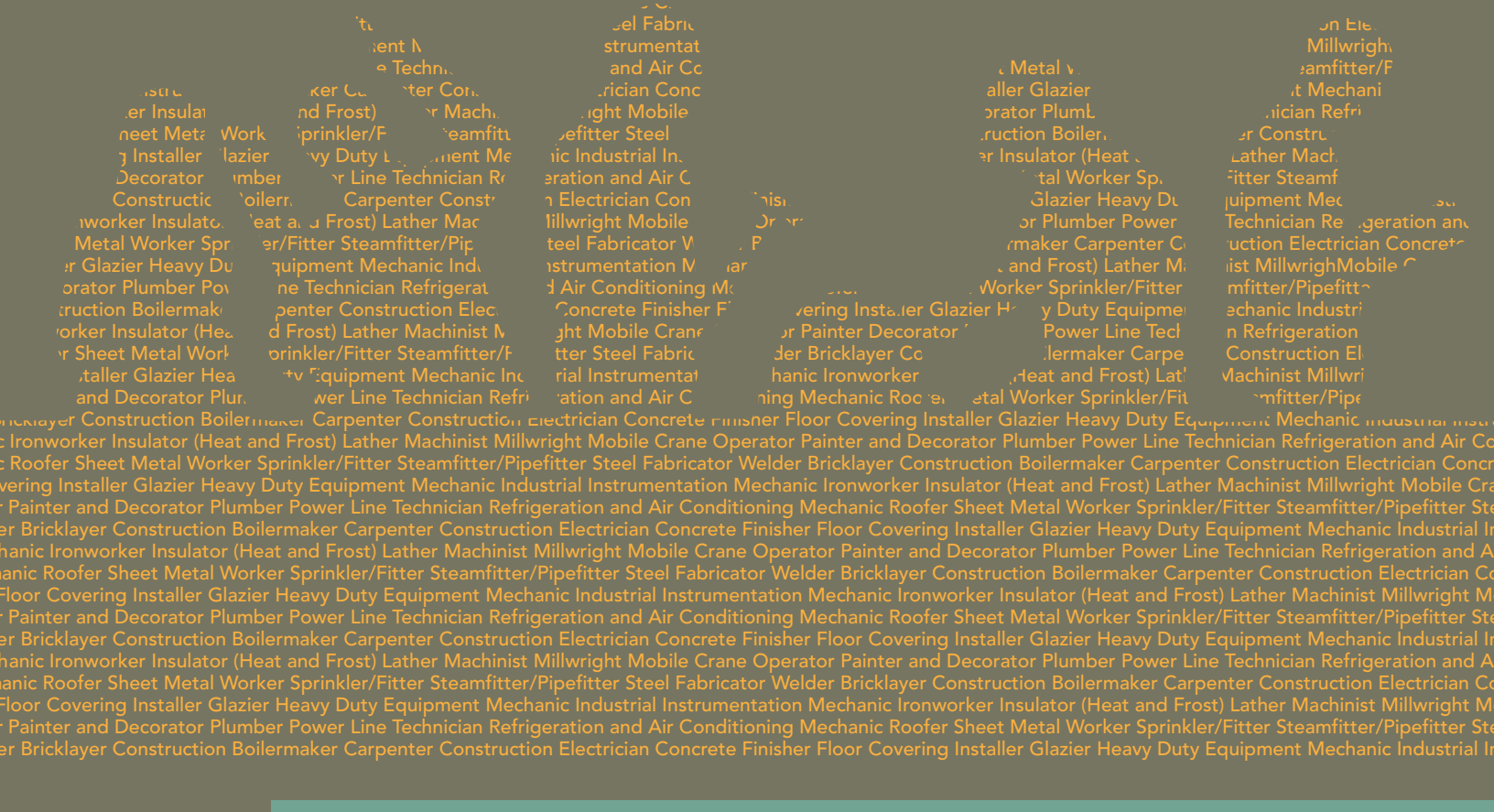
Foreign Credentials and Skills Assessment for the Construction Industry



A Workbook for Employment Counsellors

BRITISH COLUMBIA
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CONSTRUCTION SECTOR COUNCIL
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This project is funded in part by the Government of Canada's Foreign Credential Recognition Program

About the CSC

The Construction Sector Council (CSC) is a national organization committed to the development of a highly skilled workforce – one that will support the future needs of the construction industry in Canada. Created in April 2001, and financed by both government and industry, the CSC is a partnership between labour and business.

This report is available electronically at **www.csc-ca.org**, as well as at **www.bcbuildingtrades.org** and **www.itabc.ca**.

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2009

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Our thanks to…

The Government of Canada, under the Foreign Credential Recognition Program, for funding this project in partnership with B.C.'s Ministry of Advanced Education and Labour Market Development.

The following agencies participated in the pilot workshops for the Foreign Credentials and Skills Assessment training. We thank them for the time they took out of busy schedules and the suggestions they freely gave us to improve on the workbook:

- Progressive International Community Services Society (PICS), Surrey, B.C.
- DIVERSEcity Community Resources Society, Surrey, B.C.
- Centre of Integration for African Immigrants/Centre D'Integration pour Immigrants Africains (CIAI/CIIA), New Westminster, B.C.
- YWCA Employment Resource Centre, Vancouver, B.C.
- South Vancouver Neighbourhood House, Vancouver, B.C.
- SUCCESS Employment Services, Vancouver, B.C.
- Surrey Employment Resource Centre – Newton, SERC-N, Surrey, B.C.

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Introduction

While the growth of the construction industry increasingly hinges on the availability of a well-educated and highly-skilled workforce, there is a general consensus that managing the workforce requirements through cyclical upturns and downturns and through demographic shifts is critically important to the current and future viability of the sector. The construction industry is currently looking at several non-traditional sources to meet its labour needs. One of these sources is the foreign-trained immigrant population of construction tradespersons.

The *Foreign Credential and Skills Assessment (FCSA) Workbook* has been developed as a tool for settlement counsellors, employment counsellors and others who work in the area of immigrant integration into the Canadian workforce. The 26 trades outlined in detail in this workbook are all Red Seal trades within the construction industry. The *FCSA Workbook* is intended to be used specifically with clients whose skills fit into one or more of these trades. Although designed to assist immigrant clients, we believe the *FCSA Workbook* will be useful also for assisting Canadian-trained workers and members of targeted groups such as youth, Aboriginal people and women.

> *A man from Iran who was a structural engineer immigrated to Canada with a good deal of experience in designing multi-family dwellings. He was told that he should easily find employment in the construction industry in Canada. However, he found that his experience from Iran was not applicable in Canada. Here, experience in the design of wood frame construction is needed; his experience lay with cement block construction only. Further, he had no experience with seismic requirements.*
>
> – Michael Hardman, trades employment consultant

The issues around foreign credential assessment (FCA) are complex, with several stumbling blocks along the way. One major barrier in the process is that many immigrants may have a trade that we do not recognize or that has a different occupational title than the one used in Canada. Sometimes, even when the trade name is recognized, the training the client has received may be different from the training for the trade with the same title in Canada. Sometimes, the materials commonly used in other countries may not be the same as those commonly used here, and so the tradesperson's experience is not within the Canadian context. Finally, the proportion of theoretical knowledge to practical experience required for certification may be different.

> *An immigrant from the Horn of Africa had training in his home country as a mechanical engineer and hoped to find work as one in Canada. However, upon assessment, it was shown that he had graduated from a two-year program and that his only practical mechanical experience was trying to repair a tractor that dated back to the 1950s. He also had a small amount of welding experience but was not interested in pursuing that trade in Canada.*
>
> – Carl Foley, employment counsellor

Assessment and recognition of transferable skills is one process that can significantly benefit immigrant tradespersons who need to find a job quickly but who do not qualify to practice the trades in which they worked in their home countries. Although many construction jobs require specific skills, there is also a good deal of cross-over among the skills, knowledge and experience in construction trades.

Components of the *FCSA Workbook*

The *FCSA Workbook* is meant as a tool for employment counsellors with little or no knowledge of construction trades. It provides a systematic approach for the counsellor and client to use together to identify the client's experience and skills within a comprehensive range of competencies related to his or her trade. It includes the following:

- charts that list the major skills of each trade and within those major skills, the competencies required; and
- forms and templates to be used by the counsellor during the intake and assessment process, and for the client to use in applying for work.

The components are designed for flexible use and can be used separately or together. Users may find that only one of the components is useful for their purposes, or they may find that at one time or another all the materials can assist them.

> *An electrical engineer from Romania had been responsible in his home country for maintenance in a manufacturing plant where he had often repaired equipment. His experience was similar to that of a millwright. He was successfully matched with a bakery in Canada, where he did repairs and kept a whole range of machines – from mixers to packaging machines – in good running order. He obtained this job without needing certification in a trade.*
>
> – Danny O'Neill, trades consultant

Forms and templates

1. **Trades supplement to client intake form:** This form is intended as a supplement to an agency's own client intake form. It asks questions that focus on the client's knowledge, skills, abilities and interests in Red Seal construction trades. The form can be completed with the help of a counsellor, if necessary.
2. **Trade skills competency charts:** Each chart is an inventory of the major competencies for the trade and the corresponding sub-set of skills and tasks.
3. **Skills summary and gaps analysis template:** The client's responses on the competency chart are summarized using this form, and the gaps in the client's skills and experience are noted here. The counsellor will recommend a plan for "next steps", which the client can choose to follow based on the summary of skills and the analysis of gaps.
4. **Client's employment portfolio template:** This is a template and checklist that identifies and

explains the components that make up an employment portfolio. In addition to the listed suggestions, there is space for the client or counsellor to add others.

5. **Job summary template and instructions:** This template is for the client's use. It suggests to the client a well-organized design for the contents and layout of his or her work history.

Methodology

The central component of the *FCSA Workbook* is the trade skills competency charts that have been developed for each of the 26 Red Seal construction trades. These charts, which are essentially inventories of skills and competencies, were developed by a team with close to 150 years of combined expertise and experience in the skilled trades and with the apprenticeship system.

The content of the charts is derived from the "DACUM" charts (see example at the end of this introduction), which were developed by industry experts engaged in the design of apprenticeship training. The DACUM information was then compared to and corroborated by the information in the corresponding national occupational classifications (NOC). This was done to ensure that the terminology and information were compatible and to ensure that the information in the competency charts was complete and accurate.

In developing the charts, effort was made to take an employer's perspective. For this reason, the charts focus largely on the practical skills required to operate as a skilled tradesperson on the job site.

Excluded from the charts are competencies and skills that focus on safety, trades math and Essential Skills. Safety is of primary importance for every trade with the construction industry. It is not an optional requirement or qualification but rather an essential one. It is the employer's responsibility to ensure that all workers on the work site have had sufficient safety training.

Levels required in trades math, document reading, text reading and other Essential Skills can be found for many of the Red Seal construction trades on the HRSDC "Essential Skills" website:

http://srv108.services.gc.ca/english/general/home_e.shtml

On the website, the Essential Skills profiles can be searched by NOC number or by job title.

Apprenticeships

As a final word, we would like to emphasize that entering an apprenticeship is another potential option for assisting immigrant tradespersons to integrate into the Canadian workforce. Foreign-trained tradespersons can upgrade their practical and/or technical skills by entering a short-term apprenticeship. Apprenticeships combine on-the-job training with technical training at a recognized training institution. They introduce the recent immigrant to Canadian trade terminology and standards and provide an opportunity to upgrade communication skills with less pressure than could be expected of a journeyperson.

Apprenticeship is not a method of cheap labour. The length of an apprenticeship may be from one to four years, depending on ability, with a commensurate pay scale. The institutional portion of the training is free, and other subsidies may be available through federal or provincial incentive programs.

Example of a DACUM chart

Industrial Instrumentation Mechanic APPRENTICESHIP COMPETENCY PROFILE CHART						
Tubing and fittings **A**	Describe types and applications of tubing and fittings	Interpret tubing specifications	Identify fitting types	Bend and install tubing and fittings	Pressure test installation	
	1	1	1	1	1	
Industrial air supply systems **B**	Describe air system operation and components	Inspect air systems	Service instrument air supply and equipment	Test and troubleshoot air systems		
	1	1	1	1		
Indicating and recording instruments **C**	Describe process indicators	Describe process recorders	Install indicators	Repair and calibrate indicators and recorders		
	1	1	1	1		
Pressure measurements **D**	Describe process indicators	Describe primary standards	Selct pressure measurement devices	Describe pressure-related safety concerns	Use pressure test equipment	Repair and calibrate pressure devices
	1	1	1	1		
D	Install pressure gauges	Install pressure transmitters				
	1	1				
Level measurements **E**	Describe level measurement methods	Select level measuring devices	Describe level related safety concerns	Repair and calibrate level measuring devices	Install level measuring devices	
	2	1	1	2	2	
Temperature measurement **F**	Describe units and standards	Describe temperature measuring methods	Select temperature measuring devices	Describe temperature related safety concerns	Use temperature test equipment	Repair and calibrate temperature measuring devices
	1	1 2	2	1	2	1 4
F	Install temperature measuring devices					
	1					

Industrial Instrumentation Mechanic APPRENTICESHIP COMPETENCY PROFILE CHART *(continued)*						
Flow measurement G	Describe units and standards	Describe flow measuring methods	Select flow measuring devices	Describe flow related safety concerns	Repair and calibrate flow meters	Install flow measuring devices
	1	1 2 5	5	2	2 5	2
Density measurement H	Describe units and standards	Describe density measuring methods	Select density measuring devices	Describe density related safety concerns	Repair and calibrate density meters	Install density measuring devices
	2	2	2	2	2	2
Consistency and viscosity measurement I	Describe units and standards	Describe consistency measuring methods	Select consistency measuring devices	Describe consistency related safety concerns	Repair and calibrate consistency meters	Install consistency measuring devices
	5	5	5	5	5	5
Weight measurement J	Describe units and standards	Describe weight measuring methods	Select weight measuring devices	Describe weight related safety concerns	Install weight measuring devices	Repair and calibrate weight measuring devices
	1	2	2	2	2	2
Other measurement technologies K	Measure vibration and speed	Apply other measurement technologies				
	3	3				
Process gases measurement L	Describe gas related safety concerns	Measure H_2S	Measure CO	Measure CO_2	Use gas chromato-graph	Measure O_2 and combustibles
	5	5	5	5	5	5
L	Apply other gas measurements					
	5					
Environmen-tal protection devices measurement M	Measure PH, ORP and specific ion	Measure conductivity	Measure stack gases	Describe ambient environment protection devices		
	4	4	5	4		
DC electricity basic principles N	Describe DC electricity	Describe Ohm's law	Describe DC electrical safety concerns	Use measuring devices	Describe basic electrical components	Assemble series and parallel circuits
	1	1	1	1 2	1	1
N	Assemble combination DC circuits	Troubleshoot electrical circuits				
	1	1				

