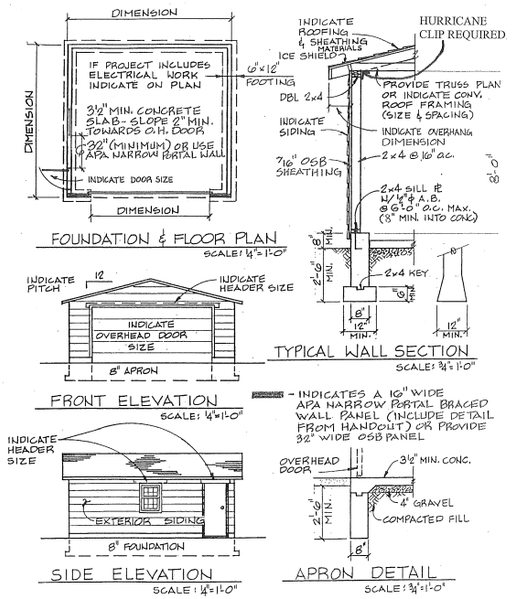
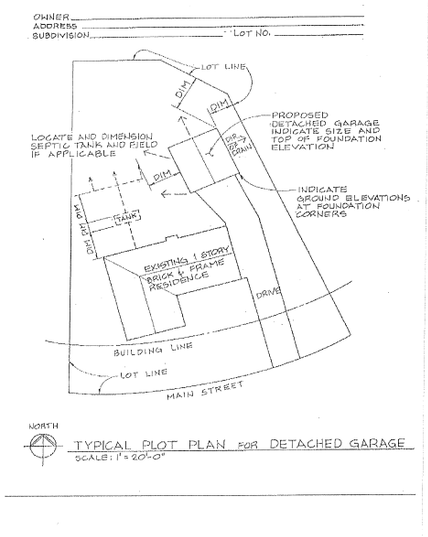




City of Kirkwood—Building Department

139 S. Kirkwood Rd Kirkwood, MO 63122

314-822-5823 www.kirkwoodmo.org

Residential Detached Garage

Building Permit Requirements

This guideline is intended to provide the homeowner/contractor with the basic information needed to apply for a building permit to construct a residential detached garage

Refer to the attached drawings and the following listing of common code requirements pertaining to most detached garages for additional information that needs to be included on the building construction plans.

All detached garages must go before the Architectural Review Board for approval before a permit will be issued.

1. Fill out and sign application for a building permit
2. Fill out, sign, and submit the Architectural Review Board application packet with required information.
3. Submit two (2) copies of a site plan (signed and sealed if required)
4. Submit two (2) complete sets of detailed construction plans drawn to scale containing the following:

- Foundation and Floor plans at ¼" = 1'
- Elevations at ¼" = 1'
- Sections and Details at a minimum of ¾" = 1'

5. Include one of the following in your plan submittal depending on choice of roof framing systems:

- If by conventional method, indicate size and spacing of rafters, ceiling joists, and/or ties, on the sections and details included in the plans submitted.
- If by the "truss" method, submit two (2) copies of the engineer's sealed truss plan that can be obtained from the lumber dealer or the "truss" fabricator.

6. A licensed electrical contractor must perform all electrical work in accordance with the City of Kirkwood Codes and Ordinances.

Footings:

Six inches (6") thick x twelve inches (12") minimum width with key, bottom of footing minimum thirty inches (30") below finish grade.

Foundation Walls:

Eight inches (8") minimum width, minimum eight inches (8") above finish grade (Note: foundation wall/footing may be a single pour if wall is flared at bottom to the required footing bearing width and thickness).

Sill Plate Anchorage:

Half inch (1/2") diameter anchor bolts, eight inches (8") minimum embedment, eight foot (8') maximum on center spacing and at ends/ corners with 1 ½" diameter washers and nuts. Minimum two (2) bolts per plate regardless of length.

Exterior Wall Framing:

- 2x4 studs sixteen inches (16") on center or (2x6 at 24 inches on center maximum)

2x4 bottom plate and two (2) 2x4 top plate (2x6 plates with 2x6 studs)

Roof Framing:

Roof framing shall be designed to support the following minimum Live and Dead loads:

Top chord or roof rafters – L.L. 20 lb. per sq. ft.

