

Minimum Design Standards for New Construction, Adaptive Reuse, and Rehabilitation Multifamily Housing Units

Kentucky Housing Corporation 2020 Revision



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KHC Minimum Design Requirements

The following minimum design items are for all newly constructed multifamily units constructed under the Kentucky Building Code. For rehabilitation and adaptive reuse projects, items which are added or replaced in the scope of work, must comply with this standard. Multifamily projects consisting of townhouses, duplexes, triplexes, or single family detached structures shall meet KHC’s Minimum Design Standards for “New Construction of Single-Family Dwelling Units” or “Rehabilitation of Single-Family Dwelling Units” as regulated by the Kentucky Residential Code.

KHC’s Minimum Design Standards are a vehicle to promote modern construction and design practices for builders, contractors, and design professionals who utilize funding

from Kentucky Housing Corporation. Other methods of construction and design may be acceptable on a case by case basis. If your design does not satisfy KHC's Minimum Design Standards, please contact the Department of Design and Construction Review for further assistance.

Division I: General Requirements

1) Minimum Design Standards:

- a) Minimum Design Standards shall apply when KHC funding exceeds ten percent (10%) or more of cost per unit to all new construction and reconstruction of multifamily dwellings, all applications involving adaptive reuse converting a former use to residential use and limited rehabilitation projects constructed with funds from the HOME Investment Partnerships Program (HOME), Affordable Housing Trust Fund (AHTF), SMAL, Risk Sharing, Housing Tax Credits and Tax Exempt Bonds.
- b) **This standard shall apply to the proposed scope of work for all rehabilitation of existing multifamily properties and structures.**

2) **Waiver Process:** Understanding that no single code or standard can cover the infinite number of possible configurations and circumstances that may arise during rehabilitation or construction, a written request for waiver to a KHC requirement will be earnestly considered.

- a) All requests for existing projects are to be submitted electronically using KHC's Universal Funding Application system waiver request form located within the UFA, under the "Other Actions" tab.
 - i) The request must detail the necessity of variance from this code. Photographs are encouraged where necessary to convey understanding.
 - ii) Applicants seeking a waiver to any KHC policy or project requirement, or a modification to KHC funding amounts or terms, must submit this completed modification/waiver request form along with any supporting documentation necessary for KHC to make an informed decision. Each waiver or

modification request must be submitted on a separate form; two or more waiver requests cannot be combined on one form. All associated fees must be paid at the time the request is submitted; no waivers or modifications will be considered until the fee(s) have been received. Please refer to the Multifamily Program Guidelines for more detailed information.

- 3) **Codes:** All construction shall comply with applicable code and standards listed below:
 - a) Kentucky building and residential construction codes
 - b) Kentucky Housing Corporation's Minimum Design Requirements
 - c) Local planning and zoning requirements
 - d) Local authorities' rules and regulations
 - e) The Fair Housing Amendment Act of 1988 (applies to units constructed for first occupancy on or after March 13, 1991)
 - f) Section 504 of the Rehabilitation Act of 1973
 - g) Americans with Disabilities Act of 1990
- 4) **Soil Treatment-Termite Protection:** A proper and complete termite inspection and appropriate treatment of all property is required.
 - a) The inspection must be completed by a licensed exterminator who shall report any termite activity located and treatment applied.
 - b) A warranty for a period of a minimum of one year on all treatments is required.
- 5) **Radon Reduction:** Passive radon venting is required in all new construction. Rehabilitation projects and adaptive reuse projects where radon levels are known to be at or above 4 pCi/l (Picocuries per liter of air) shall be retrofitted with a venting system.
 - a) A design professional shall design the venting system for all existing structures.
 - b) The radon vent pipe shall pass through a heated portion of the structure and an accessible attic space or chase which will allow adequate working space to possibly install an inline fan.
 - c) Electrical provisions shall be roughed in, in an accessible attic or chase, for possible future installation of an inline fan.

(1) If in the future it becomes necessary to supply power to the radon fan, power shall be derived from a house metering source and may not be supplied from an individual dwelling power source.

6) **Energy Efficiency:** Documentation and/or calculations that the building envelope meets or exceeds the 2012 IECC requirements must be provided from REScheck or other approved software. REScheck is a US Department of Energy free download at: <http://www.energycodes.gov/rescheck/>

a) **New Construction:** All newly constructed residential building envelope designs shall meet or exceed minimum energy efficiency requirements of the 2012 International Energy Conservation Code (IECC).

b) **Adaptive Reuse:** All projects involving any combination of adaptive reuse which requires reclassification of building Use Groups as defined by the Kentucky Building Code shall exceed the minimum energy efficiency requirements of the 2009 IECC.

(1) **This section shall apply to the extent not exempted by the Historic Preservation Office of the State of Kentucky.**

c) **Rehabilitation:** Rehabilitation projects which do not involve use group changes are not subject to energy efficiency requirements except where new construction or alterations to existing structures occur. In these instances, exposed building cavities and alterations shall be upgraded to comply with applicable provisions of the 2012 IECC.

