



2024 Bridge Contest

Review of the Qualification Process



What Are Bridge Qualifications?

When your bridge is brought to BNL, our engineers fill out an inspection report to determine if it qualifies

This inspection report is a guide and does not replace the official specification document found at www.bnl.gov/bridgebuilding



2024 Model Bridge Inspection Report

School Name		Mass	
Student Name		Load at Failure*	
Bridge Number		Efficiency	

*If load > 50 kg, 50 kg will be used in the efficiency calculation

LOC	ITEM	CRITERIA	Q	DQ
1	Materials	Only 3/32-inch (2.4 mm) square basswood and any commonly available adhesive, with no stain/paint/coating		
2a	Mass	Max 25.00 grams		
2b	Span (S)	Min 300. mm		
2b	Length (L)	Max 400. mm		
2b	Lower Extension	No part of the bridge extends below the support surface		
2b	Height (H)	Max 150. mm		
2b	Width (W)	Max 80. mm		
2c	Load Plane Height (P)	100. mm \leq P \leq 150. mm above the support surface, on the physical top of the bridge		
2e	Symmetry	Bridge is symmetrical longitudinally and transversely (visual)		
2d	Loading Points	30. mm and 50. mm on either side of center in the same horizontal plane		
2d	Level Loading Plane	Loading plate (without rod) can be pushed smoothly along the loading plane between loading points		
6a	Load Application Vertical Clearance	Loading plate and rod clearance at all load points from above and below		

FOR REFERENCE ONLY

This sheet does not replace the official rules and regulations, which can be found at www.bnl.gov/bridgebuilding

The measurements referred to in this presentation are based on the 2024 bridge specifications and are subject to change each year

Checking Materials and Mass

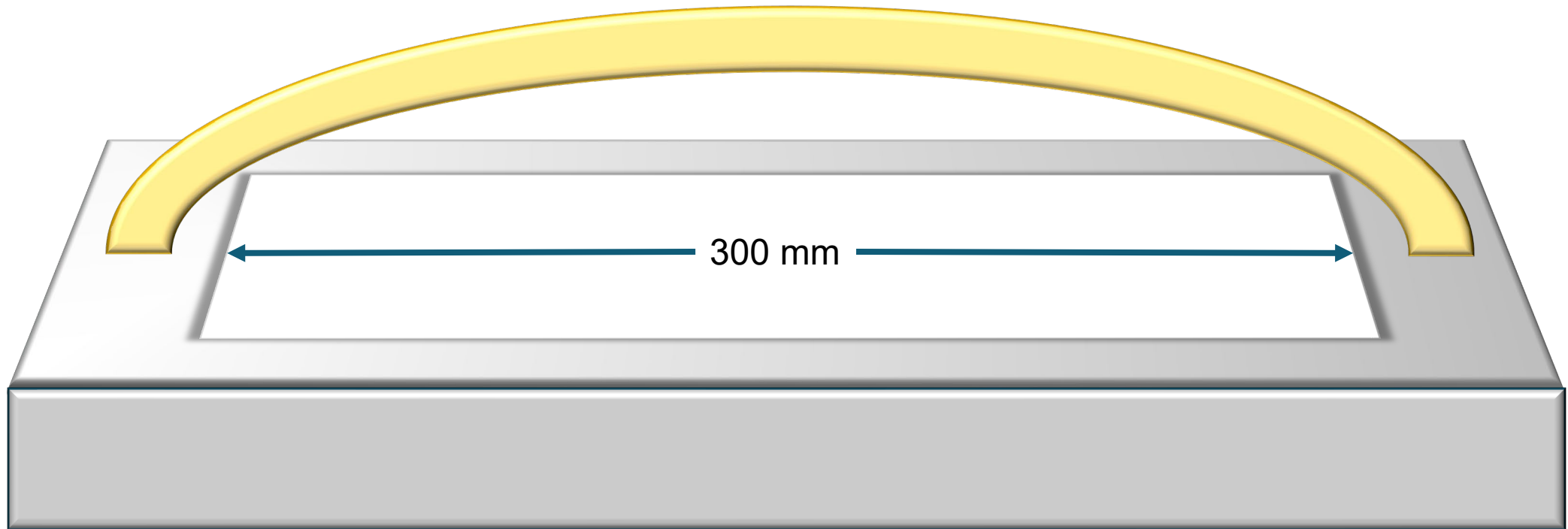


- Your bridge will first be weighed on a digital scale
 - It must be 25g or less
- Engineers will confirm that it is made with 3/32-inch square basswood
- They will also check that it does not have a coating (stain, paint, etc.)

Checking the Bridge Span

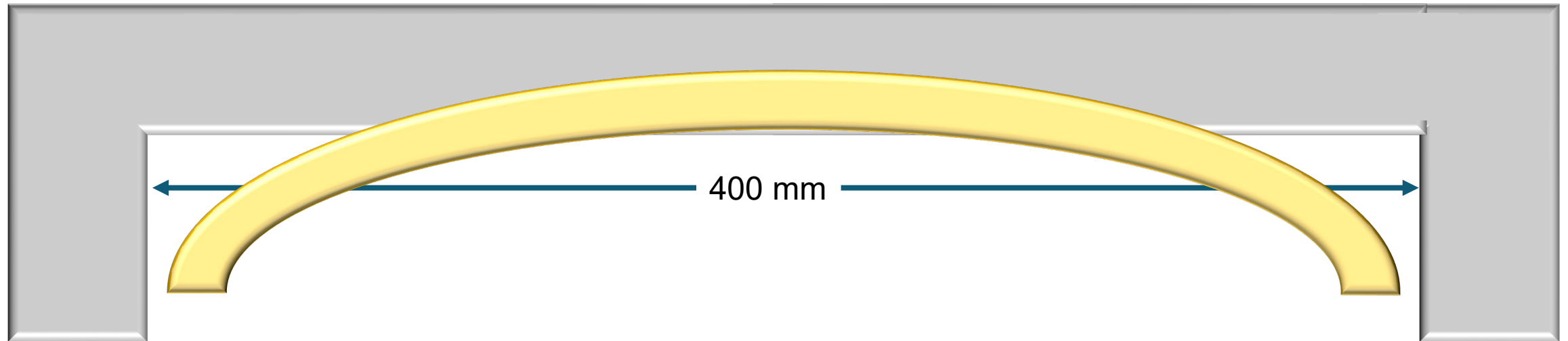
Your bridge must sit on this block without falling into the opening.

No part of the bridge can be below the opening on this block.



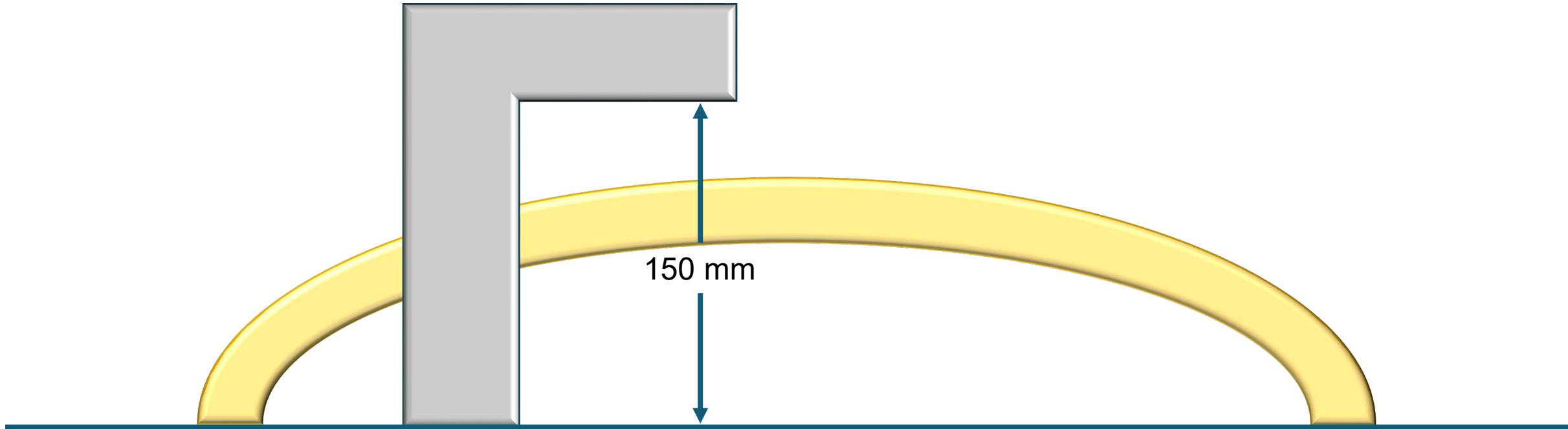
Checking the Bridge Length

The length of the bridge must fit between the two ends of the U shape.



