



More skills ... more opportunities

Professional Skills Record

Construction Electrician

NOC 7241

ACKNOWLEDGEMENTS

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This project is the result of the collaboration of the following dedicated adult educational consultants in Prince Edward Island:

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This handbook is designed to help skilled trades Journeypersons manage the skills and learning of their Apprentices who are using a Professional Skills Record.

1 Why Do I Need this Handbook?

Eighty percent of all learning in a trade happens on the job. This means the apprentice has the responsibility to learn and you, as their journeyperson, have the responsibility to mentor and teach.

Signing off for the learning an apprentice has completed under your supervision is a huge responsibility. With all the skills needed in a trade, it is important that both you and the apprentice have a tool to help you record and sign off on that learning.

2 But We Have Logbooks

When a tradesperson registers as an apprentice in most provinces or territories in Canada, they are given a Logbook.

A Logbook:

- is issued by the apprenticeship authority within a jurisdiction
- is created from the National Occupational Analysis (NOA) in a trade
- is a list of all the general skill areas (**Blocks and Tasks**) in a trade
- records an apprentice's progress in the general skill areas of a trade
- is signed off by a journeyperson to guarantee that an apprentice is performing these tasks to Industry Standard.

A Logbook lists the Blocks and Tasks from the NOA **but** the Interprovincial Red Seal exam and trades training courses in colleges and trade schools use **all** the information in the NOA. This includes the Blocks, Tasks, **Sub-tasks and the Knowledge and Abilities** listed in the NOA.

Each apprentice needs a tool that lists **all** the skills and learning they need in their trade career. Then, if they have one employer or several employers over their entire term of apprenticeship, both the apprentice and the journeyperson know what learning has been completed:

- the journeyperson knows what skills they are signing off to verify what has been taught; and
- the apprentice knows what they need to learn to be successful in their Red Seal exam.

3 What is a National Occupational Analysis (NOA)?

The Canadian Council of Directors of Apprenticeship, which is made up of managers and directors of apprenticeship from every province and territory in Canada, guides a Human Resources and Skills Development Canada (HRSDC) sponsored program to develop NOAs.

Under this partnership, joint planning committees made up of tradespeople who have a Certificate of Qualification, Red Seal endorsement from each province and territory in Canada, come together in Ottawa every four to five years to review and revise the NOA in all of the 45 skilled trades.

Each NOA is accepted as the national standard in that trade. The NOA is then used to:

- identify and group tasks performed by skilled workers in each trade in every province and territory in Canada
- group these tasks by Blocks, Tasks, Sub-tasks, Knowledge, Skills and Abilities (also called "**competencies**") required in a trade
- give information on the breakdown of questions from all sections of the NOA in the Interprovincial Red Seal exam
- create all the questions for the Red Seal exam
- create curriculum for trade school programs and Block Release/Period/Level* programs in a trade.

* *The in-school portion of apprenticeship has several names across Canada. In some provinces and territories it is called Block Release, in others it is called Period Training or Level.*

4 If there is an NOA, why do we need a Professional Skills Record (PSR)?

The NOA is designed to be used for creating curriculum and for developing test questions for the Red Seal exam.

The PSR is designed to be used by an apprentice and a journeyperson in the workplace. The PSR provides a fair and objective assessment tool to record the apprentice's learning and skills.

The PSR has been developed **with** apprentices during a three-year research project on PEI called Trade Essentials. Recommendations made by the apprentices who tested the tool have been built into the document.

The PSR was then validated by teams of tradespeople who have a Certification of Qualification, Red Seal endorsement in each trade who came together and discussed what an apprentice is expected to learn from their journeyperson in the workplace.

The apprentice has the main responsibility for completing the PSR. It is designed as a self-assessment tool so the apprentice can keep track of his/her skills and learning and make plans to fill any technical skills training gaps.

The PSR takes information from the NOA and:

- lays it out in a chart
- lists the percentage and number of questions for the Red Seal exam from each task on every page
- takes the skills from the NOA and describes them in terms of what a tradesperson does on the job, for example:
 - In the **NOA**, the skill says – “knowledge of blueprints and drawings”
 - In the **PSR**, the skill says – “read and interpret blueprints and drawings”
- has a rating chart so the apprentice can judge his/her level of learning and have it all recorded for you to review
- provides you, the journeyperson, with a tool to discuss details of an apprentice's skill areas that are great and areas that may need to improve
- helps the apprentice make a plan so he/she can improve skills
- helps you know what skills you still have to teach the apprentice.

5 Am I expected to teach all the skills in a PSR?

No. A PSR contains **all** the skills and learning a tradesperson has to learn over all their years as an apprentice. You, as their journeyman, can help make this tool useful by completing the sign-off on the learning and skill you know they have. Some of the ways you can assess the skills your apprentice has are:

- **OBSERVATION** – you watch them use their knowledge, skills and abilities or competencies to perform a task or sub-task

For example, you ask them to select a tool for a specific job, then watch them use that tool to do a task.

- **INTERVIEW** – you have a discussion with your apprentice to find out if they can demonstrate an understanding of what they are doing

For example, you ask them to tell you about any safety precautions that have to be followed before they start a certain task.

- **DOCUMENTATION** – an apprentice may have a document that provides proof of skills they already have. You can use the PSR to sign-off on tasks the document covers. The document or certificate could be from:

- another employer,
- a trade school or college,
- an industry training course,
- another province or territory,
- or even from another country.

For example, you need all your employees to be trained in WHMIS. A new apprentice you just hired shows you a WHMIS certificate he/she have from a job they were working on a couple of months ago in northern Canada.

Apprentices will also tell you, through their self-assessments, the best way they think they can prove the skills they have. This can help guide you, as their mentor, to choose a way to assess your apprentice that works best for both of you.

6 Are there any tips on how to be a good mentor to my apprentice?

Mentoring has always been the foundation of apprenticeship. In trades, a mentor is a person who has a great deal of learning and skills from experience in a trade who helps a less experienced person by guiding, teaching and sharing their skills and learning.

Along with having learning and experience in their trade, the most successful mentors are:

- **Patient** - and understand the apprentice needs time to learn and practise their skills to become as good as their mentor.
- **Organized** - and set a schedule to meet regularly with their apprentice to track their learning and make plans for new learning.
- **Positive** - and supportive in helping an apprentice tackle new learning and encourage them to keep working on skills they find difficult to learn.
- **Respectful** - so that other employees in the workplace accept the apprentice and are willing to help and encourage the new apprentice.

As a mentor, you are a role model for your apprentice. To create a successful relationship between you and your apprentice you can:

- **Lead by example.** If you set safety and quality assurance as firsts on your list each and every day, so will your apprentice.
- **Build trust.** If you want your apprentice to trust and respect you, you can show trust in them by assigning them some responsibility as soon as you see an opportunity.
- **Communicate.** Communication is a two-way street. Be willing to listen as you give directions and be available to your apprentice when they need you. Always treat every question seriously. If your apprentice has the confidence to ask, it is important to give a respectful answer.
- **Be reliable.** Your apprentices need to know they can depend on you when they run into a problem. Create supportive relationships with other employees so if you are away from the workplace, your apprentice feels confident in approaching another employee for help.

6.1 Tips

- **Give clear instructions.** When assigning a task and giving direction, give step-by-step instructions, then ask your apprentice to repeat the instructions. This gives them the opportunity to ask questions on things that might not be clear to them.

Checklist for giving instructions:

- ✓ **explain the task**
 - ✓ **show them how it is done**
 - ✓ **answer their questions**
 - ✓ **oversee the work**
 - ✓ **give them time to practise**
 - ✓ **give feedback on how they are doing**
 - ✓ **take time to show them how to do the task better**
- **Give feedback.** Giving feedback often helps your apprentice to have a clear understanding of what you want them to do and how you want them to perform. The PSR helps you to give feedback because each knowledge, skills and ability (competency) statement is clear.

There are three types of feedback that work best in the workplace:

Positive feedback means you want your apprentice to continue what they are doing. People are motivated by hearing they are doing a good job. They usually do more and try harder.

Constructive feedback means you want your apprentice to change how or what they are doing. Offering support and guidance to your apprentice to make the changes you need usually brings the best results.

Direct feedback focuses on what you have seen, not on secondhand information. Focus on how the apprentice is doing and what you have planned for them to do.

- **Give your apprentice experience in many skills.** Sometimes apprentices end up performing the same set of skills over and over again because they are really good at them. They are required to learn the scope of the entire trade during their apprenticeship. If you have the capability, it would be helpful to take advantage of the opportunity to cover a wide range of skills by moving your apprentice from one set of skills to another on a regular basis.
- **Track and Document learning.** Every employer cannot offer an apprentice training in every skill in a trade because each workplace is unique. Some workplaces are specialists in one area of a trade.

As a journeyperson, you have the responsibility to sign off on the skills your apprentice learns under your guidance in your workplace. A PSR can help you identify those skills.

Setting a regular review date once every month or two, and keeping that time just for you and your apprentice, can increase their scope in their trade and increase their knowledge which will be an asset in the workplace.

This meeting time gives you the best opportunity to:

- monitor your apprentice's progress,
- make a plan with him/her to learn more skills, and
- find out if there are any problem areas where he/she may need help.

Regular meeting dates also help your apprentice to be prepared and able to track his/her learning. This can be done by using a Professional Skills Record (PSR).

7 So how do I use a Professional Skills Record (PSR) with my apprentice?

The PSR is laid out in a chart. Each skill your apprentice has to learn has an action word to tell them how they are supposed to perform a skill. It gives you a level you can use to judge whether they are performing that skill properly. **Industry standard** is the term used to describe when your apprentice can complete a task to the level and quality of performance required by industry without assistance or supervision.

When you see the words "demonstrate an understanding of," you may find it easier to ask them questions about the skill to make sure they know what they are doing.

**PROFESSIONAL SKILLS RECORD (PSR)
JOURNEYPERSON'S HANDBOOK**

Your apprentice has the responsibility to complete the "Knowledge, Skills and Abilities – Competencies" section.

When you are sure your apprentice has proven to you they have completed the learning they say they have, you verify it by initialing the sub-task.

Trade Name
IP Exam – 125 Questions
BLOCK A
5% - 6 questions on the IP
<u>Learning Category</u>
OCCUPATIONAL SKILLS
Task 1 – A
3 questions on the IP exam
<u>Learning Outcome</u>
Uses and maintains tools and equipment
Journeyman Sign-off
Task 1
Complete <input style="width: 30px; height: 15px; border: 1px solid black;" type="checkbox"/>
Incomplete <input style="width: 30px; height: 15px; border: 1px solid black;" type="checkbox"/>



Knowledge, Skills and Abilities - Competencies

SUB-TASK 1.01	1.01.01 Identify boring tools	1.01.02 Identify hand cutting tools
<u>Learning Objective</u> Uses hand tools	Rating ___ Complete	Rating ___ Complete
JP Sign-off ___	Proof ___ <input style="width: 20px; height: 15px; border: 1px solid black;" type="checkbox"/>	Proof ___ <input style="width: 20px; height: 15px; border: 1px solid black;" type="checkbox"/>
	Use ___ <input style="width: 20px; height: 15px; border: 1px solid black;" type="checkbox"/>	Use ___ <input style="width: 20px; height: 15px; border: 1px solid black;" type="checkbox"/>



When your apprentice proves to you that he/she has finished enough sub-tasks to have a good grasp of the task, you verify that learning by initialing "complete".



