GARAGE BUILDING PLAN, 2007 KRC
ONE-STORY WOOD-FRAMED DESIGN; 2-CAR

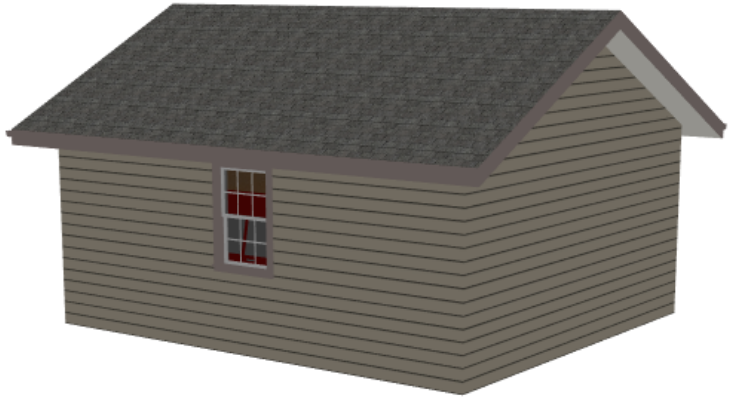
This plan will be used to build the project as described within these documents. The contractor and home owner agree to build this project in compliance with all building code sections pertaining to an accessory structure.
The drawing in this plan set is a size for illustrative purposes only.
The actual size of my garage will be: ____feet wide by ____feet long by ___feet eave height.
_____Total Square Feet.

Number of overhead doors: ____ Size of overhead door: _____
Number of side-hinged egress doors: ____ Size of egress door: _____
Number of windows: ____ Size of Windows: _____
This building will be wired for electrical lights and outlets: ___ Yes ___ No
This building will be heated: ____Yes ____No
This building will have plumbing in it: ____Yes ____No
This building will have fuel-gas lines or appliances in it: ____Yes ____No.
Engineered roof truss drawings are required and have been submitted: ____Yes ____No
The accompanying drawings indicate the construction type of this project.

