

# ASCE STUDENT CONFERENCE GEOTECHNICAL COMPETITION

## Guidance for hosting and judging

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### 1. Materials (general)

The host campus should identify and procure materials to be used for construction well in advance. No later than two months prior to the competition, samples must be sent to all campuses in the region in accordance with the event rules.

This includes

- Posterboard, kraft paper, and tape – as specified in the event rules. These should be readily obtained from an office supply store or super-store (for example, Walmart). Posterboard and kraft paper need to be cut as closely as possible to specifications. A ¼-in. tolerance is acceptable, however.
- Sand – A clean sand is required. Most home improvement stores carry “play sand” in 50-pound bags, which is affordable and adequate. Alternatively, campuses often have available large quantities of sand for concrete mixes that might be adequate. The sand must be very dry, or the paper reinforcement will degrade. Do not store the sand outside, or in a moist space indoors. More than 500 pounds of sand will be needed per testing station, so the quantity of sand available might limit the number of teams that can compete at once. The competition stations should be located close to the sand stockpile: speed in hauling sand over long distances should not be a deciding factor in the competition. It is fair to require the contestants to return their sand to the stockpile when their turn is over. To help with cleanup and to keep the sand clean for re-use, try to set up the competition in a paved, swept area and if possible provide extra brooms, dustpans, brushes, shop vac, etc.

### 2. Host institution also provides:

- Loading bucket – one per station
- Dry sand – enough to fill sandbox and loading bucket
- Balance – the same balance should be used for the entire competition.
- Stopwatch – one per station
- Rulers and measuring sticks (see below) for judging
- Leader board, if appropriate (see below)

### 3. Staggered timing

Allow two hours for a team to complete the event, from check in to clean up. To limit the volume of sand and number of judges that must be on hand for the event, consider running only a few teams at once, with new teams starting at 30-minute intervals. The construction period is divided in two segments so that it won't be necessary to have sand on hand while reinforcing is being prepared. Use a leader board to post results throughout the day.

#### **4. Judging**

One judge is required for each competition station. A suggested checklist is provided here.

##### **Suggestions**

- To measure the inside of the box, cut two stout pieces of lumber, one exactly  $17\frac{3}{4}$  in. long, and the other exactly  $25\frac{3}{4}$  in. long. Oriented horizontally, the longer piece should fit inside the box at any location without touching. Oriented vertically inside the box, the shorter piece of lumber should not be taller than any part of the walls.
- To check whether the top of the sand is no lower than 2 in. from the top of the box at all points, make spot measurements using a stout bar or rod laid across the top of the box as reference.
- To check whether any component of wall has breached the plane of the front of the box, run a straightedge down the front of the box to determine whether any part of the wall touches the straightedge.

##### **Notes:**

1. If any discrepancy exists between these guidelines and the event rules document, the rules document takes precedence.
2. Check the ASCE website for errata and links to other websites containing suggestions and recommendations.

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Judging checklist

Campus name: \_\_\_\_\_

Team members: \_\_\_\_\_  
 \_\_\_\_\_

Judge: (print, sign) \_\_\_\_\_

| Stage                    | Criterion  | Circle one or fill in blank |              |
|--------------------------|--|-----------------------------|--------------|
| Preparation              | On hand: balance, stopwatch, straightedge, ruler and other measuring sticks, loading bucket, tape    | OK                          |              |
|                          | 50-lb surcharge load weighed and ready   | OK                          |              |
|                          | Posterboard and reinforcing paper, cut to specification, available                                   | OK                          |              |
|                          | Sufficient sand of appropriate type available  | OK                          |              |
| Initiation               | Inside dimensions of box are at least 18 in. wide by 18 in. high by 26 in. long; inside is unaltered | OK                          | Disqualified |
|                          | Inside, top and front of box are free of protrusions   | OK                          | Disqualified |
|                          | Removable panel is flush with front of box   | OK                          | Disqualified |
|                          | Construction tools are acceptable  | OK                          |              |
|                          | <b>Length of reinforcement paper requested</b>   | _____ in.                   |              |
|                          | No marking or other preparation of wall components prior to start of construction                    | OK                          | Disqualified |
| Construction – Assembly  | Start time   | _____                       |              |
|                          | Any tape used is flat against posterboard, sticky side toward board                                  | OK                          | Disqualified |
|                          | No sand is handled   | OK                          | Disqualified |
|                          | Stop time (30 minutes after start, or sooner if declared by competitors)                             | _____                       |              |
| Construction – Execution | Start time (30 minutes or less after Assembly start time)  | _____                       |              |
|                          | Completion time (30 minutes after start, or sooner if declared by competitors)                       | _____                       |              |
|                          | <b>Total time for construction (assembly plus execution)</b>   | _____                       |              |
|                          | Sand is everywhere within two inches of top of box   | OK                          | Disqualified |
|                          | Loading bucket is positioned correctly   | OK                          | Disqualified |
| Loading                  | Start time, after panel removed  | _____                       |              |
|                          | Wall is stable after one minute  | YES                         | NO           |
|                          | Loading is complete by eleven minutes after start time   | OK                          | Disqualified |
|                          | Wall is stable after two more minutes<br>If no, surcharge load at failure:                           | YES                         | NO           |
| Clean-up                 | Sand is returned to original state, station is clean   | OK                          | Disqualified |

Notes: