Student Steel Bridge Supplemental Competition

2021 Rules

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Stronger.
Steel.

WELCOME

This document which is available at **www.aisc.org/ssbc**, describes the Supplemental Competition to the Student Steel Bridge Competition (SSBC). This Supplemental Competition is being conducted this year to provide a broader breadth of opportunities for teams to experience the SSBC in light of potential restrictions imposed by the ongoing pandemic. The Supplemental Competition is open to any student team that meets the eligibility requirements, whether or not they are competing in the Main SSBC Competition. Clarifications, which include any revisions to the rules, are published at **www.aisc.org/ssbc** and do not appear in this document although they are formal addenda to the rules. The website includes the form for requesting clarifications and other information. Information at the website takes priority over any other source except as herein noted.

Cover Image taken by T. Bart Quimby.

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Section S1
OVERVIEW

The Supplemental Competition has been developed with the same vision and mission as the Main Student Steel Bridge Competition while recognizing that the ability to fabricate a bridge, practice construction, and travel to a competition may be restricted for some students and teams due to the ongoing pandemic. To address this unique challenge, the Supplemental Competition has been developed to allow teams to participate in a competition while completing the requirements remotely and thereby still empowering students to acquire, demonstrate, and value the knowledge and skills that they will use as the future generation of steel design professionals.

The Supplemental Competition continues to challenge students to extend their classroom knowledge to a practical steel design project that grows their interpersonal and professional skills, encourages innovation, and fosters impactful relationships between students and faculty, and students and industry professionals. Now, maybe more than ever, these interactions and relationships are important to develop.

Students are challenged to an intercollegiate competition that supplements their education with a comprehensive, student-driven experience involving design conception, analysis, construction planning, and professional skills. This experience will culminate in a portfolio that will be critiqued and judged by industry professionals, steel construction specialists, and members of academia based on the ability of a team to adequately and professionally present a bridge design that meets the client's specifications and optimizes performance and economy. Like the Main Competition, the Supplemental Competition increases awareness of real world engineering issues such as spatial constraints, material properties, modeling requirements, strength, serviceability, construction processes, aesthetics, project management, and cost. Success in competition requires application of engineering principles and theory, effective teamwork, and excellent communication and organizational skills. Future engineers are stimulated to innovate, practice professionalism, and use structural steel efficiently for their designs.

Students design, analyze, and develop the construction sequence for the same scale-model bridge that is described in the Main Competition Rules. Student teams should be familiar with the design requirements stipulated in the Main Competition Rules document. Student teams will complete the requirements of the Supplemental Competition by themselves, but may consult with faculty and other advisors. The results will be critiqued and teams will be provided feedback on the portfolio that they submit.

STATEMENT ON INCLUSION

AISC supports and encourages the equitable opportunity for participation in the Student Steel Bridge Competition (SSBC) by all interested and eligible individuals without discrimination based on race; color; religion or faith; sex; gender identity or expression; sexual orientation; age; national origin; disability status; citizenship status; socio-economic background; genetics; protected veteran status; or any other characteristic protected in accordance with applicable federal, state, and local laws. Participation should be inclusive, open, and fair to all interested and eligible students.

COVID-19 STATEMENT

AISC requires all students to follow safety precautions in regards to the COVID-19 pandemic when participating in activities associated with the SSBC. Student teams should respect and follow all safety rules put in place by their respective schools as safety and student health is paramount. If a school's rules prohibit the ability to participate in the Main Competition, student teams are highly encouraged to participate in the Supplemental Competition, which can be completed by teams working remotely.

Section S2
INTRODUCTION

The rules for this Supplemental Competition are based on the rules and bridge layout for the Main Competition and thus refer to the design requirements (Section 8 - Material and Component Specifications and Section 9 - Structural Specifications), construction requirements (Section 10 - Construction Regulations) and loads and loading locations (Section 7- Schedule of Competition and Section 11 - Load Test Instructions) of the Main Competition Rules. The Problem Statement in Section 3 of the Main Competition Rules is the same for the Supplemental Competition with the exception that a scale model will not be fabricated as part of the Supplemental Competition, rather the bridge will be designed, analyzed under lateral and vertical loads and sequenced for construction. The rules accommodate a variety of designs and encourage innovation. Designers must consider the comparative advantages of various alternatives.