Owner Name: _____ Date: _____
Builder Name: _____ Date: _____

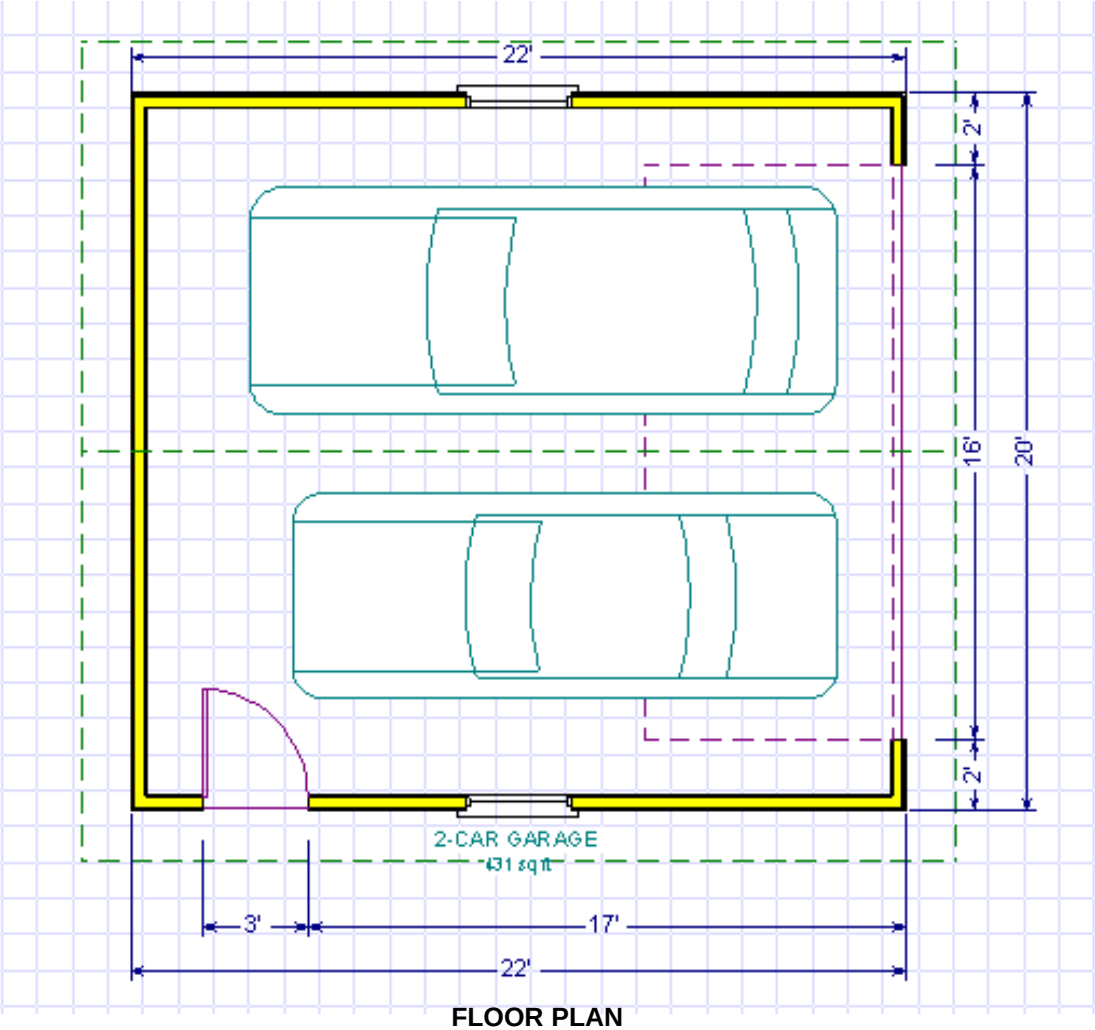
LEFT – FRONT VIEWS

FRAMING VIEWS



RIGHT – REAR VIEWS

File: Microsoft PowerPoint – [GARAGE BUILDING PLAN 2007 KRC] 5-11-2011



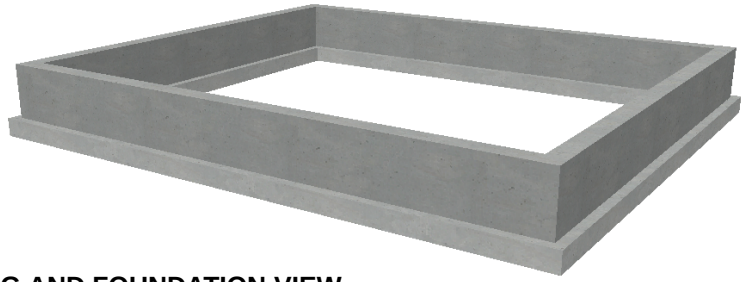
FLOOR PLAN

8. **Building inspections are required to be made on projects when a building permit is issued.** It is the duty of the permit holder to notify the building inspector when work is ready for inspection at the various stages for the **footing, framing and final inspection**. It is the duty of the permit holder to provide access to and means for inspection of such work for the inspections. *(R109.5), (R109.1)*
9. A **final inspection** shall be made and approved and a Certificate of Completion shall be issued before the building is occupied or used for any purpose. *(R110.1)*
10. **Remove all vegetation below the accessory structure. (R408.5) Slope final grade of ground 6 inches drop within the first ten feet away from the structure. *(R401.3*)**

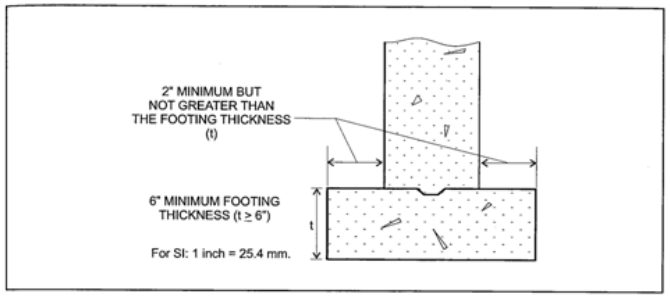
Kentucky Residential Code (R202) Definitions
Minimum Code Requirements for 1-Story Residential Garage

Accessory Structure. **A structure not greater than 3,000 square feet in floor area**, and not over two stories in height, the use of which is customarily accessory to and incidental to that of the dwelling (s) and which is located on the same lot.

