COURSE SYLLABUS

STRUCTURAL STEEL ERECTION

Course Description:

This first of two structural courses is designed to provide the Iron Worker student with training in structural steel erection including history, safety, tools and equipment, drawings, handling materials, erecting structural steel members, plumbing and aligning structural steel, bolting up, making structural connections, safely install metal decking and sheeting. The course will also include overviews of erecting bridges, towers, wind turbines, clear span, and amusement park structures. The student will also learn how to use composite materials in structural erection and how to read structural drawings.

Course Objectives:

The objective of this course is to enable a student to erect structural steel.

Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- Trace the history and safe erection of structural steel.
- Identify the tools and equipment used in erecting structural steel.
- Read structural steel drawings.
- Safely unload handle and store materials.
- Safely erect columns and beams, and install joists, joist girders and trusses.
- Plumb, align, and bolt up structural steel.
- Make structural connections.
- Safely install metal decking and sheeting.
- Explain how to erect bridges, towers, wind turbines, clear span, and amusement park structures.
- Use composites in structural erection.
- Read structural drawings.

Target Audience:

This course is mandatory for all Apprentices available to Journeymen.

Length of Course:

This course is designed to be offered during a total of 50 hours – 30 hours of classroom instruction and 20 hours of hands-on lab or shop training.

Course Materials:

- **Structural Steel Erection** Reference Manual
- **Structural Steel Erection** Student Workbook with drawings
- **Structural Steel Erection** Instructor Guide
- **Structural Steel Erection** DVD
- **Assignment Sheets** (in the Student Workbook)
- **Job Sheets** (in the Student Workbook)
- **Tests** (in the Instructor Guide)

A Word about Safety

The importance of safety will be addressed and reinforced in all hands-on activities in the classroom, in

Course Assignments:

There is at least one assignment sheet for each unit of instruction (as outlined by the specific objectives in each unit). Students will complete these assignment sheets prior to and/or during course sessions as determined by the instructor. Job sheets will be completed as part of many of the units. Most job sheets will be completed in the lab or shop area and/or outside in a work area.

Course Grading Criteria:

To successfully complete this course, the student must complete all of the assignment sheets, demonstrate the required skills in the lab or shop, and pass the knowledge tests.

Topics/Activities

Introductions
Review of the course syllabus including the course objectives
Discussion of in class and outside assignments
Unit 1: History

Test – History
Unit 2: Safety and the erection of structural steel
Lecture and discussion

Test – Safety and the erection of structural steel
Unit 3: Tools and equipment for structural steel erection
Lecture and discussion
Demonstration of basic hand and power tools

Test – Tools and equipment for structural steel erection

Unit 4: Reading structural steel drawings
Lecture, demonstration and discussion

Unit 4: Reading structural steel drawings continues
Practice reading drawings

Test – Reading structural steel drawings
Unit 5: Unloading, handling and storing materials
Lecture, demonstration and discussion

Test – Unloading, handling and storing materials
Unit 6: Erecting columns and beams
Lecture and discussion
Demonstration and practice in the shop

Introductions
Review of the course syllabus including the course objectives
Unit 11: Handling and Installing Metal Deck
Lecture and discussion

Unit 11: Handling and Installing Metal Deck
Skill demonstrations, apprentice practice and skill testing

Test – Handling and Installing Metal Deck
Unit 12: Handling and Installing Sheeting
Lecture and Discussion

Unit 12: Handling and Installing Sheeting
Skill demonstrations, apprentice practice and skill testing

Test – Handling and Installing Sheeting
Unit 13: Erecting Bridges
Lecture and Discussion

Unit 13: Erecting Bridges
Lecture and discussion
Skill practice and skill testing as applicable

Test – Erecting Bridges
Unit 14: Erecting Towers
Lecture and Discussion

Unit 14: Erecting Towers
Lecture and Discussion
Skill practice and skill testing as applicable

Test – Erecting Towers
Unit 15: Erecting Wind Turbines
Lecture and discussion
Skill practice and skill testing as applicable

Unit 15: Erecting Wind Turbines
Lecture and discussion
Skill practice and skill testing as applicable

Test – Erecting Wind Turbines
Unit 16: Erecting Clear Span and Modular Structures
Lecture and discussion
Skill practice and skill testing as applicable

Unit 16: Erecting Clear Span and Modular Structures
Lecture and discussion
Skill practice and skill testing as applicable

Test – Erecting Clear Span and Modular Structures
Unit 17: Erecting Amusement Park Structures
Lecture and discussion
Skill practice and skill testing as applicable

Test – Erecting Amusement Park Structures
Unit 18: Composites and Structural Erection
Lecture and discussion
Skill practice and skill testing as applicable

Unit 18: Composites and Structural Erection
Lecture and discussion
Skill practice and skill testing as applicable

Test – Composites and Structural Erection
Unit 19: Reading Structural Steel Blueprints
Lecture and discussion
Skill practice and skill testing as applicable
Test – Reading Structural Steel Blueprints
Course summary

Session 8	Unit 6: Erecting columns and beams Lecture and discussion Demonstration and practice in the shop
Session 9	Test – Erecting columns and beams Unit 7: Installing joists, joist girders, and trusses Lecture and discussion Demonstration and practice in the shop
Session 10	Unit 7: Installing joists, joist girders, and trusses Lecture and discussion Demonstration and practice in the shop
Session 11	Test – Installing joists, joist girders, and trusses Unit 8: Plumbing and aligning structural steel Lecture and discussion Demonstration and practice in the shop
Session 12	Unit 8: Plumbing and aligning structural steel Lecture and discussion Demonstration and practice in the shop
Session 13	Test – Plumbing and aligning structural steel Unit 9: Bolting up structural steel Lecture and discussion Demonstration and practice in the shop
Session 14	Test – Bolting up of structural steel Unit 10: Structural connections Lecture and discussion Demonstration and practice in the shop
Session 15	Test – Structural connections Skill demonstrations, apprentice practice and skill testing
Session 16	Skill demonstrations, apprentice practice and skill testing
Session 17	Skill demonstrations, apprentice practice and skill testing Course summary