

RESIDENTIAL ATTACHED GARAGES **BUILDING PERMIT REQUIREMENTS**

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

1. Fill out and sign application for a building permit.
2. Submit four (4) separate copies of your plot (site) plan drawn to scale showing existing structures and the proposed addition and its perpendicular distances to the lot lines and from other structures on the lot, if any.
Site plans must show water run-off (use arrows to indicate flow of water) away from the structure.
3. Obtain zoning approval from the St. Louis County Department of Public Works (if unincorporated) or from municipality. In municipalities site plans must be marked "Approved" and Municipal Approval Form submitted prior to permit issuance.
4. Submit four (4) separate complete sets of detailed building construction plans drawn to scale containing the following:
 - Foundations and Floor Plans @ $\frac{1}{4}" = 1'-0"$
 - Elevations @ $\frac{1}{4}" = 1'-0"$
 - Sections and Details @ min. $\frac{3}{4}" = 1'-0"$

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

- (1) If by conventional method, indicate size and spacing of rafters, ceiling joists, and/or ties, on the sections and details included in the plans submitted.
 - (2) If by the "truss" method, submit four (4) copies of the engineer's sealed truss plan, which can be obtained from the lumber dealer or the "truss" fabricator. Trusses to comply with AFPA NDS-05 and TPI 1-2002.
5. All electrical work must be performed in accordance with St. Louis County Codes and Ordinances by a licensed/electrical contractor or a pre-authorized Homeowner who by examination has demonstrated the necessary knowledge and ability to perform the work.
 6. Issuance of a building permit for the project does not authorize construction access to the work site. If the existing driveway entrance to the site is unavailable for construction access, the owner/contractor shall apply for a permit to construct a temporary entrance from the owner of the Right-of-Way.

For additional information regarding the criteria in this handout, please contact:

	<u>Contact</u>
General Information	(314) 615-5184
Permit Processing	(314) 615-7155
Zoning Review	(314) 615-3763
Building Plan Review	(314) 615-5485
Right-of-Way Owner	
State	(888) 275-6636
County	(314) 615-8517
Municipality	Municipality

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

Footing and Foundation Walls

The footing shall be a minimum 6" thick x 12" wide installed 30" below grade. The foundation wall on top of the footing shall be a minimum of 8" in thickness and extend a minimum of 8" above the outside grade.

Exception: The foundation wall may terminate 6" above the outside grade if all wood on top of the foundation wall located less than 8" above the outside grade is pressure treated.

The foundation wall and footing may be a single pour if the wall is flared at the bottom a minimum of 12" in width.

Sill Plate Anchorage

½" diameter anchor bolts, 7" minimum embedment, 6' maximum o.c. spacing and at ends/corners with 1½" diameter washers and nuts. Minimum 2 bolts per plate regardless of length.

Exception: Use 2"x2"x3/16" plate washers in lieu of the ½" diameter washers when the sill board is part of an APA Narrow Wall Bracing Panel. Use 3"x3"x0.229 plate washers in lieu of the ½" diameter washers for a garage attached to a townhouse (3 or more attached dwelling units).

Exterior Wall Framing

2 x 6 framing standard grade or better studs may be spaced 24" o.c. in a wall 10' or less in height.

Exception: 2x4's @ 24" o.c. may be used when supporting a roof spanning less than 32'.

Roof Framing

For conventional framed roof systems, indicate size, spacing, fiber stress, type and grade of wood for roof rafters and ceiling joists. Indicate roof pitch. Show rafter and ceiling joist framing layout on plans.

Trussed roofs and/or floors shall have sealed truss plans indicating spacing and roof pitch for each span utilized. Include girder trusses if utilized. Show truss framing layout including girder locations on the plans. All trusses shall comply with TPI 1-2002.

