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## COURSE INFORMATION

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Alternate Title: Telecomm Design-Field Princ.

Description:

10-451-108 TELECOMMUNICATIONS DESIGN - FIELD PRINCIPLES ...creates an experience consistent with projects in industry. Students will learn how to field buried cable projects to aerial projects and also learn industry equipment that operates on these projects. (Pre-Requisite: 10-607-112, AutoCAD for Civil Engineering. Co-Requisite: 10-607-114, Civil 3D-Intro)

Instructional Level: 10

Total Credits: 3

Total Hours: 108

## COURSE HISTORY

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Status: Active

Active Date: 5/23/2021

Last Revision Date: 8/29/2023

Revised By: Kristina Wendricks (15002977)

Last Approval Date: 8/29/2023

Approved By: Kristina Wendricks (15002977)

## COURSE COMPETENCIES

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### 1. Explain field principles as it relates to telecommunications.

Status: Active

Assessment Strategies

- 1.1. Objective exam/quiz
- 1.2. Observation

Criteria

Learners will be successful when they are able to:

- 1.1. Identify potential hazards on the worksite and how to mitigate them
- 1.2. Use proper PPE for design field principles
- 1.3. Use traffic control devices in work areas
- 1.4. Discuss tools available and what tool to use in each situation
- 1.5. Identify different surveying tools and equipment
- 1.6. Explain hardware available and what tool to use in each situation
- 1.7. Explain software that will be utilized and why we use that software

## Learning Objectives

- 1.a. Explain the importance of safety while working in the field.
- 1.b. Explain tools that will be used and how to safely use them.
- 1.c. Explain hardware and equipment that will be used and how to properly care for them.

## 2. Explain how communications infrastructure is installed underground.

Status: Active

### Assessment Strategies

- 2.1. Objective exam/quiz
- 2.2. Observation

### Criteria

- 2.1. Explain and field review directional boring equipment, materials and installation process
- 2.2. Explain and field review vibratory plow equipment, materials and installation process
- 2.3. Explain and field review vacuum excavation equipment, materials and installation process
- 2.4. Explain and field review open trenching equipment, materials and installation process
- 2.5. Identify the most cost effective and timely underground installation practice for a project

### Learning Objectives

- 2.a. Explain various methods of underground installations
- 2.b. Categorize what underground installation practice to use in certain scenarios

## 3. Explain how communications infrastructure is installed overhead (aerial)

Status: Active

### Assessment Strategies

- 3.1. Objective exam/quiz
- 3.2. Observation

### Criteria

- 3.1. Explain and field review strand and lash equipment, materials and installation process
- 3.2. Explain and field review all-dielectric self support (ADSS) equipment, materials and installation process
- 3.3. Identify the most cost effective and timely aerial installation practice for a project

### Learning Objectives

- 3.a. Explain various methods of overhead installations
- 3.b. Categorize what aerial installation practice to use in certain scenarios

## 4. Carry out utility pole measurements and field data collections.

Status: Active

### Assessment Strategies

- 4.1. Objective exam/quiz
- 4.2. Observation
- 4.3. Project

### Criteria

Learners will be successful when they are able to:

- 4.1. Collect data and information from electric utility companies
- 4.2. Interpret NESC safety codes and requirements for clearances
- 4.3. Determine logical starting point for field data collections
- 4.4. Document utility pole information (Size, Class, Pole Number, Year, etc.)
- 4.5. Measure existing conductors, down guys, and other apparatus on the utility pole
- 4.6. Document measurements on data collector or in field notes
- 4.7. Organize documentation onsite
- 4.8. Review and video record route onsite
- 4.9. Present information and data to utility pole design personnel

#### Learning Objectives

- 4.a. Collect field measurements of utility poles
- 4.b. Organize, review and present utility pole measurement documentation

### **5. Carry out stationing and right of way stake out in the field for installation crew documentation.**

Status: Active

#### Assessment Strategies

- 5.1. Objective exam/quiz
- 5.2. Observation
- 5.3. Project

#### Criteria

Learners will be successful when they are able to:

- 5.1. Compile station offset information from designs
- 5.2. Carry out data upload to data collector for field mark out
- 5.3. Plan logical station offsets for installation crews
- 5.4. Apply stationing to field utilizing paint, flags, and laths
- 5.5. Identify and expose existing property corners and right of way markers
- 5.6. Apply apparent right of way for field crews utilizing paint, flags, and laths

#### Learning Objectives

- 5.a. Compile stationing information and transfer into data collectors
- 5.b. Apply station offsets to field for installation crews
- 5.c. Apply apparent right of way to field for installation crews

### **6. Choose new installation routes.**

Status: Active

#### Assessment Strategies

- 6.1. Objective exam/quiz
- 6.2. Observation
- 6.3. Project

#### Criteria

Learners will be successful when they are able to:

- 6.1. Carry out route flagging or stakeout according to designs

- 6.2. Carry out route walkout and review with installation crews
- 6.3. Identify riser locations on utility poles
- 6.4. Carry out staking of down guy and anchor locations
- 6.5. Outline any route revisions and review with design team
- 6.6. Outline any route revisions and review with permitting authorities

#### Learning Objectives

- 6.a. Carry out underground installation route field mark out
- 6.b. Carry out aerial installation route field mark out
- 6.c. Identify and report any required route revisions

### **7. Examine permits to ensure installation requirements are adhered to.**

Status: Active

#### Assessment Strategies

- 7.1. Objective exam/quiz
- 7.2. Observation
- 7.3. Project

#### Criteria

- 7.1. Give installation contractor all permit requirements
- 7.2. Give permitting authorities the necessary notifications for traffic control, project start, project end, and restoration.
- 7.3. Give permitting authorities route revisions and reasons for the adjustments
- 7.4. Give designers route revisions and reasons for the adjustments
- 7.5. Integrate revisions to route once approvals are received from permitting authorities

#### Learning Objectives

- 7.a. Examine all permits prior to installation to ensure route matches requirements
- 7.b. Identify any variations to routes with permitting authorities

### **8. Give residents and businesses notification of the project in the area.**

Status: Active

#### Assessment Strategies

- 8.1. Objective exam/quiz
- 8.2. Observation
- 8.3. Project

#### Criteria

- 8.1. Create notification letter and door hangers for property owners
- 8.2. Review and effectively communicate project with residents, businesses, and property owners
- 8.3. Identify restoration requirements per permitting requirements
- 8.4. Review and effectively communicate restoration progress with residents, businesses, and property owners

#### Learning Objectives

- 8.a. Give residents notification of project and the impact on their property
- 8.b. Carry out restoration guidelines and requirements to installation crews

## 9. Carry out As Built data collection.

Status: Active

Assessment Strategies

- 9.1. Objective exam/quiz
- 9.2. Observation
- 9.3. Project

Criteria

Learners will be successful when they are able to:

- 9.1. Carry out new installation locating to ensure locate wire is in tact and determine final installation route
- 9.2. Carry out as built data collection with GNSS equipment to include structures, routes, and installation depths
- 9.3. Organize red line drawings from installation drawings and compare to as built data.
- 9.4. Document any items for the installation crews to complete before project completion
- 9.5. Produce project completion letter and notify permitting agencies

Learning Objectives

- 9.a. Carry out as built and red line documentation for actual installation
- 9.b. Carry out project punchlist and inspections