

CONSTRUCTION TECHNOLOGIES, 46.0400.20

These technical standards were developed by a committee of industry representatives on February 24, 2017 and were endorsed by the Arizona Career and Technical Education Quality Commission, the validating authority for the Arizona Skills Standards Assessment System, on May 24, 2017. The technical standards are taught together with the Arizona Workforce Employability Standards and embedded academics. The first testing date for the Technical Skills Assessment using the new standards is Fall 2017.

STANDARD 1.0 MAINTAIN A SAFE WORK ENVIRONMENT

- 1.1 Follow job safety regulations and procedures for handling hazardous materials/chemicals according to OSHA guidelines and SDS (Safety Data Sheets)
- 1.2 Use appropriate personal protective equipment (PPE)
- 1.3 Evaluate types of fires and use of appropriate fire extinguishers
- 1.4 Maintain worksite safety and housekeeping (lighting, safety, etc.) including a safety plan for emergency situations
- 1.5 Identify first aid procedures
- 1.6 Demonstrate appropriate procedure for lifting heavy objects
- 1.7 Follow safe procedures in setting up scaffolding and using ladders
- 1.8 Demonstrate safe work procedures around electrical hazards
- 1.9 Use correct procedures for lockout/tagout
- 1.10 Identify procedures for reporting safety hazards

STANDARD 2.0 OPERATE HAND AND POWER TOOLS/EQUIPMENT

- 2.1 Inspect, use, and maintain hand tools
- 2.2 Inspect, use, and maintain portable power tools, powder-actuated tools, pneumatic tools, and extension cords

STANDARD 3.0 USE PLANS, SPECIFICATIONS, AND CODES

- 3.1 Identify blueprint terms, components, and symbols
- 3.2 Identify a set of drawings/symbols/scales and legends
- 3.3 Read material schedules on blueprints
- 3.4 Relate information on blueprints to actual locations
- 3.5 Identify and use drawing dimensions
- 3.6 Explain build codes and their importance
- 3.7 Identify resources for current building codes
- 3.8 Identify types of technology used in construction management

STANDARD 4.0 LAY OUT BUILDING LINES

- 4.1 Demonstrate the use and care of precision measuring instruments
- 4.2 Establish building lines and recognize trade-specific layout
- 4.3 Demonstrate a builder's level or transit and differential leveling procedures to determine site and building elevations

STANDARD 5.0 PERFORM MASONRY WORK

- 5.1 Describe basic masonry units
- 5.2 Describe the components of a masonry wall and accessories
- 5.3 Describe the components of mortar and how to properly mix mortar
- 5.4 Demonstrate proper use of tools for masonry
- 5.5 Demonstrate proper use of a level to evaluate masonry work
- 5.6 Demonstrate how to lay brick/block to specification

Note: In this document i.e. explains or clarifies the content whereas e.g. provides examples of the content that must be taught.

STANDARD 6.0 LAY OUT AND INSTALL FLOOR SYSTEMS

- 6.1 Identify components of floor systems
- 6.2 Describe the procedure for setting posts
- 6.3 Describe the correct fasteners used in construction of floor systems
- 6.4 Calculate the amount of material needed to frame a floor assembly
- 6.5 Lay out and construct floor systems

STANDARD 7.0 DEMONSTRATE WALL AND CEILING FRAMING

- 7.1 Lay out wall lines including plates, corner posts, door and window openings, partition Ts, bracing, and fire stops
- 7.2 Assemble wood and metal stud walls
- 7.3 Assemble, erect, and brace exterior walls for a frame building
- 7.4 Cut and install ceiling joists on a wood frame building
- 7.5 Calculate the materials required to frame walls and ceilings

STANDARD 8.0 FRAME AND FINISH A ROOF

- 8.1 Construct conventional roof and/or set truss systems
- 8.2 Install roof sheathing and coverings
- 8.3 Frame and/or illustrate a roof opening
- 8.4 Demonstrate the techniques for installing a variety of types of roofing materials
- 8.5 Estimate the materials used in framing and sheathing a roof

STANDARD 9.0 IDENTIFY CONDITIONED LIVING SYSTEMS

- 9.1 Identify types and use of thermal insulation, vapor barriers, R-values, and U-values
- 9.2 Describe the function of an HVAC system
- 9.3 Describe various types of energy efficient systems (e.g. solar electricity, solar water heating, cocoon insulation systems, gray water systems, turbines, etc.)
- 9.4 Identify conditioned living systems and explain how they relate to overall building performance

STANDARD 10.0 APPLY EXTERIOR FINISHES

- 10.1 Identify and/or install frieze boards or soffit
- 10.2 Identify and/or install exterior moldings and trim
- 10.3 Identify and/or install various types of siding
- 10.4 Demonstrate correct installation methods to eliminate water intrusion
- 10.5 Explain and/or demonstrate installation of exterior stucco finish

STANDARD 11.0 INSTALL DOORS AND WINDOWS

- 11.1 Install door systems
- 11.2 Install window systems

STANDARD 12.0 INSTALL INTERIOR TRIM AND STAIRS

- 12.1 Lay out and cut stringers
- 12.2 Determine the number and sizes of risers and treads required for a stairway
- 12.3 Build a small stair unit
- 12.4 Install baseboards and casings

STANDARD 13.0 ASSEMBLE PIPING, WASTE, AND VENT DISTRIBUTION SYSTEMS

- 13.1 Identify the major components of a drainage and water distribution system
- 13.2 Assemble a soil, waste, and vent system
- 13.3 Assemble a water distribution system
- 13.4 Install plumbing fixtures or equipment
- 13.5 Measure, cut, and join plastic and copper piping

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- 13.6 Describe the functions of a drainage and water distribution system and how they malfunction
- 13.7 Identify how an efficient system affects water usage

STANDARD 14.0 INSTALL ELECTRICAL COMPONENT/SYSTEM(S) TO CURRENT INDUSTRY CODE

- 14.1 Identify electrical service entrance requirements
- 14.2 Rough in electrical enclosures (switch boxes and outlet boxes, etc.) and cable
- 14.3 Determine the correct wire size for a circuit
- 14.4 Trim out electrical devices, appliances, light fixtures (luminaires), and ceiling fans
- 14.5 Identify components of solar P.V. systems

STANDARD 15.0 INSTALL INTERIOR WALL AND CEILING FINISH

- 15.1 Identify type and use of drywall
- 15.2 Demonstrate the proper techniques for cutting drywall
- 15.3 Fasten drywall to ceiling and walls
- 15.4 Apply mud, use tape appropriately, and install corner bead
- 15.5 Demonstrate proper material use and methods of paint application

STANDARD 16.0 PERFORM CONCRETE WORK

- 16.1 Describe the components of concrete
- 16.2 Prepare, pour, and finish concrete
- 16.3 Demonstrate proper use of concrete tools

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