

—Plumbing Homeowner's Guide—

The following is an informational document only.

May I do my own plumbing work?

A homeowner may do his or her own plumbing work provided these three criteria are met:

1. It is a single-family dwelling.
2. The person resides at this residence.
3. The person doing the work actually owns the dwelling.

*A friend or family member **may not** obtain the Homeowner's Plumbing Permit.*

When do I need to obtain a plumbing permit?

Permits are required before any alterations are made to an existing plumbing system or if a new system is installed. A plumbing system is defined as a system water supply and distribution pipes, plumbing fixtures, supports, and appurtenances: soil, waste and vent pipes: sanitary drains and building sewers to an approved point of disposal.

When and where do I get a permit?

Permits are issued at the Building Services department on the first floor of the City Center, located at 231 North Dakota Avenue. Office hours are between 8 a.m. and 5 p.m., Monday through Friday excluding holidays. The phone number for the office is 605-367-8670. The Plumbing Inspectors are in the office to answer questions from 8 a.m. to 9 a.m. The Plumbing Inspector's phone number is 367-8253.

Active Permits.

Your permit only pertains to the work described on the permit application. Homeowner plumbing permits have a life period of two years maximum, after the two-year time period has elapsed, a new permit will be required. In order for the permit to remain active for the duration of the two-year period, a required inspection by a division of Building Services (Building, Plumbing, Mechanical, or Electrical) shall be performed within 180 days of issuance and within each consecutive 180-day time period. It is the permittee's responsibility to make all required corrections and call for reinspection within a 30-day time period. No permit shall be canceled, abandoned, or have occupancy granted with outstanding violations.

Do I have to do the work, or may I hire a friend or family member to do it for me?

The only person a homeowner's permit allows to do the work is the actual homeowner. Any person who receives monetary compensation for doing any plumbing work in the city of Sioux Falls must be employed by a plumbing contractor licensed in the city of Sioux Falls and must be doing the work for said plumbing contractor. In simpler terms, the work must be run through the plumbing contractor's business and he may **not** do the work on the side.

What if I have already done my plumbing work without obtaining any permits or receiving any inspections?

Work done without permits is always a problem for both the homeowner and the inspectors. The inspector cannot inspect the work if he cannot see it; hence, you will be required to remove wall and/or ceiling coverings to the extent that a proper inspection may be obtained.

If any code violations are noticed during the inspection process, said violations will be required to be corrected.

IMPORTANT NOTICE: Ensure that all products comply with:

- Uniform Plumbing Code—Section 301.1.1 Approvals
- International Plumbing Code—Section 303.4 Third Party Agencies

All pipe, pipe fittings, traps, fixtures, material, and devices used in a plumbing system shall be listed or labeled (third-party certified) by a listing agency (accredited conformity assessment body) and shall conform to approved applicable recognized standards referenced in this code, and shall be free from defects.

Inspections. Ground Work. Before the work in the ground is covered by dirt, sand, etc., and the concrete is poured, a ground work inspection is required. All the piping shall be complete and it shall be ready for covering when the inspection is requested. The Plumbing Inspector will either give you the OK to cover it up; or if there are corrections, said corrections will need to be repaired and the inspector will need to be called for a reinspection.

Rough-In. After all of the drainage pipes, waterlines, tubs, and showers are installed, a rough-in inspection is required.

This is before any insulation or wall coverings are installed. The Plumbing Inspector will either give you the OK to cover it up; or if there are corrections, said corrections will need to be fixed and the inspector will need to be called for a reinspection.

Final. After all the fixtures are set, the drain lines and the waterlines are connected and the water heater is turned on (if applicable), a final inspection is required to be obtained. The Plumbing Inspector will either give you a final or if there are corrections, you will need to fix the problems and then call the inspector for a reinspection.

Requesting an Inspection. It is the responsibility of the permit applicant to provide accessibility to the work. One should always keep in mind, **“If the Plumbing Inspector cannot see the work, the work cannot be inspected.”** The City of Sioux Falls is not liable for expenses entailed in the removal or replacement of any material required to allow inspection. There are separate inspectors for the Electrical, Plumbing, Building, and Mechanical Divisions. **All of the applicable inspectors must approve the rough-in or framing of their specific division before anything is covered.**

The permit holder must notify the Plumbing Inspector when the work is ready for inspection. To request an inspection, call 367-8253 or 367-8670 a minimum of 24 hours prior to the day the inspection is requested for. Inspection requests after office hours can be logged in on the answering machine at 367-8670.

When calling for inspection, be prepared to give the following information:

