The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinance of the jurisdiction shall not be valid. ***The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The building official is also authorized to prevent the occupancy or use of a structure when in violation of this code or of any other ordinances of this jurisdiction. (R105.4)***

2012 IRC - RESIDENTIAL PLAN REQUIREMENTS CHECKLIST AND CODE SUMMARY

2012 International Residential Code (IRC) – Chapters 1-10 and 15 only,
2012 International Mechanical Code (IMC), Uniform Plumbing Code (UPC),
2014 National Electrical code (NEC), 2012 International Energy Conservation Code (IECC) and as amended by the state of Montana Administrative Rules (ARM) - http://bsd.dli.mt.gov/bc/rules.asp

See the blue "Residential Plan Submittal Requirements" for plan content requirements.

DATE: _____ **LOG #** _____

OWNER: _____

PROJECT ADDRESS: _____
Permanent numbers a minimum 4" high and minimum stroke width of 1/2" on contrasting background shall be posted where visible from street. (R319)

PROJECT DESCRIPTION: _____

THIS DOCUMENT, WHEN COMPLETED AND RETURNED WITH THE "PERMIT" SET OF PLANS, SHALL REMAIN ON THE JOB SITE UNTIL FINAL OCCUPANCY IS GRANTED.

ACTION REQUIRED: (To be completed by Building Division Staff) **PLANS EXAMINER:**

	The plans as drawn substantially comply with code requirements and project is ready for permitting.
	Items marked with "**0**" shall be signed for by the owner and/or contractor with the stipulation that minor deficiencies will be corrected in the field curing the course of construction. See page 19 for additional comments and requirements related to this project.
	Items marked with "**X**" shall be corrected and resubmitted. Deficiencies shall be corrected on the plans and three (3) sets resubmitted for further review and approval. Supplemental information may be resubmitted to clarify the required corrections.
	Information as submitted is insufficient to begin review. Provide information as listed on the blue "RESIDENTIAL PLAN SUBMITTAL REQUIREMENTS" and information as requested in this check list.

_____ See additional notes and comments on drawings _____ See attached information

REFER TO INSPECTION RECORD CARD FOR ALL REQUIRED INSPECTIONS. DO NOT CONCEAL ANY BUILDING ELEMENTS WITHOUT AN APPROVED INSPECTION.

STRUCTURE MUST RECEIVE AN APPROVED FINAL INSPECTION PRIOR TO MOVING IN AND OCCUPING THE DWELLING.

CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA FOR HELENA, MONTANA - TABLE R301.2(1)

Min. Roof Snow Load	**Basic Wind Speed**	**Topo-graphic effects**	Seismic Design Category	Weathering	Frost line depth	Termite	Winter Design Temp.	Ice Shield Under-layment Required	Flood Hazards	Air Freezing Index	Mean Annual Temp.	IECC Climate Zone
30 psf	**90 mph**	**No**	D_0	Severe	42"	None to Slight	-16°	Yes	See Flood Hazard Map	2,269	43.3°	6

NOTE: The following wording is only a summary of the individual sections and not all sections are listed. The use of

this form is not a substitute for use of the code book. To obtain the exact wording of the code and applicable exceptions, refer to the complete text of the 2012 International Residential Code.

CHANGES: Code provisions that are noted in bold type and within a box are significant items that have been changed between the 2006 edition and 2012 edition of the International Residential Code. Not all changes are noted in this Plan Correction List. Refer to the 2012 International Residential Code specific code language and exceptions that may affect your project.

USE OF THIS FORM: All information requested on this form shall be provided within the construction documents. Where provision is not applicable, indicate with N/A.

◯ ——— ***Provide the requested information and in the space provided, identify the drawing sheet number & detail where the specific code provision (♦) is shown. (◯For City use only)***

CHAPTER 3 - BUILDING PLANNING

◯ ——— ***Contact the City of Helena Engineering Division to identify the nearest fire hydrant and to provide the most current fire flow at that hydrant. Identify on plans. Structure size and available fire flow may require an upgrade to the construction materials or the installation of an automatic sprinkler system.***

SECTION R301 – DESIGN CRITERIA

Section R301.1 - R301.8- Application; Design Criteria; Wind Design Criteria, Seismic Design Criteria – See Table R301.2(1) above for local criteria. See Table R301.5 for live load requirements.

- Where structures are considered as "Irregular Structures" as identified in Section R301.2.2.2.5, the irregular portion of the structure shall be designed in accordance with accepted engineering practice and submitted documents shall be stamped by a Montana licensed Engineer.

SECTION R302 – FIRE-RESISTIVE CONSTRUCTION

Section R302.1 – Exterior Walls and Projections

◯ ——— ***Site plan shall show distances to all property lines and all existing buildings on the same property. Plans shall include all decks, canopies, porches and roof eave projections.***

- Exterior walls less than 5' from property line shall be of one-hour fire-resistive construction. See Table R302.1(1). Provide approved, listed (UL or GA) wall assembly for fire resistive construction.
- Windows are limited to 25% of wall area where located ≥ 3' to < 5' from property line in non-sprinkled dwellings.
- Openings are not permitted where wall is < 3' from property line.
- Where projections extend beyond exterior wall (between 5' and 2' to property line), one-hour fire-resistive protection on the underside of projection is required. Projections may not be closer than 2' to property line.
- Distances above may be reduced if structure has an automatic sprinkler system installed. Table R302.1(2).

Section R302.2 – Townhouse Separation (Connected single family dwellings located on separate lots)

◯ ——— ***Provide detailed wall assembly from foundation to roof deck and parapet where applicable identifying fire-resistive continuity separating townhouse units. Provide fire-resistive assembly number by UL, GA, FM or other approved testing agency.***

- Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies as required for exterior walls in single-family dwelling (two one-hour assemblies). The townhouse units are to be structurally independent. (R302.2.4)
- A common two-hour fire-resistive rated wall, not containing plumbing or mechanical equipment may be used as permitted by ARM 24.301.154(6). Penetrations of receptacles shall comply with Section R302.4.
- The fire resistive assembly shall extend to and be tight against the exterior wall and wall assemblies shall extend to the underside of the roof sheathing. When a floor/ceiling assembly is required to be fire-resistive the supporting construction of the rated assembly shall have an equal or greater fire-resistive rating.
- Parapet shall be provided for townhouses as an extension of exterior walls or common walls. If the roofs are the same height, the common wall shall have a 30" parapet above the roofs. Refer to code text for roofs of different height. The 30" parapet is not required where detailed plans comply with listed exceptions. (R302.2.2) Parapet construction shall comply with Section R302.2.3.

Section R302.3 – Two-family Dwelling Separation (Duplex)

◯ ——— ***Provide detailed wall construction from foundation to roof deck and parapet where applicable and/or floor/ceiling assembly identifying fire-resistive continuity separating dwelling units. Provide fire-resistive assembly number by UL, GA, FM or other approved testing agency.***

- Dwelling units in a two-family structure shall be separated from each other by wall and/or floor/ceiling assemblies of not less than one-hour fire-resistive construction. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies are to extend from the foundation to the underside of the roof sheathing. When a floor/ceiling assembly is required to be fire-resistive the supporting construction of the assembly shall have an equal or greater fire-resistive rating. Wall may stop at ceiling that is protected by 5/8" Type X gypsum board and an attic draftstop is installed along the dwelling unit separation wall and supporting walls of ceiling is protected by minimum ½" gypsum board.

- Penetrations into or through fire-resistance-rated walls or floor/ceiling assemblies shall comply with through- and member-penetration of Section R302.4. Approved penetration firestop system shall be installed as tested in accordance with ASTM E814 or UL 1479.

Section R302.5 – Dwelling/Garage Opening/Penetration Protection

○ ——— ***Provide note on plans indicating door opening protection and required fire separation.***

- Openings between garage and dwelling unit shall be protected by a solid wood core door with a minimum thickness of 1 3/8", solid or honeycomb core steel door not less than 1 3/8" thick or a 20-minute fire-rated door. Openings between garages and sleeping rooms are not permitted. Windows are not permitted.
- **Doors shall be equipped with a self-closing device and shall latch. (R302.5.1)**
- Ducts penetrating walls or ceilings separating the dwelling from the garage shall be of 26 ga. sheet steel and shall have no openings into the garage. (R302.5.2)
- Penetrations shall be protected to resist the passage of flame and products of combustion.

Section R302.6 – Dwelling/Garage Fire Separation (Table R302.6)

○ ——— ***Provide notes on plans indicating material to be used for the required fire separation.***

- The garage shall be separated from the residence and its attic area by not less than ½" gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated with minimum 5/8" Type X gypsum board or equivalent at garage ceiling. Where the dwelling unit and garage separation is a floor/ceiling assembly, the structure supporting the separation shall also be protected by minimum ½" gypsum board or equivalent.
- Detached garages located less than 3' from dwelling unit shall have be protected by minimum ½" gypsum board applied to the interior side of the of the garage exterior wall adjacent to dwelling.

