### Electrical and Power Transmission Installers, Other, Classification of Instructional Program (CIP) 46.0399

**Units of Instruction and Task Grid Linked to Pennsylvania Core Standards**

<table>
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<tr>
<th>Secondary Competency Task List with Unit and Task Numbers:</th>
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<tbody>
<tr>
<td><strong>100 BASIC SAFETY.</strong></td>
<td></td>
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</tr>
<tr>
<td>101 Demonstrate proper use of personal protective equipment.</td>
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<tr>
<td>102 Identify causes of job site accidents.</td>
<td></td>
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<tr>
<td>103 Identify job site hazards.</td>
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<tr>
<td>104 Working safely with job hazards.</td>
<td></td>
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<tr>
<td>105 Identify safe methods and equipment of aerial work.</td>
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<tr>
<td>106 Demonstrate basic fire safety.</td>
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<tr>
<td>107 Demonstrate basic electrical safety.</td>
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<tr>
<td>108 Using Perform Lockout/Tag out.</td>
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<tr>
<td>109 Demonstrate scaffold and ladder safety.</td>
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**CAREER CLUSTER**

Manufacturing Career Cluster

(Choose Standards)

1-2-3-4-5-6-7

**CAREER PATHWAYS INCLUDE:**

- Maintenance, Installation and Repair Career Pathway
  
(Choose Standards)

1-2-3-4-5-6

**NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.

**KEY IDEAS/DETAILS**

**GRADES 9-10-11-12**

- Standard CC.3.5.9-10. A
- Standard CC.3.5.11-12 A
- Cite specific textual evidence, etc.
- Standard CC.3.5.9-10 B
- Standard CC.3.5.11-12. B
- Determine the central ideas or conclusions of a text; etc.
- Standard CC.3.5.9-10.C
- Standard CC.3.5.11-12.C
- Follow precisely a complex multistep procedure, etc.

**CRAFT & STRUCTURE**

**GRADES 9-10-11-12**

- Standard CC.3.5.9-10. D
- Standard CC.3.5.11-12.D
- Determine the meaning of symbols, key terms, and other domain specific words.
- Standard CC.3.5.9-10.E
- Standard CC.3.5.11-12.E
- Analyze the structure of the relationships among concepts in a text, etc.
- Standard CC.3.5.9-10.F
- Standard CC.3.5.11-12.F
- Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

**TEXT TYPES AND PURPOSE**

**GRADES 9-10-11-12**

- Standard CC.3.6.9-10.A
- Standard CC.3.6.11-12.A
- Write arguments focused on discipline specific content.
- Standard CC.3.6.9-10.B
- Standard CC.3.6.11-12.B
- Write informative or explanatory texts, including the narration of technical processes, etc.

**PRODUCTION & DISTRIBUTION OF WRITING**

**GRADES 9-10-11-12**

- Standard CC.3.6.9-10.C
- Standard CC.3.6.11-12.C
- Produce clear and coherent writing...appropriate to task, purpose, and audience.
- Standard CC.3.6.9-10.D
- Standard CC.3.6.11-12.D
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

- Standard CC.3.6.9-10.E
- Standard CC.3.6.11-12.E.
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| Use technology, including the internet, to produce, publish, and update individual or shared writing products. | **INTEGRATE KNOWLEDGE & IDEAS**  
**GRADES 9-10**  
**Standard CC.3.5.9-10.G**  
Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).  
**Standard CC.3.5.9-10. H**  
Assess the reasoning in a text to support the author’s claim for solving a technical problem.  
**Standard CC.3.5.9-10. I**  
Compare and contrast findings presented in a text to those from other sources, etc. | **RESEARCH**  
**GRADES 9-10-11-12**  
**Standard CC.3.6.9-10.F**  
**Standard CC.3.6.11-12.F**  
Conduct short and more sustained research to answer a question or solve a problem.  
**Standard CC.3.6.9-10.G.**  
**Standard CC.3.6.11-12.G**  
Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.  
**Standard CC.3.6.9-10.H.**  
**Standard CC.3.6.11-12.H.**  
Draw evidence from informational texts to support analysis, reflection, and research. | **RANGE OF WRITING**  
**GRADES 9-10-11-12**  
**Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.**  
Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc. | **RANGE OF READING**  
**GRADES 9-10-11-12**  
**Standard CC.3.5.9-10.J**  
**Standard CC.3.5.11-12.J**  
By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently. |
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<tr>
<td>200 HAND TOOLS.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>201 Recognize, identify and safely use hammers and screwdrivers.</td>
<td>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</td>
<td>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</td>
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<tr>
<td>202 Recognize, identify and safely use pliers and wire cutters.</td>
<td>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</td>
<td>CRAFT &amp; STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text. INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 9-10 Standard CC.3.5.9-10.G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>203 Recognize, identify and safely use saws and chisels.</td>
<td>NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>204 Identify and safely use hydraulic, hand tools.</td>
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<td>Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).</td>
<td>Standard CC.3.5.9-10. H</td>
<td>Assess the reasoning in a text to support the author’s claim for solving a technical problem.</td>
<td>Standard CC.3.5.9-10. I</td>
<td>Compare and contrast findings presented in a text to those from other sources, etc.</td>
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<tr>
<td>301 Recognize, identify and safely use drill and saws.</td>
<td>Cluster (Choose Standards) 1-2-3-4-5-6-7</td>
<td>Standard CC.3.5.9-10. A</td>
<td>GRADES 9-10-11-12 Standard CC.3.6.9-10.A</td>
<td>Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.</td>
</tr>
<tr>
<td>302 Identify and safely use electric hammer drill.</td>
<td>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</td>
<td>Standard CC.3.5.9-10. A</td>
<td>Standard CC.3.6.9-10.A Write arguments focused on discipline specific content.</td>
<td></td>
</tr>
<tr>
<td>303 Identify and safely use reciprocating saw.</td>
<td>NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td>Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc.</td>
<td>Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</td>
<td></td>
</tr>
<tr>
<td>305 Identify and safely use circular saw.</td>
<td></td>
<td></td>
<td>Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</td>
<td></td>
</tr>
<tr>
<td>306 Identify and safely use electric/cordless drill.</td>
<td></td>
<td></td>
<td>Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
<td></td>
</tr>
<tr>
<td>307 Identify the safely use of a portable jig saw.</td>
<td></td>
<td>DETERMINE KNOWLEDGE &amp; IDEAS GRADES 9-10</td>
<td>Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</td>
<td></td>
</tr>
<tr>
<td>308 Identify the safely use of a chain saw.</td>
<td></td>
<td>Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</td>
<td>Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.</td>
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<td>309 Identify the use of a portable power conduit threading machine.</td>
<td></td>
<td>Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Use technology, including the internet, to produce, publish, and update individual or shared writing products.</td>
<td>Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures.</td>
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<td><strong>400</strong> BLUEPRINT READING.</td>
<td><strong>401</strong> Identify types of blueprint plans.</td>
<td><strong>402</strong> Identify blueprint symbols.</td>
<td><strong>KEY IDEAS/DETAILS GRADES 9-10-11-12</strong></td>
<td><strong>TEXT TYPES AND PURPOSE GRADES 9-10-11-12</strong></td>
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<td><strong>401</strong> Identify types of blueprint plans.</td>
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<td><strong>TEXT TYPES AND PURPOSE GRADES 9-10-11-12</strong></td>
</tr>
<tr>
<td><strong>401</strong> Identify types of blueprint plans.</td>
<td><strong>CAREER CLUSTER</strong> Manufacturing Career Cluster (Choose Standards)</td>
<td><strong>KEY IDEAS/DETAILS GRADES 9-10-11-12</strong></td>
<td><strong>Standard CC.3.5.9-10. A</strong></td>
<td><strong>Standard CC.3.6.9-10.A</strong></td>
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<tr>
<td><strong>402</strong> Identify blueprint symbols.</td>
<td><strong>CAREER CLUSTER</strong> Manufacturing Career Cluster (Choose Standards)</td>
<td><strong>KEY IDEAS/DETAILS GRADES 9-10-11-12</strong></td>
<td><strong>Standard CC.3.5.11-12.A</strong></td>
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<td><strong>TEXT TYPES AND PURPOSE</strong></td>
<td></td>
<td><strong>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2</strong></td>
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<td><strong>KEY IDEAS/DETAILS</strong></td>
<td><strong>TEXT TYPES AND PURPOSE</strong></td>
<td><strong>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2</strong></td>
<td><strong>Apply properties of rational and irrational numbers to</strong></td>
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<td>403 Interpret blueprint plans.</td>
<td>1-2-3-4-5-6-7</td>
<td>Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</td>
<td>Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</td>
<td>solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
</tr>
<tr>
<td>404 Plan branch circuits for blueprint development.</td>
<td>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</td>
<td>CRAFT &amp; STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</td>
<td>PRODUCTION &amp; DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12.C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</td>
<td>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</td>
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<td>405 Incorporate electrical details to residential blueprint.</td>
<td>NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author’s claim for solving</td>
<td>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F</td>
<td>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures.</td>
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- **Common Career Technical Core Standards**
- **Pennsylvania Core Standards for Reading for Technical Subjects**
  - Standard 3.5
- **Pennsylvania Core Standards for Writing for Technical Subjects**
  - Standard 3.6
- **Pennsylvania Core Standards for Mathematics**
  - Standard 2.0

