



## **Designated Skilled Trades Guide**

**Apprenticeship Training and  
Skill Development Division**

**July 2008**

# Table of Contents

Introduction	Page 3
Training Paths in the Designated Skilled Trades	Page 3
Things You Should Keep In Mind	Page 5
<i>Designated Skilled Trade Descriptions:</i> Construction Trades	Page 6
Motive Trades	Page 20
Industrial/Mechanical Trades	Page 29
Service Trades	Page 47



# Introduction

Apprenticeship is a training system comprised of supervised on-the-job and theory training. Succeeding in this training system will result in becoming a journeyman in Nova Scotia. This guide contains a description of each of the 61 trades designated in Nova Scotia.

In this guide, the designated trades are grouped into categories; Construction, Motive, Industrial/Mechanical and Service trades.

## Training Paths for the Designated Skilled Trades

### Essential Components to Complete an Apprenticeship

- A minimum number of hours of on-the-job training
- Theory courses related to the trade
- Verification of the skills gained during the on-the-job training based on National Occupational Analyses (NOA). This is documented in a logbook given to the apprentice upon registration.

In order to meet these requirements, there are a number of training options. Three of those options are:

1. **Youth Apprenticeship** - beginning your on-the-job training while still in high school
2. **Pre-Apprenticeship Training** - gaining a certificate or diploma from the Nova Scotia Community College before entering into an apprenticeship
3. **Full-time Apprenticeship** (after High School) - becoming a full-time apprentice, training on-the-job and gaining theory courses throughout your apprenticeship

### Youth Apprenticeship

Youth Apprentices are youth between the age of 16 and up to and including the age of 19, who have already explored a designated trade and have been hired by an employer to train as an apprentice. If you become a youth apprentice while still in high school, you work part-time in your trade. Therefore, as a youth apprentice, you can begin counting your hours and skills gained in the trade before you even graduate.

### Full-Time Apprenticeship

**If you want to train to become a certified journeyman in Nova Scotia, you will need to become an apprentice.** For most people other than youth apprentices, apprenticeship begins after completing grade 12 or equivalent. If you do not have your



grade 12, contact the Apprenticeship Training and Skill Development division to receive more information about how you can build for your success as an apprentice.

In order to become an apprentice, you will need to find an employer who will hire you and train you in the trade. The employer will agree to train you on-the-job for approximately 85% of the time with a journeyman mentor and release you to take theory training for the remaining 15% of your time. The main training provider for apprenticeship courses is the Nova Scotia Community College.

You will be paid throughout all of your apprenticeship training. There is a minimal fee that you will need to pay for your theory courses. After you complete each set of theory courses and return to your employer, your pay as an apprentice increases. In most of the designated skilled trades, apprenticeship last for four years.

After you have completed all of the requirements in your trade, you are eligible to write the journeyman certification exam. After passing this exam, you become a journeyman in your trade.

## **Pre-Apprenticeship Training**

You can choose to enter directly into an apprenticeship, or you may choose to complete a diploma or certificate from the Nova Scotia Community College first.

Some considerations when deciding whether or not to participate in a pre-apprenticeship program are:

- *How much experience you have in a trade.* Pre-apprenticeship programs are a great way to build on your foundational skills in a trade.
- *Finding an employer to hire you as an apprentice.* In some of the designated skilled trades, employers prefer to hire graduates of pre-apprenticeship programs. If you are interested in a particular trade, you should contact the relevant sector council, (listed at [www.workitns.ca](http://www.workitns.ca) ) for this information or talk directly to employers.
- *If a relevant diploma or certificate is offered in your trade of interest.* The School of Trades and Technology offers pre-employment programs in over 20 of the designated skilled trades. If you are interested in a particular trade, you should visit the NSCC website at [www.nsc.ca](http://www.nsc.ca) to view their current course calendar.

If you choose to participate in a pre-apprenticeship program, once you graduate and find an employer, you need to contact the Apprenticeship Training and Skill Development division. At this point, you will begin your apprenticeship. You will be accredited with some on-the-job training hours and theory training for your pre-apprenticeship program.



# Things You Should Keep In Mind

## Cooperative Education Courses

When you are deciding on a career path, it is really important to explore different careers. If you are interested in becoming a skilled tradesperson, cooperative education courses offered in grades 10 through 12 are a great way to ‘test’ out a trade. If you take a co-op credit, you will have some classroom time in the beginning, and then you will be matched with an employer for a work placement. The work placements are approximately 100 hours in duration. If you complete co-op credits in a designated trade, you may be eligible to receive up to 500 hours of apprenticeship credit toward an apprenticeship program in that trade. Ask your guidance counselor if co-op courses are offered in your school.

## Apprenticeship Training

In some of the designated skilled trades, training is not currently offered in Nova Scotia. If you are interested in becoming an apprentice or a youth apprentice, contact the Apprenticeship Training and Skill Development division to get up-to-date information on what trades are apprenticeable, or check out the Designated Trades Chart on the Workit website ([www.workitns.ca](http://www.workitns.ca))

## Nova Scotia Community College Course Options

The NSCC offers pre-apprenticeship programs in over 20 of the designated skilled trades. If you are interested in gaining a certificate or diploma in a particular trade, check out [www.nsc.ca](http://www.nsc.ca) to see the most current course offerings. The certificate and diploma courses often fill up quickly in the School of Trades and Technology. Registration begins in November for the following school year. If you are enrolled in the Options and Opportunities (O2) program at your school, check with your guidance counselor about deadlines for preferred seating.

## Compulsory Certified Trades

Some of the designated skilled trades are compulsory certified trades. By law, you must be a registered youth apprentice, an apprentice or a journeyman in these trades. The compulsory certified trades are indicated in this guide.

## Red Seal Trades

A number of the designated skilled trades are Red Seal Certified trades. This means that after completing your training as an apprentice and passing your certification exam, you will be able to work across Canada without taking additional training. The Red Seal Certified trades are indicated throughout this guide.



# Designated Skilled Trade Descriptions

## Construction Trades

### **Blaster** (1000 – 4000 hours)

#### **Duties:**

Blasters engage in all blasting activities including storage, handling, transportation, preparation and use of explosives and drilling conducted at a blasting area or in relation to the use of explosives.

#### They:

- Study requirements, plan drill patterns, determine the depth and diameter of blast holes and conduct field tests, if required, to determine the type explosive and quantity to use.
- Prepare detonators, fuses, detonating cords, primers, explosive charges and other materials, or supervise the placement of explosive charges.
- Load explosives into blast holes by hand or by using mechanical delivery systems on bulk explosives trucks.
- Use detonating cords, delays, shock tubes and detonators to create blasting circuits.
- Control blast sites to ensure safety regulations are met.
- Fire charges.
- Deal with misfires or missed holes.
- Check blast sites for hazards such as overhanging rock or harmful fumes.
- Maintain blast equipment and ensure that safety procedures for handling, storing and moving explosives are followed.

#### **Work life:**

Blasters are generally employed in the oil and gas, mining, quarrying or construction industries. In the construction industry, blasters break up rock and soil, dislodge tree stumps and demolish structures such as buildings or bridges. In the mining industry, blasters prepare and blast large quantities of rock to improve mine equipment efficiency. Blastors work primarily outdoors, sometimes in remote or hazardous locations. Working conditions often are noisy and dirty. All blasters should enjoy operating machinery and performing tasks that require precision, conducting tests and analyzing information, and directing the work of others.

## **Bricklayer** (8000 hours)

This is a Red Seal, Compulsory Certified and Apprenticable trade.

### **Duties:**

Bricklayers build and repair brick and block buildings, walls, floors, fireplaces, chimneys, patios and walkways with bricks, stones and blocks.

They:

- Work from blueprints to calculate the materials that are needed for the job.
- They cut and trim bricks, concrete blocks and other masonry materials using hand and power tools.
- They construct and repair walls, chimneys and fireplaces, arches, paving, floors, smokestacks, patios, garden walls and other decorative structures.
- They install fire bricks to line chimneys, furnaces, kilns, boilers and similar installations.

### **Work life:**

Bricklayers primarily work outside and do a lot of heavy lifting. They are employed in the construction industry for small, medium and large sized businesses or may be self-employed.

## **Cabinet Maker** (8000 hours)

This is a Red Seal Certified trade.

### **Duties:**

Cabinet Makers build custom or production-type wooden, (or wood substitute), fixtures, cabinets and furniture.

