# *Electrical Wiring Industrial (Canadian) 7th edition Herman Solutions Manual*

SKU: 9780176929787-SOLUTIONS

# UNIT 1 Contract Documents and Drawings

## REVIEW

Students were asked to write all answers in complete sentences, show calculations in detail, and cite *Code* references when appropriate.

**1. List the drawings that are normally included in an electrical drawing set.**

Legend of symbols, site plan, lighting and power electrical floor plans, power riser diagram, elevations, details, sections, schedules, shop drawings. See **The Drawing Set**.

**2. List the steps to be followed when working with a set of drawings.**

- Check that the drawing set is complete.
- Review the floor plans and elevations to get a mental picture of the size and shape of the building.
- Orient the building to the site using the plot plan. Be sure that you know which sides are north, south, east, and west. Add this information to your floor plans.
- Verify the scale of all drawings.
- Identify the types of construction materials (combustible or non-combustible) and components shown in the drawings. Nonstandard items should be shown in a legend of symbols.
- Read all notes on the drawings carefully.
- Relate details to larger views.
- Note multiple or identical drawings. *Typical* means uniform throughout the building.
- Coordinate the electrical layout and installation with other trades.

See **Units | Working with the Drawings**.

**3. Measure the length of each line using the metric scale indicated.** ***(Use these numbers as approximations. Variations occur during the printing process and the lines will vary in length between one printing run and the next.)***

| | | |
|---|---|---|
| **a.** | **1:20** | 1.8 m |
| **b.** | **1:50** | 4.0 m |
| **c.** | **1:100** | 8.9 m |
| **d.** | **1:75** | 4.7 m |
| **e.** | **1:25** | 2.2 m |
| **f.** | **1:125** | 11.0 m |
| **g.** | **1:100** | 7.7 m |
| **h.** | **1:20** | 1.8 m |
| **i.** | **1:50** | 4.4 m |
| **j.** | **1:100** | 7.5 m |

See **Units.**

*Copyright ©2022 Cengage Learning Canada, Inc.*


Electrical Wiring Industrial (Canadian) 7th edition Herman Solutions Manual

**4. Measure the length of each line using the architectural scale indicated.** ***(Use these numbers as approximations. Variations occur during the printing process and the lines will vary in length between one printing run and the next.)***

**a. 1/8 in. = 1 ft** 21′ 14″
**b. 1/4 in. = 1 ft** 13′ 4″
**c. 1/2 in. = 1 ft** 8′ 0″
**d. 1-1/2 in. = 1 ft** 2′ 1″
**e. 3/8 in. = 1 ft** 10′ 0″
**f. 3/4 in. = 1 ft** 5′ 4″
**g. 1/4 in. = 1 ft** 13′ 3″
**h. 1/8 in. = 1 ft** 30′ 4″
**i. 1/4 in. = 1 ft** 13′ 9″
**j. 3/8 in. = 1 ft** 10′ 9″

See **Units.**

**5. Identify the construction event during which the following electrical activities should take place.**

**a. Trenching and underground work** = Site preparation
**b. Feeders** = Building enclosure
**c. Finishing** = Floor finishing
**d. Panelboards** = Interior walls, partitions, and ceilings
**e. Branch circuits and pulling wire** = Interior walls, partitions, and ceilings
**f. Embedded work** = Footings and foundations, superstructure and floors

See Table 1-3.

**6. Draw the symbol for each of the following items found on a site plan.**

**a. Existing contour lines** 240

**b. Finished contour lines** Final contour or proposed contour 104

**c. Benchmark** BM-1-680.0 Benchmark — Number — Elevation BM EL. 680.0

**d. Gas line** —— G —— Gas main (size) —— 4" G ——

**e. Fence line** FENCE x—x—x—x Fence (or required construction fence)

**f. Property line** PRL Property line

See Figure 1-2.

