

**Minimum and Preferred Design Standards for New
Construction
Multifamily Attached Housing Units**

**Kentucky Housing Corporation
October 2007**

CSI FORMAT

Division I: General Requirements

Division II: Site Work

Division III: Concrete

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CSI FORMAT

The Construction Specification Index (CSI) is the standard filing system used by all architectural, design, engineering and construction professionals. The CSI format provides a uniform approach to organizing specification text by establishing a structure consisting of 16 divisions (see table of contents). Each division is divided into articles subordinate paragraphs and subparagraphs with a five-digit code. An example of the filing system can be seen below:

Where to find pressure treated wood decking?

Division VI: Woods and Plastics

06070 Wood Treatments

Wood Decking

KHC has simplified the categorization of the CSI format and has eliminated the five digit numbering code, replacing the number with a bullet for example:

Where to find pressure treated wood decking?

Division VI: Woods and Plastics

- Wood Decking

For additional information or questions regarding CSI Format, please contact the Department of Design and Construction Review at (502)564-7630, extension 706.

Division I: General Requirements

- Minimum Design Standards

Minimum Design Standards shall apply to new construction and reconstruction of all multifamily detached homes constructed with funds from the HOME Investment Partnerships (HOME) Program, Affordable Housing Trust Fund (AHTF) and/or Housing Credits. These funds are available through KHC's Department of Housing Finance and Construction (HFC). The standards become effective when funding from KHC is 10 percent or more of the cost per unit.

Note: KHC's Minimum Design Standards are to be used as a guideline to meet and exceed all local, state, and national codes. These standards also provide a way to enforce above average construction and design for builders, contractors, and design professionals who wish to utilize funding from the Kentucky Housing Corporation's Department of Housing Finance and Construction (HFC). Other methods of construction and design may be acceptable on a case by case basis. **If you feel your design meets or exceeds KHC's Minimum Design Standards, please contact the Department of Design and Construction Review for further assistance.**

- Units for Elderly Residents: All units for elderly residents shall be located at the grade level or on an elevator accessible floor.

- Codes

All construction shall comply with Kentucky Building Codes (KBC), Kentucky Housing Corporation's Universal Design for projects receiving 50 percent or greater of KHC/HFC funding, local planning and zoning, and local authorities and jurisdictions. Federal regulations which may pertain to the specific project such as the Fair Housing and Section 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act of 1990, as amended, also apply.

- Energy Efficiency

All residential building envelope designs shall exceed the energy efficiency requirements of the KBC by at least 20 percent. Documentation and/or calculations that the building envelope exceeds the code requirements by 20 percent must be provided in one of the following forms:

- a) Documentation from REScheck or other approved software that the building envelope exceeds the code requirements by 20 percent.
REScheck is US DOE free download at:

<http://www.energycodes.gov/rescheck/download.stm>

- b) The design values of applicable Prescriptive Packages listed in the state building code may be increased by 20 percent and these calculations provided to KHC.
- c) Engineered designs that exceed the code by 20 percent.

- **Minimum and Preferred Design Requirements**

The following minimum and preferred design items are for all new construction multi family attached units.

- **Quality Assurance**

Contractor shall furnish a written material and labor warranty on the units for a period of one full year after occupancy.

- **Unit Size Requirements**

The following minimum square foot measurements are required for the different type of units. Net square feet are the heated and cooled area of the unit.

- SRO units shall contain at least 150 square feet (common kitchen and bath)
- Efficiency units shall contain at least 400 square feet
 - One-bedroom units: shall contain at least 600 square feet
 - Two-bedroom units: shall contain at least 800 net square feet.
 - Three-bedroom units: shall contain at least 1,000 net square feet.
 - Four-bedroom units: shall contain at least 1,100 net square feet.

- **Universal Design Requirements**

Projects that receive debt or subsidy financing from KHC equal to 50 percent or more of the total project cost for the purpose of constructing single family or multi-family housing shall comply with KHC's Universal Design Policy. Please consult KHC's web site for the most current version of the Universal Design Requirements:

www.kyhousing.org/communitytech/technical/univdesign.cfm

Division II: Site Work

- **Easements**

Setbacks or clearances may occur where units are placed on sites that have adjacent steep slopes. Please refer to the KBC, Section 1805.3. Other engineered designs may be presented to KHC for consideration

- Soil Boring Test: All projects that contain 12 or more units shall have a soil-boring test performed by an engineer. This report must be submitted to KHC. Projects containing less than 12 units may also be required to have a soil boring test performed should the test be determined necessary by KHC.
- Soil and Concrete Testing: All new construction that contains 12 or more units will be required to have soil compaction and concrete strength test performed by a Commonwealth of Kentucky approved testing laboratory. Results of the test shall comply with the KBC.
- Entries
 - One main entry shall have a concrete, treated wood, or other hard surface exterior stoop, porch or deck, a minimum of 5' x 5'. The main entry shall have a roof or awning over the entry area. The roof shall cover at least a 5' x 5' area.

