



Home Construction Utility Steps

Complete the [Construction Utilities Handout](#) to explore and familiarize yourself with the basic and common utilities found in the home. For the practical part of this project you will follow the steps below to add the plumbing and electrical components to your project. The plumbing should be pretty straight forward and drain will be "dry fitted" rather than glued. The electrical you have already had some experience with, and as such should be able to show your knowledge, skills, and experience with excellent technique and quality install with the finished work. Each group will receive the appropriate materials to complete the work. Measure carefully as to not waste material. [Click here to download print PDF version of steps below.](#)

Plumbing Steps

1. **Bottom ABS drain pipe** - On the exterior wall, you should have a 12" spacing height-wise between the bottom plate and top plate. Taking into account the 3/4" depth 1 7/8" hole you previously bored out, you are to dry fit a 1 1/2" ABS diameter pipe up to a T fitting to be located exactly in the centre, OC of the top and bottom plates. Careful calculation and measurement is required to cut the 1 1/2" ABS pipe to the correct length using either a hack saw or chop saw.
2. **Top ABS drain pipe** - Measure and cut, and install another piece of ABS drain pipe do that it ends flush with the top of your top plate.
3. **P-Trap** - you will need to make a ABS nipple (short piece, showing 1 1/2" pipe between fittings) to connect the T fitting to the P-trap the
4. **Bottom Pex water tubing** - the hot and cold 1/2" water tubing will also be measured so that the T is exactly centre OC between the top and bottom plates. You must take in account the 3/4" depth the tubing will sit into the bottom plate plus half the height of the space between the top and bottom plate minus the brass T fitting and taking in account T fitting tube over-lap to have the T fitting exactly centre, OC of top and bottom plates
5. **Top Pex water tubing** - measure and cut so that the Pex tubing length from the T to flush of the top plate taking into account the T fitting tube overlap connection.
6. **T-tap tubing extension** - cut two 3" pieces to represent going to the hot and cold valves which in turn go to the water faucet.
7. **Crimping Pex** - Once you have all your tubing cut, double check and do a dry fit to ensure accuracy, then using the crimper and the 1/2" tubing crimps, crimp the T fitting into place on both the hot and cold water supplies and slide into place



Utility Sample 1



Utility Sample 2



Utility Sample 3



Utility Sample 4



Utility Sample 5



Utility Sample 6



Utility Sample 7



Utility Sample 8



Electrical Steps

1. Wiring diagram - Using a [blank wiring template](#), individually draw out your electrical symbolic, schematic, and layout diagrams using pencil and after using legend with colour for the power (black), neutral (blue), and ground (green) similar to [sample](#), to show how wires are connected and hand-in for evaluation
2. **Box rough-in** - Start by measuring and marking locations for each of your boxes. As this is a partial sample, receptacles will be mounted 4.5" OC above finished floor, with finished hard wood floor to be 1/2" above plywood sub-floor. Switch and octagon box to be mounted 9.5" OC from finished floor.
3. **Cable holes** - Using a 3/4" speed (spade) drill bit carefully align and drill holes, one from basement through bottom plate, and the second hole on the first stud supporting both receptacle and switch boxes near the top plate
4. **Cable rough-in** - route and run your cables between each of the boxes with the feed supply coming from the basement as shown in sample 7, then to the first receptacle, then to the second receptacle, to the switch, then to the octagon box. Remember to have 6-7" of wires inside each box from cable terminations, allowing for feed cable ground wire to go under ground screw first and still have at least 5" left to spare for connections. Ensure you have cable stapled properly according to the hydro code.
5. **Rough-in inspection** - have instructor inspect your work to ensure box locations, cables, clamps, wire lengths, grounding, cable supports are all done correctly.
6. **Receptacle connections** - normally devices are connected after the drywall has gone up, but at this stage we will connect devices to bring closure to the electrical project section, so you will connect up both receptacles using marrets and one terminal for each as [previously learned in past project](#).
7. **Switch and lamp connections** - connect up a single pole, single throw toggle switch with the feed going to top of switch terminal and load going to lamp and return wires marreted together, then connect up the lamp with extra ground wire safely tucked to back of box
8. **Testing cct** - Using a multi-meter, check that all of your circuit is properly connected and working. be prepared to demonstrate your it's working condition and has no shorts.

Evaluation:

When installing the sample utilities in your groups of three, you will be marked on your knowledge, steps taken, participation, effort, teamwork, progress, and process. Using the weekly [task report](#) will allow you individually to track and record your individual progress daily, get initialed by instructor, and earn individual marks upon submission at the end of each week. Below is a breakdown of the project sections and what will be evaluated:

Evaluation Breakdown Component Descriptions	Marks
Utilities Handout - Handout - blanks filled in, questions answered	50
Wiring Cct Diagrams - template - symbolic, schematic, & layout -pencil and colours	30
Group Utilities Installed - locations, measurements, cuts, connections, and group work	60
Individual Task Reports - task report - updated daily, completed, and submitted weekly	~