### 500 ANCHORS AND SUPPORTS.

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<td>1-2-3-4-5-6-7</td>
<td><strong>GRADERS 9-10-11-12</strong></td>
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### CAREER PATHWAYS

- **501** Identify, select and install various types of anchors and supports.
  - Cite specific textual evidence, etc.
  - Standard CC.3.5.11-12.B
  - Determine the central ideas or
  - Standard CC.3.6.11-12.A
  - Write arguments focused on discipline specific content.
  - Standard CC.3.6.11-12.A
  - Analyze and interpret complex texts in different subject areas.
  - Standard CC.3.6.11-12.D

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**Units of Instruction and Task Grid Linked to Pennsylvania Core Standards**

- **Standard CC.3.5.9-10.1**
  - Compare and contrast findings presented in a text to those from other sources, etc.
  - Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.
  - Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.
  - Synthesize information from a range of sources into a coherent understanding.

- **Standard CC.3.5.11-12.A**
  - Identify, select and install various types of anchors and supports.
  - Conduct short and more sustained research to answer a question or solve a problem.
  - Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

- **Standard CC.3.6.9-10.G.**
  - Draw evidence from informational texts to support analysis, reflection, and research.

- **Standard CC.3.6.11-12.H**
  - Conduct short and more sustained research to answer a question or solve a problem.
  - Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

- **Standard CC.3.6.11-12.G**
  - Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.
  - Synthesize information from a range of sources into a coherent understanding.

- **Standard CC.3.6.11-12.H**
  - By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.

---

**RANGE OF READING**

- **GRADERS 9-10-11-12**

**RANGE OF WRITING**

- **GRADERS 9-10-11-12**

---

**500 ANCHORS AND SUPPORTS.**

- **Identify, select and install various types of anchors and supports.**

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**501** Identify, select and install various types of anchors and supports.

- **Cite specific textual evidence, etc.**
  - Standard CC.3.5.11-12.B
  - Determine the central ideas or
  - Standard CC.3.6.11-12.A
  - Write arguments focused on discipline specific content.
  - Standard CC.3.6.11-12.A

---

**ANALYZE AND INTERPRET COMPLEX TEXTS IN DIFFERENT SUBJECT AREAS.**

- **Standard CC.3.6.11-12.D**
  - Analyze and interpret complex texts in different subject areas.
  - Standard CC.3.6.11-12.D

---

**TEXT TYPES AND PURPOSE**

- **GRADERS 9-10-11-12**
  - Standard CC.3.6.9-10.A
  - Standard CC.3.6.11-12.A

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**NUMBERS AND OPERATIONS**

- **Standard 2.1.HS.F.2**
  - Apply properties of rational and irrational numbers to solve real world or mathematical problems.
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INCLUDED: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6

NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.

conclusions of a text; etc.
Standard CC.3.5.9-10.C
Standard CC.3.5.11-12.C
Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE
GRADES 9-10-11-12
Standard CC.3.5.9-10.D
Standard CC.3.5.11-12.D
Determine the meaning of symbols, key terms, and other domain specific words.
Standard CC.3.5.9-10.E
Standard CC.3.5.11-12.E
Analyze the structure of the relationships among concepts in a text, etc.

INTEGRATE KNOWLEDGE & IDEAS
GRADES 9-10
Standard CC.3.5.9-10.F
Standard CC.3.5.11-12.F
Analyze the author’s purpose in providing an explanation, describing a procedure...and
Analyze the structure of the relationships among concepts in a text.

Standard CC.3.6.11-12.B
Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING
GRADES 9-10-11-12
Standard CC.3.6.9-10.C
Standard CC.3.6.11-12.C
Produce clear and coherent writing...appropriate to task, purpose, and audience.
Standard CC.3.6.9-10.D
Standard CC.3.6.11-12.D
Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

RESEARCH
GRADES 9-10-11-12
Standard CC.3.6.9-10.F
Use technology, including the internet, to produce, publish, and update individual or shared writing products.

