

Apprenticeship and Industry Training

Construction Craft Labourer Competency Profile



Alberta Apprenticeship
and Industry Training
Excellence through training and experience



CONSTRUCTION CRAFT LABOURER

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CONSTRUCTION CRAFT LABOURER

Core Courses

BASICS OF CONSTRUCTION

This program introduces the trainee to the construction environment. Upon completion the trainee shall:

- understand the role of the construction craft labourer.
 - demonstrate a basic understanding of terminology used on construction sites regarding tools, equipment and materials.
 - understand the role of various construction trades, construction management and construction authorities.
 - apply safe construction practices and understand Occupational Health and Safety requirements.
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OPERATION AND MAINTENANCE OF SMALL TOOLS AND EQUIPMENT

The study of these topics will provide the trainee with an understanding of the operation and maintenance of small tools and equipment commonly used by labourers in construction. Upon completion, the trainee will be able to:

- identify and describe the maintenance of various pneumatically powered tools such as jack hammers, grinders, chipping hammers, and drills as well as their accessories, fittings, hoses and line oilers.
- demonstrate the operation of the various types of pneumatically powered tools identified above.
- demonstrate the operation of portable diesel powered compressors.
- identify and describe the maintenance of various types of electric tools such as chipping hammers, electric chain saws and their accessories including cords and connectors.
- demonstrate the operation of the various types of electric tools identified above.
- operate and maintain small gasoline powered portable generators.
- identify and describe the maintenance of 4-cycle and 2-cycle gasoline powered tools such as jumping jack, plate tamper, chain saw, roller compactor and various types of paddle and spiral mixers and their accessories.
- demonstrate the operation of the various types of gasoline powered tools listed above.

- identify and describe the maintenance and storage of various types of hand tools such as shovels, sledgehammers, rakes, hoes, come-a-longs, wheelbarrows and chisels.
- demonstrate the proper use of the tools identified above.
- demonstrate the proper operation of powder actuated tools.
- demonstrate the operation of various types of manual hoisting equipment such as block pulleys, come-a-longs and other lifting tackle.
- describe and demonstrate the proper use and maintenance of cutting torches in basic applications.
- demonstrate the safe use and maintenance of construction heaters.
- demonstrate the proper placement and maintenance of dewatering pumps.
- apply safe construction practices and demonstrate an understanding of the Occupational Health and Safety Act.

BASICS OF CONCRETE

This section provides trainees with an understanding of different types of concrete, additive, transportation, placement techniques and curing procedures. The trainee is also instructed in the use of various types of concrete vibrators. Upon completion, the trainee will be able to:

- demonstrate a basic knowledge of the terminology describing various types of concrete, admixtures and aggregate.
- describe various types of concrete transportation methods, including conveyors, pumps, chutes, buckets and tremies.
- demonstrate the placement and consolidation of concrete into flatslab forms.
- demonstrate the placement and consolidation of concrete into confined formed spaces (e.g., walls or columns).
- select the correct vibrator for specific concrete placement requirements.
- describe the variables affecting the mixing and transportation procedures for several basic types of structural grouts.
- demonstrate proper mixing and transportation procedures for several basic structural grouts.
- describe the proper curing and abrasion protection procedures for concrete in a variety of environmental circumstances.
- describe sub-base preparation and paving stone placement.
- apply safe practices and understand Occupational Health and Safety requirements.

EXCAVATION, BACKFILL AND COMPACTION

This program provides the trainee with an understanding of various types of excavation, trenching, shoring and compaction equipment. Upon completion of the program the trainee will be able to:

- describe basic types of soils and their behaviour in excavation and trenching situations.
- describe common types of excavation equipment and their uses.
- describe methods of protecting excavation and trenches from side-wall cave in and uses of sloping sides, hydraulic bracing, screw jacks, sheet piling and wood sheathing.
- demonstrate proper use of hand tools.
- describe potential hazards and remedies during excavation of footings and underpinnings.
- describe the various types of compaction equipment such as pogo sticks, jumping jacks, plate tampers, walk behind rollers etc.
- demonstrate the operation and maintenance of various types of compaction equipment and accessories.
- describe the proper procedure for backfilling and compacting various types of soils.
- check and maintain subgrade elevation, drainage, layout and line.
- apply safe practices and understand Occupational Health and Safety requirements.

SCAFFOLDING

This program provides the trainee with an understanding of the safe erection, dismantling and storage of scaffold components and accessories. Upon completion the trainee will be able to:

- construct and dismantle basic frame scaffold structures.
- construct and dismantle basic modular scaffold structures.
- construct and dismantle basic tube and clamp scaffold structures.
- describe single pole scaffold structures.
- construct and dismantle simple rolling platforms.
- describe the operation of powered platform scaffolds.
- describe the operation of swing stage scaffolds.
- describe construction ladder and stair requirements.
- select and demonstrate the proper use of personal protective and fall arrest equipment.
- apply safe practices and understand Occupational Health and Safety requirements.

