ATCM-1411: COMMERCIAL AND RESIDENTIAL FORM AND FINISH

Cuyahoga Community College

Viewing: ATCM-1411 : Commercial and Residential Form and Finish

Board of Trustees:
October 2020

Academic Term:
Fall 2021

Subject Code
ATCM - Appd Indus Tech-Cement Masonry

Course Number:
1411

Title:
Commercial and Residential Form and Finish

Catalog Description:
Covers intermediate principles of placing and finish of residential and commercial concrete.

Credit Hour(s):
2

Lecture Hour(s):
2

Lab Hour(s):
0

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Cement Mason's apprenticeship program.

Outcomes

Course Outcome(s):
Perform intermediate level formwork, elevations, and layout for residential and commercial concrete.

Objective(s):

1. Identify types of steps, types of finishes and types used.
2. Construct the forms needed, place the concrete and finish the steps.
3. Perform all procedures necessary to finish various types of sidewalks and patios.
4. Identify types of finishes for driveway and approaches.
5. Identify types of joints, curbs and curb-gutter combinations.
6. Place and finish drives, approaches, curbs and curb-gutters.
7. Construct forms for solid steps and stairs.
8. Construct forms for earth supported stairs with open sides.
9. Construct forms for open-sided suspended stairs.
10. Place and finish steps with fine swirl finish.
11. Place and finish steps in metal pan forms with non-skid finish.
12. Place and finish sidewalk with float finish.
13. Place and finish sidewalk with broom finish.
14. Place and finish sidewalk with exposed aggregate finish.
15. Place and finish sidewalk with swirl finish using non-skid material.
16. Place and finish sidewalk with travertine (keystone) finish.

17. Place and finish sidewalk with geometric flagstone finish.
18. Place and finish sidewalk with fine swirl finish using color in ready-mix concrete.
19. Place and finish sidewalk with fine broom finish using colored dry-shake.
20. Place and finish concrete for a driveway.
21. Place and finish concrete for a drive with curbs.
22. Place and finish concrete for a straight curb.
23. Place and finish concrete for an approach with curbs.
24. Place and finish concrete for a roll-type curb with gutter.

Methods of Evaluation:

All students will be evaluated during the first two weeks and mid-term. Progress reports will be issued per procedure. Additional course evaluations and final examination are detailed below:

1. Quizzes
2. Tests
3. Class participation
4. Homework

Course Content Outline:

1. Terms and definitions associated with steps
   a. Riser
   b. Tread
   c. Unit rise
   d. Unit run
   e. Stair gauge
   f. Nosing and tread
   g. Fall
   h. Flush
   i. Safety step edger/groover
   j. Low slump concrete
   k. Lay down
   l. Puddle
   m. Stair stringer
   n. Pitch board
   o. Batter
   p. Bent
   q. Stairwell
   r. Pipe insert
   s. Form oil
   t. Curing agent
2. Terms and definitions associated with sidewalks and patios
   a. Vapor barrier
   b. Subgrade
   c. Exposed aggregate finish
   d. Stamping pad
   e. Construction joint
   f. Control joint
   g. Isolation joint
   h. Decorative joint
   i. Longitudinal joint
   j. Transverse joing
   k. Skewed
   l. Expansion material
   m. Nonskid material
   n. Surface retarder
   o. Curing agent

   p. Seed
   q. Dry-shake
3. Terms and definitions associated with drives, curbs and curbs and gutters
   a. Approach
   b. Mortar
   c. Slope
   d. Division plate
   e. Batter
   f. Flush
   g. Wet grade
   h. Curing agent
   i. Rubbing
   j. Laying down
4. Types of steps
   a. Solid-fill base
   b. Open (suspended)
   c. Open-metal pair (no risers)
   d. Closed metal pair (risers)
5. Types of stair forms
   a. Suspended wood forms
   b. Suspended between walls
   c. Earth supported between walls
   d. Earth supported for stairs open on sides
   e. Suspended metal forms for stairs open on sides.
6. Parts of a stair form
   a. Side form
   b. Riser form
   c. Stair stringer
   d. Center stair shore
   e. Joist
   f. Block
   g. Scab
   h. Brace
   i. Wedge
   j. Sill
   k. Platform stringer
   l. Edge form
   m. Sheathing
   n. Shore
7. Rules for unit rise and unit run
   a. Unit rise 7 to 8 inches
   b. Unit run 9 to 11 inches
   c. Total of one riser and one tread not less than 16 inches or more than 18 inches
8. Calculating risers and treads for stair
   a. Risers
   b. Treads
9. Placing concrete in stair forms
   a. Start at bottom
   b. For pan-type steps - start at top
10. Types of concrete step surfaces
   a. Finished (monolithic pour)
   b. Rough with finish topping (non-monolithic)
11. Types of finishes used on steps
   a. Trowel
   b. Float
   c. Non-skid
   d. Fine swirl
   e. Trowel finish recessed for tile

