



WEST VIRGINIA BRIDGE DESIGN & BUILD CONTEST

2023 OFFICIAL RULES

CONTEST SOFTWARE



CONTEST SPONSORS



TABLE OF CONTENTS

1	WEST VIRGINIA BRIDGE DESIGN & BUILD CONTEST INFORMATION	3
1.1	<i>OVERVIEW</i>	3
1.2	<i>OVERSIGHT AND COORDINATION</i>	3
1.3	<i>RULES AND ELIGIBILITY</i>	3
1.4	<i>CONTEST SCHEDULE</i>	5
2	QUALIFYING ROUND	5
2.1	<i>BRIDGE DESIGNER SOFTWARE</i>	5
2.2	<i>REQUEST ASSISTANCE</i>	6
2.3	<i>TEAM REGISTRATION</i>	6
2.4	<i>BRIDGE DESIGNER FILE SUBMISSION</i>	6
2.5	<i>FINALIST SELECTION</i>	6
3	FINALS	7
4	DISCLAIMER	7

1 WEST VIRGINIA BRIDGE DESIGN & BUILD CONTEST INFORMATION

1.1 OVERVIEW

The West Virginia Bridge Design & Build Contest (WVBDB) is a statewide contest intended to conduct outreach to middle school and high school students considering a career track in STEM occupations. The contest primarily covers bridge design, but teams invited to the Finals will also compete in a balsa-wood bridge building contest.

The Qualifying Round of the 2023 West Virginia Bridge Design & Build Contest will **begin Tuesday, November 1, 2022, and end on Wednesday, March 1, 2023, at 11:59pm EST**. All individuals/teams must register at <https://wvbridgedesignandbuildcontest.com/>. This will ensure that the correct information is available to contact the finalists. All bridge design files must be uploaded to this website to officially enter the contest. All contest and event updates will also be posted on the website.

Approximately the Top 25 individuals/teams with the lowest cost designs will be invited to participate in the Finals (with at least five Middle Schools) that will be in-person at the WVU Institute of Technology Campus in Beckley, WV. **Finalists will be notified by Friday, March 3, 2023**, with invitation and details of the Finals event.

1.2 OVERSIGHT AND COORDINATION

The WV Department of Transportation, Division of Highways is coordinating the 2023 West Virginia Bridge Design & Build Contest. The 2023 advisory board members are:

NAME	ORGANIZATION
Hussein Elkhansa	WVDOT - DOH
Dustin Fezell	WVDOT - DOH
Jennifer Dooley	WVDOT - DOH
Erika Klose	WV Department of Education
Hornng-Jyh Yang	WVU Institute of Technology
Benjy Simpson	Bridge Walk LLC

The point of contact for the 2023 WVBDB Contest is Lindsey Hanks. She can be contacted directly with any questions at lindsey.c.hanks@wv.gov, (304) 414-6892 or dotwvbdb@wv.gov.

1.3 RULES AND ELIGIBILITY

- 1) Students must be attending a public or private West Virginia school or must be home-schooled at a West Virginia address.
- 2) Students from grades 6-12 are eligible to participate.
- 3) Students may compete individually or in teams of two.

- 4) All eligible students will be placed into one of two contest categories—Middle School or High School—based solely on their grade level. Eligible students in grades 6-8 will be registered in the Middle School Division. Eligible students in grades 9-12 will be registered in the High School Division.
- 5) Teams composed of one high school student and one middle school student will be considered as a high school team for competition purposes.
- 6) Students must register on the contest website (<https://wvbridgedesignandbuildcontest.com/register/>)
 - a) Email: Students must use an email that is validated in the registration process. Students must have access to the email that is used to register for the competition. Any official communication from the WVBDB team will be made via email.
 - b) Registration Information: Teams wishing to change the email associated with their account or any other account information must contact dotwvbdb@wv.gov and allow 2 business days for the changes to be made.
 - c) Teacher/Coach/Parent Information: Students must provide their teacher/coach's name and contact email. Home school students must provide their parent/guardian's name and contact email.
 - d) School names: Students must choose their school's name from the dropdown box provided. If the student's school is not provided in the list, please choose "Other" and type the name in the box provided.
 - e) Team names: Names should be between 4 and 20 characters long. Team names should be appropriate for a school assignment. Teachers and parent's/guardians can review team names and request that a team name be changed or eliminated. The Advisory Board will review these requests and approve or disapprove within 2 business days. The Advisory Board reserves the discretionary right to change a team name, at any time.
 - f) Submissions:
 - i) Teams must have a valid team name associated with the design.
 - ii) File naming convention: The application will generate a default file name. If a team changes the design filename, they should use the following naming convention: "TeamNamexxx.bdc" where "x" would equal an iteration number.
 - iii) The team's name will be entered at the initial creation of the design on the "Fill in the Title Block" screen and cannot be changed for the life of the design file. It must match the team's name entered at registration. Designs that do not meet these requirements will be disqualified.
 - g) Ties will be awarded by the submission time. If two designs with the same exact cost are submitted, the first design submitted will obtain the highest ranking for cost and the second design will obtain the next lowest ranking.
 - h) Ineligible submissions:
 - i) Submissions created by previous versions of the application will be disqualified.
 - ii) Design files that do not pass a load test will be disqualified.
- 7) To officially enter the contest, students must submit at least one bridge design file (<https://wvbridgedesignandbuildcontest.com/login/>) that passes the simulated load

test.