They:

- Read and study drawings of the project.
- Order construction materials.
- Measure and cut wood or construction materials to fit the specifications.
- Make layouts and patterns.
- Use and maintain tools of the trade.
- Assemble and build the project with hand and power tools.
- Repair or restyle wooden furniture.
- Estimate the cost and timing of the project for customers.

**Work life:**

Cabinet Makers are often employed by wood products manufacturers or in the construction industry. They mostly work indoors, in shop environments.

**Carpenter** (8000 hours)

This is a Red Seal Certified and Apprenticeship trade.

**Duties:**

Carpenters construct, erect, install, maintain and repair buildings, houses, and other structures made of wood, wood substitutes and other materials.

They:

- Work on residential jobs. They crib the basement; build the house framework, walls, roof, exterior and interior finishes; and install doors, windows, flooring, cabinets, stairs, handrails, paneling, molding and ceiling tiles.
- Work on commercial or industrial jobs. They build concrete forms; scaffolding; bridges; trestles; tunnels; shelters; towers and other structures.
- Work on maintenance jobs. They repair and remodel existing structures of different kinds.
- Read and interpret blueprints and drawings to meet building code requirements.
- Order construction materials.
- Measure the wood or construction materials to fit the specifications.
- Make layouts and patterns that conform to building codes.
- Maintain tools of the trade.
- Assemble and build the project with hand and power tools.

**Work life:**

Carpenters are employed in the construction industry. They work directly with companies in the industrial, commercial, institutional or residential sectors or with contractors who work with those companies. Carpentry work can be affected by seasonal changes.



## **Concrete Finisher** (6000 hours)

This is a Red Seal Certified trade.

### **Duties:**

Concrete Finishers place, finish, cut and repair concrete structures such as concrete floors, driveways, sidewalks, curbs, bridge decks, walls, ceilings.

They:

- Place wet concrete into forms and spread it to a specific depth.
- Fill hollows and remove high spots, smooth freshly placed concrete.
- Operate a power vibrator to compact the concrete.
- Finish the concrete to various surfaces: smooth, nonskid, exposed aggregate, decorative, (patterned or stamped) or a coloured surface using hand and power tools.
- Install anchor bolts, steel plates, door sills and other fixtures in freshly poured concrete.
- Waterproof, damp-proof and restore concrete surfaces.

### **Work life:**

Concrete Finishers mostly work in the construction industry. They often work on a project-to-project basis. This trade requires physical strength and coordination.

## **Construction Craft Worker**

This is a Red Seal trade.

### **Duties:**

Construction Craft Workers set up/dismantle forms, site preparation and clean-up, excavation, backfill/compaction, traffic control duties, concrete placement and finishing, mason tending and operates grading equipment.

They:

- Read blueprints.
- Prepare, excavate, backfill, compact and clean up work sites.
- Load and unload construction materials, move materials to work areas.
- Erect and dismantle concrete forms, scaffolding, ramps, catwalks, shoring and barricades required at construction sites.
- Mix, pour and spread materials such as concrete and asphalt.

- Assist varied tradespersons such as carpenters, bricklayers, cement finishers, roofers and glaziers in construction activities.
- Level earth to fine grade specifications using rake and shovel.
- Assist in demolishing buildings using prying bars and other tools and sort, clean and pile salvaged materials.
- Remove rubble and other debris at construction sites using rakes, shovels, wheelbarrows and other equipment.
- Operate pneumatic hammers, vibrators and tampers as directed.
- Tend or feed machines or equipment used in construction such as mixers, compressors and pumps.

**Work life:**

Construction Craft Workers work outdoors in all weather conditions, are exposed to water, noise, vibrations and situations requiring attention to safety, and are on their feet for long periods of time. They must be in good physical condition and enjoy hard physical labour. They are employed on a project-by-project basis or work for small, medium and large construction companies in the residential, commercial and industrial sectors.

**Construction Electrician** (8000 hours)

This is a Red Seal, Compulsory Certified and Apprenticeable trade.

**Duties:**

Construction Electricians install and repair electrical systems designed to provide heat, power, control or signals in buildings and residences.

They:

- Read and interpret drawings and electrical code specifications to determine wiring layouts for new or existing installations.
- Splice, join and connect wire to fixtures and components to form circuits.
- Position, maintain and install distribution and control equipment such as switches, relays, circuit breaker panels and fuse enclosures.
- Install and repair electrical systems and related electrical equipment.
- Install data cabling.
- Test circuits to ensure safety and compatibility of the system.
- Investigate and identify faults in electrical systems and remove faulty components.



**Work life:**

Construction Electricians do a variety of electrical work. They often work with contractors on a project-to-project basis in the construction industry.

**Floor Covering Installer** (5000 hours)

This is a Red Seal Certified trade.

**Duties:**

Floor Covering Installers install and repair resilient and carpet floor coverings such as underlayment, sheet goods, (vinyl), and tile in residential or industrial environments.

They:

- Inspect, clean and prepare the sub-floors for covering.
- Measure, estimate and cut the quantity of material needed for the project.
- Determine where to place any seams or joints if needed.
- Lay the material and tack down or glue an underlayment over the floors.
- Sew the carpet seams together or use a special heat tape.
- Stretch and fasten the carpet around the perimeter of the room.
- Install sheet goods by applying adhesive to the subfloor, laying the material and rolling it out to finish.
- Repair damage to floor coverings as required.

**Work life:**

Floor Covering Installers work in a variety of indoor settings. They often work independently and are self-employed.

**Glazier** (8000 hours)

This is a Red Seal Certified trade.

**Duties:**

Glaziers install and prepare glass to install in automobiles, commercial and residential environments.

They:

- Interpret blueprints to determine the type and thickness of glass, frame, installation and materials required.
- Cut glass using manual or computerized cutters.

- Secure the panes in place using clips, points or moldings.
- Assemble parts of prefabricated glass, mirrors or glass products on walls, display cases, shower or revolving doors, store fronts, automatic doors, sky lights, solariums and other structures.
- Repair and service glass structures in residential and automotive settings, such as furniture, windows and doors.

**Work life:**

Glaziers will often work for glass installation contractors, window manufacturers, glass factories, automotive shops and service and repair shops. They can work from great heights.

**Insulator (Heat and Frost) (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Insulators install thermal and acoustical insulation materials in commercial and industrial structures and remove asbestos.

They:

- Read drawings and specifications to determine the insulation requirements of the structure.
- Choose the amount and type of insulation to be installed as well as the method of securing the insulation according to the unique requirements of the setting.
- Apply insulation materials to plumbing, heating, cooling and refrigeration systems, piping equipment and pressure vessels, in walls, floors and ceilings of other structures to prevent or reduce the passage of heat, cold, sound or fire.
- Measure and cut insulating material and the coverings.
- Install vapour barriers and finish insulated surfaces by applying metal cladding, canvas, plastic sheeting or cement.
- Remove or seal off old asbestos insulation.

**Work life:**

Insulators work in a variety of construction and industrial settings, both indoors and outdoors. They have to be especially aware of safety, as they sometimes work with hazardous materials, such as asbestos.



## **Ironworker (Generalist)** (11,000 hours)

This is a Red Seal Certified trade.

## **Ironworker (Structural/Ornamental)** (6000 hours)

This is a Red Seal Certified and Apprenticeable trade.

## **Ironworker (Reinforcing)** (3000 hours)

This is a Red Seal Certified and Apprenticeable trade.

### **Duties:**

Ironworkers fabricate, erect, hoist, install and repair structural ironwork, pre-cast concrete, concrete reinforcement materials, curtain walls, ornamental iron, and other metals used in the construction of buildings.

They:

- Read specifications to lay out their work.
- Unload and stack steel units so each piece can be hoisted as needed.
- Erect and set up scaffolding, hoisting and rigging equipment such as construction cranes and cables, pulleys and hooks.
- Weld or bolt steel units in place after aligning using an electric arc process.
- Erect structural and architectural pre-cast concrete components for buildings, bridges, towers and other structures.
- Assemble and erect prefabricated metal structures.
- Select, cut, bend, align and secure steel bars or metal mesh in concrete forms to reinforce the concrete.
- Mount and install ornamental and other structural metalwork such as curtain walls, metal stairways, railings and power doors.

