

IRON WORKER (OUTSIDE)

APPENDIX A

O*NET CODE 47-2221.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Reinforcing	1,000-1,250
1. Safety	
2. Care and use of tools	
3. Tying rebar (various types of ties)	
4. Field fabrication of rebar	
5. Unloading, handling and storing reinforcing steel	
6. Placing	
a. Footings, walls and columns	
b. Beams and girders	
c. Joist and slabs	
7. Highway structures: placing reinforcing for footings, wingwalls and abutments	
8. Placing reinforcing steel in pavements such as:	
a. Highway	
b. Bridge decks	
c. Airport	
9. Bar splicing and CAD welding	
B. Post Tensioning	200-250
1. Safety	
2. Unloading, handling and storing post tensioning materials	
3. Placing post tension strand tendons	
4. Placing post tension wire and bars	
5. Stressing of strand tendons	
6. Stressing of wire tendons	

7. Grouting of bonded tendons
8. Placing of threadbar post tension system

C. Rigging

700-1,000

1. Safety in rigging procedures
2. Care and use of fiber line, wire rope, nylon slings and steel chokers
 - a. Determining safe working capacity (SWC), inspection and proper use
3. Using rigging hardware
 - a. Determining SWC, inspection and proper use
4. Using and reeving blocks and tackle
 - a. Determining SWC, inspection and proper use
5. Using slings, chokers and softeners
 - a. Determining SWC, inspection and proper use
6. Erecting or lifting with cranes (all types) and helicopters
 - a. Determining SW radius and capacity
 - b. Erection, disassembly and inspection
 - c. Using proper hand and/or radio signals
7. Using hand and miscellaneous rigging equipment
8. Using jacks, rollers and related devices
9. Using access structures, scaffolds, ramps, ladders, hanging, rolling, etc.
10. Using hoists, winches and related devices

D. Structural

1,200-1,500

1. General safety in structural steel erection
2. Erection of structural steel
3. Plumbing and aligning of structural steel
4. Bolting up and welding of structural steel
5. Erection of barjoist, long spans and trusses
6. Unloading, handling, storing, fabricating, and placing metal decking in controlled deck zone
7. Field layout and fabrication
8. Use of erection and detail drawings
9. Use of scaffolds, ladders and shoring

10. Use of mobile cranes
 - a. Assembly and disassembly
 - b. Field inspection and safety, signaling methods
 - c. Operating procedures and precautions
11. Use of tower and kangaroo cranes
 - a. Assembly and disassembly
 - b. Field inspection and safety, signaling
 - c. Operating procedures and precautions
12. Using guy or stiffleg derricks
 - a. Assembly, jumping and disassembly
 - b. Signaling methods, inspection and safety
 - c. Proper operating procedures and precautions
13. Erecting bridges and towers
 - a. Using all crane and derrick systems (including barge) and rigging systems
 - b. Signaling methods, inspection, safety
 - c. Proper operating procedures and precautions
14. Using theodolite, plumb bob, and laser instruments to plumb and level structural work

E. Ornamental

1,200-1,500

1. Safety
2. Proper care and use of hand tools
3. Using level, plumb bob, transit, and laser instruments to plumb and level such items as curtain walls and their accessories
4. Unloading, storing, handling, and working with specialized metals such as aluminum, stainless steel, bronze, etc.
5. Locating and installing proper anchors and fasteners
6. Caulking, sealing, and finishing
7. Layout, installation, plumbing and aligning
 - a. Stairs, railings, ladders, catwalks, grating and doors – steel or composite
 - b. Subframing, miscellaneous steel supports and entrances
 - c. Elevator entrances

- d. Window wall, curtain wall, metal window frames, pre-glazed window units, solar screens, TV and radar reflectors
- e. Glass installation in metal frames

F. Welding **1,200-1,500**

- 1. Safety
- 2. Oxy-acetylene
 - a. Welding, cutting, heating
- 3. Electric arc processes
 - a. SMAW
 - b. FCAW
 - c. GMAW
 - d. GTAW
 - e. SAW
 - f. SW
- 4. Testing and certification of apprentice as certified welder (optional)

G. Sheeting **250-500**

- 1. Safety
- 2. Unloading, handling, and storing sheeting materials
- 3. Layout and erection planning
- 4. Safely using scaffolding, boom, and scissors lifts
- 5. Erecting, care and use of tools
- 6. Aligning, plumbing, and using fastening materials
- 7. Caulking, sealing, flashing, etc.

H. Fencing **250-500**

- 1. Safety
- 2. Unloading, handling and storing fencing materials
- 3. Layout and erection planning
- 4. Erecting, care and use of tools
- 5. Plumbing, aligning and fastening methods

I. Pre-cast Concrete Erecting (optional) **200-500**

- 1. Safety

2. Unloading, handling, storing
3. Field layout and use of erection drawings
4. Erecting of pre-cast
5. Fastening methods
6. Plumbing, aligning, leveling of pre-cast

J. Lead Abatement (optional) 80-250

K. Asbestos Abatement (optional)* 80-250

Approximate Total Hours 6,000-8,000**

*This work process may not be undertaken until the apprentice has successfully completed an *Asbestos Handler* course approved by the New York State Department of Health and possesses a current “Asbestos Handler (Worker)” certificate from the New York State Department of Labor.

**Hours will increase if Work Processes “I,” “J,” and/or “K” are elected.

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>

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APPENDIX B

RELATED INSTRUCTION

Safety

1. OSHA 10-hour construction course
2. Sub-part R – steel erection standard training – minimum 10 hours
3. Personal protective equipment
4. Fall protection
5. Scaffold standard
6. Rigging safety
7. Signaling
8. Confined space
9. Alcohol and substance abuse awareness
10. Hazardous agents encountered in the trade (including lead)
11. MSDS
12. Lead Abatement (if Work Process “J” is performed)
13. Asbestos Safety:
 - a. If apprentice will do any handling of asbestos:
 - i. Successfully complete a course approved by the New York State
 - ii. Department of Health for “Asbestos Handler” and obtain, and
 - iii. keep current, an “Asbestos Handler (Worker)” certificate from the
 - iv. New York State Department of Labor
 - b. If apprentice will do no handling of asbestos:
 - i. Asbestos Awareness – minimum 4 hours (see attachment)
14. First aid/CPR – minimum 6.5 hours every 3 years

Blueprints

1. Blueprint reading
2. Layout

Mathematics

1. Fundamentals
2. Trade math

Trade Theory and Science

1. Using and caring for tools of the trade
2. Reinforcing work
3. Post tensioning
4. Rigging
5. Structural work
6. Ornamental work
7. Welding and burning
8. Cutting
9. Sheeting
10. Fencing (including razor ribbon, if applicable)
11. Pre-cast concrete erecting (if Work Process "I" is elected)

Interpersonal Workplace Skills

1. Industrial and labor relations (20 hours)
 - a. History and background (6 hours, first year)
 - b. Current laws and practices (14 hours, second year)
2. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

Other Related Courses as Necessary

A Minimum of 204 Hours of Related Instruction are Required for Each Apprentice for Each Year.

Appendix B topics are approved by New York State Education Department.

ATTACHMENT TO APPENDIX B

Asbestos Awareness

This course must be delivered by one of the following:

1. A provider currently approved by the New York State Department of Health to deliver asbestos safety training.
2. A person holding a current Asbestos Handler certificate from the New York State Department of Labor in the title of: Inspector, Supervisor, Project Monitor, Management Planner, or Project Designer.
3. Anyone otherwise approved by the New York State Education Department.

Minimum course contents must include the following:

1. Definition of asbestos
2. Types and physical characteristics
3. Uses and applications
4. Health effects:
 - a. Asbestos-related diseases
 - b. Risks to families
 - c. Cigarette smoking
 - d. Lack of safe exposure level
5. Employer-specific procedures to follow in case of potential exposure, including making a supervisor or building owner immediately aware of any suspected incidental asbestos disturbance so that proper containment and abatement procedures can be initiated promptly.

Notwithstanding the above course requirement, employers are advised that they must also be in compliance with New York State Department of Labor Industrial Code Rule 56 at all times.

Employers are further advised, and must advise all apprentices, that completion of the above course requirement does not authorize any person to remove, encapsulate, enclose, repair, disturb, or abate in any manner, any friable or non-friable asbestos, asbestos containing material, presumed asbestos containing material, or suspect miscellaneous asbestos containing material.