Bottom chord or ceiling joists – D.L. 10 lb. per sq. ft.

Bottom chord or ceiling joists – L.L. 20 lb. per sq. ft. (to be applied when the attic space or area above the bottom chord/ ceiling joists has a clear height of 42 inches or greater)

Exception: The bottom chord/ceiling joist 20 lb. L.L. design criteria may be deleted for garage attics accessible only through 22"x30" size attic access opening in the drywall ceiling of the garage area.

Wall and Roof Sheathing:

Wall Sheathing: Half-inch (1/2") intermediate grade sheathing or equal, ICC-ES approved, nailed with 1 ½" galvanized roofing nails, or 6d common nails (location – 3 inches on center along edge, 6 inches on center intermediate)

Roof Sheathing: Where trusses or rafters are spaced 24 inches on center roof panel sheathing shall be a minimum of ½" thick without edge support. Edge support shall be tongue-and-groove edges, panel edge clips (at mid-point between each support) or 2x lumber blocking.

Garage Floor Slab:

Minimum thickness of concrete floor slabs supported directly on the ground is 3 ½". The slab shall be placed over a minimum 4" base course of gravel or crushed stone.

Roofing Underlayment and Covering:

- All underlayment to be a minimum of No. 15 asphalt felt
- Corrosion-resistant metal flashing is required at all roof intersections, roof and wall intersections. Rolled roofing or two layers of No. 15 asphalt felt underlayment may be substituted for flashing at the roof valley provided the shingles are interlaced.
- The underlayment shall be installed to extend at least 18 inches beyond a roof valley or hip from either direction.
- Asphalt roll roofing installed on roofs of less than 3:12 slope shall be applied parallel to the eaves. It shall not be installed on roof slopes below 1:12. A single layer of underlayment is required when less than 4:12.
- Asphalt and fiberglass shingles shall be laid with a single-layer of No. 15 asphalt felt underlayment applied in shingle fashion over the entire roof. Asphalt shingles shall not be installed on roof slopes below two units vertical in twelve units horizontal (2:12)
- An ice shield under the shingles/roofing is required of two layers of No. 15 asphalt felt underlayment cemented together or of an approved waterproofing membrane from the edge of the eave to at least 24 inches inside the exterior wall line where a) the roof slope is greater than or equal to 4:12 and the eave overhang does not exceed twelve inches (12") and b) the roof slope is less than 4:12 and greater than or equal to 2:12.

Siding:

Owner's choice of finish weather-resistant siding is eligible to use.

Egress Door:

A 32 inch to 48 inch wide hinged man door is required if the overhead door (s) exceed 10 feet in width

Electrical:

- Receptacles (when proposed) must be on ground fault circuit
- The preceding requirements apply to most garage additions; however, the plan reviewer may determine that unusual circumstances dictate the need for additional information on any particular project.

Garage Bracing Guideline for One and Two Family Dwellings or Townhouses:

The plans for a garage do not have to identify the brace wall line locations and identify the percentage of braced wall panels with respect to a braced wall line if all of the following criteria are met:

1. The building addition exterior walls are sheathed with 7/16" or thicker wood structural panels (plywood or OSB). The wood structural panels shall be applied to all new exterior walls, gable ends, and band boards. All vertical joints between panels shall be blocked. Horizontal joints between panels on detached garage may remain unblocked.
2. Braced wall panels are located in every exterior braced wall line in accordance with the following criteria:

- The edge of the first braced wall panel meeting the width established in the table below is located 12'-6" or less from each end of the braced wall line. *Exception: The edge of the first braced wall panel may be located more than 12'-6" and up to 20'-0" from the end of the braced wall line if the collector system "Panel Offset" criteria on page 9 of Appendix A, One and Two Family Wind Bracing Guidelines is adhered to and detailed on the construction documents or when an Engineer or Architect provides calculations and details for an alternate collector system.*
- The centerline spacing of braced wall panels in a braced wall line may not exceed 25'

3. Braced wall panel locations are shown on the floor plans or the elevation views and meet the widths established in the following table:

		8' wall height	9'wall height	10' wall	12' wall
Plywood/	3:1	32"	36"	40"	48"
APA Narrow	6:1	16" [d]	18" [d]	20" [d]	24" [d]

[a] Linear interpolation is permitted

[b] Wall height is the vertical distance from the bottom of the sole/sill plate to the top of the double top plate. An additional 2" variation in height is allowed for precut stud framing.