Industrial Instrumentation Mechanic APPRENTICESHIP COMPETENCY PROFILE CHART *(continued)*						
AC electricity basic principles **O**	Describe AC electricity	Describe impedance	Describe AC electrical safety concerns	Describe AC devices	Assemble and troubleshoot ladder logic circuits	Use AC measuring devices
	2	2	2	2	2	2
Wiring installation **P**	Apply electrical code	Apply proper grounding techniques	Install cabling	Install field devices	Describe fibre optic systems	
	2	3 4 5	3	1 3	3	
Communication systems **Q**	Describe Communication Systems					
	5					
Electronic equipment installation and service **R**	Describe basic electronic components	Use electronic repair service equipment safely	Assemble and test basic electronic circuits	Troubleshoot and repair electronic circuits	Use soldering techniques	Use an oscilloscope
	3	3	3	4	1	3
Signal conditioner installation and maintenance **S**	Describe pneumatic relays	Describe electronic transducers	Calibrate, troubleshoot and repair signal conditioners			
	1 3	2 4	2 3 4			
Digital electronics basic principles **T**	Use boolean algebra	Describe digital components	Describe D/A and A/D converters	Use test equipment on digital circuits		
	3	3	3	3		
Computers **U**	Operate PC's	Configure and troubleshoot IBM PC hardware and software	Program and troubleshoot PLC's			
	2	2	4			
Distributed control systems **V**	Describe DCS systems	Describe DCS-related safety concerns	Configure DCS systems	Install DCS system hardware and software	Service, troubleshoot DCS computer equipment	
	4 5	5	4 5	4 5	5	

Industrial Instrumentation Mechanic APPRENTICESHIP COMPETENCY PROFILE CHART *(continued)*						
Final control elements servicing **W**	Describe valve types and applications 1	Describe valve related safety concerns 1	Describe valve sizing 3	Repair and maintain control valves 1	Repair and maintain actuators 1	Repair and setup valve positioners 2
W	Select and maintain solenoid valves 3	Describe other final control elements 3				
Regulators and relief valves servicing **X**	Describe regulatory and relief valve types and applications 1	Describe regulator and relief valve related safety concerns 1	Install and maintain regulators and relief valves 1	Repair self actuating temperature controllers 1		
Controllers, installation and service **Y**	Describe pneumatic controllers 3	Describe electronic controllers 5	Configure controllers 5	Install, repair and maintain pneumatic controllers 3	Install, repair and maintain electronic controllers 5	Read and make loop diagrams 3
Control theory application **Z**	Describe principles of proportional, integral and derivative control 3	Describe applications of control strategy 3 5	Tune control loops 3 4 5	Troubleshoot unstable control loops 3 4	Describe advanced control techniques 3 4 5	
Process control techniques application **AA**	Read process and control drawings 3 4 5	Analyze industrial process 3 4 5	Analyze control strategies for industrial processes 3 4 5	Troubleshoot process loops 3 4 5		

The *FCSA Workbook* process flow chart

Client:

Arrives at agency

Agency intake:

Client completes the trades supplement
to agency's client intake form

Counsellor:

Assessment:
Trade skills competency chart
Trade skills summary and gap analysis

Client:

Job summary template
Employment portfolio template

Forms and templates

Trades supplement to agency client intake form

Please answer the questions below. The information you give us will help us help you as you look for a good job.

A counsellor may help you complete this form.

First name: Last name:

Home address:

Postal Code:

Phone #: Cell (mobile):

Email:

1. Are you currently receiving, or are you eligible to receive, financial assistance from any level of government? ☐ Yes ☐ No

2. If yes, provide information:

3. What is your first language?

4. What other languages do you speak?

5. In what country were you born?

6. When did you arrive in Canada? Month Day Year

7. What is your current residential status?

☐ Canadian citizen

☐ Landed immigrant, applied for Canadian citizenship

☐ Refugee

8. Can you drive a car? ☐ Yes ☐ No

Can you drive a truck? ☐ Yes ☐ No

Do you own a vehicle? ☐ Yes ☐ No

Do you have a valid drivers' licence? ☐ Yes ☐ No What Class?

Do you have an international drivers' licence? ☐ Yes ☐ No

Education:

9a. In what country did you go to school when you were 12 to 18 years-old?

Country: Start and finish dates:

Country: Start and finish dates:

Do you have a secondary school graduation certificate? ☐ Yes ☐ No

Do you have post-secondary education? ☐ Yes ☐ No

9b. Were any of your post-secondary qualifications obtained in Canada? ☐ Yes ☐ No

If yes, which ones?

9c. Have any of your post-secondary qualifications been accepted as equivalent in Canada?

☐ Yes ☐ No

If yes, which ones?

9d. Have you taken any safety courses?

WHMIS	☐ Yes	☐ No
First aid	☐ Yes	☐ No
Safety orientation	☐ Yes	☐ No

10. Are you registered with any professional or work-related association?

Professional engineers	☐ Yes	☐ No
Technology association	☐ Yes	☐ No
Union	☐ Yes	☐ No

Other (Please name) .....

11. Do you own your own tools? ☐ Yes ☐ No

12. Here is a list of occupations in the construction industry. Do you have a special interest or preference for any occupations on this list? (There are other allied occupations, which can be identified by your counsellor, that you can consider as a career.)

☐ Yes ☐ No

Please check the box beside each trade that especially interests you.

- ☐ Boilermaker
- ☐ Bricklayer
- ☐ Carpenter
- ☐ Concrete Finisher
- ☐ Construction Electrician
- ☐ Floor Covering Installer
- ☐ Glazier
- ☐ Heavy-Duty Equipment Mechanic
- ☐ Industrial Instrument Technician/Mechanic
- ☐ Insulator (Heat and Frost)
- ☐ Instrument Mechanic
- ☐ Ironworker
- ☐ Lather
- ☐ Machinist
- ☐ Millwright
- ☐ Mobile Crane Operator
- ☐ Painter and Decorator
- ☐ Plumber
- ☐ Power Line Technician
- ☐ Refrigeration and Air Conditioning Mechanic
- ☐ Roofer
- ☐ Sheet Metal Worker
- ☐ Sprinkler System Fitter
- ☐ Steamfitter/Pipefitter
- ☐ Steel Fabricator
- ☐ Tilesetter
- ☐ Welder

Please list the tools and equipment you know how to use:

.....

.....

.....

.....

By signing this document you allow us to give information to possible employers or training agencies so that we can improve your employment opportunities. You may remove your permission at any time through written instructions to us.

Date: .....

....

Please sign your name Print your name

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LOGO/ORGANIZATION LETTERHEAD

Trade skills summary and gap analysis

Client name:

Address:

City: Postal code:

Telephone:

Interviewing counsellor:

Date:

JOB OBJECTIVE:

Previous trade experience

This client has completed a **trade skills competency chart** with the assistance of his/her employment counsellor. The client's responses have been analyzed and summarized, as follows:

Major competencies: skills, knowledge and abilities

Skills gaps

The client does not have experience with the following:

.....

.....

.....

.....

.....

.....

Recommendations

The client may choose one of the following options as a next step:

.....

.....

.....

.....

.....

.....

Date: .....

....

Client's signature **Counsellor's signature**

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The employment portfolio

To our client:

It is a good idea to keep in one place all the information you will need when you are applying for a job. This information will include, for example:

- diplomas and certificates
- letters of reference
- your job history
- your education history
- resume

And more!

We suggest that you create an **employment portfolio** that will contain all the required information and documents. You can take this portfolio with you when you go to a job interview.

- The employment portfolio will help you to talk to the employer about what you know and what you can do.
- The employment portfolio will contain the proof of your skills and knowledge in the form of certificates, diplomas, transcripts and other formal documents.

Many people use a binder for their portfolio. If you do this, be sure to use plastic sleeves to protect your valuable documents rather than punching holes in them to put them directly into the binder.

The next two pages include suggestions for what your portfolio could contain.

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Portfolio Checklist

✓	Portfolio item	What it is
	Title page	Your name and contact information
	Introduction (cover letter)	This page is a short letter to your employer. In this letter you will • introduce yourself, • state your job objective, and • say why you are qualified to do this job. This letter should only include two or three paragraphs. Ask your employment counsellor for an example of a "cover letter" and for some suggestions on how to write a good letter.
	Resume	Make sure your resume matches the job you are applying for. You may need to change it a little each time you apply for a different job. Ask your employment counsellor for an example of a resume and some suggestions on how to write a good resume.
	Job summary	Your job summary should contain the following information for each job you have had: • job title • name of company • address and telephone number of company • dates worked at this company • contact person at the company • duties performed for the company • skills used and knowledge required to do these duties • tools and equipment used • personal characteristics (qualities) required for this job **For assistance in writing your job summary, ask your employment counsellor for the hand-out called "Job summary"**
	Education history	Your education history should include the following: • name of educational institutions • city, province, country where the education institutions are located • dates attended • degrees, diplomas or certificates received
	Awards or other honours	Have you received special recognition for work you have done? This might be an award, a special letter of congratulations or appreciation, or a newspaper article about you. Remember to protect these valuable items in a plastic sleeve.
	Transcripts	You may include transcripts with the grades and marks you received in the educational institutions you have attended. Remember to protect these valuable items in a plastic sleeve.
	Certificates, diplomas	You may include the certificates and diplomas you have received. Remember to protect these valuable items in a plastic sleeve.
	Letters of reference	If you have letters of reference from previous employers or from others who recommend your work or your good character, you may include them. Again – do not punch holes in them for the binder but rather put them in plastic sleeves to protect them.

The following is a space for you to add your own ideas

✓	Portfolio item	What it is

The job summary

A job summary provides information about the work you have done in the past. Here is a suggestion for how to do a job summary that is short and has all the information an employer will want.

For each job you list, include the following:	Explanation
Job Title	For example: Carpenter
Name of company	
Address and telephone number of company	
Dates you worked at this company	
Contact person at the company	For example: your supervisor, the person who hired you or the head of personnel.
Duties performed for the company	List the tasks you did.
Skills used and knowledge required to do these duties	What knowledge did you need and what skills did you use in order to do the job?
Tools and equipment used	What tools did you use? What machines did you operate?
Personal characteristics required for this job	

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Skilled trades included in the *FCSA Workbook*

- BOILERMAKER
- BRICKLAYER
- CARPENTER
- CONCRETE FINISHER
- CONSTRUCTION ELECTRICIAN
- FLOOR COVERING INSTALLER
- GLAZIER
- HEAVY-DUTY EQUIPMENT MECHANIC
- INDUSTRIAL INSTRUMENT TECHNICIAN/MECHANIC
- INSULATOR (HEAT AND FROST)
- IRONWORKER
- LATHER
- MACHINIST
- MILLWRIGHT
- MOBILE CRANE OPERATOR
- PAINTER AND DECORATOR
- PLUMBER
- POWER LINE TECHNICIAN
- REFRIGERATION AND AIR CONDITIONING MECHANIC
- ROOFER
- SPRINKLER SYSTEM FITTER
- SHEET METAL WORKER
- STEAMFITTER/PIPEFITTER
- STEEL FABRICATOR
- TILESETTER
- WELDER

Trade skills competency charts

TRADE TITLE: Boilermaker (NOC: 7262)

DESCRIPTION: Boilermakers fabricate, assemble, erect, test, maintain and repair boilers, vessels, tanks towers, heat exchangers and other heavy metal structures.

OTHER TITLES: Construction Boilermaker, Boiler Fitter, Boiler Installer, Industrial Boilermaker, Marine Boilermaker, Pressure Vessel Fabricator

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Steel Fabricator, Steamfitter

MAJOR SKILLS		Can do	Cannot do
Use tools	Hand tools	❍	❍
	Power tools	❍	❍
	Grinding tools	❍	❍
	Hydraulic tools	❍	❍
	Gasoline-powered tools	❍	❍
	Precision tools	❍	❍
	Pneumatic tools	❍	❍
Use shop fabrication equipment	Use material handling equipment	❍	❍
	Use band saws, cut off saw	❍	❍
	Use drill presses	❍	❍
	Use ironworks	❍	❍
	Use brakes	❍	❍
	Use shears	❍	❍
	Use benders, power rolls	❍	❍
Use oxy-fuel processes	Set-up oxy-fuel equipment	❍	❍
	Operate oxy-fuel burning equipment	❍	❍
	Braze and weld using oxy-fuel systems	❍	❍
	Understand flame straightening techniques	❍	❍
Rigging	Use fibre ropes	❍	❍
	Use wire ropes	❍	❍
	Understand load mass (weighting) and centre of gravity	❍	❍
	Understand rigging communication	❍	❍
	Use tuggers and hoists	❍	❍
	Use cranes and boom trucks	❍	❍

▶

Notes Notes Notes Notes Notes Notes Notes Notes

MAJOR SKILLS		Can do	Cannot do
Blueprint reading	Interpret drawing plans and specifications	❍	❍
	Follow list of materials on drawings	❍	❍
Welding processes	Identify welding joint symbols	❍	❍
	Identify welding equipment	❍	❍
	Identify welding consumables	❍	❍
	Apply welding procedures	❍	❍
Apply fitting techniques	Use jigs	❍	❍
	Use plate fitting techniques	❍	❍
	Use distortion control	❍	❍
	Install fitting	❍	❍
	Apply bolt-up techniques	❍	❍
	Perform testing techniques	❍	❍
Apply tube expansion techniques	Describe tube expansion procedure	❍	❍
	Use tube removal, installation and expansion tools	❍	❍
	Apply test procedures	❍	❍
Apply layout techniques	Use layout tools (tapes, dividers, chalk lines, etc.)	❍	❍
	Use triangulation (how to square a plate)	❍	❍
	Develop templates (parallel line, radial line, triangulation)	❍	❍

TRADE TITLE: Bricklayer (NOC: 7281)

DESCRIPTION: Bricklayers lay bricks, concrete blocks, stone and other similar materials to construct or repair walls, arches, chimneys, fireplaces and other structures in accordance with blueprints and specifications. They work on commercial, residential and industrial applications.