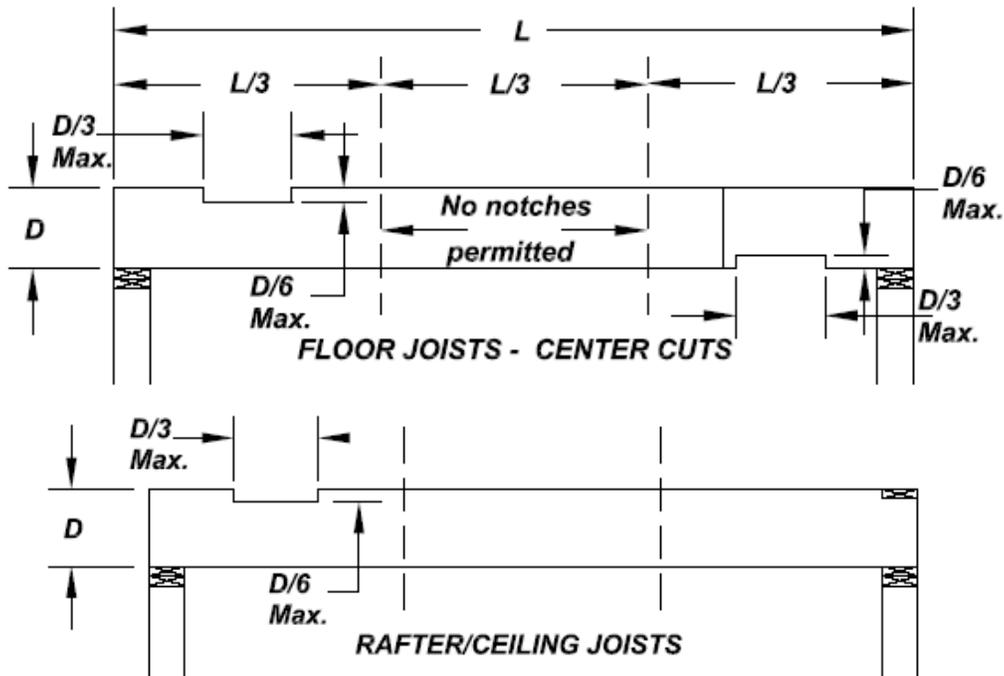
- Street address.
- Owner’s name.
- Type of inspection needed (ground work, rough-in, final).

- Date and time frame that the inspection will be requested for. Keep in mind that the inspectors may not enter an occupied dwelling unit unless an adult or contractor with authority over the dwelling is present and gives permission to enter.
- Daytime phone number that the permit holder may be reached at.

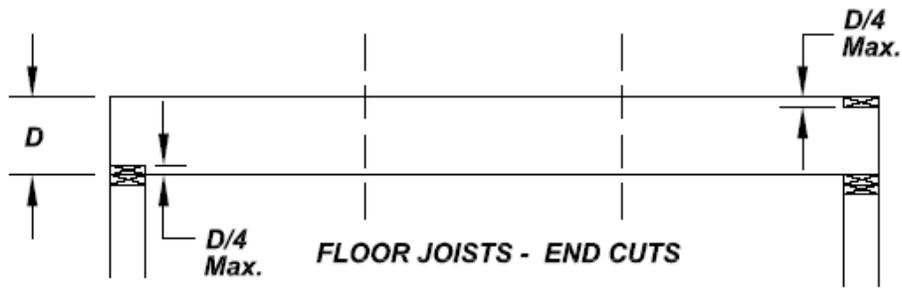
Reinspection Fee. A fee may be assessed, and must be paid before any further inspection will be made, for any of the following reasons:

- When work, for which an inspection is called, is not completed or ready for inspection.
- When corrections called for are not made.
- When access to the premises is not provided on the requested inspection date.
- For deviating from the approved plans.
- When work is concealed from access or sight before it has been inspected.
- When work is done in phases which require additional inspections, a fee will be charged per inspection; additional fees must be paid prior to inspection.

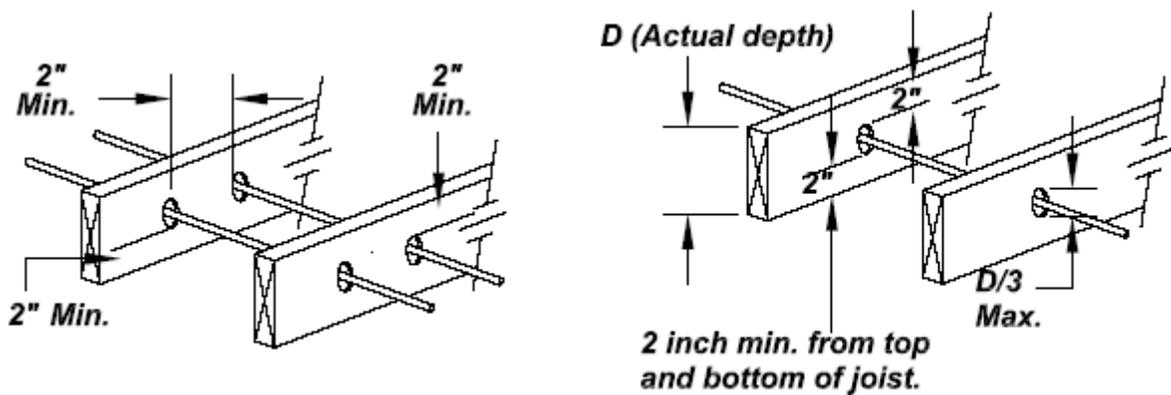
Protection of Structure. Notching Joists. Notches in sawn lumber (2 x 4, 2 x 6, 2 x 8, etc.) shall not exceed one-sixth of the depth of the member and shall not be longer than one-third of the depth of the member and shall not be located in the middle one-third of the span.



