Irrigation Specialty Contractors General Trade Knowledge Examination Content Information

Revised September 14

The General Trade Knowledge portion of the examination is administered daily in Computer Based Testing (CBT) format. It will consist of 80 equally weighted questions.

The examination will have questions relating to the following content areas and necessary knowledge for each area includes:

- reading and interpreting plans and specifications
- reading and interpreting codes
- basic mathematics (addition, subtraction, multiplication, division, calculations of area and volume, fractions, decimals, percentages, calculating the sides of triangles, square roots, powers of numbers, and solving simple algebraic equations for unknown variables)

You should be prepared to respond to examination questions on any of the content areas listed. Questions asked and content areas tested on previous examinations should not be assumed to be the only possible questions to be asked or content areas to be tested on this examination.

The percentage of questions shown for each content area may vary by as much as plus or minus three (3) percent. Please refer to the Candidate Information Brochure and the Reference List for additional information.

Content Area A 25%

Pre-Construction

1. Site Analysis
   a. Plants
   b. Soil
      knowledge of infiltration rates
      knowledge of texture
   c. Water Source
      knowledge of potable (e.g., reading meters)
      knowledge of reclaim water
      knowledge of surface
      knowledge of ground/well
      knowledge of alternative sources (e.g., rain water, condensate, storm, grey)
   d. Existing System Components

2. Develop/Review Plans & Specifications
   a. Plan Reading
      knowledge of elevations
      knowledge of contours
      knowledge of irrigation symbols
      knowledge of scale
   b. Product Application
      knowledge of emission device selection (e.g., nozzles, sprinklers, emitters)
      MPR (Matched Precipitation Rates)
      calculating precipitation rates
      efficiency
      reading nozzle charts
      knowledge of valve sizing and zone flow
      knowledge of wire
      sizing
      connectors
      wire types
      conduit
      depth
   c. Hydraulics
      knowledge of piping size
      knowledge of pump sizing & selection
      knowledge of static pressure
      knowledge of dynamic pressure (working pressure)
      friction loss
      velocity
      water hammer, surge
      knowledge of looped mains
   d. Specifications
   e. Verify Code Compliance

3. Perform Material Take Off of Irrigation Job

4. Prepare Submittals

5. Obtain Permits (e.g., right-of-way, location requirements)
Content Area B 37.50%

Construction

1. Prepare for Installation
   a. Review Scope of Work
   b. Understand Plans & Specifications
   c. System Lay-out
   d. Locating Site Utilities (e.g., Sunshine One Call)

2. Install Product
   a. Point of Connection
   b. Pipe & Fittings
      knowledge of trenching or pulling
      knowledge of locating pipe next to other utilities
      knowledge of other utilities
      knowledge of thrust blocking
      knowledge of bedding, backfill & compaction
      knowledge of pipe connections (e.g., solvent welding, threaded, gasketed mechanical joints)
      knowledge of sleeving
      knowledge of handling product
   c. Wiring & Electrical
      knowledge of electrical concepts
      • grounding
      • conventional vs. 2-wire systems
      knowledge of wire connections
      knowledge of pulling wire
   d. Sprinkler Heads and Assemblies
      knowledge of arc adjustment
      knowledge of pulling wire
   e. Low Volume Components
      knowledge of filtration
      knowledge of pressure regulation
      knowledge of limitations
      knowledge of securing
      knowledge of emitters (e.g., drip, micro-spray, bubblers)
   f. Valves
      knowledge of sizing valves
      knowledge of connecting valves
      knowledge of valve boxes
   g. Controller & Related Components
      knowledge of rain shut-off device
      knowledge of sensors (e.g., soil moisture, ET sensor, weather stations, freeze, flow, salinity, pH)
      knowledge of flow meter
      knowledge of decoders
   h. Pumps
      knowledge of pump size
      knowledge of pump types (e.g., submersible, jet, centrifugal, turbine, booster)
      knowledge of pump controls
      • pressure systems
      • clock start
      • system protection devices (e.g., low water cut off, no flow cut off, pressure relief valves)
   i. Filtration (e.g., screen, disc, media, sand separator)
   j. Chemical Injection Systems

3. Create Record Drawing

Content Area C 12.50%

Maintenance & Repair

1. Perform Maintenance
   a. Visual Inspections
   b. Rain Delay Operation
   c. Raise, Level and Adjust Heads
   d. Check Filters
   e. Identify Water Source Issues
   f. Check Controller Operation and Scheduling

2. Troubleshoot and Diagnose System
   a. Pipe Failures
   b. Low Pressure
   c. Valve Failures
   d. Electrical Problems (e.g., controller failures)
   e. Misapplication of Pumping
   f. Identifying Inadequate Installation Practices

3. Perform Repair

4. Upgrade System to Meet Current Codes

5. Educate Customers
   a. Routine Maintenance
   b. Water Efficiency and Best Management Practices
Content Area D                                      12.50%
Scheduling & Water Conservation

1. Understand Soil-Plant-Water Relationships
2. Conduct Irrigation Assessment/Audit
3. Analyze Site Conditions for water Conservation Potential
4. Calculate Watering Schedules

Content Area E                                      12.50%
Rules, Laws & Codes

1. Job Safety
   knowledge of OSHA
   knowledge of Florida Trench Safety Act
2. Electrical Safety
3. Florida Building Code, Plumbing
   knowledge of backflow
4. Department of Environmental Protection
5. Water Use/Restrictions