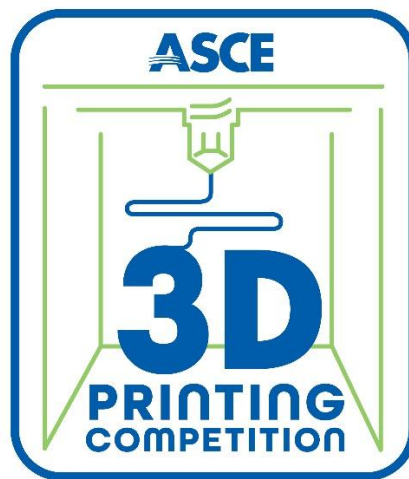




# **3D Printing Competition: Bridging the Future**

## **2027 Rules and Requirements**



IN PARTNERSHIP WITH  NJIT

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# 1. Welcome

The American Society of Civil Engineers (ASCE) supports and encourages a fully inclusive culture that celebrates individual uniqueness, engenders a sense of belonging, and promotes equitable opportunity for all people to participate in the ASCE 3D Printing Competition (3DPC). (See ASCE [Policy statement 417 - Justice, equity, diversity, and inclusion](#).) Participation should be inclusive, open, and fair to all interested and eligible students. Welcome!

## 2. About the Competition

Three-dimensional printing (3DP) is an emerging construction technology. Construction using 3DP operates by adding sequential layers of material to create a three-dimensional object, which saves labor cost, minimizes material waste, and optimizes building time. While 3DP has been used to create prototypes and small-scale models of the built environment for some time, the technology has advanced to the construction of houses and bridges.

The goal of the 3DPC is to promote the application of 3DP technology in the field of civil engineering. This year the goals for students are to design an aesthetically-pleasing, strong, and stiff bridge that minimizes assembly time and filament, and meets the geometric and loading requirements.



Figure: [The first 3D-printed home in the United States](#), 2021, Williamsburg, VA (Alquist 3D)



Figure: [The world's first 3D printed steel footbridge](#), 2021, Amsterdam, The Netherlands (Ana Fernandez/SOPA Images/LightRocket via Getty)

Students should pay attention not only to the design, but also the details of the print, which play a significant role in the shape, tolerance, and capacity of the bridge. Students will demonstrate teamwork, organization, analytical skills, and creativity throughout the process of the competition.

The 3DPC has its origin at the New Jersey Institute of Technology's inter-collegiate competition in November 2021. ASCE gratefully acknowledges NJIT's efforts in creating the competition and working to expand its reach among civil engineering students.

## 3. Participation and Eligibility

### 3.a. Team Member Requirements

Team members must be undergraduate students, enrolled during all or part of the current competition academic year, members of an ASCE Student Chapter in good standing, registered participants of the student symposium, and Society Student Members of ASCE. (Society student membership is free; be sure to [join](#).)

Graduate students are encouraged to serve as advisors.

### 3.b. Team Requirements

It is an expectation that teams will reflect diversity, foster an inclusive culture, and treat everyone with dignity and respect. The team can be as small as just one member with no limit on the number of members.

Only one team per ASCE Student Chapter may compete in the competition. A student chapter may compete in only one ASCE Student Symposium per year. Each team must designate one team member to serve as the team captain. Conference assignments and this year's student symposium hosts are listed [here](#).

### 3.c. Other Teams

#### 3.c.1. Official Guest Teams

ASCE Student Chapters hosting student symposia may invite Official Guest teams, which are teams from Region 10 that have an official ASCE Student Chapter not yet assigned to any Student Conference. Official Guest teams may compete in only one student symposium per year and are eligible to place and receive awards at the student symposium competition (if they meet the other requirements, including eligibility requirements). ASCE Student Programs shall be notified by the student symposium host school of an Official Guest team prior to the start of the student symposium via email to [student@asce.org](mailto:student@asce.org).

#### 3.c.2. Exhibition Teams

A university group that is in the establishment phase of becoming an ASCE Student Chapter may request to compete at their potential future ASCE Student Symposium as an exhibition team. If the student symposium host grants permission, the exhibition team may compete.

An ASCE Student Chapter team wanting to enter a competition that is NOT being hosted at their assigned student symposium may request to compete at another ASCE Student Symposium as an exhibition team. If the student symposium host grants permission, the exhibition team may compete.

An ASCE Student Chapter team wanting to enter a competition that is being hosted at their assigned student symposium but has circumstances that prevent participation at their assigned student symposium may contact ASCE Student Programs ([student@asce.org](mailto:student@asce.org)) with a description of the circumstances to explore options.

The exhibition team will be scored but shall not be ranked or win awards at the student symposium competition.

3.d. Student Chapter Eligibility

Eligibility criteria for the Student Symposium Competitions are shown in Appendix B.

3.e. Intent and Eligibility Acknowledgement Form

Teams must submit online [Intent and Eligibility Acknowledgement Forms](#), no later than **5:00 p.m. Eastern Time (ET) on November 2, 2026**.

By completing this form, a student chapter states:

- Their intent to have a team participate in the competition at their assigned student symposium; and
- Their acknowledgement of the eligibility requirements for student symposium competition participation (Appendix B).

The form must be completed and separately submitted by the:

- 1) Team Captain;
- 2) ASCE Student Chapter Faculty Advisor; and
- 3) Competition Team Faculty Advisor.

