

AirBus A525 Wingbox contest (Fall 2023)

Design and Build the **lightest semimonocoque wingbox** to withstand the bending and twisting loads. The cantilevered wingbox weighing **no more than 0.75 lbs** must carry a dead load 'Q' of 5 lbs and minimum end load 'P' of **15f** to qualify. The wingbox will be tested to failure and the team achieving the highest score based on a weighted rubric will be the winner. The score will be based on the wing design documentation, construction quality, and performance.

Eligibility:

Open to student groups (5) enrolled in the Fall 2023 AE 525 course

Deadlines:

Entry : Enrolled in AE 525

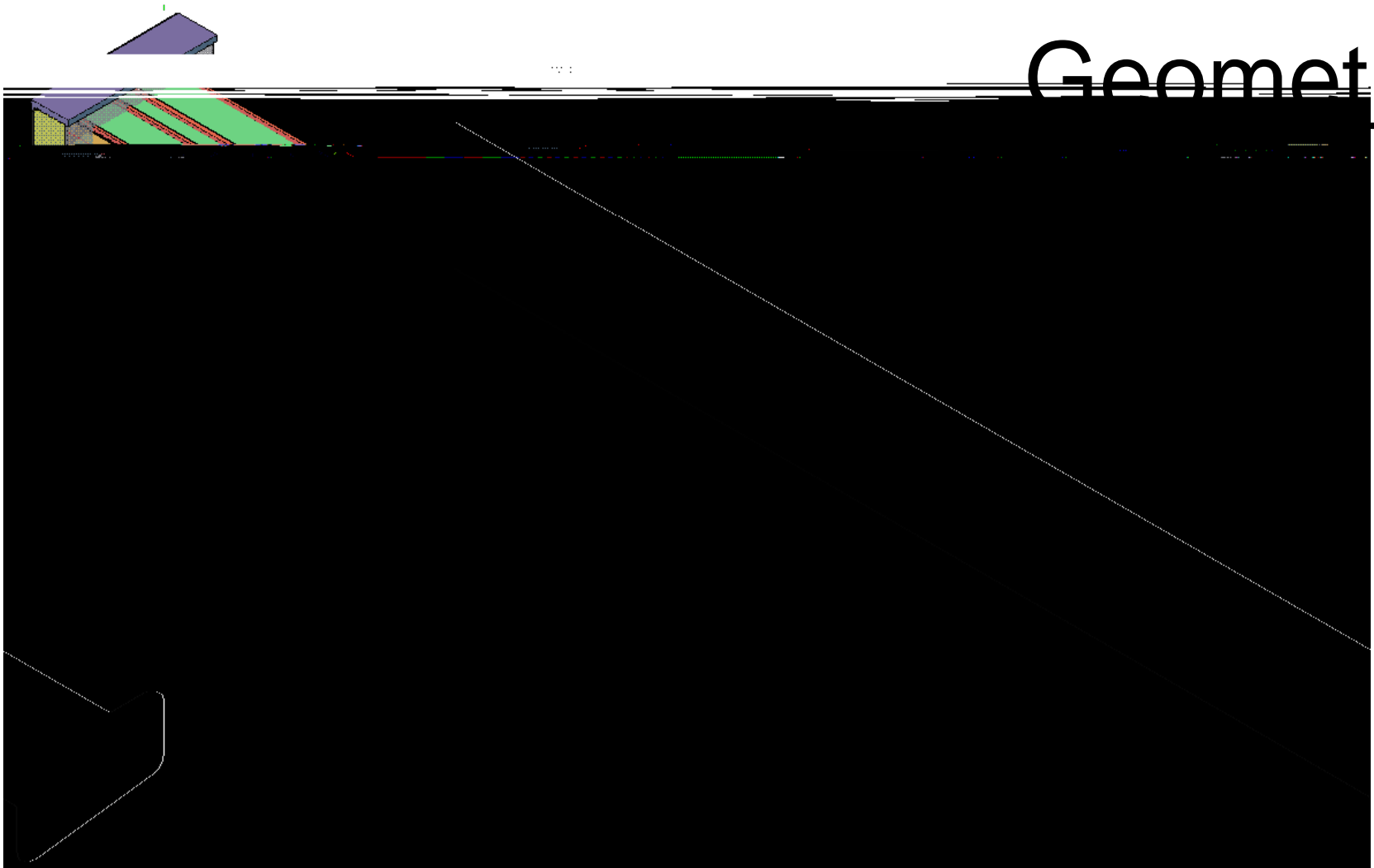
Submissions :

