

Participant/Team ID# _____

HIGH SCHOOL STRUCTURAL DESIGN AND ENGINEERING ANALYSIS AND ASSESSMENT

Complete and submit this form (signed by the chapter advisor) with the Structural Design and Engineering entry, as confirmation that a structure was designed, built, and tested prior to and in preparation for participation in conference competition.

1. Structure weight prior to testing: _____
2. Predicted ultimate load carrying capacity: $F_{u,p}$ = _____
3. Ultimate load carrying capacity: E = _____

Use the equation to calculate the error in prediction for the ultimate load carrying capacity

$$E = \frac{F_u - F_{u,p}}{F_u}$$

where

E = Error

$F_{u,p}$ = Predicted Ultimate Load

F_u = Ultimate load attained in testing

4. Structural efficiency: N_s = _____

Use the equation to calculate structural efficiency

$$N_s = \frac{F_u}{M}$$

where

F_u = Ultimate load (failure weight) attained in testing

M = Dead weight of structure as measured in testing

5. Predicted failure mode: FM = _____
6. Where or how was the structure predicted to fail? _____
7. What are the four major types of forces that act on a structure under stress? _____

8. What is the static load of a structure? _____
9. What part of a testing device should be considered live load? _____
10. What effect would a shorter length test block have during stress testing? _____

Chapter advisor printed name

Chapter advisor signature

Date