

ATLB-2150: GUNITE

Cuyahoga Community College

Viewing: ATLB-2150 : Gunité

Board of Trustees:

2013-05-23

Academic Term:

Spring 2019

Subject Code

ATLB - AIT-Construct/Hazard Material

Course Number:

2150

Title:

Gunité

Catalog Description:

Properties of gunité, its mixture and use and applications in the construction industry. Discussion and application of equipment operation and maintenance, including various nozzles for special conditions.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: admission to the Construction Tending and Hazardous Material Abatement apprenticeship program.

Outcomes

Course Outcome(s):

I. Discuss the properties of Gunité, its mixture and the terminology associated with the mix.

Objective(s):

1. Discuss the required water-cement ratio of the Gunité and explain the structural aspects of the mix.
2. Define the terms related to Gunité including the mix ingredients and water content.
3. Identify the reinforcements within the respective Gunité structures and explain how they are used for design and support.
4. Discuss the various uses of Gunité
5. List the different kind of sands and admixtures that can be added to the Gunité mix.
6. Discuss the health hazards that are associated with working on Gunité structures.

Course Outcome(s):

II. Describe the equipment that is used in Gunité applications, including the "gun" or "pot", compressor, water pump, mortar mixer and respective hand tools.

Objective(s):

1. Describe the mixture of Gunité with respect to different mortar mixes.
2. List the hand tools that are used for shaping and finishing the Gunité.
3. Identify the different types of chambers used in cement application guns.
4. List and describe the components of the application gun or pot.
5. Describe the various compressors that are used and discuss the respective hoses and cubic feet per minute (cfm) required

Course Outcome(s):

III. Demonstrate the ability to safely operate the equipment used for applying Gunite, prepare the mixture, set the required formwork and position the reinforcing wire and mesh.

Objective(s):

1. Establish the best location for stationing the equipment with respect to the project, including environmental concerns
2. Select the best location for project materials and equipment.
3. Mix the ingredients with respect to job specifications.
4. Prepare surfaces to receive Gunite applications.
5. Install reinforcing wire or bar and mesh.
6. Select and position proper nozzles for applying substrate and water mix.
7. Apply specified finishes respective of setting times.
8. Recognize the various safety hazards associated with Gunite applications including personal protective equipment, respiratory requirements and scaffolding as prescribed in the Occupational Safety Health Administration (OSHA) standards.

Course Outcome(s):

IV. Demonstrate the operation of the nozzles that are used in Gunite applications including the processes, respective adjustments, maintenance and repair.

Objective(s):

1. List the different components of the nozzle.
2. Adjust the nozzle to the specified consistency.
3. Demonstrate the ability to properly apply the mixes as determined by job conditions, distance and air flow.
4. Demonstrate the ability to repair the equipment including ring replacement, hose gaskets and lubrication requirements.

Methods of Evaluation:

1. Quizzes
2. Tests
3. Class participation

Course Content Outline:

1. Gunite
 - a. Terminology
 - i. Rebound
 - ii. Gunite
 - iii. Overhead surface
 - iv. Metal lath
 - v. Substrate
 - vi. Mesh
2. Water-cement ratio
 - a. Strength
 - b. Compaction and mix
3. Reinforcement
 - a. Design
 - b. Support
4. Uses
 - a. Decorative
 - b. Structural
 - c. Ground support
 - d. Protective
5. Sand and admixtures
6. Respiratory hazards
 - a. Silicosis
 - b. Lung disease
 - c. Infections
 - d. Lime irritations
7. Equipment and mix

- a. Guns
 - i. Single chamber
 - ii. Double chamber
- a. Components
 - i. Feed wheel
 - ii. Exhaust valve
 - iii. Air inlets
 - iv. Oilers
- b. Compressors
- c. Mixture
 - i. Sand
 - ii. Cement
 - iii. Ratio
 - iv. Water
- d. Hand tools
 - i. Trowels
 - ii. Floats
 - iii. Nippers and pliers
 - iv. Tape measures
- 8. Equipment operation
 - a. Location
 - i. Wind direction
 - ii. Project type
 - iii. Water source
 - b. Positioning
 - i. Hoses
 - ii. Mixer
 - iii. Job conditions
 - iv. Communication
 - c. Mixture
 - i. Moisture content
 - ii. Specification
 - iii. Applications
 - iv. Cement type
 - d. Preparation
 - i. Surface chipping
 - ii. Sand blasting
 - iii. Meshing
 - iv. Saw cutting
 - v. Bonding agents
 - e. Reinforcements
 - f. Nozzles
 - g. Finishes
 - i. Broom
 - ii. Nozzle
 - iii. Rubber float
 - iv. Wood float
 - v. Stain
 - h. Safety hazards
 - i. Personal Protective Equipment (PPE)
 - ii. Respirator
 - iii. Scaffold
- 9. Nozzles
 - a. Components
 - i. Water ring
 - ii. Liner
 - iii. Nozzle
 - b. Adjustments

- i. Needle valve
- ii. Air valve
- iii. Feed wheel
- iv. Field gauge
- c. Air flow and distance
- d. Maintenance and repair
 - i. Lubrication
 - ii. Gaskets
 - iii. Feed wheel cleaning
 - iv. Pot maintenance

Resources

Reed Manufacturing. *"Gunitite Machine Preventative Maintenance Tips"*. current. Reed Manufacturing Chino, CA, 91710, 2008.

Allentown Pneumatic Gun Company. *Allentown Instruction*. existing. Allentown Pneumatic Gun Company Allentown Pa., 2011.

Reed Manufacturing. *"Shotcrete"*. current. Reed Manufacturing Allentown Pa., 1987.

Resources Other

<http://www.shotcrete.org>

[www.a1 \(http://www.a1gunitite.com/gunitite.htm\)](http://www.a1gunitite.com/gunitite.htm)**gunitite.com/gunitite.htm**

www.monolithic.com/stories/shotcrete-vs-gunitite

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