Ironworker Structural
A Guide to Course Content

Ironworker Structural workers field fabricate, weld, cut, erect and dismantle structural, miscellaneous and ornamental metal work. They also erect and place pre-cast concrete, and rig and place machinery and equipment.

Training Requirements: 5400 hours (3 years) including two 8-week and one 6-week training sessions at SIAST Palliser Campus in Moose Jaw. An apprentice must successfully complete the required technical training and compile enough on-the-job experience to total at least 1800 hours each year.

Entrance Requirements: Individuals must be working in the trade and under the supervision of a certified tradesperson.

Your grade twelve diploma (with no modified classes) or GED 12 is your guarantee that you meet the educational entrance requirements for apprenticeship in Saskatchewan. In fact, employers prefer and recommend apprentices who have completed high school. This ensures the individual has all of the necessary skills required to successfully complete the apprenticeship program, and receive journeyperson certification. Individuals with “modified” or “general” classes are required to take an entrance examination prescribed by the SATCC.

The information contained in this pamphlet serves as a guide for employers and apprentices. The pamphlet briefly summarizes the training delivered at each level of apprenticeship training. An apprentice spends approximately 15% of the apprenticeship term in a technical training institute learning the technical and theoretical aspects of the trade. The hours and percentages of technical and practical training may vary according to class needs and progress.

The content of the technical training components is subject to change without notice.

Level One - 8 weeks

Safety Awareness
- safety equipment applications, maintenance and use
- safe work practices
- OH&S Regulations
- fall arrest equipment

Tools and Equipment
- applications, maintenance, storage and procedures for use
- hand, electric, hydraulic, pneumatic and gas tools
- leveling and alignment instruments
- explosive actuated tools

Access Equipment
- applications, limitations and procedures for use
- scaffolds and ladders
- swing stages, sky climbers, angel wings and crane man baskets
- aerial work platform operation

Cranes I
- types, applications and limitations
- crane lifting operations and safety
- basic load charts

Hoisting, Lifting, and Rigging
- equipment applications, limitations and procedures for use
- procedures for hoisting and lifting operations
- calculations for hoisting and lifting operations
- International crane hand signals

Structural Components
- characteristics and applications
- fastening methods
- characteristics and applications of falsework
- procedures for the erection and dismantling of falsework

Drawing Interpretation and Work Planning
- types of drawings and their applications
- interpreting and extracting information from drawings
- preparation and use of trade related documentation
- planning and organizing work tasks
- planning and handling work materials
- effective communication practices

Building Erection I
- erection and partial dismantling of a structural steel structure using a crane
- interpretation of drawings
- identification of structural components
- safe worksite practices
- rigging techniques

Welding I
- oxy fuel equipment and accessories
- oxy-fuel cutting
- shielded metal arc welding equipment and accessories
- shielded metal arc welding procedures

Industrial Mathematics
- whole numbers, common and decimal fractions
- conversions and comparisons with fractions, decimals and percents
- calculations and conversions using the metric and imperial systems
- calculations for average, perimeter, area and volume
- basic problems involving common and decimal fractions

Level Two - 8 weeks

Cranes II
- crane and lifting operation terminology and safe work practices
- codes and regulations for cranes and lifting operations
- drawings, specifications; and tables and charts for crane lifting operations
- principles of leverage and their applications to cranes
- types, components, characteristics and applications for cranes
- crane assembly and on-site installation

Drawing Interpretation
- specifications and details on structural steel drawings
- specifications and details on miscellaneous steel drawings
- welding symbols
- specifications and shop fabrication drawings
- ornamental drawings
- reinforcing rebar drawings

Erection and Dismantling
- characteristics and applications of structural steel members
- erection procedures for structural steel members and components
- dismantling and removing procedures for structural steel members and components

Building Erection II
- erection of interior structural steel components using power rigging equipment
- power rigging equipment
- interpretation of drawings
- identification of structural components
- safe worksite practices
- rigging techniques

Reinforcing Rebar
- reinforcing materials and accessories
- procedures to prepare for reinforcing concrete
- installation and tying techniques

Welding II
- welding and gouging equipment and accessories
- welding and gouging processes and procedures
- flux cored arc welding procedures

Ironworker Mathematics
- scientific numbers
- conversions and comparisons with percents, rates, ratios and proportions
- angle measurement and calculations
- calculations involving circles and partial circles
- basic geometry
- basic problems involving perimeter, area and volume

Level Three - 6 weeks

Access Equipment
- aerial work platform operations
- telefork operations

Cranes III
- terminology associated with electric overhead traveling cranes (EOT)
- communication procedures during EOT crane operations
- hazards and safe work practices for EOT cranes and EOT crane lifting operations
- EOT crane components and accessories
- EOT crane controls
- assembly and installation procedures for EOT cranes

Miscellaneous and Ornamental Ironwork
- interpretation of shop drawings
- components, characteristics and applications
- fabrication and installation procedures
- floor and roof decking procedures
- wood glulam handling and erection

Pre-engineered Structures
- interpretation of drawings specific to engineered structures
- components
- erection procedures

Machinery and Equipment
- types and characteristics
- interpretation installation information from drawings
- identification of structural components for installation and removal
- installation and removal procedures
- safe work practices

Building Erection III
- dismantling of a structural steel structure using a crane
- identification of structural components
- safe worksite practices
- advanced rigging techniques
- sequence of dismantling
- sequence of component storage
- trailer loading and storage of components

Precast Concrete
- components of pre-cast concrete members
- erection and dismantling procedures

Welding III
- plasma arc cutting equipment and accessories
- plasma arc cutting procedures

Saskatchewan Apprenticeship & Trade Certification Commission
2140 Hamilton St Regina SK S4P 2E3
Tel: (306) 787-2444
Fax: (306) 787-5105
Toll Free: 1-877-363-0536
web site: www.saskapprenticeship.ca

District Offices
Estevan (306) 637-4930
La Ronge (306) 425-4385
Moose Jaw (306) 694-3735
North Battleford (306) 446-7409
Prince Albert (306) 953-2632
Saskatoon (306) 933-8476
Swift Current (306) 778-8945
Yorkton (306) 786-1394

Saskatchewan Apprenticeship and Trade Certification Commission