The rules are intended to be prescriptive but may require interpretation. The procedure for requesting clarification of the rules is described in Section S11, "Interpretation of Rules." Teams are encouraged to read this rules document from beginning to end.

Members of the Student Steel Bridge Competition Rules Committee are

- Bradley J. Dillman, P.E., VP Engineering, High Steel Structures
- Christopher Garrell, P.E.,Chief Bridge Engineer, NSBA
- Christina Harber, S.E., P.E., Director of Education, AISC
- Lawrence F. Kruth, P.E., Vice President of Engineering and Research, AISC
- Joel Lanning, Ph.D., P.E., Asst. Professor of Teaching, University of Calif., Irvine
- Jason McCormick, Ph.D., P.E., Assoc. Professor, University of Michigan
- John M. Parucki, Structural Steel Consultant
- Craig Quadrato, Ph.D., P.E., Senior Associate, Wiss, Janney, Elstner Associates
- Matthew Schultz, S.E., P.E., Wallace Engineering Structural Consultants
- Kimberly Stillmaker, Ph.D., P.E., Asst. Professor, California State Univ., Fresno

Official Scorekeeper

- Christopher Garrell, P.E.,Chief Bridge Engineer, NSBA

Section S3
PROBLEM STATEMENT

The Katy Trail State Park, located in Missouri, contains a recreational rail trail that runs along the former corridor of the Missouri-Kansas-Texas Railroad. The state park and trail offer opportunities for walkers, joggers, bicyclists, and equestrians to enjoy while stretching 240 miles between Clinton, MO and Machens, MO, much of which follows the Missouri River. Along the trail are a number of historic steel bridges such as the Lamine River Bridge, a through truss bridge built in 1910, and the Rivaux Creek Bridge, a parker pony truss bridge built in 1896, which serviced the railroad prior to the establishment of the Katy Trail State Park.

Historic floods along the Missouri River during the spring and summer of 2019 associated with heavy winter snowpack in the upper midwest and above average precipitation have led to a wash out along the Katy Trail. In order to maintain the functionality of the trail for all users, a steel bridge to cross a new waterway created by the flooding is proposed. Steel is chosen as the structural material because of its versatility, ease of prefabrication, ability for rapid erection, superior strength to weight ratio, durability, and high level of recycled content. Due to the configuration of the existing trail and the location of the new waterway, the bridge must be skewed with the new waterway running parallel to the skew.

A feasibility study was initiated in 2020 that included a competition to identify the best design for the limited access bridge. However, the study and competition was cancelled in April 2020 due to shutdowns associated with the COVID-19 pandemic. With the shutdowns being gradually lifted, the feasibility study and accompanying competition are being resumed. Your company is invited to compete in the 2021 supplemental portion of the competition by submitting design details, analysis findings, and construction sequencing for a 1:10 scale bridge in both written and video form. The bridge must have the ability to support pedestrian, bicyclists, equestrians, park vehicles, and emergency vehicles. Private motor vehicles are prohibited. Your company must demonstrate that the scale bridge model satisfies stability, strength, and serviceability requirements under the anticipated lateral and vertical loads. A proposed construction sequence must be developed and shown to be efficient and effective given the constraints of the construction site. Construction sequences requiring permanent or temporary piers will not be considered. Aesthetics of the bridge also is an important consideration. Engineers associated with the park will judge the competition and will award the design/build contract to the company whose model satisfies specified requirements and best achieves the project objectives. Models will not include deck, foundations, and approaches.

Design companies are encouraged to create diverse teams and treat everyone with respect. A team that creates a respectful, welcoming, and inclusive environment, and

is not predisposed to defined roles and biases, will benefit greatly from the creativity that diversity affords.