All three parties will use the same form to submit. If the ASCE Student Chapter Faculty Advisor and the Competition Team Faculty Advisor are the same person, the form has a field to indicate as such and only one faculty advisor submission is required.

Teams can verify that all three parties have submitted an Intent and Eligibility Acknowledgement form by checking the [Intent Form Status Report](#) in Cerberus.

## 4. Ethics and Required Conduct

This competition is to be conducted with the highest regard for ethical responsibility per [ASCE's Code of Ethics](#). All members of ASCE, regardless of their membership grade or job description, commit to all the ethical responsibilities in this Code. All ASCE members should make themselves familiar with ASCE's Code of Ethics.

All participants shall act professionally and respectfully at all times. Failure to act appropriately may result in sanctions, disqualifications, and loss of invitations to future symposia competitions or Society-wide competitions. The inappropriate use of language, alcohol, or materials, uncooperativeness, and general unprofessional or unethical behavior will not be tolerated.

## 5. Safety

Safety is the highest priority and behaviors that increase the risk of or cause personal injury will not be tolerated. Judges and student symposium hosts, including the Safety Officers, are empowered to stop or prohibit an activity which is deemed to be hazardous, or to postpone an activity until the hazard is rectified.

Issues to Consider (not an exhaustive list):

- Participants acknowledge that there are risks when creating and testing 3D printed structures. Bridges should be printed in a well-ventilated area, and care should be taken to avoid injury when working with a 3D printer.
- Connections that are 3D printed are prone to some error, and participants are encouraged to print tests of connections to account for tolerance issues. If any parts need to be filed or cut, participants need to ensure proper caution and use hand and eye protection.
- When testing bridges, participants shall be cognizant of the brittle nature of PLA. Bridges can fail suddenly and even explosively. Only participants actively involved with the testing of bridges should be within 10 feet of the loading apparatus and should wear eye protection as well as work gloves if handling the bridge or the loading apparatus during testing. Hands or feet should never be put below the loading bucket. Participants are responsible for providing their own eye protection and gloves during the competition. Participants should consistently use the safety features included with the loading apparatus (e.g., plexiglass shield).

All participants are responsible for complying with all campus/venue protocols and procedures, including those deemed necessary for public health purposes.

It should be noted that the load to be applied to a bridge is at most 70 pounds to eliminate a safety issue when significant weight is released when a bridge fails. Rather than having a competition where the competitors seek to carry as much load as possible, this 3DP Competition seeks to design a bridge with the highest structural efficiency (capacity to weight ratio). However, a bridge must support at least 25 pounds of load (service load). A bridge that fails at 26 pounds of load could win even if another bridge has more capacity. In fact, a bridge that supports more than 70 pounds is overdesigned and not as structurally efficient as it could have been.

Hosts may coordinate with ASCE to provide and activate virtual competition provisions if determined necessary for the safety of participants.

If there is a thunderstorm, all outdoor activities shall cease and may not resume until at least 30 minutes have passed since the last observed occurrence of thunder or lightning.

## 6. Significant Changes

### 3DPC Rule Changes

The 3DPC Rules are updated annually to improve clarity of the written rules and make targeted changes to keep the competition fresh. Teams are strongly encouraged to carefully read the complete set of 2027 3DP Competition Rules and discard copies of rules from prior 3DP Competitions. Teams should not consider items such as rulings and interpretations made by judges in previous competition years and answers provided in previous interpretations of rules as setting precedence for the 2027 3DPC.

Listed below is a summary of significant changes from the 2026 3DPC Rules. This list may not capture all the changes. Teams are ultimately responsible for reading and understanding the 2027 3DPC Rules. Teams are encouraged to submit RFIs through the ASCE website if there is uncertainty in the intent or interpretation of the 2027 3DPC Rules.

- The clear span and overall length of the bridge have been increased.
- All bridge parts (those used in the construction of the bridge and spare parts that may be used in the construction of the bridge) must fit inside of a parts box that has a smaller footprint.
- The elevation of the top surface of the deck now has a specified range.
- Three potential load positions are specified in the 3DPC Rules, and one of these three load positions will be selected at the start of the competition by the Head Judge using a “roll of the dice” method. The established load position will be used by all competitors.

### 3DPC Exhibition at the 2027 ASCE Civil Engineering Student Championships

ASCE along with the 3DPC Rules Committee will be inviting up to ten 3DP teams to exhibit at the 2027 ASCE Civil Engineering Student Championships, June 17-19, 2027, hosted by Kansas State University in Manhattan, Kansas. This exhibit will provide teams with an opportunity to showcase their work and creativity on a larger stage including presenting their posters and assembling and load testing their bridges. In addition, there will be displays to showcase how 3D printing is being used in civil engineering and construction. After the last ASCE Student Symposium hosting the 3DPC, select teams will be notified and required to complete an application to be considered for an invitation. Selection criteria will be announced prior to student symposia.

## 7. Bridge Part Specifications

The following specifications are applicable for each individual bridge part.

### 7.a. Material

All parts shall be printed with 100% plain polylactic acid (PLA). No other filament material is allowed to be used.

No unextruded filament material is allowed to be used in the assembled bridge.



Bridges with any part printed with a non-compliant or fabricated with unextruded filament will be disqualified (DQ'd).

