MURRAY CITY

SUMMARY OF COMMON REQUIREMENTS FOR PRIVATE GARAGES

IT'S EASIER TO SOLVE A PROBLEM AT THE PLAN STAGE THAN ON THE JOB
PLEASE CONTACT THE BUILDING INSPECTION OFFICE WITH ANY QUESTIONS

A. GENERAL

A1. This list is compiled for the purposes of summarizing some of the general requirements for residential garage (U Occupancy). Following is information that needs to be understood at the plan stage of a residential project in order to avoid unnecessary expense and delay as the garage is constructed. The information contained herein is taken from the 2015 International Residential Code and Utah Amendments to the International Codes. Wording is not always verbatim from the codes or state amendments, the actual codes should be used for the detailed, complete requirements, exceptions, and alternatives. This list is not intended to indicate any change in the codes by inference or omission.

A2. Plans shall be DRAWN TO SCALE ¼ " per foot or larger and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of the codes and all relevant laws, ordinances, rules and regulations.

B. SITE PLAN

B1. Garages over 3,000 square feet in area shall meet the requirements of the International Building Code.

B2. Building location must comply with all Murray zoning regulations.

B3. Building walls closer than 3 feet to property line cannot have doors or windows. Walls less than 5' shall be one-hour fire resistive construction. *(R302.1 & Table R302.1(1))*

B4. Eaves, overhangs may project within 2' of the property line and shall be 1 hour fire resistive construction at the underside. *(R302.1 Ex 4, Table R302.1(1))*

B5. Building cannot be located on any easement or right of way.

B6. Ground slopes may not exceed 2 horizontal to 1 vertical unless retained in an approved manner. *(IBC Appendix J106.1 & J107.6)*

B7. Footings of structures located adjacent to slopes steeper than 3 horizontal to 1 vertical must be set back from the slope at least 1/3 the height of the slope if at the top, and the height of the slope at the bottom. *(Figure R403.1.7.1)*

B8. Site shall be graded such that the ground slopes away from the foundation dropping at least 6 inches within 10 feet of the foundation. *(R401.3)*

B9. Any retaining walls over 4 feet in height from the bottom of the footing to the top of the wall shall be of an approved design with engineer's details provided. *(R105.2)*

B10. Height of Building means the vertical distance between a reference datum and the highest part of the building, excluding roof structures such as chimneys, penthouses, towers and steeples. *(City Ord.17.08.020)* The reference datum shall be selected by one of the following.
Please provide elevations at top of foundation and all lot corners.
a. The average elevation of the top back of curb abutting the lot on which the building is to be built.
b. In the absence of curb and gutter, the average elevation of the center line of the street abutting the lot on which the building is to be built.
c. Where any part of the rear lot line is more than 6 feet above the average top back of curb, the average elevation of the perimeter of the lot on which the building is to be built.

B11. Driveway shall have an all-weather driving surface. *(City Ord. 17.72.050)*

C. FOOTING AND FOUNDATION PLAN

C1. For garages attached to a house and for masonry garages, footings shall be continuous and extend below the 30" frost line depth measured from the bottom of the footing to finish grade. For detached frame garages less than 600 sq./ft., footing depth may be 12" below grade. *(R403.1 & R403.1.4)*

C2. Foundations supporting wood walls shall extend at least 6 inches above adjacent finish grade or 4 inches above grade with masonry veneer. *(R404.1.6)*

C3. All foundation plates or sills shall be of treated wood or foundation redwood. *(R317.1)* No more than two 2 x 4 or three 2 x 6 plates are permitted.

C4. Connection of structure to foundation shall be adequate to transfer forces.
a. Anchor bolts are to be minimum ½" x 10" (½" x 12" for double plates) at 32" on center or obtain design from structural engineer. *(State Amend & R403.1.6)*
b. Plate washers, a minimum of 3" x 3" x 0.229" thick shall be installed. *(R602.11.1)*
c. Hold-downs shall be as required by engineer or as for alternate braced wall panels when using conventional construction.

