

RESIDENTIAL ADDITIONS

Information Handout

This handout is a summary of the permit and inspection process as well as standard requirements based on the State Building Code and the City of Cambridge regulations regarding Residential Additions. Information contained herein does not contain all of the specific codes for construction, and shall only be used as a guide.

Permit Submission Requirements:

- Completed building permit application, including valuation (material and labor costs).
- Two complete sets of plans drawn to scale. Plans shall include plan views of each level, cross-sections, elevations and must give specific detail regarding footings, foundation, framing, insulation, finishes and any other pertinent information applicable to the specific project.
- Two copies of a survey or site plan (which includes lot lines and dimensions, the locations and ground coverage area (size) of all existing structures, the location and ground coverage (size) of the proposed structure. Indicate setbacks from property lines and any additional information which may be required).
- Residential Energy Efficiency Certificate. Additions to existing structures must meet the current Minnesota Energy Code. The completed certificate must be provided detailing the insulation types and proposed R-values as well as window and skylight U-values.

Energy Code Value Minimums							
Foundations	Slabs	Floors	Rim Joists	Walls	Attic	Windows	Skylights
R-15	R-10	R-30	R-21	R-21	R-49	U-0.32	U-0.60

Residential Addition Permit Fees:

See the City of Cambridge Fee Schedule at www.ci.cambridge.mn.us/doing-business/fee-schedule

Licensing Requirements:

- Contractors must be licensed in the State of Minnesota if performing more than one single trade. Minnesota State license number must be provided on the permit application.
- Contractor working on a structure built prior to 1978 are required to provide their Lead Certification Number
- Property owners may perform building related trades on property they own. Property owners may perform mechanical trades, such as plumbing, heating and electrical on property they own and occupy. Otherwise, a licensed contractor is required. Property owners doing their own work will be required to sign the Property Owner Waiver acknowledging their responsibilities to the Minnesota State Building Code, to Zoning Ordinances and to other applicable rules and regulation when they are acting as general contractor.
- Rental property owners may perform building trade work. However, all plumbing, HVAC and electrical work on rental property shall be performed by a licensed contractor.
- Property owners renovating dwellings with the intent to sell must be state licensed if performing work on more than one property in a two-year period.

Inspection Requirements:

- The inspection card must be on site upon the start of work until the final inspection has been performed and passed.
- All construction work shall remain accessible and exposed for inspection purposed until approved by the Building Inspections Department.
- All required inspections will be listed on the permit card. A final inspection is required upon completion of the project and approvals for all other inspections have been completed.
- Please call 763-689-3211 to schedule an appointment. A 24-hour notice is required for all inspections (period is subject to change during busy times).

Typical Inspections

Footing:

- All footings shall be placed on undisturbed natural soil or on compacted fill.
- Overall load imposed and the soil bearing capacity determine the size of the footing.
- Care should be taken to not pour concrete on frozen soil. If pouring concrete during freezing conditions, concrete blankets or heaters should be used to ensure that the concrete properly cures.

A common footing for smaller additions is an 8" x 16". For larger structures, the footing is increased to an 8" x 20" dimension.

Foundation:

The building code allows various types of foundations such as concrete block, poured concrete, and wood foundations.

- Regardless of the type, all foundation walls need to be inspected prior to backfilling.
- Foundation walls should be adequately braced prior to backfilling to avoid unnecessary cracking and displacement.
- Foundations shall be waterproofed and insulated prior to backfilling.
- Foundations enclosing a habitable space shall be provided with a drainage system.
- Basements should be provided with an egress window or door leading directly to the exterior to ensure that occupants have a means of egress from the basement level.

Rough Electrical:

- A rough electrical inspection shall occur once all electrical wiring has been installed from the electric panel to outlets, lights or other devices served by the electrical system.
- All wiring shall be properly sized and supported in place prior to the inspection.
- Protection plates shall be installed where electrical wiring runs closer than 1 ¼" to the face of the framing member.
- All circuit wiring shall be properly sized for the load.
- All 15 and 20 amp receptacles installed or replaced in dwelling units shall be tamper-resistant.
- A listed AFCI device shall protect all branch circuits supplying 15 and 20 amp outlets in kitchens, family rooms, dining rooms, living rooms parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets and hallways.
- Kitchen counter areas shall be provided with a minimum of two 20-amp branch circuits.
- A minimum 20-amp circuit shall protect outlets in laundry rooms and bathrooms independently.
- Ground fault circuit interrupter protection shall be provided for all 15 and 20 amp receptacle outlets installed outdoors, in boathouses, crawlspaces, unfinished basements, laundry areas, garages, accessory building, bathrooms, kitchen counter tops and within 6 feet of the outside edge of all sinks, bathtubs and shower stalls.
- An owner who files for an electrical permit application must own and occupy the residence or own and intend to occupy the residence and shall personally perform all electrical work covered by the permit.

