

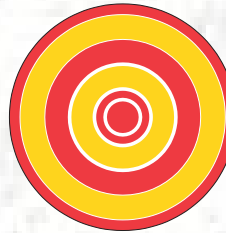
THE ELECTRICAL PLAN

Written by Donald Sajda

Instructor Section



Estimated Time for Activity



Learning Objectives



TEKS Covered



Related Concepts or Supporting Information



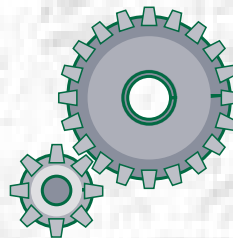
Key Terms with Definitions



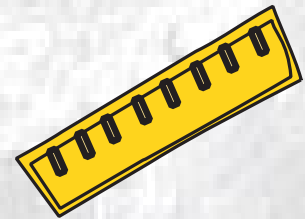
Resource Needed to Teach this Unit



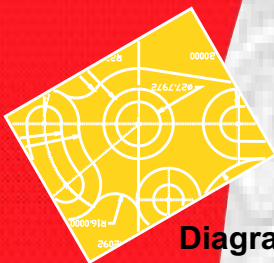
Introduction to the Activity



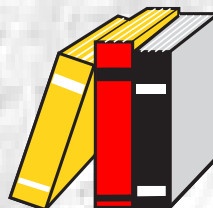
Procedures to be Used by the Teacher



Suggested Evaluation



Diagrams and Illustrations



Additional References



Extension Activities

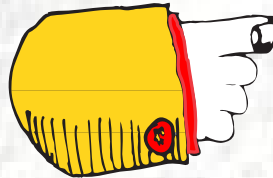
THE ELECTRICAL PLAN

Written by Donald Sajda

Student Section



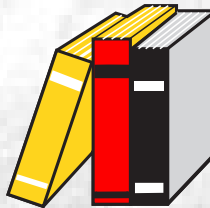
Challenge/Problem



Introduction/
Background



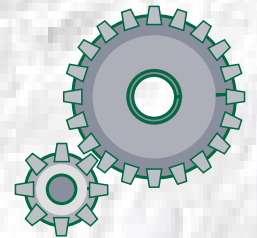
Learning
Objectives



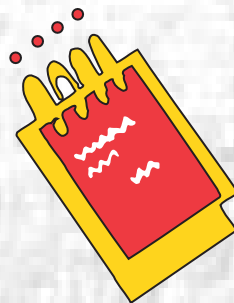
Resource List



Key Terms



Procedures for
this Activity



Work Sheets/
Lab Sheets



Evaluation



Follow-up

The Electrical Plan

Instructor Section



Estimated Time for Activity

1 to 3 Days



Learning Objectives

After completing this activity, the student will be able to:

- Draw and design a functional electrical plan
- Identify typical electrical symbols



TEKS Covered

- §123.62.2 The student uses the appropriate architectural graphic design processes and techniques to develop a variety of architectural drawings.
- §123.62.4 The student describes quality and how it is measured in architectural graphics.
- §123.62.5 The student produces a variety of architectural drawings using the appropriate tools, equipment, machines, materials and processes.
- §123.62.9 The student applies the appropriate codes, laws, standards or regulations related to architectural graphics technology, such as Occupational Safety and Health Administration (OSHA), National Electrical Code (NEC), American Society for Testing Materials (ASTM), standard symbols and line weights.



Related Concepts/Courses/Supporting Information

- Architectural Construction, Research, Design and Development

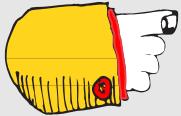
The Electrical Plan

Instructor Section



Key Terms

- 1) Switches:
 - Single pole:
 - Three-way:
- 2) Convenience outlets:
 - Duplex receptacle:
 - Ground fault circuit interrupter:
 - 230 volt outlet:
 - Weatherproof duplex outlet:
- 3) Lighting:
 - Ceiling outlet fixture:
 - Fluorescent fixture:
 - Wall mounted light:
- 4) Exhaust fan:
- 5) Service panel:



Introduction to the Activity

The primary purpose of an electrical plan is to provide information about the type of electrical equipment to be used, the location of such equipment and the identification of the service panel, electrical outlets, switches, and other special electrical features.