All roof framing shall be designed to support the following minimums:

Top chord of trusses or roof rafter:	Snow Load 20 lb. per sq. ft. Dead Load Use actual dead load.(Note: Dead load must include 2 layers of roofing membrane
Ceiling joists or Bottom chord of trusses:	Use a live load of 20 lb. per sq. ft when there is a possibility of attic storage. Attic storage shall be addressed when a 42" high 24" wide rectangle can be placed perpendicular to the rafters/ceiling joists or trusses Use 10 lb per sq. ft. live load where there is no attic storage. Dead load—use actual dead load.

Note: The live load design on the ceiling joist or bottom chord of a truss shall not be required if all of the following conditions are adhered to:

- a. Attics with drywall ceilings below that are accessed only by a 22" x 30" scuttle opening without a pull-down stairway.
- b. Warning signs attached to the trusses on each side of the scuttle opening at least 36" above the bottom chord and within 18" of the edge of the opening. The signs shall be constructed of metal or other approved durable materials suitable for the location and be a minimum of 40 sq. inches in area with 3/4" minimum high letters on a contrasting background that reads "WARNING-TRUSSES NOT DESIGNED FOR ATTIC STORAGE".
- c. Attic areas over garage areas with drywall ceilings shall also be provided with a horizontal railing attached to the trusses on each side of the scuttle opening at least 24" and not more than 36" above the bottom chord. The railing is intended to be an obstruction to easy access for storage and shall be constructed of either 1x4's, 2x4's or 3/8"x 6" plywood. It may be shop or field applied.

Where trusses or rafters are spaced 24" o.c., roof panels shall be a minimum of 15/32" thick sheathing without edge support or a minimum of 3/8" thick (minimum 24/0 span rated) sheathing with edge support. Edge support shall be tongue-and-groove edges, panel edge clips (at mid-point between each support) or 2x lumber blocking.

Roof Sheathing

Roof sheathing: Where trusses or rafters are spaced 24" o.c. roof panel sheathing shall be a minimum of 7/16" thick without edge support of 3/8" thick with edge support. Edge support shall be tongue-and-groove edges, panel edge clips (at mid-point between each support) or 2X lumber blocking. Nailing shall be 6d common for 3/8" and 1/2" sheathing and 8d common for sheathing greater than 1/2" (location - 6" o.c. along edges, 12" o.c. intermediate).

Wall Bracing

All walls shall be braced using the attached "Garage Bracing Guideline for One and Two Family Dwellings or Townhouses" or you may brace the garage using Appendix A1 document found at www.stlouisco.com/pubworks:

Garage Floor Slab

Minimum thickness of concrete floor slabs supported directly on the ground is 3 1/2". The slab shall be placed over a minimum 4" base course of gravel or crushed stone.

Roofing Underlayment and Covering

Class A, B, or C roofing shall be required where the edge of the roof is less than 3' to the property line.

Underlayment for asphalt shingles:

Slopes of 2:12 to less than 4:12 shall be protected with two layers of underlayment. Apply a 19" strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold into place. Starting at the eave, apply 36" wide sheets of underlayment. Successive 36" wide sheets of underlayment shall overlap the previous 36" wide sheet by 19". All underlayment shall be fastened sufficiently to hold into place.

Slopes equaling or exceeding 4:12 shall be protected with one layer of underlayment. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2", fastened sufficiently to hold in place. End laps shall be offset by 6'.

All underlayment to be a minimum of Type I per ASTM D226-06 or Type I per ASTM D4869-05e01 (Type I is commonly called No. 15 asphalt felt.)

Indicate corrosion-resistant flashing at all wall and roof intersections, changes in roof slope or direction, around all roof openings, intersections with chimneys, intersection of exterior walls and porches and decks, etc. Valley flashing shall be installed per R905.2.8.2

Built-up membrane roof slope is 1/4:12 with approved low-slope roof covering materials. A Coal-Tar built-up membrane may be installed on 1/8:12 slope.

Mineral-surfaced roll roofing shall conform to ASTM D 3909 or D6380M. It shall not be installed on roof slopes below 1:12.

Siding

Owner's choice of finish weather-resistant siding.

