Residential Guidelines

New Buildings
Plan Requirements (Minimum)

The following information is provided as general guidelines and information for single family dwelling design. This list is not all inclusive of all requirements of construction and zoning codes.

SUBMIT UNIFORM SIZED, DIMENSIONED, LEGIBLE PLANS

Plans must include the following:

Plot Plan – Scale not required

A. Show entire parcel, property lines dimensioned and street(s) labeled.
B. Location of all structures including decks, porches etc. with dimensions to lot lines (setbacks).
C. Label or cross hatch proposed new structures and/or additions.
D. Show utility easements where applicable.
E. Show Minimum Protection Elevations (MPE) –or- flood plain limits and elevations as applicable.

Note: MPE forms are available on the City website.
Note: FEMA As-Built Elevation Certificates are required if floodplain encroaches onto lot.
Note: Any changes to a structure such as mirroring, change in footprint, addition of a porch over deck etc. shall be reflected and re-submitted with revised construction drawings and revised site plans.

Erosion Control

A. Show types and where located on site plan.
B. Provide COSESCO documentation.

Note: Erosion control measures shall be installed at the time of permit application submittal. Permit application review will not commence until compliant controls are in place.

Energy & Mechanical Information

A. Provide energy calculations proving compliance. Minimum insulations values (R&U) and window fenestration ratings etc. shall be in accordance with the International Energy Conservation Code as currently adopted and amended by the Iowa State Building Code Bureau. Certified 'Raters' are often used to provide this information. Prescriptive elements as follows:
   1) Exterior walls:
      a. R-13 cavity insulation and R-5 continuous foam or
      b. R-20 cavity insulation
   2) Basement walls (install no vapor retarder or vapor barrier on 2 x 6 below grade framed walls)
      a. R-15 continuous insulation on either the inside or outside of walls, or
      b. R-19 cavity insulation for the interior side frame walls, or (no vapor retarder or vapor barrier on below grade framed walls)
      c. R-13 cavity insulation for the interior side frame walls and R-5 continuous insulation either inside or outside against the concrete foundation wall.
   3) Attic/Ceiling: Min R49
   4) Windows: .32 U-Factor (max)
B. Mechanical contractor or HERS Rater must provide documentation of Manuals 'D' (duct sizing) & 'J' (equipment sizing) and provide duct drawings reflecting compliance with Manual 'D'.
C. All dwellings require a blower door test confirming leakage and any dwelling with ducts outside the thermal envelope will require a duct blast test to confirm duct tightness.

Foundation Plan – Scaled ¼" = one (1) foot

A. Fully dimensioned two line drawings – show all foundations, stem walls, piers, interior and exterior, fireplace and columns.
B. Wood Floor – with crawl space or basement.
    1. Stem wall with footing locations. Basement foundation walls.
    2. Piers with footing locations. Including deck piers.
    3. Location, size and spacing of anchor bolts.
    4. Crawl space – min. 18" x 24" access door and foundation vents @ 1sq. ft. per 150 sq. ft. or artificial ventilation, min, 1 ½" lightweight concrete floor or pea rock covering over 6 mil visqueen (with sealed joints/seams), min. 18" between bottom of joists and crawlspace floor or provide fully pressure treated floor system including subfloor, insulation as applicable.
    Note: Floor framing may be a separate drawing. For a manufactured truss joist system provide an engineered floor framing plan or have plans available on job site.
    5. Girder size and direction, indicate length of span(s).
    6. Load bearing members, direction, size and labeled. Show concentrated load bearing points.
    7. Floor joist size(s), spacing and direction.
    8. Blocking locations.
    9. Beam pocket: ½" air space. Girder bearing on steel plate and anchored.
    10. Under floor appliance location(s). Furnace, water heater etc.
    11. Framing of exterior decks.
    12. Wood in contact with concrete shall be pressure treated.
    13. Foundation shall extend a minimum of 6" above grade for earth/wood separation.
    14. Foundation shall extend a minimum of 42" below grade for frost protection.
    15. 2" minimum clearance from framing to masonry fireplace and chimney.
C. Slab Floor – type of compacted sub-base, 4" minimum.
    1. Stem wall with footing locations.
    2. Interior bearing wall, post and column footing(s) location and sized.
    3. Nominal 4" concrete floor.
D. Foundation/Site Drainage
    1. Size and location of drainage tile.
    2. Location of sump pit.
    3. The grade away from foundation walls shall fall a minimum of 6 inches within the first ten feet.

Floor Plan – Each floor including basements, scaled ¼" – one (1) foot.

