4.206/4.291 Visualization
Massachusetts Institute of Technology
Professor Larry Sass

Assignment 9

April 15, 2003

2D Fabrication

This assignment is due in lecture on Tuesday, April 29

Reading Reference: *Residential Framing: A Homebuilder's Construction Guide by William P. Spence*

Download: Base.dwg

Your job will ultimately be to build a physical model of you cottage using rapid prototyping technologies such as the laser cutter and 3D printing, for this assignment (#9) you are required to turn in your cut sheet (fig f) and a detailed image similar to (fig c and or d) . The model will be built in two stages the first stage will be to build areas of your work not touching the ground of cardboard or plexi glass on the laser cutter. Parts of your model below or that touch the sand will be printed in three dimensions using the Zcorp 3D printer in assignment #10. The goal of the assignment will be to learn how to work with fairly precise rapid prototyping devices.

You will be graded on:

1) Fabrication Accuracy (sloppy models will be graded lower & Model has to stand on its own)

2) Fittings and use of glue (less is better)

3) Composition of model – Section Cut through building

Follow the these steps in preparing and

a) Create a copy of your model and rename your copy to suite the purpose. For example your original model should be lableled: villa_cornaro_original.dwg
Your copy should be labeled: villa_cornaro_lasercut.dwg

You may want to go back and re-label your .dwg files based on there purpose
Villa_cornaro_original.dwg
Villa_cornaro_render.dwg
Villa_cornaro_radiosity.dwg
Etc.

b) In real space draw a 14' x 14' box in a plan view of your model. Within the copied file slice off an area to work with (corners are best) based on the 14' box.
   a. Command: "Slice" – Select area – choose yz or zx to slice.
   b. Create a boxed area around your model and erase all unused model material
   c. Remove all un-necessary layers from your model.

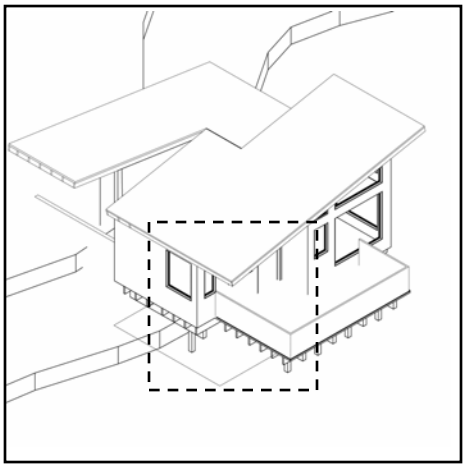

Fig. a) 14′ boxed area

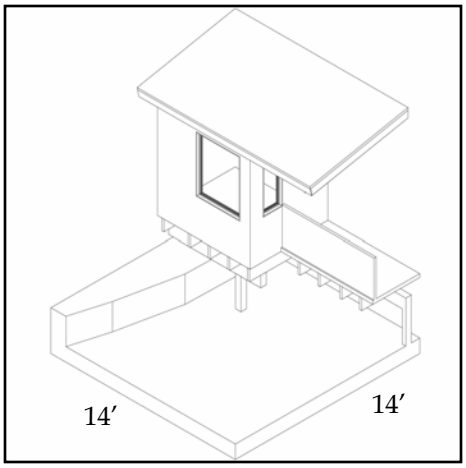

Fig. b) Model with geometry removed

c) Scale your model so that each leg of your 14’ box equals 7”

d) Insert base.dwg from StudioMIT & replace your ground plane with the base you download. Now your model is ready to be represented in real modeling scale. Remodel parts based on the thickness of 1/8” material be certain to include tabs and joints for assembly.