(1) **This section shall apply to the extent not exempted by the Historic Preservation Office of the State of Kentucky.**

7) **Testing:**

a) **New construction;** Building envelope and duct system tightness testing must be completed and comply with the 2012 IECC and reported to KHC.

b) **Adaptive Reuse;** Building envelope and duct system tightness testing must be completed and the results must comply with the 2009 IECC. All testing results must be reported to KHC.

- c) **Testing** for new construction, adaptive reuse, and rehabilitated buildings must verify compliance with the applicable ASHRAE Standard for ventilation and acceptable indoor air quality, (ASHRAE 62.2 or ASHRAE 62.1).
- d) All duct leakage tests must use total leakage as the method of testing when the duct system is outside the thermal envelope. Guarded blower door or compartmentalization blower door testing are the acceptable methods of infiltration verification. A minimum of 10% of the units will be selected by KHC for testing.
- e) **Diagnostic testing** shall be reported by one of the following methods:
 - i) Documentation from a licensed and certified HERS rater.
 - ii) Documentation from a Building Analyst, licensed and certified, by the Building Performance Institute.
 - iii) Documentation from a licensed and certified HVAC contractor, qualified in pressure diagnostic testing of the duct systems and total air infiltration.
 - iv) Documentation from a Weatherization Assistance Program trained Dwelling Needs Evaluator or Energy Auditor.
 - v) Other methods will be considered upon written request
- 8) **Quality Assurance:** General Contractors and/or subcontractors shall furnish a written material and labor warranty on all work.
- 9) **Unit Size Requirements:** The following minimum square foot measurements are required for different types of units. For purposes of this requirement, net square feet are the heated and cooled area of the unit.
 - a) **SRO units:** shall contain at least 150 square feet (common kitchen and bath)
 - b) **Efficiency units:** shall contain at least 400 square feet
 - c) **One-bedroom units:** shall contain at least 600 square feet
 - d) **Two-bedroom units:** shall contain at least 800 net square feet
 - e) **Three-bedroom units:** shall contain at least 1,000 net square feet
 - f) **Four-bedroom units:** shall contain at least 1,100 net square feet
- 10) **Universal Design Requirements:** Projects that receive debt or subsidy financing from KHC equal to ten percent (10%) or more of the total project hard cost for the

purpose of constructing single family or multi-family housing shall comply with KHC's Universal Design Policy.

- a) Please consult KHC's web site for the most current version of the KHC Universal Design requirements:

http://www.kyhousing.org/uploadedFiles/Housing_Production/Design_and_Construction/UniversalDesignStandards.pdf?n=7407

- b) **Units which are covered by the Fair Housing Amendments Act of 1988** are not required to satisfy Universal Design requirements.

Division 2: Existing Conditions

- 1) **Soil boring and Testing:** All new construction which contains 12 or more units will be required to have a soils analysis test performed by a Commonwealth of Kentucky approved testing laboratory. KHC reserves the right to require a soils test on any project regardless of construction type or unit size. Results of the test shall comply with KBC requirements.

Division 3: Concrete

- 1) **Exterior Concrete:** Shall conform to the latest revised Standard Specification for Portland cement, ASTM C595.
- a) **All exterior concrete** shall have a minimum 28-day compressive strength of 4000 psi and be entrained with 5 percent air with a minimum cement content of 520 lb per cubic yard (5.5 sacks).

b) **Expansion-joint material** shall be ½” thick asphalt-impregnated pre-molded fiber, ASTM D1752. Follow American Concrete Institute (ACI) 318.

c) **Concrete driveways and parking areas** shall be minimum 6” thick.

d) **Exterior concrete for walks, porches, and stoops** shall be minimum 4” thick.

2) **Concrete Finishes:**

a) **Walkways:** Provide a non-slip finish and provide ¼ inch per foot crown or cross slope in the direction of drainage.

3) **Concrete Testing:** All new construction containing twelve (12) or more units will be required to have concrete strength tests performed by a Commonwealth of Kentucky approved testing laboratory. Results of the tests shall comply with the KBC, KHC Minimum Design (this standard), and be provided to the KHC Construction Specialist assigned to the project.

Division 4: Masonry

1) **Face Brick:** Shall be ASTM C 216, Type FBS, Grade SW, or equivalent.

Division 5: Metals

1) **Metal Ties:** For newly constructed units, metal tie-down or “hurricane” straps shall be used at each bearing location of each roof truss, rafter and ceiling joist.

a) Correct nails and nailing pattern as required by the manufacturing company of the strap shall be used.

2) **Steel Lintels:** Steel lintels, when specified for openings in masonry walls, shall be primed and painted.