If your apprentice has not completed enough sub-tasks or you do not agree with the ratings they have given themselves, initial "incomplete".

<p>Task I Learning Needs</p> <p>Sub-Tasks <u>Learning Objectives</u> to be completed Comments</p>
--



If you have any sub-tasks you want your apprentice to work on, list them in this section and add any comments you have.

You might

- set a timeframe when you want these skills to improve
- suggest some manuals they could read
- suggest they go to their local college or training school for technical skills help
- suggest they go for help to an adult education facility if they need any academic help, for example, help in math or help in using the code book.

You have now created a learning plan for your apprentice using a PSR.

Your apprentice can then begin working on these sub-tasks or follow up on suggestions you have made to help them be successful in their trade career. By using a PSR, you now have a documented, written performance review that you can use in later sessions with your apprentice.

The PSR can help you give a fair assessment of your apprentice's ability to perform each technical skill task. If you are assigned an apprentice from another employer, province, territory or country, you can use the PSR to review his/her skills so you do not waste your valuable time teaching them skills they already know and can do.

PROFESSIONAL SKILLS RECORD

A tool for recording and recognizing skills and learning of trade apprentices

Construction Electrician

NOC 7241

A project of:
The Province of PEI
and
Human Resources and Skills Development Canada



Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

The **Professional Skills Record (PSR)** is a technical skills assessment tool designed to be used in the workplace by an apprentice and a journeyperson. The PSR has taken the content from the National Occupational Analysis (NOA) and arranged it so apprentices can use it to measure their progress in their trade from the time they sign up for apprenticeship through to Red Seal certification.

This PSR has been through a validation process with a team of trade professionals with Certificate of Qualification, Red Seal endorsement, who reached agreement on the wording of each and every knowledge and skill (*competency*) to make it measurable.

The PSR was originally designed as a tool to help apprentices move through a Recognition for Skills and Learning (RSL) process so they can receive recognition for skills they have, no matter where they learned them. Through completion of a PSR, they can avoid relearning what they already know and can do by entering the apprenticeship Block/Period/Level in-school process at a higher level. For example, move directly into Block/Period/Level three rather than relearning Block/Period/Level One and Two.

Feedback from testing and validation of the PSR has opened many new possibilities for using this tool. The PSR can be used:

- as a tool for valid assessment in a Recognition for Skills and Learning (RSL) process
- as a tool that new Canadians and people planning to emigrate can use, to assess their skills against Canadian standards, receive recognition for skills they already have and, if necessary, make a plan to fill any technical skill gaps they may still have
- in the secondary-school system and in post-secondary trades training so students can know the full scope of the trade they are entering
- as a tool to guide journeypersons while they are mentoring apprentices so they are aware of all the skills apprentices need to learn to be fully competent in their professional trade designation.

INFORMATION SITES:

PROJECT

SITE

CANADIAN

RED SEAL SITE

www.tradeessentials.ca

www.red-seal.ca

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Construction Electrician Trade Information

Name: _____ Full Address: _____
Email Address: _____
Phone: Home _____ Work _____ Cell _____

Technical Skills Journeyman Assessor/s

Name: _____ Business Name: _____
Phone: Home: _____ Work: _____ Cell: _____ Business Address: _____
Email Address: _____

Name: _____ Business Name: _____
Phone: Home: _____ Work: _____ Cell: _____ Business Address: _____
Email Address: _____

Name: _____ Business Name: _____
Phone: Home: _____ Work: _____ Cell: _____ Business Address: _____
Email Address: _____

Apprenticeship Program Start Date: _____ Completion Date: _____ Red Seal Certification Date: _____

Apprenticeship Training Officer:

Signature: _____

Provincial/Territorial Apprenticeship Manager:

Signature: _____

Province/Territory: _____

Professional Skills Record (PSR) Development

Professional Skills Record (PSR)

The Professional Skills Record (PSR) is designed as a tool of assessment. Learning and skills are validated through the PSR when they are signed off by a journeyperson in the trade in which the apprenticeship is being served.

All skills and learning assessed in this PSR are measured against the standards listed in the National Occupational Analysis (NOA). The NOA is recognized by the Canadian Council of Directors of Apprenticeship (CCDA) as the national standard for the occupation of Construction Electrician.

PSR Construction Electrician Document Validation

To conduct a reliable assessment through a formal recognition process, skills and learning statements must be measurable. To assess skills and learning using a PSR in the trades, the Knowledge, Skills and Abilities listed in the NOA have been made into measurable competency statements by adding an “action word.” This action word describes the skill and learning level which must be reached by an apprentice on the job in order to meet industry standards. Each PSR has been validated by a trades team, all of whom hold a Certificate of Qualification with Red Seal endorsement, and who reached consensus on each action word used in every knowledge, skill and ability statement.

Where Technical Trade Learning Happens

This Professional Skills Record (PSR) records and recognizes directly related trade technical skills and knowledge learned through:

- **Formal Learning** – structured learning that occurs in formal education and training institutions (for example, high school, trades school, apprenticeship programs, registered union and industry training programs)
- **Non-formal Learning** – learning that happens through planned, structured training or education outside the formal education system (for example, workshops, seminars, community school)
- **Informal/Experiential Learning** – learning that results from experience, occurs outside a structured environment, and is controlled by the learner (for example, experience on-the-job, volunteer work, self-study and life experiences). Informal or experiential learning must be current and essential to the trade.

Definitions: Adopted and/or interpreted from Work-related Informal Learning: Research and Practice in the Canadian Context, CAPLA 2008

Academic Trade Certification Requirement

Trade Designation: Construction Electrician National Occupational Classification (NOC) 7241

One of the following prerequisites must be met before writing the Interprovincial Red Seal exam: an academic Grade 12 certificate or a General Education Diploma (GED) or successful assessment in the following Essential Skills.

Essential Skills common to all trades are listed in Appendix B of this document. Specific Essential Skills for the Construction Electrician trade are listed on the Red Seal website: www.red-seal.ca. (Once on that site, you will find the Essential Skills Profiles under “National Occupational Analysis.”)

Prior Learning Assessment and Recognition (PLAR). . . Recognition for Skills and Learning (RSL)

PLAR is a formal recognition process in which a variety of tools are used to help people identify, demonstrate and receive recognition for skills and learning they have from the workplace, educational institutions, credentialing organizations or regulatory bodies.

The **Professional Skills Record (PSR)** is a tool designed to assist a trades apprentice to record skills and learning, and then receive recognition for the skills and learning through a PLAR trades process called:

RECOGNITION FOR SKILLS AND LEARNING (RSL)

Traditionally, 80% of learning in a trade happens in the workplace. Through a **Recognition for Skills and Learning (RSL)** process, an apprentice can advance in a trade when they prove they have the required hours, skills and learning for that trade. Proof of skills and learning is **recorded** by the apprentice in a **PSR** and **verified** when signed-off by a journeyman in that trade.

Through the completion of a **PSR**, an apprentice can avoid relearning what they already know and can do. Through an **RSL** process, a trade apprentice can submit a PSR for assessment to:

- advance in Block/Period/Level in-school training by not having to complete a Block/Period/Level in which proof is provided that skills and learning have already been achieved for that Block/Period/Level.
- transfer common skills from one trade to another - **Skills and learning must be transferred prior to writing the Interprovincial Red Seal exam. The same skills and learning cannot be recognized toward certification in two trades.**
- compare skills and learning in a trade from another country to Canadian standards (**as stated in the National Occupational Analysis**) and receive recognition for the skills and learning that meets Canadian standards.

The following assessment indicators (Rating, Proof, Use) have been developed to help record and then assess skills and learning in accordance with the standards of the trade outlined in the National Occupational Analysis (NOA).

Assessment Standard ONE		
Rating: Self-assessment performance rating in the workplace		
Workplace Performance	Rating	Examples of Workplace position/s
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to meet or shorten task timelines - beyond the expected level and quality of performance required by industry - can manage, lead and train others to perform this task and series of sub-tasks 	6	Journeyman with a Certificate of Qualification, Red Seal endorsement and/or Gold Seal tradesperson who is an expert in their field <ul style="list-style-type: none"> - Project Manager/Foreman - Highly skilled and experienced Manager/Supervisor - Expert who comes from industry to serve as an instructor in a trades training program
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to meet or shorten task timelines - to the highest level and quality of performance required by industry - take the initiative to respond to unexpected situations when they arise and supervise others 	5	Highly skilled and experienced journeyman with a Certificate of Qualification, Red Seal endorsement to whom co-workers turn for direction and help
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to meet task timelines - to the highest level and quality required by industry without supervision 	4	Experienced, skilled journeyman with a Certificate of Qualification, Red Seal endorsement
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to the level and quality required by industry without assistance or supervision 	3	Newly certified journeyman with a Certificate of Qualification, Red Seal endorsement
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to the required level and quality of performance with direction, some assistance and supervision 	2	Apprentice working under the direction of a journeyman with a Certificate of Qualification, Red Seal endorsement
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> - to the required level and quality of performance with assistance and constant supervision 	1	A helper or new apprentice who must work directly under the constant supervision of a journeyman with a Certificate of Qualification, Red Seal endorsement

Proof: Self-assessment options to prove skills and learning have been achieved

Type of Proof – Observation ... Interview ... Documentation

Observation

When you choose “Observation” to prove that you can perform a task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice.

Interview

When you choose “Interview” to prove that you can perform the task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice. In the case of a panel, at least one person on the panel must be Red Seal Certified in the trade in which you are an apprentice.

Documentation

When you choose “Documentation” to prove that you can perform a task, the document must be from a certified training school or from an industry training course. Course content must be part of the requirements of your trade. If the document is from another country, it must be verified as equivalent to Canadian requirements in the trade.

NOTE: Gather all your documents and keep them with your PSR.