7.a.1. Sample

Each team shall provide a 12-inch (305-mm) long unextruded sample and a photograph of the spool label of each unique filament used by the team to fabricate the parts.

Failure to provide the filament samples and the photographs of the spool label(s) will result in a presentation penalty.

7.b. Parts Box

All bridge parts shall fit in a parts box with inside dimensions of 8 inches (203 mm) wide, 8 inches (203 mm) long, and 6 inches (152 mm) tall.

Parts that do not fit in the parts box will be subject to a weight penalty which essentially doubles the weight of the parts that do not fit in the parts box.

Spare parts that are printed in case a part breaks or is lost during assembly shall also fit in the parts box and contribute to the total weight of the bridge.

7.c. Connections

Only mechanical connections between parts are allowed. In addition, a bridge part cannot be fabricated from two smaller parts that are bonded together prior to the competition.

Bridges with any adhesive or welding (melting of plastic to fuse) used to create a part or assemble the bridge will be DQ'd.

## 8. Assembled Bridge Specifications

The following specifications apply to the assembled bridge.

8.a. Span and Length

The bridge shall span a clear span of at least 24 inches (610 mm).

The total bridge length should be 28 inches (711 mm) or less.

See Appendix A.

Bridges exceeding the total bridge length will be subject to a weight penalty.

The host is only required to have a load apparatus to test bridges that fit within the penalty-free bridge envelope. A bridge longer than 28 inches in length and not able to be tested by the host will be DQ'd.

#### 8.b. Cross Section

The bridge superstructure shall fit within the elevation envelope - 6 inches (152mm) below the top of the bearing surface of the abutment and 6 inches (152mm) above the top of the bearing surface of the abutment.

The bridge depth shall be less than or equal to 8 inches (203 mm) from the extreme bottom surface to the extreme top surface of the assembled bridge.

The overall width of the bridge shall be less than or equal to 6 inches (152 mm).

See Appendix A.

Bridges exceeding the penalty-free envelope (top elevation, bottom elevation, depth, and width) will be subject to a weight penalty.

The host is only required to have a load apparatus to test bridges that fit within the penalty-free envelope. A bridge wider than 6 inches, higher than 6 inches above the bearing surface or lower than 6 inches below the bearing surface, and not able to be tested will be disqualified (DQ'd).

#### 8.c. Passageway

The cross section through the bridge shall have a continuous passageway opening through the entire length of the superstructure to allow a 3.5-inch (89-mm) tall by 3.5-inch (89-mm) wide prism to pass across the top of the bridge deck with minimal force and without obstructions.

See Appendix A.

Bridges with a non-compliant passageway will be subject to a weight penalty.

#### 8.d. Deck

The passageway shall be underlain by a bridge deck representing the vehicle driving surface.

The assembled deck shall have smooth continuous surface.

The deck shall be absent of any voids or obstructions other than the required holes to allow the threaded rod supported by the loading plate to extend through the deck. The actual location of the center of each hole in the deck has an 1/8" tolerance in any direction without being subjected to a penalty. Bridges with a hole centered outside of the provided tolerance for any of the three required holes will be DQ'd.

The top of the deck shall not be below the bearing surface nor more than 0.5 inches above the bearing surface.

The deck is considered a part of the bridge when determining the weight of the bridge. The deck can be independent of the bridge structure and be supported by other bridge members, or the deck can be printed integral with other bridge members.

The deck, at a minimum, shall cover the clear span of 24 inches (610 mm) and the 3.5-inch (89 mm) width of the required vehicle passageway.

See Appendix A.

Bridges with a non-compliant deck will be subject to a weight penalty.

## 9. Bridge Loading Specifications

### 9.a. General

The bridge shall be capable of supporting 25 pounds at any of the load positions in a service condition. The bridges should be capable of supporting a limit load of up to 70 pounds at any of the load positions.

Bridges that do not support the service load will be DQ'd.

### 9.b. Loading Position and Apparatus

Loading will be applied to the bridge by a host-provided loading plate that is 3 inches by 3 inches (76 mm by 76 mm) in size located at one of three possible load positions along the length of the bridge span and centered within the width of the bridge. The three possible load positions are:

1. at midspan,
2. 3.5 inches (89 mm) to one side of midspan, and
3. 4.5 inches (114 mm) to the other side of midspan.

The load position for all competitors will be determined randomly by the roll of a six-sided die at the start of the competition by the 3DPC Head Judge. A roll of a 1 or 4 shall mean load position 1. A roll of a 2 or a 5 shall mean load position 2. A roll of a 3 or 6 shall mean load position 3. Once determined, the load position shall be uniform for all competitors.

The load will be applied to the loading plate using a ¼-inch (6 mm)-diameter threaded steel rod with a washer and nut bearing on the top surface of the loading plate which is resting on the bridge deck and centered over the established load position.

The bridge deck shall have a hole located at each of the three possible load locations for the ¼-inch diameter loading rod to pass through the bridge deck and extend at least 8 inches below the deck surface. Access must be provided at the locations of the holes for plate and nut to be threaded onto the threaded rod.

See Appendix A - Figure 3.

Bridges that are unable to be tested due to an inability to install the loading plate and threaded rod will be DQ'd.