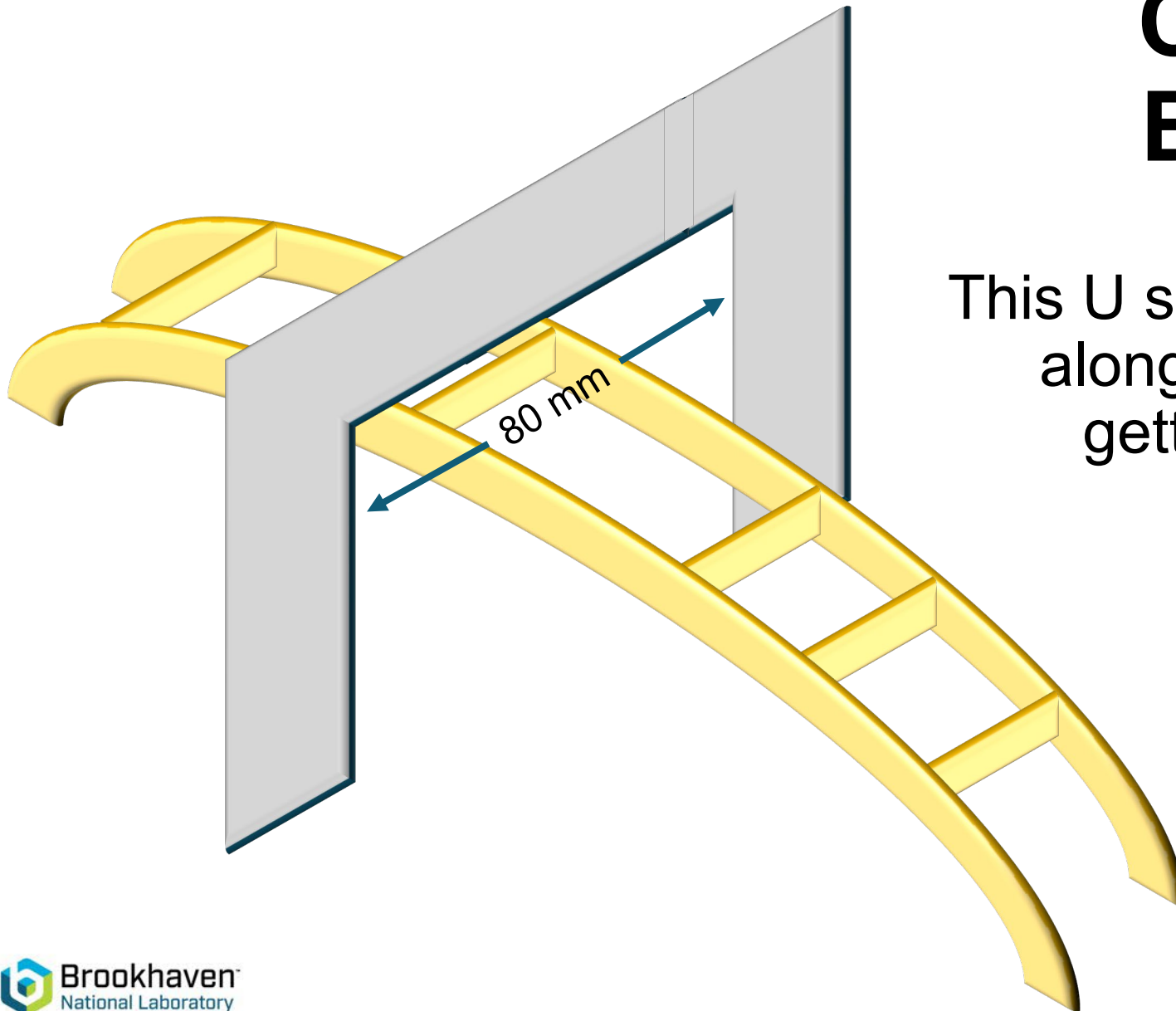
Checking the Bridge Height

The length of the bridge must fit under this shape at all points.



