

## Basement Finishing & Remodeling

All construction must comply with the following codes:

- 2012 International Residential Code
- 2008 National Electrical Code (Per State of Nebraska)
- Waverly Municipal Code

### Permits that may be required

Building Permit

Mechanical Permit

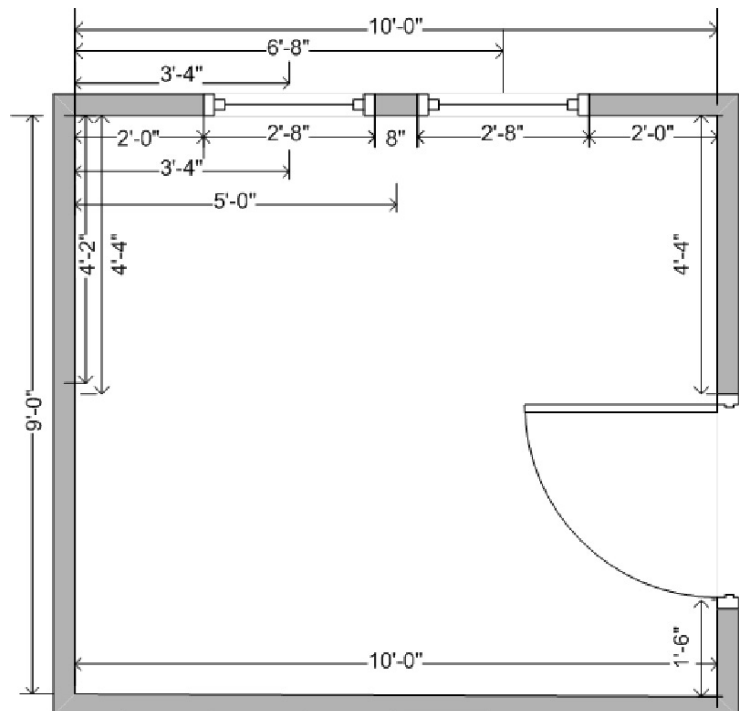
Plumbing Permit

Electrical Permit (Issued by the State of Nebraska Electrical Division)

**Additional Permits may be required based on type of construction**

In order to obtain a permit the homeowner or contractor will need to provide the following information to the City of Waverly Building Department.

1. A construction plan- A plan view of the work to be completed with the location and dimensions of stairs, windows, heating / cooling equipment, plumbing equipment and any other necessary information.
2. If any ceiling height is less than seven feet (7') it must be notated on the plans.
3. Information will need to be provided on the type and grade of lumber to be used, type and value of insulation to be added to wall assemblies.
4. Size and location of Emergency Egress needs to be in conformance with the requirements of Egress Openings.
5. Information on type of Heating and cooling equipment that will be used, if enclosing equipment.



Sample Plan

## **Typical Inspections Required**

1. Under floor slab plumbing
2. Rough-in Plumbing and Framing
3. Rough-in Electrical (State of Nebraska)
4. Egress Window installation (can be done same time as rough-in)
5. Final Electrical (State of Nebraska)
6. Final inspection

## **Existing Construction that may not meet current building codes**

Section 102.7.1 Additions, alterations or repairs (2012 international Residential Code)

Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated. Additions, alterations or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

Building code states that smoke detection systems throughout the house must be upgraded to meet current code requirements when you remodel your basement.

## **Basement Finish requirements**

### **1. Ceiling Heights:**

Ceiling heights unless otherwise approve must be 7' in height or greater.

### **2. Emergency Escapes:**

All Basements and sleeping rooms must have an emergency escape window or exterior door. Emergency escape windows with a sill height below grade must be provided with an emergency escape window well and ladder.

### **3. Smoke Detectors:**

Finishing a basement requires the entire property to upgrade to current standards for smoke detectors. Smoke detectors shall be required in each sleeping area, outside of each sleeping area and on each story of the dwelling. Detectors shall receive their primary power from the house wiring and shall be provided with battery backup. The detectors shall be interconnected so that the activation of one detector will activate all of the connected devices. An exception to this requirement allows battery operated smoke detectors to be added where finish materials have not been removed in areas requiring upgrade, and there is no attic space or other access that would allow the detectors to be hard wired and tied together. If an attic is present in the house then all smoke detectors shall be interconnected.

