

Residential Plan Review for New One and Two Family Dwellings

Planning and Development Services Department

www.opkansas.org

The following is a list of items that are normally included in a set of construction drawings for one- and two- family dwellings.

All plans are required to be submitted electronically as a PDF file at the time of permit application. The construction documents shall include plot plans. The construction documents shall be as follows:

- Minimum plan size: 18" x 24"
- Drawn to scale: floor plans minimum 1/4 inch scale; elevations minimum 1/8 inch scale
- Plans shall be sealed by a licensed Kansas architect or engineer

Requirements for plot plan submittal can be found at the link below, or at the Permit Services desk in City Hall. [Guidelines for Plot Plan Requirements for New One and Two Family Dwellings](#)

GENERAL

1. Provide a note on the construction documents stating that plans were designed and reviewed in accordance with the 2018 IRC as adopted by the City of Overland Park.
2. Plans shall provide exterior elevations of each side of the building. The elevation drawings shall be coordinated with the plot plan for walk-out conditions, windows, and locations where minimum low opening heights are required.
3. Plans shall show a floor plan of each floor with dimensions and the use of each room or area. The floor plans shall be coordinated with the plot plan for walk-out conditions and window locations.
4. Plans shall indicate the height of all ceilings.
5. Plans shall indicate the total square footage of each floor level including the basement, garages, covered porches and balconies.
6. Plans shall indicate the location of the building furnace and water heater.
7. Plans shall include a note that all exterior doors, including the door leading from the garage to the dwelling unit, are to incorporate the physical security provisions of Section 16.110.R328 of the Overland Park Municipal Code (OPMC).
8. Plans shall indicate that the dwelling will comply with the following applicable load conditions:

| Use | Minimum Dead Load, psf | Minimum Live Load, psf |
|--|------------------------|------------------------|
| Uninhabitable attics without storage | 10 | 10 |
| Uninhabitable attics with storage | 10 | 20 |
| Habitable attics and attics served with fixed stairs | 10 | 30 |
| Balconies (exterior) and decks | 10 | 40 |
| Rooms other than sleeping room | 10 | 40 |
| Sleeping rooms | 10 | 30 |
| Stairs | 10 | 40 |
| Roof - light roof covering | 10 | 20 |
| Roof - heavy roof covering (concrete/tile/slate) | 20 | 20 |

The actual weight shall be used. Numbers provided are a basic guideline.

FOUNDATION

9. The plan shall note that the foundation design is in compliance with one of the following standards:

- Johnson County Residential Foundation Guideline
- Chapter 4 of the 2018 IRC
- ACI 318
- ACI 332

Plans submitted in accordance with ACI 318 shall include the structural analysis as well as the construction details.

10. Include a note on the plot plan that 6 inches of clearance is required from the finished grade to the sill plate of the structure.
11. Provide sufficient grade incline away from the foundation of any building. The grade shall fall a minimum of 6 inches within the first 10 feet (5% grade). Please provide this note on the plot plan.
12. The plan shall indicate that footings shall extend below the frost line. A minimum depth of 36 inches below grade is required in Overland Park, Kansas.
13. The plan shall note the minimum size of footings. Continuous basement footing details shall show a minimum of two #4 bars, uniformly spaced, located a minimum 3 inches clear from the bottom of the footing (OPMC, Section 16.110.R401.2.2).

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15. The plan shall indicate the location, size and construction details for column pads and interior footings. Loads imposed on column pads shall be shown on the plans in kips. Loads imposed on interior footings shall be shown on the plans in pounds per lineal foot.
16. The plan shall note and detail the location of all foundation wall reinforcement.
17. The plan shall note that interior footings of load bearing walls and columns shall be isolated from the basement floor slab.
18. The plan shall note that anchor bolts shall not be spaced more than 3 feet O.C. (on center) and be embedded into the concrete a minimum of 7 inches.
19. Braced wall panels having hold-down devices that are anchored into the foundation, shall be detailed on the foundation plan. The foundation plan shall identify the type of device and dimension the location of each anchor.
20. Plans having foundations designed in accordance with the Johnson County Foundation Guideline shall indicate the location of all return walls. Additionally, all construction details for such walls shall be provided on the foundation plan.
21. The plan shall provide construction details for all floor slabs which are supported by fill material which exceeds 24 inches of granular fill or 8 inches of earth. Where applicable, garage floor slabs and certain over-excavated situations may be constructed in accordance with Johnson County Residential Foundation Guidelines (applicable notes and details shall be provided).
22. The plan shall provide construction details for openings in foundation walls. Foundation window wells for emergency means of egress and rescue shall provide a minimum horizontal opening of 3 feet, and a total area of at least 9 square feet (2018 IRC R310.2).