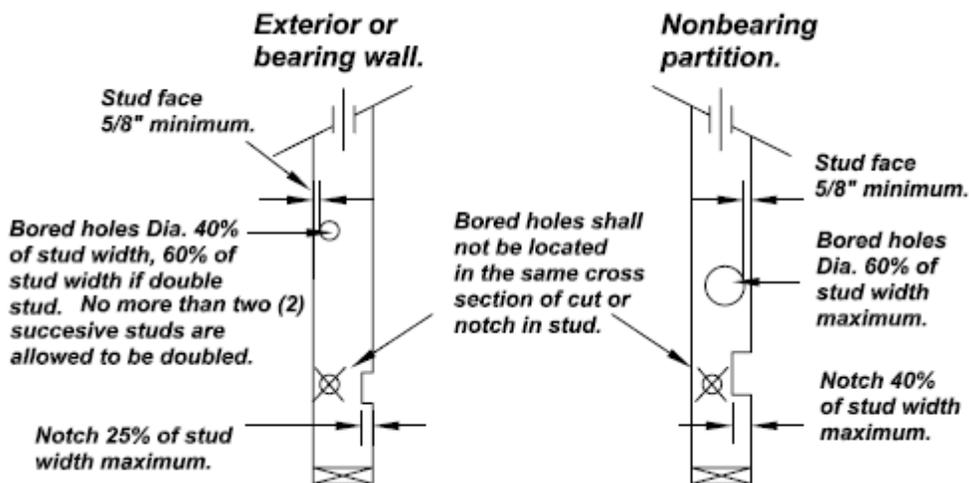
Notches on the ends of sawn lumber shall not be notched over one-fourth the depth of the member.



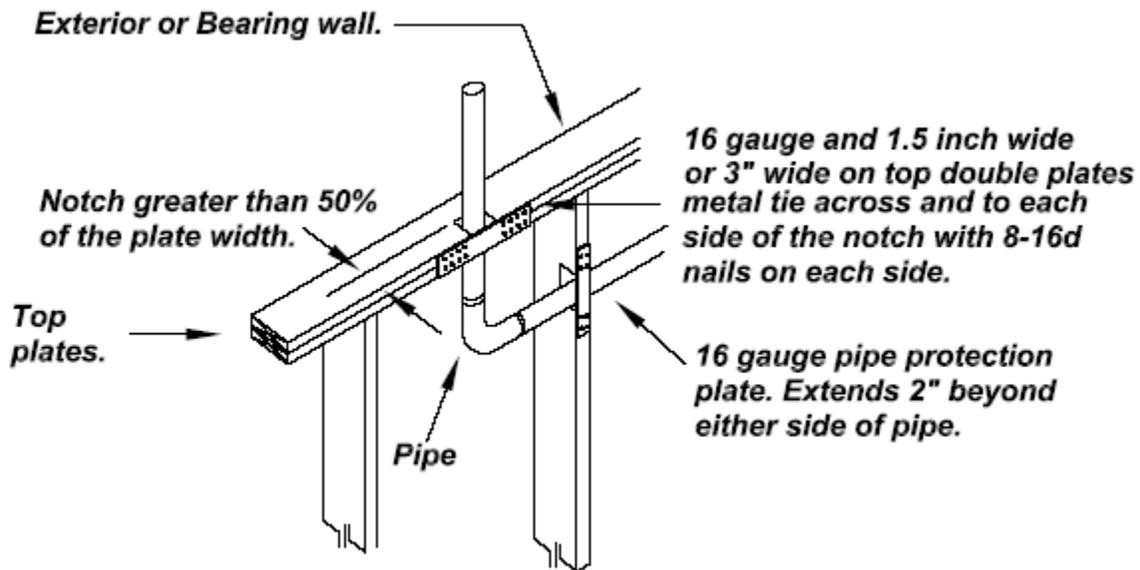
Holes in Joists. Holes drilled in sawn lumber shall not be larger than one-third the depth of the member. The holes may not be closer than 2 inches to the bottom or top of the member. Any two holes may not be closer than 2 inches from each other and any hole may not be closer than 2 inches from a notch.



Drilling and Notching Studs. A maximum of 25 percent of the width of a stud may be cut or notched in an exterior wall or interior load bearing wall. A maximum of 40 percent of the width of a stud may be cut or notched in a non-load-bearing wall. A bored or drilled hole in a stud may not exceed 40 percent of the width of the stud (exterior, load bearing, or non-load-bearing), provided the hole is no closer than 5/8 inch to the edge of the stud and the hole is not located in the same section as a cut or notch.

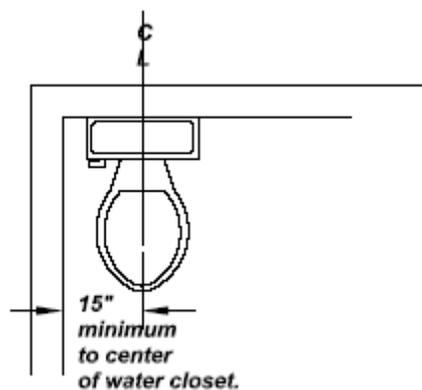


Drilling and Notching of Top Plate. When the top plate of an exterior wall or interior load bearing wall is drilled or notched by more than 50 percent of its width, a galvanized metal tie is required to be installed. The metal tie shall be a minimum of 16 gauge, 1 1/2 inches wide, and shall be fastened on each side of the notch or hole by a minimum of eight 16d nails.