Division 6: Woods/Plastics/Rough Carpentry/Millwork

- 1) **Stair Riser and Tread Construction:** Except stairs in individual dwellings, all newly constructed steps shall have a riser not greater than 7" and a tread of 11".
- 2) **Wood Exposed to Weathering Elements:** All exterior wood shall have a minimum preservative retention rate of 25 percent for above ground applications and a minimum preservative retention rate of 40 percent for all wood in contact with the ground.
- 3) **Wood Decking:** Exterior decking shall consist of composite or pressure treated wood material.
- 4) **Exterior Wood Stairs:** Exterior wood stairs shall be constructed with properly treated dimensional lumber.
- 5) **Exterior Handrails:** Exterior handrails shall be constructed of metal or plastic and must meet all other code requirements pertaining to handrails.

Division 7: Thermal and Moisture Protection

- 1) **Minimum masonry siding:** Siding material of all newly constructed buildings shall consist of a minimum of fifty percent (50%) brick, stone, or other KHC approved materials. The bricked area calculation of fifty percent shall not include window and door areas nor brick below finished grade. Elevation plans shall include calculations documenting the percent coverage of all siding types per building.
- 2) **Weather Protection:** All exposed wood shall be protected from weathering by a minimum of one or more of the following materials or methods.
 - a) **Metal:** 0.019" minimum thickness aluminum, factory finish (coil stock).
 - b) **Naturally Durable Wood:** Redwood, Cedar, or other naturally durable woods may be exposed to weathering conditions without cladding or other protective coverings. Stain or sealing exposed wood is required.
 - c) **Composites:** Cement fiber board or other durable material may be used as approved by KHC.
 - d) **Pressure Treated Lumber:** Wood shall have a minimum preservative retention rate of 25 percent for above ground applications.
- 3) **Roof Covering:**
 - a) **Shingles:** Seal tab type over 15 lb. felt, with minimum 25-year product warranty or better.
 - b) **Metal:**

- i) 29-gauge minimum thickness aluminum or galvanized steel with factory finish applied over solid decking.
 - ii) 26-gauge if applied on purlins
- 4) **Gutters and Downspouts:** All structures shall have gutters and downspouts and be appropriately designed per code with a minimum 5" gutter and a 2"x 3" downspout.
 - a) All downspouts shall empty onto concrete splash blocks or be piped to an appropriate location.
 - b) Downspouts shall not discharge directly onto sidewalks or other walking surfaces.
- 5) **Siding:** Exterior siding shall consist of one or more of the following materials or other materials approved by KHC.
 - a) **Composite:** Fiber cement siding, primed, with two-coat minimum finish or factory finish.
 - b) **Metal:** 26-gauge minimum thickness aluminum or galvanized steel with factory finish.
 - c) **Vinyl:** 0.042" minimum thickness, UV protected.
 - d) **Wood:** Cedar or redwood stained or primed once with 2-coat minimum finish.
 - e) **Brick Veneer:** Shall be ASTM C 216, Type FBS, Grade SW, or equivalent, modular size.
 - f) **Artificial stone or brick:** installed to manufacturer's instructions.
- 6) **Insulation:** In new construction, adaptive reuse, and rehab to the extent the structure is exposed, the building thermal envelope shall be insulated to the following minimum values:
 - a) **Floors over unconditioned space:** R-19
 - b) **Exterior walls:** R-20
 - c) **Ceilings:** R-49
 - d) **Slab Foundations:** R-10 continuous
 - e) **Conditioned Crawl Walls:** R-10 continuous
 - i) **This section shall apply to the extent not exempted by the Historic Preservation Office of the State of Kentucky and Kentucky Building code.**
- 7) **Air Infiltration:**
 - a) **New construction structures** shall be air sealed to prevent air exchange between conditioned and unconditioned spaces by the following means.
 - i) Exposed penetrations of floor, walls, and ceilings, such that occur at access openings, electrical wiring and outlet boxes, plumbing piping, and ducts, shall be sealed to prevent free passage of air between conditioned and unconditioned spaces or the exterior.

- ii) Exposed walls in attics, separating the conditioned space of the dwelling unit from the unconditioned space in the attic, shall have an approved air barrier installed on the attic side of the wall.
 - iii) Access doors from conditioned spaces to unconditioned spaces, such as attics and crawl spaces, shall be weather-stripped and insulated to a level equivalent to the insulation on the surrounding surfaces.
 - iv) Recessed luminaries installed in the building thermal envelope, shall be sealed to limit air leakage between conditioned and unconditioned spaces.
 - v) All recessed luminaries shall be IC-rated and labeled as meeting ASTM E 283, when tested at 1.57 psf (75 Pa) pressure differential; with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the unconditioned space.
- b) **Rehabilitated** structures shall be air sealed to the extent cavities are exposed.

Division 8: Doors, Windows, and Glazing

This section shall apply to the extent not exempted by the Historic Preservation Office of the State of Kentucky and Kentucky Building code.

