

ATCM-1806: SPECIAL TOPICS IN CEMENT MASON CONCRETE POLISHING

Cuyahoga Community College

Viewing: ATCM-1806 : Special Topics in Cement Mason Concrete Polishing

Academic Term:

Spring 2019

Subject Code

ATCM - Appd Indus Tech-Cement Masonry

Course Number:

1806

Title:

Special Topics in Cement Mason Concrete Polishing

Catalog Description:

Course covers polished concrete applications including benefits and installation processes. In addition, tools, equipment and techniques used will be covered and practiced in a shop setting.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Cement Masons' apprenticeship program.

Outcomes

Course Outcome(s):

I. Describe polished concrete and discuss the benefits of using it for applications requiring low maintenance and high efficiency.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Identify and define the terms related to polished concrete.
2. List and explain the benefits of using polished concrete.
3. Distinguish between low and high gloss polished floors and describe the required maintenance of each.
4. Describe the technique used for testing polished concrete and explain the relative purpose for testing.

Course Outcome(s):

II. Describe the process used for polishing an existing concrete including the tools used, specifications and tests performed.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List the tools required for polishing existing floors.
2. Describe how surfaces are tested for hardness.
3. Name specifications followed for polishing existing concrete.
4. Identify and explain factors to consider when constructing mock ups for existing floors.

Demonstrate the ability to polish existing concrete floors

Course Outcome(s):

III. Describe using grinders and polishers for floor prep and polished concrete.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Distinguish between grinding for floor prep and polishing.
 2. List the necessary steps in pre-job planning for both.
 3. Identify the hazards related to working with grinders.
 4. Name the safety equipment and PPE that are necessary for this work.
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Course Outcome(s):

IV. Describe the process used for polishing an existing concrete floor including the tools used, specifications, and tests performed.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List the tools required for polishing existing floors.
 2. Describe how surfaces are tested for hardness.
 3. Name specifications followed for polishing existing concrete.
 4. Identify and explain factors to consider when constructing samples for existing floors.
 5. Demonstrate the ability to polish existing concrete floors.
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Course Outcome(s):

V. Describe the process used for polishing new concrete floors.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List the tools required to polish new concrete.
 2. Name the specifications followed for polishing new concrete.
 3. Review the steps in a pre-job process for new concrete floors.
 4. Describe surface testing and creating mock-ups,
 5. Demonstrate the ability to polish new concrete.
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Methods of Evaluation:

Methods of Evaluation/Grading Policy

Grading: 50% class work and tests

25% hands on work

25% homework

All grades are a composite of these 3 criteria and will be submitted to Tri-C for College credit.

Course Content Outline:

Course Outline

1. Polished concrete: benefits and maintenance
 - a. Terms
 - i. Polished concrete
 - ii. Burnish

- iii. **Ground**
 - iv. **Reflection**
 - v. **Honed**
 - vi. **Polish**
 - vii. **Topical**
 - viii. **Densifies**
 - ix. **Grit**
 - x. **Abrasion**
 - xi. **Design mix**
 - xii. **F number system**
 - xiii. **Leadership in Energy and Environmental Design (Leed)**
 - b. **Benefits**
 - i. **General**
 - 1. **Light reflection**
 - 2. **Low maintenance**
 - 3. **Permanent solution**
 - 4. **Coating free**
 - 5. **Aesthetics**
 - ii. **Warehouse and industrial**
 - 1. **Equipment wear**
 - 2. **Tire marking elimination**
 - 3. **Dusting and particulate debris**
 - iii. **Commercial and residential**
 - 1. **Abrasion resistant**
 - 2. **Economical**
 - 3. **Leed**
 - a. **Environmentally friendly**
 - b. **Energy efficient**
 - c. **Maintenance**
 - i. **Procedures**
 - 1. **Washing/scrubbing**
 - 2. **High speed burnishing**
 - ii. **Frequency**
 - 1. **Use**
 - 2. **Class level**
 - d. **Polished concrete testing**
 - i. **Types**
 - 1. **Moisture**
 - 2. **Hardness**
 - 3. **Class**
 - ii. **Tools**
 - 1. **Gloss meter**
 - 2. **Pick set**
1. **Polishing existing floors**
 - a. **Tools**
 - i. **Coating removal**
 - 1. **Metal bonded tools**
 - a. **Epoxy less than or equal to 20mil**
 - b. **Paints**
 - c. **Curing compounds**
 - d. **Mastic and glues**
 - e. **Scraper**
 - 2. **Scrapers**
 - a. **Epoxy 30mil or less**
 - b. **Elastomeric membrane**
 - c. **Silica coating**
 - 3. **Scarifier**