OTHER TITLES: Brick Mason, Refractory Bricklayer, Stonecutter, Mason, Stonemason

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Concrete Finisher, Drywall Finisher

MAJOR SKILLS		Can do	Cannot do
Drawings and reference materials	Read residential and commercial drawings	❍	❍
	Identify specific information from the *Building Code*	❍	❍
	Estimate material quantities and identify construction details	❍	❍
	Identify required permits and inspections	❍	❍
	Sketch and draw simple details	❍	❍
Tools of the trade	Use and maintain hand tools, cutting tools, edge-cutting tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain masonry saw	❍	❍
	Use and maintain portable power tools	❍	❍
Build fireplaces and chimneys	Select types of materials	❍	❍
	Lay out projects	❍	❍
	Select, use and install fireplace components	❍	❍
Rigging and hoisting	Use scaffolds and ladders	❍	❍
	Use fibre ropes, tie knots, bends and hitches	❍	❍
	Use hoisting equipment	❍	❍
	Use visual and audio signals when lifting	❍	❍
	Construct and use specific scaffolds	❍	❍
	Calculate load weights	❍	❍
Build ornamental masonry	Build arches	❍	❍
	Build corbels	❍	❍
	Install copings and caps	❍	❍
	Install cultured masonry, sculptured masonry, terracotta	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install acid proof work	Know about types of acid proof materials	❍	❍
	Lay out acid proof projects	❍	❍
	Select tools and equipment	❍	❍
	Select acid proof materials	❍	❍
	Select and install acid proof system	❍	❍
Install brick	Select tools and equipment	❍	❍
	Select brick and materials	❍	❍
	Clean and seal surface	❍	❍
	Lay out brick project	❍	❍
	Lay brick and tool joints	❍	❍
Concrete block	Select tools and equipment	❍	❍
	Select concrete block and materials	❍	❍
	Lay out concrete block project	❍	❍
	Lay concrete block and tool joints	❍	❍
Glass block	Install connectors and reinforcing	❍	❍
	Install expansion strips and caulking	❍	❍
	Lay glass block, apply mortar and grout	❍	❍
Insulation and barrier	Select materials for insulation and barrier	❍	❍
	Prepare substratum	❍	❍
	Apply barrier	❍	❍
	Apply insulation	❍	❍
Masonry connectors	Select and use anchor connectors	❍	❍
	Identify types of connectors	❍	❍
Install pavers	Identify types of pavers	❍	❍
	Select tools and equipment	❍	❍
	Prepare surface, layout project	❍	❍
	Select materials, clean and seal, install pavers	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Refractory	Identify types of refractory materials	❍	❍
	Lay out refractory project	❍	❍
	Select refractory system, install	❍	❍
Stone	Identify types of materials	❍	❍
	Select materials, anchoring system	❍	❍
	Lay out project, place/set stone	❍	❍
Perform restoration work	Identify problem and determine corrective action required	❍	❍
	Identify existing materials and conditions	❍	❍
	Select materials and use new when required	❍	❍
	Apply corrective action	❍	❍
Mortar application	Identify types of mortar	❍	❍
	Select materials for mortar mix, apply mortar, test mortar	❍	❍
	Operate mortar and grout pumps	❍	❍

TRADE TITLE: Carpenter (NOC: 7271)

DESCRIPTION: Carpenters construct, erect, install, maintain and repair structures and components of structures made of wood, wood substitutes and other materials. They work on commercial, residential and industrial applications and are an essential trade in the construction sector.

OTHER TITLES: Finish Carpenter, Maintenance Carpenter, Renovation Carpenter, Rough Carpenter

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Cabinet Maker, Joinery/Benchwork

MAJOR SKILLS		Can do	Cannot do
Planning and use of drawings	Read residential and commercial drawings	❍	❍
	Identify specific information from the *Building Code*	❍	❍
	Estimate material quantities and identify construction details	❍	❍
	Identify required permits and inspections	❍	❍
	Sketch and draw simple details and concrete form details	❍	❍
Tools of the trade	Use and maintain, cutting tools, edge cutting tools, drilling and boring tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain fastening tools	❍	❍
	Use and maintain portable power tools, powder-actuated tools	❍	❍
	Use concrete drilling, chipping and grinding tools	❍	❍
Identify materials	Know characteristics of wood	❍	❍
	Select framing and finish lumber, panel products	❍	❍
	Select and use fasteners, adhesives and caulking compounds	❍	❍
	Select and use finish and framing hardware	❍	❍
	Know types of concrete, materials, adhesives and treatments	❍	❍
	Calculate quantities of concrete	❍	❍
Rigging and hoisting	Use scaffolds and ladders	❍	❍
	Use fibre ropes, tie knots, bends and hitches	❍	❍
	Use hoisting equipment	❍	❍
	Use visual and audio signals when lifting	❍	❍
	Construct and use specific scaffolds and swing stages	❍	❍
Shop equipment	Use and maintain table saw, radial arm saw, band saw, panel saw	❍	❍
	Use and maintain drill press, jointer, thickness planer, sanding machine, shaper	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Site layout	Use optical levels, electronic instruments	❍	❍
	Identify site conditions	❍	❍
	Lay out building locations	❍	❍
	Build batter boards, set lines and square corners	❍	❍
	Use and know about drainage systems	❍	❍
Concrete formwork	Build forms for footings, walls, stairs	❍	❍
	Build forms for suspended slab and slab on grade	❍	❍
	Use methods of placing, finishing and curing concrete	❍	❍
	Place embedded metal devices, frames, dock levellers in concrete	❍	❍
	Use stripping techniques on concrete formwork	❍	❍
	Use pre-stressed concrete and know why it's used	❍	❍
Residential housing	Explain types of wood frame construction	❍	❍
	Build foundations, floors, walls and partitions	❍	❍
	Know about types of roofs, gable with ceiling joists, hip roofs, intersecting, unequal pitch intersecting	❍	❍
	Know types of stairs, straight, stair with landing, winder, circular	❍	❍
Finishing materials	Apply roofing materials	❍	❍
	Install doors and windows	❍	❍
	Apply exterior finishes	❍	❍
	Apply wall finishes and trim	❍	❍
	Install suspended ceilings and movable partitions	❍	❍
	Build cabinets and apply plastic laminates	❍	❍
Insulation, energy conservation barriers	Use insulation materials and air and vapour barriers	❍	❍
	Use energy conservation construction methods	❍	❍
Special construction features	Build special framing	❍	❍
	Use treated wood and preserved wood foundations	❍	❍
	Use heavy timbers construction	❍	❍
	Use pile foundations and shoring	❍	❍
	Install steel-stud framing and wallboard	❍	❍

TRADE TITLE: Concrete Finisher (NOC: 7282)

DESCRIPTION: Concrete Finishers smooth and finish freshly poured concrete, apply curing or surface treatments and install, maintain and restore various masonry structures such as floors, ceilings, sidewalks, patios and roads.

OTHER TITLES: Cement Mason, Concrete Mason, Precast Concrete Finisher

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Mason, Bricklayer, Stonemason

MAJOR SKILLS		Can do	Cannot do
Planning and use of drawings	Read residential and commercial drawings	❍	❍
	Identify specific information from the *Building Code*	❍	❍
	Estimate material quantities and identify construction details	❍	❍
	Identify required permits and inspections	❍	❍
	Sketch and draw simple details and concrete form details	❍	❍
Tools of the trade	Use and maintain hand tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain portable power tools, powder-actuated tools	❍	❍
	Use concrete drilling, chipping and grinding tools	❍	❍
Site preparation, place concrete	Carry out site inspection	❍	❍
	Prepare formwork	❍	❍
	Prepare for concrete placement	❍	❍
	Place concrete	❍	❍
	Use of different types of concrete, materials, adhesives and treatments	❍	❍
	Calculate quantities of concrete	❍	❍
Concrete finishing	Estimate time required for concrete to set	❍	❍
	Float concrete	❍	❍
	Finish all edges and joints	❍	❍
	Trowel concrete	❍	❍
	Apply curing system	❍	❍
Concrete curing and protection	Use protection system for concrete	❍	❍
	Install protection for concrete	❍	❍
	Use stripping techniques on concrete forms	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Jointing	Make and install control joints	❍	❍
	Clean and fill joints	❍	❍
	Use and knowledge of drainage systems	❍	❍
Restoration work, correct, repair and modify	Conduct inspection for all defects	❍	❍
	Perform repairs	❍	❍
	Use methods of placing, finishing and curing concrete on repairs	❍	❍
	Repair concrete	❍	❍
	Cut and core concrete	❍	❍
Specialty concrete	Use specialty concrete installations	❍	❍
	Install specialty concrete	❍	❍
	Install high tolerance floors	❍	❍
	Install grouts	❍	❍
Architectural finishes	Apply architectural finishes	❍	❍
	Use texturing techniques	❍	❍
	Apply texturing techniques	❍	❍
Material handling equipment	Know about types of equipment to move concrete	❍	❍
	Operate material handling equipment	❍	❍
Install concrete grouting	Use concrete grouting	❍	❍
	Install concrete grouting	❍	❍
Install acid proof work	Use acid proof work	❍	❍
	Install acid proof work	❍	❍

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TRADE TITLE: Construction Electrician (NOC: 7241)

DESCRIPTION: Construction Electricians work in a wide variety of residential, commercial and industrial construction buildings and facilities projects, on everything from lighting and climate control systems to communication equipment. They use many specific tools and devices. A Construction Electrician's work involves assembling, installing, commissioning, testing, maintaining, servicing and operating electrical systems and equipment.

OTHER TITLES: Electrical Construction, Electrician, Electrician (Construction), Electrician – Construction and Maintenance

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Industrial Instrument Mechanic, Industrial Electrician

MAJOR SKILLS		Can do	Cannot do
Test equipment	Measure current, resistance, voltage, and power and energy with meters	❍	❍
Conductors and raceways	Install conductors	❍	❍
	Install raceways	❍	❍
	Extract electrical information from construction drawings	❍	❍
Transformers and protective equipment	Install and connect single and three-phase transformers	❍	❍
	Install and connect instrument transformers	❍	❍
DC machines and controls	Install and connect DC generators	❍	❍
	Install and connect DC motors and motor controllers	❍	❍
AC motors and motor controls	Install and operate single-phase motors	❍	❍
	Connect and operate three-phase motors	❍	❍
	Connect and operate manual and magnetic motor starters	❍	❍
	Install and operate pilot and auxiliary motor control devices	❍	❍
Lighting circuits	Install and operate incandescent, fluorescent and high intensity lighting	❍	❍
	Discharge high intensity discharge (HID) lighting circuits	❍	❍
	Install and operate emergency lighting equipment	❍	❍
Emergency power systems	Install and operate automatic transfer switches	❍	❍
	Install standby power generating systems	❍	❍
	Install uninterruptible power supply systems (UPS)	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Programmable logic controllers and automatic control systems	Install and maintain programmable logic controllers (PLC)	❍	❍
	Install input/output field devices	❍	❍
	Install control system protective devices	❍	❍
Power distribution and system controls	Install services	❍	❍
	Install and terminate cables	❍	❍
	Install high voltage (1,000 volts and more) power distribution systems	❍	❍
	Install low voltage (300 volts and less) power distribution systems	❍	❍
	Install and operate alternators	❍	❍
	Install electrical components of heating and cooling systems	❍	❍
	Install building automation systems	❍	❍
	Install and test fire alarm system	❍	❍
Solid state devices and computers	Install and operate common computer programs	❍	❍
	Install circuit protection devices	❍	❍
	Install and maintain solid state devices	❍	❍

TRADE TITLE: Floor Covering Installer (NOC: 7295)

DESCRIPTION: A Floor Covering Installer is a skilled worker who installs carpets, wood, linoleum, vinyl, and other resilient floor coverings in commercial, residential, institutional and industrial buildings.

