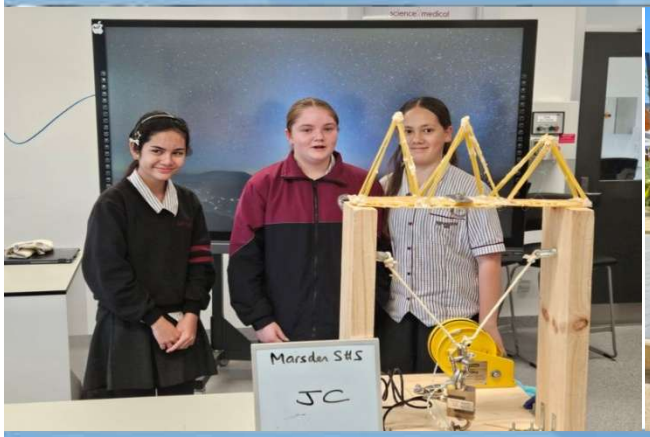
2026 Queensland Bridge Competition
Teacher Information Webinar

ENGINEERING LINK GROUP

Forging Links between Schools and Industry



ENGINEERS AUSTRALIA

QUT

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Acknowledgement of Country

The Engineering Link Group, The Queensland Government and Engineers Australia acknowledge the Turrbal, Yugara and Gubbi Gubbi people, as the First Nations owners of the lands where we meet today. We pay respect to their Elders, lores, customs and creation spirits. We recognise that these lands have always been places of teaching, research and learning.

The Engineering Link Group acknowledges the important role Aboriginal and Torres Strait Islander people play within the engineering community.

What is The Engineering Link Group (TELG)?

- Supporting and encouraging students to consider engineering as a career since 1994 (starting with two schools in Townsville)
- Supporting teachers by providing experiences that deepen their understanding and application of maths and science through engineering

Who am I?

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- I am a teacher of over 30 years' experience, teaching all levels of Mathematics, Science and Physics in State and Catholic schools in Queensland

- Currently Curriculum Leader – Mathematics St Eugene College in Burpengary.
- Formerly spent 15 years as HOD – Mathematics at Townsville SHS), and then CL – Science and Maths here at my current school
- Formed The Engineering Link Group with Paul Richards in 1994

The Queensland Bridge Competition

- TELG has operated the competition since 2014
- Over 3700 students and over 120 different schools across Queensland have participated
- Sponsors of this event:

Agenda for today

- Mike Whitehead & Natasha James (The Department of Transport and Main Roads)

"The Physics and Engineering of Bridges (and some tips about building a bridge out of spaghetti!)"

- Greg Millican - TELG
  - Hints and tips – building a successful bridge
  - About the Competition in 2026
  - Shameless Plug!
  - Questions

Welcome

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Mike Whitehead

BEng(Civil) GradCertBus CPEng RPEQ APEC Engineer IntPE(Aus)

Director (Systems & Governance)
Structures

Engineering & Technology
Infrastructure Management & Delivery

Department of Transport and Main Roads

Natasha James

BEng(Civil) CPEng RPEQ

A/Director (Systems & Governance)

Engineering & Technology
Infrastructure Management & Delivery

Department of Transport and Main Roads

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Briefly about the Competition?

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The Queensland Bridge Competition is a problem-solving, engineering challenge for students from Grades 5 to 12.

Teams of up to 4 students design and build a bridge from store-bought spaghetti and glue.

Teams test their bridge's strength on a custom-made rig.

The bridge that supports the largest peak load before failing is declared the winner.

Briefly about the Competition?