Standard 2.1.HS.F.4
Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5
Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6
Extend the knowledge of arithmetic operations and apply to complex numbers.

GEOMETRY
Standard 2.3.HS.A.13
Analyze relationships between two dimensional and three dimensional objects.
### Electrical and Power Transmission Installers, Other, Classification of Instructional Program (CIP) 46.0399

#### Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

<table>
<thead>
<tr>
<th>Secondary Competency Task List with Unit and Task Numbers:</th>
<th>Common Career Technical Core Standards</th>
<th>Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5</th>
<th>Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6</th>
<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 RESIDENTIAL CABLELING TECHNOLOGY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>601 Install Non-Metallic (NM) Cable for connection to an electrical device.</td>
<td>CAREER CLUSTER: Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</td>
<td>presented in a text to those from other sources, etc.</td>
<td>Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</td>
<td></td>
</tr>
<tr>
<td>603 Demonstrate knowledge and skill in installing low voltage wires and cable for timers, computers,</td>
<td>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10.A Standard CC.3.5.11-12.A Cite specific textual evidence, etc.</td>
<td>Standard CC.3.5.11-12.H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</td>
<td>Standard CC.3.6.9-10.H, Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</td>
<td></td>
</tr>
</tbody>
</table>

**RANGE OF READING GRADES 9-10-11-12**

- **Standard CC.3.5.11-12.1**
  - By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.

**RANGE OF WRITING GRADES 9-10-11-12**

- **Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

---

**KEY IDEAS/DETAILS GRADES 9-10-11-12**

- **Standard**

---

**CAREER CLUSTER: Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7**

- **Standard**

---

**CAREER PATHWAYS INCLUDE: Maintenance,**

- **Standard**

---

**TEXT TYPES AND PURPOSE GRADES 9-10-11-12**

- **Standard**

---

**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2**

- **Apply properties of rational and irrational numbers to solve real world or mathematical problems.**

---

**Standard 2.1.HS.F.4**

- **Use units as a way to understand problems and to...**

---

**Revised February 2014**

---
## Secondary Competency Task List with Unit and Task Numbers:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>604</td>
<td>Install and terminate a residential network.</td>
</tr>
<tr>
<td>605</td>
<td>Demonstrate knowledge and skill in installing coaxial cable for television and telecommunications systems.</td>
</tr>
<tr>
<td>606</td>
<td>Demonstrate knowledge and skill in finish wiring electrical outlets, switches, fixtures and other devices in a residence.</td>
</tr>
<tr>
<td>607</td>
<td>Define residential networks.</td>
</tr>
<tr>
<td>608</td>
<td>Identify a structured media system.</td>
</tr>
<tr>
<td>609</td>
<td>Design and plan layout of low voltage circuits services.</td>
</tr>
</tbody>
</table>

## Common Career Technical Core Standards

<table>
<thead>
<tr>
<th>Installation and Repair Career Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Choose Standards)</strong></td>
</tr>
<tr>
<td>1-2-3-4-5-6</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
</tr>
<tr>
<td>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
</tr>
</tbody>
</table>

## Pennsylvania Core Standards for Reading for Technical Subjects

- **Standard 3.5**
  - **Follow precisely a complex multistep procedure, etc.**
  - **CRAFT & STRUCTURE**
    - **GRADES 9-10-11-12**
    - Standard CC.3.5.9-10. **D**
    - Standard CC.3.5.11-12.D
    - Determine the meaning of symbols, key terms, and other domain specific words.  
    - Standard CC.3.5.9-10.E  
    - Standard CC.3.5.11-12.E
    - Analyze the structure of the relationships among concepts in a text, etc.  
    - Standard CC.3.5.9-10.F  
    - Standard CC.3.5.11-12.F
    - Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.  
    - **INTEGRATE KNOWLEDGE & IDEAS**
      - **GRADES 9-10**
      - Standard CC.3.5.9-10.G
      - Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).  
      - Standard CC.3.5.9-10. **H**
      - Assess the reasoning in a text to support the author’s claim for solving a technical problem.  
      - Standard CC.3.5.9-10. **I**
      - Compare and contrast findings presented in a text to those from other sources, etc.  
      - **RESEARCH**
        - **GRADES 9-10-11-12**
        - Standard CC.3.6.9-10.F
        - Standard CC.3.6.11-12.F

## Pennsylvania Core Standards for Writing for Technical Subjects

- **Standard 3.6**
  - **Guide the solution of multistep problems.**
  - **PRODUCTION & DISTRIBUTION OF WRITING**
    - **GRADES 9-10-11-12**
    - Standard CC.3.6.9-10. **C**
    - Standard CC.3.6.11-12.C
    - Produce clear and coherent writing...appropriate to task, purpose, and audience.  
    - Standard CC.3.6.9-10.D  
    - Standard CC.3.6.11-12.D
    - Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  
    - **USE TECHNOLOGY**
      - **GRADES 9-10-11-12**
      - Standard CC.3.6.9-10.E  
      - Standard CC.3.6.11-12.E
      - Use technology, including the internet, to produce, publish, and update individual or shared writing products.  

## Pennsylvania Core Standards for Mathematics

- **Standard 2.0**
  - **Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.**
  - **ALGEBRA**
    - **Standard 2.2.HS.C.9**
      - Prove the Pythagorean identity and use it to calculate trigonometric ratios.  
  - **GEOMETRY**
    - **Standard 2.3.HS.A.7**
      - Apply trigonometric ratios to solve problems involving right triangles.  
    - **Standard 2.3.HS.A.3**
      - Verify and apply geometric theorems as they relate to geometric figures.  
  - **Standard 2.3.HS.A.13**
    - Analyze relationships between two dimensional
### Secondary Competency Task List with Unit and Task Numbers:

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<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
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<tr>
<td><strong>INTEGRATE KNOWLEDGE &amp; IDEAS</strong></td>
<td><strong>Conduct short and more sustained research to answer a question or solve a problem.</strong></td>
<td><strong>Standard CC.3.5.11-12.G</strong></td>
<td><strong>Standard CC.3.5.11-12.G</strong></td>
<td><strong>Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G</strong></td>
</tr>
<tr>
<td><strong>GRADES 11-12</strong></td>
<td><strong>Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</strong></td>
<td><strong>Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H.</strong></td>
<td><strong>Draw evidence from informational texts to support analysis, reflection, and research.</strong></td>
<td><strong>and three dimensional objects.</strong></td>
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<tr>
<td><strong>Standard CC.3.5.11-12.G</strong></td>
<td><strong>Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</strong></td>
<td><strong>Standard CC.3.5.11-12.H</strong></td>
<td><strong>Standard CC.3.5.11-12.I</strong></td>
<td><strong>(Choose Career Cluster) Standard CC.3.5.11-12.I.</strong></td>
</tr>
<tr>
<td><strong>Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.</strong></td>
<td><strong>Synthesize information from a range of sources into a coherent understanding.</strong></td>
<td><strong>By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.</strong></td>
<td><strong>Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</strong></td>
<td><strong>Cite specific textual evidence, etc.</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.H</strong></td>
<td><strong>Determine the central ideas or conclusions of a text; etc.</strong></td>
<td><strong>Write arguments focused on discipline specific content.</strong></td>
<td><strong>Write informative or explanatory texts, including the narration of technical</strong></td>
<td><strong>Apply properties of rational and irrational numbers to solve real world or mathematical problems.</strong></td>
</tr>
<tr>
<td><strong>Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</strong></td>
<td><strong>Follow precisely a complex multistep process.</strong></td>
<td><strong>Write arguments focused on discipline specific content.</strong></td>
<td><strong>Use units as a way to understand problems and to guide the solution of</strong></td>
<td><strong>Standard 2.1.HS.F.4</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.I</strong></td>
<td><strong>KEY IDEAS/DETAILS</strong></td>
<td><strong>TEXT TYPES AND PURPOSE</strong></td>
<td><strong>NUMBERS AND OPERATIONS</strong></td>
<td><strong>Standard 2.1.HS.F.2</strong></td>
</tr>
<tr>
<td><strong>Synthesize information from a range of sources into a coherent understanding.</strong></td>
<td><strong>GRADES 9-10-11-12</strong></td>
<td><strong>GRADES 9-10-11-12</strong></td>
<td><strong>Standard 2.1.HS.F.2</strong></td>
<td><strong>Apply properties of rational and irrational numbers to solve real world or mathematical problems.</strong></td>
</tr>
<tr>
<td><strong>RANGE OF READING GRADES 9-10-11-12</strong></td>
<td><strong>Standard CC.3.5.9-10.J</strong></td>
<td><strong>Standard CC.3.6.9-10.A &amp; Standard CC.3.6.11-12.A</strong></td>
<td><strong>Standard 2.1.HS.F.4</strong></td>
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<td><strong>Standard CC.3.5.11-12.J</strong></td>
<td><strong>Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B</strong></td>
<td></td>
<td><strong>Standard 2.1.HS.F.4</strong></td>
</tr>
<tr>
<td><strong>RANGE OF WRITING GRADES 9-10-11-12</strong></td>
<td><strong>Standard CC.3.5.9-10.J &amp; Standard CC.3.5.11-12.J</strong></td>
<td><strong>Write arguments focused on discipline specific content.</strong></td>
<td></td>
<td><strong>Use units as a way to understand problems and to guide the solution of</strong></td>
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<td><strong>Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</strong></td>
<td><strong>Determine the central ideas or conclusions of a text; etc.</strong></td>
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<td><strong>Standard 2.1.HS.F.4</strong></td>
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</table>

### CAREER CLUSTER
Manufacturing Career Cluster

### CAREER PATHWAYS
**INCLUDE:**
- Maintenance,
- Installation and Repair
- Career Pathway

### KEY IDEAS/DETAILS
**GRADES 9-10-11-12**
- Standard CC.3.5.9-10. A
- Standard CC.3.5.11-12 A
- Cite specific textual evidence, etc. Standard CC.3.5.9-10 B
- Standard CC.3.5.11-12. B
- Determine the central ideas or conclusions of a text; etc.
- Standard CC.3.5.9-10.C
- Standard CC.3.5.11-12.C
- Follow precisely a complex multistep process.

### TEXT TYPES AND PURPOSE
**GRADES 9-10-11-12**
- Standard CC.3.6.9-10.A
- Standard CC.3.6.11-12.A
- Write arguments focused on discipline specific content.
- Standard CC.3.6.9-10.B
- Standard CC.3.6.11-12.B
- Write informative or explanatory texts, including the narration of technical

### NUMBERS AND OPERATIONS
**Standard 2.1.HS.F.2**
- Apply properties of rational and irrational numbers to solve real world or mathematical problems.

**Standard 2.1.HS.F.4**
- Use units as a way to understand problems and to guide the solution of

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### SWITCHES AND RECEPTACLES CIRCUITS.

<table>
<thead>
<tr>
<th><strong>700</strong></th>
<th><strong>SWITCHES AND RECEPTACLES CIRCUITS.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>701</td>
<td>Install a duplex receptacle.</td>
</tr>
<tr>
<td>702</td>
<td>Install a single pole switch.</td>
</tr>
<tr>
<td>703</td>
<td>Install a 3 way switch.</td>
</tr>
<tr>
<td>704</td>
<td>Install a 4 way switch.</td>
</tr>
</tbody>
</table>

**Revised February 2014**
### Electrical and Power Transmission Installers, Other, Classification of Instructional Program (CIP) 46.0399

#### Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

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<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>705 Install a split wired duplex receptacle.</td>
<td>(Choose Standards) 1-2-3-4-5-6</td>
<td>procedure, etc.</td>
<td>processes, etc.</td>
<td>multistep problems.</td>
</tr>
<tr>
<td>706 Install a Ground Fault Circuit Interrupter (GFCI) Receptacle.</td>
<td></td>
<td>CRAFT &amp; STRUCTURE</td>
<td>PRODUCTION &amp; DISTRIBUTION OF WRITING</td>
<td>Standard 2.1.HS.F.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRADES 9-10-11-12</td>
<td>GRADES 9-10-11-12</td>
<td>Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Standard CC.3.5.11-12.D</td>
<td>Standard CC.3.6.11-12.C</td>
<td>Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
</tr>
<tr>
<td>707 Install an Arc Fault Circuit Interrupter (AFCI).</td>
<td>NOTE:</td>
<td>Determine the meaning of symbols,</td>
<td>Produce clear and coherent writing...appropriate to task, purpose, and audience.</td>
<td></td>
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<tr>
<td></td>
<td>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td>key terms, and other domain specific words.</td>
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<td></td>
</tr>
<tr>
<td>708 Install a timer circuit.</td>
<td></td>
<td>Standard CC.3.5.9-10.E</td>
<td>Standard CC.3.6.9-10.D</td>
<td></td>
</tr>
<tr>
<td>709 Install various special switches and receptacles.</td>
<td></td>
<td>Standard CC.3.5.11-12.E</td>
<td>Standard CC.3.6.11-12.D</td>
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<td>Analyze the structure of the relationships among concepts in a text, etc.</td>
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<td>InTEGRATE KNOWLEDGE &amp; IDEAS</td>
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<td></td>
<td>GRADES 9-10</td>
<td>GRADES 9-10-11-12</td>
<td>GRADES 9-10-11-12</td>
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<td>Translate quantitative or technical information expressed in a text into visual form (e.g., a table or chart).</td>
<td>Standard CC.3.6.9-10.D</td>
<td>Standard CC.3.6.11-12.D</td>
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<td>Assess the reasoning in a text to support the author’s claim for solving a technical problem.</td>
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<td>Compare and contrast findings presented in a text to those from other sources, etc.</td>
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**NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.