### **Work life:**

Ironworkers work outdoors, in most situations. They will sometimes work at great heights in challenging and changing circumstances. Ironworkers often work from contract-to-contract on construction sites and can often travel to different locations. Employment can vary with seasonal weather conditions.

*The Ironworker (Generalist) is a combination of both the Ironworker (Reinforcing) and the Ironworker (Structural/Ornamental) trades.*

## **Lather (Interior Systems Mechanic) (6000 hours)**

This is a Red Seal Certified trade.

### **Duties:**

Lathers assemble and install the frameworks for ceilings, drywall partitions, soundproofing and vapour barriers.

They:

- Interpret blue prints and sketches to determine their work.
- Erect a metal or wood framework for walls, partitions, ceiling systems and ornamental shapes.
- Fabricate and install suspended metal ceiling grids and place in panels to form acoustical and coffered ceilings.
- Prepare wall and ceiling layouts.
- Install metal stud framing and furring for interior drywall walls and ceilings.
- Attach gypsum lath, metal lath and stucco wire.
- Install items such as metal door and window frames, access doors and wall insulation.
- Set up corner beads and wire mesh around beams to which plaster is to be applied.

### **Work life:**

Lathers work on a project-to-project basis and will often travel for work. They work primarily indoors and sometimes from a height. They will most often work in a construction team and will be in good physical condition.

## **Mobile Crane Operator (6000 hours)**

This is a Red Seal Certified trade.

### **Duties:**

Mobile Crane Operators use mobile cranes to lift and move heavy objects. Crane and hoisting equipment operators service and operate the hoist and swing equipment used to move machinery, materials and other large objects.

They:

- Service and operate booms that are mounted on crawlers or wheeled frames.
- Operate cranes or draglines to lift, move or position machinery, equipment and other large objects at construction or industrial sites.

- Inspect all equipment and calculate crane capacity and weight to prepare for rigging and hoisting.
- Drive pilings into earth to provide support to dredge waterways and to provide support for buildings and other structures.
- Drive the crane to the job site, rig and set up the machine for the lift using blocking and leveling materials.
- Perform routine maintenance work on the cranes.

### **Work life:**

Mobile Crane Operators work outside, in all kinds of conditions. They work on various construction sites and are hired by general contractors and subcontractors in the forestry, mining, construction and oil industries, and by crane rental companies. They can also work directly for building developers, construction firms or heavy construction firms. This is seasonal employment and depends on weather conditions.

## **Painter and Decorator (6000 hours)**

This is a Red Seal Certified and Apprenticable trade.

### **Duties:**

Painters and Decorators apply paint, varnish, stain, wallpaper, and wallcoverings to interior and exterior surfaces of buildings and other structures.

They:

- Determine quantities of material required by measuring surfaces or reviewing a work order.
- Prepare and clean surfaces using methods such as scraping, stripping with solvents, sanding, sand blasting, wire brushing and steam cleaning.
- Mix paint to obtain desired colour and texture.
- Apply an undercoat primer or sealer before painting, or apply “sizing” before wallpapering.
- Apply paint or other materials such as stain, lacquer, fiberglass, fire-proof and fire-retardant coatings or varnishes to surfaces of wood, metal, brick, concrete, plaster, stucco or stone using brushes, rollers or spray equipment.
- Apply finishes that are sponged, ragged and layered.
- Sandblast and apply industrial coatings.
- Measure, cut and apply wallpaper and fabrics to walls.
- Assemble and erect scaffolding and swing gates.

- Keep up-to-date on product changes and advise customer on selection of colour schemes and choice of wall coverings.
- Provide cost estimates to clients.

**Work life:**

Painters and Decorators are employed by contractors involved in construction or remodeling work, or by organizations that own or manage large buildings such as apartment complexes or schools. Painters and Decorators try to arrange their work so they will be outdoors in late spring, summer and early fall, and indoors in the late fall and winter.

**Plumber** (8000 hours)

This is a Red Seal, Compulsory Certified and Apprenticable trade.

**Duties:**

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.

They:

- Read design drawings, manufacturer's literature and installation diagrams to determine the layout of a plumbing system, water supply network, waste drainage systems and connected appliances.
- Install and repair domestic, commercial or industrial plumbing fixtures and systems; such as installing sinks, tubs and toilets.
- Locate, mark and cut for pipe connections, passage holes and fixtures in walls and floors.
- Select the type and size of pipe required and measure to specifications
- Join pipes using couplings, clamps, screws, bolts, cement or soldering, brazing and welding equipment.
- Test pipes for leaks using air and water pressure gauges.

**Work life:**

Plumbers are employed by construction contractors, plumbing repair shops and large organizations. Their employment prospects vary considerably with seasonal and economic climates.



## **Restoration Stone Mason** (8000 hours)

This is an Apprenticiable trade.

### **Duties:**

Restoration Stone Masons construct and reconstruct structures using stone and other kinds of masonry.

They:

- Lay brick and stone, concrete blocks, structural tiles and other kinds of masonry in residential, commercial and industrial settings.
- Identify types and properties of stone.
- Read sketches and blueprints to calculate materials required.
- Cut and trim bricks and concrete blocks according to specifications using hand and power tools.
- Construct, erect, install and repair walls, arches, paving, floors, fireplaces, chimneys, smokestacks and other such structures.
- Install firebricks to line industrial chimneys, furnaces, kilns, boilers and similar installations.
- Lay bricks, stone or similar materials to provide veneer facing to walls or other surfaces.
- Lay bricks or other masonry units to build patios, garden walls and other decorative installations.

### **Work life:**

Restoration Stone Masons are usually employed on a project-by-project basis or work for a construction company. They may work specifically with brick, stone, refractory, restoration, masonry, plastering, dry walling or lathing contractors.

## **Roofer** (6000 hours)

This is a Red Seal Certified trade.

### **Duties:**

Roofers install, repair and replace flat roofs and shingles, shakes or other roofing tiles on sloped roofs.

They:

- Install and repair built-up roofing systems using materials such as asphalt-saturated felts and hot asphalt and gravel.

- Prepare and apply protective coverings to flat and sloped roof surfaces in accordance with blueprints and specifications.
- Install and repair single-ply roofing systems using waterproof sheet materials such as modified plastics, elastomeric or other asphaltic compositions.
- Install, repair or replace shingles, shakes and other roofing tiles on sloped roofs of buildings.
- Install and repair metal roofs using hand and power tools.
- Set up scaffolding to provide safe access to roofs.
- Estimate materials required and quote costs.
- Set up manual and power hoists.

**Work life:**

Roofers are employed by roofing contractors on construction or repair jobs. They work outdoors on roofs of varying heights. Roofers may work considerable overtime in warmer seasons. This occupation is less sensitive to economic changes than some other construction trades because there is steady demand for repair work even if construction is slow.

**Tilesetter (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Tilesetters cover and decorate interior and exterior walls, floors and ceilings with ceramic, marble and quarry tile, mosaics or terrazzo.

They:

- Prepare, measure and mark the surfaces to be covered.
- Build underbeds and install anchor bolts, wires and brackets.
- Determine the best layout to achieve the desired pattern in a given space.
- Mix, apply and spread adhesives such as mortar, cement, mastic or epoxy over the surface.
- Set tiles or groups of tiles into position, align the tiles and tap them into place.
- Align and straighten tile, using levels, squares and straight edges.
- Cut and fit tiles around obstacles and openings using hand and power cutting tools.
- Pack grout (a fine mortar) into joints and remove the excess.
- Install terrazzo surfaces by scattering and rolling marble chips or other aggregates over a mortar base, and polishing it by hand or machine.
- Cut, surface, polish and install marble and granite.



- Lay and set mosaic tiles to create decorative wall, mural and floor designs.
- Remove and replace damaged tiles.
- Prepare cost estimates and orders.

**Work life:**

Tilesetters are employed by special trade, building and general contractors. Those who are self-employed usually contract their services for smaller renovation projects. Employment prospects for tilesetters change with seasonal and economic climates. They work both indoors and outdoors.

**Welder** (6000 hours)

This is a Red Seal Certified and Apprenticable trade.

**Duties:**

Welders join, cut or shape metals in beams, girders, vessels, piping and other metal components, make metal parts used in construction and manufacturing plants, and weld parts, tools, machines and equipment using electric arc, oxyacetylene flame, or other welding processes.