1. **Garage exterior walls** less than 3 feet from property line required to have one-hour fire resistive rating construction with exposure from both sides. Projections shall not extend to a point closer than 2 feet from the line used to determine the fire separation distance. *(R302.1).* Projections beyond the exterior wall shall not extend more than 12 inches into the areas where openings are prohibited.
2. **Openings for doors, windows, etc**. shall not be permitted in the exterior wall of an accessory structure with a fire separation distance less than 3 feet. *(R302.2)*
3. **Maintain closest exterior wall to be no closer than five lineal feet from the nearest property line.** Locate the accessory structure no closer than five feet from any other structure on the same lot *(Sec. 704.5)*
4. **Building Setback Requirements**. **The accessory structure must comply with the zoning building setback requirements from property lines as well as from utility and drainage easements**. Refer to building permit for details. (*Hardin County Development Guidance System*.) Distances to all property lines required information on permit application.
5. **This building shall be built in compliance with the current *Kentucky Residential Code*.**
6. **Building permit required**. An approved building permit is required to be obtained from the building official before the accessory structure is placed, delivered, installed, set, constructed or built on the property. *(R105.1)*
7. **Climactic and geographic design criteria**. The building shall be designed and constructed to comply with the following minimums: Ground snow load 15 psf, Roof Live Load: 15 psf; Seismic design category: B; Buildings and portions of buildings shall be limited by a basic wind speed of 90 miles per hour and construction methods in accordance with the 2007 Kentucky Residential Code.; Wind exposure category: C, Open Terrain. *(Table R301.2(1))* unless noted otherwise.



FOOTING AND FOUNDATION VIEW



Footing Thickness and Projections

10. **When using steel rebar reinforcing** it must be set on steel high chairs, no brick or blocks or stones allowed. High chairs control minimum height location of rebar in footing. (Rebar in footings is optional*).(R403.1.3)*
11. **Garages: Floor Surface. (R309.3)** Garage floor surfaces shall be of approved noncombustible material (example: Concrete). The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. *(R401.3)* Concrete Floor slabs: Thickness 3 1/2" minimum, 4" recommended. Concrete air entrain exposed slabs. Concrete slab shall have a minimum compressive strength of 3500 psi or better at 28 days. *(Table R402.2)* Weathering potential "Severe".
12. **The wood sill plate shall be of pressure preservative treated wood**. 2" thick by 6" wide min. when wall is to be 2 x 4 wood framed wall. (2 by 8 wide min, when wall is to be of 2x6 wood framing). *(R319.1).*
13. **Fasteners for pressure preservative treated wood** and fire retardant treated wood shall be of hot-dipped galvanized steel, stainless steel, silicone bronze or copper*. (R319.3)*
14. **Quality mark of an approved lumber grading agency** is required on wood used in building*..(R319.2)*
15. **Water heaters and furnaces located in garages** must be protected from impact by vehicles by means of steel barrier bolted to floor and located near the appliance. *(M1307.3.1)* Any flame or sparking device in an appliance must be located greater than 18 inches above the garage floor. *(M1307.3)*