- 1) **Exterior Doors:** New or replacement exterior doors shall be 1 ¾" thick, made of steel or other equally durable material, insulated unless of solid wood (not particleboard) and be appropriately finished as recommended by the manufacturer.
 - a) **Door Energy Ratings:**
 - i) **All opaque exterior doors** shall have a U-factor equal to or less than 0.21.
 - ii) **Doors less than fifty percent (50%) glass** shall have a U-factor equal to or less than 0.27.
 - iii) **Doors greater than fifty percent (50%) glass** shall possess a U-factor equal to or less than 0.32.
 - b) **Unit entry door hardware:** All unit entry doors shall have a lever key-lock latch, doorknocker, security accessories (eyelet and deadbolt), and kick plate.
- 2) **Interior Doors:** New or replacement doors shall be solid wood, composite, or hollow core panel doors.
 - a) **Interior doors** shall be a minimum of 1 ⅜" thick.
 - b) **Interior Hardware:** All doors shall be equipped with lever-handle hardware.
 - i) **All bedrooms and bathrooms** shall be equipped with privacy locks.
- 3) **Windows:** All new construction and replacement windows shall meet the following requirements:
 - a) **All window frames** must be of solid vinyl, thermally broken aluminum, fiberglass, wood, or wood clad.

- b) **The vapor seal** on the glazing must have a minimum ten-year warranty.
- c) **The operation** of all windows shall have a minimum one-year warranty.
- d) **All windows** shall have a **National Fenestration Rating** meeting minimum energy code requirements for Zone 4.
 - i) **All windows** shall have a U-Factor equal to or less than 0.32 and an SHGC rating equal to or less than 0.40.

Division 9: Finishes

This section shall apply to the extent not exempted by the Historic Preservation Office of the State of Kentucky.

- 1) **Exterior Ceiling:** When using vinyl or aluminum material for porch ceilings, provide a rigid, solid backing such as OSB, plywood, or furring strips per manufacturer's instructions.
- 2) **Exterior Finishes:** Exterior building elements shall be properly finished.
 - a) **Posts and Columns:**
 - i) New construction exterior posts and columns at deck level and above shall be vinyl or aluminum clad, aluminum, fiberglass, metal, or composite material.
 - ii) Rehabilitation projects may repair or replace in kind to the existing construction methods.
 - b) **Handrails:** Exterior handrails shall be smooth vinyl, metal, or composite material, weather resistant, and painted or factory finished.
 - c) **Guardrails:**
 - i) New construction and replacement guardrails shall be vinyl, aluminum, fiberglass, metal, or composite material and finished with a factory or field applied coating suitable for effective weather resistance.
 - ii) Rehabilitation projects may repair in kind to the existing construction methods.
 - d) **Fiber Cement Siding:** Shall be factory finished or be painted with at least two coats of exterior grade paint.
- 3) **Entry Door Floor Finish:** On the interior side of the main entry door within each dwelling unit, there shall be an uncarpeted, finished floor area.
 - a) **This area** shall be no less than sixteen (16) square feet.
- 4) **Finished Floor Treatments:** New construction or replacement interior floor finishes shall meet one or more of the following standards:

- a) **Sheet Carpet:** 25 oz. minimum, 100 percent nylon. Other options include Berber type with blended fiber. In high traffic areas, 30 oz. Minimum is required.
 - i) **Carpet Padding:** Minimum 7/16" thick, 6-lb. re-bond polyurethane.
 - b) **Carpet Tiles:** 20 oz. minimum
 - i) Provide product adhesive and underlayment as recommended by the manufacturer.
 - ii) All surfaces shall be clean, dry, and appropriate temperature during installation.
 - c) **Sheet Vinyl:** Shall be Armstrong or equivalent minimum 10 mil wear layer.
 - i) Provide product adhesive and underlayment as recommended by the manufacturer.
 - ii) All surfaces shall be clean, dry, and appropriate temperature during installation.
 - iii) Vinyl sheet flooring shall conform to the requirements of ASTM F 1303, Type I.
 - d) **Vinyl Tile:** Shall be Armstrong or other approved equal, 1/8" x 12" x 12".
 - i) Provide product adhesive and underlayment as recommended by the manufacturer.
 - ii) All surfaces shall be clean, dry, and appropriate temperature during installation.
 - iii) Follow manufacture's recommendation for pattern layout.
 - e) **Wood Flooring:** Flooring shall be tongue and groove hardwood; factory finished or have a minimum of three coats of site-applied, UV-protective polyurethane.
 - f) **Other Flooring Products:** Ceramic tile, vinyl plank, and laminates shall be installed in accordance with manufacturer's specifications.
- 5) **Interior Doors:** New construction or replacement interior doors shall be factory finished, painted, or stained as follows:
- a) **Paint:** primed once, with two-coat satin, semi-gloss finish on all sides and faces including tops and bottoms.
 - b) **Stain:** stain or oil on all sides and faces including tops and bottoms, with three-coat varnish, polyurethane finish
- 6) **Moisture-Resistant Drywall:** For new construction and areas where drywall is replaced during rehabilitation, Moisture-resistant gypsum board (commonly called "green board") or equivalent must be used on all walls in the bathroom and within six feet in any direction of water sources, where the drywall can be splashed, such as kitchen sink, next to water heater, and/or clothes washer.
- a) For new construction, Water-resistant gypsum board or equivalent shall be provided behind any tub/shower unit located on an exterior wall.
 - b) Water-resistant gypsum, when used on ceilings must be rated for the span.
- 7) **Interior Wall Finishes:**