They:

- Read and interpret blueprints or welding process specifications.
- Develop patterns for projects.
- Lay out, cut and form metal to specification.
- Fit sub-assemblies and assemblies together and prepare them for welding.
- Clean, check for defects and shape component parts, sometimes using a cutting torch.
- Operate manual or semi-automatic welding equipment to fuse metal segments using processes such as gas tungsten arc, gas metal arc, flux cored arc, plasma arc, shielded metal arc, resistance welding and submerged arc welding.
- Operate brazing and soldering equipment.
- Operate metal shaping machines such as brakes, shears and other metal straightening and bending machines.

**Work life:**

Welders are employed in a variety of industries including vessel or structural steel assembly, pipeline construction, commercial construction, industrial construction, steel fabrication and heavy equipment repair. Welders may work outdoors on construction sites or indoors in production and repair shops. Travel may be required on jobs such as oil field-related welding.



# Motive Trades

## **Agricultural Equipment Technician** (8000 hours)

This is a Red Seal Certified and Apprenticeship trade.

### **Duties:**

Agricultural Equipment Technicians inspect, test, repair and maintain farming equipment such as tractors, tillage, spraying, irrigation, seeding and harvesting equipment.

They:

- Test and diagnose equipment using computerized diagnostic tools.
- Work on all parts of engine repair and maintenance of the vehicles and farm equipment systems, including fuel, brakes, steering, suspension, drive train, tires, emission control and exhaust, climate control and electrical systems.
- Maintain vehicles regularly with oil changes, lubrications and tune-ups.
- Explain and advise customers on the work done and needed in the future on the equipment.
- Assemble and adjust farm machinery.

### **Work life:**

The majority of journeypeople in this field work full-time all year round. They are often hired by employers who sell and maintain wholesale equipment and machinery or in transportation.

## **Automotive Painter** (4000 hours)

This is a Red Seal Certified trade.

### **Duties:**

An Automotive Painter prepares and paints cars and other vehicles.

They:

- Inspect the condition of the vehicle.
- Prepare the vehicle for painting by sanding, spot filling and priming using specialized hand and power tools.
- Mix paint and match colours.
- Use brushes or spray guns to apply primer, paint, enamel, lacquer and protective and decorative coatings.
- Apply decals, transfers, stencils and other decoration to vehicles.

**Work life:**

Automotive Painters are often hired in auto body repair shops, automotive and truck dealerships, high-end automotive shops, trucking companies and bus lines.

**Automotive Service Technician (8000 hours)**

This is a Red Seal, Compulsory Certified and Apprenticeable trade.

**Duties:**

Automotive Service Technicians inspect, diagnose, repair and service cars and light trucks. They may specialize in areas of brakes, steering, suspension, and engine and fuel systems.

**Automotive Service Technician (Service Station Mechanic) (6000 hours)**

This is a Compulsory Certified and Apprenticeable trade.

**Duties:**

Automotive Service Technicians (Service Station Mechanics) do tune-ups, safety inspections, install engines, service and repair braking systems, clutch and tires of cars and light trucks.

They:

- Inspect vehicles using road tests, observation of operation and computerized diagnostic and testing equipment.
- Adjust, repair and may rebuild steering and braking systems, drive trains, vehicle suspensions, electrical and air-conditioning systems, emission control and exhaust and wheel alignments using specialized hand and power tools.
- Perform maintenance service such as oil changes, lubrications and tune-ups
- Consult manufacturers' guides to diagnose and fix problems.
- Advise customers on the work completed and future vehicle maintenance issues.

**Work life:**

Automotive Service Technicians are hired in small, medium or large-scale businesses such as car dealerships. Many go on to own their own businesses or work for manufacturers or suppliers as salespeople.

## **Boat Builder** (Competency-Based)

This is an Apprenticeable trade.

### **Duties:**

Boatbuilders build and repair boats for commercial and recreational use. The boats range in size from small 7ft dinghies to large 70ft draggers or live-aboard cruisers. Boats can be made of fiberglass, steel, aluminum, wood, or wood-epoxy.

They:

- Laminate fiberglass hulls using hand tools or spray guns and a mixture of resin and fiberglass cloth using specified laminate schedule.
- Cut and weld aluminum or steel parts for assembly of hulls, decks and superstructure following blueprint specifications.
- Install machinery and equipment into the hull following design specifications and drawings and in accordance with industry standards such as Transport Canada or American Boat & Yacht Council.
- Take detailed internal hull measurements to fabricate and fit interior furnishings and trim.
- Fill, sand and fair surfaces of the hull, superstructure and interior using sanding board and power sander.
- Apply marine-grade paints to hull, superstructure and interior surfaces to specified finish using hand brush, roller, or spray gun.
- Install wiring in the hull to specified design to industry standards such as Transport Canada or American Boat & Yacht Council.
- Fit and install piping systems in the hull to industry standards such as Transport Canada or American Boat & Yacht Council.
- Consult with customer or supervisor and read blueprint drawings to determine the necessary repairs.
- Position and secure staging and support structures in the boat construction area.

### *Unique Training Path:*

Work as an apprentice for a period of typically 3 ½ to 5 years to complete all the required skills competencies and become a provincially and industry-recognized Boat Builder. The Nova Scotia Boat Builder Apprenticeship program is a competency-based (not time-based) program of skills learning. Apprentices learn on-the-job, as employees of a boatbuilding company. Some theory training is required to complete the required skills competencies. Contact the Nova Scotia Boatbuilders Association ([www.nsboats.com](http://www.nsboats.com)) for advice and help in finding an employer.

**Work life:**

There are approximately 50 boatbuilding companies in Nova Scotia. They range from small operations that build one boat at a time, to large organizations that employ dozens of skilled tradespeople. Boat Builders work year-round. Wage rates are competitive with most other industry sectors.

**Heavy Duty Equipment Technician (8000 hours)**

This is a Red Seal Certified and Apprenticeship trade.

**Duties:**

Heavy Duty Equipment Technicians repair, maintain and overhaul heavy-duty equipment such as bulldozers, cranes and graders.

They:

- Maintain and repair vehicles and equipment including combustion engines and components, crawler tractors, rippers, ditchers, backhoes, trenchers, gantry cranes and similar ground working equipment.
- Work on scrapers, motor scrapers, tractors, off-highway motor vehicles, trucks and trailers.
- Repair and maintain the equipment as necessary, including cleaning, lubricating and general maintenance.
- Work with and interpret technical manuals and computers to assist diagnosing faults or malfunctions.
- Replace defective parts or components using various hand and power tools.

**Work life:**

Heavy Duty Equipment Technicians often work outside on construction sites or in industrial sites. These sites can be in many different industries, such as transportation, forestry, mining, oil and gas, landscaping or land clearing. A few Heavy Duty Equipment Technicians might even work in laboratories overhauling fuel injection pumps and delivery systems. The job is quite variable and depends on the contract or project.

## **Motorcycle Mechanic (8000 hours)**

This is a Red Seal Certified trade

### **Duties**

Motorcycle Mechanics assemble, service, and repair motorcycles, motor scooters and other multi-wheeled lightweight all-terrain vehicles and accessories.

They:

- Review work orders and discuss the work to be performed with supervisor.
- Diagnose problems and locate failures with the electrical system, engine, power train, suspension or frame by inspecting the vehicle, listening to it operate and using testing equipment.
- Determine estimates of repair cost.
- Diagnose and repair fuel injection, carburetor system, drive line, steering system, front and rear suspension, mechanical braking system, hydraulic braking system, ignition system, charging system, frames, tires and wheels.
- Test and adjust repaired systems for proper performance.
- Perform scheduled maintenance such as cleaning and adjusting the carburetor, adjusting the clutch, brakes and drive chain, and replacing worn parts.
- Advise customers on the work performed and the general condition of motorcycle.

### **Work life:**

Motorcycle Mechanics are employed at motorcycle dealerships and repair shops or are self-employed. Motorcycle Mechanics usually work indoors, however, the bulk of their work is working on motorcycles in the warmer months. Often mechanics will also work on all-terrain vehicles and snowmobiles to continue working through the winter.

## **Motor Vehicle Body Repairer (Metal and Paint) (8000 hours)**

This is a Red Seal Certified and Apprenticeable trade.

### **Duties:**

Motor Vehicle Body Repairers (Metal and Paint) are responsible for restoring the structural integrity of damage vehicles during the repair process.