### 9.c. Bearing

During load testing of the bridge, no surfaces of the bridge other than the horizontal bearing surfaces on top of the abutment can touch any portion of the load apparatus regardless of orientation of the surface. If another surface contacts the support apparatus during loading, the

loading will be stopped, and the capacity of the bridge will be the load at stoppage. The bridge should be simply supported with no positive attachment to the abutment – only resting of top of the abutments. Teams should not rely upon friction between the bridge and the abutment.

## 10. Bridge Evaluation Process

Teams and bridges will likely be evaluated using the following sequence, but hosts have the discretion to change the sequence:

### 10.a. Part Inspection

Judges will check each bridge part for Section 7 compliance.

Parts that do not fit within the parts box will be weighed at this time.

### 10.b. Initial Assembly

Once judges are ready, one or more team members will begin assembling their bridge.

An initial assembly time limit of 15 minutes will be imposed. After 15 minutes of assembly time has elapsed, the team will be allowed to complete the assembly of the bridge, but the assembly time will be set to 22 minutes regardless of how much time is required to complete the assembly of the bridge.

### 10.c. Initial Assembly Review and Repair

If a team has finished the initial assembly of their bridge but needs to make repairs (adjustments) to any issues observed during the post-assembly inspection, the team will have one opportunity to make repairs. All repairs shall be made with a 5-minute window. The bridge shall be tested in the as-as condition after either the initial assembly or allowed repairs.

After a team has finished assembling their bridge and made any necessary repairs, no other changes can be made to the assembled bridge. The team is cautioned to carefully handle their bridge throughout the remainder of the competition.

### 10.d. Presentation

Each team will create a poster board (24 inches x 36 inches) and highlight:

1. Team composition,
2. Design inspiration for the bridge,
3. 3D images of the bridge, and
4. Relevant print details.

Each team will give an oral presentation on their poster board. If a team has four members or fewer present at the 3DPC, all present team members shall participate in the oral presentation. If a team has more than four members present at the 3DPC, only four of the present team members need to

participate in the oral presentation. However, any team member present can answer a question asked by a judge.

#### 10.e. Assembled Bridge Inspection

Judges will first weigh the finished bridge. Judges will then weigh any spare or unused parts.

Judges will then inspect the finished bridge for Section 8 compliance.

#### 10.f. Loading

Judges will prepare the loading apparatus and install it on the finalized bridge in accordance with Section 9. Based on the randomly chosen loading condition, loading will be applied vertically at the established load point.

Once the apparatus is ready, the service load of 25 pounds will be hung from the established loading position. The deflection of the established load position will be measured. The deflection measurement should capture the total vertical movement from a no-load reference point or a zeroed digital indicator. If the no-load reference point for the deflection measurement moves during this stiffness test, the service load will be removed, and the judges will reestablish the no-load reference point before repeating the service load test.

Loading will then continue incrementally to bridge failure, contact of a bridge surface with the abutment outside of the original bearing area, or to maximum limit load of 70 pounds, whichever happens first. If more than 70 pounds of load is applied, the recorded capacity shall be 70 pounds.

#### 10.g. Post Load Testing

After a team has tested their bridge, the team shall do the following:

- 1) return the hanger rod and load plate to a judge,
- 2) return the load material (e.g., sand) to the storage container, and
- 3) if applicable, clean up broken bridge pieces and spilled load material.

## 11. Tips

The 3DPC Rules Committee provides the following tips for a successful bridge.

- a. Pre-competition testing of parts and bridge is permitted to optimize the bridge. Make sure that all parts can fit within the bed of the 3D printer you are using and within the parts box.
- b. 3D printed sockets tend to be slightly smaller than designed, so be sure to adjust your designs to accommodate shrinkage as the filament cools during printing. Test printing the connections will help you calibrate connection fit with your printer/filament.
- c. Check the fits of all components before the day of the competition. Parts can be sanded down to improve their connection fit.

- d. It is important to engage the entire superstructure in supporting the load—not just the bridge deck or the point at which the load is applied, so make sure the area where the load is applied to the deck is well-supported by the bridge structure to prevent a local failure.
- e. Because there is a maximum load of 70 pounds, a team only wants as much printed material as required to support the strength load. Designing a bridge capable of carrying more than 70 pounds is of no benefit. (The 70-pound load is based on the volume of sand that will nearly fill a 5-gallon bucket and not spill out.)

## 12. Scoring

### 12.a. Scoring Metrics

Five weighted metrics will be added in aggregate to determine a team's overall score. These metrics are listed and described in 12.a.1 through 12.a.5:

#### 12.a.1. Structural Efficiency

Structural Efficiency will be calculated by dividing the load capacity of the bridge or 70 pounds (whichever is smaller) by the weight (including weight penalties) of the bridge.

#### 12.a.2. Stiffness Efficiency

Stiffness Efficiency will be calculated by dividing 25 pounds by the deflection in inches divided by the bridge weight in pounds.

#### 12.a.3. Team Assembly Time

A team exceeding 15 minutes for initial assembly will receive an initial assembly time of 22 minutes, regardless of the actual time required to initially assemble the bridge.

Repair time will be multiplied by a penalty factor of 1.5 and will be added to the initial assembly time to determine the total assembly time.

The total assembly time will be multiplied by the number of team members participating in the assembly to calculate the Team assembly time.