- Landscaping

Adequate landscaping is required on all multifamily projects. The developer shall submit a landscape plan as part of the plans and specifications. At a minimum, each building shall include a basic landscaping package.

Turf: All lawn areas shall be seeded with the seed variety, lime, and fertilizer application rate, which is appropriate to establish a good lawn cover. All slopes in excess of 3:1 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.

Sodded Areas: It is preferred that the front yards of each building and common areas are sodded.

Fencing: It is preferred that multifamily projects be fenced in such a way to provide security around the site boundaries

- Parking/Driveways

All multifamily projects shall have adequate parking (as determined by KHC).

Parking Lots: All on-site parking lots and access drives are to be paved and parking spaces are to have bumper stops or curbs. If walkways are used as bumper stops, the walkway shall be 6' wide.

It is preferred that family units be provided with a minimum of 1 ½ on-site parking spaces per unit and that units for elderly residents have a minimum of 1 on-site parking space per unit.

Asphalt: shall consist of a hot mix asphaltic concrete pavement, such as manufactured by plants. Minimum 4” thick.

Concrete: shall conform to the latest revised Standard Specification for Portland Cement, ASTM C595. All 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). Expansion-joint material shall be ½” thick asphalt-impregnated premolded fiber, ASTM D1752. Follow American Concrete Institute (ACI) 318. Minimum 6” thick.

- **Soil Treatment-Termite Protection:**
Provide proper and complete termite treatment by a licensed exterminator.

- **Utilities Services**
 - Electric: It is preferred that electrical service to new units be underground.

 - Laundry: all units shall be equipped with washer and dryer hookups (Exception: SRO and Efficiency Units). Laundry facilities located on the second floor and higher shall be equipped with a washer overflow pan piped to carry the overflow to an appropriate location or floor drain.

 - Phone: all units shall be wired for telephone.

 - Trash Collection: Provisions are to be made for dumpsters or trash cans. Screening of trash cans and or dumpsters shall be provided.

- **Walkways**

All units shall have a paved walkway from the parking area to the main entrance

Concrete pads and walks: All entry walks shall be a minimum of 42 “ wide, 4000 psi, and shall be provided at all units from the entry to parking area. Provide ¼ inch per foot crown or cross slope in the direction of drainage. Expansion-joint material shall be ½” thick asphalt-impregnated premolded fiber, ASTM D1752. Follow ACI 318. The minimum concrete thickness 3 ½”.

Division III: Concrete

- **Concrete Finishes**

It is preferred that brick, stone, or texture formwork patterns shall be used for all poured in place walls exceeding 3 feet or more exposure.

Division IV: Masonry

- **Brick:** The siding material of all attached units shall consist of a minimum of 30 percent brick, stone, or other KHC approved materials. The bricked area calculation of 30 percent shall not include window and door areas, nor brick below finished grade.
- Face Brick

Shall be ASTM C 216, Type FBS, Grade SW, or equivalent, modular size.

- Concrete Masonry Units (CMU)

It is preferred that stucco or split face shall be used for all CMU walls exceeding 3 feet or more exposure.

Division V: Metals

- Metal Ties

Provide a metal tie-down strap (commonly called hurricane straps) at each bearing location of each roof truss, rafter and ceiling joist. The tie-down strap must attach to the top cord of the truss and the upper most plate of the wall. Provide the correct nails and nailing pattern as required by the company that manufactured the metal tie-down strap.

- Steel Lintels

Steel lintels, when specified for openings in masonry walls shall be primed and painted.

Division VI: Woods and Plastics/Rough Carpentry/Millwork

- Cabinets and Drawers

Cabinet fronts shall be made of solid wood (not particleboard); doors, draws and fronts shall be factory finished. Cabinet ends shall be finished with appropriate veneer. All cabinets shall be Kitchen Cabinet Manufacturers Association (KCMA) approved.

- Roof Construction

Minimum Roof Pitch: The minimum slope on all roofs shall be 4” vertical to 12” horizontal. Porch roofs are an exception.

- Stair Riser and Tread Construction

Steps: It is preferred that all steps shall have a riser not greater than 7” and a tread of 11”.

- Wood Decking

Composite material is preferred for decking. All exterior wood shall have a preservative retention rate of 40 percent.

- Wood Stairs and Handrails

Composite material is preferred for stairs and handrails. All exterior wood shall have a preservative retention rate of 40 percent.

Division VII: Thermal and Moisture Protection

- Fascias

Metal: 0.019” minimum thickness aluminum, factory finish (coil stock).

Exposed Wood: redwood, cedar, or pressure treated.

Composite: Hardiplank or other durable material as approved by KHC.