- It is illegal for a homeowner to install electrical wiring in a property that is rented, leased or occupied by others.
- All wiring including underground cable and conduit shall be inspected before it is concealed by insulation, sheetrock, paneling or other materials.

Maximum Over Current Protection Of Wiring		
Circuit Breaker Size	Copper	Aluminum
15 amp	14 gauge	NA
20 amp	12 gauge	NA
30 amp	10 gauge	8 gauge
40 amp	8 gauge	6 gauge
50 amp	6 gauge	4 gauge

Rough Plumbing:

- A rough plumbing inspection shall occur once all drain waste and vent piping have been installed.
- All drain waste and vent piping should be properly sized, sloped, supported and provided with all required cleanouts.
- Where new plumbing pipe is being installed, an air test shall be provided on all new piping. The air test shall hold 5 psi for 15 minutes minimum.
- Protection plates shall be installed where plumbing runs closer than 1" to the face of framing members.
- All water supply lines should be installed and shall be properly sized, supported and protected.
- All plumbing shall be installed such that it is protected from any potential freezing.

Rough Mechanical:

- A rough inspection of the mechanical systems shall occur once all ductwork has been installed. Ducts shall be properly sized, supported and sealed at all joints.
- Ductwork running through unconditioned spaces shall be properly insulated.
- Each room shall have heat supply and cold return air. Main trunk lines are to be adequately sized to allow additional supply branch ducts to be provided to any additional finished rooms.
- All exhaust ducts such as bathroom and dryer ducts shall be installed, supported, insulated and properly terminated at the exterior of the building with back draft dampers.
- Where exhaust hoods are in excess of 300 cfm are installed, a make-up air calculation shall be provided.
- Bathrooms must be provided with ventilation via a window with at least 1.5 square feet of open area or a mechanical exhaust fan with a minimum rating of 50 cfm.
- All in-floor heating pipe zones shall be installed and secured in place.
- Hydronic systems shall be tested hydrostatically at one and a half times the maximum system design pressure, but not less than 100 psi.
- Prefabricated gas and wood burning fireplaces shall be set in place with all framing installed around the unit for verification of required clearances.
- Concealed chases constructed for fireplace venting shall be fire stopped every 10 feet maximum, both horizontally and vertically.

Gas Line Air Test:

- Gas lines shall be properly installed and supported in place.
- 16 gauge protection plates shall be provided where gas piping is run closer than 1 ½" from the face of framing members.
- All gas piping installed outdoors shall be elevated not less than 3 ½" above grade.

- Underground gas piping shall be installed a minimum of 12" below grade.
- Gas piping installed below ground beneath buildings is generally prohibited unless meeting special provisions.
- Non-metallic gas piping installed below grade shall be provided with a tracer wire.
- Before any gas piping is put into service or concealed, it shall be inspected and tested. Gas pipe testing shall hold 25 psi for a minimum of 30 minutes. Minor alterations or repairs to gas piping may be tested with leak detection fluid when approved by the Building Official.
- Appliances served by gas piping shall be provided with a shut off valve placed within the same room as the equipment. The shut off valve shall be placed within 6 feet of the equipment.

Gas Piping Support			
Steel Pipe	Spacing	Smooth Wall Tubing	Spacing
1/2"	6'	1/2"	4'
3/4" or 1"	8'	5/8" or 3/4"	6'

Gas Fireplaces:

- Gas fireplaces and auxiliary heat sources must be UL Listed appliances.
- Fireplaces and auxiliary heat sources may be installed but must be installed in accordance with the manufacturer's written instructions.
- Gas fireplace shall be by separate permit and will require rough in and gas line air test inspections.

Rough Framing:

- Rough framing shall occur after rough plumbing, rough mechanical and rough electrical have been approved.
- All rough framing shall be in place, properly nailed and with proper point load support in place.
- Engineered floor trusses/beams shall not be cut, notched, or altered without written approval from the manufacturer.
- The exterior envelope (roof, wall and window openings) shall be weather tight.
- All anchor bolts and hold downs shall be installed and tightened in place.
- All narrow walls shall have proper strapping and shear wall nailing as required.
- All exterior sheathing at the roof and walls shall be properly fastened.

Weather Resistive Barrier:

- The exterior wall envelope shall be constructed in a manner that prevents accumulation of water within the wall assembly by providing a water resistant barrier behind the exterior veneer.
- The weather resistive barrier shall be applied horizontally with the upper layer lapped over the lower layer by not less than 2".
- Where joints occur in the water resistive barrier, they shall be lapped by not less than 6".
- Joints in the weather resistive barrier shall be taper as required by the manufacturer.