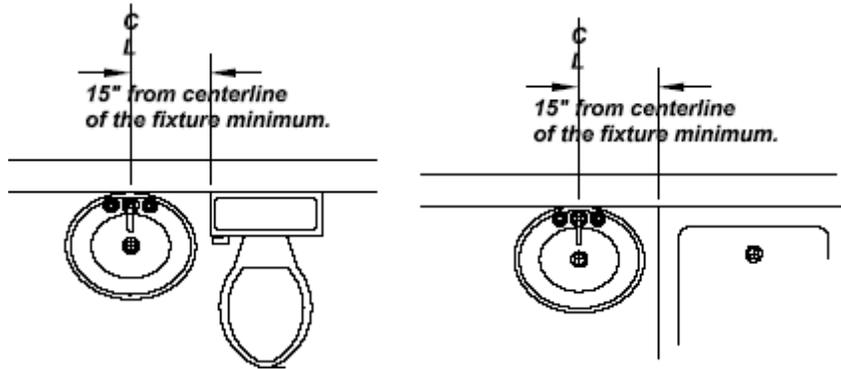


Pipe Protection. Piping that is installed in holes of studs, joists, rafters, or similar members that are less than 1 1/2 inches from the nearest edge shall be protected by a shield plate. The plate shall be a minimum of 16-gauge steel, cover the area the member is notched or bored, and shall extend a minimum of 2 inches above bottom plates and below top plates.

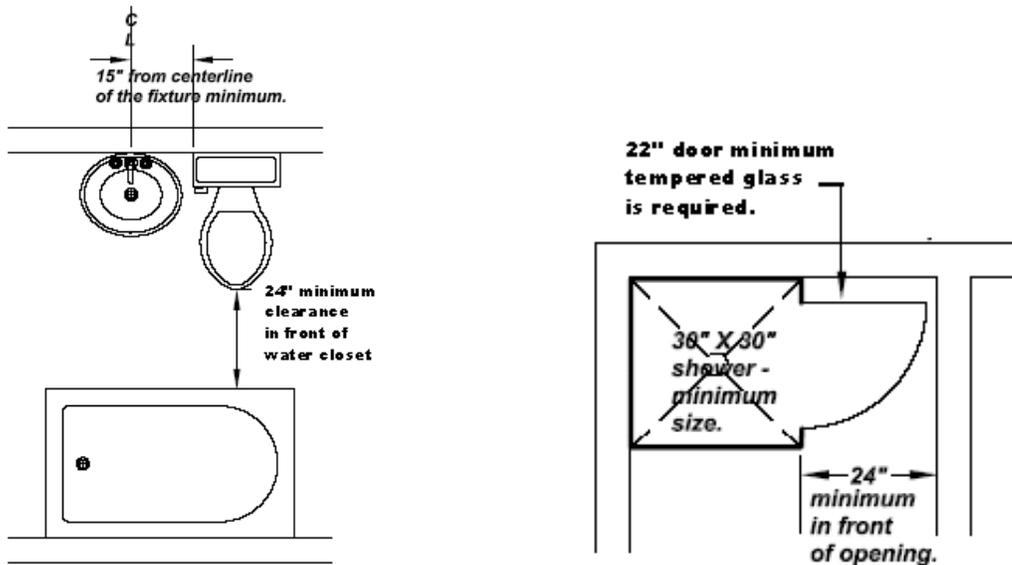
Plumbing Fixtures. Installation. A minimum of 15 inches shall be provided from the center of a toilet or bidet to an adjacent wall or partition. This will also include a tub or shower and vanity.



There shall also be 15 inches from the center of a lavatory to a toilet, tub, or wall.



A minimum of 24 inches shall be provided in front of a toilet, bidet, or lavatory to any wall, partition, door, or any other fixtures.



The location of any pipe, fixtures, or similar items shall not interfere with the operation of any door or window.

Standpipes. A standpipe, such as used for a washing machine, shall be a minimum of 18 inches and a maximum of 30 inches above the trap weir.

Showers. All showers shall have a minimum of 1,024 square inches and shall also be capable of encompassing a 30-inch circle.

Water Heaters. An approved automatic water heater or other type of domestic water heating system sufficient to supply hot water to plumbing fixtures and appliances intended for bathing, washing, or culinary purposes.

Location. Only a direct vent water heater or an electric water heater are allowed to be installed in a bedroom or bathroom.

When a water heater is installed on a combustible surface where damage may result from a leaking water heater, a watertight, corrosion-resistant pan shall be installed beneath said water heater. The pan shall be equipped with a minimum 3/4-inch drain which shall discharge to an approved location; i.e., floor drain.

Relief Valve. All water heaters shall be provided with a pressure-limiting device and a temperature-limiting device. The drain shall not be smaller than the relief valve's outlet.

Venting. When the water heater is replaced, the venting will be required to meet current codes. Venting of Category I type appliances; i.e., water heaters, is very complicated and too extensive to go into detail in this document; therefore, contact a Mechanical Inspector for the correct information concerning this type of venting.

