repair damaged or compromised draft stopping and/or fire stopping.
 26. Replacement or repairs of tub and shower surrounds built of ceramic tile, marble, or similar materials are to be installed over minimum ½ inch cementitious board.
 27. When replacing kitchen cabinets and/or bathroom vanities all new cabinets are to comply with *Virginia Housing Development Authority's Minimum Cabinet Requirements*.
 - a. Cabinets and/or vanities that are not being replaced are to be approved by VHDA.

- b. All cabinets are to be factory/manufacturer assembled.
- c. Kitchen cabinets and bathroom vanities are to abut the side walls or provide a minimum spacing of 12 inches between wall and cabinets. Wall cabinets are to abut the ceiling/soffits or provide minimum of 12 inches between cabinet and ceiling/soffits.
- d. Remove and replace all drywall that has mold. Repair or replace all damaged drywall.
- e. Holes in cabinet backs for plumbing are to be drilled, sealed, and completely covered by escutcheon plates.
- f. Kitchen wall cabinets are to be screwed to studs or blocking with a minimum of four screws; two each in upper and lower nailer strips for each wall cabinet.
- g. Plastic laminate counter tops are to be post formed or have back splashes that are factory attached to the counter top and sealed.
- h. Install a cleanable surface, such as plastic laminate, metal, or ceramic tile to the side wall next to the cooking range when it is located in a corner.
- i.

28. APPLIANCES

- a. Replace all damaged and or dented appliances and all appliances which are more than 8 years old. All appliances in an apartment unit are to match in color.
- b. Provide a 30 inch wide range in all units except studio/efficiency apartments, which may have a 20 inch wide range. Provide range hoods or combination range hood-microwaves microwaves over the cooking ranges. Provide maximum 24 inch wide range hood for 20 inch wide ranges.
- c. Kitchens with existing vented range hoods, ducted/vented to the outside, are to provide vented range hoods or combination vented range hood-microwaves over cooking ranges.
- d. Dishwashers are required in all units. Provide 24 inch wide dishwashers except for studio/efficiency apartments, which may have 18 inch wide dishwashers.
- e. All refrigerators are to be frost free. The refrigerators are to have separate doors for freezer and refrigerator compartments. Minimum sizes of refrigerators are to be 12 cubic feet for studio/efficiency apartments, 14 cubic feet for 1 and 2 bedroom apartments, and 16 cubic feet for 3 and 4 bedroom apartments.

MECHANICAL

- 1. All units are to have a Heating, Ventilation, and Air Conditioning (HVAC) system.
- 2. When installing a new HVAC system including self contained “packaged system”:
 - a. Replace both inside and outside HVAC units at the same time.
 - b. R-410A coolant (i.e. Puron® type) is required on all new HVAC equipment.
 - c. Verify if coolant lines are appropriate for new HVAC unit size and type. Lines not being replaced are to comply with all of the requirements of the manufacturer for using existing lines. Submit a letter from the manufacturer that states the use of existing lines will not reduce performance and/or warranty of the heat pumps or other air conditioning systems.
 - d. Condensate drains and coolant lines are to be concealed within the wall, ceiling, or floor systems.
 - e. Fire-caulk all penetrations in fire partitions and ceilings.
 - f. When adding and/or replacing ductwork, air supply diffusers are to be located near windows in living rooms, dens, and bedrooms.
 - g. Provide standard size air filters.
 - h. Include the replacement of all diffusers and thermostats.
 - i. Air supply diffusers are to be located in living rooms, dens, bedrooms, kitchens, and full baths.
 - j. Replace condenser pads that are damaged. Pads are to be concrete, solid vinyl, or similar materials. Level all condenser units.

- k. All installations are to comply with the latest applicable issue of the *International Mechanical Code*.
3. Through-the-wall heat pump units are to have a self-dissipating condensate, or are to discharge condensate to grade through a pipe concealed within the exterior wall system. When installing through-the-wall heat pumps, install separate units for bedroom and living room. Units with more than one bedroom are to have a ducted system serving all rooms including full baths. Provide a heater with a thermostat or timer controlled heat lamp for all full baths in units containing through-the-wall heat pumps.
4. Clean existing HVAC ducts and plenums. Verify duct sizes and air flows (cubic feet per minute at supply diffusers) are appropriate for HVAC system. Replace all supply and return vent covers and diffusers. Seal all duct penetrations in unheated spaces. All existing ductwork located in crawl spaces, attics, or any unconditioned space, is to be properly insulated. Clean, service, and repair all HVAC units not being replaced.
5. All bathroom fans are to be in good working condition, cleaned, and ducted out to the exterior. Install fans in all bathrooms, including those with windows.