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**GEOMETRY**

- **Standard 2.3.HS.A.7**
  - Apply trigonometric ratios to solve problems involving right triangles.

- **Standard 2.3.HS.A.3**
  - Verify and apply geometric theorems as they relate to geometric figures.

- **Standard 2.3.HS.A.13**
  - Analyze relationships between two dimensional and three dimensional objects.

---

**PRODUCTION & DISTRIBUTION OF WRITING**

- **Standard CC.3.6.9-10.C**
  - Conduct short and more multistep problems.

- **Standard CC.3.6.11-12.C**
  - Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
### Secondary Competency Task List with Unit and Task Numbers:

| Units of Instruction and Task Grid Linked to Pennsylvania Core Standards |
|---|---|---|---|---|
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| Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6 |
| Pennsylvania Core Standards for Mathematics Standard 2.0 |

### CAREER CLUSTER
Manufacturing Career Cluster

### CAREER PATHWAYS INCLUDE:
Maintenance, Installation and Repair Career Pathway

### KEY IDEAS/DETAILS
**GRADES 11-12**
**Standard CC.3.5.11-12. G**
Integrate and evaluate multiple sources of information presented in diverse formats to solve a problem.

**Standard CC.3.5.11-12. H**
Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

**Standard CC.3.5.11-12. I**
Synthesize information from a range of sources into a coherent understanding.

### RANGE OF READING
**GRADES 9-10-11-12**
**Standard CC.3.5.9-10.J**
**Standard CC.3.5.11-12.J**
By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.

### RANGE OF WRITING
**GRADES 9-10-11-12**
**Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I**
Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences, etc.

### 800 FIXTURES.

- **801** Install surface mounted lighting fixture.
- **802** Install recessed lighting fixtures.
- **803** Install a ceiling fan.
- **804** Install low voltage lighting.

### NUMBERS AND OPERATIONS
**Standard 2.1.HS.F.2**
Apply properties of rational and irrational numbers to solve real world or mathematical problems.

**Standard 2.1.HS.F.4**
Use units as a way to understand problems and to guide the solution of multistep problems.

Revised February 2014
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GRADE 9-10-11-12  
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Standard CC.3.5.11-12.D  
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Standard CC.3.5.11-12.E  
Analyze the structure of the relationships among concepts in a text, etc.  
Standard CC.3.5.9-10.F  
Standard CC.3.5.11-12.F  
Analyze the author’s purpose in providing an explanation, describing a procedure...and  
Analyze the structure of the relationships among concepts in a text.  
INTEGRATE KNOWLEDGE & IDEAS  
GRADE 9-10  
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Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).  
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Standard 2.1.HS.F.6  
Extend the knowledge of arithmetic operations and apply to complex numbers. |
### Secondary Competency Task List with Unit and Task Numbers:

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<th>KEY IDEAS/DETAILS</th>
<th>TEXT TYPES AND PURPOSE</th>
<th>NUMBERS AND OPERATIONS</th>
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<td><strong>900 RACEWAYS.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>901 Install Electrical Metallic Tubing (EMT).</td>
<td>CAREER CLUSTER</td>
<td>KEY IDEAS/DETAILS</td>
<td>TEXT TYPES AND PURPOSE</td>
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<tr>
<td></td>
<td>Manufacturing Career Cluster</td>
<td>GRADES 9-10-11-12</td>
<td>STANDARD CC.3.5.9-10.A</td>
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<tr>
<td></td>
<td>(Choose Standards)</td>
<td>Standard CC.3.5.11-12.A</td>
<td>Write arguments focused on</td>
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<td>1-2-3-4-5-6-7</td>
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<td>discipline specific content.</td>
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<td>CAREER PATHWAYS INCLUDE:</td>
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<td>Maintenance,</td>
<td></td>
<td>STANDARD CC.3.6.11-12.A</td>
</tr>
<tr>
<td></td>
<td>Installation and Repair</td>
<td></td>
<td>Write arguments focused on</td>
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<tr>
<td></td>
<td>Career Pathway</td>
<td></td>
<td>discipline specific content.</td>
</tr>
<tr>
<td></td>
<td>(Choose Standards)</td>
<td></td>
<td>STANDARD CC.3.6.11-12.B</td>
</tr>
<tr>
<td></td>
<td>1-2-3-4-5-6</td>
<td>Follow precisely a complex multistep</td>
<td>Write informative or</td>
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<tr>
<td></td>
<td>NOTE:</td>
<td>procedure, etc.</td>
<td>explanatory texts, including</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the narration of technical</td>
</tr>
<tr>
<td>902 Install Poly Vinyl Chloride conduit (PVC).</td>
<td></td>
<td></td>
<td>processes, etc.</td>
</tr>
<tr>
<td>903 Identify surface metal and nonmetal raceways</td>
<td></td>
<td></td>
<td>PRODUCTION &amp;</td>
</tr>
<tr>
<td></td>
<td>(Wiremold).</td>
<td></td>
<td>DISTRIBUTION OF</td>
</tr>
<tr>
<td>904 Identify flexible raceway.</td>
<td></td>
<td></td>
<td>WRITING</td>
</tr>
<tr>
<td>905 Demonstrate the five bends (90, offset, 3 point saddle,</td>
<td></td>
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<td>STANDARD 2.1.HS.F.2</td>
</tr>
<tr>
<td></td>
<td>4 point saddle, kick) used for conduit raceways.</td>
<td></td>
<td>Apply properties of rational</td>
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<td>and irrational numbers to</td>
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<td></td>
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<td>solve real world or</td>
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<td>mathematical problems.</td>
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<td></td>
<td>STANDARD 2.1.HS.F.4</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Use units as a way to</td>
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<td>understand problems and to</td>
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<td>guide the solution of</td>
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<td></td>
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<td>multistep problems.</td>
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<td>STANDARD 2.1.HS.F.5</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Choose a level of accuracy</td>
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<td>appropriate to limitations on</td>
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<td></td>
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<td></td>
<td>measurement when reporting</td>
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</tbody>
</table>
### Electrical and Power Transmission Installers, Other, Classification of Instructional Program (CIP) 46.0399