OTHER TITLES: Carpet Installer, Carpet Layer, Floor Covering Mechanic, Resilient Floor Installer, Rug Installer, Vinyl Floor Installer

MAJOR SKILLS		Can do	Cannot do
Planning and drawing	Read residential and commercial drawings	❍	❍
	Estimate material quantities and identify construction details	❍	❍
	Sketch and draw simple details	❍	❍
Tools of the trade	Use and maintain hand tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain portable power tools	❍	❍
Prepare sub-floors	Identify sub-floor types	❍	❍
	Identify underpayment panels	❍	❍
	Perform and meet moisture test requirements	❍	❍
	Apply patching and levelling compounds	❍	❍
	Rectify contaminated sub-floors	❍	❍
	Remove existing floor covering	❍	❍
	Perform preparation procedures for specialty sub-floors	❍	❍
	Interpret field test results	❍	❍
Carpet products	Use trims and edge finishes	❍	❍
	Know about tackless strips	❍	❍
	Know carpet cushion types	❍	❍
	Know types of carpet construction	❍	❍
	Know types of carpet fibres	❍	❍
	Know types of adhesives and sealers	❍	❍
	Use hot-melt seaming tapes	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Identify resilient products	Correctly handle and store material	❍	❍
	Identify resilient sheet vinyls	❍	❍
	Identify resilient tiles	❍	❍
	Identify linoleum products	❍	❍
	Identify specialty resilient products	❍	❍
	Identify resilient floor adhesives and sealers	❍	❍
	Identify baseboard materials	❍	❍
	Identify resilient stair components	❍	❍
	Identify trims and finishes	❍	❍
Install carpet, conventional method	Install tackless strip, edge trims, carpet cushion	❍	❍
	Determine carpet seam placement, install seam carpet	❍	❍
	Install tufted construction carpet	❍	❍
	Install woven carpet	❍	❍
	Install patterned carpet	❍	❍
	Install carpet with borders and insets	❍	❍
	Install carpet to stairs by conventional methods	❍	❍
	Perform specialized work	❍	❍
Install carpet, glue-down method	Select adhesives	❍	❍
	Lay out and prepare seams	❍	❍
	Apply adhesives	❍	❍
	Fit and finish carpet	❍	❍
	Install carpet with borders and insets	❍	❍
	Install carpet to stairs, walls	❍	❍
	Perform a double-bond carpet installation	❍	❍
	Repair glue-down carpet	❍	❍
	Install carpet tiles	❍	❍
Install resilient tile	Prepare sub-floor for resilient tile	❍	❍
	Do layout and grid lines	❍	❍
	Select adhesives	❍	❍
	Place tiles	❍	❍
	Scribe and fit resilient tiles	❍	❍
	Insert resilient tiles on stairs	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install resilient sheets	Prepare sub-floor for resilient sheets	❍	❍
	Fit the resilient sheet flooring using freehand method	❍	❍
	Install resilient sheet flooring using flat-lay method	❍	❍
	Apply scribe-fitting techniques	❍	❍
	Apply seam techniques	❍	❍
	Match patterns	❍	❍
	Install flash coving, borders and insets	❍	❍
	Install resilient tension floors	❍	❍
	Install resilient sheet flooring to stairs	❍	❍
	Repair resilient sheet installations	❍	❍
	Perform seam welding procedures	❍	❍
Install specialty resilient products	Install moulded stair products	❍	❍
	Install safety floors	❍	❍
	Install rubber floor products	❍	❍
	Install asphalt plank flooring	❍	❍
	Install resilient wall coverings	❍	❍
	Install conductive floors	❍	❍
Install pre-finished hardwood and laminate floors	Determine sub-floor requirements for hardwood and laminate floors	❍	❍
	Able to do layout and measurement procedures	❍	❍
	Glue and clamp hardwood and laminate floors	❍	❍
	Repair hardwood and laminate floors	❍	❍

TRADE TITLE: Glazier (NOC: 7292)

DESCRIPTION: Glaziers cut, fit, install and replace glass in residential, commercial and industrial buildings, on exterior walls of buildings and other structures, and in furniture and other products.

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Glazier and Metal Mechanic, Plate Glass Installer, Structural Glass Installer, Stained Glass Glazier, Automotive Glazier

MAJOR SKILLS		Can do	Cannot do
Tools and equipment	Identify shop tools	❍	❍
	Operate power-activated tools	❍	❍
	Sharpen drill bits	❍	❍
	Use power tools	❍	❍
	Use metal fabrication tools	❍	❍
	Use glass-cutting tools	❍	❍
	Use hand and power cups	❍	❍
	Use level, transit and laser	❍	❍
Blueprint reading	Understand common symbols and abbreviations	❍	❍
	Read architectural and shop blueprints	❍	❍
	Use architectural scale rules	❍	❍
	Follow floor plans, sections, elevations and details	❍	❍
	Follow door and window schedules	❍	❍
	Use cutting lists	❍	❍
	Make simple sketches and drawings	❍	❍
Handling glass	Know the basic use of knots and splicing methods	❍	❍
	Experience in lifting glass and sealed units	❍	❍
	Familiar with crating and uncrating glass	❍	❍
	Familiar with slinging loads for lifting and hoisting	❍	❍
Cut glass mirrors	Cut plastics and acrylics	❍	❍
	Describe types of glass and glass products	❍	❍
	Familiar with glass properties and process	❍	❍
	Describe glass and mirror edge work	❍	❍
	Use cutting tables	❍	❍
	Cut glass and mirrors using cutting machines	❍	❍
	Drill and notch holes in glass mirrors	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Glazing systems and glass	Understand glazing systems	❍	❍
	Understand structural glazing	❍	❍
	Use formulas for measuring glazing systems	❍	❍
	Install auto glass	❍	❍
	Install curtain wall glazing	❍	❍
	Install door and vent windows	❍	❍
	Glaze putty frames, gasket systems, showcases	❍	❍
	Glaze store front	❍	❍
	Glazing of total vision	❍	❍
	Install suspended glazing	❍	❍
Caulking and sealants	Familiar with wind seals, wind load, and dead load	❍	❍
	Experienced in mixing three-part sealant	❍	❍
	Select correct types of shims	❍	❍
	Familiar with application of caulking and sealants	❍	❍
	Supply silicon glass systems	❍	❍
Metal and aluminium frames	Use spigots	❍	❍
	Determine material requirements	❍	❍
	Select appropriate fasteners	❍	❍
	Drill and tap	❍	❍
	Familiar with cutting various metals including aluminium	❍	❍
	Install frames and hardware	❍	❍

TRADE TITLE: # Heavy-Duty Equipment Mechanic (NOC: 7312)

DESCRIPTION: Heavy-Duty Equipment Mechanics repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in construction, transportation, forestry, mining, oil and gas, material handling, landscaping, land clearing, farming and similar activities.

OTHER TITLES: Construction Equipment Mechanic, Diesel Mechanic, Farm Equipment Mechanic, Heavy-Duty Equipment Technician, Heavy Equipment Mechanic, Heavy Mobile Logging Equipment Mechanic, Locomotive Mechanic, Tractor Mechanic

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Marine Diesel Engine Mechanic, Diesel Engine Mechanic, Commercial Transport Mechanic, Fuel-Injection Mechanic

MAJOR SKILLS		Can do	Cannot do
Manuals and documentation	Store and transfer electronic data	❍	❍
	Access information using printed material, manuals	❍	❍
	Use and follow diagnostic and troubleshooting flow charts	❍	❍
	Interpret drawings and specifications	❍	❍
	Use documentation for work orders, warranties, service records	❍	❍
Tools of the trade	Use mechanic's hand tools, power metal working tools	❍	❍
	Use shop cleaning tools	❍	❍
	Use measuring and testing devices, e.g., gauges, meters, precision tools	❍	❍
	Use shop tools, air-operated tools, hydraulic press	❍	❍
Welding practices	Use oxy-acetylene equipment for cutting and welding	❍	❍
	Assemble, test, light, adjust, shut down, disassemble oxy-acetylene equipment	❍	❍
	Use arc welding equipment on ferrous metals	❍	❍
Rigging and hoisting	Select, use, attach rigging equipment	❍	❍
	Know and use hand signals	❍	❍
	Block and crib components and equipment	❍	❍
	Use jacks	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Hydraulic systems	Service pumps and motors, valves, cylinders and seals	❍	❍
	Service hydraulic system heat exchangers and accumulators	❍	❍
	Service, analyze, troubleshoot advanced hydraulic systems	❍	❍
	Service hydraulic braking system components	❍	❍
	Perform preventive maintenance on hydraulic braking systems	❍	❍
	Troubleshoot hydraulic braking systems	❍	❍
Pneumatic systems	Service industrial air compressors	❍	❍
	Service air starting systems, air-operated controls, accessories, air dryers	❍	❍
	Service air brake systems and components	❍	❍
	Perform preventive maintenance on air brake systems	❍	❍
	Troubleshoot air brake systems	❍	❍
Engines and engine support systems	Remove, disassemble, store and reinstall diesel engine	❍	❍
	Service all diesel engine components	❍	❍
	Install fuel system components and perform cold tune-up	❍	❍
	Perform pre-start and operating checks and engine tune-up	❍	❍
	Service cooling, lubrication, air induction, exhaust and electrical/ electronic sentinel systems	❍	❍
	Remove, disassemble, recondition, assemble, install all types of fuel systems and components	❍	❍
Drive train	Service clutches, single plate, double plate, linkage mechanisms and flywheels	❍	❍
	Service torque converters, fluid couplings and retarder components	❍	❍
	Service automatic transmissions, power shift transmissions	❍	❍
	Remove, disassemble, recondition, assemble, install driveline, bearings and seals	❍	❍
	Service standard and auxiliary transmissions	❍	❍
Steering and suspension	Remove, disassemble, recondition, assemble, install power-steering and components	❍	❍
	Perform preventative maintenance on power-steering systems	❍	❍
	Service track-type machine final drives, steering, undercarriages and working attachments	❍	❍
	Service wheel machine front spring suspension systems, steering and working attachments	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Electrical, electronic systems	Remove, disassemble, replace or recondition, assemble, install electrical systems and components	❍	❍
	Repair or replace electrical wire harnesses	❍	❍
	Remove, install, replace electronic systems components	❍	❍
	Program new electronic system components	❍	❍
	Perform calibration/adjustment procedures	❍	❍
Climate controls, accessories	Service and repair heating systems and components	❍	❍
	Service and repair ventilation systems and components	❍	❍
	Service and repair air conditioning systems and components	❍	❍
	Remove, disassemble, replace or recondition, assemble, install structural components, attachments and accessories	❍	❍
	Remove, repair or replace all operator cab components	❍	❍

TRADE TITLE: Industrial Instrument Technician/Mechanic (NOC: 2243)

DESCRIPTION: industrial Instrument Technicians and Mechanics install, repair, maintain, and adjust instruments used to measure and control industrial processes such as pulp and paper manufacturing and petrochemical production. These types of instruments are typically used for controlling factors such as the following:

- flow of gases or liquids,
- temperature of materials or stages of a process,
- pressure maintained during a process, and
- level of a material used or created during a process.

OTHER TITLES: Industrial Instrumentation, Instrument Mechanic, Instrumentation and Control Technician

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Industrial Electrician, Construction Electrician, Electronic Communication Technician

MAJOR SKILLS		Can do	Cannot do
DC electricity	Use measuring devices and troubleshoot DC circuits	❍	❍
	Assemble series and parallel circuits	❍	❍
	Assemble combination DC circuits	❍	❍
AC electricity, electronic equipment and wiring installation	Assemble and troubleshoot ladder logic circuits	❍	❍
	Use AC measuring devices and test equipment	❍	❍
	Assemble and test basic electronic circuits	❍	❍
	Install cabling including fibre optical cabling	❍	❍
	Install field devices	❍	❍
Tubing, fittings and air supply	Bend and install tubing and fittings	❍	❍
	Pressure-test installation	❍	❍
	Service, test and troubleshoot air systems	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Measurement: pressure, level, temperature, flow, density, consistency, viscosity, weight, vibration speed	Use pressure test equipment	❍	❍
	Repair and calibrate pressure devices	❍	❍
	Install pressure gauges and transmitters	❍	❍
	Install, repair and calibrate level measuring devices	❍	❍
	Install, repair and calibrate temperature measuring devices	❍	❍
	Install, repair and calibrate flow meters	❍	❍
	Install density measuring devices	❍	❍
	Repair and calibrate density meters	❍	❍
	Repair and calibrate consistency meters	❍	❍
	Install consistency measuring devices	❍	❍
	Install, repair and calibrate weight measuring devices	❍	❍
	Measure vibration and speed	❍	❍
Process gases	Measure: H_2s, CO, CO_2, O_2 and combustibles	❍	❍
	Use gas chromagraph	❍	❍
Environmental protection devices	Install, repair and calibrate indicators and recorders	❍	❍
	Measure: Ph, ORP and specific ion, conductivity, stack gases	❍	❍
Signal conditioners, digital electronics, computers	Install, calibrate, troubleshoot and repair signal conditioners	❍	❍
	Test digital circuits	❍	❍
	Program and troubleshoot programmable logic controllers (PLC)	❍	❍
Regulators and relief valves controllers	Install and maintain regulators and relief valves	❍	❍
	Repair self-actuating temperature controllers	❍	❍
	Install, repair and maintain pneumatic controllers	❍	❍
	Install, repair and maintain electronic controllers	❍	❍
	Read and make loop diagram	❍	❍
Final control elements	Repair and maintain control valves	❍	❍
	Repair and maintain actuators	❍	❍
	Repair and setup valve positioners	❍	❍
	Select and maintain solenoid valves	❍	❍
Process control	Tune control loops	❍	❍
	Troubleshoot process loops	❍	❍

TRADE TITLE: Insulator (Heat and Frost) (NOC: 7293)

DESCRIPTION: Heat and Frost Insulators cover exposed surfaces of pipes, steam generators, ducts, process vats and related equipment using a variety of insulating materials. The materials can not only reduce the transfer of heat and cold from plumbing, heating, cooling and refrigeration systems, they also reduce noise and a chance of fire. Heat and Frost Insulators work on a wide variety of commercial and industrial sites.

