



APPENDIX A

DRAFTER (STRUCTURAL)

D.O.T. CODE 005.281.014

O*NET CODE 17-3011.01

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional on-the-job or classroom learning.

WORK PROCESSES

Approximate Hours

A. <u>Tools, Equipment and Work Aids</u>	300
1. CAD: using and caring for computer-aided drafting terminal, keyboard, mouse and/or stylus	
2. Understanding and using sketches, rough drawings, tracing paper, pictorial drawings	
3. Understanding and using handbooks, charts, technical specifications, catalogs, building codes, building manuals, reference library materials, CAD manuals and tutorials	
4. Using and caring for plotters, printers, Mylar	
5. Documenting procedures; maintaining files; setting up project directories	
B. <u>Reading Structural Blueprints</u>	200
1. Reading standard blueprints	
2. Reading orthographic projections	
3. Reading isometric projections	
4. Reading geometric constructions	
5. Reading auxiliary views	
6. Reading sectional views	
7. Demonstrating an understanding of dimensioning procedures	
C. <u>Drafting Basics</u>	1,500
Producing drawings using traditional board drafting and CAD systems:	
1. Sketching freehand, preliminary and final	

2. CAD
3. Determining sequence of work and method of presentation, in conjunction with supervisor or project team
4. Interpreting rough sketches, notes and engineering specifications
5. Drafting detail drawings of architectural designs and plans for buildings
6. Drawing plans to scale
7. Changing drawings using CAD systems
8. Sketching pictorial views

D. Making Calculations 500

1. Understanding and using metric system
2. Compiling dimensions
3. Checking dimensions and materials to be used, assigning numbers to materials list
4. Calculating weights, volumes and stress factors
5. Using reference materials such as engineering hand books, product catalogs, tables, etc.
6. Calculating related materials needed, projecting amount required, preparing materials schedule. (at option of sponsor *)
7. Determining scale

E. Construction Detailing 800

The following tasks are performed using CAD programs:

1. Drawing wall sections
2. Drawing roof detail
3. Drawing standard framing detail
4. Drawing sheet metal detail
5. Drawing electrical layouts and sections
6. Drawing heating and air conditioning layout and sections
7. Drawing plumbing layouts and sections

F. Drafting Simple Architectural Drawings Manually 300

1. Drawing masonry
2. Drawing structural framing
3. Drawing landscaping

G. Drafting Commercial and Public Structure Plans, using CAD 2,500

1. Reviewing preliminary considerations, commercial building codes, Americans with Disabilities Act (ADA) accessibility guidelines/codes
2. Drawing plot plans
3. Drawing basement plans
4. Drawing roof plans
5. Drawing floor plans

6. Drawing elevations
7. Drawing machinery placement layout plans (at option of sponsor *)
8. Drawing architectural renderings (at option of sponsor*)
9. Checking plot surveys for commercial and public projects
10. Developing office designs, specifications and layouts. (at option of sponsor*)
11. Incorporating graphic design (for example: Text/Pictures/CAD) (at option of sponsor*)

H. Drafting Alterations 400

1. Sketching in the field and taking measurements
2. Surveying existing conditions in conjunction with structural engineer
3. Planning alterations scheduling/sequencing as a part of a team
4. Gathering information for specifications, using customer input (at option of sponsor*)

I. Writing Specifications 100

1. Using commercial catalogs
2. Using building code manuals
3. Using builder's manuals

J. Quality Assurance Checking 100

1. Inspecting finished drawings
2. Checking drawings for content
3. Checking for accuracy
4. Checking symbols and conventions
5. Checking specifications
6. Checking shop drawings

K. Inspecting Field Sites 300

1. Surveying sites under construction
2. Inspecting materials for conformity with plans and specs (at option of sponsor*)
3. Inspecting structures during progressive stages of completion
4. Record keeping and taking photos
5. Inspecting completed structures (at option of sponsor*)

L. Drawing Structural Steel 500

1. Shaped:
 - a. Channel – I Beam
 - b. Angle iron, etc.
2. Roof trusses
3. Plate Girders
4. Columns
5. Assemblies of above

M. <u>Drawing Structural Details</u>	500
1. Concrete, keyed expansion, isolation, rebar/ mesh	
2. Steel construction	

Total Hours	8,000

* If optional components are not selected, the time should be devoted to further mastery of the required Work Processes.

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 purpose of Article 8 or 9 of the Labor Law, please refer to <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>.

APPENDIX B
DRAFTER (STRUCTURAL)
RELATED INSTRUCTION

Safety & Health

Fundamentals – Fire, Electrical, Right-to-Know (Hazardous Communications),
OSHA, Emergency Procedures
Trade Safety
Drafting Room: VDT Precautions, Ergonomic Furnishings/Work Aids
First Aid (minimum 6.5 hours every 3 years)

Blueprint Fundamentals

Reading and Interpreting Structural Blueprints
Blueprint Production
Drawing and Sketching
Lettering and Tracing
Orthographic Projection
Geometric Constructions
Sectional Views and Auxiliary Views
Dimensioning Procedures
Fasteners and Hardware

Computer Aided Drafting (CAD)

Introduction to (CAD)
Drawing Set Up Commands and Data Entry Methods
Developing the Shape and Drawing Description
Developing Dimension and Scale Description
CAD Mechanical Detailing
File Management
Editing Commands
Construction Commands and Object Modification
Exclusive Features
Advanced CAD Tasks

Mathematics

Fundamentals
Algebra
Geometric Construction
Trigonometry
Calculus Basics
Metric System
Estimating and Specifications
Trade Applications
Calculating Reduced Scales
Calculating Weights

Calculating Tolerances
Calculating Stress Factors

Trade Theory and Science

Tools, Machines and Equipment
Terminology
Drafting Department Practice and Operation
Handbooks, Catalogs and Reference Material
Work Sequencing
Detailing, Welding Symbol
Layout and Assembly Drawings, Working Drawings
Introduction to Design, Design Research and Testing
Visualizing Multiple Perspective Drawings
Conceptualizing Inside Complex Processes
Principles of Architectural and Structural Drafting
Fundamental Principles of Engineering
Structural Construction Materials and their Properties
Geometric Dimensioning and Tolerancing

Other Workplace Skills

Communications: Management, Customer, Engineering, Team Members
Problem Solving, Group Team Problem Solving
American with Disabilities Act Overview
Sexual Harassment Prevention Training (minimum 3 hours)
Other Related Courses as Necessary or Required by Sponsor

A Minimum of 144 Hours of Related Instruction is Required for Each Apprentice for Each Year.