Section R302.7 – Under-stair Protection

○ ——— ***Provide note on plans indicating under-stair protection.***

- Enclosed accessible space under stairs shall be protected on the inside with minimum ½" gypsum board.

Section R302.9 & R302.10 – Flame Spread and Smoke-develop Index – Wall and Ceiling finishes & Insulation

- Wall and ceiling finishes shall have maximum flame-spread rating of not greater than 200 and smoke-develop index of not greater than 450.
- Exposed insulation shall comply with Section R302.10. This applies to insulation material, facing and vapor retarders of walls, floor/ceiling and roof/ceiling assemblies, crawlspace and attics.
- Foam plastic insulation provisions are covered in Section R316.

Section R302.11 and R302.12 – Fireblocking and Draftstopping

○ ——— ***Identify on plans with notes and/or details the location of fireblocking and draftstopping.***

- Fireblocking is required in walls, furred spaces and parallel rows of studs at: ceiling and floor levels and horizontally at not to exceed 10' in furred out spaces; intersections between concealed horizontal and vertical spaces such as soffits and dropped ceilings; at stair stringers at top and bottom of stair runs; around vents, pipes, ducts and other penetrations at ceiling and floor levels; around chimneys and fireplaces and cornices of duplexes in line with dwelling unit separation.
- Fireblocking shall consist of 2" nominal lumber or two thickness of 1" nominal lumber with broken lap joints or one thickness of 23/32" wood structural panels with joints backed by the same or one thickness of ¾" particleboard with joints backed by the same, ½" gypsum board, ¼" cement-based millboard, batt or blankets of mineral wool or glass fiber or **loose-fill cellulose insulation installed as tested for the specific application.** Unfaced fiberglass batt insulation where used as firestopping shall fill the entire cross section of the wall cavity to a minimum of 16" measured vertically. Insulation shall be packed tightly around piping, conduit or similar obstructions. (R302.11.1)
- Draftstopping is require at open-web floor assemblies and where ceilings are suspended below floor framing so area does not to exceed 1,000 sf in area and shall divide the space into approximately equal areas. (R302.12)

SECTION R303 - LIGHT, VENTILATION AND HEATING

○ ——— ***Show window location, sizes and the amount of openable area for each room in tabulated form or on building elevations. (R303.1)***

- All habitable rooms shall have glazed openings with an area equal to 8% of the room's floor area, with a minimum of ½ of that area being openable for ventilation, (4%). Glazed area need not be operable if a whole-house ventilation system is installed.
- Bathrooms and toilet compartments need 3 s.f. of window, 1/2 of which is openable, or a mechanical exhaust system. (R303.3)
- Dwellings shall be tested as having an air leakage rate of not exceeding 4 air changers per hour. See required blower door testing per 2012 International Energy Conservation Code (IECC). Whole-house mechanical ventilation system shall be installed per M1507.3 and IECC R403.5. [R303.4 & ARM 24.301.161(1h)]
- Outdoor intake openings shall be located minimum 10' from any hazardous or noxious contaminants. Exterior openings shall be protected with screens, louvers or grills. (R303.5)

○ ——— ***Indicate stairway illumination and switching. (R303.7)***

- Stairways and their landings shall be illuminated. Exterior stairways shall have light source located at the top landing. Exterior stairways from basements shall be provided with a light at the bottom landing. Light activation shall be controlled at each floor level of interior stairways where there are six (6) or more risers and from inside the dwelling for exterior lights.

◯ _____ ***Indicate type of mechanical / heating system and unit size (Btu/h). (R303.9)***

- Heating system shall be capable of maintaining 68° F at a point 3' above the floor and 2' from exterior walls in all habitable rooms.

SECTION R304 - ROOM SIZES

◯ _____ ***Identify use of each room and provide room dimensions.***

- Every dwelling unit shall have at least one habitable room that shall have not less than 120 sf in area. Other habitable rooms shall be at least 70 sf, except kitchens. (R304.1 & R304.2)
- Habitable rooms, except kitchens, shall have a minimum dimension of at least 7' in any direction. (R304.3)
- Portions of a room with sloping ceiling measuring less than 5' or furred ceilings less than 7' shall not contribute to the minimum required area for that room. (R304.4)

SECTION R305 - CEILING HEIGHT

◯ _____ ***Dimension ceiling heights on building section. Where non-typical, indicate at specific area on plans.***

- All habitable rooms shall have a minimum ceiling height of 7' measured from finished floor to lowest projection from the ceiling. (R305.1) See exceptions where 6'-8" is permitted.
- Not more than 50% of the required floor area can have a sloped ceiling of less than 7', with no portion of the required area having a height less than 5'.

SECTION R306 - SANITATION

◯ _____ ***Indicate on the plans the location of all fixtures including a kitchen sink, toilets, lavatory, bathtub or shower, washer, dryer, dishwasher, hose bibs, water heater, boilers, etc.***

- Every dwelling unit shall be provided with a kitchen sink, toilet, lavatory, and a bathtub or shower. Hot and cold water shall be provided at all fixtures except at toilets where only cold is required. Dwellings shall connect to the City sanitary sewer and water supply. (R306.1 - 4)

SECTION R307 - TOILET, BATH AND SHOWER SPACES

- Fixtures shall be spaced per Figure R307.1. Fixture clearance diagram available upon request.
- Showers and bathtubs with showers shall have walls finished with nonabsorbent surface to a height of not less than 6' above the floor. (R307.2)

SECTION R308 – GLAZING

◯ _____ ***Label each location where safety glazing is required on plans and/or elevations.***

- Tempered/safety glazing used in impact areas must comply with testing requirements of CPSC 16 of CFR, Part 1201 **or ANSI Z97.1.** Each pane shall be labeled by the manufacturer. The use of wire glass is not permitted.
  - **Minimum classification of safety glazing shall comply with Table R308.3.1(1) and R308.3.1(2).**

The following locations shall have safety glazing: (See complete code language for exceptions)

- Glazing in fixed or operable panels of swinging, sliding or bi-fold doors. (R308.4.1)
- Glazing adjacent to doors where the nearest vertical edge is within a 24" arc of the door and whose bottom edge is less than 60" above the floor. Walls with glazing perpendicular to the door, toward which the door swings when open, (behind the door) and within 24" arc shall have safety glazing. (R308.4.2)
- Glazing meeting <u>all</u> the following conditions: exposed area of an individual pane is greater than 9 sf; the bottom edge of the glazing is less than 18" above the floor; the top edge of the glazing is greater than 36" above the floor; there are walking surfaces within 36" horizontally of the glazing. (R308.4.3)
- Glazing in railings regardless of area or height above walking surfaces, including structural baluster panels and nonstructural in-fill panels. (R308.4.4)
- **Glazing in walls, enclosures or fences adjacent to or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor pools where the bottom exposed edge of the glazing is less than 60" measured vertically above any standing walking surface unless the glazing is more than 60" from the water's edge, measured horizontally and in a straight line. (R308.4.5)**
- **Glazing adjacent to stairways, landings between flights of stairs and ramps within 36" horizontally of walking surface when glass is less than 36" above the walking surface. (R308.4.6)**
- Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36" above the landing and within 60" horizontally of the bottom tread. (R308.4.7)

- **Skylight units shall have glazing, screens and curbs as required by Section R308.6 and shall be tested and labeled per Section R308.6.9.**

SECTION R309 - GARAGES / CARPORTS

(See Section R302.5 – Dwelling/Garage Opening/Penetration Protection)

◯ _____ ***Provide note on plans indicating floor material and slope.***

- Carports shall be open on at least two sides. Carports not open on at least two sides shall be considered a garage and shall comply with garage requirements.
- Garage and carport floor surface shall be of noncombustible material and shall slope to an approved drain or toward the main vehicle entry doorway.

SECTION R310 - EMERGENCY ESCAPE AND RESCUE OPENINGS

◯ _____ ***Provide egress window sizes, opening height above finish floor and net clear openable area. Provide window wells where required at below grade egress windows.***

- Basements, **habitable attics** and every sleeping room shall have at least one egress opening to the exterior that is operable from the inside without the use of a key or tool. Egress windows shall have maximum sill height of 44" measured **from the finish floor to the bottom of the clear opening** and a net clear opening area of 5.7 sf, minimum net clear height of 24" with width dimension as required to meet 5.7 sf and minimum net clear width of 20" with height dimension as required to meet 5.7 sf. (R310.1)
- Below grade windows shall be provided with window wells that have a minimum net clear area of 9 sf and a minimum horizontal dimension of 36" and window well size must permit full opening of the egress window. Window wells deeper than 44" shall be provided with steps or ladder. (R310.2)
- Emergency escape windows are permitted under decks or porches provided there is a minimum 36" high clear path to a yard or court. (R310.5)
- See Section R312 for operable windows located more than 6' above grade.

