
Activity 2.3.9 Residential Plumbing

Introduction

Prior to indoor plumbing, people obtained water from outside sources such as a well or a nearby stream. Waste disposal was handled by using outdoor facilities or physically carrying wastewater in containers outdoors for disposal. Luckily, today we have access to indoor plumbing which provides us with easy indoor access to clean water and handles the disposal of wastewater. As users of the system, we typically do not think about the plumbing system that provides us with these luxuries.

Plumbing systems are designed to transport supply water and wastewater within a building and include water supply pipes and plumbing fixtures as well as drain pipes and venting for wastewater disposal. Plumbing can also include storm water drainage components and gas piping.

In this activity you will plan the water supply and wastewater disposal system for your Affordable Housing Project and create a plumbing plan to document your design.

Equipment

- Print of your Affordable Housing Project Floor Plan(s)
- Colored pencils
- **Residential Plumbing Code Requirements**

Procedure

1. If you have not already done so, sketch the preliminary location of the fixtures on your Affordable House Floor Plan(s). Include all fixtures and appliances that must have a water supply and/or wastewater removed.
2. Locate the water heater for the home and sketch its location on your floor plan.
3. On your floor plan, sketch a preliminary plumbing system that complies with the residential plumbing code requirements to include hot water lines, cold water lines, and drain lines using the appropriate line color and style.
4. Identify plumbing walls. Plumbing walls are thicker interior walls that will accommodate the necessary piping for the water supply and drain-waste-vent system.
5. Using the supply water pressure that you found in Activity 2.3.8 Residential Water Supply estimate the actual water pressure supplied to the water closet that is furthest from the location of the entrance of the water supply into the building. Assume that the interior plumbing is $\frac{3}{4}$ inch copper pipe with screwed fittings. You will need to assume a vertical change in elevation between the meter and

the inlet pipe to the water closet and estimate the pipe length and fittings needed to transport the water through the plumbing to the water closet.

6. **(Optional)** Incorporate your plumbing design into your 3D model and create a plumbing plan.
7. Revise the drawings of your affordable home to reflect your water supply line and revise the wall thickness for walls identified as plumbing walls.

Conclusion

1. What is important to consider when designing a plumbing system?
2. Was it necessary to relocate the water supply service or sanitary sewer lateral to accommodate your plumbing design? Why or why not?
3. Why is it important for architects to be aware of how plumbing systems are designed or constructed?
4. What energy-efficient design features do you plan to incorporate in your plumbing design?