### **4. Fuel Burning Appliances:**

Furnaces and water heaters cannot be located in a bedroom or bathroom unless appliances are installed in a dedicated enclosure in which all combustion air is taken directly from outdoors, and a weather striped solid door equipped with an approved self closing device is installed. If the furnace and water heater are being enclosed, adequate combustion air must be provided for these appliances to operate properly. For maintenance purposes, a minimum of 30 inches clear working space must be provided in front of furnaces and water heaters. Maintenance or removal of each appliance must be possible without removing or disturbing other walls, piping, valves, wiring and junction boxes.

## 5. Fire Blocking:

Fire blocking must be installed in concealed spaces of wood furred walls at the ceiling level, at 10' intervals along the length of the wall and at all interconnections of concealed vertical and horizontal spaces such as intersections of stud walls and soffits or drop ceilings. Fire Blocks may be constructed of 1-1/2" lumber, 3/4" plywood or particle board, 1/2" gypsum board or fiberglass insulation 16 inches minimum in length, securely fastened.

## 6. Space Under Stairs:

If access to the area or space under the basement stairs is provided for storage or other uses, the walls and ceiling of this enclosed space must be protected on the inside, usually done with drywall.

## 7. Bathrooms:

Toilets must be provided with a minimum of 21" in front of the toilet and 15" from the center of the toilet and any sidewall or other obstruction. Showers shall have a minimum inside dimension of 900 square inches, capable of encompassing a 30" circle and be finished 72 inches above floor with non absorbent materials.

A ventilation fan is required in toilet rooms and bathrooms with inoperable windows. The fan must be vented to the exterior of the building and not terminate within 3 feet of an opening.

## 8. Lighting and Ventilation

Lighting and ventilation are required for any unfinished portion of the basement. Requirements will vary based on extent of work being completed.

## 9. Insulation

Insulation requirements will vary with extent of work being completed check with Building Department for information.

### Framing:

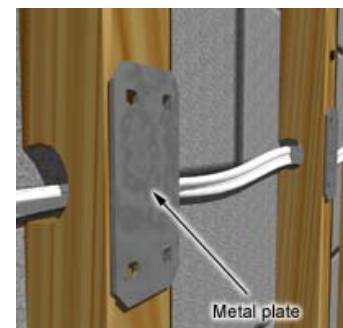
Non load bearing walls may be constructed out wood or metal studs. 2"x4" studs can be spaced a maximum of 24" on center. Utility grade studs can be used in non-bearing walls up to a height of 10'. Exterior walls shall be of sufficient depth to accommodate a minimum R-13 insulation.

### Fire Blocking:

Fire blocking is code mandated to slow the spread of fire in concealed locations. Fire Blocking is required in concealed spaces such as walls, wall/ceiling connections with soffits, stairs, around pipes and other penetrations at the floor ceiling level. This is usually achieved by using 2" nominal lumber, 3/4" plywood or fiberglass insulation 16" in length.

### Protecting for wiring and piping:

In order to protect wiring and plumbing from being damaged by screws or nails 1/16" thick plates shall be placed to protect the wiring and plumbing. This is required when wiring is less than 1-1/4" from the surface of the stud or plate and when plumbing is less than 1-1/2" from the face of the stud or plate. This plate should cover 2" above and 2" below the plate or center of piping.



Where the holes or notching limitations have exceeded standards studs shall be replaced, protected with stud shoes, or repaired per an engineered design. Provide protective plates where required edge clearances (1 ¼" for wires and 1 ½") for plumbing are not met. Holes in engineered wood joist shall be per manufacturer's instructions.

**Floor Joist:**

1. Holes shall not be located closer than 2" from top or bottom of joist.
2. Successive holes shall be separated by not less than 2"
3. The diameter of holes shall not exceed 1/3 the depth of the joist.

**Ceiling Heights:**

Minimum ceiling clearance in habitable rooms is 7'. Bathrooms, closets, storage areas or utility spaces are not considered habitable areas. Habitable rooms should have a minimum of 70 square feet. If a room has sloped ceilings a minimum ceiling height of 7' shall be maintained for 35 square feet.

**Wall Finishes:**

Gypsum wall board can be installed with longer side in either direction, horizontal or vertical to the framing. Cement, fiber cement, or glass mat gypsum backer board shall be used as backers for wall tile in tub and shower areas and wall panels in shower areas.

**Stairways:**

The rise and run requirements for stairways has changed over the years. Many stairways in older homes were constructed in ways that do not meet current codes. Newer homes are constructed to a 7 ¾" riser and 10" standard run. The basic rise and run do not have to be upgraded to meet current code requirements as part of the basement finish.