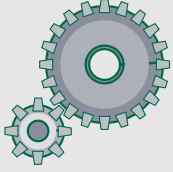


Resources Needed to Teach this Unit

- 1) Manual drafting:
 - Parallel bar, drafting arm or T-square
 - 30 x 60, and / or 45 triangle
 - Architectural scale
 - Lead holder or Pentel pencil
 - Eraser
 - Drafting tape
 - Vellum drafting paper
- 2) Computer aided drafting:
 - Computer with CAD software
- 3) Sample floor plans from builders
- 4) Sample model floor plans from model home parks
- 5) Manufacturer's information regarding special electrical products

The Electrical Plan

Instructor Section



Procedures to be Used by the Teacher

- 1) Provide students with an existing floor plan.
- 2) Explain the functions of the electrical symbols that will be used on the floor plan.
- 3) Explain the importance of following proper local electrical codes.
- 4) Instruct the students to sketch symbols onto the rough copy of the floor plan.
- 5) Instruct the students to transfer those symbols to their finished copy.



Suggested Evaluation

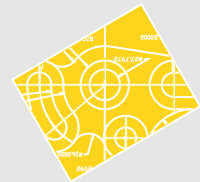
It is recommended that students be evaluated on the following items:

- Are symbols properly placed on the floor plan?
- Is the floor plan in compliance with local electrical codes?



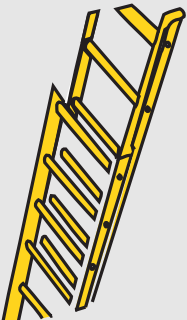
Additional References

- 1) Kicklighter, C. (1990). Architecture: residential design and drawing. South Holland, Ill.: Goodheart Wilcox Co.
- 2) Wiley, J. (1998). Architecture graphics standards. Willyshe Publishing Co.



Diagrams and Illustrations

- See Electrical Plan Drawing ([Provided - Click Here](#))

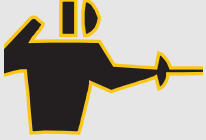


Extension Activities

- 1) Intermediate
 - Challenge the students to design a fully functional electrical plan. The students will need to research additional symbols that may be included in the plan.
- 2) Advanced
 - Challenge the students to design a fully functional electric plan that includes new electrical products that will enhance the design. The students will need to calculate circuit data.

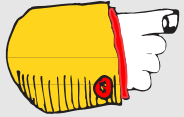
The Electrical Plan

Student Section



Student Challenge

Your challenge will be to properly place electrical symbols that are well designed and functional onto an existing floor plan.



Introduction/Background

The primary purpose of an electrical plan is to provide information about the type of electrical equipment to be used, the location of such equipment and identification of the service panel, electrical outlets, switches, and other special electrical features.



Learning Objectives

After completing this activity, you will be able to:

- Draw and design a functional electrical plan
- Identify typical electrical symbols



Key Terms

- 1) Switches:
 - Single pole:
 - Three-way:
- 2) Convenience outlets:
 - Duplex receptacle:
 - Ground fault circuit interrupter:
 - 230 volt outlet:
 - Weatherproof duplex outlet:
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- 5) Service panel:

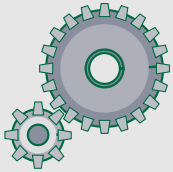
The Electrical Plan

Student Section



Resource List

- 1) Manual drafting:
 - Parallel bar, drafting arm or T-square
 - 30 x 60 and / or 45 triangle
 - Architectural scale
 - Lead holder or Pentel pencil
 - Eraser
 - Drafting tape
 - Vellum drafting paper
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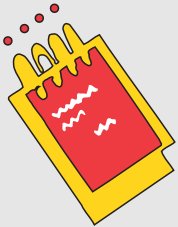
Procedures for this Activity

- 1) Begin by placing the electrical outlets in the home or building. Remember to follow local electrical codes as discussed in the lesson.
 - Remember that appliances such as refrigerators require an outlet behind them.
- 2) Add the proper type of lighting to the floor plan.
- 3) Place the switches in a logical place. Using a dashed line, connect them to the light that they control.
- 4) Place an exhaust fan in the bathroom.
- 5) Add the service panel to the garage.



Evaluation

None



Worksheets/Labsheets

- See Electrical Plan Diagram ([Provided – Click Here](#))

The Electrical Plan

Student Section



Follow-Up

- 1) How many duplex outlets are required in a room? _____
- 2) What is the maximum distance allowed between outlets? _____
- 3) What is the purpose of a GFCI outlet? _____

- 4) Why is fluorescent lighting used in the kitchen? _____

- 5) What type of switch would be found in 2 locations that control the same light? _____

- 6) What does WP stand for when seen on electric symbols? _____

Electrical Plan Diagram