Garage Separation

Wall between garage and existing residence must be protected with 1/2" drywall on the garage side of the wall. This is normally obtained by removing siding and applying 1/2" drywall from foundation to underside of roof sheathing on this wall of garage or on wall and across the garage ceiling. Any existing attic vents and windows must be blocked up and covered with 1/2" drywall. Required vents and windows must be relocated or alternative

artificial ventilation methods provided. Doors in this wall must be 1 $\frac{3}{4}$ " solid core wood doors or 1 $\frac{3}{4}$ " solid or honeycomb core steel door.

Electrical

Interior light with switch at a man-door to residence and/or to exterior door.

Minimum one ground fault circuit receptacle.

Electrical light outside each man door to the exterior. Lights must be switched from inside garage.

The preceding requirements apply to most garage additions, however, the Plan Reviewer may determine that unusual circumstances dictate the need for additional information on any particular project.

Smoke Detectors A Carbon Monoxide Detectors

AC powered, U.L. listed smoke detectors with battery backup shall be placed throughout the dwelling unit as noted below unless already existing. All detectors within the dwelling shall be interconnected and hard wired so that the activation of any alarm will sound all alarms throughout the house.

Exception: Detector locations in existing areas shall not be required to be interconnected and hard wired where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space, or basement available which could provide access for hard wiring and interconnection without the removal of interior finishes.

Smoke detectors shall be placed in the following locations:

Floor levels with bedrooms: A smoke detector is required in each bedroom and one centrally located detector is required outside of a group of bedrooms in the hall way.

Floor level without bedrooms: A smoke detector is required adjacent to the stair.

A Carbon Monoxide alarm complying with UL2034-2008 shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached or basement garages.

For structures 5' or closer to a property line consult both Zoning (Unincorporated Area) and Building Plan Review within the Department of Public Works.

GARAGE BRACING GUIDELINE FOR ONE AND TWO FAMILY DWELLINGS OR TOWNHOUSES

The construction documents shall detail the locations and widths of all braced wall panels in accordance with the following criteria:

1. The building exterior walls shall be sheathed with 7/16 inch or thicker plywood or OSB wood structural panels. The wood structural panels shall be applied to all exterior walls, gable ends, and band boards. All vertical joints between panels shall be blocked. Horizontal joints in braced wall panels shall be blocked.
2. Braced wall panels shall be located in every exterior braced wall line in accordance with the following criteria:
 - a. The outside edge of the first braced wall panel meeting the width established in Table R602.10.10.3 shall be a maximum of 12.5 feet or less from each end of the braced wall line. The outside stud of the first braced wall panels closest to the ends of the braced wall line shall be secured with a hold-down device securing the end stud to the foundation with a minimum uplift design value of 800 pounds.

Exception: The 800 pound hold-down device is not required when the braced wall panel is placed at the end of the braced wall line and there is a 24 inch wide full height sheathed wall placed 90 degrees to the end of the braced wall line and panel.

- b. The centerline spacing of braced wall panels in a braced wall line may not exceed 25 feet.
3. Braced wall panel locations shall be shown on the floor plans or the elevation views and meet the widths established in Table R602.10.10.3.

**TABLE 602.10.10.3
SIMPLIFIED BRACING PANEL WIDTHS**

		WIDTH OF SOLID PANEL ^{a, b}			
		8' wall height	9' wall height	10' wall height	12' wall height
Plywood/OSB Panel	3:1	32"	36"	40"	48"
Simplified Portal Wall ^c	6:1	16" ^d	18" ^d	20" ^d	24" ^d

- a. Linear interpolation is permitted
 - b. Wall height is the vertical distance from the bottom of the sole/sill plate to the top of the double top plate. An additional 2 inch (50.8 mm) variation in height is allowed for pre-cut stud framing.
 - c. The Simplified Portal Wall, if applicable, shall be constructed in accordance with the applicable detail in Figure R602.10.10.3. The designer shall provide this detail on the construction documents.
 - d. The Simplified Portal Wall width assumes the beam is placed under the top plate of the wall. A smaller width may be calculated for a lower top of beam height using the 6:1 height to width ratio.
4. The exterior wall corners shall be constructed in accordance with the applicable detail in Figure R602.10.10.4.