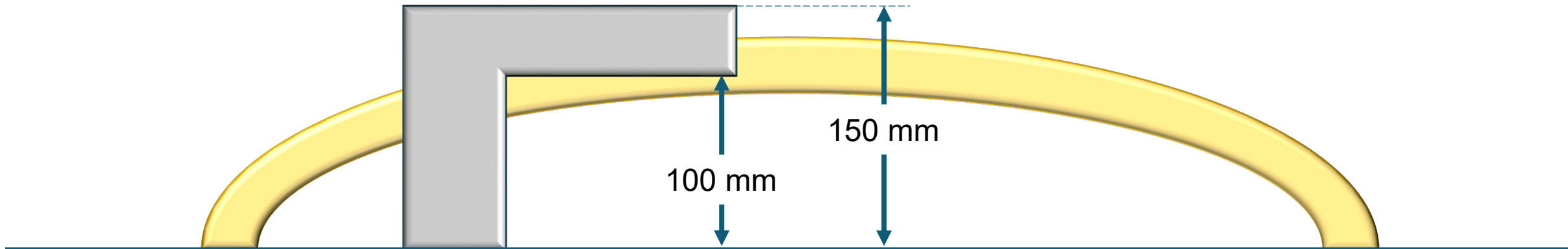
Checking the Bridge Width

This U shape must be able to move along the entire bridge without getting caught on anything.