Any attempt to gain advantage by circumventing the intent of the competition as expressed by the rules, including this problem statement, or by misrepresenting analysis findings, will be grounds for rejecting a model and terminating that company's eligibility.

Section S4
ELIGIBILITY

S4.1 LEVELS OF COMPETITION

There are two levels of the Supplemental Student Steel Bridge Competition: Regional Events and the National Finals. These competitions are conducted virtually and do not require fabrication or travel. The Supplemental Competition Regional Events will be competed between teams that reside in the same region throughout the United States of America (USA). Schools shall pre-register at **www.aisc.org/ssbc** by October 30, 2020 in order to compete in a Supplemental Competition Regional Event for the following year. Each confirmed participating school will be assigned to a local region. The top team(s) from each Supplemental Competition Regional Event will then compete in the Supplemental Student Steel Bridge Competition National Finals.

S4.2 SUPPLEMENTAL COMPETITION REGIONAL EVENTS

S4.2.1 Only one entry per school may compete in a Supplemental Competition Regional Event, and a school may compete in only one Regional Event.

S4.2.2 A school is eligible to compete if it has an ABET accredited engineering or engineering technology program and is licensed or chartered in the USA or a territory of the USA.

S4.2.3 A team shall consist only of undergraduate and graduate students enrolled at the school for which they are representing during all or part of the fall through spring of the current competition academic year.

S4.2.4 A guest team is a team from a school that is not eligible to compete per Section S4.2.2. A guest team may compete in a Supplemental Competition Regional Event if it has obtained the approval of AISC, but will not be eligible for the Supplemental Competition National Finals.

S4.3 SUPPLEMENTAL COMPETITION NATIONAL FINALS

S4.3.1 A team is eligible to be invited to compete in the Supplemental Competition National Finals if it is a top team in the Supplemental Competition Regional Event.

S4.3.2 The maximum number of eligible teams from a Supplemental Competition Regional Event that will be invited to compete in the Supplemental Competition National Finals is based on the number of non-guest teams that competed at that Regional Event.

(1) The single team with the best ranking will be invited from a Supplemental Competition Regional Event in which two to ten teams competed.
(2) The top two ranked teams will be invited from a Supplemental Competition Regional Event in which ten to twenty teams competed.
(3) The top three ranked teams will be invited from a Supplemental Competition Regional Event in which more than twenty teams competed.

S4.3.3 A team competing at the Supplemental Competition National Finals shall consist only of undergraduate and graduate students who were enrolled at the school for which they are representing during all or part of the fall through spring of the current competition academic year leading up to the Supplemental Competition National Finals.

S4.3.4 No modification to the submission will be allowed between the Supplemental Competition Regional Event and Supplemental Competition National Finals.

Section S5
RANKING

S5.1 OVERVIEW

By its nature, the Supplemental Student Steel Bridge Competition is subjective given the flexibility that teams have in meeting the requirements of each competition category and the reliance on any type of hand calculations and/or computer software to evaluate the bridge's performance.

A team's submission will be evaluated using a ranking scale for each competition sub-category in order to determine the overall final rankings. The top five teams in each sub-category will receive points associated with their rankings.

1st place = 5 points
2nd place = 4 points
3rd place = 3 points
4th place = 2 points
5th place = 1 point
Greater than 5th place = 0 points

For the Supplemental Competition Regional Events, the team's submissions will be evaluated by one member of the Rules Committee, one member from industry, and one member from AISC. Conflicts of interest between judges and any of the competing teams in the region will be avoided. The same three judges will evaluate all submissions from a region.

For the Supplemental Competition National Finals, all previous rankings and points will be cleared and all eligible submissions will be evaluated by two members of the Rules Committee (one from academia and one from industry or AISC), two members from industry, and two members from AISC. Conflicts of interest between judges and any of the competing teams will be avoided. The Supplemental Competition National Finals also will include a public vote that will carry the weight of 3 subcategories (3 x earned points). Each team's video submission will be made publicly available for viewing and the public will be able to vote on their top team. The teams will be ranked in this category based on their total number of votes.