Assessment Standard THREE

Use: Self-assessment rating to help make a plan for additional learning and skill updates needed to be successful in achieving goals in a trade

Use of Knowledge, Skills and Abilities – 1 Daily 2 Often 3 Seldom 4 Never

Show how often you use a skill. This will help you to know:

- ◆ what skills you do well because you do them on a regular basis
- ◆ what skills you have to update if you want to transfer to another employer or move to another province or territory
- ◆ what skills you have to get from a training school, industry program or other employer

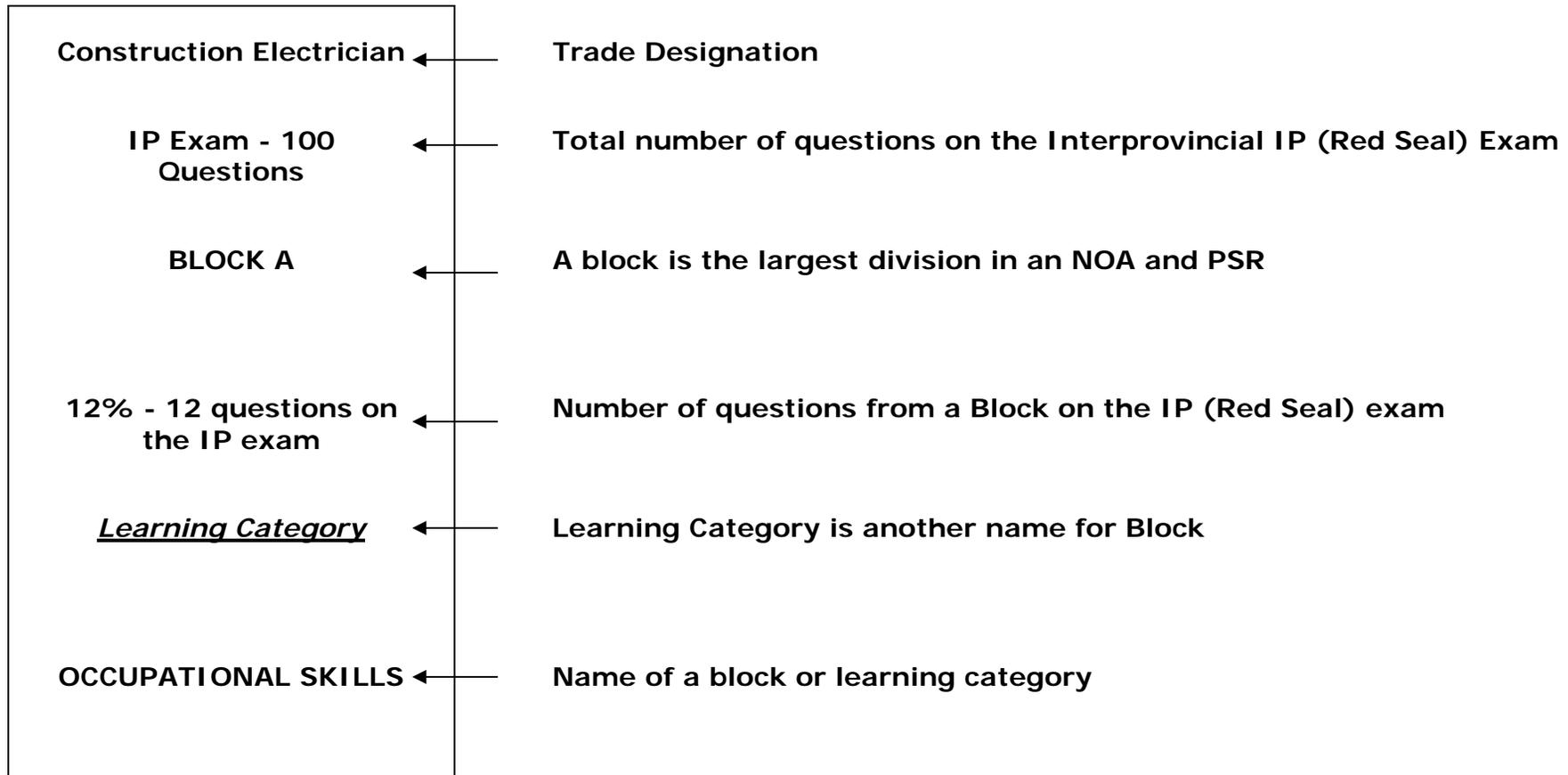
Completing this PSR can help you:

- ◆ know the full scope of your trade by exploring all the technical skills in your trade
- ◆ highlight the skills you already have
- ◆ identify any gaps that you may have to fill so you can be successful in writing your Interprovincial Red Seal certification exam
- ◆ create a plan you can follow to fill these technical skills gaps

Professional Skills Record (PSR) Components

Information from the National Occupational Analysis (NOA) is the foundation document for the Professional Skills Record (PSR). The PSR has been designed so that information is easily found to help a trade apprentice take control and direct his/her own individual skills and learning path.

Information in the PSR includes:



Professional Skills Record (PSR) Components (cont'd)

Task 1 – A

4 questions on the IP exam

Learning Outcome

Uses and maintains tools and equipment

- ← Task Number and Block/Category (letter number)
- ← Number of questions on the IP Red Seal exam from the task
- ← Learning Outcome is another name for a task
- ← Task or learning outcome description

Journeyman
Sign-off
Task 1

Complete

Incomplete

- ← Journeyman's initials verify that an apprentice can perform the task to industry standards.
- ← Journeyman's initials indicate "incomplete" when the apprentice requires more work because the task is not being performed to industry standards.

Professional Skills Record (PSR) Set-up (cont'd)

Task 1
Learning Needs

Sub-Tasks
Learning Objectives

To be completed _____
 Comments _____

Journeyman lists any Sub-Tasks (Learning Objectives that an apprentice must improve before they can have their Task (Learning Outcome) signed off).

← _____
When completed, this column becomes a learning plan for the apprentice.

Sub-Task
1.02

Learning Objective

Maintains power tools

JP Sign-off _____

- ← Sub-Task Number
- ← Learning Objective is another name for sub-task
- ← Sub-task or learning objective description
- ← Journeyman assesses and signs off when the apprentice can perform a sub-task or learning objective to industry standard

How to Self-Assess Skills and Learning Using a PSR

For easier use, the self-assessment charts have been shortened into an assessment key which is located at the top of each two-page section in a PSR. The "3" rating is considered "Industry Standard."

- RATING:**
- 6 - Expert perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

TYPE OF PROOF: O - Observation I - Interview D - Documentation

USE: 1 - Daily 2 - Often 3 - Seldom 4 - Never

How to Record Skills and Learning Using a PSR

Self-assessment takes place where the learning of skills takes place in each of the Knowledge, Skills and Abilities. (Knowledge, Skills and Abilities can also be called Competencies).

1.02.01

Demonstrate the ability to use all types of power tools such as drills and saws

← Skill and Learning that must meet industry standard.

Rating 5

← Choose and insert a number from the RATING key that best describes your level of performance in the workplace.

Proof I

← Choose and insert a letter from the PROOF key that indicates your best choice to provide proof that you have this knowledge, skill and ability in the trade.

Use 2

← Choose and insert a number from the USE key that indicates how often you use the knowledge, skills and ability (competency).

Complete



← Insert a check mark in the box to indicate completion of the competency to industry standard.

Tips to making sure you get recognition for all your skills and learning:

- take your **time** when you are working on your PSR
- do not try to complete **too much** at any one time
- be **fair and honest** with yourself; remember, this is a **self-assessment** tool
- **focus** on each task (*learning outcome*) and sub-task (*learning objective*)

**Construction Electrician
IP Exam - 100 Questions**

BLOCK A
12% -12 Questions on the IP
exam

Learning Category
OCCUPATIONAL SKILLS

Task 1 - A
4 questions on the IP exam

Learning Outcome
**Uses and maintains tools
and equipment**

Journeyperson
Sign-off
Task 1

Complete

Incomplete

**Task 1
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
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Type of Proof: O - Observation I - Interview D - Documentation

Use: 1- Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 1.01 <u>Learning Objective</u> Maintains hand tools JP Sign-off ____	1.01.01 Demonstrate a working knowledge of types of hand tools such as screwdrivers, pliers, wrenches and measuring tapes Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.01.02 Demonstrate an understanding of hand tool limitations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.01.03 Organize and store hand tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.01.04 Clean and lubricate hand tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.01.05 Recognize worn, damaged and defective hand tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	SUB-TASK 1.02 <u>Learning Objective</u> Maintains power tools JP Sign-off ____	1.02.01 Demonstrate the ability to use all types of power tools such as drills and saws Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.02 Demonstrate an understanding of limitations of power tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.03 Clean power tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.04 Change power tool components such as chucks, bits and blades Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	1.02.06 Lubricate power tool components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.07 Recognize worn, damaged and defective power tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.08 Change cords and attachment plugs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	1.02.09 Repair power tools to a limited degree Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

**Task 1 - A
(cont'd)**
Learning Outcome
**Uses and maintains tools
and equipment**

**Task 1
Learning Needs**
Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 1.03</p> <p><u>Learning Objective</u> Maintains powder-actuated tools</p> <p>JP Sign-off _____</p>	<p>1.03.01 Demonstrate the ability to use all types of powder-actuated tools and their applications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.02 Select appropriate types of pins and shots</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.03 Meet certification requirements to operate powder-actuated tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.04 Follow manufacturers' operating and maintenance instructions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.05 Demonstrate knowledge of powder-actuated tool components</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.03.06 Disassemble, clean and lubricate powder-actuated tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.07 Organize powder-actuated tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.08 Store powder-actuated tools and shots</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.09 Dispose of shots</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.03.10 Recognize worn, damaged and defective powder-actuated tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.03.11 Recognize hazards associated with powder-actuated tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p>SUB-TASK 1.04</p> <p><u>Learning Objective</u> Maintains electrical measuring equipment</p> <p>JP Sign-off _____</p>	<p>1.04.01 Use all types of electrical measuring equipment such as multimeters, voltage testers, non-contact voltage testers, insulation resistance meters and clamp ammeters</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.02 Determine job-specific applications of electrical measuring equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.03 Demonstrate an understanding of limitations and ratings of electrical measuring equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.04 Determine electrical measuring equipment components such as leads and batteries</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.05 Determine use of electrical measuring equipment accessories</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.04.06 Demonstrate a working knowledge of environmental factors that affect readings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.07 Follow manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.08 Recognize worn, damaged and defective electrical measuring equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.04.09 Organize and store electrical measuring equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	

**Task 1 - A
(cont'd)**

Learning Outcome
**Uses and maintains tools
and equipment**

**Task 1
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 1.05</p> <p><u>Learning Objective</u> Maintains specialty tools</p> <p>JP Sign-off _____</p>	<p>1.05.01 Use all types of specialty tools such as knock-out punches, compression tools, diagnostic tools, benders and cutters</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.05.02 Follow manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.05.03 Demonstrate an understanding of specialty tool limitations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.05.04 Assemble specialty tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.05.05 Clean specialty tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.05.06 Recognize worn, damaged and defective specialty tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.05.07 Organize and store specialty tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			
<p>SUB-TASK 1.06</p> <p><u>Learning Objective</u> Uses scaffolding and access equipment</p> <p>JP Sign-off _____</p>	<p>1.06.01 Select and use all types of access equipment such as scissor lifts, lift tables and articulated boom lifts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.02 Determine and use types of scaffolding such as baker, tubular and frame</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.03 Meet certification requirements for scaffolding and access equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.04 Demonstrate an understanding of safe angles of ladders</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.05 Demonstrate an understanding of three-point contact rule</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.06.06 Demonstrate an understanding of regulations regarding the use of scaffolding and access equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.07 Survey and evaluate worksite surroundings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.08 Demonstrate an understanding of limitations of scaffolding and access equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.09 Set up step ladders and extension ladders</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.10 Work from access equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**Task 1 - A
(cont'd)**

Learning Outcome
**Uses and maintains tools
and equipment**

Knowledge, Skills and Abilities - Competencies

<p>1.06.11 Erect various types of scaffolding</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.06.12 Recognize unsafe, worn, damaged and defective scaffolding and access equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
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**Task 1
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

