

Building Trades III Residential Construction
Sheldon High School
Instructor: Jeff Merker

Fabrication of concrete stepping stones

Subject Area: Industrial Technology
Date Fall of 2012

Grade Levels: 9-12

Lesson Overview

Materials Included in this Lesson

- Worksheets
- Slide show of Teichert job
- 2 x 4 dimensional lumber
- 50 lb bags of redi-mix concrete
- old plywood
- buckets
- water hose
- rubber gloves
- ½ drills with several mixers.
- Small aggregate for salt/pepper finish
- Bags of salt for salt finish

Other Materials for this Lesson

- wheelbarrows
- shovels
- trowels
- re-bar
- wire mesh
- normal construction attire, bags, hardhat, safety vest
- line pliers
- dobie blocks
- baling wire or pre-cut wire

Skills the Student will Learn

1. Students will be exposed to the utilization of concrete in residential, commercial and roadway construction projects.

Student Deliverables

Students will individually complete three stepping stones that will incorporate different materials, finishes and shapes. They will be paired up to facilitate the learning process.

Length of Unit Plan: 4 Days

Activity Day One

Students will watch slide show of Teichert construction job; residential pours and commercial pours. Students will then take a short trip on campus to observe 6-8 different applications of

concrete construction..

1. Sidewalks and curbs
2. Handball courts
3. Dugouts
4. Tennis courts
5. Retaining walls of stadium
6. Fence posts of Student Memorial Sign

Activity Day Two

Students will be handed out directions and grading rubric of concrete stepping stone project. Students will then be shown how to frame up a form that measures 12' x 12".

Students will begin cutting and framing their forms. Form material is from donated packing crate material that is 1 x 4 rough doug fir.

Activity Day Three

After reviewing several forms that have been done correctly and incorrectly, students will be shown how to lay out their forms on a sheet of old plywood laid down on the compound asphalt. Kevin Young of Young Construction will assist students with the pour using wheelbarrows and bags of redi-mix. He also assists with the skimming and floating process. After drying an hour, students come back at lunch and put creative slogans and hand-prints in their stones.

Activity Day Four (To be tried in Fall of 2013)

Students will be shown how to mix concrete for the first form and to pour it and finish it. Several students will begin this aspect.

Activity Day Five (To be tried in Fall of 2013)

Students will be shown how to mix concrete and apply salt finish.

Activity Day Six (To be tried in Fall of 2013)

Students will be shown how to mix and apply salt and pepper aggregate finish.

Activity Day Seven (Day Four of this past Fall)

Students remove forms and have pictures taken with their stones.

Activity Day Eight

Write Activity Here

Activity Day Nine

Write Activity Here

Activity Day Ten

Write Activity Here

Enrichment Suggestions

If time permits, students could form and pour a sidewalk near tennis courts to facilitate fire drill escape routes.

Student Resources

Write any additional student resources here such as online resources and worksheets.

Foundation Academic Standards

Include a bulleted list of Foundation Academic Standards by number with an abbreviated description of the standard: (<http://www.scoe.net/castandards/>)

Academic Standards are taken from CTE Standards Building Trades and Construction Sector Mathematics 8.0 Students know, derive, and solve problems involving the perimeter, circumference, volume, lateral area, and surface area of common geometric figures.

CTE Pathway Standards

Include a bulleted list of CTE Pathway Standards by number with an abbreviated description of the standard: (<http://www.cde.ca.gov/be/st/ss/>)

Engineering and Heavy Construction Pathway

B4.0 Students understand project management procedures and processes as they occur in an engineering and heavy construction project.

B4.4 Solve common construction problems by using commercial construction codes and building standards.,

B5.0 Students understand the value and necessity of practicing occupational safety in the engineering and heavy construction lab or shops.

B8.0 Students understand career opportunities in the heavy construction industry including careers concrete masonry, ironworks, sheet metal, plumbing and construction technology.

Residential and Commercial Construction Pathway

Standards D2.0. D3.0 Students will understand the safe usage of hand and power tools common to the residential/commercial construction industry.

Lesson Plan Relevance To Externship

Most students have never experienced working with concrete. The externship with Teichert Construction had a focus on the concrete paving process. While this lesson plan has each student come away with a minimal amount of product produced (three small stepping stones) it does indeed expose them to the constraints of working with this product. Upon completion of this lesson it was obvious to the instructor that the students were engaged and intrigued with the process of using stone and water to make something durable.

Rubric for the (type in the title) Project

Student Deliverables	1 Exceeds Expectations	2 Meets Expectations	3 Approaches Expectations	4 Fails to meet Expectations