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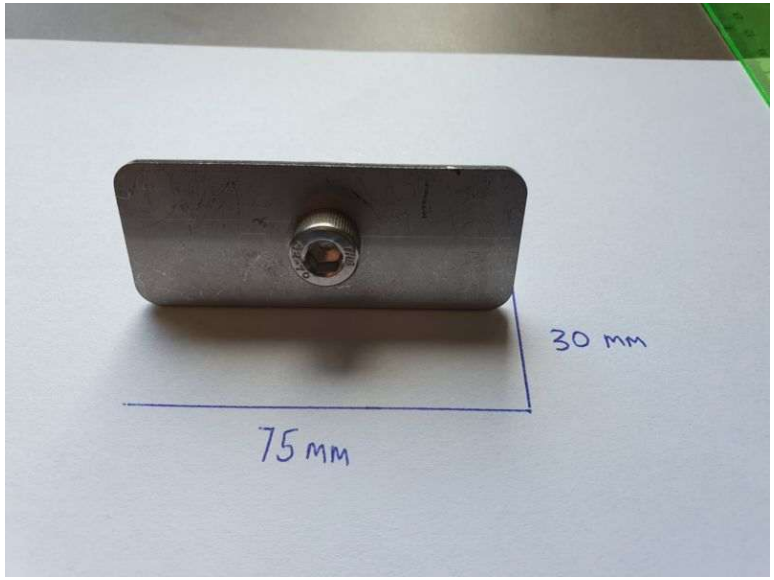
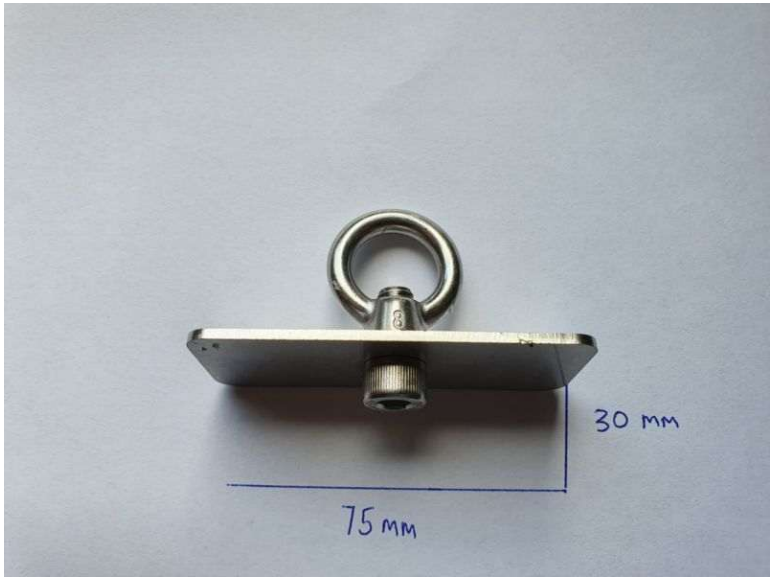
- FREE to enter
- Schools who express interest receive 1 load hook
- Testing in multiple locations across Queensland, during August.
- The competition is open now and runs until 1st September.

The load hook weighs approximately 67g

The ring must be orientated to face under the bridge, as the load cell is attached from below.





Types of spaghetti

Any brand of spaghetti is permitted, as long as it called "Spaghetti"

#4 or #5 spaghetti is okay.

Choice of Glues

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- **PVA**
  - Slow drying
  - Strong bond
  - Fill voids
- **Hot Glue**
  - Fast drying
  - Weak bond
  - Fill voids
- **Superglue**
  - Fast setting
  - Strong bond-low shea
  - No voids

Glues such as 2-pack epoxy glue and "liquid nails" are not allowed

Advice – where to start?

