

Trade Profile

IRONWORKER (STRUCTURAL/ ORNAMENTAL)



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Trade Profile

Ironworker (Structural/
Ornamental)



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 (Structural/ Ornamental) Trade

“Ironworker (Structural/Ornamental)” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by ironworkers (structural/ornamental).

Ironworkers (structural/ornamental) install and reinforce structural/ornamental steel components, precast structural concrete members and mass timber products such as glue laminated timber (glulam), cross laminated timber (CLT), and nail and dowel laminated timber (NLT & DLT). Ironworkers (structural/ornamental) work is performed 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 (structural/ornamental) also install conveyors, machinery and automated material handling systems. They are also involved in demolition and salvage duties involving all types of construction.

Ironworkers (structural/ornamental) prepare the construction site by assembling the hoisting equipment. They unload structural and ornamental components and organize the material for hoisting. They organize and sequence the hoisting of the components by connecting, choosing and installing rigging such as 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 (structural/ornamental) 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 falls from heights or falling objects, lacerations, pinch points, crushing and overexertion. Ironworkers (structural/ornamental) typically work a 40-hour week; however, inclement weather such as rain, snow or high winds may shut down projects for extended periods and alternative deadlines and priorities may require overtime hours.

Ironworkers (structural/ornamental) are required to have good mechanical aptitude, the ability to lift heavy objects, the ability to maintain balance working at heights in varying extreme climates, 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 (structural/ornamental) 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 (structural/ornamental) is workplace safety. They must be thoroughly familiar with the applicable sections of local, provincial and federal building and safety standards.

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

Ironworkers (structural/ornamental) 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 (Structural/ Ornamental)

Task Matrix and Weightings

A – Performs common occupational skills

17%

Task A-1 Maintains safe and healthy workplace 27%	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 36%	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 powder-actuated tools
	Sub-task A-2.04 Uses mobile elevating work platforms (MEWP)	Sub-task A-2.05 Uses material handling equipment	Sub-task A-2.06 Uses ladders
	Sub-task A-2.07 Uses scaffolding	Sub-task A-2.08 Uses surveying equipment	Sub-task A-2.09 Uses welding equipment
	Sub-task A-2.10 Uses mechanical cutting equipment	Sub-task A-2.11 Uses thermal cutting equipment	
Organizes work Task A-3 30%	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
	Sub-task A-3.04 Plans tasks		

Task A-4 Maintains continuous learning 3%	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 4%	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 31%

Task B-6 Plans lift 26%	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 38%	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 17%	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 19%	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 – Performs erection, assembly and installation**36%**

Task C-10 Installs primary and secondary structural members 47%	Sub-task C-10.01 Uses falsework	Sub-task C-10.02 Attaches structural members	Sub-task D-10.03 Levels, plumbs and aligns structural members
	Sub-task C-10.04 Completes installation of structural members		
Task C-11 Installs ornamental, miscellaneous, and steel cladding systems and components 27%	Sub-task C-11.01 Installs curtain walls and window walls	Sub-task C-11.02 Installs miscellaneous components	Sub-task C-11.03 Installs steel cladding, and building envelope systems and components
Task C-12 Installs conveyors, machinery and equipment 26%	Sub-task C-12.01 Installs material handling systems	Sub-task C-12.02 Performs alignment and commissioning of material handling systems	

D – Performs maintenance and upgrading

16%

Task D-13 Decommissions, disassembles and removes structural, ornamental, mechanical and miscellaneous components 50%	Sub-task D-13.01 Ensures decommissioning of structure and components	Sub-task D-13.02 Disassembles structural, ornamental, mechanical and miscellaneous components	
Task D-14 Maintains and repairs components 50%	Sub-task D-14.01 Assesses current condition of components	Sub-task D-14.02 Performs repairs, revisions and reinforcing of components	Sub-task D-14.03 Replaces components
	Sub-task D-14.04 Performs preventative maintenance		