Insulation:

- Insulation shall not be installed until all rough plumbing, mechanical, electrical and framing inspections have occurred and been passed.
- Exterior walls and attic areas shall be properly insulated.
- The thickness of blown or sprayed roof and attic insulation shall be written in inches on markers that are installed at least one for every 300 square feet throughout the attic.
- U factor labels in glazing shall remaining place until the insulation inspection has been approved.

- Fiberglass batt insulation shall be provided with a vapor barrier.
- The vapor barrier shall be sealed to the framing with construction adhesive at the top and bottom planes and where the adjacent wall is insulated.
- The vapor barrier shall be sealed around utility boxes and penetrations.
- All seams in the vapor barrier shall be lapped at least 6" and sealed to create a continuous airtight air barrier.

Final Electrical:

- A final electrical inspection should occur once all lights, outlets and other fixtures have been permanently connected.
- All circuit wiring shall be properly sized for the load.
- The installer shall call for a final inspection when all wiring is completed and before the wiring is utilized and the space occupied.

Final Plumbing:

- A final plumbing inspection should occur once all plumbing fixtures have been installed and caulked in place.
- After all plumbing fixtures have been set up and their traps filled with water, their connections shall be tested and proven gas tight and water tight by plugging the stack openings on the roof and the building drain where it leaves the building and air introduced into the system equal to the pressure of 1 inch water column.
- Such pressure shall remain constant for 15 minutes or the duration of the inspection without the introduction of additional air.

Final Mechanical:

- A final mechanical inspection should occur once all HVAC work has been completed.
- All supply and return registers shall be in place and functional.
- All exhaust duct housings shall be properly terminated at the exterior of the building.
- All gas piping shall be installed, supported and properly controlled by shut off valves.
- Furnace and air conditioning equipment should be set, connected and in a functioning state.
- Combustion and make-up air shall be installed if required.
- If powered make-up air is required, it shall be electronically interconnected with the exhaust device.

Final Building:

- A final building inspection shall occur after final plumbing, mechanical and electrical have received final approvals.
- All finish work shall be completed.
- The space shall not be occupied or used until a final building inspection approval has been given.
- All exterior finishes shall be weather tight, caulked, painted etc.
- Address numbers 4" minimum in the height and placed on a contrasting background shall be posted on the front of the home.
- All smoke detectors shall have been installed to upgrade the newly remodeled and existing area of the home.
- All permit cards and your approved plans should be on site and made available to the Building Inspector.

INFORMATION AND GUIDELINES
Standard Residential Code Requirements

House to Garage Vertical Fire Separation:

- A fire separation shall be maintained between the house and the garage by installing ½” gypsum board on the garage side of all common walls located between the house and garage.
 - The gypsum board fire separation shall start at the floor and extend continuously to the underside of the roof.
- Compartmentation is an alternative method of achieving a fire separation.
 - This is accomplished by installing gypsum board from the floor and extending up to the ceiling, then across the ceiling and back down the walls to the floor.
 - When using the compartmentation method all structural bearing walls and headers supporting the ceiling framing shall be covered with gypsum board to provide fire protection.

Additions Over Garages:

- Where habitable space is located above a garage, it shall be protected with fire separation.
- The underside of the floor joists and/or truss members shall be covered with 5/8” gypsum board.
- Walls supporting the joists and/or truss ends and the walls separating the house from the garage require ½” gypsum.

Emergency Egress:

- Basements, habitable attics, and every sleeping room shall have at least one operable emergency escape opening.
- When adding an addition to a dwelling with a basement that is 7 feet high or greater and no emergency opening currently exists in the basement, one must be added.
 - This requirement applies even if there are no bedrooms in the basement area.
- Standard egress openings are 5.7 square feet in minimum openable area.
- The window sill shall be a maximum of 44” above the floor.
- The minimum opening height shall be 24” and the minimum opening width shall be 20”.
 - Please note, the minimum dimensions of 24”x20” does not create an opening that meets the 5.7 square foot minimum. One or both of the minimum height and width need to be increased to meet the minimum openable area.
- Windows with windowsills that are located within 44” of the finished grade may have the opening reduced to 5.0 square feet.
- Emergency escape windows shall be operable from the inside without the use of a key, tools or special knowledge.
- If a window is installed below grade, then a window well is required. The window well shall provide 9 square feet of clear opening with a minimum dimension of 36”x36” are within the well. Where window wells with a vertical depth is greater than 44”, the well shall be equipped with a permanently affixed ladder or steps usable with the window in the fully opened position.