Combustion Air. Combustion air is the air necessary for complete combustion of a fuel-burning appliance; therefore, combustion air must be supplied for all fuel-burning appliances. The exception to this is a direct vent appliance that obtains its own combustion air from the outdoors. Combustion air shall be provided in one of the following manners:

Indoor Air. The minimum volume of indoor air for combustion air shall be calculated at 50 cubic feet for every 1,000 Btu/h of appliance input. If the furnace room is not large enough for the required volume of combustion air, openings into adjacent rooms may be installed. Said openings shall be located within 12 inches of the top and within 12 inches of the bottom of the enclosure. The size of the openings shall be based on 1 square inch for every 1,000 Btu/h input rating of all fuel-burning appliances; however, the minimum size of the opening shall be 100 square inches with no one dimension less than 3 inches. Unless the louver specifically gives the free area, it is assumed that it is 75 percent free area for a metal grill and 25 percent for a wood grill.

Outdoor Air. The City of Sioux Falls has adopted the following chart for determining the opening size for the combustion air to the outdoors.

Total Input of Appliances Thousand of Btu/h	Required Free Area of Air Supply Opening or Duct, Square Inches
25 (26.4 KJ/h)	7 (4,516 mm ²)
50 (52.8 KJ/h)	7 (4,516 mm ²)
75 (79.1 KJ/h)	11 (7,097 mm ²)
100 (106 KJ/h)	14 (9,032 mm ²)
125 (132 KJ/h)	18 (11,610 mm ²)
150 (158 KJ/h)	22 (14,190 mm ²)
175 (185 KJ/h)	25 (16,130 mm ²)
200 (211 KJ/h)	29 (18,710 mm ²)
225 (237 KJ/h)	32 (20,650 mm ²)
250 (264 KJ/h)	36 (23,230 mm ²)
275 (290 KJ/h)	40 (25,810 mm ²)
300 (317 KJ/h)	43 (27,740 mm ²)

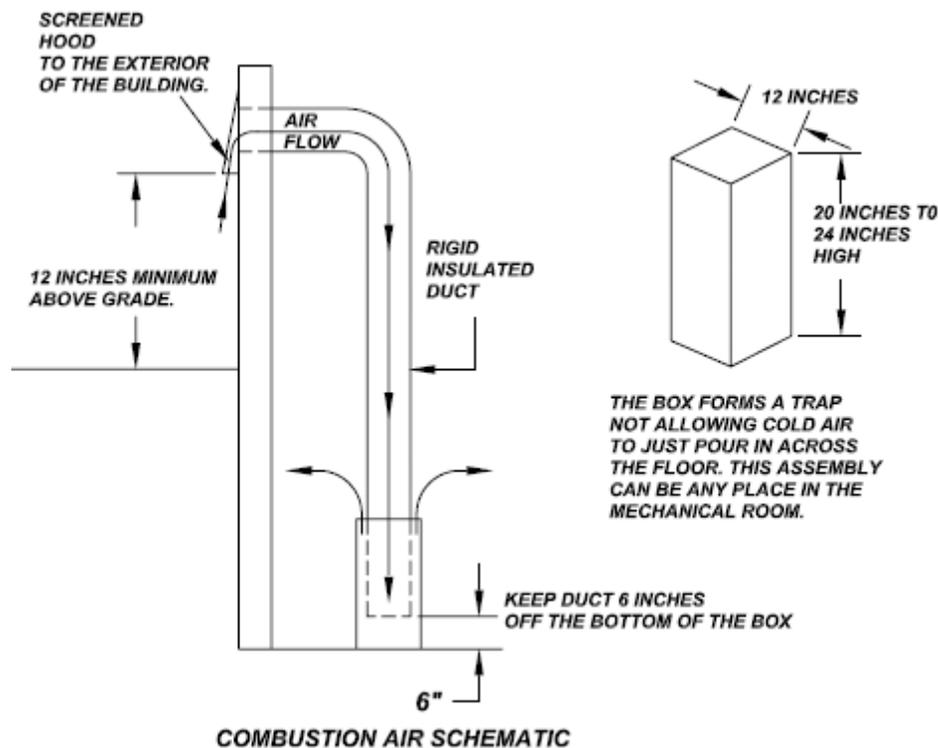
1. For total inputs that fall between the listing figures, use the next largest listed input.
2. These figures are based on the maximum equivalent duct length of 20 feet (6.1 m). For equivalent duct lengths in excess of 20 feet (6.1 m) to and including a maximum of 50 feet (15.2 m), increase the round duct diameter by one size. A square or rectangular duct may be considered only where the required duct size is 9 in² (5,800 mm²) or larger and the smaller dimension must be not less than 3 inches (76.2 mm).

The following shows the square inches of a round duct to determine the required opening to the exterior.

- 4 in. round = 12.57 sq. in.
- 5 in. round = 19.63 sq. in.
- 6 in. round = 28.27 sq. in.
- 7 in. round = 38.48 sq. in.
- 8 in. round = 50.27 sq. in.

Combustion Air Ducts. Combustion air ducts shall be made of galvanized metal or an equivalent corrosion-resistant material. **Flexible air ducts are not allowed to be used for combustion air.** Ducts that terminate in an attic space shall not have a screen on it. The intake of a combustion air that terminates on the exterior of a building shall not be located less than 12 inches above grade. Ducts shall terminate in an unobstructed space allowing

free movement of combustion air to the appliances. The remaining space surrounding a chimney liner, gas vent, or plastic piping installed within a masonry chimney flue shall not be used to supply combustion air.



Water Supply. Materials. Pipe and fittings for the water supply in a dwelling unit may be brass, copper, cast iron, CPVC, galvanized malleable iron, galvanized wrought iron, galvanized steel, or PEX.