- a) Dwelling units, common areas, offices, laundries, meeting rooms, and similar spaces intended for use by the residents shall have the interior wall surfaces properly finished with appropriate materials such as drywall or plaster.
 - i) Exposed framing and insulation are not considered a proper finish in these spaces.
- b) Unless factory finished all interior walls shall be covered with one prime coat and two coats flat or satin finish Low-VOC interior latex paint.

Division 10: Specialties

- 1) **Trash Collection:** Provisions for dumpsters or trash cans are required.
 - a) **Screening** of trash cans and/or dumpsters shall be provided.
- 2) **Common Laundry Facilities:** Unless individual units are supplied with laundry facilities, all projects including adaptive reuse and rehabilitation consisting of four (4) or more units shall provide common laundry facilities meeting the following washers and dryers per unit ratios.
 - a) SRO and 1-bedroom units must have a minimum of 1 pair (washer/dryer) for every 20 units.
 - b) 2- and 3-bedroom units must have a minimum of 1 pair (washer/dryer) for every 12 units.
 - c) All calculations must be rounded up to a whole number.
- 3) **Dwelling Unit Laundry Connection Facilities:** All newly constructed dwelling units including adaptive reuse shall be equipped with washer and dryer hookups.
 - i) **Exception:** SROs and efficiencies are not required to provide this hook up facility within the dwelling unit.
- 4) **Roof Offsets:** Projects of four (4) or more attached units shall incorporate varying the roof line with offsets, gable porch roofs, etc.
- 5) **Entries:** The main common entry to each group of newly constructed dwellings or each main exterior entry to individual dwellings shall have a concrete, treated wood, or other hard surface exterior stoop, porch or deck, a minimum of 5' x 5'.
 - a) **All main entries** shall have a roof or awning over the minimum 5' x 5' entry area.

Division 11: Equipment

- 1) **Refrigerator:** A refrigerator shall be provided in all dwelling units.
 - a) **All new and replacement refrigerators must be Energy Star qualified.** The Energy Star mark must be clearly marked on the product, clearly displayed in product literature and listed on the manufacturer's Internet site.
- 2) **Range:** A range shall be provided in all dwelling units.
- 3) **Dishwasher:** A dishwasher shall be provided in all newly constructed units and those resulting from adaptive reuse. Dishwashers shall also be provided in units resulting from rehabilitation activities where they had either previously existed or dwelling units were newly created due to structural change.
 - a) Standard dishwashers shall use less than 4.25 gallons per cycle and 295 kWh per year.
- 4) **Clothes Washers:**
 - a) **All clothes washers provided in individual dwelling units** shall have an MEF equal to or greater than 2.0 and a WF equal to or less than 6.0.
 - b) **All clothes washers provided in common laundries shall have a Modified Energy Factor (MEF) equal to or greater than 2.2 and a Water Factor (WF) equal to or less than 4.5.**
 - c) **All laundry facilities located above any habitable space** shall be equipped with a properly installed washer overflow pan piped to carry the overflow into the DWV, positive outside drain or an approved floor drain.

Division 12: Furnishings

- 1) **New Construction and Replacement Cabinets and Drawers:** **Base and wall cabinets shall be provided in all dwelling units.**
 - a) Cabinet fronts shall be made of solid wood (not particleboard); doors, draws and fronts shall be factory finished.
 - b) **Cabinet ends** shall be finished with appropriate veneer.
 - c) **Cabinet doors and drawers** shall incorporate milled edges for a hand hold or handles to aid in operating the door or drawer. Accessible pulls and handles are required in all accessible units.
 - d) **All cabinets** shall be labeled or documented ANSI/KCMA A161.1 Certified
 - i) **Exception:** Cabinets made in Kentucky do not require an ANSI/KCMA A161.1 label when pre-approved by KHC and constructed to the following specifications.