B. Fully dimensioned two-line drawings (show walls, posts etc.)
C. Wall section showing type of construction from foundation through roof, weather resistive barrier required.
D. Minimum insulations values (R&U) and window fenestration ratings etc. shall be in accordance with the International Energy Conservation Code as currently adopted and amended by the Iowa State Building Code Bureau.
E. Door and window locations, include schedule:
    1. One 3068 exit door at main floor.
    2. Safety Glass – impact areas:
        a. tub and shower enclosures
        b. within 24" of doors
        c. greater than 9 sq. ft. and within 18" of floor
        d. at stair landing if within 5' vertically and horizontally
        e. window openings more than 72" above grade outside and less than 24" above the floor inside shall not open more than 4".
    3. Natural light and ventilation – provide minimum 8% of room floor area for light and minimum 4% openable area for ventilation. Bathrooms containing a tub or shower shall be provided with mechanical ventilation to the exterior of the building at a minimum rate of 50 cfm for intermittent ventilation or 20 cfm for continuous ventilation. Artificial light and ventilation are acceptable for basements.
F. Emergency egress windows:

1. One per bedroom or any room that could be used as a bedroom.
2. Unfinished basements in new construction shall be provided with a minimum of one.
3. Requirements:
    a. 5.7 sq. ft. openable area (5.0 sq. ft. if sill is not more than 44" from grade).
    b. Minimum openable clear width of 20"
    c. Minimum clear openable height of 24"
    d. Window well as required shall be a minimum of 9 sq. ft. net clear area and 3' in least dimension, and shall be provided with drainage.
    e. Where a window is provided as a means of escape and rescue opening from a basement it shall have a sill height of not more than 44 inches above the floor or landing. Where a landing is provided the landing shall be not less than 36 inches wide, not less than 12 inches out from the exterior wall, and not more than 24 inches in height. The landing shall be permanently affixed to the floor below or the wall under the openable area of the window it serves.
    f. Window openings more than 72" above grade outside and less than 24" above the floor inside shall not open more than 4".

    Note: for egress windows 'f' above is critical

G. Floor framing plans:
    1. Beams and headers, indicate span lengths and size.
    2. Floor joist size, spacing and direction and blocking.
    3. Bearing walls and bearing points shown.
    4. Framing head-outs for stairs, chimneys, etc.

    Note: Floor framing may be a separate drawing. If manufactured truss joist system provided floor framing plan or have available on job site.
H. Enclosed Accessible Space - under stairs protect with ½" drywall
I. Basements – shall be sprinkled or protected with drywall

    Note: Beginning January 1, 2018, basement ceilings shall be sprinkled or provided with ½" sheetrock throughout.

    Exception: 80 square feet of area may be unprotected so long as fire-blocking is installed along the perimeter of the unprotected portion.
J. 22" x 30" attic access located in a clear floor space area (30" clear headroom min.)
K. Interior stairs and balconies: 36" minimum width, guardrails at 36" minimum height and maximum baluster spacing of 4" at open sides of stairs, handrails at 34" – 38" above stair nosing's on stairs with 4 or more risers, minimum headroom of 6'8", consistent height steps not to exceed 7 3/4" in height (exception: at the top or bottom of stair only – riser height may deviate by a maximum of 1") in no case may the riser(s) exceed the maximum height of 7-3/4" with a minimum exposed tread run of 10", open risers are permitted with a maximum opening between treads of 4".
L. Exterior stairs, decks and balconies: See requirements for interior stairs.

Note: secondary door(s) shall have a landing/deck no more than 7-3/4" lower than floor inside if more than four risers are required outside

M. Plumbing and mechanical chase walls should be nominal 6" or as dictated by mechanical systems.
N. Smoke alarm listed in accordance with UL 217; locations for new construction: one in each sleeping room, outside of and within ten feet from the center of each bedroom(s) door frame and one on each floor level including basements. Alarms shall be interconnected (hardwired) and provided with battery backup -or- physical interconnection shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.
    1. Ionization smoke alarm shall not be installed less than 20' horizontally from a permanently installed cooking appliance.
    2. Ionization smoke alarm with an alarm silencing switch shall not be installed less than 10' horizontally from a permanently installed cooking appliance.
    3. Photoelectric smoke alarms and smoke alarms listed and marked "helps reduce cooking nuisance alarms" shall not be installed less than 6' horizontally from a permanently installed cooking appliance.

4. Battery-powered smoke alarms must be powered by a non-removable, non-replaceable battery that powers the alarm for at least 10 years.

O. Smoke alarm locations for alterations and repairs and/or when a new sleeping room is added: shall be installed as referenced above for new construction.

P. Carbon monoxide alarms listed in accordance with UL 2034 for new construction and alterations and additions shall be installed outside of each separate sleeping area within ten feet from the center of each bedroom(s) door frame.

Q. Combination smoke and carbon monoxide alarms shall be permitted to be installed in lieu of smoke alarms. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 217 and UL 2034.