<p>SUB-TASK 1.07</p> <p><u>Learning Objective</u> Uses rigging, hosting and lifting equipment</p> <p>JP Sign-off _____</p>	<p>1.07.01 Check certification requirements regarding rigging, hoisting and lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.02 Demonstrate an understanding of all types of rigging, hoisting and lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.03 Demonstrate an understanding of limitations of rigging, hoisting and lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.04 Determine anchor points</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.05 Determine and demonstrate an understanding of load ratings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>1.07.06 Use and understand hand signals</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.07 Recognize worn, damaged and defective rigging, hoisting and lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.08 Select rigging, hoisting and lifting equipment according to application</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.09 Secure load</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.07.10 Move load to final position</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**Task 1 - A
(cont'd)**

Learning Outcome
**Uses and maintains tools
and equipment**

**Task 1
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
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 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 1.08</p> <p><u>Learning Objective</u> Uses personal protective equipment (PPE) and safety equipment</p> <p>JP Sign-off _____</p>	<p>1.08.01 Identify types of PPE such as hard hats, safety glasses, safety footwear, gloves, fall arrest equipment and respiratory protection equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.02 Select types of safety equipment such as first aid kits and eye wash stations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.03 Obtain certification and training requirements for PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.04 Determine and demonstrate an understanding of types and operation of fire extinguishing equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.05 Determine location of PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p>1.08.06 Demonstrate an understanding of shelf life of PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.07 Obey Occupational Health and Safety (OH&S) regulations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.08 Determine and demonstrate an understanding of arc flash ratings such as NFPA70E</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.09 Select PPE according to task</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.10 Apply Workplace Hazardous Material Information System (WHMIS) procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p>1.08.11 Recognize limitations of use of PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.12 Organize and store PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.13 Recognize worn, damaged and defective PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>1.08.14 Locate PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

Task 2 - A
4 questions on the IP exam

Learning Outcome
Organizes work

Journeyperson
 Sign-off
 Task 2

Complete

Incomplete

Task 2
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 2.01 <u>Learning Objective</u> Interprets codes and regulations JP Sign-off ____	2.01.01 Demonstrate an understanding of codes such as building codes, the Canadian Electrical Code (CEC) and jurisdictional codes Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.01.02 Follow OH&S regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.01.03 Keep up to date on code and regulation updates Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.01.04 Access and apply codes and regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	SUB-TASK 2.02 <u>Learning Objective</u> Interprets plans, drawings and specifications JP Sign-off ____	2.02.01 Interpret components of plans, drawings and specifications such as scale, legend, details and symbols Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.02.02 Cross-reference plans, drawings, specifications and contract documents Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.02.03 Locate information on plans, drawings, specifications and contract documents Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.02.04 Scale dimensions Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	2.02.06 Perform mathematical calculations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				
SUB-TASK 2.03 <u>Learning Objective</u> Uses documentation and reference material JP Sign-off ____	2.03.01 Recognize types of documents such as shop drawings and catalogues Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.03.02 Demonstrate an understanding of company policies and procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.03.03 Demonstrate an understanding of OH&S regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.03.04 Interpret WHMIS symbols and Material Safety Data Sheets (MSDS) Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	2.03.05 Complete work-related documents such as as-built drawings, work orders, log books and time sheets Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	2.03.06 Fill out safety documentation such as hazard assessment and first aid logs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

**Task 2 - A
(cont'd)**

Learning Outcome
Organizes work

**Task 2
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
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Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 2.04</p> <p><u>Learning Objective</u> Communicates with others</p> <p>JP Sign-off _____</p>	<p>2.04.01 Demonstrate a working knowledge of trade terminology</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.02 Communicate identified hazards</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.03 Communicate with supervisors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.04 Communicate with co-workers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.05 Coordinate work with other trades</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>2.04.06 Participate in safety and information meetings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.07 Communicate with laypersons</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.08 Communicate with engineers and architects</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.04.09 Mentor apprentices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
<p>SUB-TASK 2.05</p> <p><u>Learning Objective</u> Compiles a list of materials and supplies</p> <p>JP Sign-off _____</p>	<p>2.05.01 Determine project or task to be completed</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.02 Recognize site conditions and restrictions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.03 Locate available materials</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.04 Identify required materials and supplies according to plans and specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.05 Perform mathematical calculations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>2.05.06 Interpret site measurements and instructions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.07 Do material take-off</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.05.08 Do inventory control</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Task 2 - A
(cont'd)**

Learning Outcome
Organizes work

**Task 2
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 2.06</p> <p><u>Learning Objective</u> Plans project tasks and procedures</p> <p>JP Sign-off _____</p>	<p>2.06.01 Determine other trades' work requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.02 Check delivery dates and availability of materials</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.03 Plan sequence of operations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.04 Demonstrate an understanding of utility and specification requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.05 Establish and maintain schedules</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>2.06.06 Determine labour and equipment requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.07 Coordinate work with other trades such as shutdown requirements and installation sequencing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.08 Apply specifications to contract documents</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.09 Draw and sketch layouts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>2.06.10 Give and follow directions and instructions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>2.06.11 Follow installation and operational sequences</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				

Task 3 - A
4 questions on the IP exam

Learning Outcome
Performs routine trade activities

Journeyperson
 Sign-off
 Task 3

Complete

Incomplete

Task 3
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
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Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 3.01 <u>Learning Objective</u> Prepares work site JP Sign-off ____	3.01.01 Determine access to work site location Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.02 Interpret and follow building codes and regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.03 Demonstrate an understanding of building structures such as walls, ceilings and floors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.04 Locate equipment such as panel boards, switchgear and motor control centres (MCC) Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.05 Recognize work site hazards such as existing utilities, dust, temperature, chemicals and weather Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	3.01.06 Perform pre-job safety assessment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.07 Control workplace access Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.08 Create openings and penetrations in structures and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.01.09 Lay out job materials and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
SUB-TASK 3.02 <u>Learning Objective</u> Performs lock-out and tagging procedures JP Sign-off ____	3.02.01 Demonstrate a working knowledge of lock-out and tagging procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.02.02 Follow legislation governing minimum standards for lock-out and tagging procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.02.03 Coordinate lock-out and tagging requirements with appropriate authorities Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.02.04 Recognize equipment for tagging Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.02.05 Locate and de-energize appropriate equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	3.02.06 Select approved equipment to ensure proper lock-out and tagging Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.02.07 Verify proper lock-out and tagging Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

**Task 3 - A
(cont'd)**

Learning Outcome
Performs routine trade activities

**Task 3
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 3.03</p> <p><u>Learning Objective</u> Handles materials and supplies</p> <p>JP Sign-off _____</p>	<p>3.03.01 Follow inventory systems</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.02 Determine storage requirements such as temperature, environmental conditions and stacking limitations</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.03 Follow safe work practices such as WHMIS</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.04 Store and organize materials and supplies</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.05 Locate materials and supplies</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>
	<p>3.03.06 Verify shipments of materials and supplies</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.07 Load and unload materials and supplies</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.03.08 Coordinate the receiving of materials and supplies</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>		
<p>SUB-TASK 3.04</p> <p><u>Learning Objective</u> Maintains safe work environment</p> <p>JP Sign-off _____</p>	<p>3.04.01 Demonstrate an understanding of WHMIS</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.02 Demonstrate an understanding of workers' rights and responsibilities</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.03 Interpret and follow company safety policies and procedures</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.04 Follow site-specific fire safety and work permit procedures</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.05 Determine emergency procedures and location of on-site first aid stations and equipment</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>
	<p>3.04.06 Locate and recognize safety documentation such as MSDS and WHMIS labels</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.07 Recognize and report potential hazards</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.04.08 Perform housekeeping practices</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>		
<p>SUB-TASK 3.05</p> <p><u>Learning Objective</u> Installs seismic restraint systems (NOT COMMON CORE)</p> <p>JP Sign-off _____</p>	<p>3.05.01 Demonstrate an understanding of and follow jurisdiction regulations regarding seismic restraint systems</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.05.02 Identify seismic design requirements</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.05.03 Interpret seismic design requirements</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	<p>3.05.04 Select and use applicable methods to secure components</p> <p>Rating ___ Complete Proof ___ <input type="checkbox"/> Use ___</p>	

**Task 3 - A
(cont'd)**

Learning Outcome
Performs routine trade activities

**Task 3
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
3 - Complete a task to the level and quality of performance required by industry without assistance or supervision
 2 - Complete a task with some assistance and supervision
 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 3.06 <u>Learning Objective</u> Conducts operational tests JP Sign-off _____	3.06.01 Perform start-up and commissioning procedures such as rotational testing, voltage readings and current readings Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.06.02 Demonstrate an understanding of and obtain required documentation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.06.03 Follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.06.04 Follow sequence of operation of equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.06.05 Select and use operational testing tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	3.06.06 Perform visual inspections Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	3.06.07 Adjust equipment to specifications such as motor overload protection, energy management systems, and adjustable trip mechanism circuit breakers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

Construction Electrician

BLOCK B
25% - 25 Questions on the IP exam

Learning Category
SYSTEMS, DISTRIBUTION AND SERVICES

Task 4 - A
8 questions on the IP exam

Learning Outcome
Installs service entrance and distribution equipment

Journey person
Sign-off
Task 4

Complete

Incomplete

Task 4 Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 4.01 <u>Learning Objective</u> Installs supply services JP Sign-off ____	4.01.01 Demonstrate an understanding of all types of supply services such as underground and overhead Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.02 Demonstrate an understanding of supply service components such as conductors, insulators, meter sockets, conduit and panels Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.03 Determine installation conditions for supply services Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.04 Follow grounding requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.05 Demonstrate an understanding of types of conductors such as triplex, TECK 90 and R90 Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	4.01.06 Demonstrate an understanding of connection methods to consumer service Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.07 Demonstrate an understanding of types of wiring methods Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.08 Demonstrate an understanding of installation methods for underground application Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.09 Select and use tools and equipment such as threaders, torque wrenches and compression tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.10 Install and terminate conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	4.01.11 Assemble and mount panels Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.12 Secure conduit and cable Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.13 Select and install mechanical protection for underground installations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.14 Distinguish phase designations (colours) Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.01.15 Bend and install conduit Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
SUB-TASK 4.02 <u>Learning Objective</u> Installs metering systems JP Sign-off ____	4.02.01 Recognize types of transformers such as current transformers (CTs) and potential transformers (PTs) Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.02 Recognize types of meters such as digital and analog Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.03 Demonstrate an understanding of utility company requirements for placement and accessibility of meters Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.04 Determine types and locations of cabinet enclosures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.05 Select and use tools such as benders, hole saws and torque wrenches Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	4.02.06 Install and terminate conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.07 Install PTs and CTs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.08 Install and secure conduit and fittings Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.09 Assemble and mount metering equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.02.10 Coordinate installation of meters with utility company Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