MAJOR SKILLS		Can do	Cannot do
Planning and drawings	Read blueprints and specifications	❍	❍
	Read and interpret technical drawings and manuals	❍	❍
	Sketch and draw simple details	❍	❍
	Use scale rulers	❍	❍
	Develop layout for fittings	❍	❍
Tools of the trade	Use and maintain hand and power tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain cutting tools	❍	❍
	Use and maintain fastening tools	❍	❍
	Use portable pin welding machines	❍	❍
	Use sheet metal tools and equipment	❍	❍
Rigging, ladders and scaffolds	Use and maintain ladders and boatswain chairs	❍	❍
	Use and maintain scaffolding	❍	❍
	Use approved visual hand signals	❍	❍
	Use and maintain life lines and safety belts	❍	❍
	Use fibre ropes, knots, bends and hitches	❍	❍
Apply adhesives	Select appropriate adhesives	❍	❍
	Prepare surfaces for adhesive application	❍	❍
	Apply adhesives	❍	❍
	Use thinners and solvents for adhesives and materials	❍	❍
	Use temperature scale for adhesives	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Apply insulation	Apply caulking	❍	❍
	Apply metal and plastic jacketing	❍	❍
	Select jacketing	❍	❍
	Apply insulation to heat-traced systems	❍	❍
	Insulate HVAC (heating, ventilation and air con) systems	❍	❍
	Insulate mechanical systems	❍	❍
	Fabricate materials for insulation	❍	❍
	Make various insulation pads	❍	❍
	Spray application of sealers and coatings	❍	❍
	Carry out underground installation of insulation	❍	❍
	Use and maintain spray equipment	❍	❍
Asbestos abatement procedure	Perform maintenance repair of damaged area	❍	❍
	Remove asbestos in high risk conditions	❍	❍
	Use procedures for encapsulation or enclosure of asbestos materials	❍	❍
	Use personal protective equipment for asbestos abatement	❍	❍
Layout techniques	Develop patterns for elbows, various seams on metal covers	❍	❍
	Lay out tees and equipment	❍	❍
	Lay out various geometric shapes	❍	❍
	Use and develop isometric drawings	❍	❍
	Use lines, symbols, scales and dimensions	❍	❍
Fire stopping and smoke sealing techniques	Installation offire stopping	❍	❍
	Calculate fire stopping applications	❍	❍
	Determine fire stopping and smoke sealing materials	❍	❍
Industrial application	Apply insulation of refractory applications (1,500EF+)	❍	❍
	Apply sealants	❍	❍
	Fabricate insulation for tanks, vessels and fittings	❍	❍
	Fabricate removable covers	❍	❍
	Install underground insulating systems	❍	❍
	Install insulation for thermal applications	❍	❍
	Install protective covers	❍	❍
	Insulate for fireproofing	❍	❍
	Insulate for soundproofing	❍	❍
	Insulate for cryogenic applications (-65oC to absolute zero)	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Lead abatement	Determine administrative requirement	❍	❍
	Perform lead abatement procedures	❍	❍
	Determine health effects	❍	❍
Types of insulation materials	Determine types and use of adhesives solvents and thinners	❍	❍
	Determine types and use of cements	❍	❍
	Determine types and use of insulation fasteners and reinforcing materials	❍	❍
	Determine types and use of loose-fill insulation materials	❍	❍
	Determine types and use of poured insulation materials	❍	❍
	Determine types and use of spray insulation materials	❍	❍
	Use types of tapes, vapour barriers and weatherproofing	❍	❍
	Use types of flexible and rigid insulation materials	❍	❍

TRADE TITLE: Ironworker (generalist) (NOC: 7264)

DESCRIPTION: Ironworkers fabricate, erect, hoist, install, repair and service structural ironwork, pre-cast concrete, concrete reinforcing materials, curtain walls, ornamental iron and other metals used in the construction of buildings, bridges, highways, dams and other structures and equipment. Ironworker is designated as ironworker (generalist) under the Interprovincial Red Seal Program.

OTHER TITLES: Iron Worker, Ironworker, Metal Building Systems Erector, Reinforcing Ironworker, Structural Steel Erector

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Metal Fabrication, Welder, Ornamental Ironworker

MAJOR SKILLS		Can do	Cannot do
Tools	Select and use basic construction hand tools to measure and lay up	❍	❍
	Use and maintain portable power tools	❍	❍
	Use structural connectors and fasteners	❍	❍
	Use architectural fasteners	❍	❍
	Use level and transit	❍	❍
	Use concrete anchors	❍	❍
Metal fabrication power equipment	Use shop material handling and hoisting equipment	❍	❍
	Use power shears	❍	❍
	Use power band saws	❍	❍
	Use power metal bending equipment	❍	❍
	Use a threading machine	❍	❍
Oxy-fuel cutting and fitting structural shapes	Identify proper procedures for operating oxy-fuel cutting and fitting equipment	❍	❍
	Cut, bevel and pierce various thickness of steel plate	❍	❍
	Fit structural shapes including angle-to-angle, channel-to-channel, and 45 and 90 degree pipe fit-ups	❍	❍
	Use oxy-fuel equipment to pre-heat, bend and straighten metals	❍	❍
	Use a portable cutting machine to cut a straight line and bevel on steel plate	❍	❍
	Use a plasma arc cutting machine to cut metal plate	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Shielded metal arc welding (SMAW)	Describe safe arc welding practices	❍	❍
	Identify SMAW process	❍	❍
	Identify types of welding machines and power sources	❍	❍
	Use various electrodes for SMAW	❍	❍
	Identify and correct weld faults, arc blow and distortions	❍	❍
	Interpret welding symbols	❍	❍
	Use arc carbon, arc cutting and gouging	❍	❍
	Perform SMAW	❍	❍
Apply rigging	Use fibre rope	❍	❍
	Use wire rope	❍	❍
	Use wire slings	❍	❍
	Describe and use different types and applications of rigging hardware	❍	❍
	Use mechanical and hydraulic jacks	❍	❍
	Use skids rollers, cribbing and blocking	❍	❍
	Use work platforms, staging and scaffolding	❍	❍
	Identify special lifting equipment	❍	❍
	Describe stake and deadhead anchors	❍	❍
	Demonstrate use of fibre and wire rope reeving	❍	❍
	Describe procedures for heavy rigging and marine rigging	❍	❍
	Demonstrate rigging calculations	❍	❍
Cranes, derricks and auxiliary hoisting equipment	Identify types of mobile and crawler cranes	❍	❍
	Identify types of climbing cranes	❍	❍
	Identify derrick types and their cableways	❍	❍
	Identify and operate auxiliary hoisting equipment	❍	❍
	Identify non-visual hoisting signals and communication	❍	❍
	Demonstrate all hand signals	❍	❍
	Describe steel erection procedures for cranes, derricks and auxiliary hoisting operations	❍	❍
	Describe conveyance equipment	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Structural steel erection	Describe steel construction and erection	❍	❍
	Demonstrate application of shims and wedges	❍	❍
	Demonstrate maintenance and inspection of structures	❍	❍
	Describe field fabrication and revision to repairs	❍	❍
	Identify structural components, connection types and details	❍	❍
	Demonstrate fitting and erection of metal decking	❍	❍
	Identify types of bridges and their components	❍	❍
	Describe the procedure for erecting false work	❍	❍
	Describe miscellaneous and architectural steel	❍	❍
	Fabricate curtain wall assembly	❍	❍
Concrete reinforcing fabrication and placement	Identify where rebar is to be placed to reinforce concrete components against common forces	❍	❍
	Select appropriate accessories and bar supports to maintain concrete clearance	❍	❍
	Identify rebar using standard industry bar markings, tags and colour code	❍	❍
Tendon placement for post tensioning	Describe types and methods of post tensioning concrete	❍	❍
	Describe tendon locations, size and layout of supports	❍	❍
	Pull tendons to stress with jacking equipment	❍	❍
Sketch and read drawings	Interpret basic drawings	❍	❍
	Interpret structural steel erection drawings for a pre-engineered building	❍	❍
	Interpret structural steel erection drawings	❍	❍
	Interpret architectural drawings	❍	❍
	Interpret steel fabrication detail drawings for component correctness and prepare a materials list	❍	❍

TRADE TITLE: Lather (Interior Systems Mechanic) (NOC: 7284)

DESCRIPTION: Lathers install ceiling systems and demountable walls, access flooring and partitions. They also install soundproofing, metal lath, drywall, exterior prefabricated wall panels, lead shielding and interior/exterior metal wall studs.

OTHER TITLES: Acoustical Ceiling Installer, Ceiling Installer, Drywall Applicator, Drywall Finisher, Drywall Installer and Finisher, Drywall Taper, Interior Systems Mechanic, Plasterer, Sheetrock Applicator, Wood Lather

MAJOR SKILLS		Can do	Cannot do
Planning and drawings	Read blueprints	❍	❍
	Use layout techniques	❍	❍
	Sketch and draw simple details	❍	❍
	Use an architect's scale rule	❍	❍
	Identify lines, symbols and abbreviations	❍	❍
Tools of the trade	Use and maintain hand tools	❍	❍
	Use measuring and layout tools	❍	❍
	Use and maintain cutting tools	❍	❍
	Use and maintain portable power tools	❍	❍
	Use powder-actuated tools	❍	❍
Rigging, ladders and scaffolds	Use and maintain saw horses, ladders and stilts	❍	❍
	Use and maintain scaffolding	❍	❍
	Use approved visual hand signals	❍	❍
	Use and maintain lifelines and safety belts	❍	❍
	Use fibre ropes, knots, bends and hitches	❍	❍
Install insulation	Use appropriate protective gear	❍	❍
	Install vapour barriers	❍	❍
	Install types of thermal and acoustical insulation	❍	❍
	Be aware of the dangers of using asbestos	❍	❍
	Use mechanical fasteners and adhesives	❍	❍
Install metal framing: non-load bearing	Cut, fit and fasten metal studs	❍	❍
	Use layout methods	❍	❍
	Use steel stud framing, build walls, ceilings and bulkheads	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install gypsum wallboard	Use cutting, fitting and fastening methods for wallboard	❍	❍
	Install different types of wallboard	❍	❍
	Use proper methods of handling and stacking	❍	❍
	Recognize problems when installing and finishing wallboard	❍	❍
Install beads and mouldings	Cut, fit and fasten beads and mouldings	❍	❍
	Install drywall and plaster beads	❍	❍
	Install drywall mouldings	❍	❍
	Install drywall and plaster expansion joints	❍	❍
	Know how and when to use different types of beads and moulding	❍	❍
Install fireproofing and soundproofing	Cut, fit and fasten fire and soundproofing materials	❍	❍
	Install materials for soundproofing walls and ceilings	❍	❍
	Know types of materials used for fire and soundproofing	❍	❍
Install suspended gypsum wallboard ceilings	Know cutting, fitting and fastening methods for wallboard	❍	❍
	Perform layout methods	❍	❍
	Install types of gypsum wallboard	❍	❍
	Use proper methods of handling and stacking	❍	❍
	Recognize problems when installing and finishing wallboard	❍	❍
Install acoustical ceilings	Know cut, fit and fasten methods for acoustical ceiling	❍	❍
	Install acoustical ceilings	❍	❍
	Perform layout methods	❍	❍
	Use different types of acoustical ceiling material	❍	❍
Apply metal lath and wire	Know cut, fit and fasten methods for metal lath	❍	❍
	Install types of wire	❍	❍
	Install types of lath	❍	❍
Install metal lath and ceilings	Apply metal lath and ceiling types layout methods	❍	❍
	Know cut, fit and fastening methods for metal lath and ceiling types	❍	❍

TRADE TITLE: Machinist (NOC: 7231)

DESCRIPTION: Machinists set-up and operate machines. They must possess a wide range of knowledge and skills, including the ability to read engineering drawings, do layout procedures, and use mathematics, as well as machining and assembly. They must be able to work with and communicate with other tradespeople in related metal trades.

OTHER TITLES: Fitter/Turner, Turner, Tool and Die, Engine Machinist, Automotive Machinist, CNC Machinist

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Millwright, Specialist Machinist (e.g., Cutter Grinder, Horizontal Drilling Machine Operator)

MAJOR SKILLS		Can do	Cannot do
Planning and use of drawings	Read and interpret drawings, blueprints and sketches	❍	❍
	Know first-angle and third-angle projection	❍	❍
	Know symbols such as surface finishes, scales and tolerances	❍	❍
	Read documents such as work orders, technical data, reference manuals	❍	❍
	Plan work and work activities	❍	❍
Tools of the trade	Identify and use common hand tools, portable power tools	❍	❍
	Maintain and store hand tools and portable power tools	❍	❍
	Use measuring tools such as micrometers, vernier calipers, gear tooth verniers, protractors, sine bars and gauge blocks	❍	❍
	Use layout tools, height gauges, angle plates, scribers	❍	❍
Bench work	Select correct file type and know filing technique	❍	❍
	Use hand saws and know sawing technique, types of saw blades	❍	❍
	Use tools such as drills, reamers and hones	❍	❍
	Use taps and dies	❍	❍
	Identify types of fasteners and tools	❍	❍
Rigging and hoisting	Use rigging and lifting procedures	❍	❍
	Determine load weight	❍	❍
	Use basic body mechanics for lifting and moving equipment	❍	❍
	Use visual and audio signals when lifting	❍	❍
	Test physical properties of materials	❍	❍
	Identify non-metals	❍	❍
	Identify ferrous and non-ferrous metals	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Lathes	Identify engine lathes, turret lathes and vertical lathes	❍	❍
	Do set-up, turning, threading, drilling, boring and grinding	❍	❍
	Calculate speeds and feeds, turn internal and external surfaces	❍	❍
	Select size and type of cutting tools, boring bars, parting tools	❍	❍
Grinders	Identify surface, cylindrical and centreless tool and cutter grinder	❍	❍
	Select and maintain grinding wheels	❍	❍
	Mount, balance, true and dress grinding wheels	❍	❍
	Calculate speeds and feeds, and depth of cuts	❍	❍
Drilling machines	Identify radial arm drill, bench and floor drills	❍	❍
	Know sizes and types of cutting tools	❍	❍
	Do centre drilling, drilling, counter-boring, countersinking, spot facing, tapping and reaming	❍	❍
	Calculate speeds and feeds, and set-up work pieces	❍	❍
Milling machines	Identify vertical, horizontal, ram and turret milling machines	❍	❍
	Set-up work pieces with holding devices	❍	❍
	Calculate speeds and feeds	❍	❍
	Use cutting tools, boring bars, end mills and face mills	❍	❍
	Do facing, contouring, t-slots, dovetails and boring	❍	❍
Boring machines	Identify horizontal boring mills, vertical boring mills	❍	❍
	Set-up work pieces with holding devices	❍	❍
	Calculate speeds and feeds	❍	❍
	Use cutting tools, boring bars, milling heads	❍	❍
	Use finishing techniques, drilling, reaming, boring and honing	❍	❍
Planer, shaper and slotters	Identify planers, shapers and slotters	❍	❍
	Set-up work pieces with holding devices	❍	❍
	Calculate speeds and feeds	❍	❍
	Use cutting tools, multi-tool heads, milling heads	❍	❍
Power saws	Identify vertical, horizontal and reciprocating saws	❍	❍
	Install saw blades, adjust tension, set and position blade guides	❍	❍
	Do adjustments such as angles, guides, stops, speeds and feeds	❍	❍
CNC machines	Perform basic CNC programming	❍	❍
	Set-up and operate CNC machines	❍	❍
	Select tooling and tool holders	❍	❍
	Load and unload machine	❍	❍

TRADE TITLE: # Millwright (Industrial Mechanic) (NOC: 7311)

DESCRIPTION: Millwright/Industrial Mechanics install industry plant machinery and ancillary equipment and maintain, repair, rebuilt, and replace machinery and equipment.