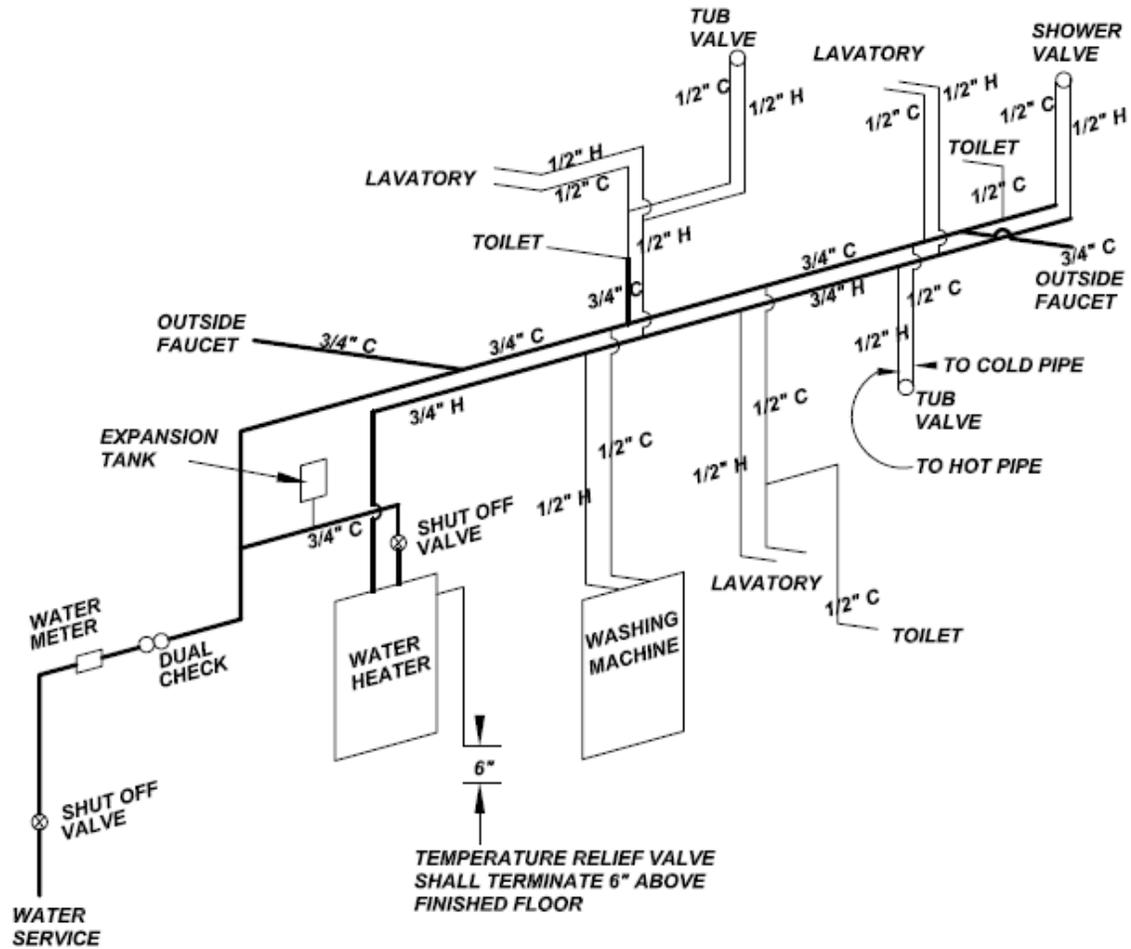
PEX tubing shall not be installed within 18 inches of the inlet and discharge of a water heater. This does not apply to electric water heaters.

Flexible corrugated connectors made of copper or stainless steel are allowed; however, they are limited in length. A maximum of 24 inches is allowed for water heater, 30 inches for fixtures, 72 inches for a washing machine, and 120 inches for a dishwasher or ice maker.

Valves. A control valve shall be installed immediately ahead of each water-supplied appliance and ahead of each slip joint or appliance supply. The valves are required to be accessible. A full-way valve shall be installed on the cold water supply line of each water heater.

Support. Copper tubing or pipe 1 1/2 inches and smaller shall be supported horizontally at intervals not greater than 6 feet. PEX pipe at intervals not exceeding 32 inches.

Supply Lines. A minimum of a 1/2-inch I.D. supply line shall be installed for each hot or cold connection to each fixture. No more than two fixtures are allowed on one 1/2-inch line.



SCHEMATIC- WATER SUPPLY LINE

Water Hammer. All building water supply systems in which quick-acting valves are installed shall be provided with devices to absorb the hammer caused by high pressures resulting from the quick closing of these valves such as water hammer arrester's or approved mechanical devices as long as they are accessible.

Sanitary Drainage. Materials. Drainage piping shall be cast iron, galvanized steel, galvanized wrought iron, lead, copper, brass, Schedule 40 ABS DWV, or Schedule 40 PVC DWV.

