

Concrete Placement and Finishing Tech 1 Syllabus

Time: 40 hours

Maximum Class Size: 12

Prerequisites: LCM Construction Math

Course Description: This course is designed to introduce the participant to the basic skills needed to be successful on the jobsite. The placement of concrete is an important part of any construction project. This course will cover the tools and materials used in placing and finishing concrete. In addition, the participant will learn the step by step process of placing, finishing, and sawing concrete. Students will also review basic Construction Math and the skills needed to calculate concrete quantities

Goals/Objectives/Student Learning Outcomes:

- Use basic math processes to solve problems involving fractions and decimals.
- Use standard math formulas to solve problems involving area and volume and common construction materials.
- Use common construction measuring equipment to identify units of measure in the US Standard System and the decimal system.
- Measure a variety of objects to within $\pm 1/8"$ using common construction measuring equipment.
- Convert measurements between the US Standard System and the decimal system.
- Identify, set up and use horizontal and vertical measuring equipment to perform basic layout, squaring and grade measurements.
- Calculate volume quantities for regular and irregular shapes to within \pm two hundredths of a cubic yard.
- Calculate the amount of concrete needed for concrete forms of certain dimensions with the yield amount included.
- Describe the five basic types of Portland cement and the uses of each
- List five common concrete admixtures; describe the effects of each admixture in placement, consolidation, and finishing concrete.
- Describe the primary health effect caused by skin exposure to cement and describe and identify the PPE used to prevent skin exposure
- Describe five methods of transporting concrete to the placement area and at least one situation that warrants each method.

Laborers Cement Mason
Concrete Placement and Finishing Tech 1 Syllabus

Goals/Objectives/Student Learning Outcomes continued

- List and identify at least three tools used in concrete placement.
- Describe three problems that can result from over-vibration of placed concrete and three problems that can result from under-vibrations of placed concrete.
- Given a scenario involving concrete placement for a wall, identify the tools needed, and demonstrate concrete placement and vibration techniques for walls following the guidelines in the LIUNA module.
- Given a scenario involving concrete placement for flatwork (a slab), identify the tools needed, and demonstrate concrete placement techniques for slabs.
- Identify common tools used for finishing concrete and describe the purpose of each tool.
- Describe three methods for curing concrete.
- Describe two types of blades used in walk behind saws, the type of cutting they are used for, and the limitations of each.
- Describe the main hazard associated with sawing/cutting concrete and the best way to control the hazard.
- Describe and demonstrate proper equipment inspection, operating procedures, and blade identification & selection for a walk behind concrete saw.
- Working in a team to complete a concrete finishing job:
 - Identify the tools needed to complete the job
 - Demonstrate basic concrete finishing techniques needed to complete the job.
 - Demonstrate at least one method of curing concrete
- Describe a slump test and a compression test.
- Demonstrate proper lay down procedures for strike off / rodding, edging and cutting joints and troweling and sealing.
- Identify types of joints (control, construction, isolating and key way).
- Demonstrate basic power trowel operations.
- Identify types of blades.
- Demonstrate directional passes of power trowel.
- Pass Performance Standards Hands-on Placement Tests (2) and a 20 Question written Exit Exam with a score of 80% or above.

Standards

- This course complies with all Federal and California Standards pertaining to Disabled Accessibility Guidelines.
- California Code of Regulations, Title 8, Section 1720 (4)(29) for the placement of concrete.
- OSHA 29 CFR 1926 (Construction Safety Regulations)
- OSHA 29 CFR 1926.700 Subpart Q (Concrete & Masonry Construction)

Laborers Cement Mason

Concrete Placement and Finishing Tech 1 Syllabus

Classroom Rules and Procedures

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

Textbooks/Readings/Materials

- *Basic Construction Math*-LIUNA Training (Instructor & Participant Guides)
- *Estimating Concrete Quantities*-LIUNA Training (Instructor & Participant Guides)
- *Concrete Placement and Consolidation*-LIUNA Training (Instructor & Participant Guides)
- *Concrete Finishing and Curing*-LIUNA Training (Instructor & Participant Guides)
- *Sawing Concrete*-LIUNA Training (Instructor & Participant Guides)
- Placement Test-Flatwork Pass/Fail
- Finishing Test-Flatwork Pass/Fail
- Concrete Placement 20 Question Exit Exam
- Concrete Placement Power Point
- Reading a Rule Handout
- Standard Measure Handout
- Converting Decimals Handouts (6)
- Slope Ratio Handouts (5)
- Reference Stake Handouts (4)
- Laying Out the Building Handouts (3)
- Types of Portland Cement Packet (6)
- Types of Tampers Packet
- Control Joints Handouts
- Section 6 Packet (Placing, Finishing, and Joining Slabs on Concrete)
- Flatwork Drives PowerPoint
- Section 7 Packet (Curing and Protection of Concrete)
- Concrete Packet-"Chapter 7"
- Flat Work Power Trowel PowerPoint

Tools/Equipment/Other Materials

- 10-Nail bags
- 10-Tape measure
- 10-Hammer
- 10-Torpedo level

Concrete Placement and Finishing Tech 1 Syllabus

- 10-Speed square
- 10-8 lb. sledge hammer
- 10-Finishing belt
- 10-4" x 16" resin hand float
- 10- 5"x 12" square trowel
- 10-5" x 20" square finishing trowel
- 10-3" x 8" square finishing trowel
- 10-2" x 8" Marginal trowel
- 10- ½" radius Hand edger
- 1- 4' Smart level
- 1-10' aluminum screed
- 1-12' aluminum screed
- 10-screed hooks
- 50-18" iron stakes
- 10-2" x 4" x 16' DF
- 1-vibratory screed
- 1-4' roller tamp
- 1-4' Fresno
- 1-4' concrete hand tamp
- 1-4' wooden bull float
- 1-6' magnesium bull float
- 1-10' highway straight edge
- 1-12' highway straight edge
- 10-pairs stainless steel sliders
- 2-3' Walk-behind power trowels
- 2-sets 36" pans with locking pins
- 2- ½" radius walking-edgers
- 2-36" concrete cutters
- 5-stainless steel hand joiners
- 2-stainless steel walking joiners
- 2-funny trowels

Personal Protective Equipment

- 12 pairs of gloves

Concrete Placement and Finishing Tech 1 Syllabus

- 12 pairs of safety glasses
- 20 pairs of ear plugs
- 12 hard hats
- 12 pairs of rubber boots

Course Requirements

To receive credit for the course, participants must:

- Be present for full forty hours
- Participate in all classroom exercises
- Pass a written exam
- Pass two hands-on exams

Course Policies

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

Assessment and Grading

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

Safety

Failure to maintain and use PPE may result in dismissal from the course.