After a team has finished assembling their bridge and, if necessary, repairs, no other repairs or alterations can be made to the assembled bridge in advance of the loading.

#### 12.a.4. Presentation

Judges will rank the presentations based on:

1. Readability of poster
2. Aesthetics of poster
3. Adherence to a 5-minute time limit. Presentations longer than 5 minutes will have 10 percent deducted from the presentation score for each increment of 30 seconds

over 5 minutes. Time required to answer questions is not included within the 5-minute time limit.

4. Presentation mechanics (speech projection, pace of delivery, eye contact with judges, flow of information, responses to questions, etc.).

#### 12.a.5. Design

The design theme for this 3DP Competition is **Accelerated Bridge Construction (ABC)**. Designs should reflect some aspects of the ABC mindset and keep ABC ideologies in mind throughout the design process and assembly of the bridge.

The design inspiration for a team's bridge should be highlighted on their poster and in their presentation. The design score will reflect how a team used their inspiration to design their bridge.

The design score will consider any innovations in the structural design process and 3D printing techniques (quality, resolution, and tolerances).

The printing shall include the name of the team's school (or organization) using a font size that is legible. The full name shall be readable on the assembled bridge. Raised or embossed (partial or full depth) printing of the name is acceptable. The design score will consider the readability of the name of the team's organization on the assembled bridge.

#### 12.b. Non-Compliance

Adherence to the rules is crucial to ensuring fair competition. Teams will be subject to penalties or disqualification for non-compliance with the rules. The judges are solely responsible for identifying non-compliance with the rules and noting the issues in the scoresheet. The Head Judge has final say over disqualifications and penalties. During the competition, the Head Judge can consult with the 3DPC Rules Committee regarding disqualifications and penalties to be sure that the rules are being correctly interpreted and applied. The 3DPC Rules Committee will not overturn or adjust subjective scoring of any of the judges.

Table 1 summarizes non-compliant issues that lead to the team/bridge being disqualified (DQ'd) from the competition and less severe non-compliant issues that lead to a penalty that impacts the competitiveness of the team/bridge.

Table 1: Summary of Non-Compliant Issues and Resolutions

| Issue                                                                                | Rule Section | Resolution | Scoring Penalty                                           |
|--------------------------------------------------------------------------------------|--------------|------------|-----------------------------------------------------------|
| Non-PLA Filament                                                                     | 7.a.         | DQ         | N.A.                                                      |
| Non-Extruded Filament                                                                | 7.a.         | DQ         | N.A.                                                      |
| Use of Adhesive or Welding                                                           | 7.c.         | DQ         | N.A.                                                      |
| Bridge Span Too Short                                                                | 8.a.         | DQ         | N.A.                                                      |
| Incorrect Location of Any Required Hole in the Deck for Load Hanger                  | 8.d.         | DQ         | N.A.                                                      |
| Inability to Install Loading Plate and/or Hanger                                     | 9.b.         | DQ         | N.A.                                                      |
| All Bridge and Spare Parts Not Fitting in Parts Box                                  | 7.b.         | Penalty    | Weight of Non-Fitting Bridge Parts Added to Bridge Weight |
| Bridge Too Long                                                                      | 8.a.         | Penalty    | 10% Increase in Bridge Weight                             |
| Bridge Extends Above Envelope                                                        | 8.b.         | Penalty    | 10% Increase in Bridge Weight                             |
| Bridge Extends Below Envelope                                                        | 8.b.         | Penalty    | 10% Increase in Bridge Weight                             |
| Bridge Depth Too Tall                                                                | 8.b.         | Penalty    | 20% Increase in Bridge Weight                             |
| Bridge Too Wide                                                                      | 8.b.         | Penalty    | 10% Increase in Bridge Weight                             |
| Prism does not Fit through Passageway                                                | 8.c.         | Penalty    | 15% Increase in Bridge Weight                             |
| Noncompliant Deck (Height above Bearing Surface, Length, Width, and/or Construction) | 8.d.         | Penalty    | 15% Increase in Bridge Weight                             |

## 12.c. Scoring Distribution

The maximum point values for each metric are shown below in Table 2.

Table 2: Maximum Point Value Per Metric

| Structural Efficiency | Stiffness Efficiency | Team Assembly Time | Presentation | Design |
|-----------------------|----------------------|--------------------|--------------|--------|
| 30                    | 30                   | 15                 | 15           | 10     |

Teams will receive points in **Structural Efficiency**, **Stiffness Efficiency**, **Presentation**, and **Design** metrics based on their score in proportion to the highest score achieved and multiplied by the maximum point value of the metric. An example scoring distribution is provided below:

| Team | Structural Efficiency Score | Calculation:<br>(Max Points) * [(Min Time) / (Time)] | Structural Efficiency Points |
|------|-----------------------------|------------------------------------------------------|------------------------------|
| A    | 22 (highest score)          | $30 * (22/22)$                                       | 30.0                         |
| B    | 17                          | $30 * (17/22)$                                       | 23.2                         |
| C    | 12                          | $30 * (12/22)$                                       | 16.4                         |
| D    | 9                           | $30 * (9/22)$                                        | 12.3                         |