SECTION R311 - MEANS OF EGRESS

◯ _____ ***Identify location of each egress door.***

- Required egress door shall provide egress from the dwelling without having to go through the garage. (R311.1)

Section R311.2 – R311.6 – Doors & Egress Path

- Dwelling units shall have at least one egress door that is side-hinged and 3' wide x 6'-8" high. (R311.2).
- Egress doors are to be openable from the inside without the use of a key, special tool or knowledge. (R311.2)
- There shall be a floor or landing on each side of all exterior door of at least 36" x 36". (R311.3)
- Landing may occur at no more than 1 ½" lower than the top of threshold. Where door does not swing over the lower landing, landing may be a maximum of 7¾" below top of threshold. (R311.3) Landings not required where there are two or fewer risers except at the required egress door. (R311.3.2)
- Habitable attics and basements shall be provided with a stair (R311.7) or ramp (R311.8) if a complying egress door per Section R311.2 is not provided. (R311.4)
- Exterior exit balconies, stairs and similar exit facilities shall be anchored to structure to resist both vertical and lateral forces. Attachment shall not be made by the use of toenailing or nails subject to withdrawal. (R311.5)
- The minimum width of hallways or egress paths shall be at least 36" in clear width. (R311.6)

Section R311.7 - Stairways

◯ _____ ***Provide cross section through stairs with indication of compliance with requirements listed below.***

- Stairways shall have minimum 36" in clear width. (R311.7.1). Minimum headroom is to be 6'-8". (R311.7.2)
- Stairs shall have maximum riser of 8¼" high and the minimum tread of 9" as allowed by State of Montana ARM 24.301.154(9 & 10). Within a flight, all tread and riser dimensions shall be consistent to within ⅜". (R311.7.5)
- Where open risers are used, the maximum opening between treads shall be less than 4". (R311.7.5.1)
- Nosing profile shall comply with Section R311.7.5.3.
- Floor or landing shall be provided at the top and bottom of each stairway. Width of landing shall not be less than stairway served and minimum 36" measured in the direction of travel. Landings are not required at top of interior flight of stairs, including enclosed garages. (R311.7.6) Landings not required at doors where there are two or fewer risers except at the required egress door. (R311.3.2)
- Handrails shall be provided on at least one side of stairways of 4 or more risers. Handrails shall be mounted between 34" and 38" above the nosing of the tread. Handrails shall be continuous and returned to the wall or terminated in newel posts or safety terminals. Handrails adjacent to walls shall have minimum 1½" between the wall and handrail. Handrail grip size shall be Type I or Type II. Flat 2x board is not acceptable. (R311.7.8)
- Circular stairways, spiral stairways, winders and bulkhead enclosure stairways shall comply with all requirements of Section R311.7 except as specified in other sections.

Section R311.8 - Ramps

◯ _____ ***Provide plans and construction details of ramps indicating compliance.***

- Ramps shall have a maximum slope of 1:12. A minimum of a 3' x 3' landing shall be provided at the top and bottom of ramps where doors open onto the ramp, and where the ramp changes directions. Handrails shall be provided on at least one side and shall comply with code specified requirements of Section R311.7.8.3.

SECTION R312 – Guards (Guardrails)

◯ ____ ***Provide cross section through decks, porches, stairs and raised floor surfaces where guards are required and provide notes and dimensions to indicate compliance.***

- Guards for porches, balconies, ramps or raised floor surfaces more than 30" above floor or grade below shall have guardrails 36" high minimum. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall be minimum 34" and maximum 38" above nosing of stair. (R312.1)
- Required guardrails are to have intermediate members such that passage of a 4" diameter sphere is not possible. Triangular opening at the open side of stair formed by the riser, tread and bottom rails of the guards shall not allow passage of 6" dia. sphere. See code text for exceptions. (R312.1.3)
- Where openings of an operable window is located more than 72" above finish grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24" above finish floor. Glazing between the floor and 24" shall be fixed or have openings as required for guards. If window opening control device is used, it must comply with ASTM F 2090. (R312.2)

SECTION R313 – AUTOMATIC FIRE SPRINKLER SYSTEMS

- **This section is deleted by State of Montana ARM, 24.301.154(12). If the applicant chooses to install automatic fire sprinkler system, it shall be designed and installed per NFPA 13D. Information on the available fire flow from nearest fire hydrants shall be obtained from the City Engineering Division.**

SECTION R314 - SMOKE ALARMS

◯ ____ ***Provide location of required smoke alarm/smoke detectors on electrical plan.***

- Smoke alarms shall be provided in each sleeping room; outside of each sleeping room in the immediate vicinity; on each additional floor, including basements and habitable attics. For split levels the smoke alarms needs to be installed only on the upper level, provided the lower level is less than one full story below the upper level, unless there is a door between the two areas. (R314.3)
- Smoke alarms shall receive their primary power from the building wiring and be equipped with battery backup.
- Where alterations, repairs or additions require a permit, the entire building shall be provided with smoke alarms as required for a new dwelling. See exceptions for existing buildings. (R314.4)
- Smoke alarms are to be interconnected. (R314.5)

SECTION R315 – CARBON MONOXIDE ALARMS

◯ ____ ***Identify location of carbon monoxide alarm.***

- **Carbon monoxide alarms shall be installed outside each sleeping area in dwellings which fuel-fired appliance are installed or dwellings that have attached garages per NFPA 720. (R315.1)**
- **In existing structures where a permit is required, carbon monoxide alarms shall be installed as required for new. (R315.3) Single station carbon monoxide alarms shall be listed to comply with UL2034 and shall be installed per manufacturer's requirements.**

SECTION R316 - FOAM PLASTIC INSULATION

◯ ____ ***Identify on the plans, the location and type of foam plastic insulation to be installed. Provide manufacturer's data to confirm compliance with flame-spread rating and smoke-developed rating.***

- Foam plastic is to have a maximum flame-spread rating of 75 and smoke-developed rating of 450, when tested in accordance with ASTM E 84 or UL 723 and maximum 4" thick. (R316.3)
- Foam plastic, unless otherwise listed or noted, shall be separated from the interior of the building by a minimum of ½" gypsum board or approved equivalent. Provide manufacturer's data or identify required protection on plans and details. (R316.4)
- Additional specific requirements shall apply to all uses of foam plastic, including but not limited to: masonry and concrete construction, roofing, attics and crawlspaces, foam-filled doors, siding backer board, interior trim and sill plates and headers. (R316.5)

SECTION R317 - PROTECTION OF WOOD AND WOOD BASED PRODUCTS AGAINST DECAY

◯ ____ ***Identify location of all pressure treated or other type decay resistant materials as required.***

- Decay resistant materials are required in the following locations: (R317.1)
  - Wood joists or the bottom of a wood structural floor closer than 18" or girders closer than 12" to the exposed ground in crawl spaces or unexcavated area located within the the building foundation.
  - Wood framing is in direct contact with concrete or masonry and less than 8" from exposed ground.
  - Sills and sleepers on a concrete slab in direct contact with the ground, unless separated from the slab by an impervious moisture barrier.
  - Wood girders entering exterior masonry or concrete when not provided with a clearance of ½" on tops, sides and/or ends.
  - Wood siding, sheathing and wall framing on the exterior of a building less than 6" from the ground or less than 2" from concrete steps or slabs.
  - Wood structural members supporting moisture-permeable floors or roofs, such as concrete or masonry slabs, unless separated with an impervious moisture barrier.
  - Wood framing members or furring strips attached to the interior of exterior concrete or masonry walls.

- Field-cut ends, notches and drilled holes of treated wood shall be treated in the field per AWPA M4. (R317.1.1)
- All wood, in contact with ground, embedded in concrete in direct contact with ground or exposed to the weather that supports permanent structures intended for occupancy. (R317.1.2)
- Posts, poles and columns shall be approved wood of natural decay resistance or approved pressure treated wood when embedded in concrete in contact with the ground or concrete exposed to the weather. (R317.1.3)
- The portions of glued-laminated timbers that form structural supports and exposed to the weather and not protected by roof, eave, or similar covering shall be pressure treated with preservative or manufactured from naturally durable or preservative-treated wood. (R317.1.5)
- Fasteners for pressure preservative and fire-retardant-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper, except when ½" diameter or greater. (R317.3)

- **Wood/plastic composite materials for decks, treads, handrails and guards shall comply with ASTM D 7032 and shall be installed in accordance with manufacturer's instructions. Manufacture's installation data shall be on-site at time of inspection. (R317.4)**

SECTION R319 – SITE ADDRESS

- **Permanent address numbers/letters, a minimum 4" high and minimum stroke width of 1/2" on contrasting background shall be posted where visible from street. (R319)**

SECTION R320 – ACCESSIBILITY and SECTION R321 – ELEVATORS AND PLATFORM LIFTS Refer to applicable code sections for requirements.

SECTION R322 – FLOOD-RESISTANT CONSTRUCTION Applicable for structures located in flood sensitive areas. If it is determined that the structure is located in whole or in part in identified in a flood sensitive area, structure shall comply with City Code, Title 3, Chapter 14 and Section R322. The Owner and/ or Contractor shall be responsible for verifying if structure is located in whole or in part in a flood sensitive area.

SECTION R323 – STORM SHELTERS
Storm shelters constructed as separate detached buildings or as safe rooms within buildings shall comply with applicable provisions of ICC/NSSA-500.