1. **Footings**. Structures larger than 600 SF in size require the concrete continuous footing to be 12" wide minimum by 6" thick min. The bottom of the footing shall be located 24 inches below finished grade of ground. [Structures smaller than 600 SF in size, the exterior footing shall be placed at least 12 inches below the undisturbed ground surface.) (KRC *R403.1)*
2. **The foundation wall** shall be either made of 6",8",10" or 12" concrete blocks or shall be 6", 8", 10" or 12" thick formed continuous concrete foundation wall, 2,500 PSI. Size to be calculated based on *Table R404.1.1(5)* Concrete Foundation Walls; 2,500 psi concrete strength min.(Table *R402.2)*
3. **The top of the foundation wall** shall be located a minimum of 6 inches above final grade of ground, when the exterior wall finish is made of vinyl or wood siding.(4 inches above final grade of ground, when the exterior wall finish is made of brick or block*).(R404.1.6)*
4. **Anchor bolts** ½" in diameter by 10"l. fitted with one washer and one nut each shall be spaced no more than 6 feet apart and there shall be no less than 2 bolts per small plate. The bolts shall be no more than 12 inches from the end of each plate and kept no closer than 3 inches from the end of each plate*.(R403.1.6)*
5. **Excavate and backfill**. All debris to be removed from site promptly. *(R404.1.7)* Storm surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as not to create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall have a minimum slope of 6 inches within the first 10 feet. *(R401.3)*
6. **All footings shall be supported on undisturbed natural soils** or engineered fill *(R403.1).* The soil shall have a minimum bearing load capacity of 1500 psf.
7. **The top surface of the footings is level**. The bottom surface of the footings shall not have a slope exceeding one unit vertical in ten units horizontal (10 percent slope). Footings shall be stepped when the slope exceeds one unit vertical in ten units horizontal. *(R403.1.5)*
8. **There can be no water standing in the footing area. All debris shall have been removed and no roots located in the footing area***.(R403)*