- Roof

Shingles: 235 lb. seal tab type over 15 lb. felt, with minimum 25-year product warranty.

Gutters and Downspouts: shall be appropriately designed with a minimum 5” gutter and a 2”x 3” downspout. All downspouts shall empty onto concrete splashblocks or be piped to an appropriate location

- Siding

Composite: Hardiplank or factory equivalent, primed, with two-coat minimum finish.

Metal: 0.024” minimum thickness aluminum or galvanized steel with factory finish.

Vinyl: 0.040” minimum thickness, UV protected.

Wood: cedar or redwood, stained or primed once with 2-coat minimum finish.

- Wet Walls

Water-Resistant Drywall: Water-resistant gypsum board (commonly called green board) must be used on all walls in the bathroom and within six horizontal feet of wall surfaces where the drywall can be splashed such as kitchen sink, next to water heater and/or washer. When a tub/shower unit is on an exterior wall, provide a vapor barrier and water-resistant gypsum board behind the tub/shower unit. Water-resistant gypsum, when used on ceilings must be rated for the span.

Division VIII: Doors, Windows, and Glazing

- Door Accessories

Exterior hardware:

- a) It is preferred that exterior doors have a doorknocker, security accessories (eyelet and deadbolt), and a kick plate.
- b) All doors shall have a lever key-lock latch.

Interior Hardware: all doors except closets shall be equipped with a lever-handle. Install locks for bedrooms and bathroom.

- Exterior Doors

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.

- Interior Doors

Solid Wood, Composite or hollow core panel doors. Interior doors shall be a minimum of 1 ⅜” thick.

- Windows

All window frames must be of solid vinyl, thermally broken aluminum, fiberglass, wood or wood clad. All glazing shall be double paned. The vapor seal on the glazing must have a minimum ten-year warranty. All windows shall have a minimum one-year warranty on the operation of the window. It is preferred that all windows have a National Fenestration Rating. Please remember to include an ingress/ egress window as required per code at all required locations, typically a

3'0" x 5'2" window. Refer to the KBC Section 1009.2. Sash removal is not an acceptable method to achieve the required opening.

Division IX: Finishes

- Exterior Ceiling

When using vinyl or aluminum material for porch ceilings, provide a rigid, solid backing such as OSB or plywood.

- Exterior Finishes

Wood: at a minimum all exposed wood shall have a preservative retention rate of 40 percent. All structural posts below grade shall have the factory treated end of the post below grade. Beginning January 1, 2004 Use of CCA Treated lumber shall be prohibited.

Posts and Columns: It is preferred that all posts (at deck level and above), columns, and guardrails be factory made and factory finished.

Handrails: Rail shall be smooth, splinter-free and painted or factory finished to withstand the weather and resist checking and splintering.

- Finished Floor Treatments

Carpet Padding: 7/16" thick, 6-lb. minimum re-bond polyurethane.

Sheet Carpet: 25 oz. minimum, 100 percent nylon. Other options include Berber type with blended fiber. In high traffic areas, 30 oz. Minimum is preferred.

Sheet Vinyl: Shall be Armstrong or other approved equal. Provide product adhesive and underlayment as recommended by the manufacturer. All surfaces shall be clean, dry, and appropriate temperature during installation. Minimum 10 mil wear layer. Vinyl sheet flooring shall conform to the requirements of ASTM F 1303, Type I.

Vinyl Tile: Shall be Armstrong or other approved equal, 1/8" x 12" x 12". Provide product adhesive and underlayment as recommended by the manufacturer. All surfaces shall be clean, dry, and appropriate temperature during installation. Follow manufactures recommendation for pattern layout.

Wood Flooring: Flooring should be tongue and groove hardwood, factory finished, or have a minimum of three coats of site-applied, UV-protected polyurethane.

Other Flooring Products: Ceramic tile and laminates

- Interior entries

At the interior side of the main entry door, there shall be an uncarpeted, finished floor area. This area shall be no less than sixteen (16) square feet.

- Interior Doors

Paint: primed once, with two-coat satin, semi-gloss finish on all sides and faces.

Stain: stain or oil on all sides and faces, with three-coat varnish, polyurethane finish

Factory Finished doors are acceptable.

- Interior Wall Finishes

Paint: primed once, two-coat flat finish. Use gloss, semi-gloss, or satin finish for bathrooms, laundry, and kitchens.

Division X: Specialties

- Closet Storage/Accessories

Closets should contain 12” deep shelf, including a coat rod. Shelves with integrated hangar hooks may also be used.

- Mailboxes

All units shall have a mailbox either at each individual unit or in a common area.

Division XI: Equipment

- Bath

Accessories: All bathrooms shall have:

- a) medicine cabinet with mirror 16” wide by 20” tall (minimum)
- b) wall hung toilet paper dispenser
- a) 18” (minimum) towel bar

Other combinations of mirror and storage may be acceptable at the approval of KHC.

