

Trade Profile

IRONWORKER

(GENERALIST)



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Trade Profile

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Structure of the Trade Profile

This profile has two sections that provide a snapshot of the trade's description, and all trade activities as they are organized in the Red Seal Occupational Standard:

Description of the Ironworker (Generalist) trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Sub-task: distinct actions that describe the activities within a task

Description of the Ironworker (Generalist) Trade

“Ironworker (Generalist)” is this trade’s official Red Seal occupational title approved by the CCDA. This analysis covers tasks performed by ironworkers (generalist).

Ironworkers (generalist) work with both structural/ornamental and reinforcing steel materials. They install structural/ornamental steel components, precast concrete members and mass timber products such as glue laminated timber (glulam), cross laminated timber (CLT), and nail and dowel laminated timber (NLT & DLT). They place reinforcing steel in commercial, industrial, institutional and large residential buildings, towers, bridges and stadiums. They erect pre-engineered buildings, wind turbines, solar panels, and ornamental ironwork such as curtain walls, metal stairways, catwalks, railings and metal doors. They also erect scaffolding, cranes, hoists and derricks on the construction site. Ironworkers (generalist) also install conveyors, machinery, and automated material handling systems. They are also involved in demolition and salvage duties involving all types of construction.

Ironworkers (generalist) cut, bend, lay out, hoist, place, tie, couple, and weld reinforcing steel bars, welded wire fabric and composite materials in a wide variety of reinforced concrete products and structures such as buildings, highways, bridges, stadiums, wind turbines, solar panels, power-generating plants, and towers. While the reinforcing material is usually pre-cut and fabricated off-site, ironworkers (generalist) may be called upon to cut and bend them in the field according to design specifications and drawings. Ironworkers (generalist) may pre-assemble reinforcing material by laying it out and connecting sub-assemblies on the ground prior to final placement. They organize the hoisting of the components by choosing and installing rigging such as cables and slings to the components and directing crane operators. They position, align and secure components according to drawings, using a variety of methods. After placing post-tensioning systems, they stress the tendons to predetermined forces using hydraulic jacks and pumps and then may grout the tendons according to the system.

Ironworkers (generalist) prepare the construction site by assembling the hoisting equipment. They unload reinforcing materials, structural and ornamental components, and organize the material for installation and hoisting. They organize and sequence the hoisting of the components by connecting rigging (cables and slings) to the components and directing crane operators. They position, align and secure components according to technical drawings using a variety of fastening methods.

Ironworkers (generalist) generally work outside in various weather conditions, although some work indoors. They generally travel to and from the work site which may be in a variety of locations ranging from remote areas where they could be working on dams, bridges, or mining projects to urban environments where they could work on high rise buildings or stadiums. The work often requires considerable standing, bending, crawling, lifting, climbing, pulling and reaching, and is often conducted in cramped areas, confined spaces or at heights. Hazards include injury from repetitive motions,

electrocution, falls or falling objects, lacerations, pinch points, crushing and overexertion. Ironworkers (generalist) typically work a 40-hour week; however, inclement weather such as rain, snow or high winds may shut down projects for extended periods and alternate deadlines and priorities may require overtime hours.

Ironworkers (generalist) are required to have good mechanical aptitude, the ability to lift heavy objects, the ability to maintain balance working at heights in various conditions, a thorough knowledge of the principles of welding, and rigging, hoisting and positioning, and a familiarity with a variety of metal fastening and joining methods. They are all required to be competent in the use and care of a variety of hand and power tools and equipment such as wrenches, pry bars, torches, levelling and welding equipment. Ironworkers (generalist) use material handling equipment such as forklifts (class 1-7), panel or glass lifting equipment and rolling hydraulic gantry systems. They also use crane charts and must be able to estimate and reconcile crane ability with load sizes.

Because of the nature of the work, a primary concern of ironworkers (generalist) is workplace safety. They must be thoroughly familiar with the applicable sections of local, provincial and federal building and safety standards.

Ironworkers (generalist) tend to work in teams and with other tradespeople, and team coordination is a large component of the occupation especially when hoisting and placing large, heavy components high above the ground.

Ironworkers (generalist) interact and work cooperatively with a wide variety of construction tradespeople such as ironworkers (reinforcing), mobile and tower crane operators, welders, carpenters, metal fabricators (fitters), boilermakers, industrial mechanics (millwrights), construction craft workers and glaziers.