Drawings : 5PM (CDT), November 22nd 2023

Wingbox & Report : 6 PM (CDT) December 8th 2023

Awards:

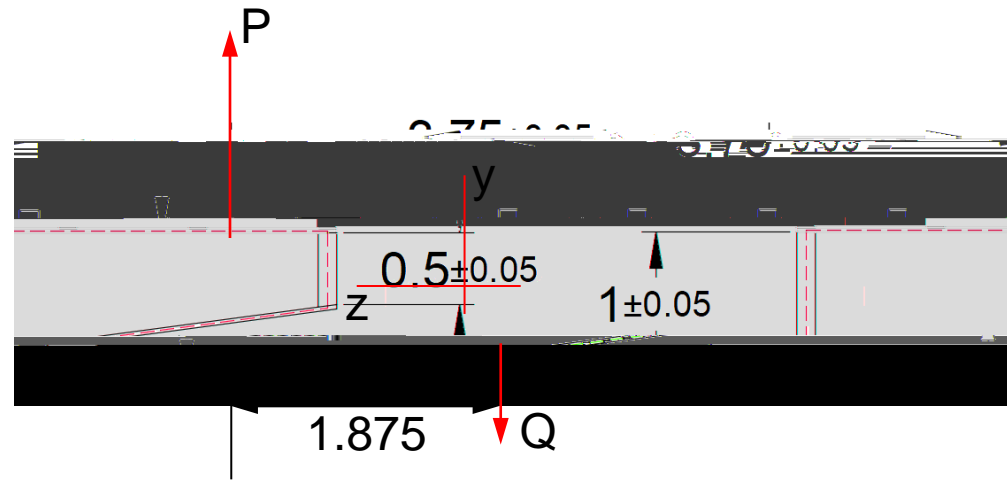
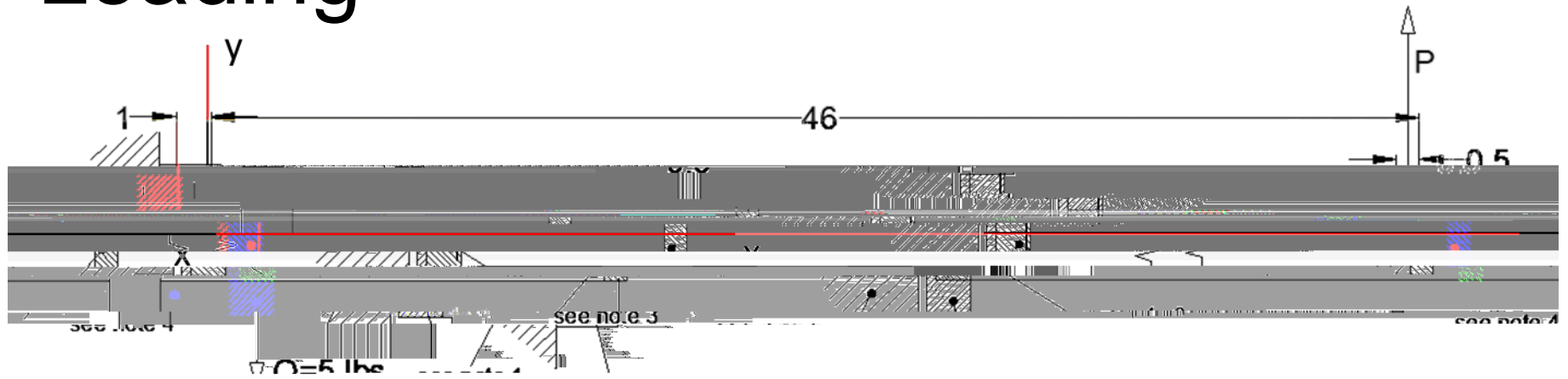
Geometry