*Copyright ©2022 Cengage Learning Canada, Inc.*


Electrical Wiring Industrial (Canadian) 7th edition Herman Solutions Manual

**7. Give the measurement indicated by each dimension in the diagram below.**

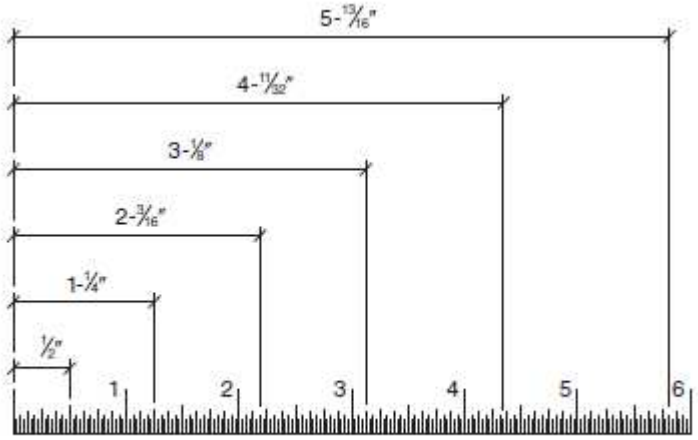



**FIGURE 1-3** Reading tape measure divisions.

They are 1/2″, 1-1/4″, 2-3/16″, 3-1/8″, 4-11/32″, 5-13/16″. See Figure 1-3.

**8. Determine the following using the blueprint drawings supplied with this textbook.** *(Use these numbers as approximations. Variations occur during the printing process and the lines will vary in length between one printing run and the next.)*

**a. What is the distance (in metres) from the south lot line to the southeast corner of the building?**

The distance from the south lot line to the southeast corner of the building is 85 × 500 = 42 500 mm = 42.5 m. See Drawing A1 or E2.

**b. Where is the new electrical room to be located?**

The new electrical room is located at column lines A15 to B14. See Drawing E4.

**c. What are the kVA and voltage ratings of the new transformers supplying power to this building?**

The kVA and voltage ratings of the two new transformers used to supply this building are 1000 kVA and 27 600V-347/600V. See Drawing E2 or E6.

**d. Where is the chiller to be located?**

There are two chillers located in the chiller room. See Drawing E4 or M1.

**e. Where is lighting panel "D" to be located?**

Lighting panel D is between column lines A12 and A13. See Drawing E4.

*Copyright ©2022 Cengage Learning Canada, Inc.*


Electrical Wiring Industrial (Canadian) 7th edition Herman Solutions Manual

**f. What is the voltage and ampere rating of power panel 102?**

The voltage and current rating of PP102 is 120/208V 225A main busses and 200A main breaker. See **Electrical Specifications: PP-102 Panel Schedule**.

**9. Perform the following conversions using the conversion factors in Figure 1-4.**

**a. 12.5 mm to inches** = 12.5 / 25.4 = 0.492″
**b. 25.4 mm to inches** = 25.4 / 25.4 = 1″
**c. 500 mm to inches** = 500 / 25.4 = 19.69″
**d. 6000 mm to inches** = 6000 / 25.4 = 236.22″
**e. 3412 mm to feet** = 3412 / 304.8 = 11.19′
**f. 0.025 mm to feet** = 0.025 / 304.8 = $8.2 \times 10^{-5}$′
**g. 1/8 in. to millimetres** = 1/8 × 25.4 = 3.175 mm
**h. 1/4 in. to millimetres** = ¼ × 25.4 = 6.35 mm
**i. 1/2 in. to millimetres** = ½ × 25.4 = 12.7 mm
**j. 9/64 in. to millimetres** = 9/64 × 25.4 = 3.57 mm

**10. Which drawings reflect the physical location of materials and equipment where they were installed?**

**a. Shop drawings**
**b.** As-built drawings
**c. Architectural drawings**
**d. Sectional drawings**
See **The Drawing Set | As-Built Drawings.**

*Copyright ©2022 Cengage Learning Canada, Inc.*


Electrical Wiring Industrial (Canadian) 7th edition Herman Solutions Manual