

Electrical Print Reading - ANSI

4 Days, 2.8 CEUs

An electrical print, schematic or diagram is a map that represents the layout of various types of electrical systems. Knowing how to read these electrical drawings is critical when performing acceptance of new equipment and in troubleshooting existing equipment. There are many types of prints that utilize hundreds of symbols established by ANSI or the IEC.

This course provides instructions and exercises in the proper use of these documents. Equipment application, troubleshooting, and print revision methods to correctly reflect equipment changes will be demonstrated. Course participants will be shown how to identify symbols and how to unravel this common language for electrical equipment.

This hands-on course is intended for new or experienced electricians and technicians that install, maintain, repair or troubleshoot power and auxiliary systems. The participant should have basic knowledge of power system components.

Lab and Classroom Attire

AVO is committed to the personal safety of each participant and requires safety glasses, long pants and ANSI rated "safety-toe" work shoes for lab activities. Lecture courses may involve a tour of a work or shop area and for this reason open-toe shoes and shorts are not considered appropriate attire for the classroom.

Learning Objectives:

To receive 2.8 CEUs, the participant must attend 4 days of class (28 contact hours) and attain a minimum average grade of 80% (overall grade will consist of 50% lab and 50% final exam). Upon completion of this course and lab practice, the participant will demonstrate that he/she is able to:

- Explain the fundamentals of electrical drawings.
- Demonstrate the application of single-line, elementary, schematic, wiring diagrams (wireless and wired) and functional control diagrams.
- Interpret common ANSI symbols used in utility and industrial applications.
- Demonstrate troubleshooting techniques utilizing schematic diagrams.
- Develop wiring diagrams from schematics.

SCOPE

Day 1* (7 contact hours)

- I. Introduction (0.5 hr)
 - A. Schedule
 - B. Course Outline
- II. Electrical Drawing Fundamentals (6.5 hrs)
 - A. Types of Diagrams
 - B. Conduits, Raceways, and Grounding
- AM Break
 - C. Drawing Types
 - D. Drawing Standards
- Lunch

- E. Drawing Classification Systems
- F. Drawing Revisions
- PM Break
- G. Changes

Day 2 (7 contact hours)

- III. Single-Line Diagrams (7 hrs)
 - A. Purpose of Single-Line Diagrams
 - B. Types of Single-Line Diagrams
- AM Break
 - C. Common Symbols and Abbreviations for Single-Line Diagrams

- D. Lab 1 - Identifying Electrical Symbols
- Lunch
- E. Power Transformers
- F. Interpreting the Single-Line Diagram
- PM Break
- G. 20 MVA Transformer To Outdoor Switchgear – Bus 2

*Class scheduling times may vary based on discussions and size of class

Electrical Print Reading - ANSI

4 Days, 2.8 CEUs

SCOPE (continued)

Day 3 (7 contact hours)

- IV. Elementary Diagrams (4 hrs)
 - A. Purpose
 - B. Symbols and Abbreviations
 - C. Interpretation of Diagrams
- AM Break
- D. Lab 1 - Wiring components according to the Elementary Diagram
- E. Lab 2 - Modifying an Elementary and Wiring Diagram
- Lunch

- V. Wiring Diagrams (3 hrs)
 - A. Purpose
 - B. Symbols, Abbreviations, and Device Numbers
- PM Break
- C. Interpretation of Wiring Diagrams
- D. Lab 4 - Completing a "Lineless" Wiring Diagram

Day 4 (7 contact hours)

- VI. Functional Control Diagrams (6 hrs)
 - A. Definition
 - B. Purpose
- AM Break
- C. Applications of the FCD
- D. Advantages of FCD
- Lunch
- E. Logic Symbols
- PM Break
- F. Interpreting the FCD

- VII. Conclusion (1 hr)
 - A. Review
 - B. Final Exam