

Concrete Bowling Rules

The purpose of this competition is to combine design skill and creativity to construct and use a Concrete Bowling Ball at the ASCE Region 6 Student Symposium.

Section 1: Participation

A team must consist of between two (2) and four (4) students from a university in good standing with their respective ASCE Section and ASCE Global. All team members must be registered attendees of the symposium for all days on which the Concrete Bowling will take place.

There shall be a limit of one (1) bowling ball per team. However, there may be up to two (2) teams per university. In the event of multiple entrants per university, each team shall be named in such a way as to easily distinguish between the teams. All team names must include the university name. For this competition, abbreviated school names are acceptable so long as they are generally understood representations of the represented university.

Section 2: Design and Construction Rules

The following rules shall be adhered to by any participating team. Failure to follow these rules will result in an automatic disqualification. At the judge's discretion, disqualified teams may still be allowed to participate in the bowling aspect of the competition to see how their Concrete Bowling ball would have performed.

- Circumference must be between 20" and 30".
- Shall not exceed 18 pounds in weight.
- Must be roughly spherical in shape. Oblong bowling balls will be disqualified.
- No resin or epoxy may be used in the construction of the Concrete Bowling ball.
- At least 60% of the Concrete Bowling balls mix design must be [hydraulic cement](#) by mass. Pre-packaged or pre-mixed cement is prohibited.
- Reinforcement, such as metallic or non-metallic reinforcing mesh, are allowed at the teams' discretion. If reinforcement is used, it shall not be visible.

Section 3: Technical Components

Concrete Bowling shall consist of two (2) technical components as outlined below.

3.1 Mix Design

The mix design is left up to each individual school so long as it adheres to the mix requirements outlined above. A mix table must be filled out and submitted no later than **5 p.m CST the Monday prior to Competition** by following the instructions at the link below. Mix designs received after the deadline will receive an automatic 5-point deduction on the team's aesthetic score.

Mix Design template and upload instructions can be found at the link below. Mix Design must use the provided template and shall be submitted in .xlsx format.

https://drive.google.com/drive/folders/1Hw1pSVvzp9dSIhOXs3YHIDThbXZ0qPu?usp=share_link

3.2 Poster Display

Each team is required to submit one (1) Technical Poster outlining the design process. This poster shall be submitted on a 24” x 36” poster. The poster must be supported in a vertical placement during judging. No posters lying flat on the ground will be accepted.

Poster Display will be separate from the Bowling event on the Saturday of the Symposium. Please check Symposium schedule for details.

Each poster must contain: School name, Mix Design (with percentages), and Construction Materials and Techniques.

Section 4: Bowling Rules

Each team is required to test their Concrete Bowling ball in a bowling competition. Each team will bowl four (4) frames, for a maximum of nine (9) rolls using standard bowling rules.

The host school shall provide standard bowling pins and an alley. The alley shall be 40’ long and flat in both the longitudinal and transverse directions. It shall be made of a material that does not hinder the movement of the bowling ball.

Each team will be allowed up to 2 practice rolls. The original weight of the bowling ball must be taken before any practice throws roll. Any damage that occurs during practice rolls will be accounted for in the durability score.

Section 5: Scoring

Scoring for the Concrete Bowling Competition is broken into three categories: durability, aesthetics, and bowling aptitude. The final score, except for those teams disqualified as outlined above, will be calculated as shown in the table below.

Competition Section	Points	Percent
Durability	60	30%
Aesthetics	20	10%
Bowling Aptitude	120	60%

The following sections as well as the applicable supplemental documents describe, in detail, these scoring components. Scoring shall be based on the ASCE Concrete Bowling Ball Score Sheet attached to this document.

5.1 Durability (60 points)

To test the Concrete Bowling ball’s durability, the weight of the bowling ball shall be measured prior to any practice rolls and the first roll. After each successful roll, the largest piece remaining of the

bowling ball (by weight) shall be registered and shall be used for the next roll. If the largest piece (by weight) of the Concrete Bowling ball cannot be safely rolled to the pins, the team is disqualified. There shall be no throwing of the Concrete Bowling Ball at any stage of the competition.

The equation used to determine a team’s durability score is below:

$$Durability\ Score = \left(\frac{Weight\ Largest\ Piece\ After\ Last\ Roll}{Original\ Weight} \right) * 60$$

5.2 Aesthetics (20 points)

Aesthetics shall be judged by each individual judge on a scale of 1 to 10 for the Technical Poster and the Concrete Bowling ball combined. The individual scores shall be averaged for the final team score. Judging shall take place prior to the bowling portion of the competition.

Decoration of a Concrete Bowling ball may consist of stain, stickers, or inlays. Paint of any kind is prohibited. Judging shall be based on texture, finish, overall decoration prior to competition.

A judge’s determination on their aesthetics score may not be disputed.

In the case of a tie, the higher aesthetics score will break the tie.

5.3 Bowling Score (120 points)

Scoring for the bowling portion of the competition shall follow standard bowling scoring, reduced for a four-frame game. Teams will have the opportunity to bowl all four frames unless they are disqualified by their bowling balls durability. A total of 120 points may be earned in this category.