DRAFTER (ARCHITECTURAL)

APPENDIX A

O*NET CODE 17-3011.01

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. Tools, Equipment and Work Aids — 300

1. Using and caring for drafting table, triangle, T-square, rulers, drawing instruments, inking tools, templates, lettering guides, compass.
2. Using and caring for drafting machine.
3. CAD: using and caring for computer-aided drafting terminal, keyboard, mouse and/or stylus and digitizing tablet.
4. Understanding and using sketches, rough drawings, tracing paper, pictorial drawings.
5. Understanding and using handbooks, charts, technical specifications, catalogs, building codes, building manuals, reference library materials, CAD manuals and tutorials.
6. Using and caring for plotters, printers, mylar.
7. Documenting procedures; maintaining files; setting up project directories. (Optional)

B. Blueprint Reading — 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. Understanding dimensioning procedures.
8. Reading architectural parts blueprints.

C. Drafting Basics — 1,500

Producing drawings using traditional manual board drafting and CADD systems:

1. Tracing simple drawings.
2. Sketching freehand, preliminary and final.
3. Drawing lettering freehand; using lettering aids and devices, CADD.
4. Sketching orthographic projections.
5. Board drafting multiple views.
6. Inking lines, symbols and letters on pencil drawings. (Optional)
7. Determining sequence of work and method of presentation, in conjunction with supervisor or project team.
8. Interpreting rough sketches and notes and engineering specifications.
9. Drafting detailed drawings of architectural designs and plans for buildings.
10. Drawing plans to scale.
11. Changing drawings using tracing paper, overlays, CADD systems.
12. Sketching pictorial views.

D. Making Calculations **500**

1. Understanding and using metric system.
2. Compiling tolerances and 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 handbooks, product catalogs, tables, etc.
6. Calculating related materials needed, projecting amount required, preparing materials schedule. (Optional)
7. Determining scale.

E. Construction Detailing **800**

The following tasks may be performed using manual drawing, or using CADD programs:

1. Drawing wall sections.
2. Drawing roof detail.

3. Drawing standard framing detail.
4. Drawing sheet metal detail.
5. Drawing eletrical installation. (Optional)
6. Drawing heating and air conditioning. (Optional)
7. Drawing plumbing installations. (Optional)

F. Drafting Simple Architectural Drawings **300**

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

G. Drafting Residential Plans, Manual and CADD **1,000**

1. Drawing plot plans.
2. Drawing basement plans.
3. Drawing floor plans.
4. Drawing elevations.
5. Drawing simple architectural renderings.
6. Learning basic surveying, using such items as tapes, levels, transits, and lasers for field layout; horizontal and vertical structure placement.

H. Drafting Commercial and Public Structures, Manual and CADD **1,200**

1. Reviewing preliminary considerations, commercial building codes, ADA codes.
2. Drawing plot plans.
3. Drawing basement plans.
4. Drawing roof plans.
5. Drafting floor plans.
6. Drawing elevations.
7. Drawing foundation plans.
8. Drawing architectural renderings.
9. Checking surveys in commercial and public projects.

I. 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 part of a team.
4. Gathering information for specifications, customer input. (Optional)

J. Drafting Detail Work **500**

1. Drawing millwork.
2. Drawing interior trim.
3. Drawing exterior trim.
4. Drafting structural steel with direction of Architect and Engineer. (Optional)

K. Writing Specifications **500**

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

L. Quality Assurance Checking **200**

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.

M. Inspecting Field Sites **300**

1. Surveying sites under construction.
2. Inspecting materials for conformity with plans and specs. (Optional)
3. Inspecting structures during progressive stages of completion.
4. Inspecting completed structures. (Optional)

N. Drawing Architectural Renderings (Optional) **300**

1. Using variety of media in production of pictorial sketches.
2. Using air brushes.
3. Using color.
4. Drawing pictorial views in isometric, oblique orthographic and perspective.

Approximate Total Hours 8,000

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 (16 hours)

1. Fundamentals – including fire, electrical, Right-to-Know (Hazardous Communications),
2. OSHA, Emergency Procedure
3. Trade Safety
    a. Drafting Room: VDT Precautions, Ergonomic Furnishings
    b. Site Safety
4. First Aid (minimum 6.5 hours every 3 years)
    a. CPR (optional; renewable yearly)
5. Sexual Harassment Prevention Training – must comply with Section 201-g of the Labor Law

Blueprint Fundamentals, Sketching and Drawing

1. Basic Reading and Interpreting
2. Handling, Filing Practices
3. Blueprint Production
4. Blueprint Reading for Construction Trades
5. Drawing and Sketching
6. Geometric Constructions
7. Sectional Views
8. Trade Symbols: Carpentry, Electrical, Plumbing, HVAC
9. Modifying Drawings

Mathematics

1. Fundamentals: Algebra, Geometry, Trigonometry; Basic Calculus (Optional)
2. Geometric Construction
3. Basic Dimensioning – Procedures
4. Architectural Applications
5. Using Tables, Engineering Handbooks
6. Calculating Stress Factors

7. Calculating Reduced Scales
8. Estimating
9. Architectural Specifications
10. Architectural Dimensions

Computer Aided Drafting and Designing

1. Basic Introduction to Terminal, CADD Software and Applications; Techniques, Drawing, Editing, Plotting, Projection
2. Customizing with Programs such as Auto CADD including: Customizing Menus, Creating Special Files, Three Dimensional Modeling
3. Advanced CADD Applications to Complex Architectural Projects, Two and Three Dimensional Design
4. Overview of Current Developments in CADD Commercial Packages and Enhancements. Converting Manual Drawings to CADD.

Quality Control Process

1. ISO 9,000 Standards (Optional)
2. Total Quality Management (Optional)
3. Continuous Improvement Philosophy (Optional)

Trade Theory

1. Tools, Machines and Equipment, Care and Maintenance
2. Materials
3. Terminology
4. Drafting Department Practices and Operation
5. Work Sequencing
6. Methods of Presentation
7. Projection Theory
8. Lettering and Tracing
9. Alterations
10. Multiple Perspective Drawings
11. Conceptualizing Spatial and Building Component Relationships

Trade Science

1. History of Architecture

2. Principles of Building Construction and Engineering
3. Physical Properties of Materials, Strength of Materials
4. Architectural Handbooks, Catalogs and Reference Materials
5. New York State Building Code and Zoning
6. Principles of Architectural Drafting
7. Working Drawings
8. Detailing Structural, Electrical, Plumbing, Foundations and Heating
9. Residential Design
10. Commercial and Industrial Design
11. Site Conditions
12. Structural Foundations
13. Masonry Construction and Veneers
14. Structural Systems; Wood, Steel, Iron, Concrete
15. Drafting Wood Flooring, Walls, Roofs and Supports
16. Sheet Metal Design, Structural Systems, Forced Air, HVAC Systems
17. Drafting Plumbing Diagrams
18. Electrical Drafting – Circuit Fundamentals, Technique, Wiring Diagrams, Service Diagrams, Power, Lighting Diagrams
19. Preparing Specification Documents

Industrial and Labor Relations

1. History and Background (6 hours 1st year)
2. Current Laws and Practices (14 hours 2nd year)

Interpersonal Communications: Management; Customer; Architect/Engineer

Problem Solving, Group Team Problem Solving (Optional)

Americans with Disabilities Act Overview

Other Courses as Necessary

144 Hours of Related Instruction are required for each Apprentice for each year.

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