

2017 ASCE SOUTHEAST STUDENT CONFERENCE

Wood Dam

Friday, March 17
Bldg. 36, EG, Back of Building in Walled Area
777 Glades Rd, Boca Raton, FL 33431

Overview

The wood dam competition offers students the chance to challenge their knowledge of structures and hydraulics. Students will design a dam using not more than 1,000 small Popsicle sticks to create a dam that will permit 5 gallons of water to be released in 5 minutes.

Objective

The objective of the competition is to design and build a 3-dimensional wooden dam from Popsicle sticks that conform to specific criteria defined herein. The model will be tested to determine the flow rate to expel 5 gallons of water (without refilling) in as close to 5 minutes as possible. In addition a 750-1000 word technical paper will be submitted outlining the materials, calculations and design principles used to implement the model. Technical papers will be assessed and scored.

Eligibility

Each university may have one team with up to four students, one of whom may be a graduate student. Each team will have a captain who is responsible for submitting the dam and a paper copy of the technical report during registration. Each university may only submit one entry. Submitted dams must meet all design specifications. Compliance evaluation will be conducted at least 24 hours prior to testing. Team captains will be notified by cell phone if a compliance issue has been identified. Failure to meet a specification requirement will result in disqualification.

Submittals

All technical reports and dams must be submitted upon arrival to the conference at the time of registration. Reports must be bound or stapled and presented on 8.5" x 11" paper. Entries must have the name of the university printed in ink along the length of the entry.

Material Specifications

Wood - Only small wooden Popsicle sticks (3/8" x 4") are permitted.

- No more than 1000 may be used

Glue - Dams must be constructed using only one type of glue throughout, which must be selected from one of the following without additives:

- Elmer's Carpenter's Interior Wood Glue
- Titebond Original Wood Glue
- Gorilla Wood Glue

General Specifications

The dam must fit a cat carrier with the following dam dimensions:

- Bottom opening = 12.375 inches
- Top opening = 14 inches
- Height = 6 inches
- Bottom corners are ¼-inch radius



- No allowance to modify the shape at the time of the contest will be permitted.
- Glue is only to be used to connect members, joints and plates.
- Excessive glue assisting with the strength and stability is not allowed.
- Paint, stain or any other coating is not allowed.
- Sealers are not permitted.

Technical Paper

The technical paper shall be 750-1000 words in length and consist of:

1. Introduction
 - a. Name of University.
 - b. Names of team members.
 - c. Captain's name, email address, and cell phone number.
2. Material Documentation
 - a. Quantity and dimensions of the wood used in construction.
 - b. Name, specifications, and amount of the wood glue used in construction.
 - c. Purchase information of all materials. (Include photocopies of the receipts.)
3. Design Methodology and Construction
 - a. Explanation of all design assumptions.
 - b. Discussion of alternative designs considered.
 - c. Analysis procedures used to determine member locations and sizes.
 - d. Discussion of the construction sequence.
 - e. Discussion of any problems encountered and overcome.
4. Figures
 - a. CAD plan view with all dimensions to scale.
 - b. CAD elevation view with all dimensions to scale.
 - c. CAD connection details with all dimensions to scale.

Appendix. Wood Dam Competition Scoring Summary Sheet (Note: Appendix does not count against the word limit).

Load Testing

Testing will use the upper half of a cat carrier (described earlier). The students will be permitted to seal the dam in place with caulk (provided). Water will be added to the dam, and the testing will begin. Failure of the dam as a result of it breaking will result in disqualification. Excessive leaks, i.e. significant water (>1/8 inch stream) flowing through the dam prior to starting the timer, will result in disqualification. The cat carrier must be cleaned and dried by the team after testing for the next group.

Judging

There will be a minimum of three judges for the competition. It will be the judges' responsibility to evaluate the teams fairly and consistently based on the criteria outlined in the scoring summary sheet. The time will stop once there is a break in the continuous flow of water out of the dam regardless if it begins to drain again continuously. The judges' ruling will be final.

Teams will be ranked based on how close their time came from 5 minutes to drain. The closest to 5 minutes will receive 75 points. Each team afterward will receive 3 less until there are no remaining points.

Location and Directions

Bldg. 36, EG, Back of Building in Walled Area
777 Glades Rd, Boca Raton, FL 33431

- Head south on I-95
- Take Exit 45 east onto Glades Road
- In 1.8 miles left onto W. University Drive
- Right onto Indian River St.
- Left on Dade Ave.
- Pass main crosswalk
- Bldg. 36 on right

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Wood Dam

Scoring Summary Sheet

University: _____

Dam Performance

Time to drain (75 points max) _____

Technical Paper

1. Introduction (5 points maximum) _____

2. Material Documentation (5 points maximum) _____

3. Design Methodology, Calculations and Construction (10 points maximum) _____

4. Figures (5 points maximum) _____

Technical Paper Sub-Total Score (25 points maximum) _____

Overall Score _____