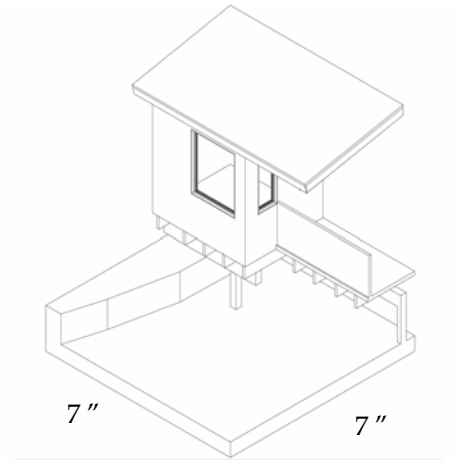

Fig. c) Scaled model

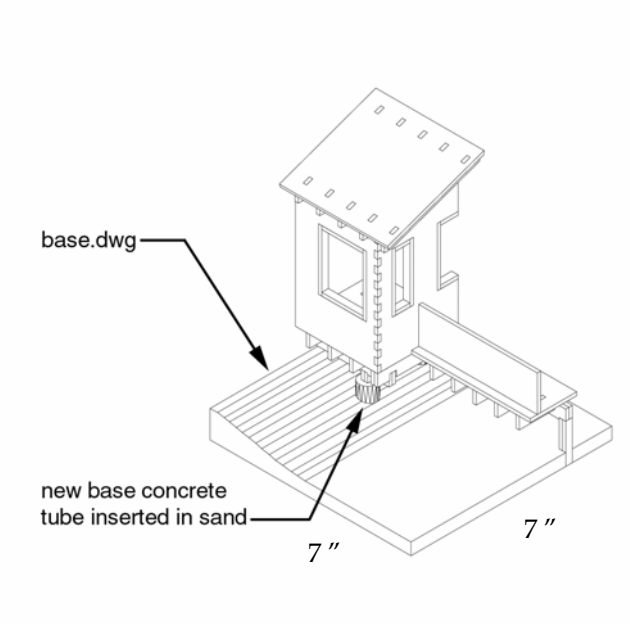

Fig. d) New model constructed of 1/8″ material

e) Referring to "*Residential Framing* " replace wood joist, walls and studs with 1/8" parts to be cut on the laser cutter.

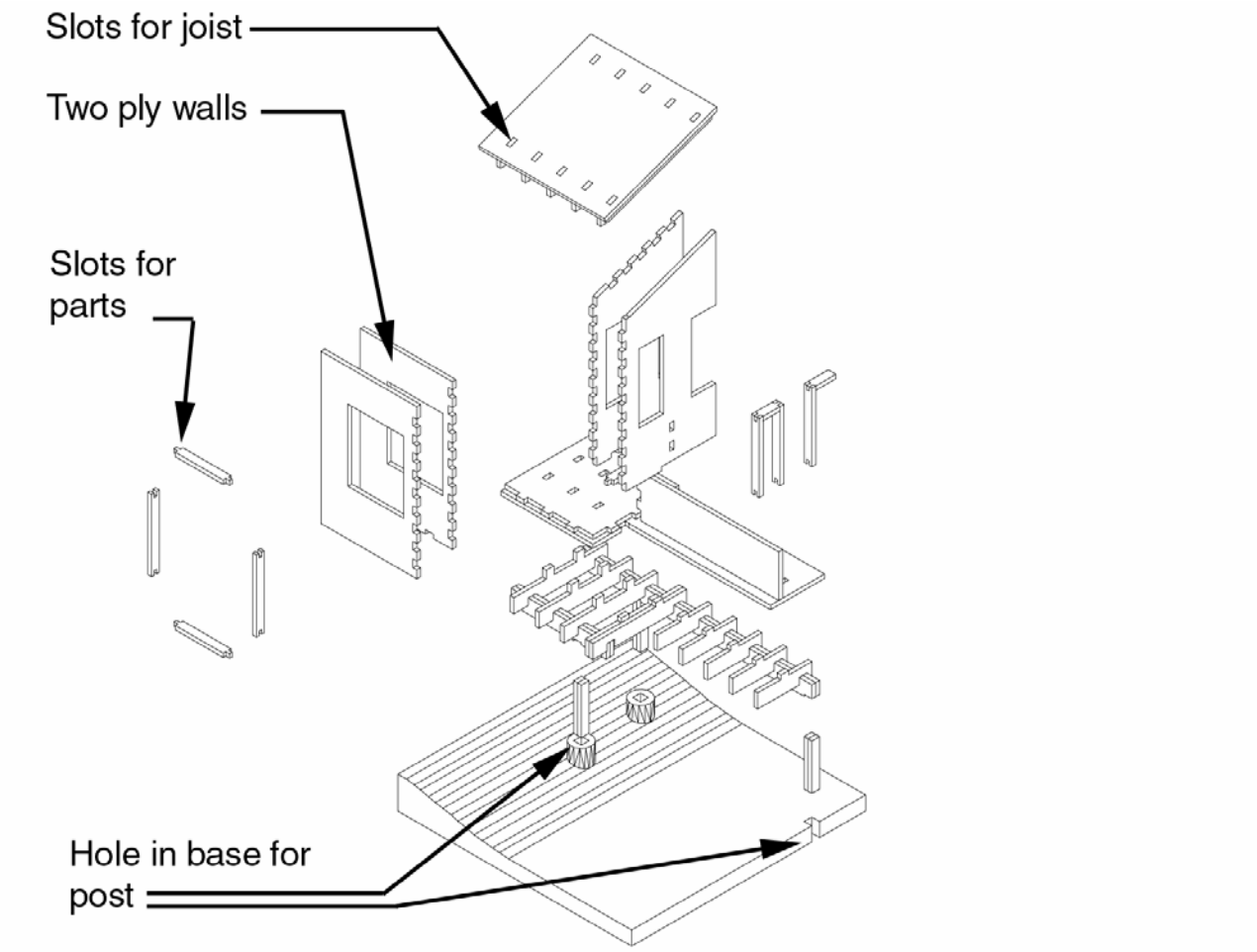

Fig. e) Model components and tabs for alignment

f) Lay all parts to be laser cut flat on a sheet in AUTOCAD 17” X 31”

g) Add part numbers in a logical manner so that you can figure out how to put the parts together once cut.