Smoke Alarms:

- Where alterations, repairs or additions are constructed, smoke alarms shall be installed in every sleeping room, outside of sleeping areas and on each level of the dwelling including basements and habitable attics, but not including crawlspaces and uninhabited attics.
- Smoke detectors shall be hardwired and have battery backup.
- The hardwiring of smoke alarms in existing areas shall not be required where the alteration or repairs do not result in the removal of the interior wall or ceiling finishes exposing the structure, unless there

is an attic, crawlspace or basement available in which to provide access for hard wiring without the removal of the interior finishes.

Carbon Monoxide Alarms:

- Where work requiring a permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel fired appliances exist, carbon monoxide alarms shall be provided.
- Carbon monoxide alarms shall be installed outside and not more than 10 feet from each separate sleeping area or bedroom.
- Alarms shall be installed on each level containing sleeping areas.

Ceiling Height:

- Habitable space, hallways, bathrooms, toilet rooms, laundry rooms and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet.
- For rooms with sloped ceilings, at least 50% of the ceiling height of at least 7 feet and no portion of the required floor may have a ceiling height of less than 5 feet.
- Bathrooms shall have a minimum ceiling height of 6 foot 8 inches.

Stairways:

- Stairways shall be not less than 36" in clear width above the handrail height and below the required headroom height.
- Handrails shall project not more than 4 ½" on either side of the stairways.
- The minimum clear width of the stairway below the handrail elevation shall be not less than 31 ½" where the handrail is installed on one side and 27" where the handrail is installed on both sides.
- The minimum headroom in all parts of the stairway shall be not less than 6 foot 8 inches.
- The maximum stair riser height shall not exceed 7 ¾".
- The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8".
- The minimum stair tread length shall not be less than 10".
- The greatest tread depth withing any flight of stairs shall not exceed the smallest by more than 3/8".
- There shall be a floor or landing at the top and bottom of each stairway. The landings shall be equal to the width of the stairway served with a minimum length in the direction of travel not less than 36".

Glazing:

- Glazing in hazardous locations such as doors, adjacent to doors, in guardrails, around tubs and showers shall be tempered.
- Windows with large areas of glazing that meet ALL of the following shall be tempered:
 - Glazing in windows greater than 9 square feet.
 - Windows with a bottom edge less than 18" above the floor.
 - Windows with a top edge more than 36" above the floor.
 - Windows adjacent to a walking surface shall be tempered.

Foam Plastic Insulation:

- Foam plastic insulation products left exposed shall be listed, labeled and approved for direct exposure.
- Foam materials not rated for exposure and installed in a room, crawlspace or attic shall be covered with a 1/2" minimum gypsum board, 3/4" wood structural panels or other material approved by the Building Official.
- Exception: Spray foam installed in the rim joist area not exceeding 5 ½" thick and having a flame spread rating of 25 and a smoke development rating of 450 or less can be left exposed.

Attic Ventilation:

- Enclosed attics and enclosed attic spaces where ceilings are applied directly to the underside of ceiling joists or roof rafters shall have cross ventilation.
- The minimum net free area shall be 1/150th of the area of the vented space.
 - Exception: The minimum net free ventilation area shall be allowed to be reduced to 1/300th of the attic area where a vapor retarder is installed on the warm-in-winter side of the ceiling.
- In cases where a vapor retarder does not exist, the ventilation may be reduced to 1/300th of the attic area where 40-50% of the ventilation is provided by ventilators located not more than 3 feet below the ridge.
- The code does allow unvented attic areas where special provisions are met. If you want to construct an unvented attic (hot roof) area, inquire with the building department staff as to the specific requirements that must be met.

Attic Access:

- Attic areas having a vertical height of 30 inches shall be accessible.
- A rough framed opening shall be provided not less than 22"x30" and shall be located in a hallway off other readily accessible area.

Roofing:

- Roof assemblies shall be covered with approved roof coverings.
- Asphalt shingles cannot be installed on roof slopes of less than a 2:12 pitch.
- All asphalt roofing shingles must be listed to withstand wind speeds of 90 mph or greater.
- Underlayment such as felt paper or other approved material shall be applied to the roof sheathing prior to installing shingles.
- An ice and water shield membrane shall be installed along the eave lines.
 - Ice and water barrier should extend up the slope of the roof to a point at least 24" beyond the exterior wall line.
- Open valleys shall be properly lined with valley flashing material at least 24" in width.
- Closed valleys covered with asphalt shingles shall have valleys lined with flashing material at least 36" in width.
- Proper flashing shall be applied against all vertical walls as well as soil stack, vent pipe and chimney flashing.
- Sidewall flashing shall be continuous or stepped, shall be a minimum of 4" in height and 4" in width, and shall direct water away from the vertical sidewall onto the roof.
- Kick out flashing shall be installed where the lower portion of a sloped roof steps within the plane of an intersecting wall cladding in a manner as to divert or kick out water away from the wall assembly.
- Asphalt shingles shall have the minimum number of fasteners required by the manufacturer but not less than four per shingle.