   f. Brush
   g. Manufactured nosing
12. Types of nosing and treads
   a. Small plain
   b. Aluminum with abrasive tread
   c. Abrasive strips for tread
   d. Nosing and tread formed with combination safety edger/groover
13. Reasons for using low slump in stair forms
   a. To prevent concrete from slumping into lower steps
   b. To prevent segregation
   c. To prevent excessive bleeding
   d. To promote faster set
14. Steps to take before placing concrete for a sidewalk or patio
   a. Put down vapor barrier
   b. Set forms to grade
   c. Make sure there is a proper slope for drainage
   d. Check sub-grade is on grade, properly compacted, and relatively smooth
   e. Wet down sub-grade if necessary
15. Order for placing and finishing concrete
   a. Place concrete
   b. Straight-edge
   c. Darby or bull float
   d. Edge
   e. Hand float
   f. Trowel
   g. Re-edge
   h. Cut joints
   i. Finish
16. Types of finishes used on sidewalks and patios
   a. Float
   b. Trowel
   c. Fine swirl
   d. Broom
   e. Exposed aggregate
   f. Travertine
   g. Geometric
      i. leaf
      ii. circle
      iii. flagstone
      iv. stamping pad
      v. colored
17. Types of joints used on sidewalks and patios
   a. Construction
   b. Control
   c. Isolation
   d. Decorative
   e. Longitudinal
   f. Transverse
   g. Skewed
18. Reasons joints in sidewalks and patios are important
   a. Eliminate random cracks
   b. Allow expansion and contraction
   c. Separate two successive placements of concrete temporarily
   d. Enhance appearance
   e. Allow stress relief
19. Locations of types of joints on sidewalks and patios
   a. Construction joints
   b. Control joints

   c. Isolation joints
   d. Decorative joints
   e. Longitudinal joints
   f. Skewed joints
20. Types of non-skid materials used on sidewalks and patios
   a. Aluminum grits
   b. Silicon carbide grits
   c. Carborundum grits
   d. Emery grits
21. Types of drives and approaches
   a. Residential
   b. Commercial
22. Factors to consider prior to laying out an approach
   a. Type
   b. Location
   c. Design
   d. Size
   e. Use
   f. Slope
   g. Codes and ordinances
   h. Utilities
23. Guidelines for width and slope of drives and approaches
   a. Width
   b. Slope
24. Types of finishes for residential drives and approaches
   a. Broom
   b. Float
   c. Machine
   d. Burlap
   e. Exposed aggregate
   f. Cobblestone
   g. Stamping pad
   h. Recreational
25. Types of joints on drives and approaches
   a. Construction
      i. tooled or sawed cut joint
      ii. tooled or sawed cut joint with steel rod
      iii. tooled joint with keyway
      iv. tooled joint with keyway and deformed steel rod
   b. Control
   c. Isolation
   d. Decorative
   e. Longitudinal
   f. Transverse
   g. Skewed
26. Concrete thickness variations for drives and approaches
   a. Residential
   b. Commercial
27. Methods used to drain driveways
   a. Crown in the center
   b. Inverted crown in the center
   c. Cross slope
28. Types of curbs and curbs and gutters
   a. Curbs
      i. straight
      ii. fully battered
      iii. partially
   b. Curbs and gutters

i. straight face vertical
ii. straight face battered
iii. single radius vertical
iv. single radius battered
v. double radius vertical
vi. double radius battered
vii. roll-type
viii. highway gutter

Resources

"Cement Masons' Guide to Building Concrete Walks, Drives, Patios and Steps"

Resources Other

1. International Operative Plasters' and Cement Masonry's Association. https://www.opcmia.org/training/ . 2017.
2. Concrete and Cement Masonry, Developed by the Curriculum and Instructional Materials Center for the Trade and Industrial Education Division Oklahoma Department of Career and Technology Education, 2002

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