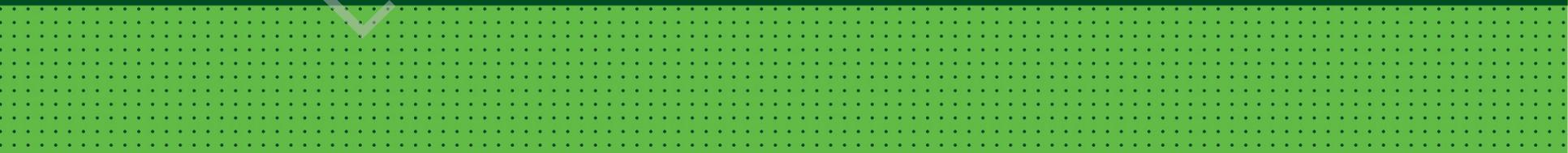




◀ STRUCTURE IS KEY

◀ Name

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Who am I?



- ▶ From Korea, have lived in UK and Brazil
- ▶ American Engineering Student – WPI
 - ◆ Electrical Computer Engineering



Who is an engineer?



- ▶ An engineer is...
 - ◆ Engineers work with machines
 - ◆ Play 'Who is an Engineer?'

A



B



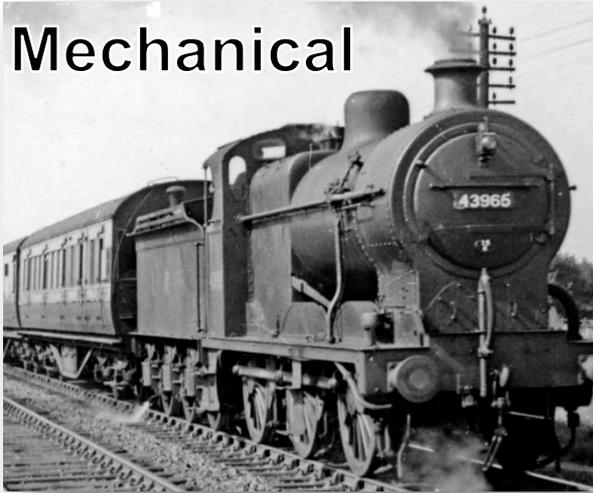
C



D



What do engineers do?



