

CONFIDENTIAL

Experiment Plan

Project: Dimensional Accuracy of Additive Polymers in Objet 30Prime

Principal: H. Scott Halliday

Investigator(s): Navajo Technical University  
School of Engineering Math & Technology  
(505) 409.1451

[hhalliday@navajotech.edu](mailto:hhalliday@navajotech.edu)

Objective(s): Determine the variance of dimensional accuracy of various build orientations of the multijet Objet 30Prime

Research Task(s):

- [1] Print specimen of 10mm x 10mm x 10mm, 25mm and 50mm in various orientations within the build box using the simulated engineering plastic VeroWhite material. Parts labeled: "A" are 10mm x 10 mm x 50mm, "B" are 10mm x 50mm x 10mm, "C" 10mm x 10mm x 25mm, "D" 10mm x 25mm x 10 mm, and "E" 10mm x 10mm x 10mm.

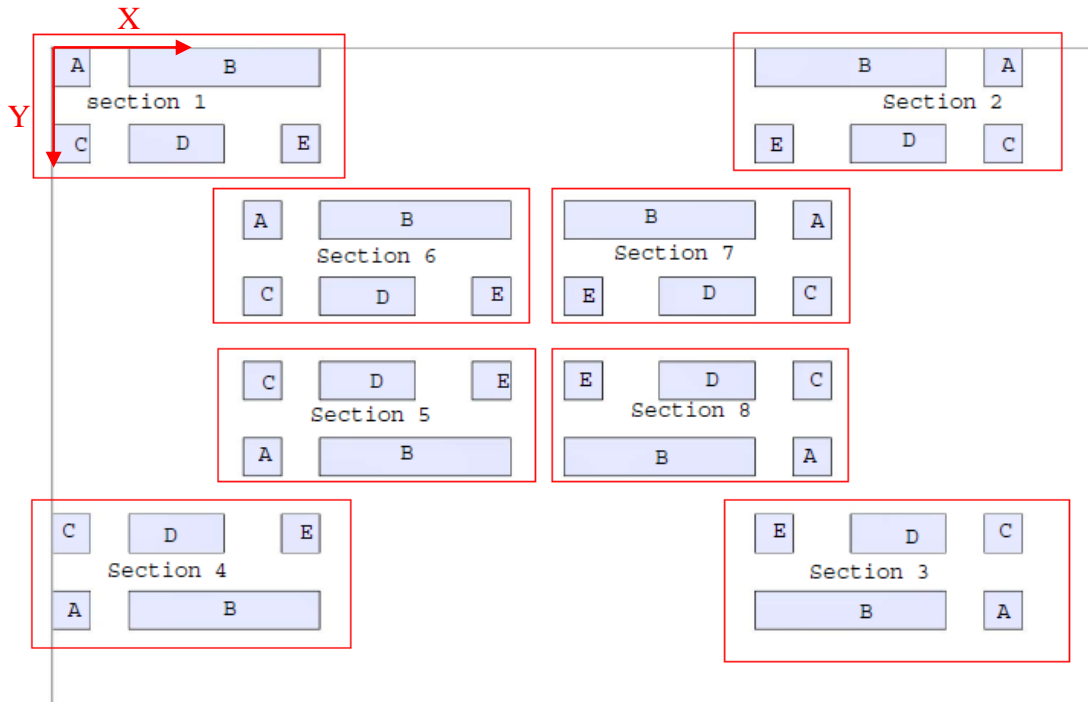


Fig. 1 Orientation of parts within the build.

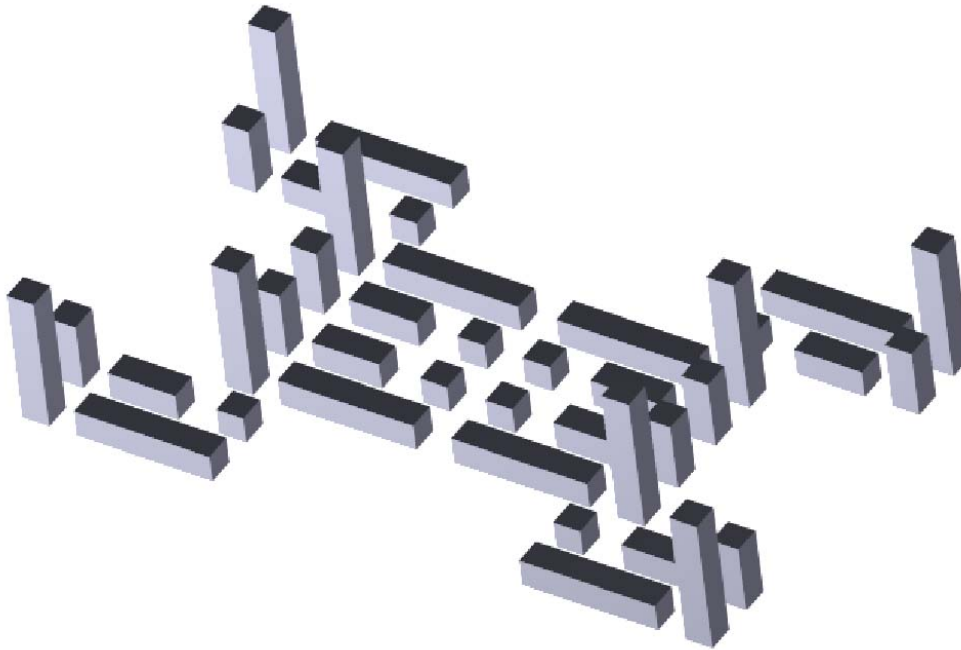
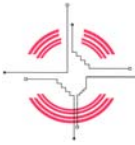


Fig 2. Orientation of Parts within Build - 3D

[2] Measure dimensions x, y and z using the laser tracker (portable cmm)

a. the accuracy of the cmm will periodically checked using the gage block standards.

[3] Measure flatness on the 50mm faces in each x and z directions and orientations using the laser tracker (portable cmm)

a. the accuracy of the cmm will periodically checked using the gage block standards.

Future Work:

[1] Examine the microstructure of the printed specimen with SEM.

[2] Examine effects within the y direction for flatness and dimensional accuracy.

[3] Examine material properties for yield strength and failure.