**Units of Instruction and Task Grid Linked to Pennsylvania Core Standards**

<table>
<thead>
<tr>
<th>Secondary Competency Task List with Unit and Task Numbers:</th>
<th>Common Career Technical Core Standards</th>
<th>Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5</th>
<th>Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6</th>
<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>906 Demonstrate how to thread and install rigged/intermediate conduit.</td>
<td>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td>Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</td>
<td>GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</td>
<td>Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
</tr>
<tr>
<td>907 Demonstrate the application of construction math problems.</td>
<td>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). Standard CC.3.5.9-10.H Assess the reasoning in a text to support the author’s claim for solving a technical problem. Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.</td>
<td>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12 Standard CC.3.5.11-12. G Integrate and evaluate multiple quantities.</td>
<td>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more quantities.</td>
<td>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures.</td>
</tr>
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</table>
### Secondary Competency Task List with Unit and Task Numbers:

**Units of Instruction and Task Grid Linked to Pennsylvania Core Standards**

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</tr>
</thead>
<tbody>
<tr>
<td>1000 WIRED DEVICES.</td>
<td></td>
<td>sources of information presented in diverse formats...to solve a problem.</td>
<td>sustained research to answer a question or solve a problem.</td>
<td></td>
</tr>
<tr>
<td>1002 Install door bell system.</td>
<td></td>
<td>Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.</td>
<td>Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RANGE OF READING</td>
<td>GRADES 9-10-11-12</td>
<td>RANGE OF WRITING</td>
<td>GRADES 9-10-11-12</td>
</tr>
<tr>
<td></td>
<td>Standard CC.3.5.9-10.J</td>
<td>By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.</td>
<td>Standard CC.3.5.11-12.J</td>
<td>Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</td>
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<td>Standard CC.3.5.11-12.J</td>
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<td></td>
<td></td>
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</tbody>
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### CAREER CLUSTER
Manufacturing Career Cluster
(Choose Standards)
1-2-3-4-5-6-7

### CAREER PATHWAYS
INCLUDE:
Maintenance, Installation and Repair Career Pathway

### KEY IDEAS/DETAILS
GRADE 9-10-11-12
Standard CC.3.5.9-10. A
Cite specific textual evidence, etc. Standard CC.3.5.9-10 B
Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C
Follow precisely a complex multistep procedure, etc.

### TEXT TYPES AND PURPOSE
GRADE 9-10-11-12
Standard CC.3.6.9-10.A
Write arguments focused on discipline specific content. Standard CC.3.6.11-12.A
Write informative or explanatory texts, including the narration of technical processes, etc.

### NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2
Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4
Use units as a way to understand problems and to guide the solution of multistep problems.

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### Electrical and Power Transmission Installers, Other, Classification of Instructional Program (CIP) 46.0399

#### Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

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<tr>
<td>(Choose Standards) 1-2-3-4-5-6</td>
<td>CRAFT &amp; STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10.D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</td>
<td>PRODUCTION &amp; DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12.C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10.D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</td>
<td>Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
<td></td>
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<tr>
<td>NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.</td>
<td>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).</td>
<td>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer</td>
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</tr>
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### Secondary Competency Task List with Unit and Task Numbers:

<table>
<thead>
<tr>
<th>IDEAS</th>
<th>Common Career Technical Core Standards</th>
<th>Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5</th>
<th>Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6</th>
<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated and evaluate multiple sources of information presented in diverse formats...to solve a problem.</td>
<td>Standard CC.3.5.11-12.G</td>
<td>Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</td>
<td>Standard CC.3.6.9-10.G.</td>
</tr>
<tr>
<td></td>
<td>Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</td>
<td>Standard CC.3.5.11-12.H</td>
<td>Draw evidence from informational texts to support analysis, reflection, and research.</td>
<td>Standard CC.3.6.9-10.H.</td>
</tr>
<tr>
<td></td>
<td>Synthesize information from a range of sources into a coherent understanding.</td>
<td>Standard CC.3.5.11-12.I</td>
<td>By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.</td>
<td>Standard CC.3.6.11-12.H.</td>
</tr>
</tbody>
</table>

### RANGE OF READING:

**GRADES 9-10-11-12**

- **Standard CC.3.5.9-10.J**
- **Standard CC.3.5.11-12.J**

By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.

### RANGE OF WRITING:

**GRADES 9-10-11-12**

- **Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.**

Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

---

**1100 TESTING EQUIPMENT.**

<table>
<thead>
<tr>
<th>1101</th>
<th>Identify and safely use a multimeter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1102</td>
<td>Identify and safely use a continuity tester.</td>
</tr>
<tr>
<td>1103</td>
<td>Identify and safely use a plug in circuit tester.</td>
</tr>
<tr>
<td>1104</td>
<td>Identify and safely use a clamp on ammeter.</td>
</tr>
<tr>
<td>1105</td>
<td>Identify and safely use a megger insulation tester.</td>
</tr>
</tbody>
</table>

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**CAREER CLUSTER**

Manufacturing Career Cluster (Choose Standards)

1-2-3-4-5-6-7

**CAREER PATHWAYS INCLUDE:**

- Maintenance, Installation and Repair Career Pathway (Choose Standards)

**KEY IDEAS/DETAILS**

**GRADES 9-10-11-12**

- **Standard CC.3.5.9-10. A**
- **Standard CC.3.5.11-12 A**
- **Standard CC.3.5.9-10 B**
- **Standard CC.3.5.11-12. B**
- **Standard CC.3.5.11-12.C**

**TEXT TYPES AND PURPOSE**

**GRADES 9-10-11-12**

- **Standard CC.3.6.9-10.A**
- **Standard CC.3.6.11-12.A**
- **Standard CC.3.6.9-10.B**
- **Standard CC.3.6.11-12.B**

**NUMBERS AND PURPOSE**

**Standard 2.1.HS.F.2**

Apply properties of rational and irrational numbers to solve real world or mathematical problems.

**Standard 2.1.HS.F.4**

Use units as a way to understand problems and to guide the solution of multistep problems.
1106   Identify and safely use a circuit tracer.

NOTE: Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area.