For the Supplemental Competition Regional Events and National Finals, the total number of points gained across all sub-categories from each judge will be used to determine the final ranking of the team's submissions. Ties will be broken by the team with the largest number of points gained in the video category (see Section S5.2.4). If a tie still exists, then the judges will vote on their top submission from those that are tied, and the submission with the majority of votes will be ranked ahead of the other(s).

The school with the top ranked submission coming out of the Supplemental Competition National Finals will receive an automatic invitation to the 2022 Main Student Steel Bridge Competition National Finals provided that they compete in a 2022 Main Competition Regional Event.

S5.2 SUPPLEMENTAL COMPETITION CATEGORIES

Competition categories are Design, Analysis, Construction Sequencing, and Video. An additional category, Public Vote, is only applicable to the Supplemental Competition National Finals. Points gained in each of these categories will be summed to determine the overall ranking of the submissions.

S5.2.1 Design

An award will be given to the team that obtains the largest total number of points in the sub-categories of *design process*, *aesthetics*, *design innovation*, and *design compliance*.

S5.2.2 Analysis

An award will be given to the team that obtains the largest total number of points in the sub-categories of *lateral deflection*, *vertical deflection*, *stability analysis*, and *model verification*.

S5.2.3 Construction Sequencing

An award will be given to the team that obtains the largest total number of points in the sub-categories of *construction planning*, *construction procedure*, and *construction innovation*.

S5.2.4 Video

An award will be given to the team that obtains the largest total number of points in the sub-categories of *communication clarity*, *informative content*, and *confidence*.

S5.2.5 Public Vote [Supplemental Competition National Finals Only]

An award will be given to the team that obtains the most public votes based solely on the public's opinion of the video submissions.

Section S6
DESIGN PORTION

S6.1 DESIGN OVERVIEW

Design requires consideration of the bridge's objectives and constraints associated with its geometry, fabrication, and construction. A good design efficiently uses material, considers ease of fabrication and construction, and allows the bridge to function properly under expected loads. Aesthetics and innovation also can play a significant role in the viability of bridges, particularly when reviewing potential options.

Student teams are asked to design a bridge that meets the Materials and Components Specifications in Section 8, Structural Specifications in Section 9, Construction Regulations in Section 10 and Load/Deflection Requirements in Section 7 and 11 of the Main Student Steel Bridge Competition Rules. Teams need to think about the underlying principles on which they are basing their design choices, the overall configuration of the individual members and overall bridge, the total number of pieces, and the overall weight of the bridge in meeting the structural and construction specifications.

S6.2 DESIGN DELIVERABLE

The deliverable for this portion of the Supplemental Competition is a brief design section in the written report. This section shall

(1) be a maximum of 5 pages of text (figures, tables, and necessary calculations shall be provided in an appendix that does not count against the 5 page total);
(2) contain a description of the design process, the principles used to select the final bridge configuration, and (if applicable) what software was used in the design process;
(3) It must also contain
    (a) the advantages and disadvantages of the selected overall bridge design,
    (b) a discussion of the aesthetic appeal of the overall bridge design,
    (c) an overview of any innovative features in the design and why they were selected;
    (d) information in regards to the selection of design features for individual members;
    (e) hand calculations showing design checks for one member (discussion in the text and calculations in the appendix);
    (f) a discussion of anticipated connection design; and
    (g) drawings of the overall bridge and individual members that show compliance with the Structural Specifications (in appendix).
(4) be written in a concise manner and contain a balance of clear and well-labeled plots and diagrams (as necessary).