They:

- Read and interpret specification charts and use sophisticated measuring and repair systems to restore damaged vehicles.



- Repair, reshape, and refit body panels, fenders, and skirtings.
- Weld breaks in body panels, fenders and skirtings.
- Repair restraint systems, such as air bags and seat belts.
- Shrink or stretch metal body panels by heat treatment.
- Remove or replace electrical and vacuum components, wiring harnesses, air conditioning systems and water pumps.
- Remove and install bolt-on components such as hoods, decklids, fenders, trim, doors, glass and interior components.
- Straighten and align frame and unibody assemblies.
- Remove, replace or adjust steering and suspension components.
- Verify dimensional accuracy, system functions, passenger protection and finally, test-drive the vehicle to ensure proper alignment and handling.

### **Work life:**

Motor Vehicle Body Repairers are employed by auto body repair shops, automobile and truck dealerships, custom shops and sometimes by trucking companies and bus lines. They mostly work indoors. Motor Vehicle Body Repairers can also become automobile damage appraisers for insurance companies.

### **Partsperson (6000 hours)**

This is a Red Seal Certified trade.

### **Duties:**

Partspersons manage and dispense parts inventories, which may include automotive, heavy duty, agricultural, industrial and recreational vehicle parts.

They:

- Are responsible for stock handling, warehousing, identifying and cataloguing parts and assemblies.
- Are responsible for stock handling, warehousing, identifying and cataloguing parts and assemblies.
- Order, receive, inspect, price and sell parts in wholesale, retail or warehouse distribution businesses.
- Maintain records of the amount, kind and location of parts in the store using a manual or computerized inventory system.
- Provide customer support service and merchandising by selling spare and replacement parts for motor vehicles, machinery and equipment in a retail setting in person, over the telephone or Internet.

- Organize and ship exchange parts and returns.
- Prepare, maintain and update purchasing files, reports, catalogues and price lists.
- Prepare statements.
- Submit bills.
- Use administrative and organizational tools such as computers, calculators, facsimile (fax) and materials handling equipment.

**Work life:**

A Partsperson may work for motor vehicle parts manufacturers, motor vehicle manufacturers, motive power repair shops and retail parts establishments. They may work indoors or outdoors, which may include working in storerooms where large inventories of parts are kept, usually on rows of shelves or in bins. With some sales experience, Partspople can move into sales representative positions.

**Recreation Vehicle Service Technician (6000 hours)**

This is a Red Seal Certified trade.

**Duties:**

RV Service Technicians install and repair exterior and interior components, install accessories, and perform pre-delivery inspections on motor homes, holiday trailers, fifth wheels, truck campers, and tent trailers.

They:

- Examine, troubleshoot and diagnose units needing repairs and/or maintenance by using computerized and electrical testing equipment, troubleshooting techniques, manufacturers' specifications, and Internet websites.
- Repair or replace electrical wiring, plumbing, propane gas lines, appliances, windows, doors, cabinets and structural frames in recreational vehicles.
- Repair fiberglass, body and structural components of recreational vehicles.
- Communicate with supervisors, manufacturers and consumers to ensure timely, efficient and economical repairs.
- Install accessories.
- Perform pre-delivery inspections.
- Write repair estimates.



**Work life:**

Recreation Vehicle Service Technicians are employed by dealerships, manufacturers and independent repair shops. Recreation Vehicle Service Technicians enjoy a high level of job security, usually work at indoor shops and occasionally work outdoors and at RV sites. Experienced Recreation Vehicle Service Technicians may advance to a number of supervisory or administrative positions, specialize in a particular area of repair, or open their own repair shops.

**Transport Trailer Technician (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Truck and Transport Technicians repair and service the braking, electrical, hydraulic system, and heating/cooling units of trucks and transport trailers, on-highway vehicles, both towed and self-propelled.

They:

- Interpret work orders and technical manuals and discuss work orders with supervisor.
- Inspect truck trailer systems and components using computerized diagnostic and other testing devices to diagnose and isolate faults.
- Adjust, repair or replace parts of truck trailer systems including electrical and electronic systems, landing gear assemblies, frames, hitching and coupling systems, bodies, suspension parts, tires, wheels, rims, hubs, and axles, air and auxiliary systems, braking systems, heating and refrigeration systems and ventilation devices and hydraulic systems, using hand tools and other specialized repair equipment.
- Test and adjust repaired systems to manufacturer's performance specifications.
- Keep equipment cleaned, lubricated and maintained.
- Advise customers on work performed, general trailer condition and future repair requirements.
- Write service reports.

**Work life:**

Truck and Transport Technicians are employed in small repair shops, large fleet maintenance companies, transportation and construction companies. The working environment for transport trailer technicians varies considerably from one job to another.

## **Truck and Transport Mechanic (8000 hours)**

This is a Red Seal, Compulsory Certified and Apprenticable trade.

### **Duties:**

Truck and Transport Mechanics repair and service the various systems and engine components of buses and transport vehicles. These may include flat decks, dry freight vans, refrigerated vans, tankers, converters, boosters, pole trailers, jeeps, steering dollies, dump trailers and any other commercial pull type devices.

They:

- Review work orders and discuss work with supervisor.
- Inspect motors in operation and road test motor vehicles.
- Test systems and components using computerized diagnostic and other testing devices to diagnose and isolate faults.
- Adjust, repair or replace parts and components of truck and bus systems including fuel, brake, steering and suspension, engine and drive train, emission control and exhaust, cooling and climate control, and electrical and electronic systems using hand tools and other specialized automotive repair equipment.
- Test repaired equipment to ensure that the work done meets manufacturers' specifications and legislated regulations.
- Perform scheduled maintenance service, such as oil changes, lubrications and tune-ups.
- Advise customers on work performed, general vehicle conditions and future repair requirements.
- Write service reports.

### **Work life:**

Transport Trailer Mechanics are employed in transportation fleet repair shops, trailer dealerships, municipal or provincial highway transportation departments, general mechanical repair shops, manufacturers' repair shops and specialized repair shops. Truck and Transport Mechanics may also work as service advisors, work for suppliers or manufacturers, or work in sales.

# Industrial/Mechanical Trades

## Alarm and Security Technician (6000 hours)

### Duties:

An Alarm and Security Technician installs and repairs intrusion alarm, closed circuit video and access control systems.

They:

- Repair, install and service security systems.
- Change access code combinations.
- Discuss security needs with clients.
- Advise clients on materials and costs.
- Install and test security systems including intrusion alarms, closed circuit videos and access control systems.
- Order replacement parts.
- Keep up to date with new products and developments.

Work life:

Alarm and Security Technicians tend to work in shops or have a mobile workshop. They need to keep informed about all the new developments in security systems. They often work with customers for a good portion of their day.

## Appliance and Service Technician (6000 hours)

This is a Red Seal Certified trade.

### Duties:

Appliance and Service Technicians install and repair household and commercial appliances such as refrigerators, ovens, ranges, washers, dryers, microwaves and waste disposers.

They:

- Investigate and diagnose problems in household equipment with specialized tools.
- Consult manufacturers' manuals and technical bulletins to identify how to fix the problem.
- Clean and replace parts of equipment.
- Deal with customers often in their home environment, prepare cost estimates and work orders.

**Work life:**

Appliance Service Technicians are very independent. They can work in a shop if the appliances are portable, or work out of a truck if the appliances are not portable. They will often be dealing with customers in their homes.

**Boilermaker** (6000 hours)

This is a Red Seal Certified and Apprenticeship trade.

**Duties:**

Boilermakers build, assemble, erect, test and repair air-tight containers such as boilers, tanks and pressure vessels.

They:

- Read blueprints or specifications to plan operations.
- They lay out plate, sheet steel and other heavy metal and find and mark the bending and cutting lines.
- Set up and operate metal-working machines such as brakes, rolls, shears, flame cutters and drill presses to cut and shape metal into sections.
- Assemble and fit metal plates to form complete units using tack welding, bolting or other methods.
- Erect, install, maintain and repair boilers and other heavy-metal products using hand and power tools.

**Work life:**

Boilermakers often work outside and sometimes at great heights. They require physical strength and coordination. Many people in this trade work for the federal government in the Department of National Defense. They might also work for private contractors.

**Communications Technician** (6000 hours)**Duties:**

Communication Technicians install, maintain, remove or repair wiring networks, consumer and business communication equipment and specialized equipment such as intercoms, fax machines and computer networks.