R. Wood stove, fireplaces:
   1. type of floor and wall finishes
   2. clearances and hearth dimensioned
   3. provide manufacturer's specs

Elevations – scale ¼" = one (1) foot (front, rear and side drawings)

A. Two dimensional drawings. Outside view showing finished structure.
B. Door and window sizes and locations. Safety glass where required.
C. Type of siding and wall covering. Flashing – roof/wall.
D. Wall bracing – show location.
   Note: for narrow wall bracing provide detailed section including anchoring details
E. Dimension eaves, overhangs.
F. Roof/attic ventilation: gable end, soffit and ridge, turbine type. Ventilate at 1 sq, ft. per 150 sq. ft. of attic floor space. High and low venting at 1 sq. ft. per 300 sq. ft. attic floor space.
G. Chimney:
   1. Type of construction, flashing at roof, saddles or crickets.
   2. Dimension height above ridge.
   3. Spark arrestor.
   4. Wood burners shall be a minimum of 2' above any part of the roof within 10, horizontally and at least 3' above the roof where penetrating the roof.
H. Decks, porches etc.
   1. 30" or more above grade shall have vertical guardrails 36" high minimum with baluster spacing not to exceed 4"
   2. Footings, post and beam sizes shall be labeled.
   3. Steps to grade with handrails if 4 or more risers.
   4. Slabs shall extend a minimum of 6" above grade.

Note: secondary door(s) shall have a landing/deck no more than 7-3/4" lower than floor inside if more than four risers are required outside

I. Dimension height of building(s) at all sides.

Roof Framing Plan scale – ¼" = one (1) foot

A. 33 psf minimum roof snow load
B. Load bearing beams and headers. Indicate size and span.
C. Post locations and supporting beams. Show size, location and span.
D. Rafter sizes, direction and spacing.
E. Ceiling joist sizes, direction and spacing.
F. Truss rafter plans (engineered), **engineered plans shall be available on job site.**
G. Ridge, valley and hip sizes to be labeled and dimensioned.
H. Show blocking and bracing locations.
I. Show covered deck and/or porch framing.

Cross Section scale – ¼" = one (1) foot

A. Make visible all construction elements.
B. Show rough construction elements: Anchor bolts, ½" x 10" at 6' max spacing, within 12" of ends of boards and a minimum of two anchor bolts per board.
    1. Footing and stem walls.
    2. Girders and joists, size, spacing and blocking: or slab with fill.
    3. Studs – size and spacing.
    4. Floor and roof sheathing, type and size:
    5. confirm panel span rating: floor/roof
    6. Rafter size and spacing. **If engineered roof system, plans shall be available on job site.**
    7. Roof blocking, rafter tie downs etc.
    8. Girders, ridges and beams, size and spans.
    9. Insulation package – energy compliance.
    10. Anchorage systems for masonry, size and spacing etc.
    11. Braced wall lines – sheathing, let-in etc.
C. Describe all finish elements:
    1. Drywall or interior wall and ceiling finishes.
        Note: Beginning January 1, 2018, basements shall be sprinklered or ceilings shall be provided with ½" sheetrock throughout.
        Exception: 80 square feet of area may be unprotected so long as fireblocking is installed along the perimeter of the unprotected portion.
    2. Weather resistive barrier – over all framing elements including un-inhabited spaces – 15# felt, house-wrap etc.
    3. Approved exterior sidings.
    4. Floor Finishes.
D. Dimensions
    1. Ceiling heights.
    2. Door sizes
    3. Window sizes and type(s)
    4. Maximum sill height for egress windows.
    5. Under floor clearance.
    6. Minimum earth/wood separation.
    7. Footing depth below grade – minimum 42" below grade as established within 5' of the foundation.
E. Roof overhang and attic space:
    1. Fascia material, drip edge required.
    2. Show overhangs and dimensions.
    3. Soffit – construction – ventilated?
    4. Roof eaves shall be provided with ice protection to a minimum of 24" inside the exterior wall line.
    5. Type of roofing materials – shingles, shakes, tile etc.
F. Stair information and details:
    1. Maximum riser height of 7 3/4"
    2. Minimum run of 10"
    3. Minimum headroom of 6'8"
    4. Handrail(s) at 34" to 38" above tread nosings
    5. Guardrail baluster spacing maximum 4", minimum height of 36" (42" minimum height if serving more than one dwelling unit)

Details – scale ½" = one (1) foot or larger

A. Footings, stem walls, foundation walls and piers – materials, sizes, rebar (horizontal and vertical), depth below grade, anchor bolts.
B. Special details – connections of structural elements, plate connections, beam to joist etc.
    Note: for narrow wall bracing provide detailed section(s) including anchoring details
C. Masonry fireplace – plan and section, footing, block, rebar, lintel, firebox, hearth and chimney. Show 2" minimum clearance to combustibles.