S6.3 DESIGN EVALUATION

S6.3.1 Summary

Submissions will be ranked by the judges in four separate design sub-categories: *design process*, *aesthetics*, *design innovation* and *design compliance*. It is up to each team to decide how each of these sub-categories is conveyed in the written deliverable, but the quality, comprehensiveness, and clarity of the discussion will be important. In each of the sub-categories for design, the feasibility of the proposed design also will be taken into consideration. Design aspects that are not deemed feasible will not be highly ranked.

S6.3.2 Design Sub-Category Criteria

S6.3.2.1 *Design process* refers to the methods used by a team to develop the design of the overall bridge and individual members. The design process includes how different design configurations at the overall bridge and member level were evaluated in selecting the final design. Design calculations also fall into this sub-category.

S6.3.2.2 *Aesthetics* refers to the bridge's appearance, which includes its balance, proportion, and elegance.

S6.3.2.3 *Design innovation* refers to innovative approaches or features developed as part of the bridge or member design that allow the bridge to better meet the design requirements or improve constructability.

S6.3.2.4 *Design compliance* refers to how well the overall bridge and individual members meet the Materials and Components Specifications (Section 8 - Main Student Steel Bridge Competition Rules) and Structural Specifications (Section 9 - Main Student Steel Bridge Competition Rules).

Section S7
ANALYSIS PORTION

S7.1 ANALYSIS OVERVIEW

Structural analysis software is typically utilized by student teams in the design and planning stages of the SSBC. Likewise, analysis software is a crucial tool used by engineers on a day-to-day basis in order to efficiently carry out the many analyses necessary to design structures that conform to design specifications. Furthermore, structural analysis allows engineers, and SSBC teams, to predict the structural performance of their structures. However, in order for analysis results to be useful a number of engineering skills are needed. These include (i) accurate material and cross-sectional assignments, (ii) proper modeling techniques and assumptions, (iii) proper demands, (iv) a consideration for geometric imperfections, structural stability, and loading sequence, (v) accurate modeling of member end restraints, and (vi) the ability to verify the results generated by a computer analysis by employing fundamentals of structural analysis and approximate methods (e.g hand calculations).

S7.2 ANALYSIS DELIVERABLE

The deliverable for this portion of the Supplemental Competition is a brief analysis section in the written report. This section shall

(1) be a maximum of 5 pages of text (figures, tables, and necessary calculations shall be provided in an appendix that does not count against the 5 page total);
(2) contain a description of the analysis methods, techniques, and/or software used, including which features of the software package were used (if applicable);
(3) contain
    (a) a description of the analysis procedure for each analysis sub-category, including assumptions,
    (b) a description of the perceived limitations of the analysis,
    (c) a summary of the results in each analysis sub-category (necessary figures to show the required results should be provided in the appendix);
(4) be written in a concise manner and contain a balance of clear and well-labeled plots and diagrams (as necessary).

S7.3 ANALYSIS EVALUATION

S7.3.1 Summary

Submissions will be ranked in four separate analysis sub-categories: *lateral deflections*, *vertical deflections*, *stability analysis*, and *model verification*. The rankings are not based on the structural performance (i.e., minimizing deflection, etc). Rather, the

analysis category will be evaluated based on the quality, comprehensiveness, and balance between sophistication and practicality of the analyses (similar to what might be undertaken in a design office), modeling approach, and the clarity with which results are reported.

S7.3.2 Analysis Sub-Category Criteria

Analyses in the *lateral deflection*, *vertical deflection*, *stability analysis*, and *model verification* sub-categories are to be reported by each team competing in the 2021 Supplemental Competition. In each of these sub-categories, where applicable, the effects of member deformations, connection deformations, geometric imperfections, and/or reductions in member stiffness due to initial geometric imperfections shall be considered. Other conditions or effects may also be included as deemed necessary.

S7.3.2.1 *Lateral deflection* shall be estimated through analysis with loads, loading locations, deflection limits, and deflection measurement locations consistent with the lateral load testing of the Main Student Steel Bridge Competition as described in sub-sections 11.3, 11.4, and 12.2.

S7.3.2.2 *Vertical deflection* shall be estimated through analysis with loads, loading locations, deflection limits, and deflection measurement locations consistent with the vertical load testing of the Main Student Steel Bridge Competition as described in sub-sections 11.3, 11.5, and 12.2.

S7.3.2.3 *Stability analysis* shall consider the global stability of the bridge. Global stability refers to the ability of the bridge to withstand vertical loading without excessive lateral deflection. As described in sub-section 11.5 of the Main Student Steel Bridge Competition rules, sway is not to exceed one inch at any location.

S7.3.2.4 *Model verification* sub-category shall include hand calculations that verify analysis software results for the following:

(1) free-body diagram of a single beam that represents one of the bridge stringers, with the same end-to-end length, supports at appropriate locations to represent the piers, loads for one loading scenario, and reaction forces;
(2) shear and moment diagrams of the beam corresponding to the free-body diagram, showing peak magnitudes;
(3) internal load effects of at least one member and one loading scenario
(4) local stability of at least one member and one loading scenario (i.e., flexural and local buckling)
(5) vertical deflection of the bridge for two of the load cases in Section 7 of the Main Student Steel Bridge Competition Rules, considering a linear first-order analysis, at measurement locations consistent with the Main Student Steel Bridge Competition sub-section 11.5.

Section S8
CONSTRUCTION SEQUENCING PORTION

S8.1 CONSTRUCTION SEQUENCING OVERVIEW

How a bridge is constructed is as important as ensuring that it can carry its loads. Designers should take into account the erection process in developing their final design. The number of members, number of fasteners, types of connections, and how many builders are required are all important aspects to consider when developing the sequence by which the members will be attached to create the bridge. All construction processes for the Supplemental Competition must meet the Construction Regulations specified in Section 10 of the Main Student Steel Bridge Competition Rules.

S8.2 CONSTRUCTION SEQUENCING DELIVERABLE

The deliverable for this portion of the Supplemental Competition is a brief construction sequencing section in the written report. This section shall

(1) be a maximum of 5 pages of text (figures, tables, and necessary calculations shall be provided in an appendix that does not count against the 5 page total);
(2) contain a description of the methods used to decide the final construction sequencing including, but not limited to
    a. decisions on the types of connections,
    b. selection of the number of builders,
    c. evaluation of the efficiency of the construction sequence, and
    d. a calculation of the estimated total construction time and construction cost;
(3) Contain a description of the final construction sequence, including, but not limited to
    a. written and pictorial description of the construction sequence,
    b. any innovative construction methods developed, and
    c. potential difficulties in implementing the construction sequence in reality;
(4) be written in a concise manner and contain a balance of clear and well-labeled plots and diagrams (as necessary).

S8.3 CONSTRUCTION SEQUENCING EVALUATION

S8.3.1 Summary

Submissions will be ranked by the judges in three separate construction sequencing sub-categories: *construction planning*, *construction procedure*, and *construction innovation*. It is up to each team to decide how each of these sub-categories is

conveyed in the written deliverable, but the quality, comprehensiveness, and clarity of the discussion will be important.

S8.3.2 Construction Sequencing Sub-Category Criteria

S8.3.2.1 *Construction planning* refers to the methods used to evaluate different construction sequences and the process used to develop it. The criteria for choosing and importance of the types of connections, tools, number of builders, and location of builders in developing the construction sequence should clearly be conveyed.

S8.3.2.2 *Construction procedure* refers to the feasibility of the final construction procedure. The benefits and disadvantages of the proposed construction sequence should be clearly identified. Describe other construction sequences considered and eliminated as well as the reasons for elimination.

S8.3.2.3 *Construction innovation* refers to innovation in the procedure used to construct the bridge, whether it be in the connections, placement of builders, tools, or construction methods. Innovative techniques that are considered or may be necessary in order to complete the proposed construction sequencing should be clearly identified and described.

Section S9
VIDEO

S9.1 VIDEO OVERVIEW

Being able to convey the features of a design, the analysis conducted to verify that the design meets the structural specifications, and the procedure by which it will be constructed is critical to a client accepting the work of an engineer. Videos are one means of accomplishing this task provided that they are professional, concise and informative while also considering the level of knowledge of the viewing audience.

S9.2 VIDEO DELIVERABLES

The deliverable for this portion of the Supplemental Competition is a brief video. There are no restrictions on how the content is arranged and presented in the video, but the video shall

(1) be a maximum of 10 minutes long and be formatted in a manner that it can be posted to YouTube;
(2) be directed toward the owner who is using it to assist in the decision of which company to select to move forward with the bridge project (assume the owner has some technical background);
(3) summarize the design, analysis and construction aspects of the team's model bridge
    a. provide enough detail so that the owner/viewer can adequately evaluate the benefits and disadvantages of the proposed bridge,
    b. describe the process used in the design, analysis, and construction portions of the project, and
    c. highlight any innovative features associated with the design, analysis, and construction; and
(4) involve more than one team member in presenting the content.

S9.3 VIDEO EVALUATION

S9.3.1 Summary

Submissions will be ranked by the judges in three separate video sub-categories: *communication clarity*, *informative content*, and *confidence*. It is up to each team to decide how each of these sub-categories is conveyed in the video deliverable, but the quality, comprehensiveness, and clarity of the discussion will be important.

S9.3.2 Video Sub-Category Criteria

S9.3.2.1 The *communication clarity* sub-category refers to the quality of how the information is conveyed through the video. Judges will consider whether proper explanations are provided and whether supporting materials are used effectively.

S9.3.2.2 The *informative content* sub-category will be evaluated on whether enough information is provided so as to evaluate the design, analysis, and construction aspects of the model bridge. Specifically, rankings will be based on whether sufficient information is provided with a level of clarity and quality to be able to assess the merits of the model bridge.

S9.3.2.3 The *confidence* sub-category will be evaluated based on the level of confidence the owner/viewer has after watching the video that this bridge model is the right one to be selected for the project.

Section S10
SUBMISSION

Teams shall submit all materials for the Supplemental Competition at **aisc.org/ssbcsubmission** where there will be instructions on how to upload materials. All materials shall be submitted by March 1, 2021.

S10.1 WRITTEN DELIVERABLES

Reports shall be uploaded as PDF files (maximum 10 MB per file). The report shall contain:

(1) A cover page that includes a title, name of the school that the student team is representing, and the names of all students that contributed to the project;
(2) A table of contents that indicates the page numbers where the design, analysis, and construction sequencing sections begin as well as their respective sections in the appendix (sub-sections can be listed, but are not required);
(3) Standard 8.5” x 11” pages with 1” margins;
(4) Page numbers for all pages after the table of contents;
(5) Standard text font (e.g. Arial, Calibri, Times New Roman, etc.) that is at least 11 pt;
(6) Required materials based on the deliverables for each section;
(7) Appendices with the required materials based on the deliverables of each section (anything that is located in the appendix should be referenced in the main body of the text);

S10.2 VIDEO

Videos will be posted to YouTube. The videos shall introduce the school that the student team is representing, highlight those involved in the project, and meet the deliverables provided in Section S9.2. No specific requirements are placed on the format in which the video is saved provided that it can be played on YouTube. Specific directions on how to upload the video will be provided at **aisc.org/ssbcsubmission**.

Section S11
INTERPRETATION OF THE RULES

The website **www.aisc.org/ssbc** lists clarifications of the Supplemental Competition Rules. Students and judges may submit questions via a form on that website but should **first read the previously posted clarifications and reread this rules document carefully in its entirety**. Submitters' names and affiliations must accompany clarification requests and will be posted with the questions and answers. Questions shall be limited to interpretation of rules; specific designs approaches and analysis procedures will not be validated. Deliberation by the SSBC Rules Committee typically requires one to two weeks but possibly longer. Questions must be submitted before 5:00 PM Eastern Daylight-Saving Time, February 15, 2021.