

NCEES
*advancing licensure for
engineers and surveyors*

35th Annual Model Bridge Competition 2025 - 2026 Technical Specifications

LIVE! Watson Hall, Wentworth Institute of Technology

Competition Date: Saturday, February 7th, 2026

(Pre-recorded Teams need to arrange testing by 1/19/2026)

**DOCUMENT LAST MODIFIED: 11/09/2025: BRIDGE WEIGHT LIMIT
INCREASE TO 24 oz.**

Register for the competition at www.engineeryourfuture.org

Direct link: [CLICK HERE](#)



WELCOME TO THE 35th ANNUAL MODEL BRIDGE COMPETITION!

The Boston Society of Civil Engineers Section (BSCES) is proud to present the THIRTY-FIFTH annual Model Bridge Contest. This competition serves the important role of introducing students to the world of engineering and design. Through this contest, the BSCES aims to provide positive role models for students and enable them to visualize future opportunities in the STEM and engineering fields.

First, thank you to the NCEES for your very generous grant. These additional funds are allowing us to renovate and improve the loading devices, plus use a material we have been wanting to use for years: screws!

Also, thank you to each of you for your interest in the BSCES Model Bridge Competition. This document contains all you will need to know regarding model bridge specifications, basic bridge design concepts, and competition schedule including materials delivery and built bridge delivery information (for remote teams only). The following are the rules and regulations for the Model Bridge Contest. It is the responsibility of the contestants to follow and construct their bridges in accordance with the rules contained herein.

In general, teams competing simply bring their models on February 7th, 2026, at 8:30 AM to Watson Hall. If there is an individual team or two from a school that is unable to attend on competition day but others from the school will be attending, it is acceptable for those other *students* (not a parent or educator) to test the model. Otherwise, contact Reed Brockman as soon as possible to arrange early testing, which must be completed before January 19, 2026. Acceptable arrangements include setting up the device at a school/program, or by visiting AECOM at 1 Federal Street in Boston. All testing must be done in the presence of an official judge/coordinator.

NEW RULE: No bridges longer than 40" – we will no longer be placing bridges on the cinder blocks.

Second new rule: this year involves post screws – please use them as intended: no melting them down or doing anything that will cause a sharp edge and hurt someone.

Several changes were instituted a couple of years ago, and we want to bring attention to them. First, to allow teams to better explain the details to the judges in selecting the most aesthetic model, students may submit an information sheet (1 sheet, maximum 11x17, no fonts smaller than 10) with images and words to better inform the judges of the composition of the bridge in assessing the aesthetics. Second, we have done away with the concept of shipping bridges. It is preferred that all teams come to the competition. Third, there should be no teams with only one or greater than three competitors. We feel that teams of two get the most out of this competition, but we realize that there may be good reasons for teams of three, such as storage space for the models, and our goal is to not make any rules that may be prohibitive.

We will award prizes in 2 sub-categories: high school level and middle school level. The “cash prizes” will remain the overall winners (1st through 3rd) in the efficiency and aesthetic categories, but trophies will be given for middle and high school levels. Teams will also be invited to vote for their favorite bridges during the contest (nobody can vote for a bridge from their own program), and we will have a single “People’s Choice” trophy. This should be a fun one this year. We are excited about the materials, and we hope you all are also!

CONTENTS

Welcome to the 35th Annual Model Bridge Competition!	1
Bridge Specifications Checklist	3
Section 1: Introduction	5
Section 2: Competition Participants	6
Section 3: Bridge Specifications	7
3.1 Materials	7
3.2: Bridge Weight Limit	8
3.3: Bridge Span	8
3.4: Bridge Configuration	9
3.5: Loading the Bridge	10
3.6: Failure of the Bridge	13
3.7: Disqualification	13
Section 4: Materials Delivery, Pre-Competition Deliverables / Requirements	14
Section 5: Most Aesthetic Model Judging	14
Section 6: Competition Day	15
Section 7: Finding a Mentor and Other BSCES Assistance	15
 APPENDIX A: JUDGING FORM - EFFICIENCY TESTING	 17
APPENDIX B: JUDGING FORM - AESTHETICS (PARTIAL CLIP)	18
APPENDIX C: WENTWORTH MAP SHOWING WATSON HALL AND PARKING	19

BRIDGE SPECIFICATIONS CHECKLIST

This checklist is to help you make sure your bridge complies with specifications. Make sure you read through the full specification!

