**Lesson Information**

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| Lesson: (2 of 3) Load Calculations Length: 90 minutes  Unit: (3 of 3) System Design  Course: Electrical |

**Content Assumptions**

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| Prior to this class, students have taken math and construction drawing classes as well as lesson 3, “Conduit and Raceways,” of the previous unit, “System Elements”. |

**Essential Questions**

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| 1. What is the importance of the National Electrical Code® in sizing services, feeders, and branch and feeder circuits? 2. How are load calculations performed for services, feeders, and branch and feeder circuits? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Use the National Electrical Code® to appropriately size services and associated circuit elements for residences. | 1. Load calculation checklist (student-derived) — Instructor observation   Load calculation — rubric |

**Activities/Instruction**

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| **Show and Tell** (35 minutes)  Using samples (as listed in the Materials section) and a copy of the National Electrical Code® (NEC®), Instructor explains how load calculations are performed in order to size services, feeders, circuit breakers, fuses, and branch- and feeder-circuit conductors. Students ask questions as the Instructor teaches, creating a classroom dialogue.  **Make a List; Check it Twice** (15 minutes)  Instructor guides students to collectively make a checklist for performing load calculations and sizing services and the associated circuit elements, as Instructor just explained.  **Trade and Grade** (40 minutes)  Using copies of the NEC® and their electrical drawings of simple residences (as listed in the Materials section), students are to perform the load calculations to size the service, feeders, and one branch circuit for their residence. When everyone is finished (20 minutes), students trade calculation papers and “grade” them, based on the checklist they devised. If mistakes have been made, students correct them before turning them in to Instructor. |

**Materials**

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| For students:   * Electrical drawings for a simple residence (see lesson 3, “Conduit and Raceways,” of previous unit, “System Elements”) * Copies of the current edition of the National Electrical Code®   For Instructor:   * Samples of electrical drawings depicting various services, feeders, and branch and feeder circuits * [LOAD CALCULATION RUBRIC] |