Mechanical

Railway



Robotics

Biomedical



Food

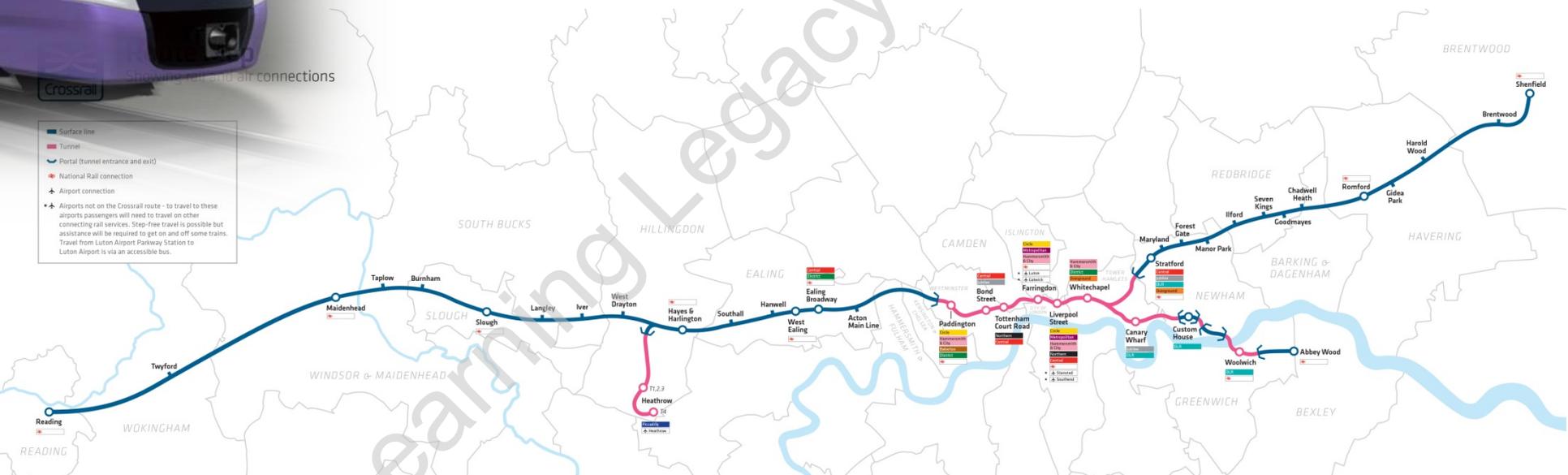
Chemical

Crossrail: A railway route east to west



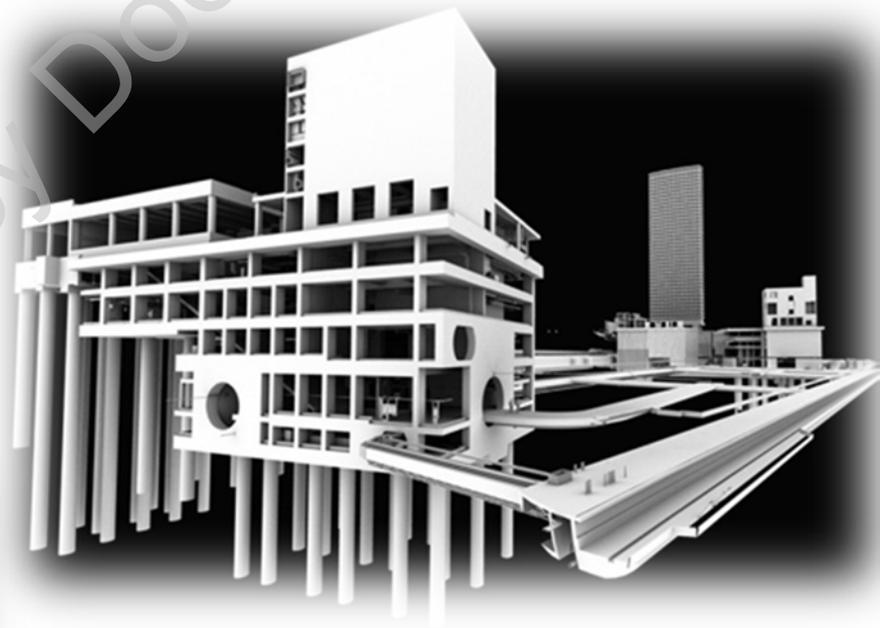
Crossrail

- Surface line
- Tunnel
- Portal (tunnel entrance and exit)
- National Rail connection
- Airport connection
- Airports not on the Crossrail route - to travel to these airports passengers will need to travel on other connecting rail services. Stop-free travel is possible but assistance will be required to get on and off some trains. Travel from Luton Airport Parkway Station to Luton Airport is via an accessible bus.





TAKE A LOOK AROUND



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◀ **What are the most stable structures like?**

◀ **Building Structure Explained**

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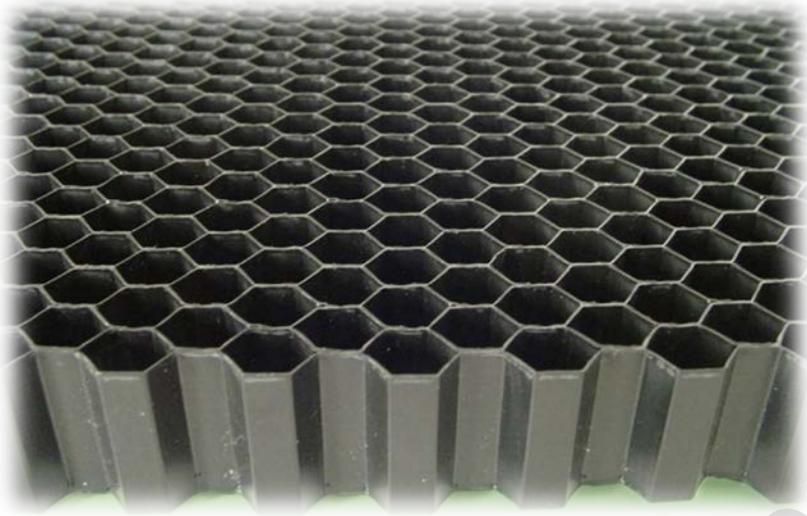