STAIRWAYS

23. Indicate on the plan that the maximum riser height of stairways shall not exceed 7 3/4 inches and the treads shall provide a minimum tread depth of 10 inches (2018 IRC R311.7.5).

EMERGENCY EGRESS AND RESCUE

24. The plan shall note the location of the emergency egress and rescue window in each bedroom. A note or detail shall be provided which indicates that the emergency egress window shall have a minimum openable area of 5.7 square feet with a minimum clear opening height of 24 inches and a width of 20 inches. The sill height of the window shall not exceed 44 inches above the floor.

FRAMING

25. The plan shall identify all load bearing walls. Load paths must be identified from roof to foundation. Include the locations and designs for connections that transfer loads from structural element to structural element. Interior truss loads shall be indicated on the plans. Indicate the load on bearing walls in pounds per lineal foot and indicate point loads in kips.

26. Wood framed walls exceeding the prescriptive height allowances in IRC Table R602.3(5) and Section R602.3.1 will require an engineered design to be submitted. Deflection calculations shall be submitted for walls taller than 18 feet.
27. The plan shall denote the size, span, spacing and grade of all floor joists, ceiling joists, purlins and roof rafters.
28. If I-joist construction is used, a layout plan specifying the type and size of I-joist shall be submitted for review.
29. Where floor or roof trusses are used, truss designs and layout plans shall be submitted bearing the seal of a licensed Kansas Design Professional. Deferred submittals are allowed, but must be submitted prior to installation.
30. If I-joists or trusses are used, the Design Profession who designed the structure shall submit confirmation that the plans for the installation of the I-joists or trusses are compatible with the structural design.
31. Floor assemblies shall be minimally protected from fire on the underneath side of the floor truss with 1/2 inch sheet rock or 5/8 inch wood structural panels (2018 IRC R302.13).
32. The plan shall denote the size, span, and materials used for all beams, hip rafters, and valley rafters. Loads imposed on these structural members shall be provided. Point loads shall be shown in kips. Uniform loading shall be in pounds per lineal foot.
33. Column size, location and materials identification for determining code compliance must be shown on the plans. The loads on columns shall be indicated in kips.
34. The plan shall identify the location of interior and exterior braced wall lines. The type, size and location of individually braced wall panels shall be identified. Construction details for each braced wall panel type shall be provided (2018 IRC Section R602.10).
35. The plan shall show a fastener schedule for structural members. The schedule shall include fasteners that are commonly used in nail guns. See ICC ES Report 1539.

ENERGY REQUIREMENTS

36. Plans must indicate how energy compliance is being achieved by including a table of all the insulation and fenestration values of the dwelling. There are 5 methods of meeting energy compliance:
 - Prescriptive - see item 40 and Table N1112.1 below, for climate zone 4.
 - Total UA Alternative - see Section N1102.1.5 (R402.1.5) of the 2018 IRC.
 - Simulated Performance Alternative (a.k.a. Performance) - can be calculated or found using Compliance Software such as "Rescheck". See item 41 below.
 - Energy Rating Index - see Section N1106 (R406) of the 2018 IRC.
 - Local Prescriptive Path - see item 40 and Table N1112.1 below, for the City of Overland Park.
37. Prescriptive Method: The plans shall note that the dwelling must meet or exceed the minimum requirements of 2018 IRC Table N1112.1.

TABLE N112.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a
CLIMATE ZONE 4

| FENESTRATION U-FACTOR ^b | SKYLIGHT ^b U-FACTOR | GLAZED FENESTRATION SHGC ^b | CEILING R-VALUE | WOOD FRAME WALL R-VALUE | MASS WALL R-VALUE | FLOOR R-VALUE | BASEMENT WALL R-VALUE | SLAB ^d R-VALUE & DEPTH | CRAWL SPACE ^e WALL R-VALUE |
|------------------------------------|--------------------------------|---------------------------------------|-----------------|---------------------------|-------------------|---------------|-----------------------|-----------------------------------|---------------------------------------|
| 0.32 | 0.55 | 0.40 | 49* | 20 or 13 + 5 ^h | 8 / 13 | 19 | 10 / 13 | 10, 2 ft | 10 / 13 |

