

Arch 463  
ECS  
Fall 97

Name \_\_\_\_\_

Quiz #2

## "The Retreat and the Forge"

For this problem you are the passive design consultant for an artist who has purchased some acreage in a remote area. The 400' x 800' site includes a south-facing bowl formation in a long east-west ridgeline that has a long-range view of the countryside. Both the ridgeline and the foot of the south slope of the ridge are on the site. The artist wants to build two structures on the site—a simple retreat dwelling and a studio. The studio will be equipped with a forge for forming metallic sculpture. Since the site is remote, no electric and gas utilities nor water and sewer service is available. The artist wants both buildings to employ passive techniques for heating and cooling.

**Building Programs.** The retreat should be a 300 square foot one-room cabin. The studio should be a single space of 500 square feet, housing the forge. One of the structures must take advantage of the great view to the south. The buildings must be at least 100' apart.

**Climate Context.** The site is in the vicinity of Dodge City, Kansas. The climate of southwestern Kansas is classified as semi-arid. Though nearly 300 miles east of the Rockies, the mountains form a barricade against all but high altitude moisture from the west. Relatively dry air and an abundance of sunshine contribute to broad diurnal temperature ranges. Winters are dry and sunny with short periods of snow cover. Summer afternoon highs are usually in the nineties with low humidity and continual breezes.