<table>
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<tr>
<th>Secondary Competency Task List with Unit and Task Numbers:</th>
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<th>Pennsylvania Core Standards for Mathematics Standard 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2-3-4-5-6 Identify and safely use a circuit tracer.</td>
<td>CRAFT &amp; STRUCTURE</td>
<td>PRODUCTION &amp; DISTRIBUTION OF WRITING</td>
<td>Standard 2.1.HS.F.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GRADES 9-10-11-12</td>
<td>GRADES 9-10-11-12</td>
<td>Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</td>
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</tr>
<tr>
<td></td>
<td>Standard CC.3.5.11-12.D</td>
<td>Standard CC.3.6.11-12 C</td>
<td>Extend the knowledge of arithmetic operations and apply to complex numbers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine the meaning of symbols, key terms, and other domain specific words.</td>
<td>Produce clear and coherent writing...appropriate to task, purpose, and audience.</td>
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</tr>
<tr>
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<td>Standard CC.3.5.9-10.E</td>
<td>Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</td>
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<td>Standard CC.3.5.11-12.E</td>
<td>Standard CC.3.6.9-10 D</td>
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<tr>
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<td>Analyze the structure of the relationships among concepts in a text, etc.</td>
<td>Standard CC.3.6.11-12.D</td>
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<td></td>
<td>Standard CC.3.5.9-10.F</td>
<td>Analyze the author’s purpose in providing an explanation, describing a procedure...and</td>
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<td>Standard CC.3.5.11-12.F</td>
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<td></td>
<td>CRAFT &amp; STRUCTURE</td>
<td>INTEGRATE KNOWLEDGE &amp; IDEAS</td>
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<td></td>
<td>GRADES 9-10-11-12</td>
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<tr>
<td></td>
<td>Standard CC.3.5.9-10.G</td>
<td>Standard CC.3.6.9-10.F</td>
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<td></td>
<td>Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).</td>
<td>Standard CC.3.6.11-12.F</td>
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<td>Standard CC.3.5.9-10. H</td>
<td>Conduct short and more sustained research to answer a question or solve a problem.</td>
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<td>Standard CC.3.5.9-10. I</td>
<td>Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</td>
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<td></td>
<td>Compare and contrast findings presented in a text to those from other sources, etc.</td>
<td>Standard CC.3.6.11-12.G.</td>
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<td>INTEGRATE KNOWLEDGE &amp; IDEAS</td>
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<tr>
<td><strong>GRADES 11-12</strong></td>
<td>Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.</td>
<td>Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</td>
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<tr>
<td><strong>Standard CC.3.5.11-12. H</strong></td>
<td>Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</td>
<td><strong>RANGE OF WRITING</strong></td>
<td><strong>GRADES 9-10-11-12</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12. I</strong></td>
<td>Synthesize information from a range of sources into a coherent understanding.</td>
<td><strong>Standard CC.3.5.9-10.J</strong></td>
<td><strong>Standard CC.3.5.9-10.J</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.J</strong></td>
<td>By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.</td>
<td><strong>Standard CC.3.5.9-10.A</strong></td>
<td><strong>Standard CC.3.5.9-10.A</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.A</strong></td>
<td>Cite specific textual evidence, etc.</td>
<td><strong>Standard CC.3.5.9-10.B</strong></td>
<td><strong>Standard CC.3.5.9-10.B</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.B</strong></td>
<td>Determine the central ideas or conclusions of a text; etc.</td>
<td><strong>Standard CC.3.5.9-10.C</strong></td>
<td><strong>Standard CC.3.5.9-10.C</strong></td>
</tr>
<tr>
<td><strong>Standard CC.3.5.11-12.C</strong></td>
<td>Follow precisely a complex multistep procedure, etc.</td>
<td><strong>CRAFT &amp; STRUCTURE</strong></td>
<td><strong>GRADES 9-10-11-12</strong></td>
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### ELECTRICAL SERVICE.

<table>
<thead>
<tr>
<th><strong>1200</strong></th>
<th><strong>CAREER CLUSTER MANUFACTURING CAREER CLUSTER</strong></th>
<th><strong>KEY IDEAS/DETAILS</strong></th>
<th><strong>NUMBERS AND OPERATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1201</td>
<td>Install a 100 amp overhead service.</td>
<td>GRADES 9-10-11-12</td>
<td>Standard 2.1.HS.F.2.</td>
</tr>
<tr>
<td>1202</td>
<td>Identify a 100 amp underground service.</td>
<td>Standard CC.3.5.9.10.A</td>
<td>Apply properties of rational and irrational numbers to solve real world or mathematical problems.</td>
</tr>
<tr>
<td>1203</td>
<td>Install a 200 amp overhead service.</td>
<td>Standard CC.3.5.11-12.A</td>
<td><strong>Standard 2.1.HS.F.4.</strong></td>
</tr>
<tr>
<td>1204</td>
<td>Install a 200 amp underground service.</td>
<td>Cite specific textual evidence, etc.</td>
<td>Use units as a way to understand problems and to guide the solution of multistep problems.</td>
</tr>
<tr>
<td>1205</td>
<td>Install a multiple meter service.</td>
<td>Standard CC.3.5.9.10.B</td>
<td><strong>Standard 2.1.HS.F.5.</strong></td>
</tr>
<tr>
<td>1206</td>
<td>Install a multiple meter service with over current</td>
<td>Standard CC.3.5.9.10.C</td>
<td>Choose a level of accuracy appropriate to limitations on measurement when</td>
</tr>
</tbody>
</table>

**NOTE:**

- **NUMBERS AND OPERATIONS**
  - Standard 2.1.HS.F.2
  - Apply properties of rational and irrational numbers to solve real world or mathematical problems.
  - **Standard 2.1.HS.F.4**
    - Use units as a way to understand problems and to guide the solution of multistep problems.
  - **Standard 2.1.HS.F.5**
    - Choose a level of accuracy appropriate to limitations on measurement when