C5. Foundation Reinforcement
a. Foundation wall steel: Vertical #4 bars at 32" on center to within 3" of top of wall; horizontal bars shall be 4 - #4 bars at 24" (one each within 4" of the top and bottom of the wall); remaining reinforcement shall be placed in the center of the wall.
b. Dowels: Footing dowels with a standard hook shall match vertical reinforcement and extend at least 18" into the wall. *(State Amend & R404.1)*
c. Footing, foundation, and floor may be cast together in a "monolithic pour". Minimum width of the foundation leg is 12" at the base with 2-4# bars horizontally, located in the middle third of the footing. *(R403.1.3.2)*

NOTE: ALL REINFORCEMENT SHALL BE PROPERLY TIED AND CHAIRED TO INSURE MAINTENANCE OF PROPER PLACEMENT.

C6. Where ground slopes more than 1 foot in 10 feet, footings shall be stepped so both the top and bottom of the foundation are level. *(R403.1.5)*

C7. Footings

a. Footings shall be on undisturbed natural soils without organic or deleterious materials. Fill under footings shall be engineered and compacted in no more than 12" lifts and compaction tests indicating 95% minimum density will be required prior to footing inspection approval. *(R403.1 & Murray Policy)*

b. Where footings are dug rather than formed, soil must be stable enough to maintain near vertical slopes without sluffing or forms shall be used.

NOTE: ALL FOOTINGS MUST BE INSPECTED AND APPROVED PRIOR TO CONCRETE PLACEMENT

C8. Sloped or stepped footings shall be continuous. The upper portion of a stepped footing must include a vertical drop with continuous reinforcement or be within 12" horizontal distance and tied to a concrete stem wall with a hooked dowel in the footing extending at least 24 inches into the wall**.** *(R403.1.5)*

D. FLOOR PLANS

D1. Separation between House and Garage

a. At least ½" sheetrock is required separating a residence and an attached garage applied to the garage side. Where bedrooms or other living space is above the garage, 5/8" type 'X' shall be on the garage side and supporting framing is to be protected with ½" sheetrock. *(R302.6)*

b. Separation shall be vertical and/or horizontal. Protection must extend uninterrupted from concrete to exterior sheathing. Walls common to house and garage must be completely protected. All structural members supporting the separation, such as, bearing walls, columns and beams must also be protected. *(R302.6)*

c. Any door between the house and garage shall be a tight fitting, self-latching, solid wood door, 1-3/8" in thickness, solid or honeycomb steel doors not less than 1-3/8" thick, or a 20 minute labeled door. *(R302.5.1 & State Amend)*

d. Duct penetrations shall be by minimum 26 gauge sheet metal, no openings into the garage are permitted. *(R302.5.2)*

e. No windows are permitted in garage wall or in door between the house and garage. *(R302.5)*

f. Separation need not be provided between a house and a carport having no enclosed uses above, provided the carport is entirely open on two or more sides. *(R309.2)*

g. Under no circumstances shall a garage have any openings into a room used for sleeping purposes. *(R302.5.1)*

D2. Ventilation and Attic Access

a. Enclosed attics and enclosed rafter spaces shall have ventilation for each separate space by ventilating openings protected against rain or snow. Openings shall be covered with a 1/8" to 1/4" mesh. The net free ventilating area shall be not less than 1/150 of the area of the space ventilated, or 1/300 if 40% to 50% is located in the upper 3' of the attic and the remainder is provided by soffit vents. Where soffit vents are used, an insulation dam must be provided between every truss or rafter. *(R806)*

b. An attic access 22"x 30" shall be provided at roof/ceiling areas and shall be located in a corridor, hallway, of other readily accessible location. There shall be 30" of headroom over the opening. If there is less than 30" maximum height in the attic, access need not be provided. *(R807)*

D5. Glazing
   a. Glass in doors shall be safety glazed. *(R308.4.1)*
   b. Glazing adjacent to a door within a 24" arc of either door edge when closed, must be safety glazed if the bottom edge is within 60" of the floor or walking surface. *(R308.4.2)*

E. ROOFING

E1. Roofing materials must have an approval by an approved testing agency. Roof slope will determine the types of roofing that can be used. Roofing materials must be installed exactly as intended by the approval. Asphalt shingles on roofs less than 4/12 pitch must be over an approved water shield. Asphalt shingles cannot be used for slopes less than 2/12. *(R905)*

E2. Ice and water shield shall be used at roof eaves from eave edge to 24" inside the exterior wall. *(R905)*

E3. Step flashing shall be used where the roof meets a vertical surface. Counter flashing shall be installed at roof and wall junctures. *(R905)*

F. MASONRY

F1. See IRC Section R606 for reinforced masonry construction.

F2. Wood members shall not be used to permanently support the load of any masonry or concrete except nonstructural floor or roof surfacing not more than 4" thick.

F3. Brick and stone veneer are only permitted on the first floor above grade unless all provisions of the state amendment for additional bracing are met. Veneer shall be attached with corrosion resistant sheet metal ties 22 ga. x 7/8" or 9 ga. wire. Stud spacing shall be a maximum of 16" on center. Tie spacing shall be such that no more than 2 sq.ft. of wall is supported (16" on center both ways). A #9 ga. wire shall be provided as horizontal bedjoint reinforcement to ties. Brick ties shall engage the #9 wire. *(R703.8)*

F4. Stone units, 5" maximum thickness, may be applied with a 1" minimum grouted backing space which is reinforced by not less than 2"x 2" 16 ga. galvanized wire mesh placed over waterproof paper backing and anchored directly to studs spaced no more than 16" on center. Mesh must be furred out from sheathing for embedment in grout. *(R703.8)*

G. ELECTRICAL

G1. Lighting Outlets
   a. At least one wall switch controlled lighting outlet shall be installed in every attached garage and detached garages with electric power; and at outdoor entrances (not including garage overhead or vehicle doors. *(E3903)*
   b. Incandescent fixtures in closets shall be a minimum of 12" from any shelf edge, measured horizontally (6" for fluorescent fixtures). The dimension for shelves less than 12" wide will be 24" from the wall. *(E4003.12)*

G2. Receptacle Outlets
   a. At least one outlet, in addition to any provided for laundry, shall be installed in each basement and each attached garage, and in each detached garage with electric power. A minimum of one receptacle per motor vehicle space is required. *(E3901.9)*

G3. Ground fault circuit interrupters (GFCI) are required in the following locations: *(E3902)*
   a. Receptacles in garages.
   b. Receptacles outdoors including balconies, roof, under eaves, etc. shall have a weatherproof cover. *(E4002.8)*

H. PLUMBING AND MECHANICAL

H1. Equipment and appliances located in garages which generate a glow, spark or flame shall be installed with the pilots, burners or heating elements and switches at least 18" above the floor level. *(G2408.2)*

H2. Appliances installed in garages or other areas where they may be subject to damage shall be suitably guarded against such damage. *(G2408.3)*

J. CONSTRUCTION DETAILS

J1. Any trusses to be used must have details provided for the specific garage.
   a. Truss details must be provided from an approved fabricator. Homemade trusses are not acceptable unless designed, stamped and inspected by a structural engineer.
   b. All details must indicate correct design snow loads for the area.
   c. Specific engineered design for connections of trusses to each other and other framing members which are supported by trusses must accompany the details.
   d. Details must be stamped by a Utah registered structural engineer.

J2. The attached RAFTER SPANS table is a condensation of the tables and can be used for Douglas-Fir #2 and Hem-Fir #2.