**Task 4 - A
(cont'd)**

Learning Outcome
Installs service entrance and distribution equipment

**Task 4
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 4.03</p> <p><u>Learning Objective</u> Installs overcurrent protection</p> <p>JP Sign-off _____</p>	<p>4.03.01 Identify all types of fuses such as time delay and non-time delay</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.02 Identify all types of circuit breakers such as mechanical and adjustable</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.03 Demonstrate an understanding of branch circuit loads and demand factors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.04 Determine conductor sizes</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.05 Determine available fault current</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.03.06 Determine breaker and fuse ratings and interrupting capacity</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.07 Select and use tools such as hex wrenches, cable benders and mallets</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.08 Fasten and mount overcurrent protection devices using fasteners such as bolts, screws and fuse holders</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.09 Install and terminate conductors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.03.10 Select and install breakers and fuses</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
<p>SUB-TASK 4.04</p> <p><u>Learning Objective</u> Installs power distribution centres</p> <p>Continued next page</p>	<p>4.04.01 Identify and demonstrate an understanding of all types of transformers such as step-up and step-down</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.02 Determine and establish meter stack requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.03 Demonstrate an understanding of all types of power distribution centres such as single-phase panel, three-phase panel and MCC</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.04 Demonstrate an understanding of all types of components such as transfer switches, overcurrent protection devices and fittings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.05 Determine and demonstrate an understanding of clearances of power distribution centres</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.04.06 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.07 Install conduit and fittings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.08 Install and terminate cables and bus ducts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.09 Assemble and install cabinets and busbars</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.04.10 Identify and label components</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**Task 4 - A
(cont'd)**

Learning Outcome
Installs service entrance and distribution equipment

**Task 4
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 4.04 continued <u>Learning Objective</u> Installs power distribution centres</p> <p>JP Sign-off _____</p>	<p>4.04.11 Place and secure power distribution centres</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p>SUB-TASK 4.05 <u>Learning Objective</u> Installs temporary power</p> <p>JP Sign-off _____</p>	<p>4.05.01 Demonstrate an understanding of and follow power and distribution as per local CEC and local jurisdictional regulations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.02 Determine load requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.03 Demonstrate an understanding of types of temporary portable panels</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.04 Demonstrate an understanding of metering</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.05 Demonstrate an understanding of all types of transformers such as indoor, outdoor, step-up and step-down</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.05.06 Determine temporary power uses such as for power tools, construction shack, lighting, welders and cranes</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.07 Determine and demonstrate an understanding of all types of cables and conductors used for temporary power</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.08 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.09 Run cables and conductors from supply to temporary panel</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.10 Terminate conductors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.05.11 Weatherproof temporary equipment such as panels, transformers and receptacle banks</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.12 Install masts and poles</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.05.13 Ground and bond equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
<p>SUB-TASK 4.06 <u>Learning Objective</u> Installs surge protection systems</p> <p>JP Sign-off _____</p>	<p>4.06.01 Determine and select surge protection components such as lightning arresters, isolated ground panels and ground systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.06.02 Determine phase and voltage rating</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.06.03 Determine types of electrical equipment that require surge protection such as computers, electronic equipment and lighting</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.06.04 Install and connect surge protection equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.06.05 Ground lightning arresters separate from system ground</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**Task 4 - A
(cont'd)**

Learning Outcome
Installs service entrance and distribution equipment

**Task 4
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 4.07</p> <p><u>Learning Objective</u> Installs power conditioning devices</p> <p>JP Sign-off _____</p>	<p>4.07.01 Determine and select all types of power conditioning devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.07.02 Determine and select power factors and power factor corrections</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.07.03 Demonstrate an understanding of and follow power conditioning installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.07.04 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.07.05 Mount power conditioning devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.07.06 Connect power conditioning devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p>SUB-TASK 4.08</p> <p><u>Learning Objective</u> Installs uninterruptible power supply (UPS) systems</p> <p>JP Sign-off _____</p>	<p>4.08.01 Demonstrate an understanding of requirements for battery bank installations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.02 Demonstrate an understanding of types of UPS systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.03 Demonstrate an understanding of UPS components such as transfer switches, battery banks and generators</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.04 Determine uses and requirements of UPS systems such as lighting, computers and telephones</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.05 Determine the use for specialty tools used for UPS installation such as insulated tools and torque wrenches</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>4.08.06 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.07 Recognize hazards of battery bank installations such as explosions, burns and electrocutions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.08 Install and connect transfer switches</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.09 Calculate demand factor</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>4.08.10 Assemble and mount battery banks, rectifiers and generators</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**Task 4 - A
(cont'd)**

Learning Outcome
Installs service entrance and distribution equipment

**Task 4
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 4.09 <u>Learning Objective</u> Performs start-up and shut-down procedures JP Sign-off _____	4.09.01 Read and interpret single line diagrams, flow charts, and other documentation which detail sequential process control Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.02 Anticipate sequential events during start up and shut-down operations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.03 Follow start-up and shut-down procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.04 Test cables for ground faults and phase identification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.05 Check for phase rotation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	4.09.06 Apply safety ground on shut-down Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.07 Remove safety ground on start-up Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.08 Verify busbar connections and torquing of bolts Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	4.09.09 Check for loose hardware and tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

Task 5 - B
7 questions on the IP exam

Learning Outcome
Installs sub-panels, feeders and transformers

Journeyperson
 Sign-off
 Task 5

Complete

Incomplete

Task 5
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 5.01 <u>Learning Objective</u> Installs sub-panels JP Sign-off _____	5.01.01 Determine types of sub-panels by application Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.02 Demonstrate an understanding of components such as breakers and lugs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.03 Recognize sub-panel ratings such as current, voltage and capacity Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.04 Determine location and clearances of sub-panels Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.05 Determine applications that require sub-panels Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	5.01.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.07 Mount sub-panel components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.08 Mount breakers and fuses in sub-panel Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.01.09 Prepare sub-panel for conduit and cables Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
SUB-TASK 5.02 <u>Learning Objective</u> Installs feeders to sub-panels Continued next page	5.02.01 Determine and demonstrate an understanding of all types and sizes of cable, conduit and conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.02 Determine and demonstrate an understanding of parallel conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.03 Determine and demonstrate an understanding of types of fittings and connectors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.04 Demonstrate an understanding of the effect of induction Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.05 Evaluate environment such as dry or wet, and above or below ground Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	5.02.06 Determine and demonstrate an understanding of installation and support of cables and raceways Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.08 Select type of conductor for application Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.09 Pull cables and conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.10 Install and secure cables and conduit Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

**Task 5 - B
(cont'd)**

Learning Outcome
**Installs sub-panels, feeders
and transformers**

**Task 5
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 5.02 continued <u>Learning Objective</u> Installs feeders to sub-panels JP Sign-off ____	5.02.11 Terminate conductors and torque the lugs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.12 Build and install racks Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.13 Install trays Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.02.14 Install bus ducts Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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SUB-TASK 5.03 <u>Learning Objective</u> Installs low voltage transformers JP Sign-off ____	5.03.01 Demonstrate an understanding of types and sizes of transformers such as dry, oil-filled and single-phase Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.02 Demonstrate an understanding of low voltage transformer installation procedures and locations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.03 Determine and demonstrate an understanding of tap settings Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.04 Demonstrate an understanding for the purpose of transformers such as step-up, step-down and isolation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.05 Determine and demonstrate an understanding of transformer clearances Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	5.03.06 Demonstrate an understanding of transformer winding configuration Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.07 Determine and demonstrate an understanding of the purpose of transformer grounding Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.08 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.09 Raise, mount and secure transformers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	5.03.10 Install raceway systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	5.03.11 Terminate cables and conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

Task 6 - B
5 questions on the IP exam

Learning Outcome
Installs bonding, grounding and cathodic protection systems

Journeyman
 Sign-off
 Task 6

Complete

Incomplete

Task 6
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
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Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 6.01 <u>Learning Objective</u> Installs grounding grids JP Sign-off ____	6.01.01 Determine and select grounding equipment such as rods, plates, electrodes, wire and crimps Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.01.02 Determine and follow grounding requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.01.03 Demonstrate an understanding of step potential Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.01.04 Determine and select types of grounding wire such as bare, multi-stranded and insulated Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.01.05 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	6.01.06 Thermit weld Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.01.07 Pull and fasten ground wire Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			
SUB-TASK 6.02 <u>Learning Objective</u> Installs bonding conductors JP Sign-off ____	6.02.01 Determine and select bonding equipment such as lugs, wire and crimps Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.02.02 Demonstrate an understanding of continuity Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.02.03 Determine and follow bonding requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.02.04 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	6.02.05 Bond equipment such as lights, plugs, sub-panels, trays and bus ducts Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	6.02.06 Terminate conductors, conduit and cables Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

**Task 6 - B
(cont'd)**

Learning Outcome
Installs bonding, grounding
and cathodic protection
systems

**Task 6
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 6.03</p> <p><u>Learning Objective</u> Installs ground fault protection systems</p> <p>JP Sign-off _____</p>	<p>6.03.01 Determine and select ground fault equipment such as relays and CTs</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.02 Demonstrate an understanding of applications for ground fault protection systems such as pools, shipyards, kitchens and bathrooms</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.03 Determine and follow installation methods</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.04 Determine location, clearance and access for ground fault protection systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>6.03.06 Mount equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.07 Terminate conductors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.03.08 Adjust ground fault protection systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
<p>SUB-TASK 6.04</p> <p><u>Learning Objective</u> Installs lightning arresters</p> <p>JP Sign-off _____</p>	<p>6.04.01 Recognize types of lightning arresters</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.02 Determine use of extra stranded cable</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.03 Demonstrate an understanding of the purpose of lightning arresters</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.04 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>6.04.06 Pull, fasten and terminate conductors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.07 Mount lightning arrester equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.04.08 Attach wire to lightning arresters and ground electrode</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Task 6 - B
(cont'd)**

Learning Outcome
Installs bonding, grounding
and cathodic protection
systems

**Task 6
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 6.05</p> <p><u>Learning Objective</u> Installs cathodic protection systems</p> <p>JP Sign-off _____</p>	<p>6.05.01 Determine and demonstrate an understanding of components of cathodic protection systems such as controllers and sensors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.05.02 Demonstrate an understanding of purposes of cathodic protection systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.05.03 Recognize hazards of working on cathodic protection systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.05.04 Demonstrate an understanding of a rectifier circuit</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.05.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>6.05.06 Connect components of cathodic protection systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>6.05.07 Follow manufacturers' instructions</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

Task 7 - B
3 questions on the IP exam

Learning Outcome
Installs power generation systems

Journeyperson
 Sign-off
 Task 7

Complete

Incomplete

Task 7
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 7.01 <u>Learning Objective</u> Installs generators and transfer switches JP Sign-off ____	7.01.01 Identify all types of generators Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.02 Select and demonstrate an understanding of types of transfer switches such as manual and automatic Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.03 Determine load requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.04 Determine generator requirements such as clearances, access, ventilation and fuel systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.05 Demonstrate an understanding of operation of transfer switches and generators Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	7.01.06 Determine and select control circuits and alarms for transfer switches and generators Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.08 Place and secure generator Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.09 Ground and bond generator Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.01.10 Terminate conductors and install raceways to transfer switches and generators Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	7.01.11 Program the generator controls for start-up and shut-down sequences Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____					
SUB-TASK 7.02 <u>Learning Objective</u> Installs alternative power systems JP Sign-off ____	7.02.01 Identify and demonstrate an understanding of all types of alternative power systems such as photovoltaic, tidal and wind Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.02.02 Demonstrate an understanding of and follow utility company requirements and regulations regarding alternative power systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.02.03 Demonstrate an understanding of the operation of alternative power systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.02.04 Determine location requirements for maximum efficiency Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.02.05 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	7.02.06 Mount components such as solar panels, control panels and wind turbines Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	7.02.07 Connect conductors to power supply Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