CHAPTER 4 - FOUNDATIONS

SECTION R401 – FOUNDATIONS

(Provide a copy of Soils Investigation Report for areas of unknown or unstable soil conditions.)

- Foundations shall be designed and constructed to support building loads. Fill soils shall be designed, installed and tested in accordance with accepted engineering practice. Provide copy of soil compaction tests. (R401.2)

◯ ——— ***Provide note and drainage arrows on site plan indicating lot will be graded away from foundation walls minimum 6" within the first 10'. Where less than 10' is available, final grade shall slope minimum of 5% away from structure and directed to a drain or swale with minimum 2% slope. Impervious area within10' of building shall be sloped 2% away from building. Drainage shall not be directed to or affect adjacent properties. (R401.3)***

- The building official will require soil tests and/or report in areas likely to have expansive, compressible, shifting or other unknown soil characteristics. Test and/or report shall be made by an approved agency using approved methods. (R401.4)
- Unless a soils report or letter of visual certification from a soils engineer is provided, all footings are to be designed for a maximum soil pressure of 1,500 psf.

SECTION R402 – FOUNDATION MATERIALS Concrete batch tickets shall be maintained with job-site records

- Concrete foundations shall comply with the minimum compressive strength of concrete for severe weathering potential: basement walls and foundations not exposed to weather and interior slabs, except garage floor slabs of 2,500 psi; basement walls, foundation walls, exterior walls and other vertical concrete exposed to the weather of 3,000 psi with 5-7% air entrainment; porches, steps, carport and garage floor slabs of 3,500 psi with 5-7% air entrainment. (R402.2) See Section R506 for concrete floor requirements.
- Wood foundations shall be designed in accordance with accepted engineering practice for Seismic Design Category D_0 and Section R402.1.

SECTION R403 and R404 – FOOTING, FOUNDATION and RETAINING WALLS *(Seismic Design Category D_0)*

◯ ——— ***Provide complete footing and foundation details identifying size, depth and reinforcing to be placed. Drawings shall provide adequate details to trace all loads from the point of loading to foundation. All exterior and interior bearing wall or pier foundation sizes shall be shown on the drawings.***

- Minimum size of concrete and masonry footings shall comply with Table R403.1 and Figure R403.1(1), unless otherwise called for by special design based on imposed loads or soil conditions. Pier and column footing sizes shall be based on the tributary load and allowable soil bearing capacity per Table R401.4.1 and footings for wood foundations shall be as required by Section R403.2 and Figures R403.1(2) and R403.1(3). (R403.1.1)
- Footings are to have a minimum of 2~# 4 horizontal bars continuous, unless otherwise called for by special design based on imposed loads or soil conditions. Vertical bar shall be placed in footing not more than 4' on

center with standard hook and extend into foundation wall minimum 14". (ACI 332 and R403.1.3)

- Foundation wall reinforcing shall comply with Section R404.1.4. Minimum requirements shall be - # 4 bars 18" o.c. each way with minimum one #4 in upper 12" or as required in Tables R404.1.1(2) through Table R404.1.1(4) or as required by engineered design. Two #4 in upper 12" where required by Section R404.1.4. Vertical bars shall be 3" clear of bottom of footing with standard hook. Foundation details shall show all foundation system reinforcement.
- Top of foundation elevation shall extend above the elevation of the street gutter at point of discharge or inlet a minimum of 12" plus 2%. Alternate elevation subject to approval by building official. (R403.1.7.3)
- All footings are to be a minimum of 42" below grade or protected from frost. Where approved by the building official, small, detached accessory structures may have slab on grade with turn-down footing with minimum footings that are 12" wide with 18" face of 12" below grade and 6" above grade. (R403.1.4.1)

◯ ____ ***Provide note on plans identifying anchor bolts placement. Anchor bolts are to be a minimum of ½" diameter; embedded in concrete a minimum of 7"; spaced a maximum of 6' o.c. for all wood plates to concrete in single story structures. See additional requirements for multistory structures or provide as required by engineered design. (R403.1.6.1)***

- Anchor bolts shall be located within 12" of the ends of pieces and corners with minimum 2 anchor bolts per piece of wood. Each anchor bolt shall have 3" x 3" x .229" (7/32") plate washer. Diagonally slotted hole in plate washer is permitted – 3/16" maximum width and 1¾" maximum length provided a standard cut plate washer is placed between the plate washer and nut. (R403.1.6 and R602.11.1)

◯ ____ ***Identify on the plans location of interior and exterior braced wall lines and footings at spacing not to exceed 25' longitudinal and transverse directions. Exterior and interior braced wall panels where plan dimension is greater than 50' shall be supported on continuous footings. (R403.1.2 and R602.10.9)***

◯ ____ ***Footings for wood foundations shall comply with Section R403.2 and wood foundation walls shall be constructed in accordance with Section R404.2. Provide specifications and complete details.***

◯ ____ ***Where frost protected shallow foundations are used, provide detailed information on plans to show compliance. System shall be designed and constructed in accordance with Section R403.3.***

- Foundation walls supporting over 4' of unbalanced backfill that do not have permanent lateral support at top and bottom shall be designed in accordance with accepted engineering practice. Elevation views of the building shall show height of concrete foundations walls and depth of soil supported. (R404.1.3)
- Concrete foundation walls shall extend above finish grade minimum of 4" where masonry veneer is used and minimum of 6" elsewhere relative to the closest wood element. (R404.1.6)

◯ ____ ***Insulating concrete form foundation wall systems, (ICF) and their footings shall be constructed in accordance with Section R404.1, R611 and per manufacturer's instructions. Provide complete details and a copy of the manufacturer's data with plan submittal.***

◯ ____ ***Retaining walls that are not laterally supported at the top and that retain more than 24" of unbalanced fill shall be designed by licensed design professional. Retaining walls shall be designed for a safety factor of 1.5 against lateral sliding and overturning. (R404.4) Separate permit is required for retaining wall where the height is >4' from bottom of footing to top of wall.***

SECTION R405 and R406 - FOUNDATION DRAINAGE, WATERPROOFING AND DAMPPROOFING

◯ ____ ***Foundation drainage system shall be provided where required by soils classification. (R405.1)***

- Foundation drainage system is not required where rain gutters are installed and drain extensions extend minimum 6' from foundation and grading around the building is in accordance with R401.3. Areas of high water tables shall be provided with a foundation drainage system. [State of MT ARM 24.301.154(13)]

◯ ____ ***Indicate the required moisture proofing provided for concrete and masonry walls below grade. (R406)***

SECTION R407 - COLUMNS

◯ ____ ***Provide details and type of brackets showing all column connections. All columns are to be restrained to prevent lateral displacement at the bottom and top. (R407.1)***

- Wood columns shall be minimum 4" x 4" and be protected against decay per Section R317.
- Steel columns shall be minimum 3" in diameter standard pipe or approved equivalent. Steel columns are to be given a shop coat of rust-inhibitive paint inside and out unless they are provided with other approved corrosion resistance coating. ((R407.2)

SECTION R408 - UNDER-FLOOR SPACE See additional requirements for insulation and venting in 2012 IECC.

◯ ____ ***Identify on the plans how crawlspace venting or conditioning will be addressed. See "Residential Buildings Energy Code Summary 2016" published by Montana Department of Environmental Quality.***

- Vented crawlspaces - Where floor system above crawl space is insulated, ventilation openings shall be provided at a rate not less than 1 sf for each 150 sf of under floor area and shall be located within 3' of each corner of the building. Provide screens over vents with openings not to exceed ¼". (R408.2)
- Conditioned crawlspaces - Where walls of crawlspace are insulated, ventilated openings are not required, provided the exposed earth is covered with a continuous vapor retarder with 6" overlaps, joints and edges sealed and a.) A continuously operated mechanical exhaust ventilation is provided at a rate of 1cfm for each 50

s.f. of crawlspace floor area, or b.) Conditioned air supply sized to deliver at a rated equal lo 1cfm for each 50 s.f. is provided. (R408.3)

◯ ____ ***Identify crawl space access location on the floor plan. Minimum opening shall not be less than 18" x 24" through the floor or 16" x 24" through interior or exterior wall. Complying areaway shall be provided where access is below grade. (R408.4)***

- Water heaters shall not be located in crawlspaces unless T/P valve outlet can be drained directly to the exterior of the building. (UPC 608.5)
- Heating system installation in the crawlspaces shall be approved by building official based on type of and combustion air requirements. Additional requirements apply for heating systems located in crawlspaces. Separate drainage system (IMC 306 & 307) and insulation requirements (IECC R403.2) may apply.

CHAPTER 5 – FLOORS Minimum Floor Design Loads - See Table R301.5

SECTION R501 – DESIGN AND CONSTRUCTION OF FLOORS

Section R501.3 – Fire Protection of Floors - is deleted by State of Montana ARM, 24.301.154(15). Where required elsewhere in the code, fire-resistive rated floor assemblies shall be installed, i.e. dwelling unit and garage separation requirements.