Exception: Braced wall panels located in accordance with Item 2.

5. When the perpendicular distance between the exterior braced wall lines exceeds 50 feet, the registered design professional shall include the following certification on the drawings:

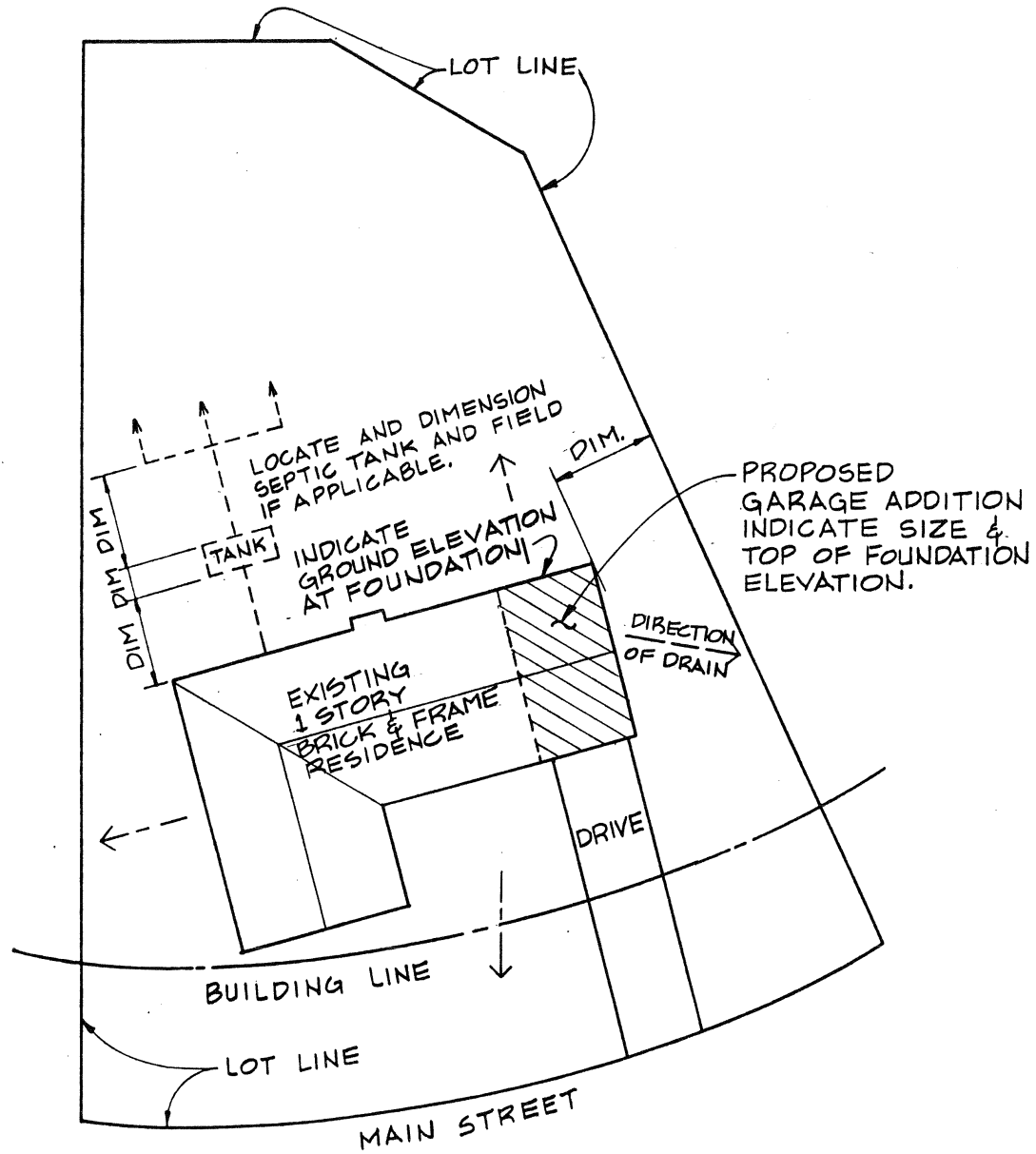
The interior and exterior wall configuration braces the structure in accordance with or equivalent to the lateral bracing provisions of Section R602.10 of the International Residential Code, 2009 edition or Section 2305 of the International Building Code, 2009 edition.

