Abstract

The experimental objective of this lab was to engineer a boom which had minimum weight, maximum weight supported, and fastest setup time and enter it into a competition against other team’s booms. Our constructed boom placed 2nd in the competition with a competition ratio of 1.86. The 1st place team scored a ratio of 2.23, and third place 1.41. The results of the lab show that booms which displace their weight load over the biggest area hold the highest amount of weight, but tend to be large and hard to setup quickly, which hurts their competition score.

Conclusion

Viewing other teams during their competition trial influenced the construction of our boom. Time to setup the boom on the anchor was taken heavily into account because a long anchor time greatly decreased the competition ratio of other booms, even though the 4th place boom held the greatest amount, 487 grams, their anchor time was the second highest at 107 seconds, and that high anchor time tremendously decreased their score.

Our boom held 391 grams, which was the 2nd highest amount, but our anchor time was 3rd at 45 seconds. The 1st place team held the 4th lowest weight, 337 grams. Although their weight held was low, their setup time was 14 seconds, the fastest by a large margin. Even though our boom held 54 grams more than the 1st place boom, their anchor time allowed them to easily secure 1st place with a competition ratio of 2.23 and our boom came in 2nd with a ratio of 1.86.

In order to improve our competition ranking, our setup time must be faster. Although we had our supporting pre-prepared and attached securely to our boom, getting everything in place beforehand would have decreased our anchor time by a significant amount. Another thing we could is rehearse attaching the boom to the anchor before the official competition trial. The 1st place team rehearsed their setup several times before their trial which allowed them to get the fastest anchor time in the competition.

Due to the nature of booms, which are structures that are meant to hold a massive amount of weight, much higher than the weight of the boom, the anchor time should not be such a massive deciding factor in the competition. The 4th place team held a whopping 487 grams, 96 grams more than our boom, yet they were punished immensely by their slow setup time. The competition ratio should be adjusted to more accurately reflect booms which can effectively hold massive amounts of weight.