SECTION R502 – WOOD FLOOR FRAMING

◯ ____ ***Show the size, spacing, span, layout and type of floor joists to be used. Provide details for all floor construction including decks and porches.***

- Floor joists are to be sized in accordance with Tables R502.3.1(1) and (2) if standard lumber, or as per the manufacturer's specifications for manufactured floor systems.

◯ ____ ***Identify material, location, size, span, end supports and connection to end support of all floor beams and girders. (R502.5 and Tables R502.5(1) and (2)) Provide manufacturer's compliance data for engineered beams and girders and required connections.***

- Load path for lateral forces (solid blocking) of braced wall lines shall be provided between floor framing and braced wall panels located above or below a floor. R502.2.1
- Floor systems having joists framing from opposite sides over or into bearing support shall be connected and supported as required by Section R502.6.
- Joists shall be supported laterally at the ends by full-depth solid blocking not less than 2" in thickness; or by attachment to a full-depth header, band or rim joist, or to an adjoining stud; or otherwise provided with lateral support to prevent rotation. Lateral restraint shall also be provided at each intermediate support in Seismic Design Category D_0. (R502.7)
- Joists exceeding 2 x 12 shall be supported laterally by solid blocking, diagonal bridging or a continuous 1" x 3" strip nailed across the bottom of joists perpendicular to joists at intervals not exceeding 8'. (R502.7.1)
- Notches and holes drilled or bored in floor joists shall not exceed limitations as set forth in Section R502.8.1.
- Engineered wood products shall only be cut, notched or have holes bored as specifically permitted by manufacturer or specifically engineered by a registered design professional. (R502.8.2)
- Floor framing shall be nailed in accordance with Table R602.3(1). Connections shall be provided to prevent uplift and lateral displacement for post and beam or girder construction supporting floor framing. (R502.9)

◯ ____ ***Where open web floor truss are used, provide truss manufacturer's layout and specifications with data as required by Section R502.11.4. Floor trusses shall be designed in accordance with approved engineering practice. Modifications to manufactured trusses are not permitted. (R502.11)***

◯ ____ ***Indicate the location and type of draftstopping to be installed on framing plan. (R502.12)***

- When there is usable space above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed. Area of the concealed space shall not exceed 1,000 sf and shall be divided into approximately equal areas. Draftstopping may be ½" gypsum board, 3/8" wood structural panels, 3/8" particleboard or other approved materials adequately supported. The integrity of draftstops shall be maintained at all penetrations.
- Fireblocking at floor trusses shall be installed as required by Section R302.11. (R502.13)

SECTION R503 - FLOOR SHEATHING

◯ ____ ***Identify on the building section the type and thickness of floor sheathing to be used.***

- Allowable spans of structural floor sheathing or combination shall comply with Table R503.2.1.1(1) or Table R503.2.1.1(2) which ever is applicable. Other types of floor sheathing shall be installed per Section R503.

SECTION R504 - PRESSURE PRESERVATIVELY TREATED-WOOD FLOORS (ON GROUND) - Comply with all applicable provisions of Section R504 where wood floors are constructed in direct contact with ground.

SECTION R505 - STEEL FLOOR FRAMING - Comply with all applicable provisions of Section R505 where cold-formed steel floor framing is used.

SECTION R506 - CONCRETE FLOORS

◯ ____ ***Identify on the plans and/or building section the thickness of concrete floors.***

- Concrete floors are to be a minimum of 3½" thick on 4" thick base course of gravel or other material as approved by building official. Concrete slabs below grade shall be poured on complying vapor barriers unless

specifically exempted by the building official. (R506.2)

- Where reinforcement is provided within slabs, reinforcement shall be supported to remain in place from the center to the upper one-third of the slab for the duration of the concrete placement. (R506.2.4)
- Basement and interior slabs shall have minimum compressive strength of 2,500 psi. Porches, carport slabs and steps and garage floor slabs shall have minimum compressive strength of 3,500 psi. Recommend use of wire mesh or fiber reinforced concrete and control joints. (R506.1 and Table R402.2)

SECTION R507 – DECKS – (New Section replaces 2006 IRC Section R502.2.2)
This new section provides several tables for prescriptive deck ledger attachment details.

◯ ____ ***Provide complete foundation and framing plans, sections and connection details for posts, beams, ledgers, joists, stairs, handrails, guards, etc.***

- Where decks are supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads. Such attachment shall not be done by the use of toenails or nails subject to withdrawal. (R507.1)

◯ ____ ***Identify on plans and details the size, type and spacing of anchorage used for exterior deck ledgers. Ledger anchorage shall be in accordance with Section R507.2 or as specified by MT structural engineer.***

CHAPTER 6 - WALL CONSTRUCTION

SECTION R602 - WALL FRAMING

◯ ____ ***Identify size, height and spacing of all interior and exterior wall studs. Stud size and height shall be spaced in accordance with Table R602.3(5).***

- Studs shall be a minimum No. 3, standard or stud grade lumber. (R602.2 and Table R602.3(5))
- **Exterior walls shall be framed in accordance with Figures R602.3(1) and R602.3(2), with components of exterior walls fastened in accordance with Tables R602.3(1) through R602.3(4). Several changes occur throughout the tables for fastening of structural members.**
- Except for opening around doors and windows, wall studs shall be continuous from support at sole plate to a support at the top plate to resist loads perpendicular to the wall. The support shall be a foundation or floor, ceiling or roof diaphragm or as designed in accordance with accepted engineering practice. (R602.3)
- Exterior wall studs shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates are to be offset at least 24". Plates shall be nominal 2" thick and width equal to stud width. See exception for uses and limitations of single top plate. (R602.3.2)
- Where floor or roof framing members are spaced more than 16" on center and the bearing studs are spaced 24" on center the members are to bear within 5" of the studs beneath. Plates shall be nominal 2" thick and width equal to stud width. See code exception for uses and limitations. (R602.3.3 and R602.3.4)
- Braced wall panel uplift load path – Braced wall panels located at exterior walls that support roof rafters or trusses shall have framing members connected in accordance with one of the three requirements listed in Section R602.3.5. See Section R602.10 for additional requirements for wall bracing.
- Interior bearing partitions shall be constructed, framed and firestopped as required for exterior walls. (R602.4)
- Interior nonbearing partitions may be constructed with 2"x3" studs spaced 24" on center or 2"x4" flat studs spaced 16" on center when not part of a braced wall line. These types of walls may have a single top plate.
- Studs in exterior walls, bearing or nonbearing partitions may be cut or notched and bored or drilled as permitted and limited in Section R602.6. (R602.6, Figure R602.6(1) and Figure R602.6(2))
- Piping or ductwork placed in an exterior or interior load-bearing wall, necessitating a cutting of top plate by more than 50% of its width, a specified galvanized metal tie shall be attached to the plate at each side of the opening and fastened as required. (R602.6.1 and Figure R602.6.1)

◯ ____ ***Show the size of all headers and width of bearing at each end, including those for overhead garage doors. The allowable spans for headers and number of jack studs in bearing walls shall be in accordance with Table R502.5(1) and R502.5(2). Where concentrated loads occur over headers, provide Engineer's analysis for header size and required connections. (R602.7)***

◯ ____ **Single member headers are permitted where sized and installed in compliance with Table R602.7.1, Figures R602.7.1(1) and Figures R602.7.1(2). Identify on plans if and where single members are used.**

- Plywood box headers are to be in accordance with Figure R602.7.2 and Table R602.7.2.
- Interior or exterior nonbearing walls may have headers of a single flat 2"x4" where header span does not exceed 8' in width if the vertical distance to parallel nailing surface above is not more than 24". (R602.7.3)

◯ ____ ***Foundation cripple walls shall be framed of studs not less in size than studs above. When exceeding 4' in height, such walls shall be framed of studs having the size required for an additional story. If wall height is less than 14" in height, provide sheathing on one side with wood structural panels attached to top and bottom plates or wall shall be constructed of solid blocking. All cripple walls shall be supported on continuous foundations. (R602.9)***

Section R602.10 - WALL BRACING

This section has been rewritten to clarify many of the code provisions of wall bracing. Refer to Section R602.10 for all applicable provisions, changes and requirements. Additionally, the State of Montana ARM 24.301.154(16) permits the use of APA System Report 102: APA Simplified Wall Bracing Method https://www.apawood.org/SearchResults.aspx?tid=1&q=SR-102 as an alternative method. Where Section R602.10 or APA System Report 102 are not used, the structure shall be designed in accordance with accepted engineering practice and shall be stamped and signed by a Montana licensed structural engineer.

