



# SciOly Bridges

Annual NM State Competition



# Basics of Bridges

Build bridges to hold a bucket of sand

Number of Team Members- 2

Impound- None

Eye Protection- B

Event Time- 6 minutes



# Necessary To Bring To The Event

Structure (bridge)

Eye Protection of Category B (must provide protection from high inertia particle hazard and bear “Z87+” marking)

Design log of Event Bridge and bridges built for testing prior



# Construction of the Bridge

Single structure, one piece, no separable pieces

Made of wood and adhesive

Cross-sectional size of individual pieces of wood has no limit

Wood can be laminated without restriction

Before loading, no portion of the bridge may hang below the top of the test supports

Participants must be able to answer questions relating to the design, construction, and operation of the bridge



# Construction B

Bridge must be designed to hold the loading block at a height of at least 10 centimeters above the test supports

A 7 cm tall by 4 cm wide block must be able to pass through the bridge under the loading block from one end to the other

The clear span of the bridge will be 35 centimeters (the distance from one test support to the other)




# Construction C

Bridge must be designed to hold the loading block at a height of at least 15 centimeters above the test supports

A 12 cm tall by 7 cm wide block must be able to pass through the bridge under the loading block from one end to the other

The clear span of the bridge will be 45 centimeters (the distance from one test support to the other)



# Design Log of Test Bridge and Prior Bridges Must Include

Materials Used

Sketch of the Design

Weight and other dimensions of the bridge


Appropriate metric units for all numerical values

Predictions: Load held and weak points

Test results: Load held and breaking point(s)

Observations and recommended design improvements

Cover page with Team Name and Team Number for the current tournament



## Design Log of Test Bridge and Prior Bridges Must Include (cont.)

If a machine was used as a tool to build the team's device (bridge) or any component of said device is must be noted in the design log

Information about the tool hardware, software, materials, and supplies used

Details of the source of any digital files utilized by the tool: including at least where the file was obtained including web address if downloaded from the internet

Descriptions of how the team constructed the final device from the tool created components

All logs submitted will be returned to teams





# Check-in

Present structure (bridge) for inspection and measurement

Place structure on the scale to measure mass

Submit estimated load in the event of a tie

No alterations may be made to the bridge after check-in process has been started

Before testing: the combined load of the loading assembly and the sand will be checked to insure that it is at least 15000 grams but less than 15200 grams



# Testing

6 minutes

Load as much sand into the bucket before structure failure

Participants may stabilize the bucket **WITHOUT** direct contact

After structure failure, pieces of the structure in the bucket will be removed so that the load can be measured



# Scoring

Score of a team= (Load score in grams)/(Mass of the structure in grams)

Load score= Mass of load in grams + Bonus points in grams

If a structure supports a load of 15000 grams the bonus will be 5000 grams

Tiers separate teams by any infractions of the rules and the severity of the infractions

Ties are broken by:

Closest estimation of supported load mass

Lowest structure mass