Teams will receive points in the **Team Assembly Time** metric based on the lowest team assembly time received in proportion to their team assembly time and multiplied by the maximum point value of the metric. An example is provided below:

| Team | Team Assembly Time | Calculation:<br>(Max Points) * [(Min Time) / (Time)] | Team Assembly Time Points |
|------|--------------------|------------------------------------------------------|---------------------------|
| A    | 25 (shortest time) | $15 * (25/25)$                                       | 15.0                      |
| B    | 28                 | $15 * (25/28)$                                       | 13.4                      |
| C    | 65                 | $15 * (25/65)$                                       | 5.8                       |
| D    | 300                | $15 * (25/300)$                                      | 1.3                       |

## 13. Requests for Information (RFIs)

Requests for information (RFI) shall be submitted through the online [2027 ASCE 3D Printing Competition RFI Form](#). Clarifications will be posted on the [ASCE 3D Printing Competition Collaborate Site](#) approximately one week after being received starting September 25, 2026 until February 12, 2027. The cutoff date for submitting an RFI is Wednesday, February 3, 2027, at 11:59 p.m. Eastern Standard Time (EST). Those received after this date will not be acknowledged or addressed. **Teams are strongly encouraged to submit RFIs to avoid misinterpretation of the rules and project tasks. All RFIs will be made public.** All teams are responsible for all information provided in the Rules and Regulations and RFI responses posted to the Collaborate site.

## 14. Key Dates

|                                                          |                                    |
|----------------------------------------------------------|------------------------------------|
| Release of 3D Printing Competition Rules and Regulations | September 8, 2026                  |
| Intent and Eligibility Acknowledgement Form due date     | November 2, 2026 at 5:00 p.m. EST  |
| Last day to submit an RFI                                | February 3, 2027 at 11:59 p.m. EST |

## 15. Awards

Awards for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> places will be awarded for the highest overall scores.

Awards for 1<sup>st</sup> place will be awarded for the following metrics:

- Highest Structural Efficiency,
- Highest Stiffness Efficiency,
- Fastest Team Assembly Time,
- Best Presentation, and
- Best Design.

## 16. Judging

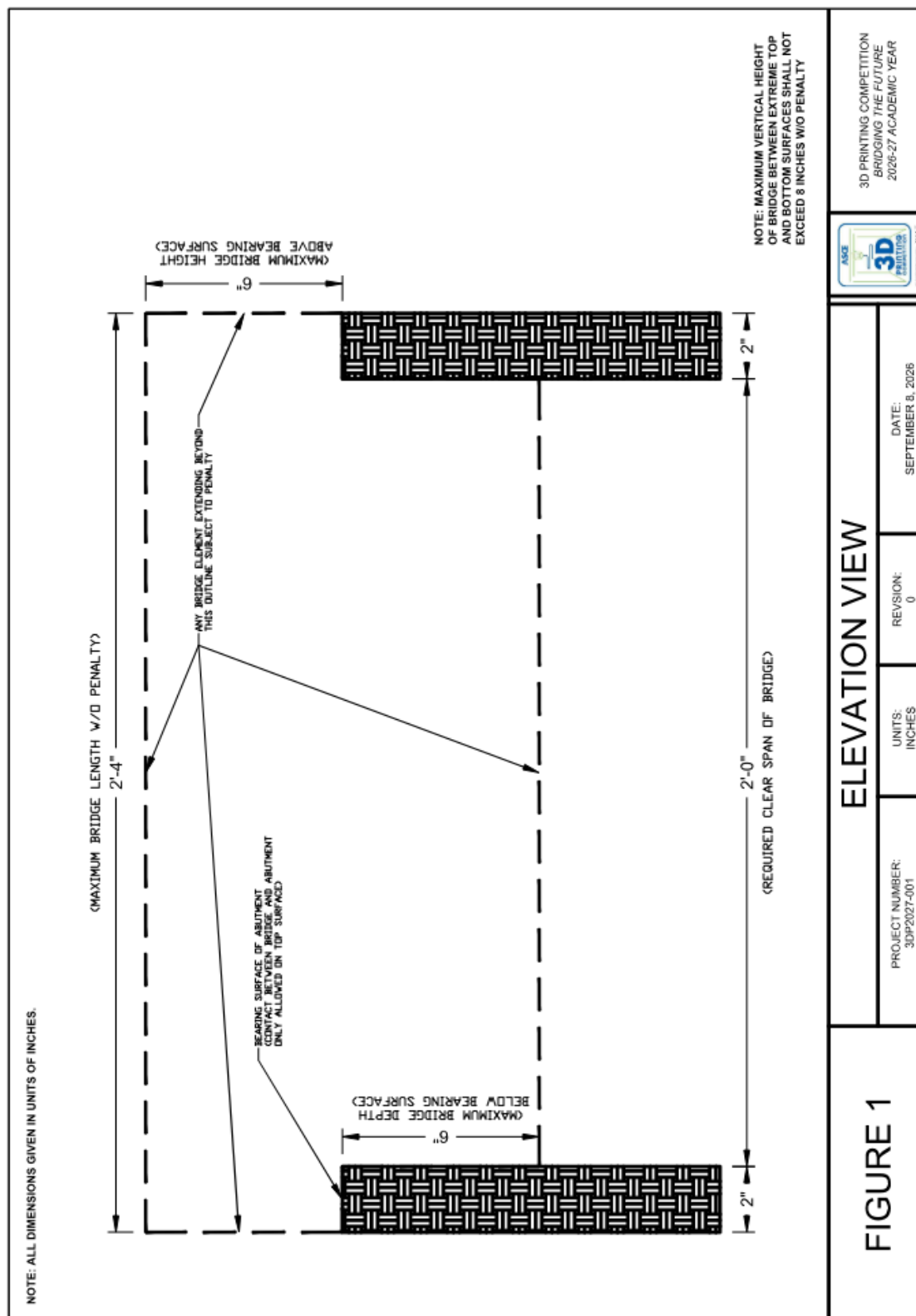
The host of each student symposium should recruit at least three judges, including the Head Judge, for the 3DP Competition. The 3DP Rules Committee recommends that the volunteer judges be from industry or academia, and have expertise in bridge design, structural testing, and/or 3D printing. Recruitment of a larger team of judges provides broader input related to the subjective scoring within the 3DP Competition and can allow for more parallel competition activity to shorten the time needed to run the 3DP Competition.