Ironworker (Generalist)

Task Matrix and Weightings

A – Performs common occupational skills

12%

Task A-1 Maintains safe and healthy workplace 28%	Sub-task A-1.01 Maintains safe work environment	Sub-task A-1.02 Uses personal protective equipment (PPE) and safety equipment	Sub-task A-1.03 Participates in healthy and respectful work environment
Task A-2 Uses and maintains tools and equipment 38%	Sub-task A-2.01 Uses hand tools and measuring equipment	Sub-task A-2.02 Uses power tools	Sub-task A-2.03 Uses bending tools and equipment
	Sub-task A-2.04 Uses powder-actuated tools	Sub-task A-2.05 Uses mobile elevating work platforms (MEWP)	Sub-task A-2.06 Uses material handling equipment
	Sub-task A-2.07 Uses ladders	Sub-task A-2.08 Uses scaffolding	Sub-task A-2.09 Uses surveying equipment
	Sub-task A-2.10 Uses welding equipment	Sub-task A-2.11 Uses mechanical cutting equipment	Sub-task A-2.12 Uses thermal cutting equipment
	Sub-task A-3.01 Organizes materials and supplies	Sub-task A-3.02 Performs layout	Sub-task A-3.03 Uses drawings and documentation
Organizes work Task A-3 24%	Sub-task A-3.04 Plans tasks		

Task A-4 Maintains continuous learning 5%	Sub-task A-4.01 Upskills in new trade practices and procedures	Sub-task A-4.02 Upskills in emerging technologies
Task A-5 Uses communication and mentoring techniques 5%	Sub-task A-5.01 Uses communication techniques	Sub-task A-5.02 Uses mentoring techniques

B - Performs rigging, hoisting and positioning, and mobilization, erection, and demobilization of cranes 26%

Task B-6 Plans lift 24%	Sub-task B-6.01 Assesses load	Sub-task B-6.02 Performs pre-lift analysis	Sub-task B-6.03 Selects rigging, hoisting and positioning equipment
	Sub-task B-6.04 Secures lift area		
Task B-7 Rigs, hoists and positions load 35%	Sub-task B-7.01 Inspects rigging, hoisting and positioning equipment	Sub-task B-7.02 Assembles rigging, hoisting and positioning equipment	Sub-task B-7.03 Attaches rigging equipment to load
	Sub-task B-7.04 Performs hoisting and positioning operations	Sub-task B-7.05 Secures load before rigging removal	
Task B-8 Performs post-lift activities 20%	Sub-task B-8.01 Conducts post-lift inspection	Sub-task B-8.02 Disassembles rigging, hoisting and positioning equipment	Sub-task B-8.03 Maintains rigging, hoisting and positioning equipment
Task B-9 Performs mobilization, erection and demobilization of cranes 21%	Sub-task B-9.01 Mobilizes telescopic boom cranes	Sub-task B-9.02 Erects lattice boom cranes, tower cranes, derricks and components	Sub-task B-9.03 Performs demobilization and disassembly of cranes

C - Fabricates and installs reinforcing material**18%**

Task C-10 Fabricates reinforcing materials on-site 34%	Sub-task C-10.01 Cuts reinforcing materials	Sub-task C-10.02 Bends reinforcing materials	
Task C-11 Installs reinforcing materials 66%	Sub-task C-11.01 Places reinforcing materials	Sub-task C-11.02 Ties reinforcing materials	Sub-task C-11.03 Splices reinforcing materials

D - Performs pre-stressing/post-tensioning**8%**

Task D-12 Places pre-stressed/post-tensioning systems 57 %	Sub-task D-12.01 Lays out profile	Sub-task D-12.02 Places tendons and accessories	Sub-task D-12.03 Installs bursting steel and anchorages
	Sub-task D-12.04 Connects tendons to anchorages	Sub-task D-12.05 Protects exposed tendons	
Task D-13 Stresses tendons 30%	Sub-task D-13.01 Sets up stressing equipment	Sub-task D-13.02 Tensions tendons	Sub-task D-13.03 Cuts and caps tendons
	Sub-task D-13.04 Removes stressing equipment	Sub-task D-13.05 De-stresses tendons	
Task D-14 Grouts tendons 13%	Sub-task D-14.01 Sets up grouting equipment	Sub-task D-14.02 Installs grout	

E - Performs erection, assembly and installation

26%

Task E-15 Installs primary and secondary structural members 51 %	Sub-task E-15.01 Uses falsework	Sub-task E-15.02 Attaches structural members	Sub-task E-15.03 Levels, plumbs and aligns structural members
	Sub-task E-15.04 Completes installation of structural members		
Task E-16 Installs ornamental, miscellaneous, and steel cladding systems and components 26%	Sub-task E-16.01 Installs curtain walls and window walls	Sub-task E-16.02 Installs miscellaneous components	Sub-task E-16.03 Installs steel cladding, and building envelope systems and components
Task E-17 Installs conveyors, machinery and equipment 23%	Sub-task E-17.01 Installs material handling systems	Sub-task E-17.02 Performs alignment and commissioning of material handling systems	

F - Performs maintenance and upgrading

10%

Task F-18 Decommissions, disassembles and removes structural, ornamental, mechanical and miscellaneous components 60%	Sub-task F-18.01 Ensures decommissioning of structure and components	Sub-task F-18.02 Disassembles structural, ornamental, mechanical and miscellaneous components	
Task F-19 Maintains and repairs components 40%	Sub-task F-19.01 Assesses current condition of components	Sub-task F-19.02 Performs repairs, revisions and reinforcing of components	Sub-task F-19.03 Replaces components
	Sub-task F-19.04 Performs preventative maintenance		