They:

- Install and/or maintain electronic communication equipment such as telephone sets, line status indicator or modems
- Troubleshoot service malfunctions or equipment breakdowns by evaluating, coordinating, and resolving the telecommunications problems
- Process customer orders for the installation of initial voice, video and/or data communication services as well as service orders for the maintenance and repair of communications equipment and circuits
- Install cabling or other equipment in accordance with accepted industry standards
- Maintain network documentation and equipment specifications
- Maintain and modify operating procedures and standards for documentation

**Work life:**

Communication Technicians should have mechanical and analytical ability, good communication skills and enjoy doing precision work that sometimes required creativity. They are employed by companies that install, maintain, sell, rent or lease communications equipment. They may also install private communication systems.

**Electric Motor System Technician (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Electrical Motor Systems Technicians test, rebuild and repair electric motors, generators, transformers, controllers and related electrical and mechanical equipment used in commercial, industrial and institutional establishments.

They:

- Diagnose problems and dismantle electric motors, transformers, switchgear, electric welders, generators and other electrical and mechanical equipment for servicing, modification or repair.
- Remove and replace shafts, bearings, and other components, referring to blueprints or service manuals as required.
- Wind and assemble various types of coils for electric motors or transformers and reinstall them.
- Balance armatures or rotors, weld and braze or solder electrical connections, and align and adjust parts.



**Work life:**

Most Electrical Motor Systems Technicians work primarily indoors in large shops and production plants. Those who work for firms that contract their services to other organizations may remove and replace burned out motors on the customer's premises, and may have to travel regularly to perform maintenance on customer equipment.

**Electronics Technician (Consumer Products) (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Electronics Technicians (Consumer Products) service and repair radios, televisions, and VCRs.

They:

- Talk to customers and conduct routine checks to find the source of a malfunction.
- Inspect and test electronic equipment, components and assemblies using multimeters, circuit testers, oscilloscopes, logic probes and other test equipment.
- Diagnose and locate circuit, component and equipment faults.
- Follow equipment manuals and drawings to adjust, align, replace or repair parts.
- Keep records such as work orders and test and maintenance reports.
- Access and distribute product information using electronic means such as e-mail, data bases and the Internet.
- May specialize in repairing particular types of electronic equipment such as radio and television receivers, stereo components, video cameras, two-way radio communication systems, video and audio tape recorders, bio-medical systems, computer systems or security systems.

**Work life:**

Electronic Technicians generally work alone with little supervision. Some technicians travel to customers' locations to make routine repairs and transport faulty equipment back to the shop if necessary, but the work is otherwise indoors.

**Gasfitter (4000 hours)**

This is an Apprenticeable trade.

**Duties:**

Gasfitters install piping, appliances, equipment and controls for the use of natural gas or propane as a fuel in residential, commercial and industrial environments.



They:

- Inspect, install, repair and maintain gas lines and gas equipment such as meters, regulators, heating units and appliances.
- Study drawings and specifications to prepare for installations.
- Determine the size and type of pipe, equipment, appliances and devices to use for the project.
- Test piping and other materials.
- Cut, thread and assemble pipes using pipe cutters, pipe threading machines, pipe vices and other tools.
- Install vents and flues and connect gas-consuming appliances such as ranges, dryers, barbecues, furnaces, boilers, space heaters, radiant and forced air heaters.
- Inspect systems and identify and replace faulty components.
- May also install and service propane and natural gas filling stations.

**Work life:**

Gasfitters work both indoors and outdoors and in a physically-demanding trade. They are mostly employed by the firm who is distributing gas in the province. Others work for companies who are engaged in the installation and maintenance of propane gas delivery systems.

**Industrial Electrician** (8000 hours)

This is a Red Seal Certified and Apprenticable trade.

**Duties:**

Industrial Electricians install, repair, and maintain electrical wiring and electrical equipment for industrial settings that provide heat, light, power, control, signal or fire alarms.

They:

- Read and interpret drawings, blueprints, schematics and electrical code specifications to determine wiring layouts for new or existing installations.
- Install, examine, replace or repair electrical wiring, receptacles, switch boxes, conduits, feeders, fibre-optic and coaxial cable assemblies and lighting fixtures.
- Test electrical and electronic equipment and components for continuity, current, voltage and resistance.
- Splice, join and connect wire to fixtures and components to form circuits.

- Maintain, repair, install and test switchgear, transformers, switchboard meters, regulators and reactors.
- Maintain, repair, test and install electrical motors, generators, alternators, industrial storage batteries and hydraulic and pneumatic electrical control systems.
- Test circuits to ensure safety and compatibility of the system.
- Conduct preventive maintenance programs and keep maintenance records.

**Work life:**

Most Industrial Electricians work for larger companies on a full-time basis to maintain and repair the electrical systems. They mostly work indoors.

**Instrumentation and Control Technician** (8000 hours)

This is a Red Seal Certified and Apprenticeship trade.

**Duties:**

Industrial Instrument Mechanics repair, maintain, and install industrial measuring and controlling equipment.

They:

- Work with pneumatic, electronic and microcomputer instruments used to measure, control and maintain pressure, flow, temperature, level, motion, force, and chemical composition.
- Repair and maintain system components and remove and replace defective parts when needed.
- Calibrate and maintain industrial instruments.
- Work with engineers on basic design elements.
- Install and maintain instruments on new or existing plant equipment and processes.
- Interpret and use appropriate CSA, ISA and API installation standards and practices.

**Work life:**

Industrial Instrument Mechanics work in industrial settings in various sectors such as: pulp and paper, hydropower generation, mining and natural gas and industrial and commercial manufacturing. Individuals in this trade sometimes move on to management or sales positions.



## **Industrial Mechanic (Millwright) (8000 hours)**

This is a Red Seal Certified and Apprenticeship trade.

### **Duties:**

Millwrights install and maintain stationary machinery and equipment in factories and production plants.

They:

- Read diagrams and schematic drawings to determine work procedures.
- Dismantle and move stationary industrial machinery such as pumps, fans, tanks, conveyors, furnaces and generators, using hand and power tools and rig hoisting and lifting equipment.
- Inspect machinery and equipment to investigate malfunctions.
- Install and maintain power transmission, vacuum, hydraulic and pneumatic systems, and programmable logic controls.
- Fit bearings, align gears and shafts, attach motors, and connect couplings and belts.
- Operate machine tools such as lathes and grinders to fabricate parts as required.
- Clean, lubricate and maintain equipment using preventative procedures such as vibration analysis.
- Are responsible to make and maintain an inventory of replacement parts for the industrial equipment.

### **Work life:**

Millwrights are employed in manufacturing plants and other industrial establishments, often doing construction or plant maintenance work. They work mostly in a team environment of other tradespeople such as Machinists, Electricians and Pipefitters.

## **Locksmith (8000 hours)**

### **Duties:**

Locksmiths install and repair locks, make keys, and change lock combinations. They work on residential, automotive, commercial and institutional locksets and door hardware.

They:

- Repair and service adjusting key machines.
- Repair, adjust, rekey and install locks.

- Reproduce keys for locks and change key combinations.
- Open cylinders when keys are not available.
- Prepare master keys from code.
- Install and design high-security lock and master key control systems, window bars, deadlocks, and keyless entry locks for various companies, including factories and government institutions.
- Repair or replace entrance or exit door security components, such as closers, hinges and release mechanisms.
- Open and make keys for automobiles.
- Change combinations on safes and vaults as needed.

**Work life:**

Locksmiths tend to work in shops or have a mobile workshop. They need to keep informed about all of the new developments in security systems. They often work with customers for a good portion of their day.

**Machinist** (8000 hours)

This is a Red Seal Certified and Apprenticable trade.

**Duties:**

Machinists set up and operate metal cutting and grinding machines such as lathes, milling machines and drills to make parts and products with precise dimensions.

They:

- Read and interpret blueprints, charts and tables or study sample parts to determine the machine operation to be performed.
- Compute dimensions and tolerances and measure by the plans provided, through logic or by using specific tools such as micrometers and vernier calipers.
- Prepare working sketches if needed.
- Install, operate and maintain a variety of machine tools including computer numerically controlled tools to perform precision, non-repetitive machining operations such as sawing, turning, milling, boring, planning, drilling, precision grinding and other operations.
- Fit and assemble machined metal parts and subassemblies using hand and power tools.
- Verify dimensions of products for accuracy and conformance to specifications using precision measuring instruments.



