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4.500 Introduction to Design Computing
Fall 2008

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Shape Exploration with Solid Modeling

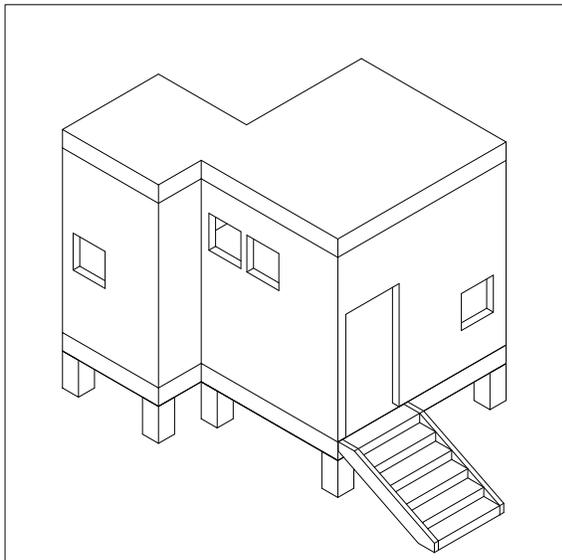
September 16, 2008

Assignment 2

This assignment is due in lecture and on Stellar, Tuesday, September 23

DESIGN

As with any client Concord City Hall expects that your design will be unique and well crafted both in shape and detail. Before you can explore building details you will need to explore shapes beyond the box. Frank Lloyd Wright always believed in creating shapes that broke from the box. Today architects such as Norman Foster, Frank Gehry, Nox and Alsop architects believe in breaking the box through the creation of non-Euclidian, non-box like shapes. Some architects such as Frank Gehry and Norman Foster work with constructible shapes in design always knowing that what they design on paper can be built. Some designers create designs they are not so sure of in construction, these architects use the design process to explore shape possibilities learning how to construct later. The first part of your job will be to explore constructible shapes. This means shapes built of flat sides, avoid curves for they are very hard to construct. The second part will be to use solid modeling to construct building parts (walls, a floor, windows, doors and a roof) from one of the complex shape designs in part 1.



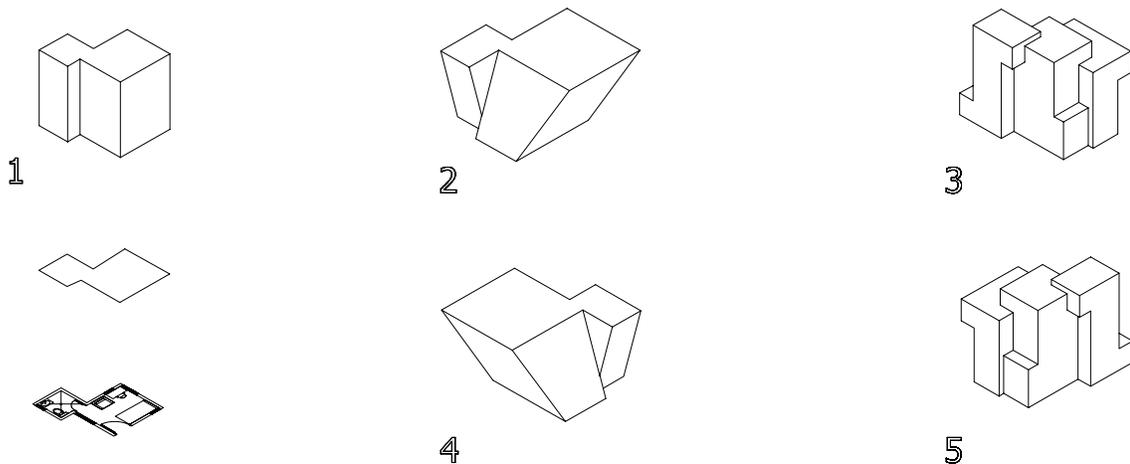
PART 1: DESIGN SHAPES

Design the shape of your cottage in AutoCAD with varying sides. The shape of your cottage should reflect the environmental study completed the week before. For example, you may want one side to demonstrate that there no view with small windows (towards the dunes), and the other to reflect that there is a view with larger windows (towards the ocean). Starting with the boundary of your plan you will need to design 4 shape variations from the original shape for this part of the assignment. Your job will be to turn in the 5 shapes (the original shape [1] and 4 designed shapes) as a 3D model on stellar and to print the 5 shapes on paper like the illustration below.