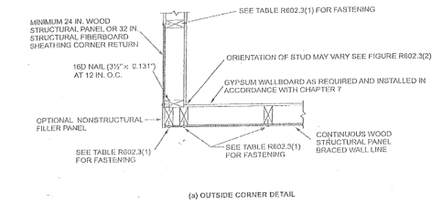
[c] The APA Narrow-Wall Panel, if applicable, shall be constructed in accordance with Figure 3. The designer shall provide this detail on the construction documents.

[d] This APA Narrow Portal wall width assumes the beam is placed under the top plate of the wall. One may compute the required width based in a 6:1 height to width ratio for a top of beam height located lower in the wall (i.e.: 20" Portal Wall can be used when the top of beam is at 10'-0" in a 12'-0" tall wall.

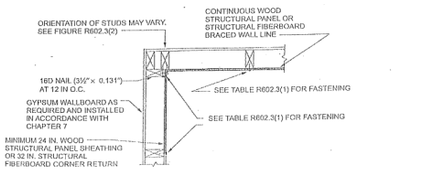
4. The exterior wall corners shall be constructed in accordance with Figures 1 and 2. The designer shall provide these details on the construction documents.
5. When the perpendicular distance between the exterior braced wall lines exceeds 50', an interior wall fully sheathed with 7/16" wood structural panels (plywood or OSB) must be provided or a Design Professional (Engineer or Architect registered in the State of Missouri) shall include the following certification on the drawings:

- The interior and exterior wall configuration braces the structure in accordance with or equivalent to the lateral bracing provisions of Section R602.10 of the 2009 edition of the IRC or Section 2305 of the 2009 edition of the IBC

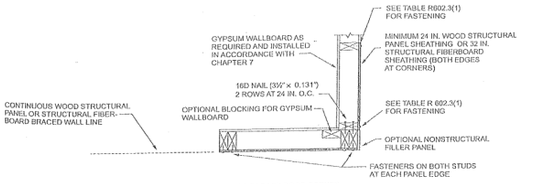
6. Wall height may not exceed 12' (12'-2" actual). Walls greater than 12' shall be designed and detailed by the Design Professional to resist wind loads in both the longitudinal and transverse directions.



(a) OUTSIDE CORNER DETAIL



(b) INSIDE CORNER DETAIL



(c) GARAGE DOOR CORNER

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

FIGURE R602.10.4.4(1)
TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING

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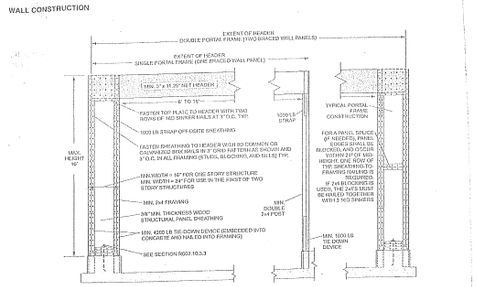
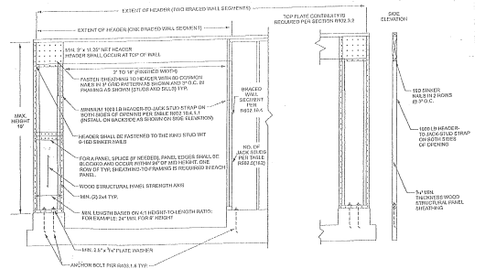


For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

FIGURE R602.10.3.3
METHOD PFH: PORTAL FRAME WITH HOLD-DOWNS



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

FIGURE R602.10.3.4
METHOD PFG PORTAL FRAME AT GARAGE DOOR OPENINGS IN SEISMIC DESIGN CATEGORIES A, B AND C

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