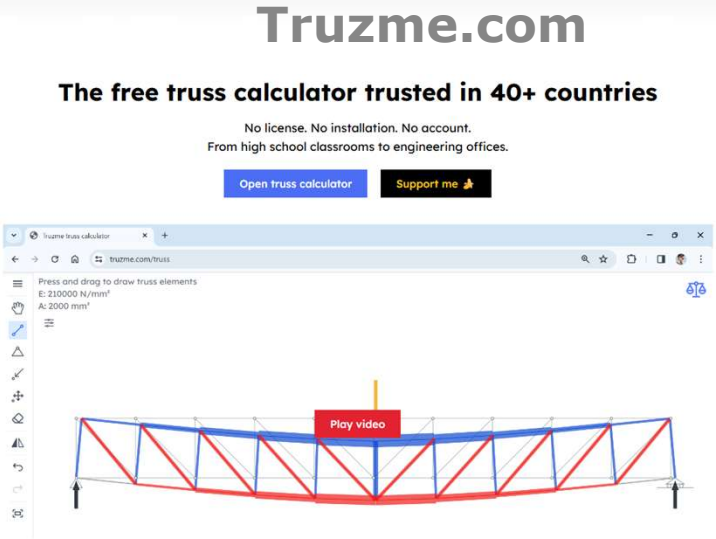
- Consider designs (look at past bridges)
- Experiment with different glues
- Design before you build
- Build the bridge in sections and then combine the sections
- Make sure the load hook is centred and the bridge is balanced

Is it necessary to build a prototype?

If you have the time…

- It certainly helps
- Can try different structures
- Test different glues
- Test spaghetti choices

Truzme.com



Bridgedesigner.org

Things to consider when building your bridge

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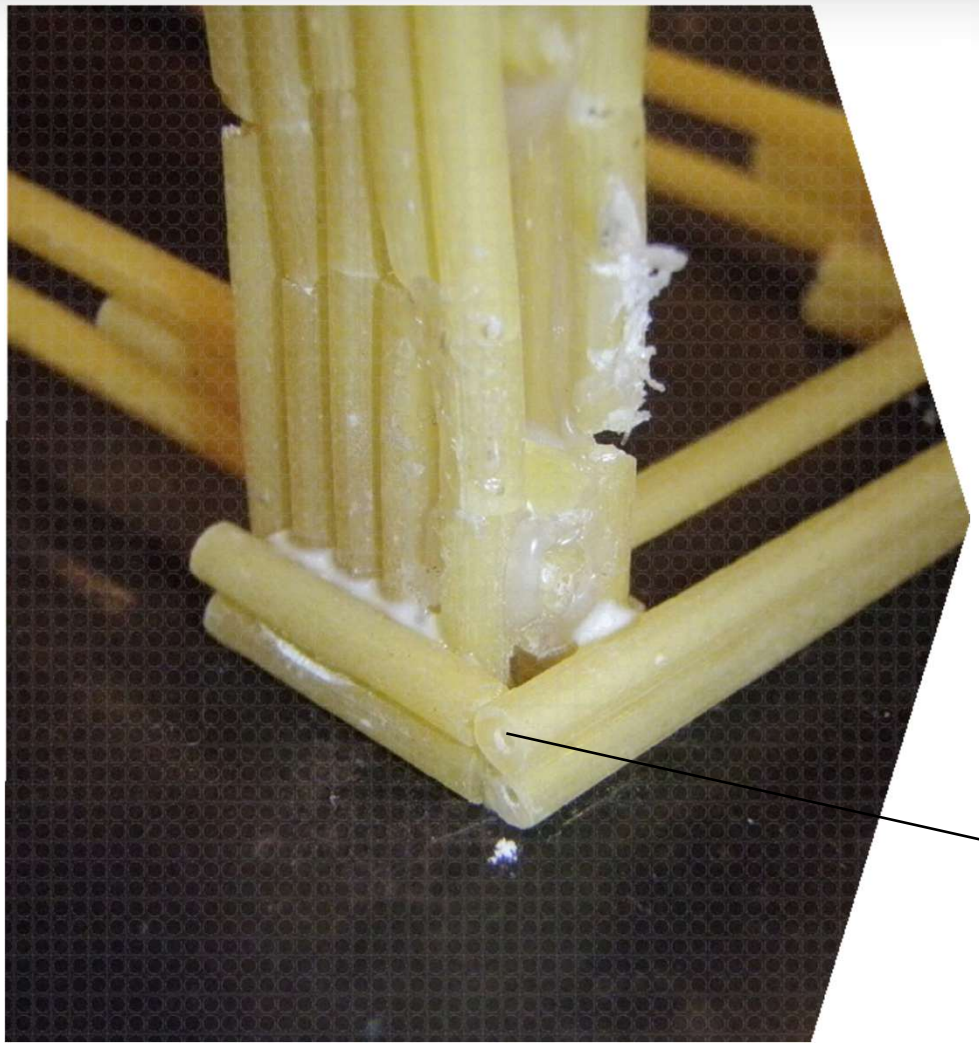
- Spaghetti shrinks when dried.
- Don’t let it dry unevenly
- Use spaghetti from same packet where possible
- Store the yet-to-be-used the spaghetti with the bridge
- Atmospheric conditions make a difference