- 1) Create interesting shapes that respond to environmental elements (assignment #1)
- 2) There is no right or wrong shape design
- 3) Try to shape the initial volume from the plan (#1 below) do not over extend shapes
(your model will be too big)
- 4) Stay away from curved shapes
- 5) Use your eyes to design and test arrangements of shape

Modeling Process

Build the original shape from the plan (extrusion of plan). Using solid volumes add and subtract shapes from the original volume.



PART 2: DESIGNING COMPONENTS

As a designer pick a shape from the set of shapes (you can not pick shape #1) to use as the skeleton of your design. Here you will subtract windows, design doors, a floor and roof. The goal of part 2 will be to design the external shape of your cottage as a basic block model. Create simple shapes outlining roof lines, wall and window openings, separating the model into 6 distinct layers:

- 1) Ground Surface
- 2) Floor
- 3) Walls
- 4) Roof
- 5) Window openings, Door openings
- 6) Details (stairs, etc.)

Modeling Process

This example starts with a very simple shape, your shape will be slightly harder. Starting with a shape select from the 5 shapes above use the images below as a process guide that will lead you to a modeled cottage. Also use the environmental forces from assignment one to drive the location of windows and doors.

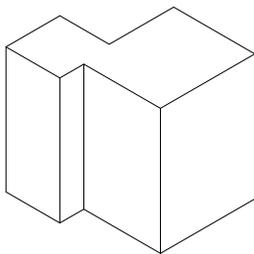


Fig. 1. Selected shape

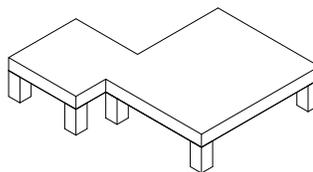


Fig. 2. 12" Floor deck over 12" square piles

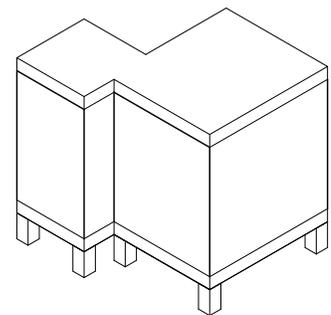


Fig. 3. Walls with a 12" thick roof deck.

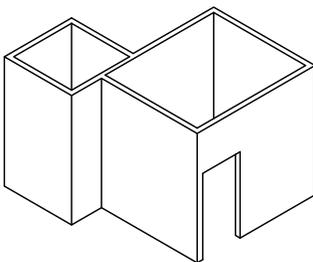


Fig. 4. Subtractions for doors

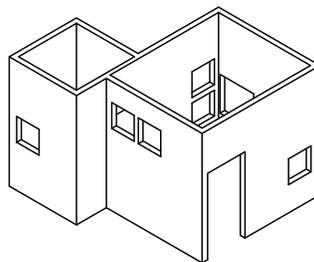


Fig. 5. Subtractions for windows

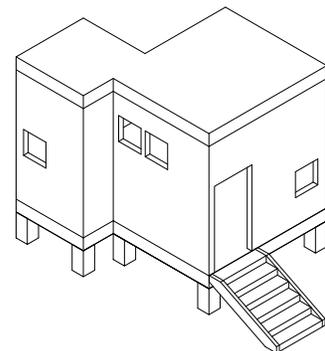


Fig. 6. Details for stairs

PAPER TURNIN

Page 1:

Print on page of the collection of five models number each model. Please make sure to include your title block and assignment # on the final sheet.

Page 2:

a. Writing: Select one shape of the 5 for the model. Present "4" reasons why you selected that shape!!

b. Print one axonometric view of your model from paper space. This model must include doors, windows a roof and floor. Make sure to include your title block and assignment # on the final sheet.

ONLINE TURNIN

Part 1.dwg. NOTE: Turn in .dwg file of your models in part 1 (one file - part_1.dwg) make sure the plan drawing is in the file as well. The 5 models should be on different layers well labeled layers.

Part 2.dwg. NOTE: You will loose points if I can not figure out the layer you used to build the 5 models, second turn in the detailed model from page 2.

LABELING

Lsass_part_1.dwg

Lsass_part_2.dwg