Team-Based Challenge – Community Model

PROJECT OVERVIEW	
Team-Based Challenge Title	**Boomilever Build**
Source	Science Olympiad (soinc.org)
Industry Partner	SkyCiv
Endorsement Area	Manufacturing, Engineering, Technology, and Trades
Problem to Investigate/Scope	Teams will design and build a Boomilever meeting requirements specified in the rules to achieve the highest structural efficiency. 1. The Boomilever must be a single structure with no separate or detachable pieces, constructed of wood, and bonded by adhesive. No other materials are permitted. 2. The Boomilever must be designed to attach to the Testing Wall using a Mounting Hook. 3. The Boomilever must be designed to support the Loading Assembly so that the loading point (the centerline of the chain) is between 40 cm and 45 cm from the Testing Wall. 4. Before and through loading, no portion of the Boomilever may touch the TEsting Wall between the Contact Width Lines or below the Contact Depth line. Participants must be able to answer questions regarding the design, construction, and operation of the device.
Project Outcomes	Students will develop an understanding of design and construction of a load-bearing structure. They will take into account the parameters and limits of the structure, evaluate design solutions, test designs, and gather data for design modification and improvement.

PROJECT OUTLINE			
Stage:	**Topics/Events:**	**Timeline:**	**Deliverables:**
Preparation	- Set Expectations - Skill Development Part 1	Week 1-2	Complete the MY SO lesson plan on Structures to build an understanding of structure design and computer-assisted design (CAD) in structure design and pre-testing. Review the resources listed under "Practice Tests and Resources" > February on the MY SO webpage. Watch the STEM Session on Structures to better understand college and career pathways related to this challenge.
Project Plan	- Refine problem/question - Develop an approach to addressing	Weeks 3-4	Draft designs for the structure that match parameters and use CAD software (ex. SkyCiv) to test out variations of the design. Collect data on best designs.
Project Execution	- Build prototypes	Weeks 5-6	Refine building skills with assistance of mentors and resources. Build prototype of design and test (intentionally break it).
Project Presentation	- Build final product	Weeks 7-9	Build final structure for competition. Review concepts for question and answer period with judges.
Close Out	- Competition	Week 10	Final competition day.

This resource was created by Education Systems Center at Northern Illinois University.

The Illinois Work-Based Learning Innovation Network (I-WIN) is designed to help employers, educators, and students leverage innovative models for scaling high-quality work-based learning opportunities in school districts and community colleges across the State. This network explores ways to create equitable opportunities for students through both in-person and virtual learning. For more information on I-WIN and additional work-based learning resources, visit edsystemsniu.org/i-win/.

To access a resource bank of Team-Based Challenge templates, visit edsystemsniu.org/i-win-resources/.