



ACE MENTOR PROGRAM

ARCHITECTURE • CONSTRUCTION • ENGINEERING

ACE ACTIVITIES

UNDERSTANDING SITE TOPOGRAPHY + SCALE

DEVELOPED BY:
THE ACE MENTOR PROGRAM OF LOS ANGELES

Educational Goals Students will understand scale and learn how to read topography plans and to “think in sections.”

Description Using a topographical map of an actual site, students first learn how to interpret such maps and how they are used. Then they are introduced to scale and section. Students are assigned section cuts from the map to draw on core foam boards which are cut out and placed onto a base board onto which is pasted the entire map.

Time This activity requires approximately three hours or one and a half ACE meetings. In the first session, mentors explain the exercise, and then students draw sections and cut them. In the second session (approximately 60 minutes), students glue the sections onto a base and apply the gesso.

Materials

- ▶ A 2D topographical map of a site
- ▶ 5 foam core boards, 30" x 30" x 1/8" or 1/4" thick
- ▶ Glue gun and glue sticks.
- ▶ Mat knives for cutting foam core
- ▶ Straight-edge rulers
- ▶ Architect's scale

Preparation

1. Obtain a topography map of a site. If the final project for all teams is the same site, then it is preferable in this activity to use the topography map for that particular site. Mentors can obtain topography maps through the city or on the Internet. Mentors should scale the map to a manageable size; approximately, 1:20 or so. This can be done by scanning the map and then using AutoCAD or by reducing it on an oversize printer.
2. Draw a series of vertical or horizontal lines on the map, representing section cuts to be drawn by students. The number of vertical or horizontal lines drawn should equal the number of groups that students will be broken into. Make enough copies of this drawing for each student or each group of students. The copies should be made using oversize printers and should be prepared in advanced.

Understanding Site Topography, Sections and Scale

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SITE TOPOGRAPHY



The scale of the copies should match the scale of the site model to be made. In this way students can more readily understand the relationship between the map and model.

3. Glue a copy of the scaled topography map onto a full-size foam core base board. Allow a 2" perimeter around the board so that students will not glue their sections starting from the very edge of the board. Otherwise, topographical features may not be as pronounced as they should be.

Procedure

1. Explain to students what a topography map is, what it represents, and how it is used in the design and construction of a project. Discuss contour lines and what the numbers associated with them mean. Which way does the site slope? How do we know? What are the increments the contours are increasing by? Once students understand how to read a topography map, explain to them how to use an architect's scale. What is the purpose of an architect's scale? What is scale? Explain how they will be using both. Also, if students are not already familiar with the concept of section and section cuts, this should be explained to them.
2. Each student or group is given a copy of the topography map and assigned a section cut. With the help of mentors, the students are asked first to draw sections on foam core boards at a pre-determined scale. The scale should be pre-determined by the mentors. It is helpful to draw a sample section as a group on the board before they break into smaller groups.
3. Once the sections have been completed, students carefully cut them out using a knife.
4. Each student or group then glues its assigned section onto the foam core base board containing the overall topography map. This step in the process usually occurs in the second mentoring session.
5. Students can visualize how each section is a slice of the site and how, when combined with the remaining sections, it forms the





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site. Cheesecloth with gesso can be used to cover the top. Another option is to papier-mâché the top. Either of these methods will attach itself to the section cuts, thus showing the slope of the site. ▽