LOCAL PRESCRIPTIVE REQUIREMENTS BY COMPONENT
CITY OF OVERLAND PARK

| | | | | | | | | | |
|------|------|------|-----|----|--------|----|-------------------------------|----------|---------|
| 0.34 | 0.55 | 0.31 | 49* | 13 | 8 / 13 | 30 | R-10/11. 3ft Below Grade Line | 10, 2 ft | 10 / 13 |
|------|------|------|-----|----|--------|----|-------------------------------|----------|---------|

Notes:

* Ceiling insulation can be reduced to R-38 where the uncompressed insulation extends over the wall top plate at the eaves – N1102.2.1

Ducts: In the Attic: minimum R-8 for ducts 3 inches in diameter and larger, minimum R-6 for ducts smaller than 3 inches. Ducts in all other areas of the building shall be insulated with not less than R-6 for ducts 3 inches in diameter and not less than R-4.2 for ducts smaller than 3 inches. (2018 IRC, N1103.3.1)

Mechanical system piping capable of carrying fluids greater than 105 degrees F, or less than 55 degrees F – R-3 minimum

Hot water piping – R-3 minimum

- a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- c. "10 / 13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement walls.
- d. R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.
- e. The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, "13 + 5" means R-13 cavity insulation plus R-5 continuous insulation.
- f. Mass walls shall be in accordance with Section N1102.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

38. Provide a note on the plans that the building thermal envelope is required to be sealed (2018 IRC Section N1102.4.1 and Table N1102.4.1.1).
39. Provide a note on the plans that ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed (2018 IRC Section N1103.3.2).
40. Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies (2018 IRC Section N1103.7). A summary of the Manual J & S design calculations and equipment information shall be submitted as part of the plan submittal (example summary attached below).
41. Indicate the minimum equipment efficiency ratings for any Furnace, Air Conditioner, and Water Heater. (2018 IRC N1103.7)

FIRE FLOW

42. For fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the code officials may utilize NFPA 1142 or the International Wildland Interface Code.

43. For dwellings with a fire-flow area between 0 and 3,600 sq. ft., the dwelling can either have no automatic sprinklers and a minimum available fire flow of 1,000 gallons per minute, or the dwelling can have automatic sprinklers and a minimum available fire flow of 500 gallons per minute.
44. For dwellings with a fire-flow area of 3,601 and greater, the dwelling can either have no automatic sprinklers and a minimum available fire flow based on 2018 IFC Table B105.1(2), or the dwelling can have automatic sprinklers and reduce the fire flow on 2018 IFC Table B105.1(2) by 50 percent.

The City of Overland Park does not warrant the accuracy, completeness, or timeliness of the information contained in this handout. To verify the city requirements please refer to the official version of the Municipal Code.

Project Address _____ Model _____

Building Orientation: _____ Total Condition Floor Area: _____ # of Bedrooms: _____
(Front Door) (Sq. Ft.)

Mechanical Contractor: _____ *Johnson County License # _____

*A contractor license is not required if the information is being submitted by a design professional registered in the State of Kansas.

Contact Name: _____

Phone # _____ Email: _____

(Example) Summary of Manual J and S Design Information

| Design | | Performance Equipment Capacity | |
|--|---|--|--|
| Winter Design Conditions | | | |
| Outdoor °F | -1° (minimum) | Heating Equipment Manufacturer | |
| Indoor °F | 72° (maximum) | Heating Equipment Model Number: | |
| Total Calculated Heat Loss | | Output BTUH at design conditions: (≤ 140%) | |
| Summer Design Conditions | | | |
| Outdoor °F | 93° (maximum) | Cooling Equipment Manufacturer | |
| Indoor °F | 75° (minimum) | Outdoor Unit Model Number: | |
| Entering WB | | Total Cooling Capacity (≤ 115%) | |
| Total Heat Gain | | Sensible Cooling Capacity (≈Heat Gain) | |
| Sensible Heat Gain | | Latent Cooling Capacity (≈Heat Gain) | |
| Latent Heat Gain | | Indoor Unit Model Number: | |
| Sensible Heat Ratio (SHR) | | Indoor Blower CFM (CFM used to determine capacity in manufacturer's performance data): | |
| Design Air Flow <ul style="list-style-type: none"> See example below. Airflow should be at unit's MEDIUM fan speed | | Btuh Difference between Heat Pump Balance Point and Total Heat Loss | |
| | | Auxiliary Heat (Circle): Electric Gas Oil | |
| SHR= $\frac{\text{Sensible Heat Gain}}{\text{Total Heat Gain}}$ | Sensible Heat Ratio versus Temperature Design Value | | |
| | SHR | Recommended Temp. Design | |
| | | | |
| | | | |
| From Manual J8 Tables | From Manual 18 Load Calculation | From Equipment Performance Data | |