Herff College of Engineering EDAY 2015  
*K'NEX BRIDGE*  
*Grades 1-8*

Each team will consist of four or fewer team members. Each school may have up to three teams entering the competition.

Student teams will compete with K’NEX bridges that they bring and submit to the judges on E-Day. Teams will submit their bridges from 9:30 am until 4:30 pm in Room 102C of the Engineering Administration Building at the University of Memphis. Structures will be submitted unassembled with all parts contained in a zip-lock bag no larger than 12 inches by 12 inches. The bag will be labeled with the submitting school’s name and the names of the team members.

**Rules**

- Structures must be submitted to the judges unassembled.
- All parts for the bridge must be K’NEX pieces that are commercially available. No panels, cable, strings may be included in the structure.
- All parts for the bridge must be contained in a zip-lock bag that is no larger than 12 inches by 12 inches. The bag must be sealed and labeled with the school’s name and the names of the team members.
- The mass of the bridge will be determined when it is submitted and will include the mass of the bag and any labels attached to the bag.
- After the bridge’s mass has been determined, no pieces may be added or subtracted from the pieces submitted in the zip-lock bag.

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• Glue is not allowed.
• K’NEX members cannot be coated or treated in any way.
• All structures must support a load of 35 pounds for three minutes.
• Figure 1 shows an example of the type of structure that should be constructed. This is referred to as a truss bridge. It is composed of two identical, parallel trusses that are connected together laterally. This is simply an example; many other configurations are possible.
• The structure must fit on the supports shown in Figure 1. The supports will be two tables, positioned 15 in. apart. The structure must be at least 2 in. wide but no more than 6 in. wide. No part of the structure may extend below the table surface.

Figure 1 - Typical Structure

• The 35-lb. load will be applied at the center of the structure’s span by stacking weights on a 6-inch-square piece of 1/2-inch plywood.

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• All members of the team may participate in the construction of the structure. Notes and sketches may be used to aid in the construction. No outside aid may be given during the building of the structure.

• The judges will measure the time needed for construction. Judges will tell each team when to begin construction. The team will signal to the judges when the construction is complete. After completion, no changes or modifications to the structure may be made.

• All construction must be completed within 30 minutes. After 30 minutes, construction will be stopped and the bridge will be disqualified.

• Failure is defined as bridge collapse or as the point where the structure can no longer support the load without significant deflection. The judges’ decision as to failure will be final.

• Each team will be responsible for the placement of the loading block on their structure, but the judges will place the weights on the loading block for safety reasons.

**Judging Criteria**

• Structural performance will be measured based on the build time and the mass of the bridge (and the bag holding the pieces).

• The final score will be computed using the formula:

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Score = 50 \times \frac{\text{Shortest Build Time of Any Bridge}}{\text{Build Time of Your Bridge}} \\
+ 50 \times \frac{\text{Lowest Mass of Any Bridge}}{\text{Mass of Your Bridge}}
\]

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• For example, assume the shortest construction time of any team was 590 seconds and the lowest mass of any bridge was 350 grams. If your build time was 742 seconds and your mass was 412 grams your score would be

\[
Score = 50 \times \frac{590}{742} + 50 \times \frac{350}{412} = 82.2
\]

• The structure with the highest score at the end of the competition will be judged as the winner.

• Final Standings and results will be sent to all competing schools.

Please send any questions about the competition to
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