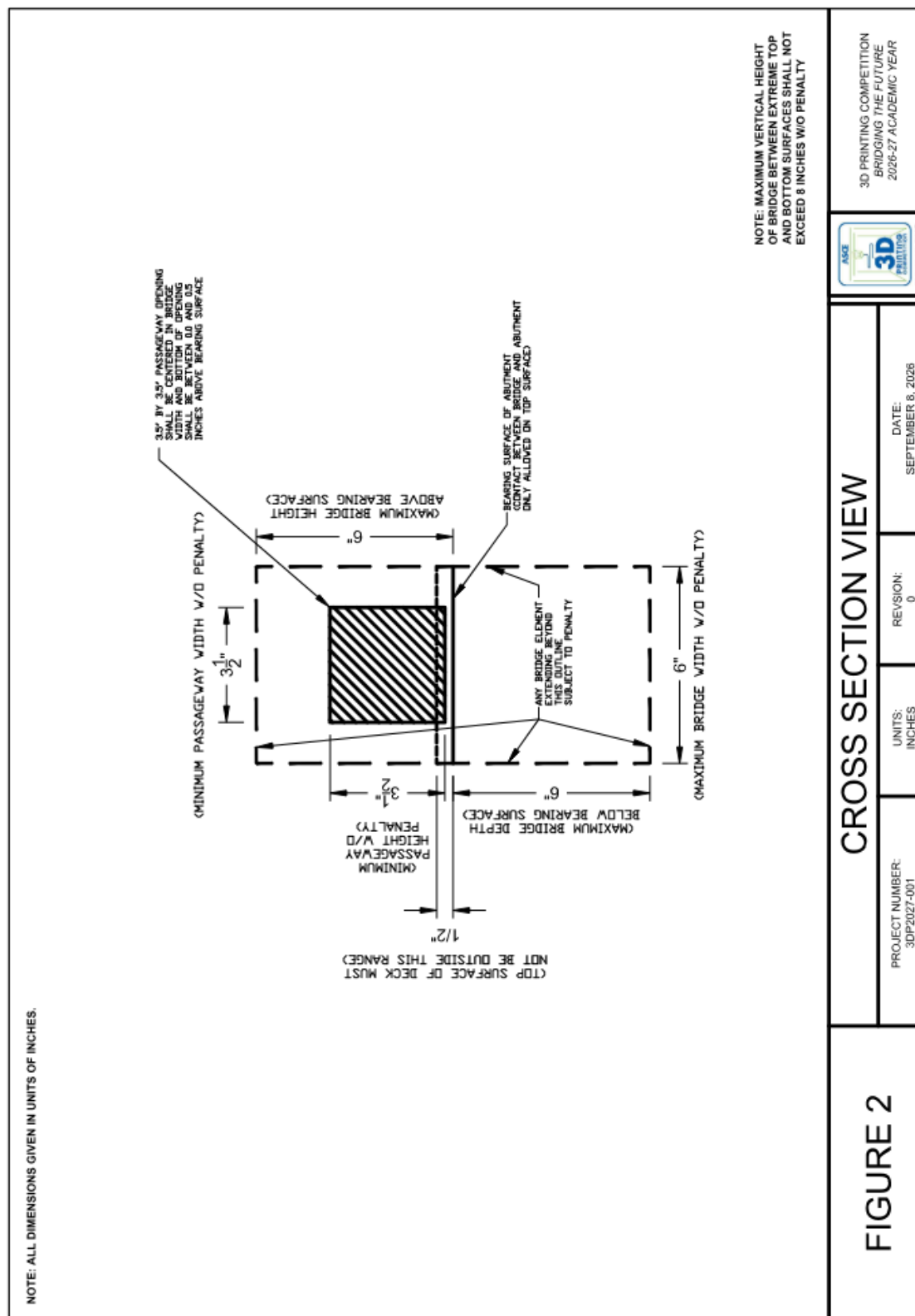
Judges should be well versed in the rules and RFI responses posted on the [Collaborate site](#). Judges for the 3DPC will have the opportunity to attend a live training webinar hosted by ASCE in February 2027 or view the recording of the training webinar.