- 8) Students must create their designs using the Bridge Designer 2023 software that can be downloaded from the contest website.
- 9) Students are expected to perform their own work during the Qualifying Round and Finals.
- 10) The contest advisory board has discretion to disqualify students caught cheating or exhibiting behavior that is not representative of the contest values of teamwork and honesty.

1.4 CONTEST SCHEDULE

The schedule for the 2023 West Virginia Bridge Design & Build Contest is shown in the table below and will be updated on the website accordingly. Registration can be completed at <https://wvbridgedesignandbuildcontest.com/register/>. The Qualifying Round will **end on Wednesday, March 1, 2023, at 11:59 p.m. EST**. The top 25 teams at the end of the Qualifying Round (with at least five Middle Schools) will be invited to participate in the Finals.

EVENT	DATES
Registration	November 1, 2022 – March 1, 2023
Qualifying Round	November 1, 2022 – March 1, 2023
Notification of Finalists	March 3, 2023
Deadline to RSVP	March 10, 2023
Finals	TBD; event info will be posted on website

2 QUALIFYING ROUND

2.1 BRIDGE DESIGNER SOFTWARE

The Bridge Designer 2023 software can be downloaded from <https://wvbridgedesignandbuildcontest.com/student-resources/>. The bullets below provide an overview of the software use. Additional tutorials are provided on the website:

- Students will be presented with a requirement to design a bridge to carry a given load from a roadway across a river.
- Students may choose from a wide variety of site configurations for their bridge. Each will carry the load in a different way, and each will have a different site cost.
- Students will develop a design for their bridge by drawing a picture of it on the computer.
- Once the design is complete, the software will test the bridge to see if it is strong enough to carry the specified highway load. This test includes a full-color animation showing a truck crossing the designed bridge. If the design is strong enough, the truck will be able to cross the bridge successfully. If not, the structure will collapse.
- If the bridge design collapses, it can be strengthened by changing the types of steel and the sizes of the structural components that make up the bridge, or by changing

- the configuration of the bridge itself.
- Once the bridge can successfully carry the highway load without collapsing, the student can then refine the design with the objective of minimizing its cost while still ensuring it is strong enough to carry the specified loads.

2.2 REQUEST ASSISTANCE

Assistance can be requested up to Friday, February 17, 2023. Teachers or Students may submit a request for an engineering professional to explain how to use the Bridge Designer 2023 software and teach some aspects of bridge design. The assistance will be provided by an undergraduate engineering student involved in an American Society of Civil Engineer (ASCE) student chapter (e.g., Bluefield State University, Fairmont State University, Marshall University, West Virginia University, or WVU Institute of Technology), a West Virginia Department of Transportation employee, or another professional engineer volunteer.

These requests will be handled by completing the “Contact Us” form here:

<https://wvbridgedesignandbuildcontest.com/contact/>

Bridge Design Tutorial Videos are also available here:

<https://www.youtube.com/playlist?list=PLgTLt6aWunv35OGftvHYsEO-qxZDGyovl>

2.3 TEAM REGISTRATION

Registration for the West Virginia Design & Build Contest must be completed at the contest website here: <https://wvbridgedesignandbuildcontest.com/register/>. Any changes to emails or other team member’s information provided during registration can be made up to 2 business days prior to the end of the contest by contacting us at dotwvbdb@wv.gov.

2.4 BRIDGE DESIGNER FILE SUBMISSION

The 2023 West Virginia Bridge Design & Build Contest will utilize Bridge Designer 2023 software located here: <https://wvbridgedesignandbuildcontest.com/student-resources/>. Bridge design files must be uploaded to the contest website to officially enter the contest.

2.5 FINALIST SELECTION

Approximately the top 25 individuals/teams (teams with the lowest cost designs) will be selected to participate in the Finals. The goal is to have 50 students participate in the Finals. To have a similar number of middle school and high school participants and because students can enter individually or as teams, it is not possible to set an official number of individuals/teams that will advance to the Finals. Twenty-Five is given as an estimate and assumes that the 25 least expensive designs constitute team entries and are primarily composed of high-school teams, with at least five middle-school teams included in the competition.

Finalists will be notified by Friday, March 3, 2023, with an invitation. Finalists will have

until Friday, March 10, 2023, to accept their invitation. All information regarding event times, location and schedule will be posted on the website.

3 FINALS

The Finals will be a combination of a Bridge Designer 2023 computer lab and Balsa wood bridge building contest in-person at the WVU Institute of Technology Campus in Beckley, WV (*or virtually depending upon CDC COVID-19 guidelines*). All information regarding event details, time, schedule, and location will be released on the contest website.

4 DISCLAIMER

The Contest Organizers & Advisory Board have made every effort to adequately explain the contest format and corresponding rules within this document. However, they reserve the right to change the rules without notice right up to the Final Round. Any changes will be communicated to the contest participants on the contest website. ***Please note all advisory board and judges' decisions are FINAL.***

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