Task 8 - B
2 questions on the IP exam

Learning Outcome
Installs high voltage systems

Journeyman
 Sign-off
 Task 8

Complete

Incomplete

Task 8
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 -Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 8.01 <u>Learning Objective</u> Installs high voltage equipment JP Sign-off _____	8.01.01 Identify and demonstrate an understanding of all types of high voltage equipment such as switchgear, cabinets, load regulators, transformers, insulators, poles and towers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.02 Determine and demonstrate an understanding of grounding and step potential Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.03 Demonstrate an understanding of the effect of inductance Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.04 Demonstrate awareness of limits of approach for various voltages and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.05 Determine and demonstrate an understanding of and follow installation specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	8.01.06 Determine locations of high voltage equipment such as underground and at heights Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.07 Determine and follow guarding requirements and methods Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.08 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.09 Assemble high voltage equipment such as capacitor banks, rectifiers and transformers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.10 Mount, support and secure large components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	8.01.11 Locate transformers and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	8.01.12 Ground and bond all metallic components such as fences, towers and cabinets Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

**Task 8 - B
(cont'd)**

Learning Outcome
**Installs high voltage
systems**

**Task 8
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 8.02</p> <p><u>Learning Objective</u> Installs high voltage cables</p> <p>JP Sign-off _____</p>	<p>8.02.01 Determine and demonstrate an understanding of bending radius of high voltage cables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.02 Demonstrate an understanding of high voltage principles and practices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.03 Demonstrate an understanding of direct burial requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.04 Demonstrate an understanding of all types of cables such as armoured and concentric</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.05 Demonstrate an understanding of all types of conductors such as aluminium and copper</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>8.02.06 Determine configurations, spacing and barriers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.07 Demonstrate an understanding of marking requirements and practices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.08 Demonstrate an understanding of and select installation materials such as insulators and supports</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.09 Select and use tools and equipment such as tuggers, cranes, jack stands and ropes</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.10 Calculate pulling tolerances and tension requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>8.02.11 Install pulleys and sheaves</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.12 Rig pulls</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.13 Install supports</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.02.14 Pull high voltage cables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
<p>SUB-TASK 8.03</p> <p><u>Learning Objective</u> Terminates high voltage cables</p> <p>JP Sign-off _____</p>	<p>8.03.01 Demonstrate an understanding of principles of high voltage such as corona effect and induction</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.03.02 Demonstrate an understanding of high voltage termination techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.03.03 Determine and demonstrate an understanding of types of connections for high voltage cables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.03.04 Determine bonding and grounding for high voltage installation</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.03.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>8.03.06 Secure and support cables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.03.07 Select and use lugs, pin connectors and stress cone kits</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

**Task 8 - B
(cont'd)**

Learning Outcome
Installs high voltage systems

Task 8 Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 8.04</p> <p><u>Learning Objective</u> Tests high voltage systems</p> <p>JP Sign-off _____</p>	<p>8.04.01 Demonstrate an understanding of all types of tests such as high pot test and inductor test</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.02 Demonstrate an understanding of the purpose of tests such as detecting leakage current, phase identification and ensuring insulation integrity</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.03 Determine and demonstrate an understanding of test requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.04 Select and use test equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.05 Isolate conductors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>8.04.06 Bleed capacitor banks</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.07 Bleed cables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>8.04.08 Interpret test data</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

Construction Electrician

BLOCK C

26% - 26 Questions on the IP exam

Learning Category

BRANCH CIRCUIT WIRING

Task 9 - C

8 questions on the IP exam

Learning Outcome

Installs raceways and cables

Journeyperson
Sign-off
Task 9

Complete

Incomplete

Task 9 Learning Needs

Sub-Tasks

Learning Objectives
to be completed

Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 9.01 <u>Learning Objective</u> Installs raceways JP Sign-off ____	9.01.01 Demonstrate an understanding of types of raceways such as conduit, tray, floor duct and cellular floors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.01.02 Determine and demonstrate an understanding of raceway sizes Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.01.03 Recognize all types of fittings such as couplings and connectors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.01.04 Determine and demonstrate an understanding of installation requirements such as number of bends, support spacing and types of supports Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.01.05 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	9.01.06 Select and install raceway according to the environment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.01.07 Select fitting according to the installation environment such as weathertight, dust-tight and raintight fittings Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			
SUB-TASK 9.02 <u>Learning Objective</u> Installs cables JP Sign-off ____	9.02.01 Demonstrate an understanding of cable types and applications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.02 Evaluate installation environment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.03 Recognize types of cable supports and fasteners such as staples and straps Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.04 Demonstrate an understanding of termination requirements such as connectors, anti-oxidants and bushings Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.05 Determine pulling tension when using power pullers for cable installation in raceways Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	9.02.06 Determine cable spacing and supports Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.08 Construct support systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.02.09 Fasten cable supports Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

**Task 9 - C
(cont'd)**

Learning Outcome
Installs raceways and cables

**Task 9
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 9.03</p> <p><u>Learning Objective</u> Installs underground wiring</p> <p>JP Sign-off _____</p>	<p>9.03.01 Determine and demonstrate an understanding of all types of underground conduit and cable</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.03.02 Determine and demonstrate an understanding of conductor protection, marking and spacing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.03.03 Demonstrate an understanding of underground wiring techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.03.04 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.03.05 Locate utility services and wires</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>9.03.06 Place cable and conduit in trenches</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.03.07 Mark and backfill trenches</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			
<p>SUB-TASK 9.04</p> <p><u>Learning Objective</u> Installs enclosures</p> <p>JP Sign-off _____</p>	<p>9.04.01 Determine and demonstrate an understanding of types of enclosures such as boxes and cabinets</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.02 Evaluate installation environment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.03 Follow specifications for clearances and accessibility</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.04 Determine types of fasteners</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.05 Determine sizing requirements for enclosures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>9.04.06 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.07 Secure and support enclosures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>9.04.08 Create openings and knockouts in enclosures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Task 9 - C
(cont'd)**

Learning Outcome
Installs raceways and cables

**Task 9
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 9.05 <u>Learning Objective</u> Installs conductors in raceways JP Sign-off _____	9.05.01 knowledge of types of conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.02 knowledge of size, number and types of conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.03 knowledge of lubricants Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.04 knowledge of fishing techniques and related hazards Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.05 knowledge of sizing requirements for enclosures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	9.05.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.07 Tag and pull conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.08 Calculate raceway capacity Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	9.05.09 Strip and splice conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

Task 10 - C
8 questions on the IP exam

Learning Outcome
Installs power and lighting systems

Task 10 Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
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- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 10.01 <u>Learning Objective</u> Installs luminaires JP Sign-off _____	10.01.01 Demonstrate an understanding of all types, functions and applications of luminaires Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.02 Recognize all types of fasteners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.03 Determine method of installation on structure surfaces such as T-bar, concrete and steel Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.04 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.05 Recognize types of supports such as chain, cable and box Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	10.01.06 Determine support and protection requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.08 Determine circuitry and demand loading Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.09 Assemble luminaires Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.10 Connect luminaires Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	10.01.11 Install lamps Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	10.01.12 Mount support to structure Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

**Task 10 - C
(cont'd)**

Learning Outcome
Installs power and lighting systems

**Task 10
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 10.02</p> <p><u>Learning Objective</u> Installs devices (switches and receptacles)</p> <p>JP Sign-off _____</p>	<p>10.02.01 Identify and demonstrate an understanding of all types of devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.02 Demonstrate an understanding of all types of fasteners</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.03 Assess environment and classification</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.04 Determine installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>10.02.06 Determine device configuration and ratings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.07 Connect and mount devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.02.08 Select and install faceplates and covers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
<p>SUB-TASK 10.03</p> <p><u>Learning Objective</u> Installs lighting controls</p> <p>JP Sign-off _____</p>	<p>10.03.01 Identify and demonstrate an understanding of all types of lighting controls such as relays, dimming systems, photocells, motion sensors and timers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.02 Demonstrate an understanding of all types of fasteners</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.03 Assess environment and classification</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.04 Demonstrate an understanding of operation of lighting control systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>10.03.06 Determine circuitry and demand loading</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.07 Assemble control components</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.08 Mount lighting controls to structure</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.03.09 Connect and program lighting controls</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	

Task 10 - C
(cont'd)

Learning Outcome
Installs power and lighting systems

Task 10
Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 -Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 10.04</p> <p><u>Learning Objective</u> Installs light posts</p> <p>JP Sign-off _____</p>	<p>10.04.01 Identify and demonstrate an understanding of all types of light posts such as street lights, traffic lights, bollard lights and parking lights</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.02 Demonstrate an understanding of all types of fasteners</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.03 Demonstrate an understanding of and follow light post installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.04 Determine and demonstrate an understanding of uses and requirements of light posts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>10.04.06 Fabricate bases fitted with sleeves or conduit, anchoring bolts and studs and breakaways</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.07 Mount, fasten and shim for level</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.08 Connect and ground light post</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.04.09 Adjust and aim luminaires and photocells</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
<p>SUB-TASK 10.05</p> <p><u>Learning Objective</u> Installs branch circuit protection</p> <p>JP Sign-off _____</p>	<p>10.05.01 Identify and demonstrate an understanding of all types of branch circuit protection such as circuit breakers, fuses and fault protection</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.05.02 Determine conductor sizes and ampacity</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.05.03 Determine and demonstrate an understanding of available fault current</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.05.04 Recognize branch circuit protection installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.05.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>10.05.06 Calculate demand load</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>10.05.07 Mount branch circuit protection devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

Task 11 - C
5 questions on the IP exam

Learning Outcome
Installs heating, ventilation and cooling (HVAC) systems

Journeyman
 Sign-off
 Task 11

Complete

Incomplete

Task 11
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 11.01 <u>Learning Objective</u> Installs electric heating systems JP Sign-off ____	11.01.01 Identify and demonstrate an understanding of all types of electric heating systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.02 Demonstrate an understanding of all types of fasteners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.03 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.04 Determine and follow electric heating installation procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.05 Determine and demonstrate an understanding of heat loss and heat requirement calculations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	11.01.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.07 Assemble, mount and connect electric heating Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.08 Calculate demand load Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.01.09 Determine wire size, overcurrent protection and disconnect means Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
SUB-TASK 11.02 <u>Learning Objective</u> Connects ventilation and cooling systems JP Sign-off ____	11.02.01 Identify and demonstrate an understanding of all types of cooling systems such as refrigeration and air conditioning Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.02.02 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.02.03 Determine and follow connection procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.02.04 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.02.05 Calculate demand load Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	11.02.06 Determine wire size, overcurrent protection and disconnect means Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.02.07 Make electrical connections Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

