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## Electrical Drawings and Schematics

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://www.electricityforum.com/onsite-training-rfq>

Students will be introduced to electrical symbols, one-line and three-line electrical schematics and their content, including basic layout and legends. Participants will participate in practical exercises in schematic reading, diagram verification and the steps required for creating and maintaining accurate one line diagrams. Participants are encouraged to bring examples of their own facility's prints to use during practical exercises. Low, medium and high-voltage installations can be reviewed as requested by participants.

### COMPLIANCE REGULATIONS:

- Occupational Health and Safety Act and Regulations
- Provincial Regulations
- CSA Standard Z460 Control of Hazardous Energy
- CSA Standard Z432 Safeguarding of Machinery
- CSA Standard Z142 Code for Power Press Operations
- Canadian Electrical Code 2006

- NPFA 70E
- Manufacturers Standards
- Company Policy, Procedures and Practices

In order to comply with the above-mentioned regulations, complete and up-to-date electrical single-line diagrams and equipment operating and control schematics must be made available in the work place. These important documents are required to be updated as necessary or as equipment changes or is modified and sometimes verified on an annual basis. In addition, this two-day program is designed to provide knowledge of the various types of electrical diagrams used in the industry, and to develop the skills necessary to read, draw and interpret these diagrams.

#### **YOU WILL LEARN HOW TO:**

- Create a block map of the installed equipment
- Transfer the information to the one line diagram
- Verify electrical prints and make changes to existing diagrams
- Create and maintain regulatory compliant electrical diagrams

#### **WHO SHOULD ATTEND**

Electrical technicians, field engineers, project managers, inspectors, contractors, and journeyman electricians who depend on effective skills and knowledge required in this ever changing fast pace electrically driven environment.

#### **STUDENTS RECEIVE**

- **FREE** Electricity Forum Digital Electrical Testing & Measurement Handbook (Value \$20.00)
- **\$100** Coupon Toward any Future Electricity Forum Event (Restrictions Apply)

- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value \$25.00)
- Course Materials in Paper Format
- Register Three, Get One **FREE**

## **COURSE OUTLINE**

### **DAY ONE**

#### **INTRODUCTION AND REVIEW OF THE REGULATIONS**

##### **How do the regulations apply and what do we need to know?**

- Occupational Health and Safety Act and Regulations
- Provincial Regulations
- CSA Standard Z460 Control of Hazardous Energy
- CSA Standard Z432 Safeguarding of Machinery
- CSA Standard Z142 Code for Power Press Operations
- Canadian Electrical Code 2006 Changes
- NPFA 70E
- Manufacturers Standards
- Company Policy, Procedures and Practices

#### **PRINT READING BASICS**

##### **Legends**

- What is the purpose of the legend?
- What information can be found in the legend?

## **Electrical Symbols**

- Review of standard symbols.
- Symbol identification and meaning.

## **Basic layout**

- Familiarization with the layout of different schematics and one-line diagrams

## **Practical exercise using example prints**

- Participants will be involved in practical exercises and skills demonstrations of symbol identification and meaning, basic information location and schematic diagram layout.

## **ELEMENTARY ELECTRICAL DIAGRAMS**

### **Purpose**

- What are schematics used for and why are they necessary

### **DC voltage schematic**

- Introduction, familiarization and review of:
  - Series circuits,
  - Parallel circuits, and
  - Series/parallel circuits.

### **Single-Line Diagram**

- Purpose of a single-line
- Equipment identification
- Hazardous energy control

### **ELEMENTARY ELECTRICAL DIAGRAMS (Continue)**

#### **AC voltage schematic**

- Equipment identification
- Troubleshooting and fault finding

#### **Three-Line Diagram, and Practical exercise using elementary diagrams**

- Participants will be involved in practical exercises and skills demonstrations on the identification of circuits, and the uses of single-line, AC schematic and three-line diagrams.

## **DAY TWO**

### **DEVELOPING AND MAINTAINING A SINGLE-LINE DIAGRAM**

- Regulation compliance
- Site familiarization
- Equipment identification and inventory
- Nomenclature verification
- Preparing a block diagram
- Interconnecting the equipment

- Verification of accuracy
- Practical exercise
- Participants will be involved in the development of a single-line diagram using narrative information.

## **TROUBLESHOOTING USING ELECTRICAL SCHEMATICS**

### **Purpose**

- Effective troubleshooting approach

### **Evaluating and assessing the fault**

#### **Mapping a solution**

- Task identification

### **Identifying the hazards**

- Introduction to Job Hazard Analysis

### **Practical exercise using schematics**

- DC circuits
- AC single-phase circuits
- AC three-phase circuits

### **Questions and Answers**

## **COURSE TIMETABLE**

### **Both days:**

Start: 8:00 a.m.

Coffee Break: 10:00 a.m.

Lunch: 12:00 noon

Restart: 1:15 p.m.

Finish: 4:30 p.m.

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