

# 2020 Lehigh Valley Bridge Design Contest

## OFFICIAL RULES

The Lehigh Valley Bridge Design Contest (LVBDC) is an educational outreach activity developed and implemented by the Lehigh Valley Section of the American Society of Civil Engineers (LVASCE), <http://www.lvasce.org/>. The purpose of the contest is to stimulate interest in engineering through a realistic, engaging design experience. There is no cost for participation.

### 1. Eligibility and Contest Categories

- 1.1. To compete in the Lehigh Valley Bridge Design Contest (LVBDC), a contestant must be *either*:
  - 1.1.1. a student in grades 6-12, currently enrolled in a school located in any of the following Pennsylvania counties: Berks, Bradford, Carbon, Columbia, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Sullivan, Susquehanna, Wayne, or Wyoming; *or*
  - 1.1.2. a student who is legally home-schooled, studying at the 6<sup>th</sup> through 12<sup>th</sup> grade level, and living in any of the following Pennsylvania counties: Berks, Bradford, Carbon, Columbia, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Sullivan, Susquehanna, Wayne, or Wyoming.
- 1.2. All eligible contestants will compete in 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 Competition. Eligible students in grades 9-12 will be registered in the High School Competition.
- 1.3. The Contest Coordinator reserves the right to contact any contestant's school to verify his or her attendance and grade level at that school.

### 2. Teams

- 2.1. Students may compete individually or in teams of two members each. Competing in teams of two is encouraged. [NOTE: Throughout these rules, the word "team" refers to one or two students who have identified themselves as a team when submitting a design.]
- 2.2. A team of two students is considered eligible only if *both* members of the team are eligible to compete in the *same* Contest Category; i.e., both must be in the Middle School Category or both must be in the High School Category. A team may not be composed of one middle school student and one high school student.
- 2.3. To be eligible for the Final Round of the LVBDC, each team member must be available to participate at the time and place specified in Rule 6 below. If one member of a two-person team is unavailable for the Final Round (or if one member loses eligibility for any other reason), then that member is disqualified. The remaining eligible team member may continue in the contest as a one-person team but may not add a new team member to an existing team.
- 2.4. During the Qualifying Round, each contestant may participate as a member of *only one team*. Team membership is considered to be finalized when the team submits its first design.

- 2.5. The membership of a team can *only* be changed under the following circumstances:
- 2.5.1. If a one-person team is *not* currently ranked among the top 10 teams in his or her Contest Category, then he or she may add a second team member and continue competing.
  - 2.5.2. If one member of a two-person team voluntarily drops out of the contest or becomes ineligible, the remaining team member may continue competing as a one-person team. However, if the team is ranked among the top 10 teams in its Contest Category at the time of this change, the team must notify the Contest Coordinator by e-mail at [lvbridgecontest@gmail.com](mailto:lvbridgecontest@gmail.com). This e-mail message must provide a clear explanation of the reason for one team member's departure from the contest. Failure to provide this explanation may result in disqualification of the team.
- 2.6. A design submission is permanently associated with the team that submitted it. If a team is disqualified for any reason, all designs submitted prior to the disqualification are also disqualified and cannot be resubmitted by any other team. No design may be transferred from one team to another under any circumstances.

### 3. Creating and Submitting Designs

- 3.1. All bridge designs submitted to the LVBDC must be created using the Bridge Designer 2016 software, which is available for download at <http://bridgedesigner.org/download/>.
- 3.2. All bridge designs submitted to the LVBDC must use the following 6-character Local Contest Code: **LVC46B**
- 3.3. The procedure for entering the Local Contest Code is as follows:
- 3.3.1. Start up the Bridge Designer.
  - 3.3.2. After closing the Tip of the Day, select “**Create a New Bridge Design**” and click **OK**.
  - 3.3.3. On the Design Project Setup Wizard, click **Next**. Then, at Step 2, select “**Yes, with a 6-character Local Contest Code;**” and in the text box, enter the Local Contest Code specified in 3.2 above.
  - 3.3.4. Click **Next**; choose a template (OPTIONAL); then click **Finish**.

Once the Local Contest Code is entered, a specific deck elevation, support configuration, deck material, and loading will be automatically set on the Bridge Designer's Drawing Board.

- 3.4. All bridge designs submitted to the LVBDC must pass the Bridge Designer's simulated load test.
- 3.5. To submit a bridge design for judging, each team must do the following:
- 3.5.1. Save the design as a .bdc file, using the “Save” or “Save As” function of the Bridge Designer 2016 software. Bridge designs submitted in any other file format will be disqualified.
  - 3.5.2. Attach the .bdc file to an e-mail message.
  - 3.5.3. The subject of the e-mail message must be the team's **Contest Category** followed by the **exact cost of the bridge design**—for example, “Middle School \$123,456.78” or “High School \$234,567.89”.
  - 3.5.4. The e-mail message itself must include: (1) the full **name, age, and grade** of each team member, (2) the **e-mail address** at which the team can be contacted, and (3) the **name and address of each team member's school**. (Team members who are home-schooled should provide their home address.)

3.5.5. Send this message to the following e-mail address: [lvbridgecontest@gmail.com](mailto:lvbridgecontest@gmail.com) for judging.

- 3.6. Any design submission that does not fully comply with requirements 3.1–3.5 above will be considered an *invalid* submission and will not be judged.
- 3.7. The Contest Coordinator will acknowledge each design submission by return e-mail within 48 hours of submission. If a team does not receive an acknowledgement within 48 hours after submitting a design, the team should re-submit the design, using the same procedure specified in 3.4 above, taking care to ensure that the e-mail address is correct.
- 3.8. Anyone who is found to have provided an incorrect name, age, grade, e-mail address, school name, address, or bridge cost may be disqualified from the contest.

## 4. Judging Designs

- 4.1. A bridge design is considered to be *valid* if:
  - 4.1.1. The file is a "bridge design file" (.bdc) created by the Bridge Designer 2016;
  - 4.1.2. The design is based on the Local Contest Code specified in Rule 3.2 above.
  - 4.1.3. The design is not identical to any previously submitted design; and
  - 4.1.4. The design is structurally adequate; i.e., it passes the Bridge Designer load test with no member failures.
- 4.2. Within a given contest category, any bridge design submission that is identical to any previously submitted design will be rejected. In other words, the first team to achieve and submit a given design will obtain full, exclusive credit for it. Two designs are considered to be identical if (1) their joints are all in the same positions; (2) their structural members are all in the same positions (without regard to member numbers); and (3) each member in one design uses exactly the same material, cross-section, and size as the corresponding member in the other design.
- 4.3. If a design is rejected, the Contest Coordinator will attempt to notify the affected team by e-mail. However, even if a team never receives such notification, the Contest Coordinator's decision to reject the design will stand.
- 4.4. Once an entry is determined to be valid, its standing in the contest is determined by its cost, as calculated by the Bridge Designer 2016. **A lower cost results in a higher standing. In both rounds of the contest, the lowest cost wins.**
- 4.5. If two teams submit designs that are *not identical* but that have *exactly the same cost*, the tie will be broken based upon the time of submission. The design submitted earlier will have the higher standing.

## 5. The Qualifying Round

- 5.1. The Qualifying Round of the LVBDC will begin and end at the times and dates specified in the "Schedule" section on the contest web page, <http://bridgedesigner.org/lehighvalley/>.
- 5.2. Any designs received prior to the official start of the Qualifying Round or after the official end of the Qualifying Round will be considered *invalid*. The official time of receipt will be the time indicated on the e-mail message.
- 5.3. During the Qualifying Round, there is no limit to the number of designs that an eligible team may submit.

- 5.4. During the Qualifying Round, there are no restrictions on collaboration. Teams may consult freely with teachers, parents, or peers about their designs. (Note, however, that collaboration with others will not be allowed in the Final Round.)
- 5.5. During the Qualifying Round, each team is responsible for the security of its own design(s). Any contestant who shares his or her team's design(s) with another person or team does so at his or her own risk. Any contestant who fails to safeguard his or her team's design(s) does so at his or her own risk. A contestant who has shared or failed to safeguard a design loses all claim to "ownership" of that design or design concept. If a team shares or fails to safeguard its design and subsequently fails to qualify for the Final Round, that team has no basis for complaint and no claim on a place in the Final Round.
- 5.6. During the Qualifying Round, only the *top two teams from a given school* will be listed with an official standing on the Contest Scoreboard.
- 5.7. At the end of the Qualifying Round, the top 3 eligible High School teams and the top 3 eligible Middle School teams (but with *no more than two teams from any given school*) will be invited to compete in the Final Round. Finalists will be notified by e-mail, no later than one week after the completion of the Qualifying Round. To facilitate notification, each team is responsible for ensuring that it has provided an accurate e-mail address with its design submissions.
- 5.8. The Contest Coordinator reserves the right to invite more than 3 High School teams and more than 3 Middle School teams to compete in the Final Round.
- 5.9. In accordance with federal privacy law, contestants under the age of 13 will require parental consent to participate in the Final Round. The parent or guardian of any finalist under age 13 should contact the Contest Coordinator by e-mail at [lvbridgecontest@gmail.com](mailto:lvbridgecontest@gmail.com) to provide consent.

## 6. The Final Round

- 6.1. The Final Round of the LVBDC will be conducted at the time and location specified in the "Schedule" section on the contest web page, <http://bridgedesigner.org/lehighvalley/>.
- 6.2. Only the teams invited by the Contest Coordinator to participate in the Final Round will be allowed to participate. Any finalist who is unavailable to compete at the designated time and location will be disqualified.
- 6.3. Each finalist team will travel with a parent or guardian to the designated location for the Final Round. Travel will be at the contestant's expense.
- 6.4. During the Final Round, each team will be provided with a computer workstation consisting of a Windows computer equipped with a conventional mouse. Teams will be presented with a new design project for the Bridge Designer 2016 and will be required to develop a new bridge design within a designated one-hour period.
- 6.5. During the Final Round, teams are required to do their own work. Team members may not collaborate with anyone outside of their own team. Unauthorized collaboration will result in immediate disqualification from the contest.
- 6.6. The Contest Coordinator may designate one team member as Computer Operator for all or a portion of the Final Round. If the Contest Coordinator chooses to designate a Computer Operator, only that team member will be permitted to manipulate the computer mouse during the Final Round.
- 6.7. At the conclusion of the one-hour Final Round, the Contest Coordinator will check each team's best design and identify the winner(s) in each of the two Contest Categories.

6.8. In the event that the ongoing Coronavirus crisis makes it impossible to conduct a face-to-face Final Round competition, the Final Round will be conducted over the internet at the scheduled time, using a procedure that will be communicated to finalists after the completion of the Qualifying Round.

## 7. Your Privacy

- 7.1. The LVBDC contest staff will respect and safeguard all personal information submitted in conjunction with the contest.
- 7.2. To submit a bridge design, each eligible contestant is required to provide his or her name, age, grade, e-mail address, school name, and school address. This information will be used solely for verification of eligibility, contest administration, and notification of finalists.
- 7.3. No information collected in conjunction with the LVBDC will be disclosed to any third parties—except that the names of the contest winners may be made public for the purpose of contest publicity.
- 7.4. All personal information collected in conjunction with the LVBDC will be permanently deleted at the end of the contest.
- 7.5. In accordance with federal privacy law, contestants under the age of 13 will require parental consent to participate in the Final Round. The parent or guardian of any finalist under age 13 should contact the Contest Coordinator by e-mail at [lvbridgecontest@gmail.com](mailto:lvbridgecontest@gmail.com) to provide consent. If the parent or guardian of a finalist under age 13 does not provide consent, the finalist will be disqualified and the Contest Coordinator will refrain from any further contact with the contestant.

## 8. Technical Requirements

- 8.1. During the Qualifying Round, contestants in the LVBDC are responsible for choosing and using appropriate computer hardware and a suitable internet connection. Neither the Lehigh Valley Section of the American Society of Civil Engineers nor the contest sponsors will be responsible for any difficulties encountered due to technical malfunctions or internet access problems.

## 9. General Conditions

- 9.1. All teams agree to abide by the terms of these official rules.
- 9.2. If any contestant engages in conduct judged by the Contest Coordinator to be "unsportsmanlike," then the contestant and his or her team will be permanently disqualified from the contest.
- 9.3. The decisions of the Contest Coordinator are final on all matters concerning the operation of this contest. All teams agree to be bound by the decisions of the Contest Coordinator.
- 9.4. The published contest schedule and rules are subject to change.
- 9.5. Members of winning teams grant the LVASCE and the contest sponsors permission to use their names on line, in print, or in any other media, in connection with contest publicity.
- 9.6. By entering, participants release and hold harmless the LVASCE, the Contest Coordinator, Lehigh University, the contest sponsors, and their respective directors, officers, employees, and agents from any and all liability for any injuries, loss, or damage of any kind arising from or in connection with the LVBDC or any prize won.

- 9.7. The LVASCE and the contest sponsors assume no responsibility for lost, late, or misdirected entries, or for any computer, communications, or other technical malfunctions that may occur during creation or submission of contest entries.
- 9.8. Any attempt by any individual to deliberately damage a website or to otherwise undermine the legitimate operation of the LVBDC is a violation of criminal and civil laws. Should such an attempt be made, the LVASCE and the contest sponsors reserve the right to seek damages from any such individual to the fullest extent permitted by the law.
- 9.9. Neither the LVASCE nor the Contest Coordinator have any authority over, or responsibility for other bridge design contests conducted with the Bridge Designer software. Any dispute or disagreement with the rules, procedures, or prizes used in any contest other than the LVBDC must be directed to the associated contest organizer(s) for resolution.