PLUMBING

1. Replace all interior, exterior, and underground PB (Polybutylene) pipes such as “Quest” and “Big Blue” with current code accepted materials.
2. Replace all galvanized water lines with CPVC, copper, plastic or other approved materials. The water supply is to have adequate pressure.
3. Replace galvanized waste lines and traps with PVC.
4. When replacing water heaters, installations are to comply with latest adopted edition of the *International Plumbing Code for New Construction*. Refer to Code for pan and drain specifications.
5. Clothes washing machines or hook-ups for clothes washing machines are to have water shut off valves operated by a moisture sensor on the floor, or have a pan with a drain connected to the sewer system per applicable plumbing code.
6. When installing new wall-hung sinks, provide concealed hangers.
7. All new tubs/showers and shower diverters are to have internal shut-off-valves or external shut-off-valves with access panels.
8. Bathtubs, showers, and surrounds which will not be replaced, are to be refinished or repaired. Remove mold and stains, clean, and re-caulk all tubs, showers, and surrounds. The bottoms of all new bathtubs and showers are to have slip resistant/textured finish.

ELECTRICAL

1. Increase the size of the electric panels and service per load calculations:
 - a. Electric panels with fuses are to be replaced with circuit breakers
 - b. Use appropriate connectors for connecting aluminum wiring to electrical outlets and switches.
 - c. Replace all plates, switches and outlets that are old and/or painted.
 - d. Provide ground fault outlets near vanities in all bathrooms.

2. All wiring for the interior and exterior of the building is to be concealed within the walls, ceiling, or floor systems. This includes electrical, cable TV, internet, and telephone. Exposed electrical service to the building is to be in conduit and run vertically to the meter without horizontal runs.
3. When replacing kitchen cabinets and counter tops, electrical outlets for countertop, ranges, refrigerators, dishwashers, and other appliances are to comply with the latest applicable requirements of the *National Electric Code for New Construction*.
4. Provide fluorescent light fixtures in all apartment kitchens and public common areas, such as offices, multipurpose rooms, laundry rooms, hallways, and stairs. The kitchens are to have a minimum of one fluorescent light fixture 4 feet long with a minimum of two bulbs.
5. Provide a minimum of one electric smoke detector with battery backup for garden units and a minimum of one electric smoke detector with battery backup for each floor for townhouses.
6. Exterior fixtures are to be fluorescent, metal halide, high or low pressure sodium, or mercury vapor. Provide exterior lighting to illuminate all parking areas and dumpster pads with a minimum of one foot candle of illumination. Provide illumination so that the building numbers and apartment numbers are legible at night.



Virginia Housing Development Authority
Architectural & Engineering Review

LISTED BELOW ARE SUBMITTALS REQUIRED FOR VHDA LOAN APPLICATIONS. THE TAX CREDIT APPLICATION CONTAINS TAX CREDIT SUBMITTAL REQUIREMENTS.

New Construction Requirements

1. Site drawings and specifications
2. Landscape drawings and specifications
3. Architectural drawings and specifications
4. Soil Report
5. Environmental Report
6. Tax Credit requirement as related to design and construction.**
7. Mechanical (HVAC & Fire Sprinkler) drawings and specifications
8. Plumbing drawings and specifications
9. Electrical drawings and specifications
10. Site lighting drawings and specifications

Rehabilitation Requirements

1. Site drawings showing proposed repair, replacement and specifications
2. Landscape drawings and specifications
3. Unit Survey, not more than 6 months, at the time of submission of A & E review, with age, condition and quantities of the items that will not be replaced, and a Scope of Work for items that will be replaced
4. Architectural drawings and specifications
5. Termite Report
6. Environmental Report
7. Tax Credit requirement as related to design and construction**
8. Mechanical (HVAC & Fire Sprinkler) drawings and specifications
9. Plumbing drawings and specifications
10. Electrical drawings and specifications
11. Site lighting drawings and specifications

*All drawings are to be to scale. Reduced drawings are not acceptable.

**Include in the drawings and specifications all the items you committed to completing as shown in your Tax Credit Application (if applicable).

Solid vertical lines in margins show technical changes, additions, and deletions to VHDA's 2011 "Minimum Design and Construction" requirements. Format changes such as reorganization, number changes, and phrasing are not identified.