**** Where buildings or portions of buildings are identified as IRREGULAR BUILDINGS as identified in Section R301.2.2.2.5, the structure shall be designed in accordance with accepted engineering practice. The wall bracing requirements of the structure shall be stamped and signed by a Montana licensed structural engineer.**

**** The length of braced wall panels shall be the greater value based on wind speed [Table R602.10.3(1)] and seismic design category [R602.10.3(3)]. Helena's basic wind speed is 90 mph, exposure B and Seismic Design Category (SDC) is D_0.**

○ _____ ***Identify on plans the location of braced wall lines, length of all braced wall panels and bracing method used, including footings/foundations under interior braced wall lines. Comply with prescriptive bracing requirements of Section R602.10 or provide structural engineer's lateral analysis, design and recommendations.***

Braced wall lines – (R602.10.1)

- Required bracing shall be calculated for each story of the dwelling. Braced wall lines shall be designated on the plans as straight lines. (R602.10.1.1)
- Offsets along an interior or exterior braced wall line shall not exceed 4'. (R602.10.1.21)
- Spacing between braced wall lines shall not exceed 25' on center both longitudinal and transverse directions. Distance may be increased to maximum of 35' as permitted by exception in accordance with Table R602.10.1.3.
- Angled walls (maximum 8' long) shall be permitted to contribute to the required overall braced wall panel length as limited by projected length as determined by Section R602.10.1.4.

Braced wall panels and required length of bracing – (R602.10.2 and R602.10.3)

- Required braced wall panels shall be full-height sections with no vertical or horizontal offsets. Braced wall panels shall be placed along the brace wall line in accordance with Section R602.10.2 and the bracing method as specified in Section R602.10.4.
- Braced wall panels shall be placed at the ends of each braced wall line and not to exceed 20' between adjacent edges. Where braced wall panels are located more than 10' from the ends of the braced wall lines, construction and connections shall comply with Section R602.10.2.2.1 and listed exceptions.
- The required length of braced wall panels shall be the greater value determined from Table R602.10.3(1) or Table R602.10.3(3) and the applicable adjustment factors in Table R602.10.3(2) or R602.10.3(4).

Construction methods for braced wall panels – (R602.10.4)

○ _____ ***Braced wall panel method and lengths shall be identified for each level of the dwelling on floor plans.***

- There are 12 intermittent bracing methods and 4 continuous sheathing bracing methods specified. Bracing methods and the specific requirements for each type are outlined in Table R602.10.4.
- Mixing intermittent bracing and continuous sheathing methods from story to story shall be permitted, but not within the same story. Mixing of continuous sheathing methods along a braced wall line is permitted.
- Continuous sheathing methods require structural panel sheathing to be used on all sheathable surfaces on one side of a braced wall line including areas above and below openings and gable end walls and shall meet the requirements of Section R602.10.7.
- All braced wall panels shall have minimum ½" gypsum board or equivalent in-plane shear resistant material installed on the side opposite the bracing material. Gypsum board shall be fastened in accordance with Table R702.3.5 or in accordance with Table R602.3(1) for exterior sheathing.

Minimum length of a braced wall panel – (R602.10.5)

- The minimum length of braced wall panels and the contributing length shall comply with Table R602.10.5 for the specific method of bracing to be used. (R602.10.5.1)

Alternate braced wall panel and portal frame methods – (R602.10.6)

- Alternate braced wall panels (ABW) utilizing hold-down devices shall be constructed in accordance with Figure R602.10.6.1 and Table R602.10.6.1.
- Portal frame with hold-down method (PFH) shall be constructed in accordance with Figure R602.10.6.2.
- Continuously sheathed portal frame (CS-PF) shall be constructed in accordance with Figure R602.10.6.4 and Table R602.10.6.4. This method may only be used the Method CS-WSP and CS-G. Refer to Section R602.10.4.1, item #4.

TABLE R602.10.4 - BRACING METHODS (Partial) (Refer to code for complete text, diagrams and footnotes)	
BRACING METHOD	DESCRIPTION

Intermittent Bracing Methods	~~LIB~~	~~Let-in-bracing~~ *(This method is not permitted in SDC D_0)*
	DWB	Diagonal wood boards
	WSP	Wood structural panels
	BV-WSP	Wood structural panels with stone or masonry veneer
	SFB	Structural fiberboard sheathing
	GB	Gypsum board
	PBS	Particleboard sheathing
	PCP	Portland cement plaster
	HPS	Hardboard panel siding
	ABW	Alternate braced wall
	PFH	Portal frame with hold-downs
	~~PFG~~	~~Portal frame at garage opening~~ *(This method is not permitted in SDC D_0)*
Continuous Sheathing Methods	CS-WSP	Continuously sheathed wood structural panel
	CS-G	Continuously sheathed wood structural panel adjacent to garage openings
	CS-PF	Continuously sheathed portal frame
	CS-SFB	Continuously sheathed structural fiberboard

○ ——— ***Where narrow braced wall panels are used, plans shall identify specific elements, including bracing method, sheathing, nailing and alternate hold-down devices.***

- Wall bracing for dwellings with stone and masonry veneer in SDC D_0 shall comply with Section R602.10.6.5 and Table R602.10.6.5 and shall conform to the requirements of bracing method BV-WSP.

Ends of braced wall lines with continuous sheathing – (R602.10.7)

- Each end of a braced wall line with continuous sheathing shall have one of the 5 conditions shown in Figure R602.10.7. In SDC D_0 hold-down device capacity must be 1,800 lbs per Section R602.10.2.2.1, exception #2.

○ ——— ***Identify on the plans which end condition shown in Figure R602.10.7 will be utilized.***

Braced wall panel connections – (R602.10.8)

- Braced wall panels shall be connected to floor framing or foundation as required by Section R602.10.8.1 and Figures R602.10.8(1) and R602.10.8(2).
- Braced wall panels shall be connected to roof framing and blocked as required by Section R602.10.8.2 and Figure R602.10.8.2(1).

Braced wall panel support – (R602.10.9)

- Braced wall panel support shall be provided as required by Section R602.10.9.

Braced wall panel joints – (R602.10.10)

- All vertical and horizontal joints of braced wall panels shall be fastened to common studs and blocking. Review code text for applicable exceptions.

Cripple wall bracing – (R602.10.11)

- Cripple walls shall be constructed as required by Section R602.9 and braced with length and method of bracing used for the wall above.
- An adjustment factor of 1.15 shall be applied for calculating the length of the cripple wall braced wall panel.
- The distance between adjacent edges of braced wall panels shall be reduced from 20' to 14' and other applicable adjustments as required by Section R602.10.11.1.

Section R602.11 – Wall Anchorage

○ ——— ***Identify on the plans size, type and spacing of anchorage at interior and exterior braced wall line sills.***

- Anchor bolts shall be placed per Section R403.1.6 and R602.11.1.
- Stepped foundations in SDC D_0 shall be constructed, braced and shall comply with anchorage requirement of Section R602.11.2 and Figure R602.11.2.

Section R602.12 – Simplified Wall Bracing - The simplified bracing method in Section R602.12 is not applicable to SDC D_0 and may not be utilized in Helena.

SECTION R603 - STEEL WALL FRAMING Comply with this section where cold-formed steel wall framing is used. Provide complete details for all elements.

SECTION R604 - WOOD STRUCTURAL PANELS

○ ——— ***Identify the grade and thickness of structural panels. Allowable spans of material and installation shall comply with Section R604 and Tables R602.3(1) and R602.3(3).***

SECTION R605 - PARTICLEBOARD Where used, provide type and grade as applicable in sections and tables.

SECTION R606 – SECTION R610 - MASONRY CONSTRUCTION Provide detailed information where masonry construction is utilized.

SECTION R611 – EXTERIOR CONCRETE WALL CONSTRUCTION (Previously Insulating Concrete Form Walls - ICF)
Exterior concrete walls in Seismic Design Category D_0 shall be designed and constructed in accordance with PCA 100 or ASCI 318. Section R611 does not provide for a prescriptive method for structures in SDC D_0.

○ _____ ***When a specific manufactured concrete wall form system is used, provide a copy of manufacturer's printed information and installation instructions. Manufacturer's information shall indicate compliance with requirements of SDC D_0 and wind speed of 90 mph. (R611.2)***

SECTION R612 – EXTERIOR WINDOWS AND DOORS

○ _____ ***Provide window and door schedule indicating rough opening size, glazed area and allowable ventilation for each opening. See Section R303 for required light and ventilation requirements.***

- Provide tempered glazing in windows and doors where applicable by Section R308 and per Section R310.
- Window and door performance shall comply with applicable standards and 2012 International Energy Conservation Code. (R612.2 and R612.3)

SECTION R613 – STRUCTURAL INSULATED PANEL WALL CONSTRUCTION (SIP Walls)

○ _____ ***Provide complete SIP manufacturer's shop drawings and details for intended project. Design shall provide documentation to ensure compliance with requirements of SDC D_0 and wind speed of 90 mph.***

- **Section R613 does not provide for a prescriptive method for structures in SDC D_0.**

CHAPTER 7 - WALL COVERING

SECTION R702 - INTERIOR COVERING

○ _____ ***List all interior materials used, including but not limited to; plaster, gypsum board, ceramic tile, stone, wood and metal. Interior materials shall be installed in accordance with this chapter and listed tables.***

- Installation of gypsum board shall comply with Sections R702.3.1 – R702.3.6.
- Gypsum board shall be installed perpendicular to ceiling framing members. Perimeter shall be blocked with minimum 2x6 and installed flat on top plate to provide minimum 2" nailing surface. Gypsum board shall be fastened in accordance with Table R702.3.7. (R702.3.7)
- Water resistant gypsum board shall not be used as a backer behind tiled tub and shower walls or in areas of continuous high humidity. (R702.3.8)
- Ceramic tile shall be installed on fiber-cement, fiber-mat reinforced, glass mat gypsum backer or fiber-reinforced gypsum material. (R702.4)
- Other interior materials shall be installed as specifically required or limited in Sections R702.5 – R702.6.
- Interior masonry veneer shall be installed in accordance with manufacturer's instructions. Copy of information shall be available on-site for review.