- (1) Cabinet fronts shall be made of solid wood (no particleboard or fiberboard); doors, draws, and fronts shall perform to ANSI/KCMA A161.1-2012 standard.
- (2) Cabinet box and shelves shall be constructed of cabinet grade plywood and braced at points where necessary to insure rigidity and proper joining of various components.
- (3) **All hardware** shall perform to ANSI/BHMA A156.9-2015 standard.
- 2) **Countertops:** Countertops shall be molded roll-backed, laminate plastic or Formica with finished ends and sealed at the cut out for sink.
- a) **Other appropriate materials** may be used such as Corian™. Consult the KHC Department of Design and Construction Review.
- 3) **Closet Storage/Accessories:** Clothes closets shall contain a 12" deep shelf, including a coat rod. Shelves with integrated hangar hooks may also be used.
- 4) **Mailboxes:** All units shall have a USPS approved mailbox either at each individual unit or in a common area.
- a) **Exception:** When US postal service is not available at the project.
- 5) **Bath Accessories:** Dwelling unit bathrooms shall be equipped with the following:
- a) **Medicine cabinet** with mirror 16" wide by 20" tall (minimum)
- i) Other combinations of mirror and storage may be acceptable by approval of KHC
- b) Wall hung **toilet paper dispenser**
- c) 18" (minimum) towel bar
- d) Shower rod

Division 13: Special Construction

- 1) **Storage areas:** Storage areas are required on all newly constructed units and adaptive reuse projects, unless exempted by SHIPO and excluding SROs and efficiency units.
- a) The storage area shall be a minimum of twenty-five (25) net square feet.
- b) Structures must satisfy applicable building code requirements.
- c) Prefabricated plastic structures are prohibited.
- d) Exterior storage areas shall match exterior building veneer, trim, and possess identical shingles.

- e) Storage area within the dwelling unit shall be a designated room or space and cannot encroach on clear space requirements for any equipment or appliance.
- 2) **Ramps:** All newly constructed accessible ramps shall meet the following specifications and applicable accessibility standards:
 - (1) Ramps shall be constructed a minimum of 42" wide.
 - (2) Each landing shall have 5' turning areas at the top and bottom of each ramp run.
 - (3) Ramps shall not exceed a maximum slope of 1:12 and a maximum rise of 30".
 - (4) Ramps and landings shall have a minimum load capacity of 300 lbs. concentrated load applied in a 4 square inch area and a uniform live load of 100 pounds per square foot.
- a) **Portable or temporary ramps are prohibited** and may not substitute for locations requiring a permanent ramp.
- b) **Ramp construction materials:** Ramps may be constructed of the following materials:
 - i) **Composite:** PVC or other with non-skid surface.
 - ii) **Concrete:** with non-skid surface.
 - iii) **Metal:** galvanized steel, or aluminum with non-skid surface.
 - iv) **Wood:** All exterior wood shall have a minimum preservative retention rate of 25 percent for above ground applications and a minimum preservative retention rate of 40 percent for all wood in contact with the ground. Use of CCA treated lumber is prohibited.
- 2) **Playgrounds:** Playgrounds shall meet the following current standards and be approved by KHC prior to installation.
 - a) ASTM F1487, Standard Consumer Safety Performance Specification for Playground Equipment for Public Use
 - b) ASTM F1292, Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment
 - c) ASTM F1951, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment
 - d) ASTM F2223, Standard Guide for ASTM Standards on Playground Surfacing
 - e) ASTM F2479, Standard Guide for Specification, Purchase, Installation and Maintenance of Poured-in-Place Playground Surfacing
 - f) ASTM F2049, Standard Guide for Fences/Barriers for Public, Commercial, and Multi-Family Residential Use Outdoor Play Areas
 - g) ASTM F2075, Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment
 - h) DOJ 2010 ADA Standard for Accessible Design

Division 21: Fire Suppression

- 1) Reserved for future use

Division 22: Plumbing

- 1) **Required Fixtures:** Fixtures must be provided in all dwelling units. The following specifications shall be the minimum size and/or quality for new or replacement plumbing fixtures.
 - a) **Bath Tub and/or Shower:** Tubs shall be 30" minimum width. Showers shall be 36" x 36" minimum.
 - b) **Water Closets:** Water closets shall be maximum 1.28 GPF and made of porcelain.
 - c) **Faucets:** Polished chrome plated. Lever handle required. Faucets containing plastic material for exterior housing are prohibited.
 - d) **Lavatories:** Sinks shall be 15" minimum diameter.
 - e) **Kitchen Sink:** Except roll under sinks required in mobility impaired dwelling units, sinks shall be a minimum eight inches (8") deep, stainless steel double bowl.
- 2) **Water Supply Piping:** New construction and replacement water supply lines shall be of approved material.
 - a) Installation in exterior walls except for hose bibs is prohibited.
 - b) All new construction and replacement hot water lines shall be insulated equal to or greater than R-3.
- 3) **Overflow Protection Accessories:** New and replacement water heaters located above any habitable space shall have an overflow pan properly plumbed into DWV, positive drain outside or an approved floor drain.
- 4) **Water Heater Efficiency:**
 - i) **New construction electric water heaters** shall have a minimum Energy Factor (EF) rating of .95 or Uniform Energy Factor (UEF) rating of .92.
 - ii) **Rehabilitation replacement water heaters shall be the maximum efficiency attainable if space limitations restrict larger water heater insulation jackets.**
 - b) **Gas fired water heaters** shall an EF equal to or greater than 0.67.
 - c) **Instantaneous gas water heaters** shall have an EF equal to or greater than 0.82.