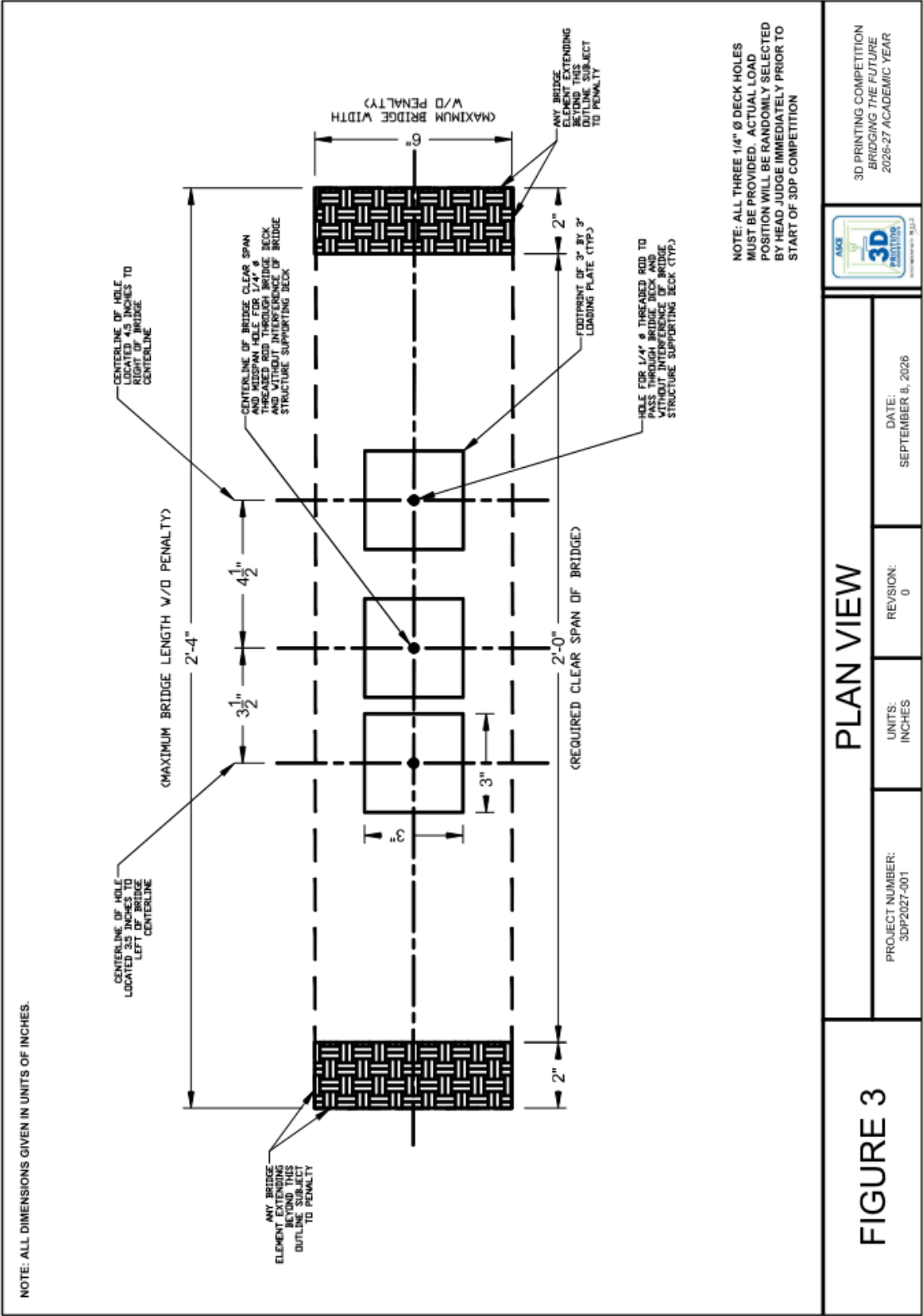
Judges will enter scoring data into the official electronic scoring spreadsheet for each team. Paper judging forms, provided by the 3DP Competition Rules Committee, may be used to facilitate the scoring process. The spreadsheet will calculate the points in each metric and rank the non-DQ'd teams in the overall total. A summary report is provided to the symposium host for their records and distribution to the competition teams.

At the end of the student symposium competition, the Head Judge will upload the completed official scoring spreadsheet for the 3DP Competition to ASCE's Cerberus ftp server for archival and for use by the 3DP Rules Committee. The official scoring spreadsheet shall not be distributed to the host school or teams.

## Appendix A. Figures of Drawings







## Appendix B. Eligibility for Student Symposium Competitions

The purpose of student competitions is to provide student members with career-enrichment opportunities to gain hands-on, practical experience and leadership skills. Society Competitions are an important and special opportunity to showcase the engineering and professional skills of student teams. As such, mutual respect is required for all stakeholders, including competitors, judges, hosts, and guests. Participation in the Student Symposia competitions is a privilege, not a right. Failure to act professionally can result in sanctions, disqualifications, and loss of invitations.

### **Student Chapter Eligibility for Student Symposium Competitions**

The following qualifications are required of all ASCE Student Chapters to compete at the Student Symposium Competitions:

An ASCE Student Chapter must:

1. Be in good standing with ASCE:
  - a. Have paid their annual dues, as received by ASCE, no later than the start of their Student Symposium.
  - b. Have submitted their student chapter's full Annual Report or EZ Annual Reporting Form **no later than February 1, 11:59 p.m. Eastern Standard Time (EST).**

Questions regarding eligibility should be directed to [student@asce.org](mailto:student@asce.org).