Section R702.7 – Vapor Retarders

○ _____ **Indicate on the building sections the location and type of vapor retarder being installed.**

- **Class I or II vapor retarder shall be installed on the interior side of all framed walls except at basements and below grade portions of any wall and elsewhere as required by other sections of the code.**
- **Class III vapor retarder may only be used where permitted by Table R702.7.1.**
  - **Class I material: ≤ 0.1 perm, such as sheet polyethylene, sheet metal, non-perforated aluminum foil.**
  - **Class II material: > 0.1 < 1.0 perm, such as Kraft-faced fiberglass bats or low-perm paint.**
  - **Class III material: > 1.0 < 10 perm, such as latex or enamel paint.**

SECTION R703 - EXTERIOR COVERING

○ _____ ***Specify each different type of exterior wall finish. Materials shall be installed as specified in this section and as required by manufacturer's printed instructions. (Sections R703.3 – R703.12 and Table R703.4)***

- Exterior walls shall have a weather-resistant sheathing cover or asphalt-saturated felt applied in accordance with specific requirement for the exterior material being installed.
- Stone and masonry veneer shall be installed per Table R703.4 and shall be supported and attached as required in Section R703.7.2 and Table R703.7(2).

○ _____ ***Identify type, size and spacing of masonry tie to be installed.***

- Veneer ties and sheet metal ties shall be installed per Section R703.7.4.1.
- Ties shall be spaced maximum 24" on center horizontally and vertically and shall support maximum 2 s.f. of wall area. Additional metal ties to be provided at openings greater than 16" wide. (R703.7.4.1 and R703.7.4.1.1)

- **Flashing shall be provided in accordance with State of Montana ARM 24.301.154(18-21) to prevent entry of water into the wall cavity or penetrations of water to the building structural framing components. Flashing shall extend to the surface of the exterior wall finish or to the water resistive- barrier for drainage and shall be install at locations described in Section R703.8, except as modified by ARM 24.301.154(18-21): Flashing is required at exterior window and door openings, intersections of chimneys or other masonry construction, under and at ends of coping and sills, above projecting wood trim, at attachment locations of porches, decks and stairs, at wall and roof intersections and at built-in**

gutters. Three additional sub-sections appear in ARM relating to flashing and pan flashing. Complete text may be found at http://bsd.dli.mt.gov/bc/rules.asp .

○ _____ ***Exterior insulation finish systems (EIFS)shall be installed per manufacturer's printed instructions. Copies of manufacturer's installation instructions shall be available on site at time of inspection.***

○ _____ ***Adhered masonry veneer shall be installed in accordance with manufacturer's instructions and as required by Section R703.12.1, clearance to adjacent surfaces and R703.12.2 for flashing at foundations.***

CHAPTER 8 – ROOF-CEILING CONSTRUCTION

SECTION R802 ROOF FRAMING The roof system shall be designed to support minimum 30-psf ground snow load.

○ _____ ***For conventionally framed roof systems, provide complete framing plans for the roof system showing sizing, spacing and layout of all components and connections. Conventionally framed roof systems, including rafters, ceiling joists and connections, shall be designed and constructed in accordance with Section R802.1 through R802.9.***

- Gable ends are to be braced to prevent hinging at the plate line.
- Ridge board shall not be less than 1" thick and not less in depth than the cut end of the rafter. Valley boards shall be not less than 2" thick and not less in depth than the cut end of the rafter. (R802.3)
- Ceiling joists shall be connected to rafters at top of walls or collar ties shall be used and placed in accordance with Section R802.3.1 and Table R802.5.1(9).
- Allowable spans for ceiling joists are contained in Tables R802.4(1) and R802.4(2).
- Allowable spans for roof rafters are contained in Tables R802.5.1(3) and R802.5.1(5).
- Structural roof members shall not be cut, bored or notched in excess of the limitations of Section R802.7.1.
- Engineered wood products, re. I-joists, glu-lam beams, micro-lams, etc., shall not be cut, notched or bored with holes unless specifically permitted by manufacturer. Modifications to engineered product shall be approved by a Montana registered structural engineer. (R802.7.2)
- Lateral support for roof framing members and ceiling joists having a depth-to-thickness ration exceeding 5 to 1 shall be provided with lateral support at points of bearing to prevent rotation. (R802.8)

○ _____ ***Where manufactured trusses are being used, truss layout and specification sheets shall be submitted with permit application. Design of trusses shall be in accordance with accepted engineering practice. Truss manufacture's data sheets shall be available on site for inspections. (R802.10.1)***

- Applicability limits for trussed roofs - maximum 60' in length perpendicular to span, maximum 36' in width parallel to span, **3-stories** or less and roof slopes between 3:12 and 12:12. (R802.10.2.1)
- Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the truss manufacturer's drawings and the Building Component Safety Information Manual (BCSI). (R802.10.3)
- Trusses shall not be cut, notched, drilled, spliced or otherwise modified without the approval of a Montana registered structural engineer. (R802.10.4)

Section R802.11 – Roof tie-down

○ _____ ***Identify type and spacing of roof assembly tie-down device or method being used. Uplift resistance shall be provided as required by Sections R802.11.1.2 and R802.11.1.3.***

- **Where rafters or trusses are spaced 24" oc or less, the attachment to wall plates may be by toenailing under either of the following conditions as permitted by Table R602.3(1):**
  - **Where the uplift force does not exceed 200 pounds or**
  - **Where the roof pitch is 5:12 or greater and the following criteria are met: Wind speed does not exceed 90 mph; Wind Exposure Category B; building width does not exceed 32' and the maximum roof overhand is 24".**

SECTION R803 ROOF SHEATHING

○ _____ ***Identify type and thickness of sheathing to be installed on roofs.***

- Wood structural panel roof sheathing shall not exceed values specified in Table R503.2.1.1(1).

SECTION R805 CEILING FINISHES

○ _____ ***Identify on building section the type of ceiling material to be installed. See also Section R702.***

SECTION R806 ROOF VENTILATION

○ _____ ***Provide calculations for the required ventilation of the attic space. Identify type and net free area of each type of vent provided.***

- Net free ventilated area is to be not less than the basic amount of 1 sf of ventilation per 150 sf attic area (1:150).
- Ventilation at a rate of 1:300 is permitted if a Class I or II vapor retarder is installed at the ceiling line **or <u>where at least 40% and not more than 50% of the required ventilating area is provided by ventilators located in the upper portion of the attic.</u> Ventilators shall be no more than 3' below the ridge with the balance provided by eave or cornice vents. (R806.2)**
- Vents in the eave or cornice shall allow the free flow of air. A minimum of 1" space is to be provided between

the insulation and the roof sheathing. Identify on eave detail. (R806.3)

- **Unvented conditioned attics are permitted where specific conditions are met as listed in Section R806.4. This provision incorporates air-impermeable insulation (spray foam). Provide description of materials used in conditioned unvented attic space. Spray foam shall be protected per Section R316.**

SECTION R807 ATTIC ACCESS

◯ ____ Identify on floor plans, location and size of attic access. Each attic spaces with a clear height of over 30" and is over 30 sf, an attic access of minimum 22" x 30" shall be provided through the ceiling easily accessible from below or through wall. (R807.1)

CHAPTER 9 – ROOF ASSEMBLIES

SECTION R903 WEATHER PROTECTION

- Flashing shall be provided at wall and roof intersections, at change in roof slopes or direction and around roof penetrations. **A flashing shall be installed to divert the water away from where the eave of sloped roof intersects a vertical sidewall (kick-out flashing).** Metal shall be minimum No. 26 galvanized sheet, corrosion resistant material. (R903.2.1)
- Roof shall drain over roof edges or to roof drains. Where roof drains are required, secondary (emergency overflow) drains or scuppers shall be provided. (R903.4)

SECTION R904 AND R905 ROOFING MATERIALS and COVERINGS REQUIREMENTS

◯ ____ ***Identify all roof-covering materials on building sections, including underlayment, ice-water barrier and finish covering.***

- Asphalt shingles shall be installed per Section R905.2 and manufacturer's instructions. (R905.2.1 - R905.2.7)
- Underlayment shall be provided on roofs in accordance with Section R905.2.7.
- Ice and water barrier shall be provided from the lowest edge of all roof surfaces to a point 24" in from inside the exterior wall line. Ice and water barrier is not required on unheated, detached accessory structures. R905.2.7.1
- Flashing shall be provided as required by Section R905.2.8, including but not limited to base and cap flashing, valleys, sidewalls, around any soil pipes, vent pipes and chimneys. Drip edges shall be provided at eaves and gable ends. (R905.2.8.1 – R905.2.8.5)
- Other roof materials are permitted provided they are installed in accordance with Section R905.3 - R905.16.

