PRESTRESSED MINI-BEAM COMPETITORS

Extra Information

You will need a water source to mix the mortar mix. (This will be provided at location.)

The mix should be just flowable (0.25 cf or 30# of mortar mix with ½-gal (64oz) of water). (Judges will provide concrete materials & quantity of water. Team will mix their own with bucket & tools provided.)

A judge will take one test cylinder of the mix and test it the next day before the beam is removed from the form. We gave the teams a 500 300 psi strength to initially use in their calculations. When we know the exact compressive strength, each team then recalculates using this known strength. Teams are to submit final calculations prior to testing of beams.

Only 0.28 0.25 cf (30# or half bag of 60# Mortar Mix) of materials will be provided for the beam. The total required volume of the beam shall be less than 0.28 0.25 cf.

Teams will need to be very cognizant of how to form beam cross-section because wooden form and foam boards will need to be removed without damaging the beam.

Tension for 34" Normal Bass Guitar strings

E1 - .102 dia.	40.359 lbs.	41.203 Hz
A1 - .079 dia.	43.04 lbs.	54.99 Hz
D2 - .065 dia.	52.962 lbs.	73.416 Hz
G2 - .045 dia.	46.54 lbs.	97.99 Hz

You need to be very cognizant of how you form because you will need to remove the beam with out damaging it.

Bearing at testing should be 1" in from each end

Per the rules of the competition, the number of strings and how they are used is up to each team.

Teams can use the following website to help determine forces in each string
www.stringtensioncalculator.com

The maximum string tension is currently not known which is why the normal string tensions were given above.

Three judges were involved with testing. One read the gauge and determined ultimate failure. One operated the testing machine, and one was an observer.

Judging was on a. Ultimate load carrying capacity. b Calculation of ultimate load carrying capacity versus actual capacity.

All teams need to be finished by a certain time. We had the teams all ix their mortar at the same time.

When selecting a beam shape and over-all size, the teams have to keep in mind that only .28 cf of mortar will be used.

When one team needed an explanation, we had all of the team captains there to hear the explanation