CONSTRUCTION RIGGING AND HOISTING

This program provides the trainee with instruction in the identification, safe use and inspection of lifting, rigging and hoisting components and the handling and skidding of various materials. Upon completion, the trainee will be able to:

- describe the safety factors, inspection procedures and proper usage of fibre rope, wire rope, chain, spreader bars, chokes and slings.
- demonstrate a selection of knots and hitches.
- define 'safe working load' and 'safety factor' and perform 'safe load' calculations.
- demonstrate proper use and inspection of chain.
- describe the handling characteristics of fibre rope.
- describe various basic sling configurations.
- identify hardware for hoisting and recognize unsafe installation.
- demonstrate proper procedures and stance for manual lifting.
- describe the types of physical injuries commonly associated with lifting and procedures in case of accident.
- identify equipment used for hoisting on the job site.
- demonstrate hand signals for hoisting equipment.
- describe safety procedures while working around hoisting equipment.
- describe proper receiving and delivery practices.
- demonstrate slinging and skidding procedures for various types of construction products.
- apply safe work practices and understand Occupational Health and Safety requirements.

SURVEY I

This course provides the trainee with instruction in the theory and practice of levelling, types of surveys, differential levelling, sources of error and field note keeping. Practice will be provided with tilting levels, automatic levels, laser levels and different leveling rods. Upon completion the trainee will be able to:

- describe various types of surveys
- operate tilting levels
- demonstrate the correct method of differential leveling
- demonstrate profile and cross sectional leveling.

Sector Specific Options

FORMWORK

In this section, the trainee will be introduced to concrete formwork. Topics of study include preparation of form surfaces, stripping, cleaning and storing of form components and protection of cast in place concrete structures. Upon completion of this section, the trainee will be able to:

- describe the duties of a skilled forming crew.
- demonstrate a knowledge of site preparation, sorting and transporting of form components and hardware.
- demonstrate an understanding of formwork terminology.
- describe the uses of various types of forming hardware and bracing.
- describe the uses of scaffolding and shoring in re-shore applications.
- apply safe practices and understand Occupational Health and Safety requirements.

MASONRY FOR LABOURERS

This course provides the trainee with instruction in the proper handling and distribution of masonry units, mortar and grout and masonry hardware. Upon completion the trainee will be able to:

- describe different types of masonry units and their uses.
- estimate masonry requirements for a given section of project.
- inventory and stock masonry units on the ground and on scaffolding.
- describe the basic types of fork lift equipment available, their terrain and load limits.
- set up mud boards and mortar mixer.
- identify the ingredients for various types of masonry mortars.
- describe mortar additives and their uses.
- mix and distribute various types of masonry mortar and grout.
- identify various types of masonry reinforcement and hardware.
- perform specific masonry cleanup procedures.
- apply safe masonry construction practices and understand Occupational Health and Safety requirements

Trainees will review relevant sections of scaffolding material from previous sections as required.

UTILITIES CONSTRUCTION

With this course, the trainee receives instruction in the principles and procedures of installation, connection, levelling and testing of municipal water and sewer systems. Upon completion of the program the trainee will be able to:

- identify the soil characteristics of type A, B and C soils and the warning signs of previous excavations or unmarked installations.
- identify pipe tools and parts as well as perform jointing operations using mechanical, heat fusion and push-on connections.
- describe different types of pipes used in municipal utilities and the accuracy requirements for their installation.
- perform alignment procedures and check for drainage.
- perform repair operations on concrete pipe.
- perform pneumatic testing and sanitization procedures.
- install manhole, drop inlets and sanitary sewer cleanouts.

Trainees will review survey and layout program material related to this topic.

Trainees will review shoring, excavation and backfill procedures related to this topic.

Optional Programs

BLUEPRINTS I

This course provides an introduction to the interpretation of basic blueprints. The program emphasizes isometric and orthographic sketches, introduces symbols, abbreviations and conventional drafting nomenclature. Upon completion, the trainee will be able to

- interpret basic orthographic projections.
- interpret basic working drawings.

BLUEPRINTS II

This course provides the trainee with advanced instruction in the interpretation of architectural drawings, grid-lines and co-ordinates, technical terminology, specifications and estimating. Upon completion, the trainee will be able to:

- identify the trades responsible for work illustrated in specific types of working drawings.
- state the information found on a site or plot plan.
- state the information found on a floor plan.
- state the information found on elevation drawings.

- list the information derived from geodetic and/or architectural elevations.
- describe the application of sectional views and detail drawings.
- interpret a room finish schedule.
- identify typical abbreviations found on blueprints.
- identify the information contained in a typical set of specifications.
- obtain specific construction details from the specifications and from the working drawings, as required.

SURVEY II

This course provides the trainee with instruction in the use of transits, theodolites and an introduction to the concept of total station. The course includes instrument horizontal circle and vernier, transit set-up and layout adjustment, angle measurement and survey practices in building construction. Upon completion, the trainee will be able to:

- measure horizontal and vertical angles.
- measure angles by repetition
- demonstrate proper use of stadia
- demonstrate various transit adjustments.

FLAGGING AND SIGNALLING

Trainees will be provided with instruction in the responsibilities of flagpersons. Topics include: crew safety, barrier placement, legal responsibilities, traffic control principles, proper flagging signals, job hazards, and personal protective equipment.