**Task 11 - C
(cont'd)**

Learning Outcome
Installs heating, ventilation and cooling (HVAC) systems

**Task 11
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
3 - Complete a task to the level and quality of performance required by industry without assistance or supervision
 2 - Complete a task with some assistance and supervision
 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 11.03 <u>Learning Objective</u> Installs HVAC control systems JP Sign-off _____	11.03.01 Determine and demonstrate an understanding of HVAC system operational requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.02 Demonstrate an understanding of electrical control devices such as thermostats, sensors and timers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.03 Identify and demonstrate an understanding of mechanical control devices such as solenoid valves, dampers and relays Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.04 Determine and follow installation procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.05 Determine control device location and accessibility requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	11.03.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.07 Mount electrical control devices Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.08 Connect control components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	11.03.09 Calibrate and program control devices Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

Task 12 - C
5 questions on the IP exam

Learning Outcome
Installs emergency lighting systems

Journeyperson
 Sign-off
 Task 12

Complete

Incomplete

Task 12
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 12.01 <u>Learning Objective</u> Installs exit lighting JP Sign-off ____	12.01.01 Identify all types of exit lighting such as self-powered and remote-powered Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.02 Follow building code requirements for spacing and location Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.03 Determine AC and DC circuit requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.04 Demonstrate an understanding of and select all types of fasteners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.05 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	12.01.06 Identify types of emergency power supplies such as batteries and generators Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.08 Integrate exit lighting and emergency lighting Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.09 Calculate emergency current supply Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.01.10 Mount and connect exit light Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
SUB-TASK 12.02 <u>Learning Objective</u> Installs battery-operated lighting JP Sign-off ____	12.02.01 Demonstrate an understanding of all types of battery-operated lighting Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.02 Follow building code requirements for spacing and location Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.03 Determine AC and DC circuit requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.04 Demonstrate an understanding of and select all types of fasteners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.05 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	12.02.06 Determine battery types and sizing Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.07 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.08 Integrate exit lighting and emergency lighting Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.09 Calculate battery demand load Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	12.02.10 Mount and connect emergency light systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

Construction Electrician

BLOCK D

20% - 20 Questions on the IP exam

Learning Category
MOTOR AND CONTROL SYSTEMS

Task 13 - D

13 questions on the IP exam

Learning Outcome
Installs motor controls

Journeyperson
Sign-off
Task 13

Complete

Incomplete

Task 13 Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others

5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others

4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision

3 - Complete a task to the level and quality of performance required by industry without assistance or supervision

2 - Complete a task with some assistance and supervision

1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 13.01 <u>Learning Objective</u> Installs starters JP Sign-off ____	13.01.01 Identify all types of starters such as full voltage, reduced voltage, manual and magnetic starters Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.02 Demonstrate an understanding of requirements of motor and operation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.03 Follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.04 Determine and demonstrate an understanding of all types of enclosures such as dry, wet and hazardous Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.05 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	13.01.06 Select starter size Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.07 Adjust starters Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.08 Assemble components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.09 Mount and connect starter assembly Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.01.10 Calculate feeder requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
SUB-TASK 13.02 <u>Learning Objective</u> Installs variable frequency drives (VFD) Continued next page	13.02.01 Identify types of VFD Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.02 Determine and demonstrate an understanding of all types and sizes of enclosures such as wet, dry and hazardous Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.03 Determine and follow motor specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.04 Demonstrate an understanding of line and load conditioning Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.05 Demonstrate an understanding of harmonics Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	13.02.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.07 Select drive size and voltage Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.08 Calculate feeder requirements for special conditions such as shielding requirements and length of cable Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.09 Determine location of drive Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.02.10 Connect drives Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

**Task 13 - D
(cont'd)**

Learning Outcome
Installs motor controls

**Task 13
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 13.02 continued <u>Learning Objective</u> Installs variable frequency drives (VFD)</p> <p>JP Sign-off _____</p>	<p>13.02.11 Calibrate and program drives</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p>SUB-TASK 13.03 <u>Learning Objective</u> Installs overload protection</p> <p>JP Sign-off _____</p>	<p>13.03.01 Identify all types of overloads</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.03.02 Determine motor sizes, types and characteristics</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.03.03 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.03.04 Calculate overload requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.03.05 Determine the size of overload protection</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>13.03.06 Mount and connect overload protection</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p>SUB-TASK 13.04 <u>Learning Objective</u> Installs motor controls</p> <p>JP Sign-off _____</p>	<p>13.04.01 Identify and demonstrate an understanding of all types of motor controls</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.02 Determine and follow system requirements and applications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.03 Identify and demonstrate an understanding of control devices such as float and interlock switches</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.04 Identify and demonstrate an understanding of multiple voltage systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>13.04.06 Select and install relays, contactors and control transformers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.07 Determine location of devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.08 Terminate motor controls</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>13.04.09 Adjust control devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	

**Task 13 - D
(cont'd)**

Learning Outcome
Installs motor controls

**Task 13
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
3 - Complete a task to the level and quality of performance required by industry without assistance or supervision
 2 - Complete a task with some assistance and supervision
 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 13.05 <u>Learning Objective</u> Installs Programmable Logic Controls (PLCs) JP Sign-off _____	13.05.01 Demonstrate an understanding of PLCs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.05.02 Determine interface requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.05.03 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.05.04 Determine system requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.05.05 Write and verify basic PLC programs Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	13.05.06 Program a PLC Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	13.05.07 Plan and install interface Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

Task 14 - D
7 questions on the IP exam

Learning Outcome
Installs motors

Task 14
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 14.01 <u>Learning Objective</u> Installs AC and DC motors JP Sign-off ____	14.01.01 Identify all types of motors such as single-phase, three-phase and DC Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.02 Determine motor applications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.03 Determine and follow power, starting and duty requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.04 Assess environment and classification Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.05 Determine system requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	14.01.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.07 Apply nameplate data Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.08 Mount and align motors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.01.09 Terminate motors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
SUB-TASK 14.02 <u>Learning Objective</u> Installs motor overcurrent protection JP Sign-off ____	14.02.01 Identify all types of motors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.04 Determine types and sizes of fuses and breakers Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.03 Identify and demonstrate an understanding of motor applications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.04 Determine and demonstrate an understanding of types of motor starters Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.05 Determine types of conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	14.02.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.07 Interpret motor nameplate data Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.08 Calculate overcurrent requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.09 Select overcurrent devices Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.10 Select enclosures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	14.02.11 Determine size of conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	14.02.12 Terminate conductors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

Construction Electrician

BLOCK E

9% - 9 Questions on the IP exam

Learning Category
SIGNALLING AND COMMUNICATION SYSTEMS

Task 15 - E

5 questions on the IP exam

Learning Outcome
Installs signalling systems

Journeyperson
Sign-off
Task 15

Complete

Incomplete

Task 15 Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
 - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
 - 2 - Complete a task with some assistance and supervision
 - 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 15.01 <u>Learning Objective</u> Installs fire alarm systems JP Sign-off ____	15.01.01 Recognize and follow codes and regulations applying to fire alarm system installation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.02 Identify and demonstrate an understanding of types of fire alarm systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.03 Identify and demonstrate an understanding of components of fire alarm systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.04 Determine wiring methods Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.05 Identify and follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	15.01.06 Identify and demonstrate an understanding of ancillary devices and circuits such as fan shut down, elevator recall and door release Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.07 Select and use installation tools and equipment such as wire and cable strippers and mineral-insulated cable tools Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.01.08 Follow installation procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
SUB-TASK 15.02 <u>Learning Objective</u> Installs nurse call systems JP Sign-off ____	15.02.01 Identify all types of nurse call systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.02.02 Identify and demonstrate an understanding of components of nurse call systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.02.03 Demonstrate an understanding of operating principles of nurse call systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.02.04 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	15.02.05 Follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	15.02.06 Follow installation procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

**Task 15 - E
(cont'd)**

Learning Outcome
Installs signalling systems

**Task 15
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 15.03</p> <p><u>Learning Objective</u> Installs security and surveillance systems</p> <p>JP Sign-off _____</p>	<p>15.03.01 Identify all types of security systems such as card access, door access and intrusion</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.02 Identify and demonstrate an understanding of all types of surveillance systems such as video, motion and heat</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.03 Interpret and follow manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.04 Demonstrate an understanding of operating principles</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.05 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>15.03.06 Locate and mount system components</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.07 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>15.03.08 Confirm operation of security and surveillance systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

Task 16 - E
4 questions on the IP exam

Learning Outcome
Installs communication systems

Task 16
Learning Needs

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 16.01</p> <p><u>Learning Objective</u> Installs voice/data systems</p> <p>JP Sign-off _____</p>	<p>16.01.01 Identify and demonstrate an understanding of all types of cables such as copper, fibre optic and coaxial</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.01.02 Determine and follow installation standards</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.01.03 Interpret and follow manufacturers' specifications such as bend radius, jacket stripping and splicing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.01.04 Demonstrate an understanding of all types of lines such as analog and digital</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.01.05 Select appropriate cable type according to specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>16.01.06 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.01.07 Confirm operation of the voice/data systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			
<p>SUB-TASK 16.02</p> <p><u>Learning Objective</u> Installs public address (PA) systems</p> <p>JP Sign-off _____</p>	<p>16.02.01 Identify and demonstrate an understanding of types of PA systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.02.02 Determine and follow installation standards</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.02.03 Interpret and follow manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.02.04 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.02.05 Select appropriate cable type according to specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>16.02.06 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.02.07 Confirm operation of PA systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

**Task 16 - E
(cont'd)**

Learning Outcome
Installs communication systems

**Task 16
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Knowledge, Skills and Abilities - Competencies

<p>SUB-TASK 16.03</p> <p><u>Learning Objective</u> Installs community antenna distribution and radio and television systems</p> <p>JP Sign-off _____</p>	<p>16.03.01 knowledge of community antenna distribution and radio and television equipment as defined by the CEC</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.03.02 knowledge of types of cables such as RG59, RG6, Category 5e and 6</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.03.03 knowledge of manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.03.04 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.03.05 Select appropriate cable type according to specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>16.03.06 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.03.07 Confirm operation of the systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			
<p>SUB-TASK 16.04</p> <p><u>Learning Objective</u> Installs building automation systems</p> <p>JP Sign-off _____</p>	<p>16.04.01 Identify and demonstrate an understanding of all types of building automation systems such as energy management systems, integrated building systems and smart buildings</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.04.02 Recognize components of building automation systems such as cables and sensors</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.04.03 Interpret and follow manufacturers' specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.04.04 Select and use tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.04.05 Select components such as occupancy sensors, sail switches and dusk-to-dawn controls</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p>16.04.06 Follow installation procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p>16.04.07 Confirm operation of the systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

Construction Electrician

BLOCK F

8% - 8 Questions on the IP exam

Learning Category
**UPGRADING,
 MAINTENANCE AND
 REPAIR**

Task 17 - F

3 questions on the IP exam

Learning Outcome
Upgrades electrical systems

Journeyperson
 Sign-off
 Task 17

Complete

Incomplete

Task 17
Learning Needs

Sub-Tasks
 Learning Objectives
 to be completed
 Comments

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

Type of Proof:

- O - Observation
- I - Interview
- D - Documentation

Use:

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 17.01 <u>Learning Objective</u> Evaluates existing electrical systems JP Sign-off ____	17.01.01 Identify and demonstrate an understanding of system components such as MCCs, transformers, panel boards and splitters Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.02 Determine and demonstrate an understanding of all types of systems by voltage and use Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.03 Determine and demonstrate an understanding of system operation by sequence Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.04 Determine calculation and demand factors Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.05 Determine, interpret and follow current code rules and jurisdictional regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	17.01.06 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.07 Calculate demand factors and loads Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.01.08 Determine upgrades to meet current code regulations Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
SUB-TASK 17.02 <u>Learning Objective</u> Replaces electrical systems and equipment JP Sign-off ____	17.02.01 Identify and demonstrate an understanding of all types of electrical systems and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.02.02 Determine and demonstrate an understanding of system operation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.02.03 Identify and demonstrate an understanding of all types of system components such as breakers, fuses and overcurrent and overload devices, panel boards, relays, capacitors, timers and terminal blocks Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.02.04 Determine and follow removal and disposal procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.02.05 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	17.02.06 Perform shut-down procedures Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	17.02.07 Select corresponding replacement parts according to their rating Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

Task 18 - F
3 questions on the IP exam

Learning Outcome
Maintains electrical systems

Journeyperson
 Sign-off
 Task 18

Complete

Incomplete

Task 18
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 18.01 <u>Learning Objective</u> Troubleshoots electrical systems JP Sign-off ____	18.01.01 Determine and demonstrate an understanding of all types of electrical systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.01.02 Demonstrate an understanding of electrical system concept and operation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.01.03 Determine troubleshooting techniques Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.01.04 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.01.05 Apply troubleshooting techniques Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	18.01.06 Recognize defective electrical components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				
SUB-TASK 18.02 <u>Learning Objective</u> Replaces electrical components JP Sign-off ____	18.02.01 Identify and demonstrate an understanding of all types of electrical systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.02 Determine and demonstrate an understanding of electrical system operation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.03 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.04 Recognize defective electrical systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.05 Select equivalent replacement parts Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	18.02.06 Install replacement parts Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.07 Integrate new components into existing systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.02.08 Verify operation of replacement components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		

**Task 18 - F
(cont'd)**

Learning Outcome
Maintains electrical systems

**Task 18
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
3 - Complete a task to the level and quality of performance required by industry without assistance or supervision
 2 - Complete a task with some assistance and supervision
 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 18.03 <u>Learning Objective</u> Repairs electrical components JP Sign-off _____	18.03.01 Identify and demonstrate an understanding of all types of electrical systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.03.02 Determine and demonstrate an understanding of electrical system operation Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.03.03 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.03.04 Select approved material Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.03.05 Recognize defective electrical components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	18.03.06 Integrate new components into existing systems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	18.03.07 Verify operation of repaired components Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

Task 19 - F
2 questions on the IP exam

Learning Outcome
Performs preventative maintenance

Journeyperson
 Sign-off
 Task 19

Complete

Incomplete

Task 19
Learning Needs

Sub-Tasks
Learning Objectives
 to be completed
 Comments

Knowledge, Skills and Abilities - Competencies

SUB-TASK 19.01 <u>Learning Objective</u> Tests system operation JP Sign-off ____	19.01.01 Determine system design Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.01.02 Determine system sequence Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.01.03 Select and use tools and equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.01.04 Use evaluation techniques Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.01.05 Recognize potential system operation problems Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	SUB-TASK 19.02 <u>Learning Objective</u> Cleans components JP Sign-off ____	19.02.01 Identify select cleaners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.02.02 Determine operation of equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.02.03 Select and apply cleaners Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.02.04 Follow maintenance schedules Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
SUB-TASK 19.03 <u>Learning Objective</u> Lubricates components JP Sign-off ____	19.03.01 Identify lubricants Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.03.02 Determine operation of equipment Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.03.03 Select and apply lubricants Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.03.04 Follow maintenance schedule Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	SUB-TASK 19.04 <u>Learning Objective</u> Establishes maintenance schedule JP Sign-off ____	19.04.01 Identify and demonstrate an understanding of equipment being maintained Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.02 Interpret and follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.03 Determine and follow customer requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.04 Assess environmental conditions Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

**Task 19 - F
(cont'd)**

Learning Outcome
Performs preventative maintenance

**Task 19
Learning Needs**

Sub-Tasks
Learning Objectives
to be completed
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
3 - Complete a task to the level and quality of performance required by industry without assistance or supervision
 2 - Complete a task with some assistance and supervision
 1 - Complete task with assistance and constant supervision

Type of Proof: O - Observation I - Interview D - Documentation

Use: 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

SUB-TASK 19.05 <u>Learning Objective</u> Implements maintenance schedule JP Sign-off _____	19.04.01 Identify and demonstrate an understanding of equipment being maintained Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.02 Interpret and follow manufacturers' specifications Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.03 Determine and follow customer requirements Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.04 Assess environmental conditions Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	19.04.05 Execute maintenance schedules Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	19.04.05 Record maintenance data Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

APPENDIX A

CONSTRUCTION ELECTRICIAN NATIONAL OCCUPATIONAL ANALYSIS GLOSSARY OF TERMS

Ancillary	Functions performed by the fire alarm system as an output of the fire alarm system, controlled by a relay or similar device, for example, elevator recall, fan shut down and door release
Bonding	A low impedance path obtained by permanently joining all non-current-carrying metal parts to assure electrical continuity and having the capacity to conduct safely any current likely to be imposed on it
Cathodic protection	Technique to control the corrosion of a metal surface by making that surface the cathode of an electrochemical cell
Extra low voltage	Any voltage up to and including 30 volts
Grounding	A permanent and continuous conductive path to the earth with sufficient ampacity to carry any fault current liable to be imposed on it, and of a sufficiently low impedance to limit the voltage rise above ground and to facilitate the operation of the protective devices in the circuit
Intrinsically safe	That any spark or thermal effect that may occur in normal use, or under conditions of fault likely to occur in practice, is incapable of causing an ignition of the prescribed flammable gas, vapour, or dust
Low energy power circuit	A circuit where the power is limited to $100/V$ Amperes where V is the open circuit voltage

Luminaires	A complete lighting unit designed to accommodate the lamp(s) and to connect the lamp(s) to circuit conductors, for example, florescent, High Intensity Discharge (HID) and incandescent
Raceway	Any channel designed for holding wires, cables, or busbars, and, unless otherwise qualified by rules of the CEC, the term includes conduit (rigid, flexible, metal, non-metallic) electrical, metallic and nonmetallic underfloor raceway, cellular floors, surface raceways, wireways, cable trays, busways, and auxiliary gutters
Troubleshoot	Diagnosing problems
Voltage system, low	Any voltage from 31 to 750 volts
Voltage system, high	Any voltage above 750 volts

Construction Electrician National Occupational Analysis ACRONYMS

AC Alternating current

CEC Canadian Electrical Code

CT Current Transformer

DC Direct current

HID High Intensity Discharge

HVAC Heating, Ventilation and Cooling

LED Light Emitting Diode

MCC Motor Control Centre

MSDS Material Safety Data She

OH&S Occupational Health and Safety

PA Public Address

PLC Programmable Logic Control Systems

PPE Personal Protective Equipment

PT Potential Transformer

UPS Uninterruptible Power Supply Systems

VFD Variable Frequency Drive

WHMIS Workplace Hazardous Material Information System

APPENDIX B

REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
Technical Reading	<ul style="list-style-type: none"> ➤ Find and use information from one source - i.e., a book, internet, and work order ➤ Find and use information from many parts of a single source - i.e., a code book ➤ Recognize what is important from several sources of information ➤ Interpret information using more than one source ➤ Apply information to the task
Document Use	<ul style="list-style-type: none"> ➤ Use large or difficult documents which are organized into units, headings chapters, or sub-headings -i.e., a code book ➤ Find information in large or very specialized documents which may have many smaller documents - i.e., operations manuals, safety manuals ➤ Find information from many sources - i.e., code books, blueprints, work manuals ➤ Enter information into pre-set documents and forms - i.e., accident report forms, order forms ➤ Combine information from several sources and use it – i.e., alter a work order using information from code books, manuals and blueprints ➤ Create new documents using information from a variety of sources – i.e., create work orders, material lists, time logs sheets

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
Writing	<ul style="list-style-type: none"> ➤ Write information into a pre-set form – i.e., contract, lease, building permit ➤ Write short messages, explanations, requests or directions – i.e., write a work order, memo, written message for a foreman, supervisor or client ➤ Write longer messages, explanations, requests or directions – i.e., write an accident report, a detailed message to a foreman, supervisor or client ➤ Write a longer article which may need to be organized into headings with a table of contents, i.e. work report, section of a work manual ➤ Write detailed, non-routine articles – i.e., make recommendations, use technical language to give directions to or ask for information from other tradespeople
Math	<ul style="list-style-type: none"> ➤ Perform math calculations using formulas, fractions, decimals and percent ➤ Combine one or more math operations to solve a problem ➤ Estimate numbers ➤ Convert between Imperial and Metric measurement systems ➤ Solve equations ➤ Use trigonometry to solve problems (not a requirement in every trade)

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
Computer Use	<ul style="list-style-type: none"> ➤ Perform basic computer operations needed to produce a document – i.e., a letter ➤ Find information on the internet ➤ Find information in workplace data bases ➤ Send and receive email ➤ Enter data into a set format – i.e., form, spreadsheet, chart ➤ Manage electronic information – i.e., save files ➤ Choose and use the best software program for the task
Oral Communication	<ul style="list-style-type: none"> ➤ Take directions from a supervisor or co-workers on work related projects ➤ Give directions to co-workers on work related projects ➤ Exchange information using trade terminology ➤ Provide details on facts ➤ Provide opinions on work related projects ➤ Organize, present and interpret ideas in a logical manner ➤ Communicate one-on-one on or in a group on complex work related matters

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
Thinking Skills	<ul style="list-style-type: none"> ➤ Identify problems ➤ Apply learning from previous experiences to identify possible solutions to a problem ➤ Find, evaluate, and choose appropriate information to solve a problem ➤ Evaluate the best possible solution to a problem ➤ Make decisions ➤ Plan and organize job tasks to set time-lines ➤ Ensure quality control standards are met
Working with Others	<ul style="list-style-type: none"> ➤ Complete tasks to industry standard under supervision ➤ Complete tasks to industry standard without supervision ➤ Complete assigned tasks to meet time-lines that meet project deadlines ➤ Accept feedback ➤ Give feedback ➤ Evaluate then apply recommendations from co-workers ➤ Resolve conflict ➤ Mentor an Apprentice

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
Continuous Learning	<ul style="list-style-type: none"> ➤ Identify work/career strengths and areas for improvement ➤ Develop a work/career learning plan ➤ Set goals ➤ Participate in learning opportunities to meet workplace goals ➤ Apply new learning in the workplace environment ➤ Revisit, reflect, and revise the learning plan regularly ➤ Engage in learning opportunities to keep skills current and meet career goals