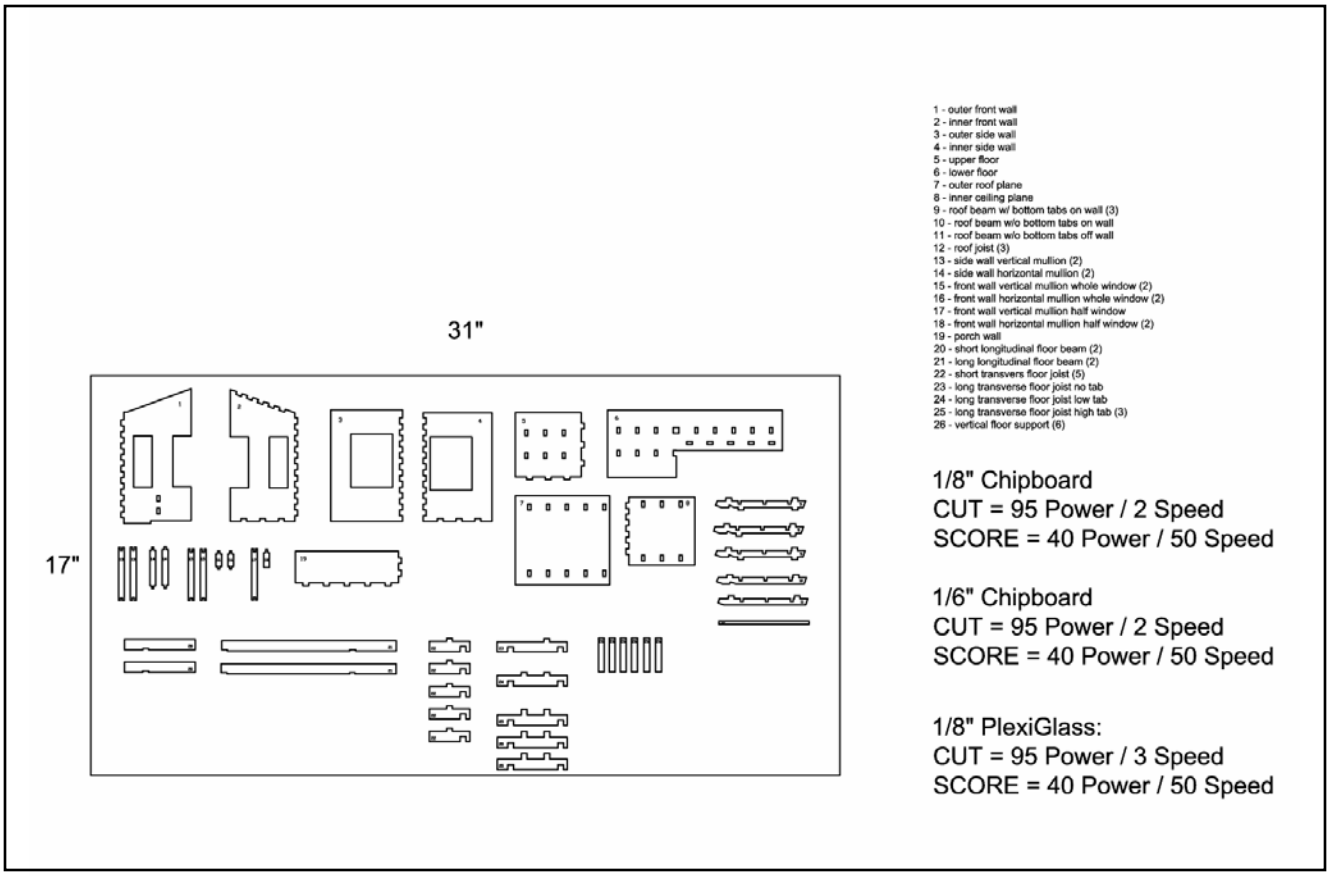

Fig. f) Cut Sheet of numbered parts & Side Notes

Turn in