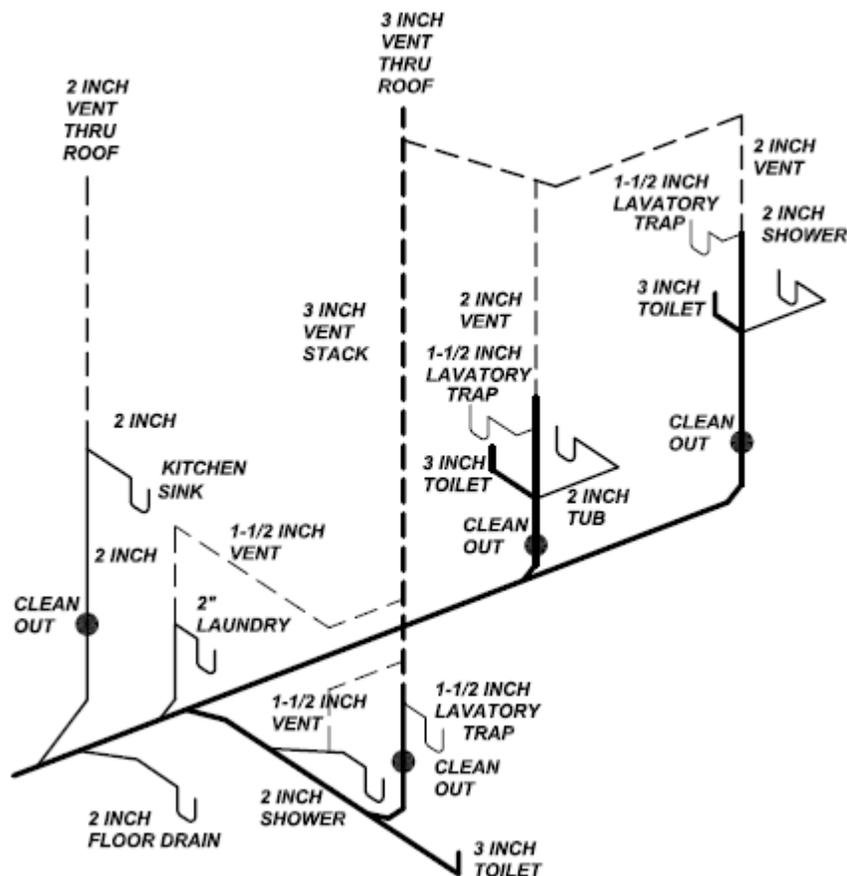
Plastic piping shall be glued with the specific type of cleaner, solvent, or glue for that type of pipe. All-purpose glues are not allowed to be used.

Support. All piping shall be properly supported. Underground piping shall be supported for its entire length. Aboveground piping shall be supported to ensure alignment, prevent sagging, and allow movement for expansion and contraction of the pipe. ABS and PVC pipe shall be supported at a maximum distance horizontally of 4 feet, 1 1/2 inch and smaller copper pipe or tubing at a maximum of 6 feet, 1/2-inch steel a maximum of 6 feet, and 3/4- and 1-inch steel a maximum of 8 feet.

Tail Pieces and Drains. A minimum of a 1 1/2-inch diameter trap and trap arm shall be provided for sinks, dishwashers, laundry tubs, bathtubs, and similar fixtures. A minimum of a 1 1/4-inch diameter shall be provided for bidets, lavatories, and similar fixtures. Floor drains shall have waste outlets not less than 2 inches in diameter.

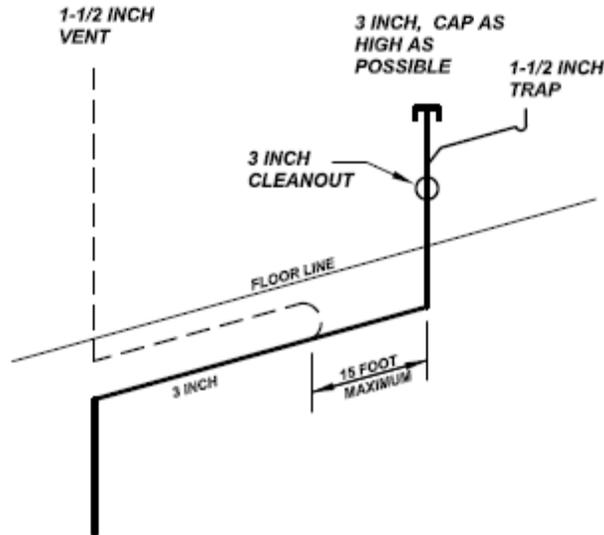
Slip Joints. Slip joints are allowed to be used on the inlet, outlet, and trap seal within each trap. If the slip joint is to be concealed, it must be provided with an access panel with its minimum dimension being 12 inches. This is to provide the slip joint with access for inspection and repair.

Grade. Horizontal drainage pipe less than 4 inches in diameter shall have a uniform slope of not less than 1/4 inch per foot. Pipe that is 4 inches and larger shall have a slope of not less than 1/8 inch per foot.



DRAINAGE FOR ISLAND SINK

ISLAND SINK DETAIL



Vents. Materials. Drainage piping shall be cast iron, galvanized steel, galvanized wrought iron, lead, copper, brass, Schedule 40 ABS DWV, or Schedule 40 PVC DWV.

Size. The minimum vent size for an individual vent is 1 1/4 inches and also not less than one-half the diameter of the drain to which it is connected. The vent shall be a minimum of 2 inches in diameter where it terminates above the roof. The vent shall maintain this size to a point a minimum of 1 foot below the roof line

Grade and Connections. All vent pipes shall not have any sags. The horizontal pipes shall be level or slope back to the drainage pipe it serves. When vents connect to horizontal drainage piping, the vent connection shall be above the centerline of the drainage pipe. This connection shall be located downstream of the trap being served. The vent shall run vertically to a point that is a minimum of 6 inches above the flood level rim of the fixture it is venting before it is allowed to run horizontally.