TYPICAL MIMUMUM MATERIALS DESCRIPTION:
One story wood framed Garage

1. **Concrete Footing**: concrete continuous footing to be 12" wide minimum by 6" thick min., 2500 psi or better. *(Table R402.2)*
2. **Steel rebar** (if used) ½" diameter (No.4). 2 runs of rebar continuous of footing perimeter, setting on steel high chairs properly spaced to support weight and to maintain 3" high clearance above ground. Rebar in footings is not required by 2007 KRC unless specified by an engineer or architect stamped design. (Good standard construction practice).
3. **Concrete Floor slab**: 3 ½" thick minimum, over level gravel sub grade. (Gravel sub grade is optional). 6 mil poly vapor barrier over crushed stone gravel or over bare ground will help prevent moisture traveling through slab to top of floor. (In unheated buildings vapor barrier under floor slab is not required, and is still highly recommended.) R-10 insulation board required to be placed for 2 feet wide, under floor slab, at full perimeter of garage when garage is heated. (Table 402.1). Garage floor slab: 3,500 psi (Hardin County is in "Severe" weathering potential zone) *Table R402.2*
4. **A typical garage floor slab in this area** is 4" concrete slab reinforced with 6"x6" #10/#10 woven wire mesh over 6 mil poly vapor barrier over a 4" stone base and will be completed with saw cut floor joints to decrease chances of floor cracking. (This exceeds minimum code requirements but is good standard construction practice.)
5. **Wood Sill Plate**: 2 x 6" pressure preservative treated. *(R319.1)*
6. **Anchor (Foundation bolts)**: ½" dia. By 10"l., spaced no more than 6 feet apart and within 12" of ends of each sill plate, and not within 3" of each end.*(R403.1.6)*
7. **Wall Framing**: 2 by 4 full height wall studs, No. 2 lumber, 16" on center spacing, 3 vertical studs per each corner. Double top plate, single pressure treated bottom plate required. *(R602.3)*
8. **Quality mark (grade stamp)** of an approved lumber grading agency is required on all wood used in building..*(R319.2), (R502)*
9. **Headers**, single 2 x 6, required in exterior bearing walls over each window and each 3070 door opening. Headers for overhead doors required to be sized by a supply yard to meet code requirements. Headers require jack studs at each end for support. Long headers are doubled, when greater than 4' up to 6', and require two jack studs at each end. *(R802.9)*
10. **Apply approved wall sheathing**, 4 x 8 x ½ inch minimum plywood horizontal sheathing typical used, when installing vinyl siding. One layer of No. 15 asphalt felt, complying with ASTM D 226 for Type I felt or other approved water resistive barrier shall be applied over sheathing of all exterior walls, applied continuous to top of walls in a manner to meet the exterior wall envelope as described in *Section R703.1 and R703.2.* Vinyl siding shall be installed per manufacturer's specifications.
11. **Connection of roof trusses and/or roof rafters to top wall plate shall be by means of hurricane ties** having a resistance to uplift of not less than 175 pounds. *(R802.10.5).*
12. **Roof trusses** (if used) shall be designed according to approved engineering practices, with metal plate connectors complying with ANSI/TPI 1. No cutting or altering of trusses allowed. Trusses shall be properly braced as indicated on the design drawings. **Truss design drawings required to be submitted and approved** by the building inspector prior to installation. *(R802.10). [Home-built trusses are not allowed by code.]*
13. **Ridge Framing**. Rafters fastened to a ridge board; ridge board must be at least 1 inch thick with a depth not less than the cut end of the rafter or rafters can also be fastened to each other with a gusset plate. *(R802.10)*
14. **Roof rafters** when used for a 20' wide gable roof building width, Roof Live load = 20 psf, ceiling attached to rafters, deflection L/240: shall be a minimum of 2" by 6", No. 2 grade SPF lumber, rafter spacing 16" o.c.. *(Table R802.5.1(2)) Refer to this table for requirements of other sizes, other spans and other spacing requirements.* Collar ties or rafter ties required (4' o.c. in upper third of attic).
15. **Spans for ceiling joists** shall be in accordance with *Tables R802.4 (2) and R802.5 (1).* The span of each rafter shall be measured along the horizontal projection of the rafter. In this 20' wide gable roof building plan, uninhabitable attic with limited storage, live load = 20 psf, deflection of L/240, dead load = 10 psf: requires 16" o.c. spacing, Southern pine No.2, using 2" by 10" ceiling joist could span to 20'-9" max. (Note: Douglas-Fir-Larch, No. 2, 2 x 10, spacing 16" o.c., limited to 19'-10" span.
16. **Roof Sheathing requirements**. Asphalt shingles shall be fastened to solidly sheathed roof decks. (R905.2.1) Minimum thickness of lumber roof sheathing for rafter spacing of 24 inches or less is 5/8" *(Table R803.1)*
17. **Ventilation Requirements.** Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. Ventilated openings shall be provided with corrosion-resistant wire mesh, with 1/8" minimum to ¼ inch maximum openings. *(R806.1)* Minimum net free ventilating area shall not be less than 1/150 of the space ventilated area except that reduction of the total area to 1/300 is permitted, provided that at least 50% and not more than 80% of the required ventilation area is provided by ventilators located in the upper portion at least 3 feet above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents. *(R806.2)* Insulation shall not block the free flow of air. *(R806.3)*
18. **Roof Shingles**. Asphalt shingles shall be installed to comply with the provisions of *Section R905.2*. Provisions address requirements for sheathing, roof slope, underlayment, fasteners and attachments. Asphalt shingles shall be used only on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. **Low slope Roofs**. For roof slopes from (2:12) up to (4:12), **double underlayment application** is required in accordance with *Section R905.2.7*. Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D 225 or D 3462. *(R905.2.4) Wind resistance of asphalt shingles.* Asphalt shingles shall be installed in accordance with *Section R905.2.6.* Shingles classifies using ASTM D 3161 (Class A, D, or F) are acceptable for use in wind zones less than 110 mph. *(R905.2.4.1)* In all cases the minimum number of fasteners must be the number required by the shingle manufacturer. *(R905.2.6)*
19. **Interior finishes**. ½" drywall may be used with 16" o.c. wall stud spacing and/or ceiling joist spacing. 5/8" drywall required for 16" o.c. spacing without adhesive, installed in either direction. *(Table R702.3.5)* Minimum thickness and application of gypsum board. Screws for attaching gypsum board to wood framing shall be Type W or Type S in accordance with ASTM C 1002 and shall penetrate the wood not less than 5/8". *(R702.3.6)*