Notes:

1. Active length of 46 inches + 1 inch for potting end
- 2.

Loading



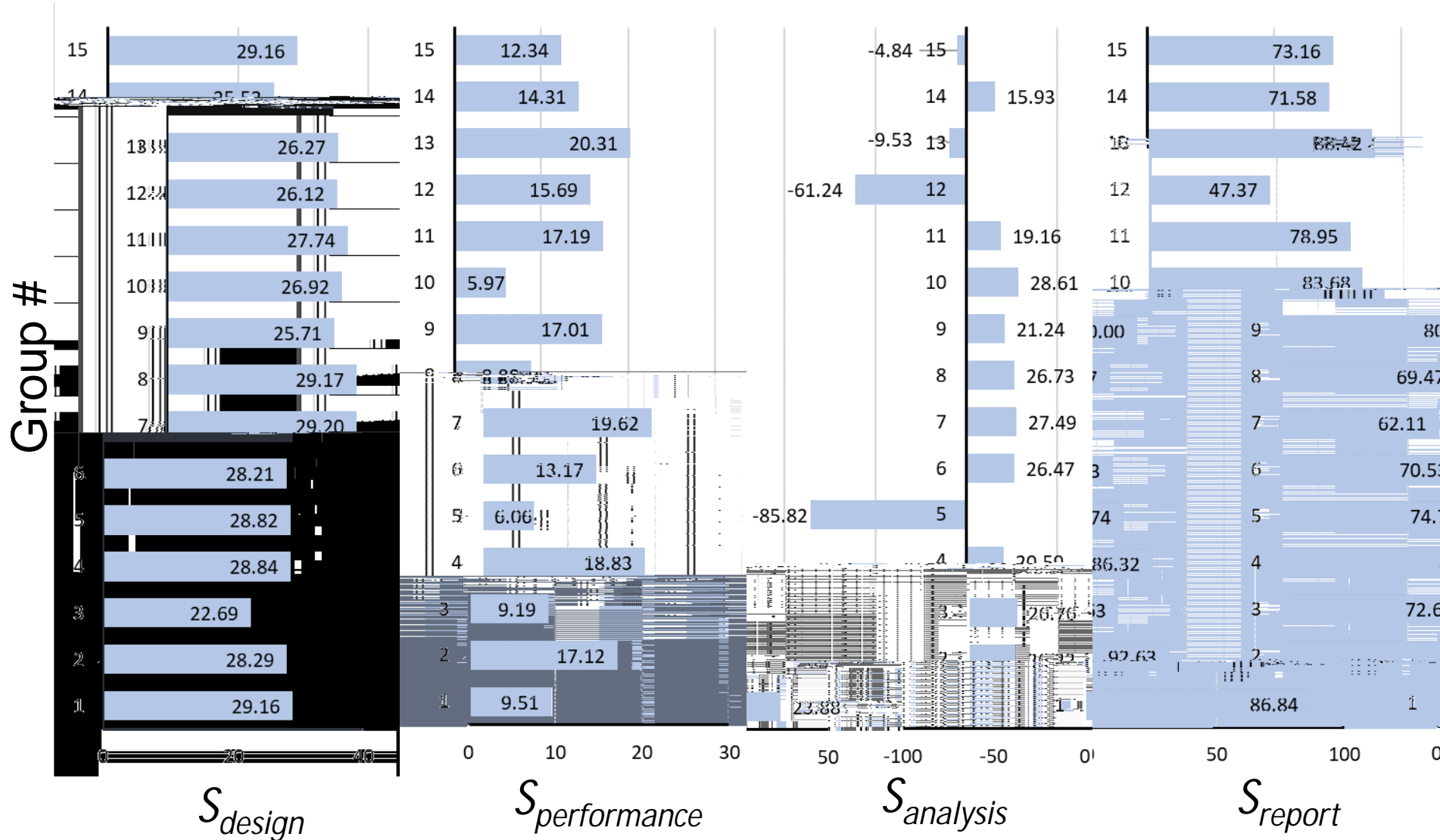
NOTE: The teams will be provided with a Basswood ribs for the fixed end (1.00 inch thick) and free end (0.5 inch thick). The stringers, spars and skin must extend the entire length (46 inches)