OTHER TITLES: Fitter, Fitter/Turner, Machinist, Engine Fitter, Engine Machinist

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Marine Engineer, Power Engineer, Stationary Engineer

MAJOR SKILLS		Can do	Cannot do
Planning, drawings and layout	Ability to read and interpret drawings, blueprints, sketches	❍	❍
	Must know STD codes such as ASTM and ANSI	❍	❍
	Produce sketch or drawing and develop material take-off list	❍	❍
	Use drawing, blueprints or sketches, do layouts	❍	❍
	Be able to plan work and work activities	❍	❍
Tools of the trade	Identify and use common hand tools, portable power tools	❍	❍
	Maintain and store hand tools and portable power tools	❍	❍
	Use measuring tools to do layouts to specifications	❍	❍
	Set-up and operate shop machines	❍	❍
Fastening devices	Know types of materials used for fasteners	❍	❍
	Use of torquing procedures	❍	❍
	Use of appropriate resins to secure components	❍	❍
	Able to identify, use retaining devices	❍	❍
	Identify types of fasteners and tools	❍	❍
Rigging and hoisting	Assemble and use scaffolds, lifts and ladders	❍	❍
	Determine load weight	❍	❍
	Safely lift loads, secure, transport and unload machinery	❍	❍
	Use of correct hand signals and radio to communicate	❍	❍
Welding, metallurgy	Use of oxy-acetylene equipment to do cutting and welding	❍	❍
	Weld or braze metal, achieve proper fusion and penetration	❍	❍
	Use of arc welding equipment on ferrous metals	❍	❍
	Identify ferrous and non-ferrous metals	❍	❍
	Perform heat treatment of metal components	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Installation and maintenance	Install appropriate metal guards, rails as required for safety	❍	❍
Lubrication	Select proper lubricants and fluids	❍	❍
	Test and analyze lubricants and fluids	❍	❍
Alignment of machinery	Use transit and laser to level machinery/equipment	❍	❍
	Able to adjust machinery/equipment in three axes	❍	❍
	Use shims to level machinery/equipment	❍	❍
Power drives	Install all common power drives and components	❍	❍
	Troubleshoot, inspect and analyze power drives and components	❍	❍
	Repair and maintain power drives and components	❍	❍
Material moving systems	Install different types of material moving systems (MMS)	❍	❍
	Maintain MMS components, assemblies and sub-assemblies	❍	❍
	Repair, modify and replace MMS, components and assemblies	❍	❍
Machine components	Install all types of shafts, bearings and seals	❍	❍
	Inspect, test and examine shafts, bearings and seals	❍	❍
	Repair, modify and replace shafts, bearings and seals	❍	❍
	Identify types of keys and keyways on shafts and couplings	❍	❍
	Install keys on shafts and couplings	❍	❍
Prime movers	Install prime movers, associated equipment and support systems	❍	❍
	Troubleshoot, inspect and analyze prime movers	❍	❍
	Maintain, repair, modify and replace prime movers and/or support systems	❍	❍
Pumps	Install all types of pumps, pump components, tubing and piping	❍	❍
	Troubleshoot, inspect and identify pump problems	❍	❍
	Maintain, repair, modify and replace pumps	❍	❍
	Install all types of valves and seals	❍	❍
	Maintain, repair and replace valves and seals	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Fluid power	Install all types of hydraulic systems	❍	❍
	Use schematics and specifications to install piping	❍	❍
	Install and align hydraulic pump and motor	❍	❍
	Install correct size of reservoir	❍	❍
	Measure, cut bend and install piping	❍	❍
	Install filters, strainers, hydraulic valves and seals	❍	❍
	Record hydraulic data, check specifications and adjust if required	❍	❍
	Troubleshoot/test and identify faults and problems	❍	❍
	Maintain, repair, modify and replace hydraulic components and systems	❍	❍
Pneumatic systems	Install all types of pneumatic systems and components	❍	❍
	Install and align air compressors and equipment/accessories	❍	❍
	Select required tubing, cut, bend and install	❍	❍
	Select and install pneumatic valves	❍	❍
	Troubleshoot and identify faults and problems	❍	❍
	Maintain, repair, modify and replace pneumatic systems and components	❍	❍
	Record pneumatic pressures, check specifications and adjust	❍	❍
Vacuum systems	Install all types of vacuum systems and components	❍	❍
	Select piping/tubing required, cut, bend and install	❍	❍
	Troubleshoot and identify faults and problems	❍	❍
	Maintain, repair, modify and replace, fine-tune and lubricate vacuum systems	❍	❍
Fans and blowers	Install fans and blowers, associated equipment and support systems	❍	❍
	Troubleshoot and identify faults and problems	❍	❍
	Maintain, repair, modify and replace fans and blowers	❍	❍
Tanks and containers	Install all types of tanks, containers and related components	❍	❍
	Identify faults and problems with tanks and containers such as auto-gauging	❍	❍
	Maintain, repair, modify and replace tanks, containers and components	❍	❍
	Change liners, maintain ventilation system	❍	❍
	Read, record and test vibration analysis data	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Vibration analysis	Determine vibration noise measurement	❍	❍
	Identify vibration frequencies in journal and rolling element bearings, mechanical looseness, rubbing, gears, belts, cavitation and hydraulic systems	❍	❍
	Install transducers and related equipment	❍	❍
	Determine vibration limits using manuals and tables	❍	❍
	Use static and dynamic balancing procedures	❍	❍
	Use single and multi-plane balancing methods	❍	❍
	Balance equipment to ISO standards	❍	❍
Preventive maintenance (PM)	Use existing data to determine PM requirements	❍	❍
	Use CPM (critical path method) and PERT (program evaluation review technique) in maintenance planning programs	❍	❍
	Perform a safety audit on machinery and equipment	❍	❍
	Follow manufacturers' recommended specifications for PM	❍	❍
	Identify outstanding problems from unusual sounds, vibrations, etc.	❍	❍
	Monitor for wear, adjust and calibrate equipment	❍	❍

TRADE TITLE: Mobile Crane Operator (NOC: 7371)

DESCRIPTION: Mobile Crane Operators (construction industry) operate any hoisting device or structure that incorporates a power-driven drum and wire rope designed for raising, lowering or moving material and is equipped with a hook, either cable-suspended or hydraulically supported, capable of moving in the vertical and horizontal plane and mounted on a base or chassis intended to provide mobility. The mobile crane may be crawler- or wheel-mounted, but excludes boom trucks, side booms and rail-mounted tower or gantry cranes.

OTHER TITLES: Crane Operator, Crane and Hoist Operator, Crane and Hoisting Equipment Operator

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Tower Crane Operator, Hydraulic Boom Crane Operator

MAJOR SKILLS		Can do	Cannot do
Tools	Use hand tools	❍	❍
	Use power tools	❍	❍
	Use oxy-acetylene cutting torch	❍	❍
	Cut blocking with power saw	❍	❍
Fuels, coolants, oils and lubricants	Fuel-up cranes	❍	❍
	Change and top-up coolant	❍	❍
	Lubricate cranes	❍	❍
Hydraulic systems	Assemble hydraulic hoses and fittings	❍	❍
	Operate basic hydraulic system	❍	❍
	Perform routine maintenance and inspection of crane hydraulic system	❍	❍
Wire rope and rigging hardware	Determine crane capacity	❍	❍
	Pre-plan a crane lift	❍	❍
	Rig a load	❍	❍
	Maintain wire rope and rigging and components hardware	❍	❍
Engine support systems	Service the engine lubrication systems	❍	❍
	Service engine cooling systems	❍	❍
	Service air intake systems	❍	❍
	Service engine electrical systems	❍	❍
	Service engine fuel systems	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Hydraulic boom, truck cranes	Perform routine inspection and maintenance of crane hydraulic system	❍	❍
	Assemble and erect crane to working position	❍	❍
	Start, move and shutdown the carrier and upper-works of a hydraulic boom truck crane	❍	❍
	Determine lifting capacities of crane using load charts	❍	❍
	Perform hoisting operations	❍	❍
	Prepare a crane for transport	❍	❍
Hydraulic boom, rough terrain cranes	Carry out maintenance of the crane carrier system	❍	❍
	Perform routine inspection and maintenance of crane hydraulic system	❍	❍
	Assemble and erect crane to working position	❍	❍
	Start, move and shut down a rough-terrain crane	❍	❍
	Determine lifting capacities of crane using load charts	❍	❍
	Perform hoisting operations	❍	❍
	Prepare a crane for transport	❍	❍
Lattice boom, truck cranes	Carry out maintenance of the crane carrier system	❍	❍
	Perform routine inspection and maintenance of crane	❍	❍
	Assemble and erect crane to working position	❍	❍
	Start, move and shut down a lattice boom truck crane	❍	❍
	Determine lifting capacities of crane using load charts	❍	❍
	Perform hoisting operations	❍	❍
	Dismantle and prepare a crane for transport	❍	❍
Lattice boom, crawler cranes	Carry out maintenance of the crane carrier system	❍	❍
	Perform routine inspection and maintenance of crane	❍	❍
	Assemble and erect a lattice boom crawler crane to the working position	❍	❍
	Perform routine maintenance and adjustment of lower works components	❍	❍
	Perform routine upper works maintenance and adjustments	❍	❍
	Start, cycle, move and shut-down a crawler crane	❍	❍
	Determine lifting capacities of crane using load charts	❍	❍
	Perform hoisting operations	❍	❍
	Dismantle and prepare a crane for transport	❍	❍

TRADE TITLE: Painter and Decorator (NOC: 7294)

DESCRIPTION: Painters and Decorators apply paint, wallpaper and other finishes to interior and exterior surfaces of buildings and other structures.

OTHER TITLES: Construction Painter, Maintenance Painter, Paperhanger

MAJOR SKILLS		Can do	Cannot do
Drawings and related documents	Read residential and commercial blueprints	❍	❍
	Estimate material quantities and identify construction details	❍	❍
	Identify lines, symbols, scales and dimensions	❍	❍
	Identify symbols and abbreviations	❍	❍
	Interpret specifications and schedules	❍	❍
Tools of the trade	Use and maintain hand tools and equipment	❍	❍
	Use and maintain paint application tools	❍	❍
	Use and maintain power tools	❍	❍
	Use abrasive products	❍	❍
	Protect surrounding areas	❍	❍
Coating systems	Identify specification, inspection agencies and testing of materials	❍	❍
	Identify basic components of paint and coatings	❍	❍
	Apply coating systems	❍	❍
	Identify appropriate coating systems	❍	❍
Decorative finishes	Identify surface preparation procedures	❍	❍
	Use glazing techniques	❍	❍
	Apply specialty finishes	❍	❍
	Apply texture finishes	❍	❍
Lay out lining and graphics	Lay out lining and graphics	❍	❍
	Apply graphics	❍	❍
Match colours	Use a colour wheel	❍	❍
	Create colours using bases and colour tints	❍	❍
	Match colours	❍	❍
	Identify colour codes	❍	❍
	Identify characteristics of colour	❍	❍
	Identify effect of light on colour	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Prepare surfaces	Use caulking compounds	❍	❍
	Prepare drywall surfaces	❍	❍
	Prepare wood surfaces	❍	❍
	Use abrasive blasting	❍	❍
	Identify paint failures and remedies	❍	❍
	Prepare steel substrates	❍	❍
	Prepare substrates	❍	❍
Spray painting equipment	Identify types of spray systems	❍	❍
	Use and maintain airless spray equipment	❍	❍
	Use and maintain air spray equipment	❍	❍
	Use and maintain specialty spray equipment	❍	❍
Wall coverings	Estimate wall covering quantities	❍	❍
	Execute surface preparation requirements	❍	❍
	Install wall coverings	❍	❍
	Remove wall coverings	❍	❍
	Identify adhesives	❍	❍
	Identify wall covering materials	❍	❍
	Use wall covering tools	❍	❍
Wood finishing products	Prepare wood surfaces for finishing products	❍	❍
	Identify stains, fillers, sealers and topcoats	❍	❍
	Apply finishing products	❍	❍
	Maintain and repair wood finishes	❍	❍
	Identify wood composite products	❍	❍

TRADE TITLE: Plumber (NOC: 7251)

DESCRIPTION: Plumbers install, repair and maintain pipes, fixtures and other plumbing equipment used for water distribution and waste water disposal in residential, commercial and industrial buildings.

