

Job Task Analysis (JTA) for Fiber-Reinforced Polymer Reinforcing Bar Inspector

HOW TO USE THIS JTA:

For each of the following assessment methods, the Candidate must:

On the written examination:

- **Understand** the following general concepts, which may not have specified values, procedures, or measurements; *and*
- **Know** the following specific procedures or values; performance of these items may also be assessed on the performance examination.

RESOURCES:

ACI SPEC-440.5	Construction with Glass Fiber-Reinforced Polymer Reinforcing Bars—Specification
ACI CODE-440.11	Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars—Code and Commentary
ASTM D570	Standard Test Method for Water Absorption of Plastics
ASTM D2584	Standard Test Method for Ignition Loss of Cured Reinforced Resins
ASTM D3171	Standard Test Methods for Constituent Content of Composite Materials
ASTM D7205/D7205M	Standard Test Method for Tensile Properties of Fiber Reinforced Polymer Matrix Composite Bars
ASTM D7617/D7617M	Standard Test Method for Transverse Shear Strength of Fiber-reinforced Polymer Matrix Composite Bars
ASTM D7705/D7705M	Standard Test Method for Alkali Resistance of Fiber Reinforced Polymer Matrix Composite Bars used in Concrete Construction
ASTM D7913/D7913M	Standard Test Method for Bond Strength of Fiber Reinforced Polymer Matrix Composite Bars to Concrete by Pullout Testing
ASTM D7914/D7914M	Standard Test Method for Strength of Fiber Reinforced Polymer Bent Bars in Bend Locations
ASTM D7957/D7957M	Standard Specification for Solid Round Fiber Reinforced Polymer Bars for Concrete Reinforcement
ASTM D8505/D8505M	Standard Specification for Basalt and Glass Fiber Reinforced Polymer (FRP) Bars for Concrete Reinforcement
ASTM E1356	Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry
ASTM E2160	Standard Test Method for Heat of Reaction of Thermally Reactive Materials by Differential Scanning Calorimetry

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- Understand how FRP bars are manufactured
 - Be able to verify FRP bar certification
 - Know the Scope, Significance, and Use of ASTM D570, Standard Test Method for Water Absorption of Plastics
 - Know the Scope, Significance, and Use of ASTM D2584, Standard Test Method for Ignition Loss of Cured Reinforced Resins
 - Know the Scope, Significance, and Use of ASTM D3171, Standard Test Methods for Constituent Content of Composite Materials
 - Know the Scope, Significance, and Use of ASTM D7205/D7205M, Standard Test Method for Tensile Properties of Fiber Reinforced Polymer Matrix Composite Bars

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- Know the Scope, Significance, and Use of ASTM D7617/D7617M, Standard Test Method for Transverse Shear Strength of Fiber-reinforced Polymer Matrix Composite Bars
- Know the Scope, Significance, and Use of ASTM D7705/D7705, Standard Test Method for Alkali Resistance of Fiber Reinforced Polymer Matrix Composite Bars used in Concrete Construction
- Know the Scope, Significance, and Use of ASTM D7913/D7913M, Standard Test Method for Bond Strength of Fiber Reinforced Polymer Matrix Composite Bars to Concrete by Pullout Testing
- Know the Scope, Significance, and Use of ASTM D7914/D7914M, Standard Test Method for Strength of Fiber Reinforced Polymer Bent Bars in Bend Locations
- Know the Scope, Significance, and Use of ASTM D7957/D7957M, Standard Specification for Solid Round Fiber Reinforced Polymer Bars for Concrete Reinforcement
- Know the Scope, Significance, and Use of ASTM D8505/D8505M, Standard Specification for Basalt and Glass Fiber Reinforced Polymer (FRP) Bars for Concrete Reinforcement
- Know the Scope, Significance, and Use of ASTM E1356, Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry
- Know the Scope, Significance, and Use of ASTM E2160, Standard Test Method for Heat of Reaction of Thermally Reactive Materials by Differential Scanning Calorimetry
- Understand detailing differences between FRP bars and mild steel bars
- Know the detailing of FRP bars
- Know the property limits for quality control of GFRP bars
- Know the requirements sampling GFRP bars for quality control and certification
- Know the allowance for retests for quality control and certification
- Know how to verify the bars being used are the bars that were specified
- Know the minimum requirements for the contents of test reports for product certification
- Know the requirements for markings on straight and bent GFRP bars
- Know the requirements for on-site storage of GFRP bars
- Understand the additional provisions for long-term storage of GFRP bars
- Be able to identify defects on GFRP bars
- Know the rejection criteria for GFRP bars
- Understand the repair of defects
- Know the requirements of proper field cutting
- Understand the prohibition on field bending
- Know the concrete cover requirements and tolerances for GFRP reinforcement
- Know the placement compliance requirements for GFRP reinforcement
- Know the frequency for inspection of reinforcement