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| protection.                                               | Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local Area. | Standard CC.3.5.9-10. D  
Standard CC.3.5.11-12.D  
Determine the meaning of symbols, key terms, and other domain specific words.  
Standard CC.3.5.9-10.E  
Standard CC.3.5.11-12.E  
Analyze the structure of the relationships among concepts in a text, etc.  
Standard CC.3.5.9-10.F  
Standard CC.3.5.11-12.F  
Analyze the author’s purpose in providing an explanation, describing a procedure...and  
Analyze the structure of the relationships among concepts in a text.  
**INTEGRATE KNOWLEDGE & IDEAS**  
**GRADES 9-10**  
Standard CC.3.5.9-10.G  
Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).  
Standard CC.3.5.9-10. H  
Assess the reasoning in a text to support the author’s claim for solving a technical problem.  
Standard CC.3.5.9-10. I  
Compare and contrast findings presented in a text to those from other sources, etc.  
**INTEGRATE KNOWLEDGE & IDEAS**  
**GRADES 11-12**  
Standard CC.3.5.11-12. G  
Integrate and evaluate multiple reporting quantities.  
Standard 2.1.HS.F.6  
Extend the knowledge of arithmetic operations and apply to complex numbers. |
| 1207  Cut in a residential panel.                          |                                                        |                                                                         |                                                                         |                                                          |
| 1208  Perform a live service tie in.                       |                                                        |                                                                         |                                                                         |                                                          |
| 1209  Demonstrate knowledge of 3 phase safety disconnect switch. |                                                        |                                                                         |                                                                         |                                                          |
| 1210  Dress and tie in a service panel.                    |                                                        |                                                                         |                                                                         |                                                          |

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#### Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

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### 1300 NATIONAL ELECTRICAL CODE.

1301 Identify the purpose of the National Electrical Code, its publisher and its source, and explain why the NEC is needed in this occupation.

1302 Demonstrate how to use the National Electrical Code Book as a reference for finding answers to questions, solutions to problems, and up to date regulations during the installation of electrical service and power transmission.

1303 Use the NEC as a reference to questions and competencies that students perform for all electrical installations.
### Secondary Competency Task List with Unit and Task Numbers:

- **Pathways to meet the needs of your local Area.**

### Common Career Technical Core Standards

- Key terms, and other domain specific words.
- Standard CC.3.5.9-10.E
- Standard CC.3.5.11-12.E
- Analyze the structure of the relationships among concepts in a text, etc.
- Standard CC.3.5.9-10.F
- Standard CC.3.5.11-12.F
- Analyze the author’s purpose in providing an explanation, describing a procedure...and
- Analyze the structure of the relationships among concepts in a text.

### Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

#### INTEGRATE KNOWLEDGE & IDEAS

**GRADES 9-10**

- Standard CC.3.5.9-10.G
  - Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).
- Standard CC.3.5.9-10. H
  - Assess the reasoning in a text to support the author’s claim for solving a technical problem.
- Standard CC.3.5.9-10. I
  - Compare and contrast findings presented in a text to those from other sources, etc.

#### INTEGRATE KNOWLEDGE & IDEAS

**GRADES 11-12**

- Standard CC.3.5.11-12. G
  - Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.
- Standard CC.3.5.11-12. H

### Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

- Produce clear and coherent writing...appropriate to task, purpose, and audience.
- Standard CC.3.6.9-10 D
- Standard CC.3.6.11-12.D
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- Standard CC.3.6.9-10.E
- Standard CC.3.6.11-12.E
- Use technology, including the internet, to produce, publish, and update individual or shared writing products.

### Pennsylvania Core Standards for Mathematics Standard 2.0

- Extend the knowledge of arithmetic operations and apply to complex numbers.

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## Secondary Competency Task List with Unit and Task Numbers:

### CAREER CLUSTER
- **Manufacturing Career Cluster**
  - (Choose Standards)
  - 1-2-3-4-5-6-7

### CAREER PATHWAYS INCLUDE:
- Maintenance, Installation and Repair Career Pathway
  - (Choose Standards)
  - 1-2-3-4-5-6

### NOTE:
- Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways to meet the needs of your local community.

### KEY IDEAS/DETAILS
- **GRADES 9-10-11-12**
- Standard CC.3.5.9-10.A
- Cite specific textual evidence, etc.
- Standard CC.3.5.11-12.A
- Determine the central ideas or conclusions of a text; etc.

### CRAFT & STRUCTURE
- **GRADES 9-10-11-12**
- Standard CC.3.5.9-10.D
- Determine the meaning of symbols, key terms, and other domain specific words.
- Standard CC.3.5.11-12.D

### TEXT TYPES AND PURPOSE
- **GRADES 9-10-11-12**
- Standard CC.3.6.9-10.A
- Write informative or explanatory texts, including the narration of technical processes, etc.
- Standard CC.3.6.9-10.B
- Write arguments focused on discipline specific content.
- Standard CC.3.6.11-12.A

### NUMBERS AND PURPOSE
- **Standard 2.1.HS.F.2**
- Apply properties of rational and irrational numbers to solve real world or mathematical problems.
- **Standard 2.1.HS.F.4**
- Use units as a way to understand problems and to guide the solution of multistep problems.
- **Standard 2.1.HS.F.5**
- Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
- **Standard 2.1.HS.F.6**
- Extend the knowledge of arithmetic operations and apply to complex numbers.

## GREEN TECHNOLOGY.

1400

1401 Describe and explain the uses of wind power and solar power.

1402 Demonstrate knowledge of installation procedures for a wind turbine system.

1403 Demonstrate knowledge of installation procedures for photovoltaic systems.

1404 Demonstrate knowledge of installation procedures for a solar energy source.

1405 Demonstrate knowledge of installation procedures for installing a wind energy source.

1406 Demonstrate knowledge of the operation of solar power.

Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

**Standard CC.3.5.11-12. I**

Synthesize information from a range of sources into a coherent understanding.

**RANGE OF READING GRADES 9-10-11-12**
- Standard CC.3.5.9-10.J
- Standard CC.3.5.11-12.J
- By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.

**RANGE OF WRITING GRADES 9-10-11-12**
- Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I
- Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

## Notes

- **February 2014**

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<td><strong>1401</strong> Describe and explain the uses of wind power and solar power.</td>
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<td><strong>1402</strong> Demonstrate knowledge of installation procedures for a wind turbine system.</td>
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<td><strong>1403</strong> Demonstrate knowledge of installation procedures for photovoltaic systems.</td>
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<td><strong>1404</strong> Demonstrate knowledge of installation procedures for a solar energy source.</td>
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<td><strong>1405</strong> Demonstrate knowledge of installation procedures for installing a wind energy source.</td>
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<td><strong>1406</strong> Demonstrate knowledge of the operation of solar power.</td>
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<td>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</td>
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<td>Standard CC.3.5.9-10.F Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</td>
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<td>Standard CC.3.6.11-12.D Use technology, including the internet, to produce, publish, and update individual or shared writing products.</td>
<td>RESEARCH Standard 2.3.HS.A.13 Analyze relationships between two dimensional and three dimensional objects.</td>
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<td>SKILLS DEVELOPMENT Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.</td>
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<td>Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</td>
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<td>Standard CC.3.5.11-12.G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.</td>
<td>Standard CC.3.6.9-10.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</td>
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