☐ The bridge is completely made of these materials:

McKennon Jumbo craft sticks (each team will get approximately 500 craft sticks)

- <https://a.co/d/0tHibQ6>
- Material: birch
- Thickness: 1/16 inch / 2 mm
- Length: 6 inches / 15 cm
- Width: 11/16 inch / 1.75 cm
- 192 sticks per pound
- Rounded ends

TruBind Chicago Post Screws

- Aluminum
- Shafts are 3/16" diameter
- Each team will receive 100 that have ¼" long posts and 50 with ½" long posts
- ¼" Long: <https://a.co/d/hwChMOo>
- ½" Long: <https://a.co/d/eN6vPIW> - 100 sets weigh 3.7 ounces.

Gardzen Jute Gardening Twine

- <https://a.co/d/hUSHeal>
- Each team receives a 328 ft roll
- 3-ply
- 2mm diameter

FOR CREATING HOLES IN CRAFT STICKS: CGERMA ¼" diameter single hole punch, 15 sheet capacity

- <https://a.co/d/fnRb8cD>

Note: for pricing, craft sticks were bought in boxes of 1000. The intent is that each team gets 500, which is more than double the allowable bridge weight, so you have plenty of material for experimentation.

- **The bridge weighs 24 ounces (1.5#) or less.** The “MOST EFFICIENT” winner is determined by efficiency ratio (see **the Bridge Specifications Section 1**). You do not need to build up to the weight limit – there is no minimum bridge weight. Lower weight bridges taking higher loads will have high efficiency ratios.
- The bridge height is not greater than 23”. The maximum model dimension is 7” wide x 24” tall x 40” long. The minimum model dimension is 4 1/4” wide x NO MINIMUM HEIGHT x 38” long. All dimensions above will be verified square to the bridge and the minimum at any point will be considered for the minimum allowable, and the maximum at any point will be considered for the maximum allowable. **See the Bridge Specifications Section 3.3** for a figure explaining the bridge lengths and load test setup. Bridges under 38” in length may not test well because the bearing area will be short.
- The bridge shall have a roadway that either runs through the bridge or runs over the top side of the bridge. The roadway must be along the entire length of the bridge so that a scale truck (4” wide by 4” tall by 8” long, with a transfer bar above, **see figure 3A and 3B**) could drive from start to end over or through the bridge. The roadway does not need to be a continuous surface, but make sure there are strong supports for the truck to be placed at any point along the bridge roadway length!
- If the bridge is a through truss or through girder type, the roadway between the main carrying members must be 4 1/4” wide. The scale truck shall fit along the length of the roadway, and the loading apparatus bars shall extend out the sides of the truck.
- **If being tested remotely, each educator must coordinate the logistics with Reed Brockman reed.brockman@aecom.com well before January 19th, 2026.**

SECTION 1: INTRODUCTION

The goal of this competition is to design and construct a structure with the specified materials that can adhere to the following:

- Span a gap between 2 tables spaced 36 inches apart (to avoid length issues, all bridges must be at least 38" long). This can be done in one of two ways:
 - o 38" – 39 ¾" without packing shims made of index cards between the bridge and the concrete blocks at the back of the loading device, which are 40" apart, as horizontal end restraints.
 - o 39 ¾" to 40" using index cards packed between the bridge and the concrete blocks to provide horizontal end restraint.

See Section 3.3: Bridge Span for more information.

- Fit a model truck (4" wide x 4" tall) through the bridge or along the topside of the bridge. To accomplish this with the truck interior to the bridge cross section, the bridge roadway (space between trusses or through girders) must be a minimum 4 ¼".

See Sections 3.4 & 3.5 for more information.

- Hold at least the weight of the model truck plus loading device, which is approximately 9 ½ lbs.
- Weigh at most 24 ounces. Data about material weights is stated elsewhere in these rules/specifications.

Prizes will be awarded in the following categories:

- **Most Efficient:** Bridge efficiency is defined as the ratio of total load supported to self-weight of the bridge. The winner of this award will be the bridge with the highest efficiency value. In the event of a tie, the bridge with the higher aesthetic ranking will be declared the winner.
- **Most Aesthetic:** Aesthetics is based on craftsmanship, creativity, and display of sound design principles. The winner will be determined by the judges. In the event of a tie, the more efficient bridge will be declared the winner. As it pertains to remote teams, all qualifying failed models will be brought to the competition for aesthetic judging. Teams will be allowed to do cosmetic repairs. Teams are encouraged to take pictures while building their bridges and create an information sheet about their bridge. There may be details not readily evident to judges, and we want each team to be able to show that off. It can be a maximum of 1 single 11x17 page with fonts or lettering at least that of a 10 font. The judges will only be using the information on the sheet to help judge the aesthetics – the sheet itself will not be judged on its own aesthetics.

SECTION 2: COMPETITION PARTICIPANTS

This competition is available for students between the 5th grade and 12th grade in the greater Massachusetts area. **TEAMS MUST BE EITHER 2 OR 3 PARTICIPANTS. IT IS THE PREFERENCE OF OUR PROGRAM TO HAVE TEAMS OF TWO OVER TEAMS OF THREE.** BSCES strives to emphasize the importance of working in a group, which is essential to engineering. Participants shall not be on multiple teams, and no team may register more than one bridge for the competition.

All design and construction work for the model bridge (including devices that assist in fabrication, such as templates) shall be done only by the team members. Teachers, parents, and mentors are encouraged to provide education and guidance; however, they should not take control of design and construction. The overall goal of the competition is for students to learn how to think like an engineer and feel the pride that an engineer feels as they successfully build a model bridge of their own design.

There is no upper cap on the number of teams competing from one school, but we know we cannot handle more than 100 teams total in the competition. It is also the preference of the organizers that teams compete live at the event as opposed to being remotely on video. We will visit schools or work to have schools bring the models to us to be tested prior to the competition, but we encourage any team that can make it to the actual competition to attend, as we know it is a wonderful experience.

SECTION 3: BRIDGE SPECIFICATIONS

All the rules and specifications within this section must be followed to qualify for this contest. **BSCES will allow testing of all bridges, but if specifications are not met, bridge will not qualify for prizes.**

3.1 Materials

Bridges shall be built entirely of the materials listed in the preceding BRIDGE SPECIFICATIONS CHECKLIST.

Use of any other material may be grounds for disqualification. Before structures can be admitted officially in the testing corral, official BSCES volunteers running the registration will ensure that all officially accepted bridges meet length, width, height, and weight restrictions. We will, after all official bridges are tested, load the bridges not meeting specifications, but they will not be eligible for any prize but the "People's Choice Award".

Structures may not be brushed, sprayed, or dipped in any coating material. This includes, but is not limited to, coatings such as stickers, glue, fabric, or any film-like coating. Non-structural decoration (tempura or watercolor paint, markers, pens, pencils, crayons, etc.) of the bridges is allowed. All questionable materials should be checked with the model bridge coordinator (reed.brockman@aecom.com) before being used. BSCES requests that any decorations be tasteful and appropriate. Inappropriate markings on the bridges will be grounds for disqualification at the judging panel's discretion.

NOTE TO EDUCATORS/MENTORS: Our program is all about having the students do their own exploration and design, and that regardless of how well equipped a school may be and how surrounded a group may be with experts in skills or knowledge, we want a level playing field. Please refrain from using laser cutters for anything more than straight cuts. Please refrain from building jigs or clamping devices for the teams. Absolutely do not provide any design details/templates or construct any portion of any bridge. We know we have a wide range of ages/abilities of students and safety is of course a top priority. The craft sticks were tested extensively and a sixth grader had no issues cutting them with a standard pair of scissors (both the small safety ones and 8" scissors) and the same 6th grader also easily punched holes in the craft sticks with the supplied punch. DO NOT MODIFY THE CHICAGO POST SCREWS IN ANY WAY. Twine, of course, is easily cut with even school safety scissors. **ANY SCHOOL/PROGRAM NEEDING SCISSORS – PLEASE REACH OUT IMMEDIATELY AND THESE WILL BE PROVIDED.** We know in the past we sent everything needed to all teams with the materials, but many schools told us this was not necessary and to better utilize our funds we choose to only send them to those with need.

Once the bridges are loaded, another inspection of the bridges by the judging panel can be made to ensure that the proper materials were used that were not visible prior to testing.

In general, all students should follow this as a rule of thumb: if you feel you are bending the rules, please don't. Which leads us to the last rule:

ALL DECISIONS OF THE JUDGES ARE FINAL. During the building, if you have any questions or need any clarification about rules or specifications, please contact reed.brockman@aecom.com.

3.2: Bridge Weight Limit

Refer to the preceding BRIDGE SPECIFICATIONS CHECKLIST for the bridge weight limit. Bridges at the competition have until 10 AM to comply and can return to the model registration tables repeatedly before that time to check conformance. It is sometimes strategic to make the bridge well under the weight limit.

3.3: Bridge Span

The bridge will span between tables that are 36 inches apart. There will be 7 5/8" tall concrete (CMU) blocks that will be secured to each table 2" from the edge. The bridge must rest on the top surface of the table between the concrete blocks. The bridge cannot be adhered or attached to the blocks in any way, however it may contact and bear on the blocks. The bottom of the bridge ends (the bearing area) must be level and stable and the bridge must be able to stand on its own under the effects of gravity when supporting the loading device.

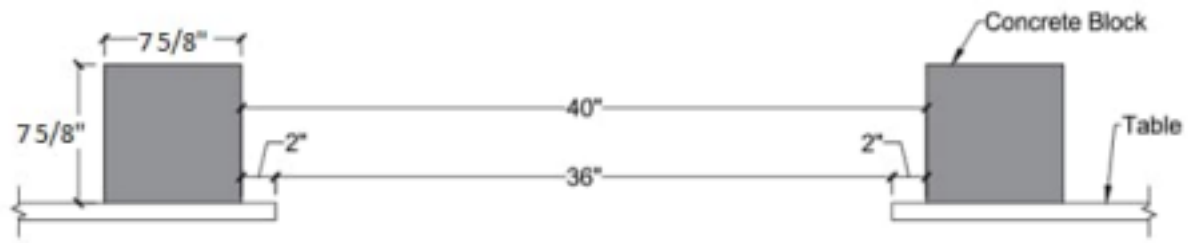


Figure 1: Span of Bridge

The bridge will need to span across the 36" gap, but shall be less than 40". It is recommended that bridges be at least 38" in length to allow for proper bearing area on the table. If a model is between $39\frac{3}{4}$ " and 40", the ends can be shimmed with index cards to resist horizontal thrust.

3.4: Bridge Configuration

NOTE: THE LOADING DEVICE IS UNDERGOING EXTENSIVE RENNOVATION, BUT THE CONFIGURATION WILL REMAIN THE SAME EXCEPT BRIDGES OVER 40" WILL NO LONGER BE PERMITTED.

Top of Bridge

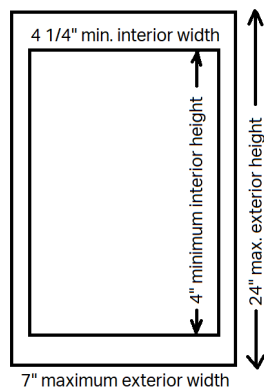
No portion of the bridge shall extend more than 24" above the table surface. The minimum height shown in Figure 2 only applies to trucks placed inside the bridge. There is no minimum height for trucks on top of the bridge.

Bottom of Bridge

No portion of the bridge shall extend below the top surface of the table. Bridges will be permitted to extend below the top surface of the table only if it is due to incidental deflection of the bridge under loading (but note the amount of deflection permitted due to load is limited). **See *Failure of Bridge* Section 3.6** for more information.

Bridge Width

The overall width is limited to 7 inches maximum. The roadway width shall be a minimum of 4 1/4



inches. The roadway is defined as the distance between the interior edges of the bridge in the case of a through truss, or the overall width of the bridge when the roadway is on top of the bridge. **See Figure 2.**

Figure 2: Cross Section of Bridge with Roadway through Bridge

Figure 3a is a section view of the truck inside and on top of the bridge.

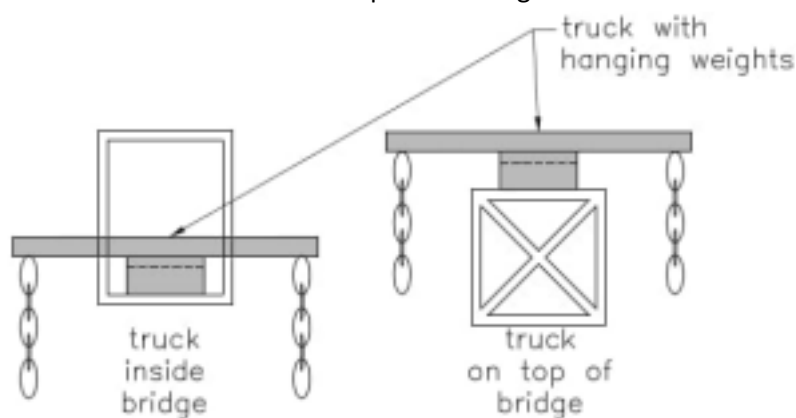


Figure 3a: Different Ways to Load the Bridge - Section Views

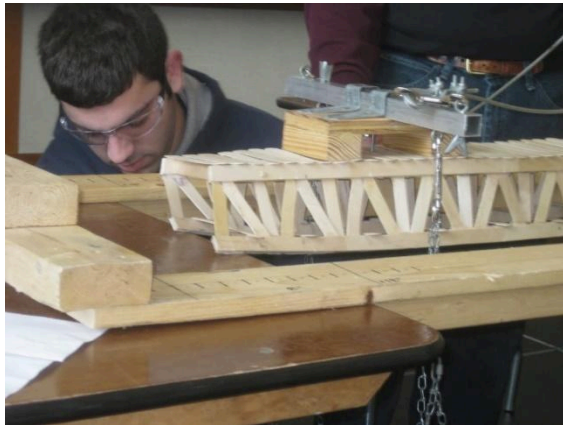
Truck Support Along Span

The roadway/loading surface must be provided at all potential wheel support locations (**see Figure 7**). Since the truck that is loaded has “wheels” that are each 2” wide, the roadway shall have enough material to prevent the wheel from falling through. There should not be any obstructions that would prohibit the truck from “driving” across the bridge span.

Geometry Verification

When teams arrive at the competition, they visit a registration table, and all models are checked to see that they meet specifications. If they do not, modifications are allowed until 9:30 AM – at that time all models must be in the “corral” for the judges to perform a review. There is no limit to the number of times a model can be revised from 8:30 to 9:30. Teams can also give an up to 11x17 page to the judges with their model showcasing details of their design.

3.5: Loading the Bridge



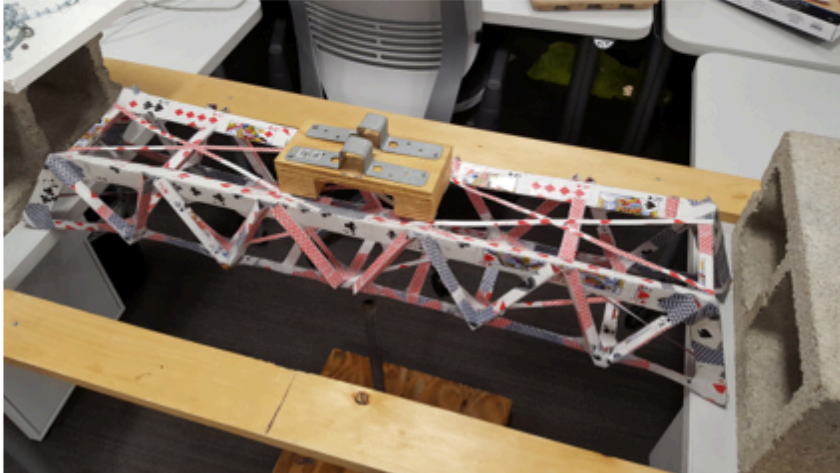
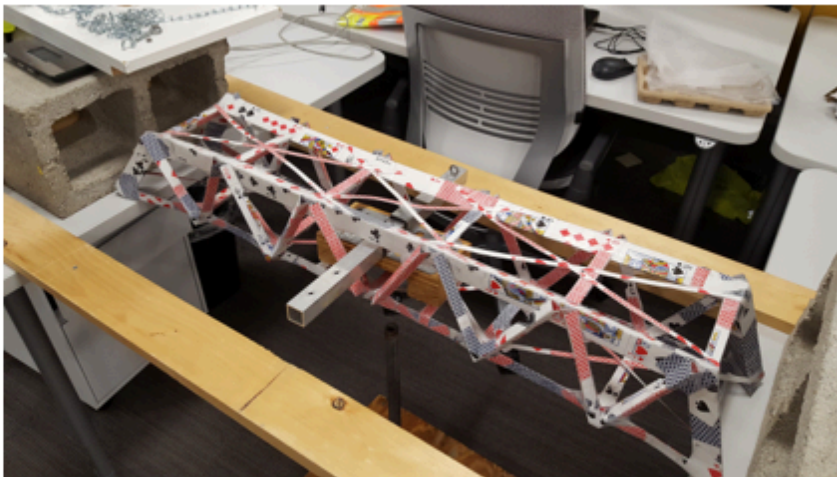


Figure 3b:

Top: Example of Loading device placed on top of bridge.



Bottom:

Example of loading device located inside the bridge. There must be room for the loading device to fit inside the structure as well as room for the transfer bar to fit in between truss members.

1. In order to be loaded, the bridge shall be capable of supporting an initial weight of the loading apparatus (approximately 2 lb truck + 7.5 lb loading platform = 9.5 lbs).
2. The truck will be placed on the loading surface at a point that will be determined by the roll of a die, which will take place at the time all bridges are received (see Figure 7). The random point will remain the same for all teams. A load transfer bar will be placed across the top of the truck with chains suspending a loading platform beneath the bridge. The loading platform is set on 4" tall blocks to assure that when the platform touches the base, the deflection of 4" has been exceeded. Participants will test each structure by placing the supplied weights onto the loading platform until failure. All bridges will be checked to assure the crossbar will fit prior to the competition.

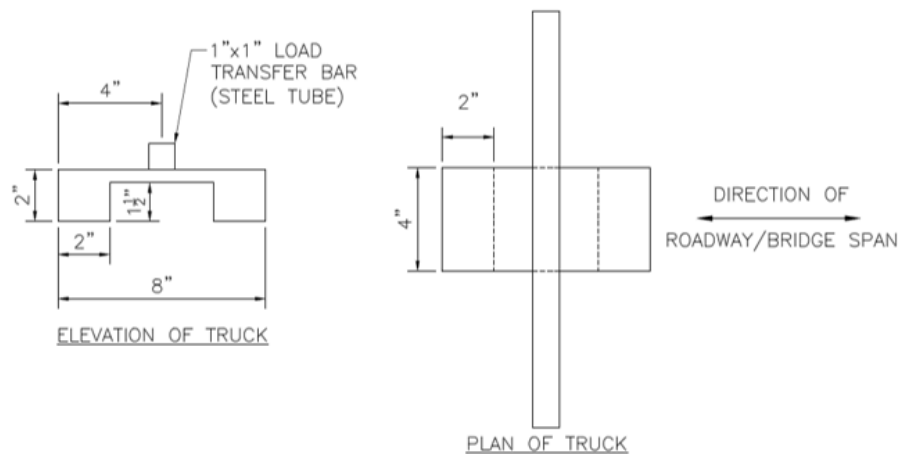


Figure 4: Details of Truck

3. Loading is limited to 250 lbs. of free weights. Loading is also limited to the top of the center support pole (18.5"). As a little advice when loading, numerous lighter weights, when stacked, will take up more height on the pole than fewer heavier weights, when stacked. This should play a role during your loading session. Once loads are applied (touch the weight below), they cannot be removed. Any new load being applied at the time of bridge failure will not be counted towards the recorded loading. At the moment a newly applied weight touches the weights below it all weights below are official. It is completely the responsibility of the design team to decide how best to apply the loads, and they can communicate their plans for loading through the linked form. Down at the level of the loading platform, if that platform becomes out of plane, a judge will hook an outer edge of the platform to prevent the edge from touching the base but the "truck" will not be repositioned on the bridge once loading is underway.
4. The loading apparatus (truck + loading platform) must be capable of being supported on the loading surface (roadway) as shown in the diagram. This means that your structure MUST have enough roadway surface for the truck to be placed at one of the six locations along span (see Figure 7), but each bridge does not need a continuous surface. The roadway should be reasonably level (some arch is permitted) from one end of the bridge to the other without obstruction. Bridges with roadways that have excessive slope causing the truck to slide off of the bridge will not be aided in the loading process and tested as best possible.

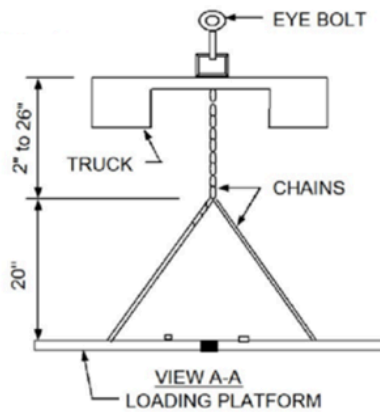


Figure 5: Loading Apparatus with Truck

5. If the roadway surface is not along the top of structure, the design must allow for a 1" x 1" load transfer bar (see Figure 4) to be passed through the bridge transversely with the bar's underside 2" above the loading surface, without causing interference with the structure during testing. The design must accommodate the truck being placed in any of the possible loading areas.

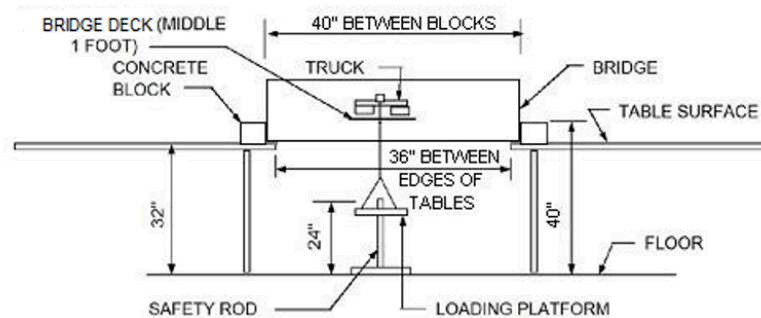


Figure 6: Sketch of Bridge with Roadway Surface through Bridge

6. The concrete blocks provided on the loading tables are there for bridges that exert a horizontal force (e.g. arch bridges). These concrete blocks will be restrained and unable to slide apart. In cases where the bridge exerts a horizontal force on the blocks (e.g. thrust from arch bridges), the blocks can be counted on to resist horizontal forces. If your design intent is to utilize the concrete blocks to resist horizontal thrust, please limit the end to end length of your structure to be under 40" by at least 1/16". The judges will fill the small gap with index card shims. It is the responsibility of the designers to have gaps of consistent width. Each shim will be placed alongside and parallel to each other.
7. In order for a bridge to be selected as the most aesthetically pleasing bridge, it must carry the minimum specified weight (9.5 lbs = loading device + truck).

A diagram of a table with a ruler and blocks. The table has a brown top and a brown base. A yellow ruler is placed on the table top, with markings from 0 to 60 inches. A block is placed on the table top, with a label 'no max length' pointing to its top edge. The block has a height of 20 inches, a width of 19 inches, and a depth of 18 inches. The block is labeled with the number 4. Below the ruler, there are six colored blocks arranged in two rows. The top row has three blocks: a red block labeled 1, a yellow block labeled 2, and a green block labeled 3. The bottom row has three blocks: a cyan block labeled 4, a purple block labeled 5, and a pink block labeled 6. A label 'Table Top' points to the surface where the ruler and blocks are placed.

A roll of 1 or 5 will be centered. A roll of 2 or 3 will be offset 4" from midspan. A roll of 4 or 6 will offset 8" from the center.

1. Failure is defined as a fracture of primary members causing either the “truck” to not bear on the roadway or an abrupt drop in elevation for a truck that would be extremely hazardous for a driver. It is also considered failure if the deflection of the structure causes the truck to settle more than 4" (dropping the weights to the base). Slippage from the bearings or overturning of the structure is also considered failure.
2. Settlement is measured by the distance of the underside of the loading platform to the top surface of the centering device. Upon placing the loading device on the bridge, the cables are set snug with 4" blocks holding a 4" space available for deflection. BSCES officials will have a stick to pick up the exterior edge of the loading platform if the loading device rotates as the bridge is loaded, but it will only be used to keep the edge from touching and never pick up the actual load of the weights.

3.7: Disqualification

INAPPROPRIATE OR DISRESPECTFUL MARKINGS ON A BRIDGE MODEL – Disqualification.

INAPPROPRIATE OR DISRESPECTFUL BEHAVIOR OR INTENTIONALLY NEGATIVELY AFFECTING ANY TEAM DURING LOADING OR ANY OTHER TEAM'S BRIDGE AT ANY TIME - Disqualification.

Section 4: Materials Delivery, Pre-Competition Deliverables / Requirements

Materials Delivery

Around Halloween, materials will be delivered to each educator. It is up to the educator to distribute materials to students. To avoid shipping costs, BSCES may contact educators to deliver materials, but many may be shipped. For every model, the following will be supplied:

- 500 JUMBO CRAFT STICKS
- 100 - ¼" LONG CHICAGO POST SCREWS (⅜" diameter post)
- 50 - ½" LONG CHICAGO POST SCREWS (⅜" diameter post)
- 1 ROLL OF JUTE GARDEN TWINE
- One ¼" diameter hole punch
- Cutting devices (scissors or utility knives) will only be sent upon special request.

***NOTE: Educators may purchase additional materials. The amazon products have links earlier in these rules. BSCES is only supplying the materials listed above for each team.**

Registration

It is up to the teachers to assure all students are correctly registered at <https://forms.gle/Cemh5mBYoXxQNego8>

Post-Competition Package Delivery from BSCES

Prizes, results, T-shirts, etc. will be sent within 2 weeks after the competition. All packages will be delivered to the teachers for distribution. Model bridges will not be returned to students participating remotely.

Section 5: Most Aesthetic Model Judging

The aesthetics will be judged in person by judges at the competition. Judges may also review one additional page submitted by each team showcasing design details that may not be obvious to the judges, such as internal details not visible on the surface. One page, one sided, no lettering smaller than a 10 font. Images/sketches are encouraged. **A sample of the Aesthetic Judging Form is included on page 19.**

The judges in general consider the following factors equally in judging this award:

- Craftsmanship (symmetry where appropriate, precision cutting/folding/connecting)
- Sound design practices (wider hollow members in compression areas and thinner in tension areas, adequate bracing, high moments of inertia of areas in high bending, thickened cross sectional members in areas of high shear / crushing, etc.)
- Visual appearance

Section 6: Competition Day

February 7th, 2026, 8:30 AM – noon (registration table opens at 8:30 and testing begins at 10 AM). Parking will be available in both the east and west lots. A map is included in Appendix C. Parking is free. Wentworth does an amazing job with signage to guide you but both lots are right by Watson Hall. Buses will fit in these lots.

All bridges will be weighed, measured, checked/scored for deductions, and judged for the “Most Aesthetic” award prior to the start of the competition at 10 AM.

Format:

The competition will be live with a camera showing the competition via a Teams meeting. Virtual teams will be tested by judges/volunteers first, followed by the in person participants. Our hope is that this contest will be viewable by the entire public, so we will not mention full names of students in the broadcast.

Challenges:

It must be clear that the volunteers are doing the best they can, and have no bias.

Any CHALLENGES during the competition must be brought up immediately. A STUDENT must present the challenge directly to the contest coordinator, Reed Brockman, at the time it is recognized as an issue. The competition will pause, and the issue will be discussed by the judges.

The judges’ decisions will be final. Any challenges, complaints, or appeals after the competition will not be allowed.

Aesthetics:

The bridges will be examined for the most aesthetic award (see criteria elsewhere in this handbook) before any bridges are load tested. Please note that for a bridge to be selected as the most aesthetic bridge, it must carry the minimum load of **9.5 lbs (the weight of the loading apparatus)**.

Load Testing:

Each bridge (aside from those requested not to be tested fully) will be loaded as previously described until failure. Individuals that do not want their bridge tested to failure may request this on competition day. We recommend loading the bridges to failure. There is no set plan for preserving bridges after the competition anyway, other than in video and photographic form.

Prizes:

Each overall first place team member receives \$100 Amazon card, each 2nd place team member receives a \$75 Amazon card, each 3rd place team member receives a \$50 Amazon card. Prizes for high school level, middle school level will be only as trophies or similar.

Section 7: Finding a Mentor and Other BSCES Assistance

Schools wanting mentors can request this of BSCES. Overall, it works best to keep them virtual.

While we expect that your school will CORI check volunteers, we also check on our volunteers and have them take a training about working with school children ([“Stewards of Children”](https://www.d2l.org/training-catalog/stewards-of-children/) training via <https://www.d2l.org/training-catalog/stewards-of-children/>)

In general, it is between the educator and mentor to arrange virtual meetings with competitors. Mentors are not to be working with competitors without an educator involved.

The BSCES also runs hands-on activities to help teach about a wide variety of bridges and run tours of the bridges in Boston.

As an added bonus for those who read things until the end, here are some helpful hints that the volunteers developing this year's rules came up with:

- Look at the wood grain – is any direction stronger than another? Are they consistent?
- Find out the difference between a pinned and a moment connection.
- This material sounds easy but it has its challenges, so take the time to experiment and see how it behaves.
- Be careful of out-of-plane forces – think about how you brace it and decide whether you want to put the roadway near the top or the bottom of the structure.
- If you poke a hole near the end of a craft stick, how strong is that remaining wood behind the hole if the stick is in tension?
- There is a good place to use the twine and a good place to use the screws – play around and figure it out.
- The craft sticks can be cut with standard scissors.
- Thin members buckle if they have excessive unbraced lengths.
- Nobody said the twine is only for connections.
- How much do the sticks weigh? The twine? The screw sets?
- Are there any advantages to having multiple connections along the same sticks?
- Think about where exactly the truck may be placed. Are there ways to make the bridge stronger at those locations?
- Does the loading device fit through at every location?
- Can you bend the craft sticks without breaking them? What if they are wet?
- Think like an engineer, do the research on all tips listed above, sketch out designs, make test models (as best you can) and improve on what you have, work together as a team and talk ideas through.

● **HAVE FUN WITH IT!**

APPENDIX A: JUDGING FORM - LOAD TESTING

FOR JUDGES ONLY:

WEIGHT

BRIDGE WEIGHT (POUNDS, 2 DECIMALS)	POUNDS
DEVICE WEIGHT (depends on which loading rig, approx. 9.50#)	POUNDS
APPLIED LOAD WITHOUT WEIGHTS (SUM OF ABOVE)	POUNDS

FOR JUDGES – COMPETITION DAY

BRIDGE NAME	
SCHOOL	
PARTICIPANTS	
GRADES	
EDUCATOR	
ROADWAY LOCATION	
SELF-WEIGHT	
AESTHETIC RANK (N/A IF NOT TOP 5)	
TOTAL WEIGHTS APPLIED (Last weight added at failure does not count)	POUNDS
TOTAL LOAD APPLIED (TLA) (SELF WEIGHT, LOADING DEVICE AND WEIGHTS)	POUNDS
EFFICIENCY RATIO (COMPETITION WEIGHT / SELF WEIGHT OF BRIDGE)	

APPENDIX B: JUDGING FORM - AESTHETICS (PARTIAL CLIP)

Aesthetics Judging Sheet						
Judge Name:						
Team Number	Complexity	Structural	Craftsmanship	Originality	Overall Aesthetics	Total Points
	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	SUM
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

