# Architectural Drafting Blueprint

This Blueprint contains the subject matter content of this Skill Connect Assessment. This Blueprint does **NOT** contain the information one would need to fully prepare for a SkillsUSA Championships contest. Please refer to the *SkillsUSA Championships Technical Standards* CD-ROM for the current year or purchase and download the relevant "Contest Singles." Both are available through *www.skillsusa.org* > Shop > Educational Materials Catalog.

## Standards and Competencies

**Demonstrate understanding of terms and principles used in the architectural profession**

- Define and use terms commonly used in the architectural profession
- Explain the application of geometric objects to building materials
    - Define the characteristics of an equilateral triangle and its application to architecture
    - Define the characteristics of an isosceles triangle and its application to architecture
    - Define the characteristics of a square and its application to architecture
    - Define the characteristics of a parallelogram and its application to architecture
    - Define the characteristics of an equilateral triangle and its application to architecture
    - Define the characteristics of a hexagon and its application to architecture
    - Define the characteristics of an octagon and its application to architecture
    - Define the characteristics of a circle and its application to architecture

**Interpret and apply conventional General Drafting Standards to architectural drafting situations**

- Define function of each line in the Alphabet of Lines
- Explain the graphical characteristics of each line
    - Visible/Object Lines: Thick solid lines that represent visible edges or contours of the part. Visible lines of floor plans are medium thickness (0.6mm)
    - Hidden Lines: Hidden lines should always touch where the visible feature starts or ends (0.3mm). Hidden lines may be omitted from drawings for clarity purposes
    - Section Lines: Section lines represent the area of the part that would be cut in a section view (0.3mm)
- Explain orthographic elevation projection
    - Architecturally, views are referred to as elevations
    - Roof plan is the top view and front elevation is the front view, etc.
    - Elevations are oriented on site with reference to true north or building north
- Explain the terms and definitions used in detail drawings, working drawings and drafting
- Define and describe the components that comprise architectural drawings
    - Necessary multiviews
    - Dimensional information
    - Specified materials
    - Revision block, title block and sheet size
    - Drafter/reviewer names
    - Enlarged views and sections showing detail
    - General notes with construction information
    - Schedules: doors, windows and room finishes
- Define and describe the components that comprise architectural construction (working) drawings

**Develop a set of working drawings from a provided scenario with provided materials using competencies identified for drafting certification by the American Design Drafting Association**

- Produce multiview drawings with lines, curves, surfaces, holes, fillets, rounds, chamfers, run outs and ellipses

- Use standard drafting techniques to create section views in order to improve the visualization of new designs
- Clarify multiview drawings and facilitate the dimensioning of drawings
- Summarize and apply the principles and procedures for adding size information to a drawing according to standard dimensioning practices
- Draw and label site plans, floor plans, foundation plans, plumbing plans, mechanical plans, electrical plans and landscaping plans with elevations, sections, details, schedules and necessary multiviews

**Demonstrate professional development skills in a simulated customer-service or employment situation. Examples may include:**
- Job interview
- Customer service scenario
- Communications
- Decision making, problem solving and/or critical thinking

## Committee Identified Academic Skills

The SkillsUSA national technical committee has identified that the following academic skills are embedded in the architectural drafting training program and assessment:

**Math Skills**
- Use fractions to solve practical problems
- Use proportions and ratios to solve practical problems
- Simplify numerical expressions
- Solve practical problems involving percents
- Solve single variable algebraic expressions
- Solve multiple variable algebraic expressions
- Measure angles
- Find surface area and perimeter of two-dimensional objects
- Find volume and surface area of three-dimensional objects
- Construct three-dimensional models
- Apply Pythagorean Theorem
- Make predictions using knowledge of probability
- Make comparisons, predictions and inferences using graphs and charts
- Organize and describe data using matrixes
- Graph linear equations
- Solve problems using proportions, formulas and functions
- Find slope of a line
- Solve practical problems involving complementary, supplementary and congruent angles
- Solve problems involving symmetry and transformation
- Use measures of interior and exterior angles of polygons to solve problems

**Science Skills**
- Describe and recognize solids, liquids and gases
- Describe characteristics of types of matter based on physical and chemical properties
- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, color)
- Use knowledge of classification of elements as metals, metalloids and nonmetals
- Use knowledge of mechanical, chemical and electrical energy
- Use knowledge of heat, light and sound energy
- Use knowledge of temperature scales, heat and heat transfer
- Use knowledge of sound and technological applications of sound waves
- Use knowledge of simple machines, compound machines, powered vehicles, rockets and restraining devices
- Use knowledge of principles of electricity and magnetism

- Use knowledge of static electricity, current electricity and circuits
- Use knowledge of motors and generators

**Language Arts Skills**
- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of verbal communication skills, such as word choice, pitch, feeling, tone and voice
- Demonstrate use of nonverbal communication skills, such as eye contact, posture and gestures using interviewing techniques to gain information
- Analyze mass media messages
- Demonstrate comprehension of a variety of informational texts
- Use text structures to aid comprehension
- Identify words and phrases that signal an author's organizational pattern to aid comprehension
- Understand source, viewpoint and purpose of texts
- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Use print, electronic databases and online resources to access information in books and articles
- Demonstrate narrative writing
- Demonstrate expository writing
- Demonstrate persuasive writing
- Demonstrate informational writing
- Edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure and paragraphing

## Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

**Math Standards**
- Numbers and operations
- Algebra
- Geometry
- Measurement
- Problem solving
- Communication
- Connections
- Representation

***Source:*** NCTM Principles and Standards for School Mathematics. To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm. Select "standards" from menu.

**Science Standards**
- Understands forces and motion
- Understands the nature of scientific inquiry

***Source:*** McREL Compendium of National Science Standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/.

**Language Arts Standards**
- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes

- Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language and genre to create, critique and discuss print and nonprint texts
- Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge
- Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

***Source:*** IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.readwritethink.org/standards/index.html.