Structures II

Arch 314

Name 1 _____

Name 2 _____

Name 3 _____

Deflection

Description

This project uses observation and calculation to understand how a cantilever member deflects under load.

Goals

To observe the bending behavior of a cantilever through physical modeling.
To find the deflection using the diagram method.
To verify the deflection using beam equations.

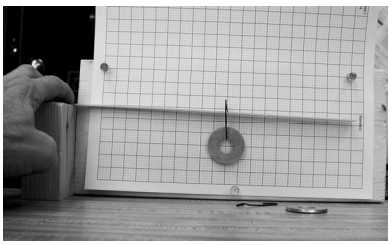
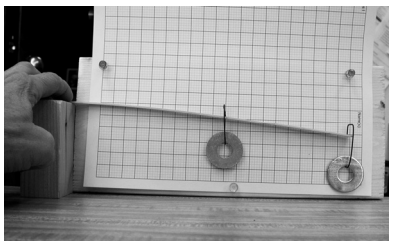
Procedure

1. Hold the 1/16"x1/2" basswood stick flatwise on the 2x4 support as shown.
2. Load first the free end, and measure the deflection against the graph paper (small squares = 0.1 inch).
3. Repeat the procedure for a load at the half point and at both points.
4. For each load measure and record a deflection.
5. Use the diagram method to calculate the deflection for the point load at the end.
6. Finally, calculate the deflection for the end load case with the equation below.

Basswood Properties

E = 1,650,000. psi
I_y = 0.0000102 in^4
P_1 = 0.035 lbs.
L = 10.5 in



Equations:

$$I = \frac{bd^3}{12} \qquad \delta = \frac{Pl^3}{3EI}$$

Due

During recitation