

BRIDGE COMPETITION FINALS

Teams will be chosen to attend the 2025 STEM Outreach Solutions Bridge Finals by a panel of judges that score the portfolios. Finalist teams will present at the AASHTO Spring Meeting to a panel of judges comprised of various AASHTO members and sponsors. Each team will be expected to make a PowerPoint presentation and be able to answer questions from the panel of judges about their entry. Supporting materials may be presented to the judges. All technical drawings must be created using CAD Software. Judges will examine each entry to make sure it fits the specifications given in the rules. The bridge brought to competition must be similar with no major changes to the bridge in pictures labeled the competition bridge submitted in the portfolio. The criteria below outlines the competition fundamentals:

- A. SPECIFICATIONS: Prior to testing, the bridge will be checked by the judges for adherence to the specifications on page three of this document. Specification violations will be discussed with the team prior to testing. Any bridge not meeting the specifications on page three will result in judges recording zero weight held.
- B. ORAL PRESENTATION (50% of the total score): Teams will present a 10-minute PowerPoint presentation (a deduction is assessed for every minute under or over 10 minutes). A rubric on page 11 has been provided for the presentation as a guide.
- C. PERFORMANCE (50% of the total score): Bridges will be weighed and then tested on the Pitsco structural tester. Results will be used to calculate strength-to-weight ratio.

Awards:

Teams chosen to attend the AASHTO Bridge Competition will compete for awards of:

First Place Team: \$400 gift card per team member (\$1200 total)

Second Place Team: \$300 gift card per team member (\$900 total)

Third Place Team: \$200 gift card per team member (\$600 total)

Teacher/Advisor of each First Place Team at the National Competition will receive a gift card, not to exceed \$250 per teacher/advisor.

PREPARING FOR COMPETITION

Form a team of interested students or friends. Discuss the challenges and design specifications. Teams shall consist of three students. Each team must have at least one teacher or other adult to help and advise, though a single adult may be advisor to more than one team.

Study the rules. The individual challenge documents and the grading criteria will give important information, which must be followed if your team is to achieve the best results. Failure to adhere to the rules could lead to penalties, or even disqualification. If any of the information is not clear, please call for additional help.

Plan the timing of the project. Ensure that everyone in the team knows the date for submission of the written report and recognizes that this means that all major development work should be finished before this date.

Keep records of meetings and working drawings carefully and give members of the team responsibility for different sections of the final report.

Notes to Adults: STEM OUTREACH SOLUTIONS would like to stress that **the work on all phases of the project is to be done by the students.** Adult assistance is to be limited to:

- Mentoring
- Basic guidance of the students
- Teaching engineering, mathematical and scientific principles applicable to the project
- Guiding students in research
- Assisting in the production of the report and preparation of the drawings
- Overseeing the manufacturing stages of the project

Guidance should be in the form of asking questions, (leading questions if necessary) to promote creative thinking by the students to identify the scientific and engineering principles involved. **Encourage students to consult creditable web sites and other resources** to help with the project. **Encourage students to test and improve their designs.** A good way to begin is for each student to design and/or construct a rough prototype. Test it and make improvements.

GUIDELINES

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Oral PowerPoint Presentation: Bridge Competition

Team Name _____

NOTE: This is a rubric for to help for the preparation of the presentation. Oral presentation has a possible score of 100 points. Each category will be judged on a scale from 1 to 20 points.

CATEGORY	20 ●	15 ●	10 ●	5 ●	0 ●	Sub-Score
Content	Covers topic in-depth with details and examples. Subject knowledge is excellent.	Includes essential knowledge about the topic. Subject knowledge appears to be good.	Includes essential information about the topic but there are 1-2 factual errors.	Content is minimal OR there are several factual errors	Did not fulfill requirements	_____/20
Mechanics	No misspellings or grammatical errors.	Three or fewer misspellings and/or mechanical errors	Four misspellings and/or grammatical errors.	More than 4 errors in spelling or grammar.	Did not fulfill requirements	_____/20
Organization	Content is well organized using headings or bulleted lists to group related material.	Uses headings or bulleted lists to organize, but the overall organization of topics appears flawed.	Content is logically organized for the most part.	There was no clear or logical organizational structure, just lots of facts.	Did not fulfill requirements	_____/20
Presentation	Interesting, well-rehearsed, few to no glances at presentation and/or notecards, with smooth delivery that holds audience attention.	Relatively interesting, rehearsed, glancing frequently to presentation and/or notecards, with a fairly smooth delivery that usually holds audience attention.	Delivery not smooth, read from presentation and/or notecards but able to hold audience attention most of the time.	Delivery not smooth, read from presentation and/or notecards and audience attention lost.	Did not fulfill requirements	_____/20
Attractiveness	Makes excellent use of font, color, graphics, effects, etc. to enhance the presentation.	Makes good use of font, color, graphics, effects, etc. to enhance to presentation.	Makes use of font, color, graphics, effects, etc. but occasionally these distract from the presentation content.	Use of font, color, graphics, effects etc. but these often distract from the presentation content.	Did not fulfill requirements	_____/20
						Total Sub-Score ____/100
						Each Minute Under/Over 10 Minutes: (-10) ____
						TOTAL SCORE ____

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Suggestions and Helpful Hints

1. Students should be prepared for questions at the end of the presentation. These questions may be concentrated in the following topics. However, note that the judges are free to ask any question about any topic. Therefore, each team should be prepared.
 - a) Choice of design
 - b) Civil engineering careers related to bridges
 - c) Safety
 - d) Impacts of bridges
 - e) Lessons learned
2. Stay organized and keep track of time limits.
3. If you have a question, ASK. Students and parents communicate to teacher/advisor and teacher/advisor communicate with Julia Smith at jsmith@aaashto.org.
4. Contact your DOT engineers. They will answer many of your questions.
5. Check out other bridges in your area or around the world
6. **Include detailed information in the team portfolio. Remember, your portfolio is what determines if your team is selected to come to national competition.**
7. RESEARCH