6. Wall height may not exceed 12 feet (12'-2" actual maximum height). Walls greater than 12 feet in height shall be designed and detailed by the registered design professional to resist wind loads in both the longitudinal (racking and parallel) and transverse (perpendicular) directions.

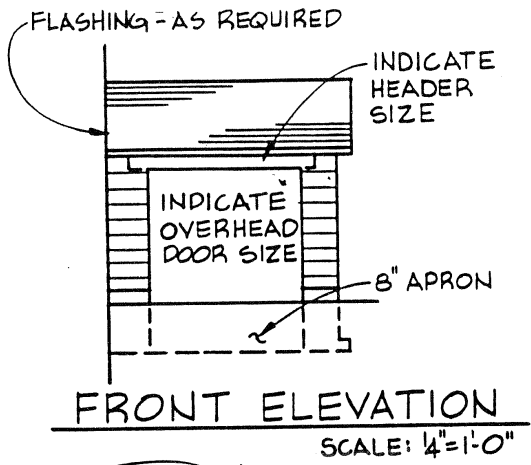
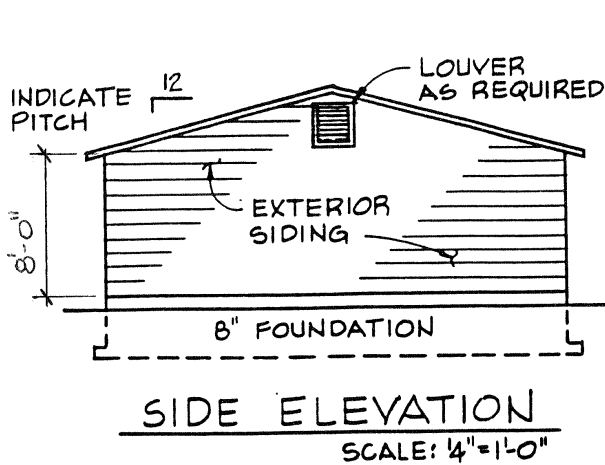
Exception: Structural calculations and details are not required in the following situations:

- a. Longitudinal structural calculations are not required when there are no braced wall panels in that portion of a wall where the height exceeds 12 feet and that greater wall height segment is part of a prescriptive braced wall line on each of the adjacent stories.
 - b. Transverse structural calculations are not required if the wall exceeding 12'-2" complies with Table R602.3.1 of the 2009 International Residential Code (IRC).
7. Braced wall panel connections to floor and roof/ceiling assemblies shall comply with Sections R602.10.6 and R602.10.7 of the 2009 International Residential Code (IRC).

OWNER _____
 ADDRESS _____
 SUBDIVISION _____ LOT NO. _____



TYPICAL PLOT PLAN FOR ATTACHED GARAGE
 SCALE: 1" = 20'-0"



ONE (1) INTERIOR SWITCHED LIGHT REQUIRED OVER MAN DOOR

1 3/4" SOLID CORE DOOR

INDICATES A 16" WIDE APA NARROW PORTAL BRACE WALL PANEL (INCLUDE DETAIL FROM HANDOUT) OR PROVIDE 32" WIDE OSB PANEL

ONE (1) GROUND FAULT INTERRUPTER (GFI) TYPE RECEPTACLE REQUIRED

1/2" DRYWALL ON GARAGE SIDE OF SEPARATING WALL TO UNDERSIDE OF ROOF SHEATHING OR DRYWALL GARAGE CEILING AND SEPARATING WALL

INDICATE ROOFING & SHEATHING

INDICATE SIDING

7/16" OSB SHEATHING MATERIAL