**Work life:**

Machinists can work in big, industrial settings or smaller job shops. In the job shops, they make parts for various types of machinery, and in industrial settings, they may be part of a large production line, where many of the same parts are made. Machinists work in any environment where equipment is being made or repaired.

**Marine Fitter (8000 hours)****Duties:**

A Marine Fitter makes and repairs structural metal parts for ships and cuts and shapes metal for shipbuilding purposes.

They:

- Assess and identify what work needs to be done on the boating equipment, after consulting work orders.
- Maintain equipment as needed and according to schedule.
- Estimate the repair cost.
- Operate boats and boat handling equipment.
- Install and maintain engines and components including electrical, hydraulic and drive systems.
- Test the repaired equipment.
- Explain to customers the repair work that needed to be done.

**Work life:**

Marine Fitters are employed by dealer service shops and by independent boating service establishments.

**Metal Fabricator (Fitter) (8000 hours)**

This is a Red Seal Certified and Apprenticeable trade.

**Duties:**

Metal Fabricators make and repair metal parts used in the construction of bridges, buildings, and plates for boilers, tanks and pressure vessels.

They:

- Read and interpret drawings and discuss them with the customer.
- Perform metal fabrication calculations.
- Lay out pattern and transfer the features of the drawings to the metal part.
- Develop patterns for sheet metal using Computer Assisted Design and Drafting (CAD) software packages.
- Use metal removal, punching and forming equipment machines and cutting torches to cut steel, drill or punch holes, and roll, bend or press steel into the desired shapes.
- Fasten components together (by mechanical means or tack weld) in preparation for a welder to complete the process.

**Work life:**

Metal Fabricators work for industrial companies who do precise metal fabrication. They usually work inside factories or in workshops. Structural steel and plate fitters are employed by manufacturing, commercial construction and repair shops in the steel fabrication and oil industries.

**Mine Electrician** (5000 hours)

**Duties:**

Mine Electricians install, repair, and maintain electrical equipment and systems used in mining.

They:

- Read and interpret drawings, blueprints, schematics and electrical code specifications to determine layout of industrial electrical equipment installations.
- Install, examine, replace or repair electrical wiring, receptacles, switch boxes, conduits, feeders, fibre-optic and coaxial cable assemblies, lighting fixtures and other electrical components.
- Test electrical and electronic equipment and components for continuity, current, voltage and resistance.
- Maintain, repair, install and test switchgear, transformers, switchboard meters, regulators and reactors.
- Maintain, repair, test and install electrical motors, generators, alternators, industrial storage batteries and hydraulic and pneumatic electrical control systems.



- Troubleshoot, maintain and repair industrial (mine), electrical and electronic control systems and other related devices.
- Conduct preventive maintenance programs and keep maintenance records.
- May install, maintain and calibrate industrial instrumentation and related devices.

**Work life:**

This is a very specific, industrial trade. Mine Electricians work in mines. However, they will have many transferable skills for an Industrial Electrician. Therefore, if they decide to leave mining, they will be able to work in other industrialized environments.

**Mine Mechanic** (5000 hours)

**Duties:**

Mine Mechanics repair, maintain, and, if needed, assemble equipment and machinery used in mining.

They:

- Install and repair any machinery in the mine using specific mechanical hand and power tools.
- Maintain equipment by greasing, oiling, cleaning and routine inspections.
- Dismantle and reassemble mine machinery.
- Read and interpret blueprints and construction and installation instructions.
- May have to conduct processes such as vertical welding.
- Build and install ordinary sheet metal piping.

**Work life:**

This is a very specific, industrial trade. Mine Mechanics work in mines. However, they will have many transferable skills for an Industrial Instrument Mechanic. These tradespeople work in industrial settings in various sectors such as: pulp and paper, hydropower generation and natural gas and industrial and commercial manufacturing.



## **Oil Burner Mechanic** (6000 hours)

This is a Red Seal, Compulsory Certified and Apprenticeable trade.

### **Duties:**

Oil Burner Mechanics install, repair, and service oil burning, coal, wood and oil combination burning equipment and appliances.

They:

- Put fuel pipes, air ducts and other components in place following blueprints and design specifications.
- Check equipment.
- Perform routine maintenance.
- Diagnose malfunctions and repair or replace defective or worn parts.

### **Work life:**

Many Oil Burner Mechanics are self-employed. Employment in this field is slower than other trades due to advances in technology that are causing the newer heating systems to become more reliable, reducing maintenance needs.

## **Power Engineer** (4000 – 8000 hours)

This is an Apprenticeable trade.

### **Duties:**

Power Engineers maintain equipment, boilers and generators that provide heat, ventilation and power for buildings.

They:

- Inspect, install and test machinery and equipment.
- Discuss machine operation variations with supervisors or other maintenance technicians, to diagnose problem or repair machine.
- Dismantle defective machines and equipment and install new or repaired parts.
- Clean and lubricate shafts, bearings, gears, and other parts of machinery.
- Install and repair electrical and electronic components of machinery and equipment.
- Lie out, assemble, install, and maintain pipe systems and related hydraulic and pneumatic equipment.
- Repair and replace gauges, valves, pressure regulators, and related equipment.



- Install, program or repair automated machinery and equipment, such as computer numerical controls.
- Set up and operate machine tools such as lathe, grinder, drill, and milling machine to repair or fabricate machine parts, jigs and fixtures, and tools.
- Operate cutting torch or welding equipment to cut or join metal parts.
- Fabricate and repair counters, benches, partitions and other structures.

**Work life:**

Power Engineers work in industrialized settings. They often work for large companies and on a team.

**Powerline Technician** (8000 hours)

This is a Red Seal Certified and Apprenticable trade.

**Duties:**

Powerline Technicians build and maintain overhead and underground electrical power transmission and distribution systems, including powerlines, poles, and street lights.

They:

- Install, maintain, troubleshoot and repair electrical distribution and transmission systems including overhead and underground power lines and cables, insulators, conductors, lightning arrestors, switches, transformers and other associated equipment.
- In a power disturbance, failure, or storm damage, Powerline Technicians locate the source of the problem and replace or repair defective power lines and accessories.
- Erect and maintain steel, wood or concrete poles, towers and guy wires.
- Splice, solder and insulate conductors and related wiring to connect power distribution and transmission networks using splicing tools, related electrical equipment and tools.
- Inspect and test overhead and underground power lines and cables and auxiliary equipment using electrical test equipment.
- Climb ladders or operate hydraulic buckets when working aloft on poles and towers, or work in confined spaces such as trenches and tunnels to install power lines and cables and associated equipment.
- Install and maintain street lighting systems.



- Use wiring diagrams, voltage indicating devices, and other electrical-testing instruments to identify defective automatic sectionalizing devices, circuit breakers, fuses, voltage regulators, transformers, switches, relays, or wiring.

**Work life:**

Powerline Technicians are employed by utility companies and their contractors. Powerline Technicians work outdoors at various work sites, so travelling is often part of the work day. Although a 40-hour work week is normal, in emergencies technicians may be called upon at any hour and in any weather.

**Refrigeration and Air Conditioning Mechanic (8000 hours)**

This is a Red Seal, Compulsory Certified and Apprenticeable trade.

**Duties:**

Refrigeration and Air Conditioning Mechanics install, maintain, repair and overhaul industrial, commercial and residential refrigeration and air conditioning systems and their component parts.

They:

- Read and interpret blueprints, drawings or other specifications.
- Measure and lay out reference points for installation.
- Assemble and install refrigeration or air conditioning components such as motors, controls, gauges, valves, circulating pumps, condensers, humidifiers, evaporators and compressors using hand and power tools.
- Measure, cut and connect piping using welding and brazing equipment.
- Install, troubleshoot and overhaul entire heating, ventilation, air handling, and refrigeration and air conditioning systems.
- Start up system and test for leaks using testing devices.
- Recharge system with refrigerant and perform routine maintenance or servicing.
- Prepare work estimates for clients.

**Work life:**

Refrigeration and Air Conditioning Mechanics usually work for companies that install and service air-conditioning and refrigeration systems. They work in compressor rooms and on roof tops as well as in computer rooms. They normally work 40 hours a week on a year-round basis. Work is performed in restaurants, supermarkets, hospitals or anywhere cooling systems are required.