- d) **Central water heating systems** serving multiple dwelling units or common areas must be Energy star Qualified.

Division 23: Heating Ventilating and Air Conditioning

- 1) **Heating Ventilating and Air Conditioning Equipment:** All units shall be heated and cooled using high-efficiency equipment.
 - a) **Heat pump systems** shall have a minimum SEER (Seasonal Energy Efficiency Rating) rating of 15 with a minimum HSPF (Heating Seasonal Performance Factor) rating of 9.
 - i) PTHP systems in individual dwellings shall have a minimum 11 EER (Energy Efficiency Ratio) rating and a minimum 3.0 COP (Coefficient of Performance) rating.
 - b) **Air conditioning only** split systems shall have a minimum SEER of 15.
 - c) **Fuel oil, gas fired furnaces and boilers** shall have an Annual Fuel Utilization Efficiency (AFUE) equal to or greater than ninety-two percent (92%).
 - d) **Electric-resistance-only** heat systems are **prohibited**.
 - e) Alternative HVAC systems may be approved by KHC.
- 2) **Duct Insulation:** All supply air, return air, and exhaust air ducts installed in unconditioned spaces outside the thermal envelope shall be sealed and insulated with a minimum R-8 insulation wrap and installed free of restrictions.
- 3) **Programmable Thermostats:** All new and replacement individual HVAC systems shall be controlled by a programmable thermostat.
- 4) **Range Hoods:** All dwelling units shall be equipped with a, minimum 150 CFM, vented or non-vented range hood, or combination range hood/microwave oven.
 - a) Use ducting sized and ducting material per manufacturer recommendation.
 - b) Exposed ducting is prohibited and where installed above cabinets, ducts shall have a finished cover.
 - c) Recirculation combination microwave hoods or range hoods shall be equipped with an activated charcoal filter.
 - i) Note: Recirculating hood ventilation rates must be made up with whole unit ventilation. See ASHRAE standards.
- 5) **Exhaust and Ceiling Paddle Fans:** All paddle and ventilation fans (except for range hoods) shall be Energy Star qualified.
 - a) The Energy Star mark must be clearly marked on the front/top of the product, clearly displayed in product literature and listed on the manufacturer's Internet site.

Division 26: Electrical

- 1) **Common Area Lighting:** Luminaries shall be located at all entrances and common areas.
 - a) The electrical supply for all common areas, stairways, and walkways shall not originate from an individual unit.
- 2) **Parking Lot Lighting:** All onsite parking areas shall be lighted.
 - a) The electrical supply for all parking areas shall not originate from an individual unit.
- 3) **Dwelling Unit Lighting:** Each room, hall, stair, and walk in closet shall have a minimum of one switch-operated overhead light.
 - a) Kitchens shall include switch-operated lighting over the cooking area, sink and the general or dining area.
 - b) Bathrooms shall be equipped with switch-operated lighting over the lavatory area and the general area.
- 4) **Energy Efficient Lighting:** All interior luminaries shall be Energy Star qualified.
 - a) The Energy Star mark must be clearly marked on the front/top of the product, clearly displayed in product literature and listed on the manufacturer's Internet site.

Division 27: Communications

- 1) **Telephone Access:** All dwelling units (including rehabilitation) shall be wired for telephone service.
- 2) **Cable Access:** All dwelling units (including rehabilitation) shall be wired for cable service or a local antennae system.
- 3) **Internet Connectivity:** All dwelling units (including rehabilitation) shall have the ability to connect to the internet by one or more of the following means.
 - a) **Telephone Connection:** Connectivity may be accomplished by prewired telephone jacks installed within the dwelling.

- b) **Cable Modem:** Connectivity may be accomplished by prewired cable jacks installed within the dwelling.
 - c) **Wireless Connection provided by the property:** A secured wireless router may be provided for internet connectivity by the residents of the property in lieu of wired connections.
 - i) All dwellings units shall be supplied with signal strength adequate for connection to the internet.
 - ii) Common areas accessible by the residents shall be supplied with signal strength adequate for connection to the internet.
- 4) **Help/Call for Aid:** Where installed, or included in the scope of work, Help/ Call for Aid systems shall at a minimum, alert persons outside the dwelling unit by visual and/or audible means.
- a) Audible systems shall produce sound at a level of at least 15 decibels above ambient noise levels near the dwelling unit.
 - i) The notification sound shall not be similar to a fire alarm notification.
 - b) Visual notification systems shall be visible to persons within 200 feet from the dwelling and be a flashing strobe.
 - c) An activation device shall be installed in all bedrooms, bathrooms, and living rooms of the dwelling unit.
- 5) **Units designed for the hearing and visually impaired:** All dwelling units designed for the hearing and visually impaired shall be equipped with audible and visual notification devices for the benefit of the occupant to know when someone is at the entry door, when the telephone rings, and when there is smoke or carbon monoxide detected within the dwelling or building.

