



Visualization Chapter 8

Electrical Drawings

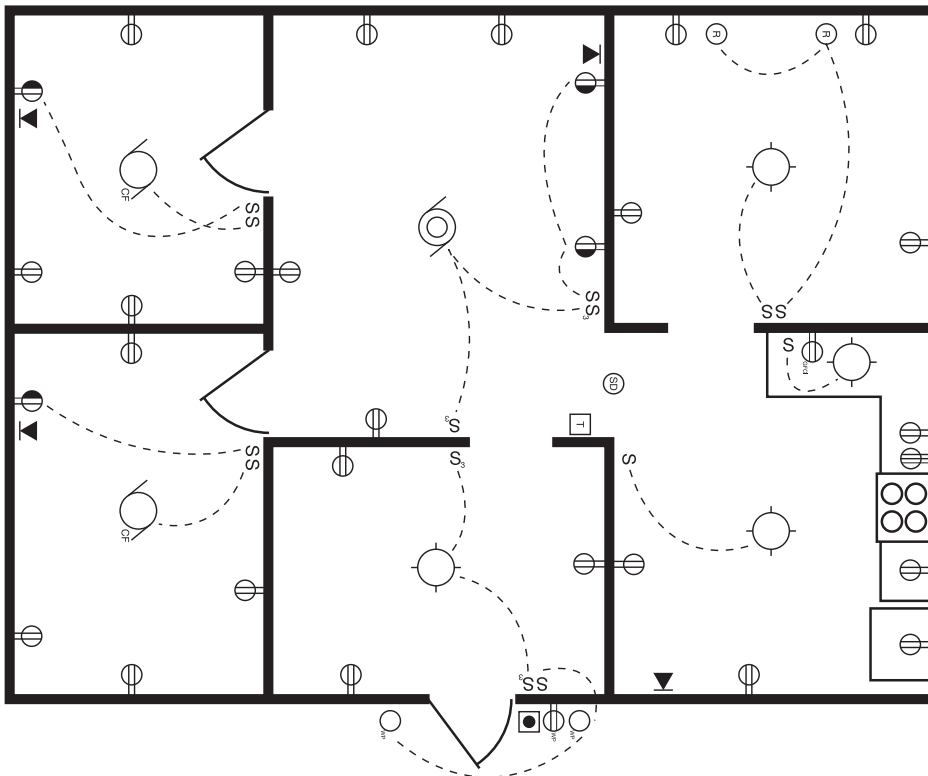
Electrical and electronic drawings are a little different than mechanical, architectural, or civil engineering drawings. The diagrams are not always drawn to a particular scale and often do not look like the finished product. Being able to visualize is important so you can look at these drawings with all their symbols and make a mental picture of the finished product. This is especially true of schematics that use logic symbols or cabling diagrams that trace large numbers of connections. Electrical plans for a house are a little closer to the actual finished product, but they still use special symbols and require visualization and interpretation.

Residential electrical plans have many components including the service entrance that brings electricity into your house, the service panel that has the main breaker, and circuits that deliver the electricity throughout the house. Having multiple circuits allows appliances and outlets to be grouped so smaller breakers, fuses, and conductors may be used. If there were only one circuit and a fuse blew or a breaker tripped, the whole house would lose power. Creating residential electrical plans requires not only knowledge of electricity and electronics, but also visualization to plan the layout of the circuits, the outlets, and the placement of fixtures and appliances.

Exercise

Here is a drawing of an electrical plan for a house. Take note of the symbols and all the details that show everything from convenience outlets to permanent light fixtures.

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	Electrical Switchbox	S	Single Pole Switch
	Three-Way Switch		SinglePlex Receptacle
	Duplex Receptacle		Duplex Receptacle W/P: Waterproof
	GFCI Duplex Receptacle		Isolated Ground Receptacle
	Switched Receptacle		FourPlex Four Gang Receptacle
	240-Volt Receptacle		Ceiling Mounted Light Fixture PC: Pull Chain
	Wall-Mounted Light Fixture		Recessed Light Fixture
	Weatherproof Light Fixture		Flourescent Light Fixture
	Ceiling Fan		Combination Light and Fan
	Power Vent Fan		Electric Motor Number: HP
	Smoke Detector		Circuit Breaker
	Telephone Jack		Doorbell Transformer
	Doorbell Pushbutton		Ground



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Now you are going to make your own, slightly simplified residential electrical plan.

Sketch, at an appropriate scale using grid paper, the layout of your home.

Next try to remember where the service panel is. The service panel can also be called a fuse box or a breaker box. Have you ever looked at it? Did you notice the labeled switches? There are probably quite a few of them, one for each circuit in your home like the kitchen, the bathrooms, the utility room, and so on. Label the approximate location of the service panel on your drawing.

Think about all the convenience outlets in your house. How many places do you have to plug things in? If you cannot remember them all, try to picture each room in your house, and then visualize the items in there such as televisions, computers, lamps, and even plug-in air fresheners. Put a symbol on your sketch for each outlet.

The next items to add to your sketch are permanent lighting fixtures. Also place a symbol for all the light switches in the appropriate locations. Sketch a dashed line from each switch to the fixture that it operates.

Last of all, add in the major appliances that need electricity. Can you remember them all? If you are having problems remembering, again imagine yourself walking through your home. What do you see? Have you included the kitchen appliances like the stove, dishwasher, and refrigerator? What about the clothes washer and dryer? Did you remember the water heater? Do you have a furnace for heat and an air conditioner or heat pump?

If you have the opportunity, share your sketch with your classmates. How did they visualize the location of the components in their plan? Was it easy to picture your house in a plan view? Did you imagine physically walking through your house? Remember that there is no right or wrong way to visualize. What is important is being able to create a mental picture and put what you see on paper for others to see.



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