Floor covering materials should be selected carefully because the maximum variation between the highest and lowest riser cannot exceed 3/8". Adding a finish material more than 3/8" in thickness to the floor in front of the stairs might reduce the height of the first riser too much, and create a code violation.

Open risers are not permitted. Any existing stairways with open risers will need to be corrected as part of the basement remodel. The stairway shall be constructed so that a 4" sphere is not allowed to pass through any openings. When possible a ¾" nosing should be on each tread.

All stairways shall have a minimum clear width of 36" at all points above the handrail height, and below the required headroom height of 6'-8" measured vertically from the sloped plane adjoining the tread nosing's and floor surfaces of landing platforms. Minimum clear width below handrails is 31 ½".

Handrail shall be provided on at least one side of each stairway that consists of 4 or more risers between landings. Handrails shall be continuous along each flight of stairs from the bottom riser to the top riser. Handrails shall be placed between 34" and 38" above the nosing of the step and provide a graspable surface. The handrail shall have a circular cross-section with an outside diameter between 1 ¼" and 2" with a circumference of between 4" and 6". The space between the handrail and wall shall be not less than 1 ½".

Where the height of any riser on the open side of stair or landing is more than 30 inches above the floor guardrails are required to prevent falling off the stairs. Guard rails shall be not less than 34" in height measured at the nosing of treads. The guardrail shall have intermediate railings below the guardrail spaced so a sphere greater than 4 inches in diameter cannot pass through at any point, except that a 6 inch limitation is

permitted at the triangular opening formed by the intersection of the tread and riser at the bottom of the guardrail.

Enclosed accessible space under stairs shall have walls, under-stair surfaces and any soffits protected and enclosed on all sides with ½" gypsum board. Interior portion of under stair surface is not required to be finished as long as the drywall is taped.

### **Plumbing:**

All Plumbing fixtures shall be provided with approved drains and vents. Vents shall be connected to the venting system for the building or where compatible with the listing approved air admittance valves may be used.

Materials – All piping materials shall be labeled with the manufacture's mark or name and the quality or grade of the product. Water supply lines must be of a Polyethylene material such as Pex. Copper tubing can be utilized, as long as it does not amount to more than 5% of the total water supply piping.



Access to valves and cleanouts- All cleanouts and or valves shall remain accessible for maintenance and operation. A door or removable panel is an acceptable means of access.

### **Standard Plumbing requirements**

- Minimum slope for drain lines is ¼" of fall for each 12" of run for drain pipe that is 2" or smaller. Pipe 2.5" or larger must slope 1/8" of fall for each 12" of run. .
- Access panels must be provided for all hydro massage bathtubs and air admittance valves as required by the manufacturer.
- An individual shutoff valve is required on all fixtures that supply water other than a bathtub or a shower.
- All shower control valves must be the anti-scald type( pressure balance, thermostatic mixing, or combination pressure balance/thermostatic mixing per ASSE 1016)

### **Mechanical Systems:**

Access must be maintained to unions, valves, equipment in ceilings and walls. Provide an identifiable readily accessible opening with enough clearance to maintain and inspect the devices.

Clearances- installed equipment shall maintain clearance to allow inspection, service and repair. Clearances shall follow manufacturer requirements or 3" whichever is greater.

Bathroom exhaust fans shall have a capacity of not less than 50CFM and discharge directly to the outdoors. An exhaust fan is required in all rooms containing a water-closet, bathtub or shower.

Combustion air- If walls are to be placed around the furnace and hot water heater, adequate combustion air must be maintained for proper operation. Access and clearance must be maintained to replace and service the

equipment without the removal of other equipment or walls. Generally 30" is required in front in front of a furnace or hot water heater unless more is required by the manufacturer. For air from inside the building room occupied by a gas appliance must have a total volume of 50 square feet for each 1000BTU/H combined input rating of the appliance. An adjacent room may be included in the minimum volume if openings between the rooms are provided.

**Energy Code Requirements:**

All new construction and remodels are required to follow the 2009 IECC (International Energy Conservation Code). You can use the free Res Check software to perform an energy audit on your home to determine insulation requirements. The program can be found at <http://www.energycodes.gov/rescheck/>.

**Please allow a 24-hour notice when calling for an inspection. To obtain a building permit or schedule a Inspection Contact the City of Waverly at (402) 786-2312 ext 1**

**This informational sheet is a summary guideline and is not conclusive of all codes and requirements.**