Calculate a Residential Load

Program: Electrician Technician

Course: EL140 – Residential Applications

Objectives: Under the supervision of your instructor, you should be able to do the following:

- Explain the role of the *National Electrical Code®* in residential wiring and describe how to determine electric service requirements for dwellings (*Objective 1*).
- Calculate and select service-entrance equipment (*Objective 3*).
- Compute branch circuit loads and explain their installation requirements
- For a residential dwelling of a given size, and equipped with a given list of major appliances, demonstrate or explain how to:
  – Compute the lighting, small appliances, and laundry loads.
  – Compute the loads for large appliances.
  – Determine the number of branch circuits required.
  – Size and select the service-entrance equipment (conductors, panelboard, and protective devices)

Lab Equipment:
- Residential dwelling floor plan and load conditions (*Figure 1*)

Required Tools:
- Pencil and paper
- Calculator
- Copy of the latest edition of the *National Electrical Code®*

Materials: N/A

Safety (PPE): N/A

Resources-
- *NEC Sections 220.40, 220.42, Tables 220.42, 220.52, 220.53, 220.54,* and *220.55*
- *NEC Informative Annex D, Example D1(a)*

Time Required: 60 Minutes

Shop Maintenance:
- All work will cease 20 minutes prior to the end of class.
- All work areas must be cleaned.
- Tools and equipment must be cleaned and returned to the designated areas (cage, tool room, cabinets etc.)
- Any broken or missing tools must be reported immediately.
- Tools and equipment are student's responsibility

Instructor Notes:

- Round off final load calculations to whole amperes (no decimals).
- Have your instructor verify your final answer.
- Always refer to the tables in the *NEC®* for demand factors.
- Refer to ***NEC Informative Annex D, Example D1(a)*** for a similar example.

Procedures:

This performance project requires the trainee to calculate a typical residential load based on livable space and appliances.

1. Review the floor plan and calculate the general lighting load (*Figure 1*).
2. Review the load specifications and calculate the following:
    a. Small appliance load
    b. Laundry load
    c. Range load
    d. Electric dryer load
3. Determine the net calculated load in whole amperes at a voltage of 240 volts.
4. Have your instructor check your answer.

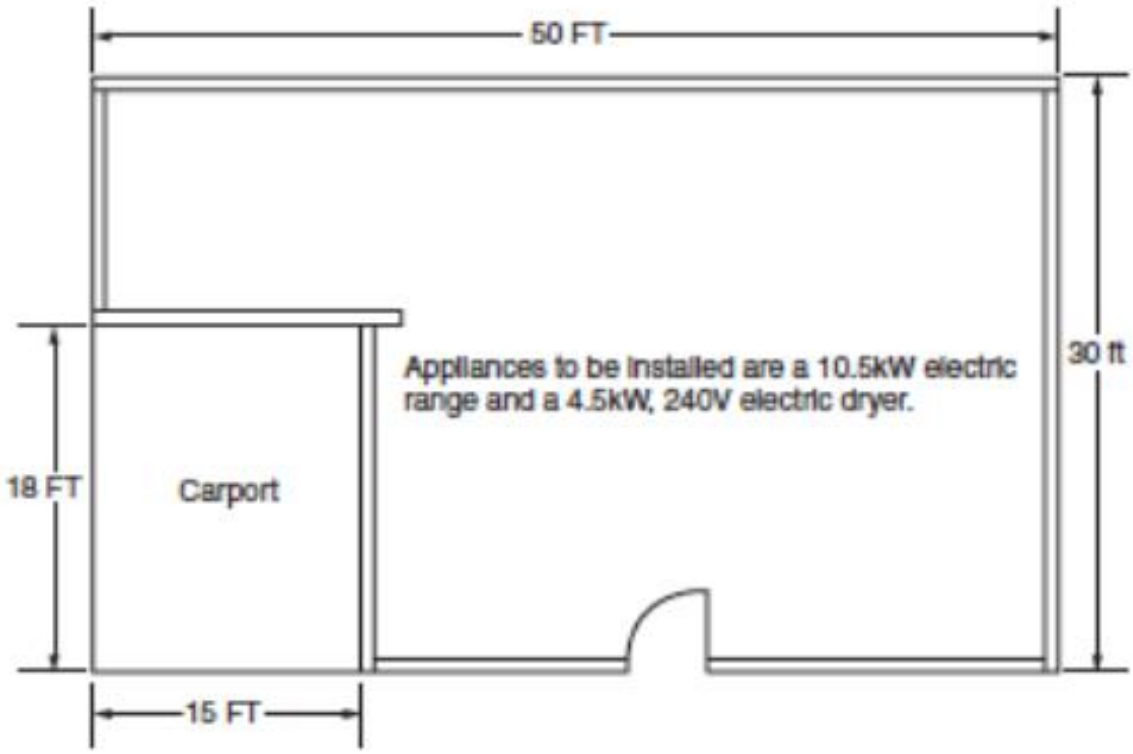

Figure 1 ■ Floor Plan