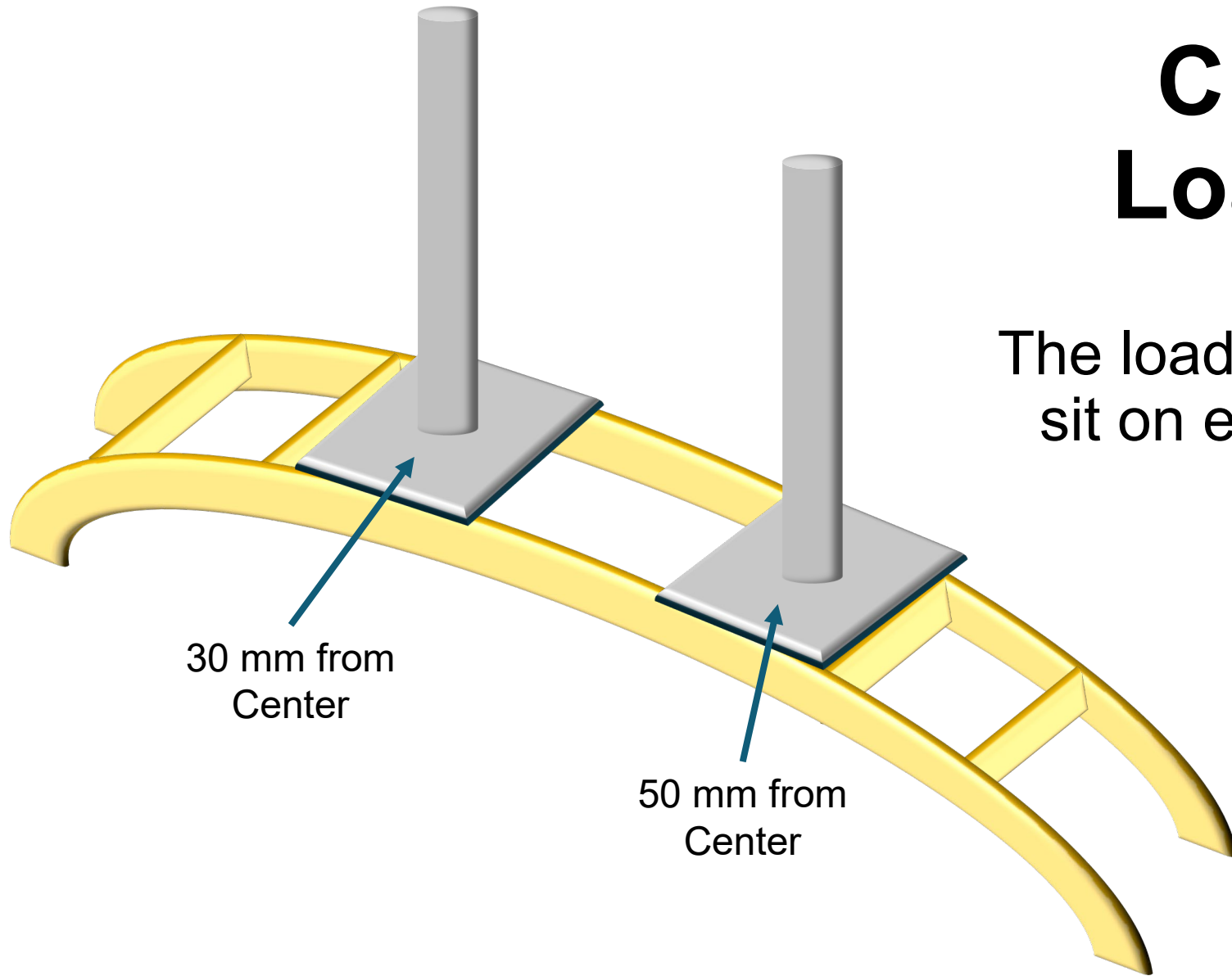
Checking the Load Plane Height

The top of the bridge (where the loading plate will sit) must be located **WITHIN** this shape (between 100 – 150 mm).



Checking the Loading Points

The loading plate must be able to sit on each of the loading points



30 mm from
Center

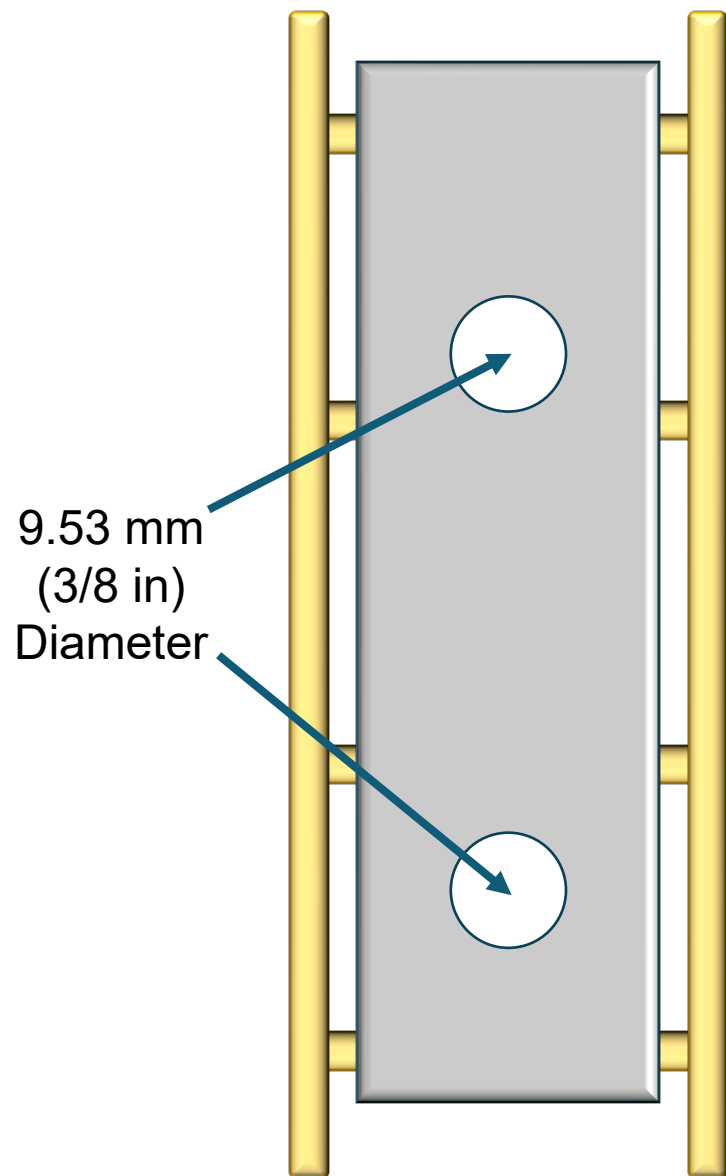
50 mm from
Center

These measurements
can be from **EITHER**
side of the center

Checking the Loading Points

This shape with a hole at each loading point will be placed on top of the center of your bridge.

No parts of the bridge can be visible in the holes.



Checking the Symmetry

A visual inspection will confirm that the bridge is symmetric and that your name and bridge number are **legibly** written on the side of the bridge near the bottom



At the contest, efficiency is calculated by dividing the load supported by the mass of the bridge (i.e., how many times its own weight the bridge can support)

$$\text{Efficiency} = \frac{\text{Load Supported (up to 50,000 g)}}{\text{Mass of the Bridge in grams}}$$

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