Division 28: Electronic Safety and Security

This section shall apply to new construction, adaptive reuse, and rehabilitation projects.

- 1) **Fire Detection and Alarm:** Installation of smoke alarms is required in all new construction, adaptive reuse, and rehabilitation projects.
 - a) All local ordinances shall be observed.
 - b) Written manufacturer specifications for the proper installation of individual alarms shall be observed and maintained on site throughout construction.

- i) Instructions for specific locations and other installation details shall be strictly observed.
 - ii) Individual smoke alarms shall be installed on all floors and in all bedrooms and hallways no more than eight (8) feet from any bedroom door within the dwelling unit.
- 2) **Carbon Monoxide Alarms:** UL listed carbon monoxide alarm(s) shall be installed outside each sleeping area no more than eight (8) feet from any bedroom door within the dwelling unit if the dwelling or building contains fuel burning appliances or has an attached garage.
- 3) **Audible and Visual notification alarms:** Where required, dwellings shall provide audible and visual notification of smoke and carbon monoxide detection in all rooms within the dwelling.
 - a) **Audible alarms shall** provide minimum noise pressure 15 decibels above ambient noise levels in all rooms of the dwelling including bathrooms and kitchens and where a room may be isolated by closure of a door.
 - b) **Visual alarms shall** be installed in locations where the alarm's flashing strobe may be seen from any location within the dwelling including bathrooms and kitchens and where a room may be isolated by closure of a door.

Division 31: Earthwork

- 1) **Soil Testing:** All new construction that contains 12 or more units and/or building sites determined necessary by KHC's construction specialists will be required to have a geotechnical investigation performed by a design professional registered in the Commonwealth of Kentucky.
 - a) **Investigation Report:** Results of the test shall comply with the applicable building code requirements and be submitted to KHC.
 - i) At a minimum the report submitted to KHC shall contain recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of expansive soils; mitigation of the effects of liquefaction, differential settlement and varying soil strength; and the effects of adjacent loads.
- 2) **Steep Slopes:** Setbacks or clearances may occur where units are placed on sites that have adjacent steep slopes of 33.3% (1 foot rise: 3 feet run) or greater.

- a) Setbacks indicated in the current Kentucky Building or Residential Code, from the top or bottom of the slope, shall be observed and included in the building's design.
 - i) Building foundations located within the required setback indicated in the building codes shall be designed by a registered design professional.

Division 32: Exterior Improvements

- 1) **Landscaping:** Adequate landscaping is required on all multifamily projects.
 - a) **Installation:** Landscaping shall be installed according to the **approved** landscape plan submitted to KHC as part of final plans and specifications.
 - b) **Turf:**
 - i) **All side and rear lawn** areas shall be seeded with the seed variety, lime, and fertilizer application rate, which is appropriate to establish a good lawn cover.
 - ii) **Sod is required** in building front yards and common areas for all projects requiring establishment of new grass.
 - iii) **All slopes in excess of 33.3%** (1:3) within 10 feet of the building, driveway and/or walkway shall receive sod or other approved erosion control materials which will enhance the establishment of a permanent ground cover.
- 2) **Parking/Driveways:** All multifamily projects shall have adequate parking as determined by KHC.
 - a) All on-site parking lots and access drives are to be paved.
 - i) Asphalt shall consist of a hot mix asphaltic concrete pavement, manufactured by plants and be placed a minimum of 4" thick.
 - ii) Concrete parking lots and access drives shall be 6 inches thick.
 - iii) Pervious concrete parking surfaces shall be properly drained to prevent accumulation of water.
 - b) Unless prohibited by local code, jurisdiction, or structural constraints, all projects shall have a minimum of one parking space per unit.
 - i) Parking spaces shall have wheel stops or curbs.
 - (1) If walkways are used as wheel stops, the walkway shall be 6' wide.
- 3) **Walkways:** All dwelling units and common use facilities shall have a paved walkway from the parking area to the main entrance and connecting dwelling units to common use areas and public sidewalks.

- a) All entry walks shall be a minimum of 42 "wide.

Division 33: Utilities Services

- 1) **Availability:** Required building utility services shall be available before construction begins at the building site in sufficient size to adequately provide sufficient power, flow, volume, pressure, and drainage to allow for safe, dependable service of appliances and fixtures.
 - a) **Septic or sewage treatment systems** may be constructed onsite as construction progresses and shall be capable of performing intended functions prior to occupancy.
- 2) **Electric:** Electrical service to newly constructed units shall be installed underground except in cases where deemed structurally infeasible.