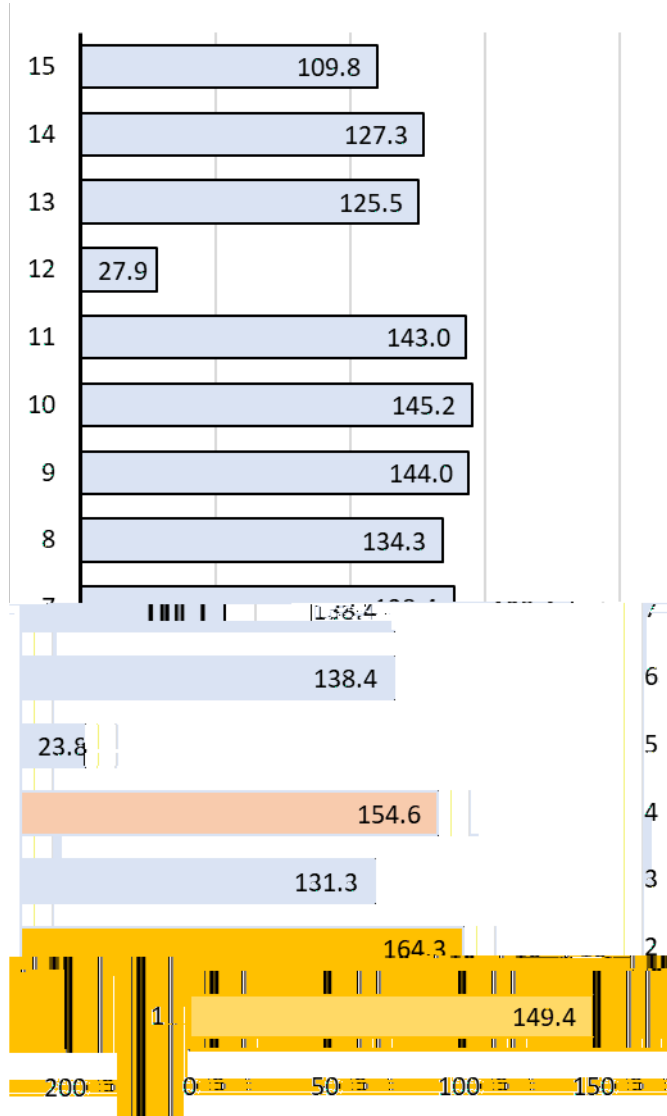
Scoring rubric

The designs will be scored based on the following formula

$$\begin{array}{l}
 \text{design} \quad \text{performance} \quad \text{analysis} \quad \text{report} \\
 \\
 \text{design} \quad 100 \quad 0.6 \frac{\text{stringer} \quad 5}{0.003 \quad \text{stringer} \quad 5^3} \quad 0.4 \frac{15}{\text{rib}} \quad \frac{\text{stacked}}{8} \quad \frac{\text{adjacent}}{8} \\
 \\
 \text{performance} \quad 0.5 \frac{\text{max}}{\text{Wing}} \quad 0.1 \frac{\text{max}}{Q} \quad 0.05 \frac{\text{max}}{\text{max}} \quad \frac{\text{max}}{\text{max}} \quad 10 \frac{\text{Wing}}{0}
 \end{array}$$

Category Scores





1ST PLACE

Mason Hensley, Joseph MacKaleb Perkins, Peter Stuhlsatz

2ND PLACE

Erik Anderson, Julia Buie, Zachary