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Maintenance Plumber

MAJOR SKILLS		Can do	Cannot do
Use power and pound or activated tools	Use plumbing hand tools, use measuring layout and levelling tools	❍	❍
	Use pipe cutting and threading tools, use power tools, use piping shop tools	❍	❍
	Use builder's level	❍	❍
	Use laser and electronic levels	❍	❍
Select pipes, valves and fittings	Describe plumbing valves	❍	❍
	Describe hangers and supports	❍	❍
	Select piping for specific applications	❍	❍
	Select tubing for specific applications	❍	❍
	Use sealants and gaskets	❍	❍
Cut, weld, braze and solder metals	Identify gases, components and procedures for oxy-fuel cutting and welding	❍	❍
	Assemble, test, light, adjust, shut down and disassemble portable oxy-fuel equipment	❍	❍
	Solder copper fittings and joints	❍	❍
	Weld pipe joints	❍	❍
Read and interpret pipe drawing and specifications	Sketch and draw simple details	❍	❍
	Identify standard piping symbols	❍	❍
	Read and interpret piping drawings	❍	❍
	Take material from piping drawings	❍	❍
Lay out drainage and venting systems	Apply the *Plumbing Code* to single-family residences	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install potable water systems	Design and size potable water systems for single-family residential applications	❍	❍
	Describe water distribution services	❍	❍
	Install hot water heating system	❍	❍
Install and troubleshoot pumps	Describe types of pumps	❍	❍
	Install and troubleshoot pumps	❍	❍
Install gas appliance piping, venting and storage	Describe fuel gases	❍	❍
	Size and install gas piping systems	❍	❍
	Design and install a propane storage system	❍	❍
	Select and change orifices in a burner	❍	❍
Install and test hot water heating systems	Describe types of hot-water heating systems	❍	❍
	Describe hot-water hearing boilers	❍	❍
	Install boilers	❍	❍

TRADE TITLE: Power Line Technician (NOC: 7244)

DESCRIPTION: Power Line Technicians construct, maintain and repair the overhead and underground electrical power transmission and distribution systems that make up the electrical power grid. This involves putting up and maintaining electrical poles, towers and guy wires as well as installing or repairing the live-line wiring and other components required to connect power distribution and transmission networks. Power Line Technicians also inspect and test overhead and underground power lines and auxiliary equipment, and install and maintain street lighting systems. Because of the nature of their work, they are often working at heights on poles and towers, either on a ladder or in a hydraulic bucket. In some cases, they are required to work in confined spaces like trenches or tunnels to install underground lines or equipment.

OTHER TITLES: Lineman, Operating Lineman, Power Line Electrician, Power Lineman, Power Lineperson, Power Line Worker, Power Line Technician (Lineman)

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Industrial Electrician, Construction Electrician

MAJOR SKILLS		Can do	Cannot do
Overhead distribution	Construct and maintain overhead distribution lines applying utility standards	❍	❍
	Identify and select materials	❍	❍
	Install, operate and maintain overhead electrical apparatus	❍	❍
Underground residential distribution (URD)	Construct and maintain URD distribution lines applying utility standards	❍	❍
	Identify and select materials	❍	❍
	Install, operate and maintain URD electrical apparatus	❍	❍
	Identify line status	❍	❍
Transmission	Construct and maintain transmission lines applying utility standards	❍	❍
	Identify and select materials	❍	❍
	Install, operate and maintain transmission electrical apparatus	❍	❍
Rigging	Identify and demonstrate lifting and rigging components	❍	❍
	Identify and demonstrate distribution rigging	❍	❍
	Identify and demonstrate transmission rigging	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Work practices	Identify and demonstrate correct grounding and equi-potential procedures	❍	❍
	Identify and demonstrate lock-out procedures	❍	❍
	Recognize and observe limits of approach	❍	❍
	Demonstrate communication methods	❍	❍
	Perform rescue procedures	❍	❍
	Handle transportation and storage of hazardous materials	❍	❍
Climbing	Climb wood structures	❍	❍
	Climb steel structures	❍	❍
	Work on elevated platforms	❍	❍
	Test for pole (structure) stability	❍	❍
Equipment	Care for and use hydraulically equipped vehicles	❍	❍
	Care for and use stringing equipment (distribution and transmission)	❍	❍
Tools and instruments	Care for and use live line tools	❍	❍
	Care for and use test instruments	❍	❍
	Install metering (single phase, three phase, primary, secondary)	❍	❍
	Correct power factor	❍	❍

TRADE TITLE: # Refrigeration and Air Conditioning Mechanic (NOC: 7313)

DESCRIPTION: Refrigeration and Air Conditioning Mechanics make, install, repair and service residential, commercial and industrial cooling and heating systems. Some work in building maintenance, e.g., servicing the air conditioning systems in high-rise office buildings; others specialize in repairing small, portable refrigeration and freezing units.

OTHER TITLES: Pipefitter – Refrigeration Mechanic Specialty, Refrigeration and Air Conditioning, Refrigeration Mechanic

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Millwright, Pipefitter, Industrial Electrician, Electric Motor System Technician

MAJOR SKILLS		Can do	Cannot do
Welding and brazing	Use oxy-acetylene and air acetylene welding equipment for welding and brazing	❍	❍
	Do electric arc welding	❍	❍
Tools	Use charging, evacuation and reclaim tools	❍	❍
	Use hand, precision measuring and power tools	❍	❍
Piping practices	Test for refrigerant leaks	❍	❍
	Install piping for refrigeration systems	❍	❍
Single and three-phase electricity	Install and operate single phase electric motor	❍	❍
	Install and operate three phase electric motor	❍	❍
	Install and test motor starters	❍	❍
	Use electric meters to test for voltage, resistance and current	❍	❍
	Use computers and software to calculate heating and cooling loads	❍	❍
	Test rectifier circuits	❍	❍
	Troubleshoot motor protection circuits	❍	❍
Electronics	Test integrated controls	❍	❍
	Test circuit components	❍	❍
	Test remote monitoring systems	❍	❍
	Interpret electrical and mechanical drawings	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Air conditioning	Install and repair fan systems	❍	❍
	Install and replace air-air heat exchangers	❍	❍
	Calculate air conditioner, cooler and freezer loads	❍	❍
	Charge air conditioning system with refrigerant	❍	❍
Refrigeration system components	Install and maintain compressors	❍	❍
	Install and maintain evaporators and condensers	❍	❍
	Lubricate system components	❍	❍
	Install and calibrate metering devices	❍	❍
	Repair ammonia systems	❍	❍
	Repair absorption systems	❍	❍
	Install and test heat pumps	❍	❍
Mechanical systems	Install fans	❍	❍
	Use rigging to move components	❍	❍
Gas applications	Select and change orifices in a burner	❍	❍
	Select and install gas regulators	❍	❍
	Install and change gas valves	❍	❍
	Test gas-fired appliances	❍	❍
	Install, set-up and adjust gas burners	❍	❍

TRADE TITLE: Roofer (NOC: 7291)

DESCRIPTION: Roofers build and repair flat roofs using hot asphalt, gravel and waterproof sheet materials. They may also build and repair sloped roofs using asphalt and wood shingles, shakes and masonry or baked clay roofing tiles and metal materials, although this type of work is typically done by a residential steep roofer. Their work also involves setting up scaffolding to provide safe access to roofs.

MAJOR SKILLS		Can do	Cannot do
Identify roofing tools and equipment	Identify roofing hand tools	❍	❍
	Identify roofing power tools	❍	❍
	Perform maintenance on roofing hand tools	❍	❍
	Care for and maintain roofing power tools	❍	❍
	Care for and maintain hot asphalt equipment	❍	❍
	Describe hot asphalt equipment	❍	❍
Rigging and hoisting	Apply roofing rigging techniques	❍	❍
	Apply safe rigging techniques	❍	❍
	Apply roofing hoisting techniques	❍	❍
	Carry out erection and dismantling of roofing hoisting equipment	❍	❍
	Know rooftop delivery systems	❍	❍
	Know rooftop delivery systems operation	❍	❍
Read blueprints	Know roof designs and structures	❍	❍
	Know types of lines, scales and symbols	❍	❍
	Identify terms used for the roofing industry	❍	❍
	Identify and interpret types of blueprints and specifications	❍	❍
Select flat roofing materials	Identify and select insulation and fastening methods	❍	❍
	Identify and select insulation and fastening tools	❍	❍
	Identify and select vapour retarders	❍	❍
	Identify flashing materials	❍	❍
	Identify and select materials used for built-up roofing	❍	❍
	Identify and select materials used in flexible membrane roofing systems	❍	❍
	Identify and select self-adhering bituminous materials	❍	❍
	Identify and select thermoplastics	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install flat roofing materials	Install insulation	❍	❍
	Install vapour retarders	❍	❍
	Install flashing materials	❍	❍
	Install materials used for built-up roofing	❍	❍
	Install materials used in flexible membrane roofing systems	❍	❍
	Install self-adhering bituminous materials	❍	❍
	Install thermoplastics	❍	❍
Select steep roofing materials	Identify and select insulation and fastening methods	❍	❍
	Identify and select insulation and fastening tools	❍	❍
	Identify and select eave protection and under-layments	❍	❍
	Identify and select flashing materials	❍	❍
	Identify and select organic, fibreglass and SBS shingles	❍	❍
	Identify and select wood products	❍	❍
	Identify and select concrete and composite materials	❍	❍
	Identify and select steep roofing metallic-unitized materials	❍	❍
	Identify and select slate and other specialty steep roofing materials	❍	❍
Install steep roofing materials	Install insulation	❍	❍
	Install eave protection and under-layments	❍	❍
	Install flashing materials	❍	❍
	Install organic, fibreglass and SBS shingles	❍	❍
	Install wood products	❍	❍
	Install concrete and composite materials	❍	❍
	Install metallic materials	❍	❍
	Install slate and other specialty steep roofing materials	❍	❍
Inspect and repair roofs	Understand causes of roof failures	❍	❍
	Use special tools and equipment for roof repair	❍	❍
	Repair flat and steep roofs	❍	❍
Damp and waterproof structures	Identify and select damp-proofing and waterproofing materials	❍	❍
	Prepare substrate for damp and waterproofing	❍	❍
	Damp-proof and waterproof roofs, and above- and below-grade structures	❍	❍

TRADE TITLE: Sheet Metal Worker (NOC: 7261)

DESCRIPTION: Sheet Metal Workers fabricate, assemble, install and repair sheet metal products. They must apply a wide range of knowledge, abilities and skills to perform their duties.

OTHER TITLES: Sheet Metal Fabricator, Sheet Metal Mechanic, Tinsmith

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Metal Fabricator, Metal Press Operator

MAJOR SKILLS		Can do	Cannot do
Drawings and blueprints	Read and interpret drawings, blueprints, sketches	❍	❍
	Perform CAD drawing process	❍	❍
	Prepare a detailed shop drawing	❍	❍
	Read documents such as work orders, technical data, reference manuals	❍	❍
	Plan work and work activities	❍	❍
Tools of the trade	Identify and use common hand tools, portable power tools	❍	❍
	Use riveting techniques and soldering methods	❍	❍
	Identify and use shop tools and equipment	❍	❍
	Know about CAD/CAM equipment uses	❍	❍
Lay out and develop patterns	Draw objects using orthographic projections	❍	❍
	Develop geometric constructions	❍	❍
	Develop patterns for duct fittings	❍	❍
	Develop patterns using parallel line development	❍	❍
	Develop patterns using radial line development	❍	❍
	Develop patterns using triangulation development	❍	❍
	Develop patterns for round fittings	❍	❍
	Develop patterns using a combination of techniques	❍	❍
	Identify types and uses of drafting equipment	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Fabricate shop projects	Fabricate seams, locks, edges and joints	❍	❍
	Fabricate a project using parallel line development	❍	❍
	Fabricate a project using radial line development	❍	❍
	Fabricate a project using triangulation development	❍	❍
	Fabricate duct fittings	❍	❍
	Fabricate a project to be MIG/SMA-welded	❍	❍
	Fabricate a project using heavy gauge metal	❍	❍
	Fabricate a project involving louvers and opposed blade dampers	❍	❍
	Fabricate a stainless steel project	❍	❍
	Finish a stainless steel project	❍	❍
	Fabricate round and rectangular fittings	❍	❍
	Use a press brake and power shear	❍	❍
	Install field-measured project	❍	❍
Materials and equipment	Identify air filters	❍	❍
	Identify fasteners and fastening tools	❍	❍
	Identify insulation and fastening methods	❍	❍
	Identify materials commonly used in sheet metal and architectural industry	❍	❍
	Identify stainless steel and aluminum	❍	❍
	Identify terminal, mixing and induction units	❍	❍
Field installation methods	Use rigging and hoisting equipment	❍	❍
	Install ducts	❍	❍
	Install heating ventilating air conditioning (HVAC) system	❍	❍
	Install venting system	❍	❍
Architectural sheet metal components	Install architectural metal	❍	❍
	Identify gutter, flashing and cornice design	❍	❍
	Identify ventilators and louvers	❍	❍
Residential heating requirements	Perform residential furnace installations	❍	❍
	Identify the need for a HVAC system	❍	❍
	Install residential heating and ventilating systems	❍	❍
Blowpipe systems and equipment	Identify blowpipe systems equipment and design	❍	❍
	Identify cyclones	❍	❍
	Identify bag houses	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Stainless steel equipment components	Identify fixtures used in the food service industry	❍	❍
	Carry out stainless steel fabrication procedures	❍	❍
	Carry out stainless steel finishing procedures	❍	❍
	Carry out stainless steel fixture construction	❍	❍
	Identify other materials used in stainless steel fixture construction	❍	❍
Duct system sound attenuation methods	Identify types and construction of sound attenuation	❍	❍
Welding sheet metal skills	Perform ARC and MIG welding	❍	❍
	Assemble, ignite, shut down and maintain oxy-fuel gas cutting and welding equipment	❍	❍
	Cut and weld	❍	❍
	Perform plasma cutting	❍	❍
	Perform TIG welding	❍	❍
	Identify common metals and their characteristics	❍	❍
	Identify welding symbols and joint design	❍	❍

TRADE TITLE: Sprinkler System Fitter (NOC: 7252)

DESCRIPTION: Sprinkler System Fitters fabricate, install, test, maintain, and repair water, foam, carbon dioxide and dry chemical sprinkler systems in buildings for fire protection purposes.