Bath Tub: Tubs should be 30” minimum width; made of fiberglass, acrylic, porcelain, or cultured marble.

Faucets: Polished chrome plated. Lever handle preferred.

Sink: Sinks shall be 15” minimum diameter; made of fiberglass, acrylic, porcelain, or, cultured marble.

Shower: Showers should be 36” x 36” minimum; made of fiberglass, acrylic, ceramic, or, cultured marble.

Toilet: Toilets should be 1.6 GPF; made of porcelain.

- Protection/Suppression Accessories

Smoke Alarms: Building code requires the installation of smoke alarms. The manufacturer of the specific smoke alarm being used will provide written instructions on the locations for their product. Follow the manufacturer’s instructions on locations and other details. Place the smoke alarm required in the hallway near the bedroom doors. No bedroom door shall be more than 8 feet from a smoke alarm. Each hallway must have its own smoke alarm.

Radon Reduction: Radon venting is preferred for all living units. A drawing can be provided to assist in installing the radon vent system. This drawing is available upon request from the Department of Design and Construction Review at Kentucky Housing. Call (502) 564-7630, extension 706.

- Kitchen

Countertops: shall be molded roll-backed, laminate plastic or Formica with finished ends and sealed at the cut out for sink. Other appropriate materials may be used such as Corian. Consult the KHC Department of Design and Construction Review.

Faucets: Lever handled faucets preferred. The housing of the faucet shall not be plastic.

Hoods: All units shall be equipped with a 150 CFM range hood. It is preferred that the range hood be vented to the exterior of the building. Use ducting sized and ducting material per manufacturer recommendation. Provide a finished cover over exposed ducting.

Sink: 6” deep minimum, stainless steel double bowl.

- Laundry

Shall have an overflow pan or floor drain if laundry is located second level or higher.

Division XIII: Special Construction

- Storage areas

Exterior storage areas are preferred on all units. This storage area should be constructed so it can be used for yard tools, mowers and outside recreational equipment.

- Ramps

Note: When including an accessible ramp comply with the following in addition to the KBC: all ramps shall be minimum 42' wide with a 5' turning areas at each landing, and a minimum load capacity of 1500 lbs.

Composite: PVC or other with non-skid surface.

Concrete: with non-skid surface.

Metal: galvanized steel, or aluminum with non-skid surface.

Wood: shall have a preservative rate of 40 percent. All structural posts below grade shall have the factory treated end of the post below grade. Beginning January 1, 2004, the use of CCA treated lumber shall be prohibited.

- Playgrounds

It is preferred that playgrounds be included in the overall design of the project. When office, laundry and maintenance (OLM) buildings are provided it is preferred that an approved fenced-in playground be provided adjacent to OLM Building. The area immediately in and around the playground shall be mulched with 6" of appropriate material such as cypress mulch, pine bark mulch, pine needle mulch or sand.

- OLM Building

On projects of 30 or more units it is preferred that the developer include an OLM building.

- Washer and Dryer Facilities

It is preferred that projects of 30 or more units include washer and dryer facilities.

- Roof Offsets

It is preferred that projects of four or more attached units be designed in such a way as to vary the roof line with offsets, gable porch roofs, etc.

- Defensible Space

KHC prefers housing developments that provide residents with a sense of ownership and control of physical areas by incorporating items such as unit-specific entryways and lawn areas that are clearly associated with individual units. If this cannot be accomplished, KHC prefers to keep the total number of residents sharing these spaces as low as is practical.

Division XV: Mechanical

- Heating Ventilating and Air Conditioning Equipment

All units shall be heated and cooled using high-efficiency equipment. Heat pump systems shall have a minimum SEER (Seasonal Energy Efficiency Rating) rating of 13.00 with a minimum HSPF (Heating Seasonal Performance Factor) rating of 7.7. Fuel oil and gas fired furnaces and boilers shall have an AFUE efficiency of 90 percent or better. Electric-resistance-only heat systems are not permitted. Alternative HVAC systems may be approved by KHC.

- Plumbing Accessories

Washers and hot water heaters located on the second floor or higher shall have overflow pan piped into DWV, positive drain outside, or floor drain.

- Piping

Water Lines: shall be insulated in all crawl areas, copper water lines preferred.

Division XVI: Electrical

- Exterior Luminaries

Shall be located at all entrances and common areas. All on site parking areas shall be lighted. The electrical supply for all-common areas, stairways, walkways and parking areas shall not come from the individual unit.

- Interior Luminaries

Each room, hall, stair, and walk in closet shall have a minimum of one switch-operated overhead light. Kitchens shall include switch-operated lighting over the cooking area, the sink area and the general or dining area. Bathrooms shall be equipped with switch-operated lighting over the lavatory area and the general area.