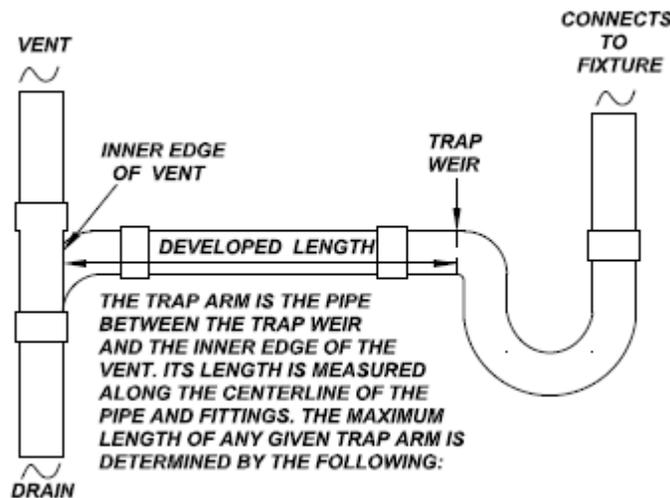
Vent Termination. Each vent pipe or stack shall extend through its flashing and shall terminate a minimum of 6 inches above the roof. It shall be a minimum of 1 foot from any vertical surface. The termination shall be a minimum of 10 feet from any openable window, door, opening, air intake, or vent shaft. The exception to this is if the vent terminates a minimum of 3 feet above said openings.

The vent pipes may extend through the roof separately or combined for one penetration through the roof; however, the size must be increased if combining vents to accommodate the additional load. The vent may be 2 inches in diameter if it serves the kitchen sink only; otherwise, 3 inches is the minimum it may be. If a change in diameter is required, it shall be made inside the building at least 1 foot below the roof.

Vertical Wet Venting. A wet vent is a vent that also serves as a drain. Wet venting is limited to vertical drainage piping receiving the discharge from the trap arm of one and two fixture unit fixtures that also serves as a vent for no more than four fixtures. All wet vented fixtures shall be within the same story. No wet vent shall exceed 6 feet.

Traps. Each plumbing fixture is required to have a trap. It may be an integral trap like a toilet has or more often a separate trap from the fixture. One trap may not serve more than three lavatories adjacent to each other, provided the waste outlets are not more than 30 inches apart and the trap is centrally located. The vertical distance between the trap and the fixture outlet shall be as short as possible; however, it shall never exceed 24 inches in length.

Each trap shall be protected against siphonage and back-pressure by means of a vent. The distance from the trap to the vent is determined by the size of the trap in accordance with the following table. The distance is measured from the trap weir to the inner edge of the vent. The trap arm may change directions; however, if the change of direction is greater than 90 degrees, a cleanout is required.



Trap Size	Maximum distance from vent to trap
1 1/4"	2 feet 6 inches
1 1/2"	3 feet 6 inches
2"	5 feet
3"	6 feet
4" and larger	10 feet

“S” traps, bell traps, running traps, and crown-vented traps are not allowed to be used. No fixture is allowed to be double trapped.

Fuel Gas Piping. Fuel gas piping may be of steel (wrought-iron, black, or galvanized) or seamless copper tubing and CSST (Corrugated Stainless Steel Tubing).

Every appliance shall have a shut-off valve installed within 6 feet of said appliance and shall be installed upstream from the union. The shutoff shall not be installed in a concealed location and shall be installed so as to provide access for operation.

One-half-inch steel gas pipe shall be supported at intervals not exceeding 6 feet and 3/4- or 1-inch pipe at a distance not greater than 8 feet. Gas piping shall not be installed in or through an air duct, clothes chute chimney, or gas vent. Unions, tubing fittings, right and left couplings, bushings, swing joints, and compression couplings are not allowed to be installed in concealed locations.

Gas piping installed underground must be a minimum of 18 inches deep. The trench shall be dug so that the pipe is substantially continuous on the bottom. Gas piping that is in contact with the earth shall be of materials that will not corrode or shall be protected against corrosion.

A sediment trap shall be provided before each piece of equipment. A minimum of a 3-inch drip leg is required. However, fireplaces, lights, ranges, and clothes dryers are not required to have sediment traps before them.

Gas piping shall be sized to accommodate all equipment. There are many charts and different situations to figure out the required gas line size; therefore, it is impossible to put everything in this handout.

Gas piping shall be leak tested with air, nitrogen, carbon dioxide, or an inert gas. OXYGEN SHALL NEVER BE USED. The test pressure shall be one and one-half times the proposed maximum working pressure; however, never less than 3 psi. The test shall have a duration of not less than ten minutes.

Yellow-jacketed CSST must be bonded to the bonding electrode conductor or copper water service below the water meter. A minimum of a #6 copper wire must be used. Bond clamps used shall be stamped Direct Burial or "DB."

Black-jacketed CSST identified by the brand names Counter Strike or Flash Shield are not required to be bonded if the appliance has a ground wire installed directly to it. If the ground wire is not provided, it will be required to be bonded.