J3. Beams must all be carefully sized. Usually your lumber supplier can assist in recommending a size and material. The Building Inspection Division will check the beam shown on the plan. Beams or girders with concentrated loads, cantilevers or any special condition should be designed by a structural engineer. *(R502.1)*

J4. There are currently many good, manufactured, wood products available for building framing. Any product used should be approved as an alternate by an ICC Evaluation Report. Span charts, details and installation recommendations are readily available from lumber suppliers and local factory representatives.

J5. Walls
   a. Walls supporting two floors shall be 2 x 6 or 3 x 4 studs at not less than 16" o.c. Stud height in bearing walls cannot exceed 10'. Stud height in non-bearing wall cannot exceed 14' for 2 x 4's or 20' for 2 x 6's.
   b. Garages greater than 25' in either dimension or where the garage is deeper than it is wide, braced wall panels must be provided. The braced panel must be at least 48" in width with plywood or OSB to provide required bracing. *(R602.10)*
   c. Alternate braced wall panels may be used as a replacement for braced wall panels. (Detail available from the inspection office) *(R602.10.6.1)*

d. All openings in bearing walls shall be provided with headers. *(R602.7)*

J6. All weather exposed surfaces shall have a weather-resistive barrier to protect the walls under finish material. The most common type is a waterproof building paper or felt applied weatherboard fashion, lapped at least 2" at horizontal joints and at least 6" at vertical joints. "One coat" stuccos require 2 layers. *(R703.2)*

J7. Stucco system shall be installed in accordance with R703.6 or shall be an approved system with an ICC Evaluation Service number. All "systems" must be applied in strict compliance with the manufacturers' recommendations including requirements for self-furring lath, flashing, corner treatment, expansion control joints, and drainage system.

Note: There are currently no EIFS type stuccos approved for wood frame construction without a drainage system.

RAFTER SPANS

Live Load **Dead Load** **Description**		**30 PSF** **10 PSF** **Shingles/No Ceiling**		**30 PSF** **15 PSF** **Shingles/Sheetrock**		**30 PSF** **20 PSF** **Tile or Slate Roof**	
Member Size	Member Spacing	**DF #2**	**HF #2**	**DF #2**	**HF #2**	**DF #2**	**HF #2**
2 x 4 *(#2 Grade Lumber)*	**12" OC** **16" OC** **24" OC**	7' - 8" 6' - 8" 5' - 5"	7' - 5" 6' - 7" 5' - 4"	7' - 3" 6' - 7" 5' - 5"	6' - 9" 6' - 2" 5' - 4"	7' - 1" 6' - 2" 5' - 0"	6' - 9" 6' - 1" 4' - 11"
2 x 6	**12" OC** **16" OC** **24" OC**	11' - 3" 9' - 9" 7' - 11"	11' - 1" 9' - 7" 7' - 10"	11' - 3" 9' - 9" 7' - 11"	10' - 8" 9' - 7" 7' - 10"	10' - 5" 9' - 0" 7' - 4"	10' - 3" 8' - 11" 7' - 3"
2 x 8	**12" OC** **16" OC** **24" OC**	14' - 3" 12' - 4" 10' - 1"	14' - 0" 12' - 2" 9' - 11"	16' - 5" 14' - 3" 11' - 8"	16' - 3" 14' - 0" 11' - 6"	13' - 2" 11' - 5" 9' - 4"	13' - 0" 11' - 3" 9' - 2"
2 x 10	**12" OC** **16" OC** **24" OC**	17' - 5" 15' - 1" 12' - 4"	17' - 2" 14' - 10" 12' - 1"	20' - 1" 17' - 5" 14' - 2"	19' - 10" 17' - 2" 14' - 0"	16' - 1" 13' - 11" 11' - 5"	15' - 10" 13' - 9" 11' - 3"
2 x 12	**12" OC** **16" OC** **24" OC**	20' - 2" 17' - 6" 14' - 3"	19' - 11" 17' - 3" 14' - 1"	23' - 4" 20' - 2" 16' - 6"	23' - 0" 19' - 11" 16' - 3"	18' - 8" 16' - 2" 13' - 2"	18' - 5" 15' - 11" 13' - 0"