January Wind Rose



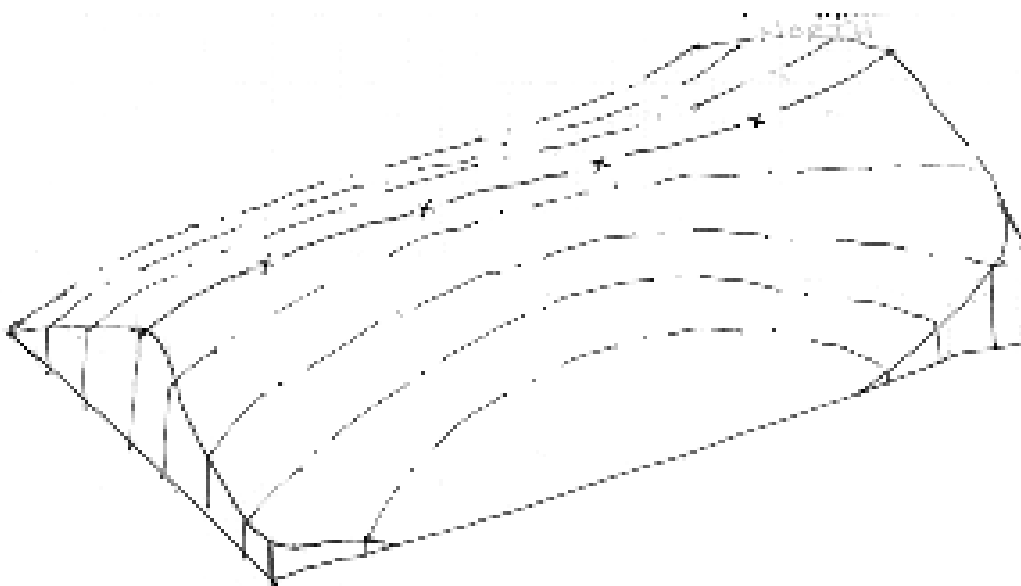
March Wind Rose



July Wind Rose

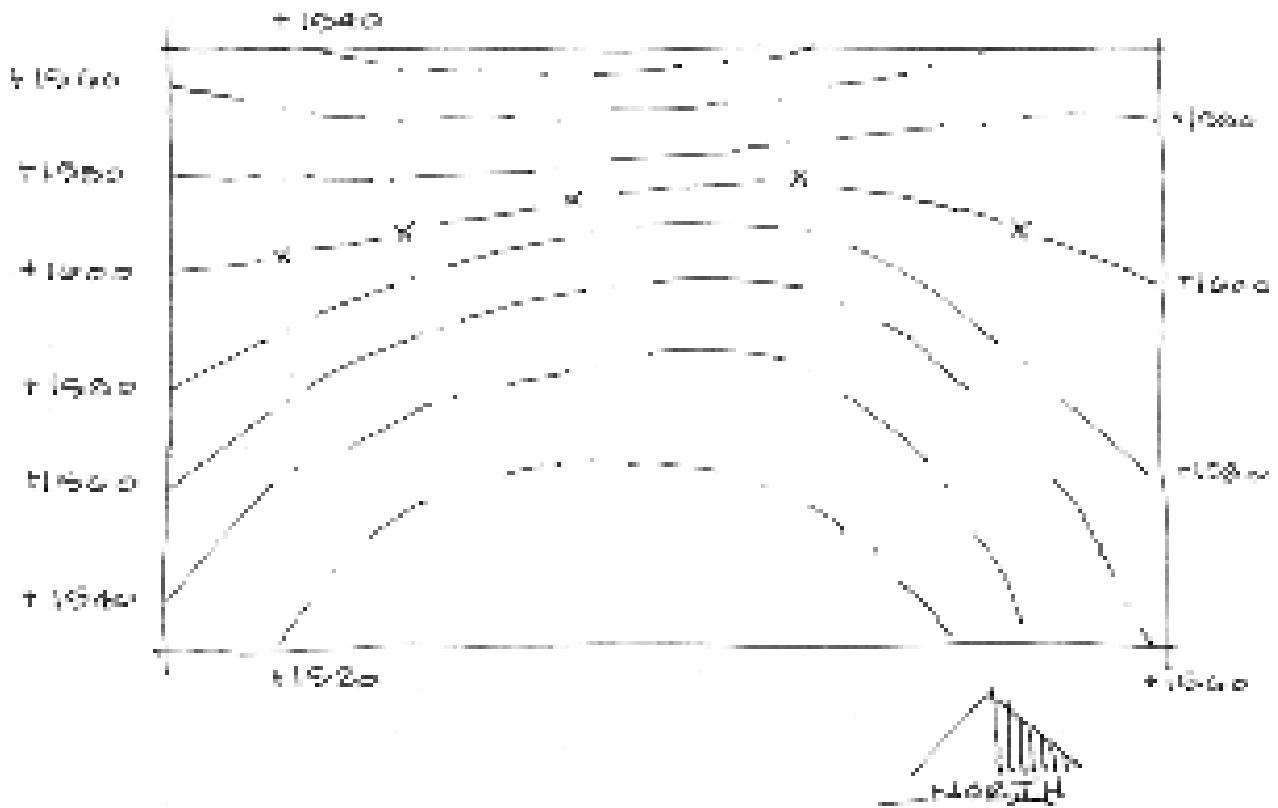


October Wind Rose



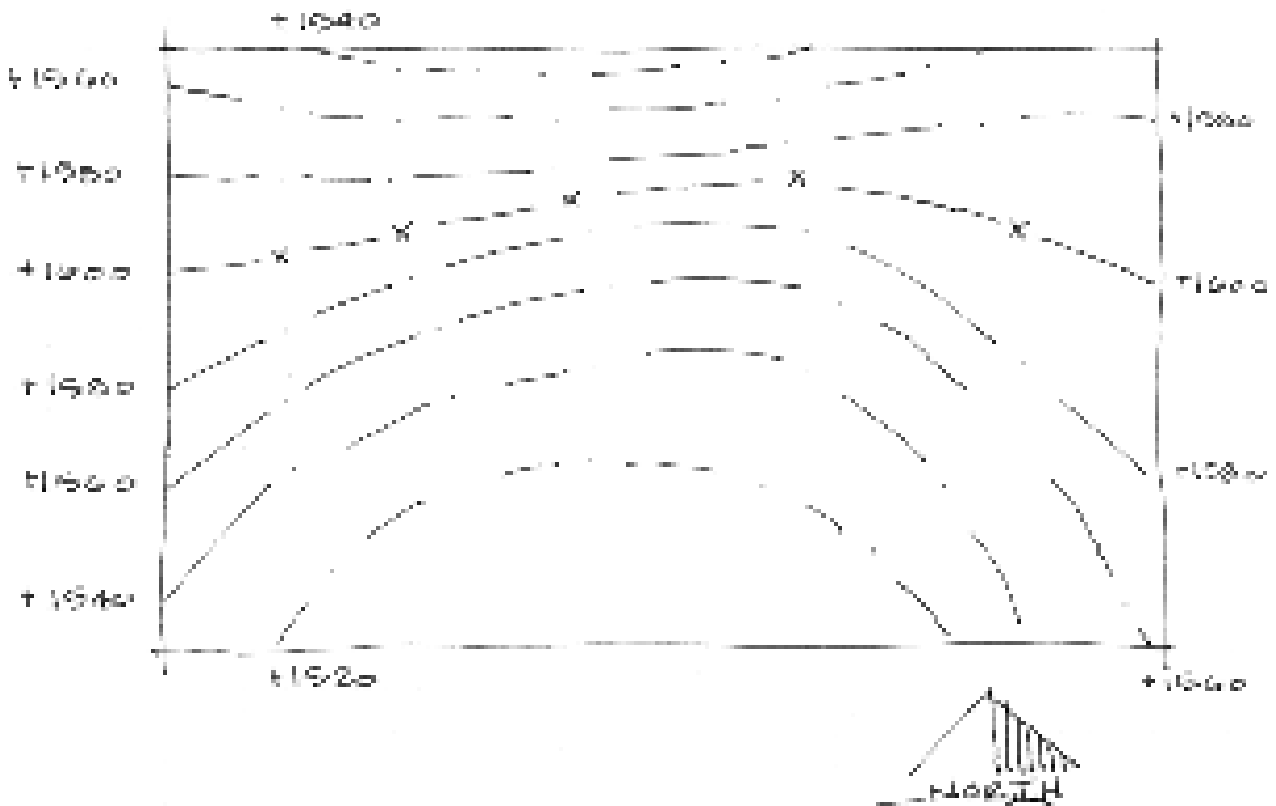
Site axonometric looking north by northeast.

1. a. Locate the cabin/retreat on the site.
- b. Explain why the location that you have chosen is climatically appropriate.



- c. Give three passive heating or cooling strategies that are appropriate to the building and the site. Explain their significance.

2. a. Locate the studio/forge on the site.
- b. Explain why the location that you have chosen is climatically appropriate.



- c. Give three passive heating or cooling strategies that are appropriate to the building and the site. Explain why.