SECTION R907 REROOFING

- Separate application is required for all reroof only projects. Contact the Division office for application and submittal requirements.

CHAPTER 10 CHIMNEYS AND FIREPLACES

◯ ____ Provide complete structural and finish details for fireplace construction. Fireplaces and chimneys are to be installed as required by Sections R1001.1 – R1001.12.

- Refer to code language for Masonry Chimneys (R1003), Factory-Built Fireplaces (R1004) and Factory-Built Chimneys (R1005).

◯ ____ Wood stoves and gas fireplace units shall be installed in accordance with manufacturer's printed instructions and data shall be available on site for inspection.

- Exterior air supply shall be provided to ensure proper combustion air is provided unless mechanically ventilated as described in Section R1006.

CHAPTER 15 EXHAUST SYSTEMS

Chapter 15, Exhaust Systems (M1501 – M1507) of the International Residential Code (IRC) has been adopted by the State of Montana ARM 24.301.154(3) as an alternative to the International Mechanical Code (IMC) for exhaust systems only. All other requirements for mechanical systems shall comply with the IMC.

◯ ____ **Identify location of each exhaust fan, cfm rating and discharge location.**

- **Exhaust ducts shall terminate on the outside of the building. (M1502-M1505)**
- **Exhaust duct openings shall be at least 3' from property lines and operable or non-operable openings of the building and at least 10' from mechanical air intakes unless they are located at least 3' above air intake. (M1506.2)**

Section M1507.3 – Whole-House Mechanical Ventilation System

- **Whole house ventilation system shall consist of one or more supply or exhaust fans or a combination of such. Local exhaust or supply fans are permitted to serve as such a system.**
- **Continuous ventilation rate shall provide outdoor air per Table M1507.3.3(1) or adjusted for intermittently supplied ventilation per Table M1507.3.3(2).**
- **Minimum required local exhaust rates to have capacity to exhaust minim air flow in kitchens of 100 cfm intermittent or 25 cfm continuous and for bathrooms, 50 cfm intermittent or 20 cfm continuous.**

2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) – RESIDENTIAL PROVISIONS

CHAPTERS 3 – CLIMATE ZONES - Helena is located within Climate Zone 6. Where tables are referenced, Climate Zone 6 requirements shall be used for the City of Helena. Refer to State of Montana ARM 24.301.161 for amendments.

CHAPTER 4 – RESIDENTIAL ENERGY EFFICIENCY

SECTION R401 – CERTIFICATE

- "Energy Code Compliance Label" will be issued with project inspection record card. Label must be permanently affixed by the Contractor to the inside of the breaker panel as required by State of Montana MCA Section 50-60-803. (R401.3)

SECTION R402 – BUILDING THERMAL ENVELOPE – 2012 International Energy Conservation Code (IECC) and as amended by State of Montana ARM 24.301.161. http://bsd.dli.mt.gov/bc/rules.asp

- "Residential Buildings Energy Code Summary 2016" published by Montana Department of Environmental Quality at ***http://deq.mt.gov/Energy/EnergizeMT/energycode*** provides a comprehensive summary of the energy code requirements.
- Or, provide ResCheck compliance documentation form specific to this project. Compliance program is available through the US Department of Energy at http://www.energycodes.gov/rescheck/

PRESCRIPTIVE PATH - Refer to IECC Table R402.1.1 for all footnotes that apply to this table.

COMPONENT	INSULATION AND FENESTRATION REQUIREMENTS	EQUIVALENT U-FACTORS
Ceiling	R-49 (R-38 is allowed if full depth is achieved in entire ceiling including over exterior wall plates)	0.026
Exterior wall	R-21 or R13 cavity+ R10 continuous insulation	0.054
Mass wall	R15/20 (R20 applies when more than half the insulation is on the interior of the wall)	0.060
Floor	R-30 over non-conditioned space (floor insulation must be in contact with underside of sheathing)	0.033
Basement wall	R-19 cavity or R15 continuous insulation (must be installed whether or not space is finished). Or, R13 cavity on the interior and R5 continuous on the interior or exterior of wall.	0.050
Crawlspace wall	R-19 cavity or R15 continuous insulation. Or, R13 cavity on the interior and R5 continuous on the interior or exterior of wall.	0.055
Slab on grade	R-10 or R-15 for in-floor heated slab – Insulation shall be placed from top of slab downward on interior or exterior for 4' by any combination of vertical or horizontal.	-
Window U factor	U-0.32 maximum (up to 15 s.f. of glazing is exempt for U-value requirement)	0.32
Replacement Windows U-factor	U-0.32 maximum (up to 15 s.f. of glazing is exempt for U-value requirement)	0.32
Skylights U-factor	U-0.55 maximum	0.55
Glazed Penetration SHGC	NR – Not required in Climate Zone 6	NR

○ ——— Identify on the building plans and sections the location and type of insulation to be installed, including, but not limited to, walls, floors, attic, basements and crawlspaces. (R402.2)

- Exposed insulation materials, including facings, installed in a floor-ceiling, roof-ceiling, crawl space, attic or wall assembly is to have a maximum flame-spread rating of 25 and smoke developed rating of 450.
- Foam insulation shall be covered in accordance with Section R316.

Section R402.4 Air Leakage – "Air Barrier & Insulation Installation Checklist" and "Blower Door Test"

○ ——— Air Barrier & Insulation Installation Checklist shall be completed and signed by installers of the components. Checklist form will be issued with building permit documents and form must be completed prior to final inspection. (R402.4.1.1)

- Air leakage into and through the building envelope shall be controlled with the use of an air barrier. Air sealing shall be accomplished by a single material or a combination of materials.

○ ——— Blower door testing shall be completed and documentation provided prior to final inspection. Documentation may be on the form provided with permit documents or similar approved form. (R402.4.1.2)

- Building shall be tested and verified as having an air leakage rate not to exceed four (4) air changers per hour (ACH) as required by State of Montana ARM 24.301.161(1h).

- ♦ During testing: The exterior windows and doors, fireplace and stove doors shall be closed, but not sealed; dampers shall be closed, but not sealed, including exhaust, intake, makeup air, back draft and flue dampers; interior doors shall be open; exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed; heating and cooling system(s) shall be turned off; "B" or "L" vents, combustion air vents, and dryer vents shall be sealed; and HVAC ducts shall not be sealed.
- ♦ Door and window infiltration rates indicated on manufacturer's label shall be visible for inspection. Windows, skylights and sliding glass doors infiltrations rate shall not exceed 0.3 cfm/sf and swing doors shall not exceed 0.5 cm/sf. (R402.4.3)
- ♦ Recessed lighting installed in the building thermal envelope shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm. Recessed fixtures shall be sealed with gasket or caulk between unit housing and ceiling covering. (R402.4.4)

SECTION R403 – SYSTEMS – Mechanical, Electrical and Plumbing

◯ ____ Programmable thermostat shall be provided for each separate heating and cooling system. Describe mechanical heating system to be installed and location of thermostat. (R403.1.1)

- ♦ Duct work located outside the building thermal envelope shall be insulated to a minimum R-8 for supply ducts and minimum R-6 for all others. Provide notes on plans.
- ♦ All duct joints, air handlers and filter boxes shall be sealed. Where ducts and air handlers are located outside the building envelope, a total leakage test (duct blaster) shall be conducted and documentation available for inspection. (R403.2.2)
- ♦ Building framing cavities shall not be use as supply ducts. (State of Montana ARM 24.301.161(1j)).
- ♦ Service hot water system piping shall be insulated minimum R-3 where required by Section R403.4.2 and as amended by State of Montana ARM 24.301.161(1k).

Section R403.5 – Mechanical Ventilation

◯ ____ Whole house mechanical ventilation system shall be installed as required by one of the following methods - IECC, Section R403.5 - Performance Based, IRC, Section M1507.3.3 or IMC, Section 403. Describe system.

◯ ____ The method in IRC, Section M1507.3.3 is summarized above under IRC, Chapter 15. If one of the other methods is used, provide required documentation and information to verify compliance.

☐ **Additional plan review Comments and/or corrections are provided on the attached documents.**

If box is checked, see the attached documents that will provide additional items that require attention. Owner and/or contractor shall provide additional information as required and incorporate into the construction of the project the corrections noted.

Mechanical, electrical and plumbing work shall comply with 2012 International Mechanical Code, 2014 National Electrical Code and 2012 Uniform Plumbing Code respectively. Separate permits shall be obtained for each.

When project is ready for permitting, Owner and/or contractor shall sign below. By signing below, the Owner and/or Contractor also agrees to comply with all requirements above and to call for ALL required inspection.

I,_____, will hereby conform to the above requirements and any additional comments listed or any notations on the plans.
(Please Print Name)

Signature:_____ Date: _____