Troubleshooting



- Ensure feet of bridge are outside the 35 cm, and are rigid and level
- The load hook needs to be in the centre of the bridge (as much as possible)
- Don’t use too much glue

(bridges can be disqualified if the amount of glue used is considered “excessive”)

This type of spaghetti is not allowed!

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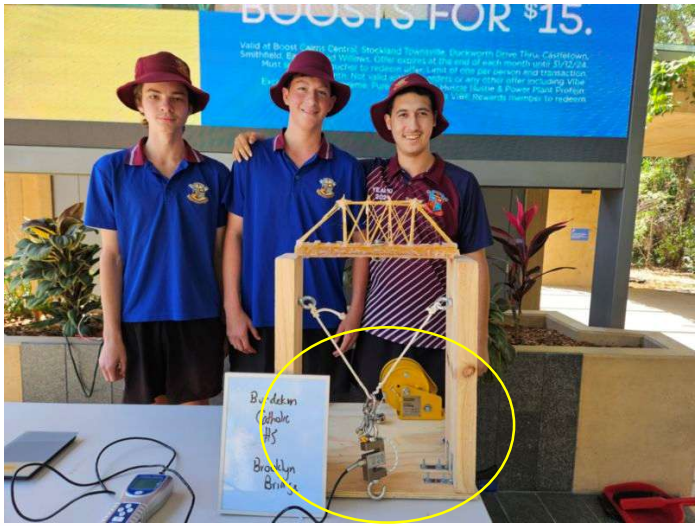
The winch pulls down on the bridge

We measure the peak load (in kilograms)

Load cell and apparatus weighs approximately 0.6 kg



Example

A test

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2023 Winner

64.04 kg

2024 Winner

17.84 kg

Previous Winning Loads

Year	Max Load
2025	42.00 kg
2024	17.84 kg
2023	64.04 kg
2022	86.18 kg
2021	63.3 kg
2020	76.7 kg
2019	59.8 kg

Testing Dates and Locations

- The Lakes College (North Lakes) – June 9
- QUT Gardens Point (Brisbane) – Aug 10
- St Eugene College (Burpengary) – Aug 12
- Townsville SHS (Townsville) – Aug 14
- Hillcrest Christian College (Gold Coast) – Aug 19
- Marsden SHS (Logan) – Aug 19
- Heights College, Rockhampton – Aug 26
- Suncoast Christian College (Sunshine Coast) – Aug 31

Teams can post their bridge to us for testing

Prizes - $2000 total

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Places determined by peak load

First Place: $700

Second Place: $400

Third Place: $300

Location Winners: $75* per location (up to 8 locations/regions)

All teams are strongly encouraged to read the Terms and Conditions carefully

Like some support?

- Registered schools can access resources developed by TELG and schools who have successfully competed in the past
- TELG YouTube channel – tests from previous years. Students can analyse the bridges and learn from past “mistakes”
- If you would like an engineer mentor, we may be able to organise it – contact us

What now?

https://www.telg.com.au/qldcompetition/

Some words of wisdom from the 2024 winners

Shameless Plug

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Engineering Link Project

Year 10, 11 and 12 students

Queensland Tour

- Cairns – Friday 25 Sept
- Emerald – Monday 28 Sept
- Gladstone – Wednesday 30 Sept
- Hervey Bay – Thursday 1 Oct

Details coming soon!

Questions?

Please unmute yourself and ask away!

Thank you to Mike Whitehead and Natasha James

Thank you to you for giving up your time.

Best of luck in the competition.