- a. Severe conditions
 - b. Thick coatings
 - ii. Hardness test tools
 - b. Surface testing
 - i. Diamond selection
 - ii. Moisture
 - c. Specifications
 - i. Processing
 - ii. Protection
 - iii. Moh's Hardness Test
 - d. Mock up factors
 - i. Designated area
 - 1. Joints
 - 2. Poor F numbers
1. Polishing process
- a. Existing mastic removal
 - b. Abrasions
 - c. Grinding
 - d. Polish
 - e. Clean up
1. Floor prep /polished concrete
- a. Types of floor prep/polished concrete
 - i. Epoxy prep
 - ii. Arder prep
 - iii. Tile work
 - iv. Mastic removal
 - v. Repair work
 - vi. Existing concrete
 - vii. New concrete
 - b. Pre-job planning
 - i. Specifications
 - ii. Design
 - iii. Access
 - iv. Expectations
 - c. Hazards
 - i. Silica
 - ii. Asbestos
 - iii. Electrical hazards
 - d. Safety
 - i. Equipment
 - 1. HEPA vacuums
 - 2. HEPA air scrubbers
 - ii. PPE
 - 1. Dust masks/half/whole respirators
 - 2. Safety glasses
 - 3. Gloves
1. Polishing existing floors
- a. Tests
 - i. Coating removal
 - 1. Metal bonded tools
 - a. Epoxy 20 ml or less
 - b. Paint
 - c. Curing compounds
 - d. Mastics and glue
 - e. Scraper
 - 2. Scrapers
 - a. Epoxy 30ml or less
 - b. Elastomeric membrane
 - c. Silica coating

- 3. Scarifier
 - a. Severe conditions
 - b. Thick coatings
- ii. Hardness test tools
 - 1. Surface testing
 - a. Diamond selection
 - b. Moisture
 - 2. Specifications
 - a. Processing
 - b. Protection
 - c. Moh's Hardness Test
- b. Mock-up factors
 - i. Designated area
 - ii. Joints
 - iii. Poor F numbers
- c. Polishing process
 - i. Existing mastic removal
 - ii. Abrasions
 - iii. Grinding
 - iv. Polish
 - v. Clean up
- 1. Polishing new concrete floors
 - a. Tools
 - i. Metal bored diamonds
 - ii. Soft bored diamonds
 - iii. Hybrid diamonds
 - b. Specifications
 - i. F number
 - ii. Appearance
 - 1. Salt and pepper finish
 - 2. Aggregated exposure
 - iii. Sealers
 - 1. Densifiers
 - 2. Hybrids
 - 3. Ultra-violet sealers
- c. Pre job process
 - i. Time frame
 - ii. Access
 - iii. Electrical supply
 - iv. Expectations
- d. Test K mock-ups
 - i. Pre-polish hardness test
 - ii. Diamond approval
 - iii. Mock-up placement
- e. Polishing process
 - i. Wet or dry
 - ii. Grinding
 - iii. Densifying
 - iv. Honing
 - v. Polishing
 - vi. Sealing
 - vii. Burnishing
 - viii. Sealing
 - ix. Clean up

Resources

Fanone, Giuseppe. . *Concrete & Marble Polishing* . current. Independently Published, 6/30/2018. 6/30/2018.

OPCMIA Polished Concrete Student Text. current. Published by Meta Media Training International Inc. , 2011. 2011.

Bob Harris . *Guide to Polished Concrete*. . current. 2010. 2010.

Resources Other

1. <https://www.opcmia.org/training/> (<http://catalog.tri-c.edu%0dhttps://www.opcmia.org/training/%20%20%20%0d/>)
2. www.polishedconcretesolutions.com/training-consulting/ (<http://%20www.polishedconcretesolutions.com/training-consulting/%0d/>)

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