## Rig Technician

This is a Red Seal Certified trade.

### Duties:

Rig technicians operate the drawworks, rotary equipment and pumps; inspect rig; maintain records of drilling operations; are able to perform all duties performed by any crew member; and are responsible for the safety, training and supervision of the crew members.

They:

- Work with a variety of hand tools, as well as motorized equipment, lifting and hoisting equipment, and personal protective and safety equipment.
- Disassemble and assemble rigs.
- Inspect and maintain rig equipment.
- Run air, fuel and hydraulic lines, and power cables.
- Set up boiler and steam circulating systems.
- Perform drilling, tipping and casing activities.
- Perform specialized drilling and well operations.
- Prepare for rig moves.

### Work life:

Rig crew often travel to remote locations and work in all weather conditions. Good physical condition is important because the work often required considerable lifting, long hours and repetitive movement. Shift work is an expectation, with drilling taking place on a 24-hours schedule.

## Sheet Metal Worker (8000 hours)

This is a Red Seal Certified and Apprenticeable trade.

### Duties:

Sheet Metal Workers design, fabricate, assemble, install, and repair the sheet metal products required in a wide variety of industries and settings. They use many types of metal including black and galvanized steel, copper, brass, nickel, stainless steel, aluminum and tin plate.

They:

- Lay out, measure and mark sheet metal according to drawings or templates.
- Develop patterns for sheet metal using Computer-Assisted Design and Drafting (CAD) software packages.
- Operate light metalworking machines such as shears, brakes, punches, and drill presses, including Computer Numerical Control (CNC) equipment to cut, bend, punch, drill, shape or straighten sheet metal and operate computerized laser or plasma cutting equipment to cut sheet metal.
- Fabricate, assemble, install and repair sheet metal products.
- Fit and join sheet metal parts using riveter, welding, soldering to fabricate ventilation shafts, eaves troughs, partition frames, air and heat ducts, roof decking and sheet metal buildings.
- Grind and buff seams, joints and rough surfaces.
- Inspect product quality and installation to ensure conformance to specifications.

**Work life:**

Most Sheet Metal Workers are employed by sheet metal, air-conditioning and heating contractors involved in residential, commercial and industrial construction. Some are employed by roofing contractors to install flashing and coping. Sheet Metal Workers work indoors and outdoors in all types of weather. Experienced Sheet Metal Workers may become specialists in design and layout work or in estimating the cost of installations.

**Sprinkler System Installer** (8000 hours)

This is a Red Seal, Compulsory Certified and Apprenticiable trade.

**Duties:**

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

They:

- Read and interpret drawings and specifications to determine layout requirements.
- Install clamps, brackets and hangers to support piping systems as well as sprinkler and fire protection equipment using hand and power tools.
- Fabricate, install, test, maintain and repair water, foam, carbon dioxide and dry chemical sprinkler systems in buildings for fire protection purposes.

- Join and connect pipes and piping sections to related piping systems, tanks, mains, pumps, compressors and control equipment using various pipe joining methods including soldering and welding.
- Install valves, alarms and associated equipment.
- Test system for leaks using air or liquid pressure equipment.
- Inspect, maintain and repair piping, fixtures and controls including hydrant, pump and sprinkler head connections.
- Prepare cost estimates for clients.

**Work life:**

Sprinkler Systems Installers work in industrial operations, department stores, office buildings, hotels, schools, hospitals and residences. Sprinkler Systems Installers are employed in the construction industry by contractors and companies that specialize in fire protection. Sprinkler Systems Installers work primarily indoors, often in temporarily heated or unheated spaces.

**Steamfitter-Pipefitter** (8000 hours)

This is a Red Seal Certified and Apprenticable trade.

**Duties:**

Steamfitter – Pipefitters lay out, assemble, fabricate, maintain and repair piping systems which carry water, steam, chemicals or fuel used in heating, cooling, lubricating and other processes.

They:

- Study blueprints, drawings and specifications to determine the type of pipe and tools to use, and lay out the sequence of tasks.
- Make detailed sketches for pipe and equipment fabrication and installation, as required.
- Cut openings for pipes in walls, floors and ceilings using hand or power tools.
- Select type and size of pipe required; measure, cut, thread and bend pipe to required shape using hand and power tools.
- Weld, braze, cement, solder and thread joints to connect pipes and fabricate sections of piping systems.
- Use testing equipment to check systems for leaks.
- Clean and maintain pipe units and fittings.



- Remove and replace worn components.
- Prepare cost estimates for clients.

**Work life:**

Steamfitter – Pipefitters are employed by pipeline construction contractors and sub-contractors, thermal or steam generating plants, manufacturers, utility companies, oil refineries, gas plants, pulp mills and chemical plants. Employment prospects change with the seasonal and economic climates. Construction contractors may require employees to travel and live in rented accommodation or at a company “on-site” camp.

**Tool and Die Maker (8000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Tool and Die Makers use precision metal-working machines and hand tools to build and repair special tools, dies, (metal forms used to shape metal in stamping and forging operations), metal moulds, press tools, various types of small mechanical devices and patterns used in manufacturing.

They:

- Read and interpret engineering drawings and specifications of tools, dies, prototypes or models.
- Prepare templates and sketches, and determine work processes.
- Choose, measure and mark metal stock or castings.
- Set up, operate and maintain a variety of conventional and Computer Numerically Controlled (CNC) machine tools to cut, turn, mill, plane, drill, bore, grind or otherwise shape work piece to prescribed dimensions and finish.
- Use a variety of machine tools to machine parts to close tolerances, and may apply heat treatments.
- Check the accuracy of the work and assemble the parts.
- Fit and assemble or disassemble parts using hand tools.
- Test the completed device for proper operation.

**Work life:**

Tool and Die Makers are employed primarily in large and small companies in manufacturing industries such as automobile, aircraft, metal fabrication, electrical machinery and plastics, and in tool and die, mould making and machine shops. Tool and Die Makers usually work indoors in “tool rooms” or machine shops. Some become tool designers and/or open their own tool and die shops.



# Service Trades

## **Baker** (6000 hours)

This is a Red Seal Certified trade.

### **Duties:**

Bakers prepare breads, pastries, cookies, cakes and other baked goods.

They:

- Follow and create recipes for baked goods.
- They prepare bread, rolls, muffins, pies, cookies and cakes for sale in retail food establishments or in restaurants.
- They decorate baked goods.
- They are in charge of the inventory of ingredients and baking tools and must ensure that the finished products are up to industry standards.
- They often oversee the sale of the baked goods.
- Bakers are often in charge of hiring and training baking personnel.

### **Work life:**

Bakers will often work in restaurants, hotels, grocery stores, catering companies, or bakeries, as well as in public or private food service operations.

## **Cook** (6000 hours)

This is a Red Seal Certified and Apprenticable trade.

### **Duties:**

Cooks plan and direct food preparation, organize menus and ingredients for people in institutions, restaurants, hotels and other establishments.

They:

- Plan menus according to requests and number of people.
- Measure and order ingredients.
- Carve cooked meats, poultry and game.
- Keep their work environments up to health and safety standards.
- Clean and maintain cooking utensils.
- Oversee kitchen staff in preparation, handling and cooking of the food.
- Monitor and order supplies for the kitchen.

- Operate stoves and ovens.
- Evaluate the quality of the products used in the preparation of the food.

**Work life:**

Cooks work in the accommodation and food services industry. They work in hotels, institutions, restaurants, and other establishments. They often work shift work and sometimes move on to own their own restaurants.

**Hairstylist (4000 hours)**

This is a Red Seal Certified trade.

**Duties:**

Hairstylists cut and style hair according to the client’s lifestyle, preference and physical features.

They:

- Cut and style hair according to the client’s preferences.
- Recommend hair styling to clients according to their physical features.
- Shampoo and rinse hair.
- Use permanent wave solutions.
- Straighten or wave hair.
- Apply bleach, colour, dyes, rinses and highlights.
- Work with wigs, hairpieces and extensions.

*Unique Training Path:*

Hairdressing is a skilled trade that might require private certification in order to work in specific salons in Nova Scotia. Contact a local salon to find out the specific requirements if you want to work in a salon in Nova Scotia.

**Work life:**

Hairstylists often work in privately owned salons or are self-employed. They work on their feet for most of the day and like to work with people.