OTHER TITLES: Marine Pipefitter, Fire Sprinkler Installer

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Pipefitter, Plumber

MAJOR SKILLS		Can do	Cannot do
Basic blueprint reading	Interpret drafting symbols	❍	❍
	Identify different types of drawing (architectural, mechanical, structural)	❍	❍
Pipe valves and fittings	Identify types and uses of valves, pipes and fittings	❍	❍
	Measure and assemble pipes and fittings	❍	❍
Rigging	Identify lifting equipment	❍	❍
	Identify ropes, cables and attachments	❍	❍
	Tie various knots	❍	❍
	Select and use correct safety harness	❍	❍
Wet and dry systems	Identify wet and dry systems	❍	❍
	Understand the operation of wet and dry systems	❍	❍
	Troubleshoot the system	❍	❍
	Repair and maintain the system	❍	❍
Valve stations wet and dry	Identify component parts of a wet and dry system	❍	❍
	Demonstrate functions of accelerators, excess pressure pumps, retard chambers, water motor cones, air supplier, fire department connections, and secondary water supply	❍	❍
	Trim a wet and dry valve station	❍	❍
Installation practices	Interpret and explain pipe elevation	❍	❍
	Field check to pre-establish job plan	❍	❍
	Use transit and laser levels	❍	❍
	Use a chalk line	❍	❍
	Define swing joints and centre of title installations	❍	❍
Stand pipe and hose systems	Interpret the NFPA 14 standard for installation purposes	❍	❍
	Understands installation procedures, e.g., anchoring	❍	❍
Residential and dwelling sprinklers	Understand the residential sprinkler provisions as compliant with the National Fire Protection Association (NFPA) standards	❍	❍

TRADE TITLE: Steamfitter/Pipefitter (NOC: 7252)

DESCRIPTION: Steamfitters and Pipefitters lay out, assemble, fabricate, maintain, troubleshoot and repair piping systems carrying water, steam, chemicals and fuel in heating, cooling, lubricating and other process piping systems.

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Marine Pipefitter, Steamfitter

MAJOR SKILLS		Can do	Cannot do
Install and maintain propane and natural gas systems	Size pipes and install gas-fitted appliances	❍	❍
	Troubleshoot system	❍	❍
	Adjust burners	❍	❍
	Size and install vents	❍	❍
	Verify electrical connections	❍	❍
	Size and install combustion air ventilation	❍	❍
Solder and braze	Determine heat source	❍	❍
	Select materials – brazing, soldering, silver solder, fluxes	❍	❍
	Perform surface preparation	❍	❍
Use tools and equipment	Use precision measuring tools	❍	❍
	Use power tools	❍	❍
Install and maintain power plant piping systems	Identify steam generator equipment and functions	❍	❍
	Read and interpret schematic drawing	❍	❍
Familiarity with process application	Familiar with industrial applications	❍	❍
	Familiar with commercial applications	❍	❍
	Familiar with marine applications	❍	❍
Assemble, install and maintain low pressure steam heating systems	Identify types of boilers and heat exchangers	❍	❍
	Assemble and install low pressure boilers and trim	❍	❍
	Commission the system	❍	❍
	Troubleshoot the system	❍	❍
	Install and maintain steam traps	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Install and maintain hydroponics heating systems	Identify component controls	❍	❍
	Identify types of boilers	❍	❍
	Assemble and install hydroponics boilers	❍	❍
	Commission the system	❍	❍
	Troubleshoot the system	❍	❍
Fabricate piping and components	Make appropriate templates	❍	❍
	Prepare component for assembly	❍	❍
	Assemble components	❍	❍
Bend pipe and tubing	Determine bending procedure	❍	❍
	Calculate pipe length	❍	❍
	Use machining and hand bend pipe and tube	❍	❍

TRADE TITLE: Steel Fabricator (NOC: 7263)

DESCRIPTION: Steel Fabricators lay out, fabricate, assemble, fit and install steel or other metal components for buildings, bridges, tanks, towers, boilers, pressure vessels and other similar structures and products. They work in structural steel, boiler and platework fabrication plants and heavy-machinery manufacturing and shipbuilding companies.

OTHER TITLES: Steel Fabricator, Plater, Plate Work Fitter, Ship Fitter, Structural Steel Fitter, Shop Boilermaker

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Boilermaker, Ironworker, Sheet Metal Worker

MAJOR SKILLS		Can do	Cannot do
Use trade tools	Use basic hand tools	❍	❍
	Use bench hand grinder	❍	❍
	Use and maintain portable power tools	❍	❍
Use shop equipment	Use power plate shears	❍	❍
	Use hydraulic brake press	❍	❍
	Use power plate rolls	❍	❍
	Use shop saws	❍	❍
	Use drill presses	❍	❍
	Use power angle rolls	❍	❍
Burn and weld metals	Describe safe burning practices	❍	❍
	Use oxy-fuel equipment	❍	❍
	Perform manual arc welding	❍	❍
	Familiar with selection of welding electrodes	❍	❍
	Weld plate using manual arc welding	❍	❍
	Use arc air gouging equipment	❍	❍
	Know methods to reduce distortion	❍	❍
Blueprint reading	Sketch objects using isometric projection	❍	❍
	Sketch objects using orthographic projection	❍	❍
	Understand standard symbols and abbreviations	❍	❍
	Understand welding symbols and abbreviations	❍	❍
	Interpret structural drawings	❍	❍

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MAJOR SKILLS		Can do	Cannot do
Fabricate plate and structural projects	Know common fitting procedures	❍	❍
	Fabricate a multiple-joint pipe connection	❍	❍
	Describe laying out and fitting connections to a structural beam (cleats, base plate, bolt connections)	❍	❍
	Know the layout fabrication of a simple hopper	❍	❍
Develop plate patterns	Understand parallel line development	❍	❍
	Understand radial line development	❍	❍
	Understand triangulation development	❍	❍

TRADE TITLE: Tilesetter (NOC: 7283)

DESCRIPTION: Tilesetters cover interior and exterior walls, floors and ceilings with ceramic, marble and quarry tile, mosaics or terrazzo. They are employed by construction companies and masonry contractors or they may be self-employed.

OTHER TITLES: Specialist in Mosaics or Terrazzo

MAJOR SKILLS		Can do	Cannot do
Planning and drawings	Read blueprints	❍	❍
	Use layout techniques	❍	❍
	Sketch and draw simple details	❍	❍
	Estimate materials	❍	❍
	Perform geometrical construction	❍	❍
Tools of the trade	Use and maintain hand tools	❍	❍
	Use measuring, levelling and layout tools	❍	❍
	Use and maintain cutting and drilling tools	❍	❍
	Use and maintain mortar and other special tools	❍	❍
Preparation of surfaces	Prepare horizontal surfaces	❍	❍
	Prepare vertical surfaces	❍	❍
	Prepare circular surfaces and columns	❍	❍
	Prepare curved arches	❍	❍
	Prepare stairways	❍	❍
Tiling processes	Lay out tile	❍	❍
	Set tile on vertical surfaces	❍	❍
	Set tile on horizontal surfaces	❍	❍
	Tile circular walls and columns	❍	❍
	Use cleaning materials and protect ceramic tile after installation	❍	❍
Special material	Apply marble and marble mosaics	❍	❍
	Apply ceramic veneers	❍	❍
	Use glass block and tile	❍	❍

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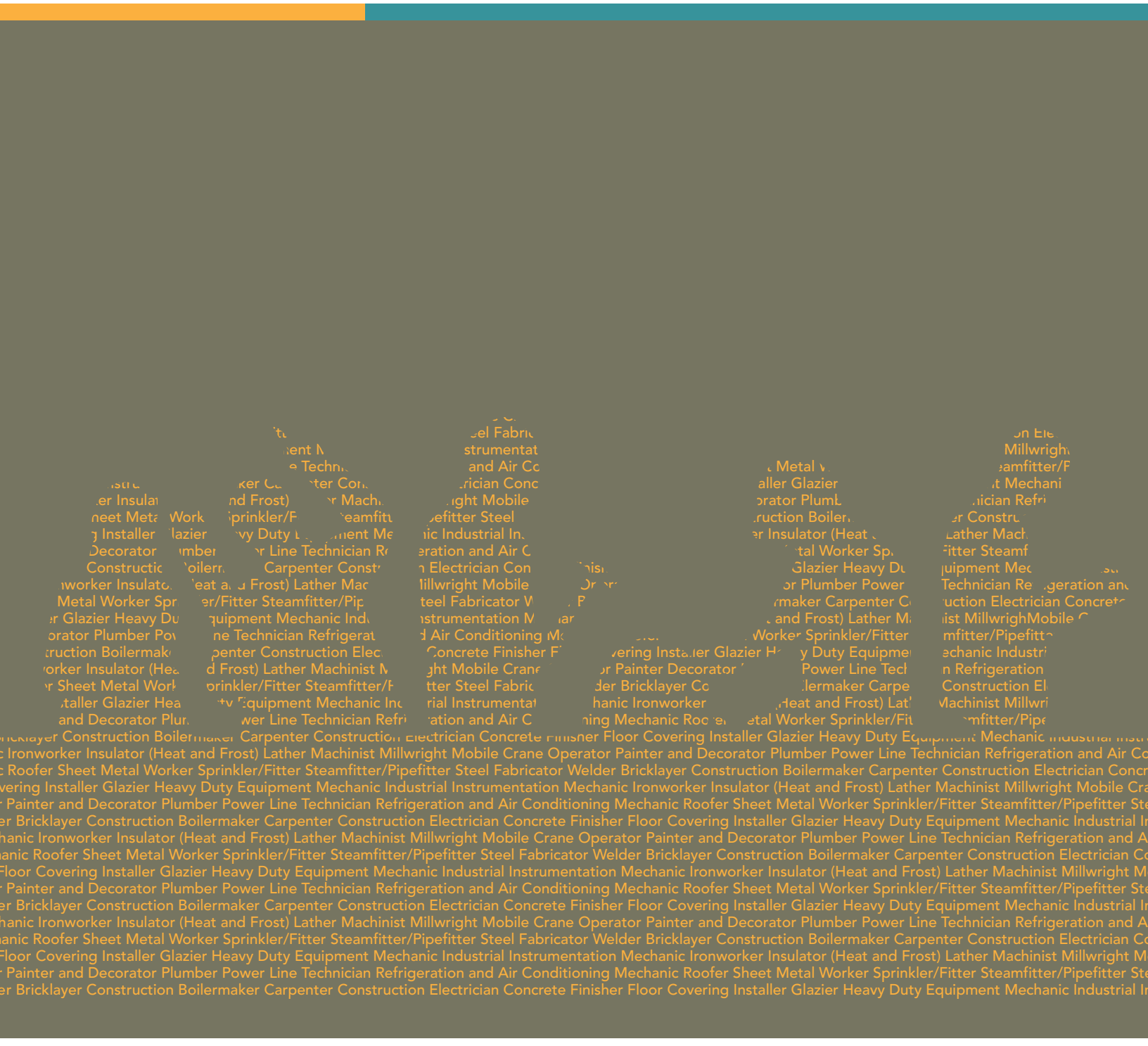
MAJOR SKILLS		Can do	Cannot do
Specialized jobs	Tile fireplaces and fireboxes	❍	❍
	Tile swimming pools	❍	❍
	Tile ceilings	❍	❍
	Tile steam rooms	❍	❍
Fastening materials	Use Portland cement grout to fix tile	❍	❍
	Use acid- and alkali-resistant grout to fix tile	❍	❍
	Use grouts and their applications	❍	❍
	Use inserts and accessories	❍	❍
	Use types of backing for tile	❍	❍

TRADE TITLE: Welder (NOC: 7265)

DESCRIPTION: Welders operate welding equipment to join ferrous and new ferrous metals using shielded metal arc, gas metal arc, fusion and braze welding using oxy-fuel process. Performs electric arc gouging and related processes and performs oxy-fuel cutting.

SIMILAR TRADES THAT HAVE SOME RELATED SKILLS: Electric Arc Welder, Aviation Welder, Technician, Submerged Arc Welder, Machine Operator, Spot Welder, Welder Fitter, Boilermaker Welder, Steel Fabricator Welder, Ship Building Welder

MAJOR SKILLS		Can do	Cannot do
Oxy-fuel cutting process	Select, assemble, ignite, shut down and maintain equipment	❍	❍
	Perform freehand and guided cuts on low carbon steel plate	❍	❍
	Use automatic and semiautomatic cutting machines	❍	❍
Fusion and braze welding using oxy-fuel processes	Identify filler metals, flukes and tips used for fusion and brazing	❍	❍
Shielded metal arc welding (SMAW)	Describe equipment and operation of machines	❍	❍
	Identity types of electrodes used on low carbon steel	❍	❍
	Describe basic weld joints	❍	❍
	Identify causes of weld faults and describe how to prevent	❍	❍
	Perform hard surfacing on low carbon steel	❍	❍
Electric arc cutting, gouging and related processes	Identify electric arc cutting and gouging equipment and its operation	❍	❍
	Gouge cut metals using air carbon arc	❍	❍
Gas metal arc welding (GMAW)	Know about GMAW equipment and its operation	❍	❍
	Know about and identify electrode wires and shielding gases	❍	❍
	Perform fillet and groove welds on low carbon steel	❍	❍
	Perform fillet and grove welds on aluminum	❍	❍
Flux-cored arc welding (FCAW) and metal-cored arc welding (MCAW)	Know about the FCAW and MCAW equipment and its uses	❍	❍
	Identify and select electrode wires and shielding gases for FCAW and MCAW	❍	❍
	Weld fillet and groove welds on low carbon steel	❍	❍
Welding drawing	Identify common welding symbols	❍	❍
Handling and rigging procedures	Use wire and fibre rope	❍	❍
	Use slings	❍	❍
	Use hoisting equipment	❍	❍
	Use rigging hardware	❍	❍


Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial Instrumentation Mechanic Ironworker Insulator (Heat and Frost) Lather Machinist Millwright Mobile Crane Operator Painter and Decorator Plumber Power Line Technician Refrigeration and Air Conditioning Mechanic Roofer Sheet Metal Worker Sprinkler/Fitter Steamfitter/Pipefitter Steel Fabricator Welder Bricklayer Construction Boilermaker Carpenter Construction Electrician Concrete Finisher Floor Covering Installer Glazier Heavy Duty Equipment Mechanic Industrial