From Your Neighborhood to the Sky





STRUCTURE IS KEY



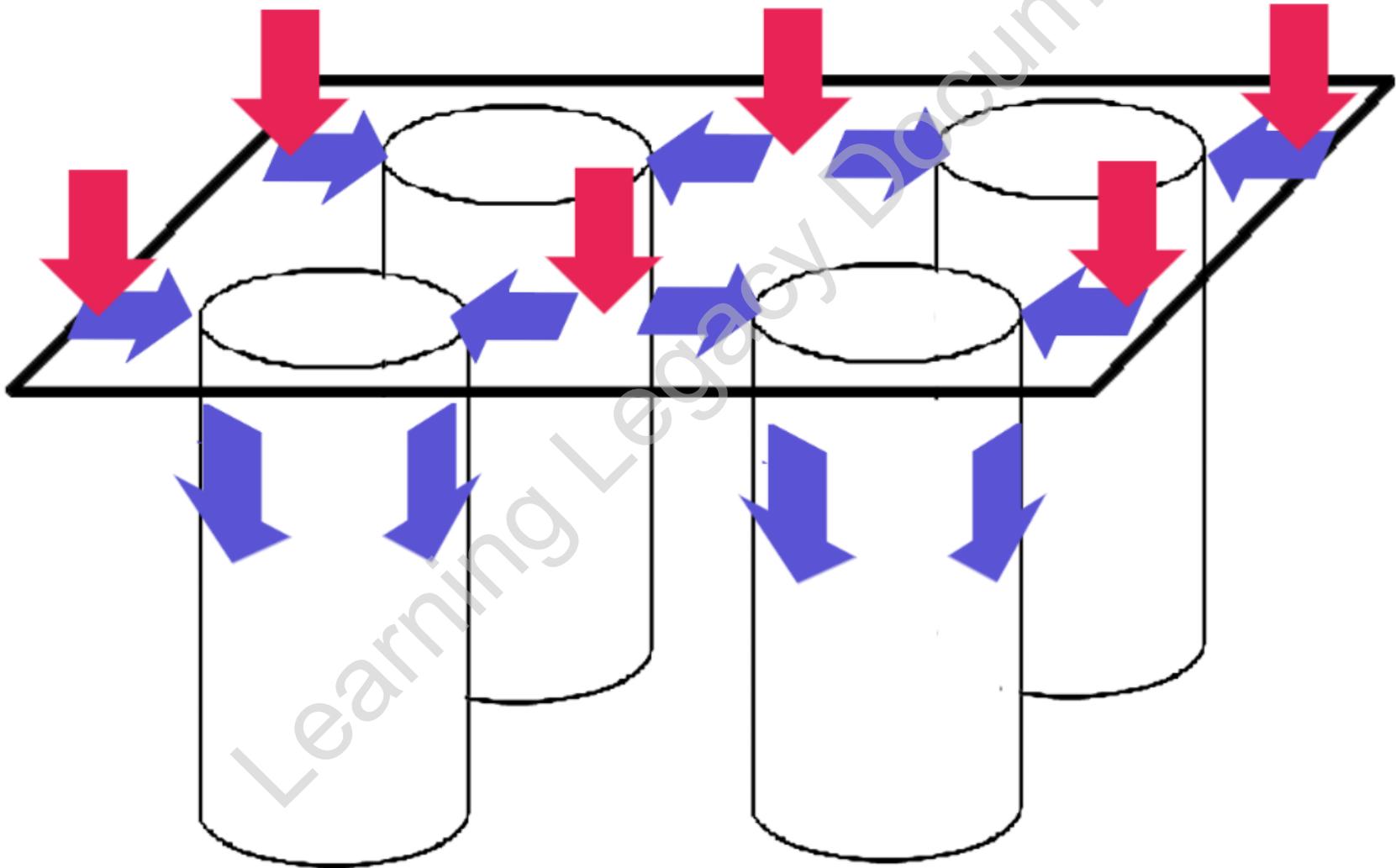
BECAUSE WE DON'T HAVE MAGIC



- **Force Distribution**
- **Flexural Stiffness**
- **Resist Bending**

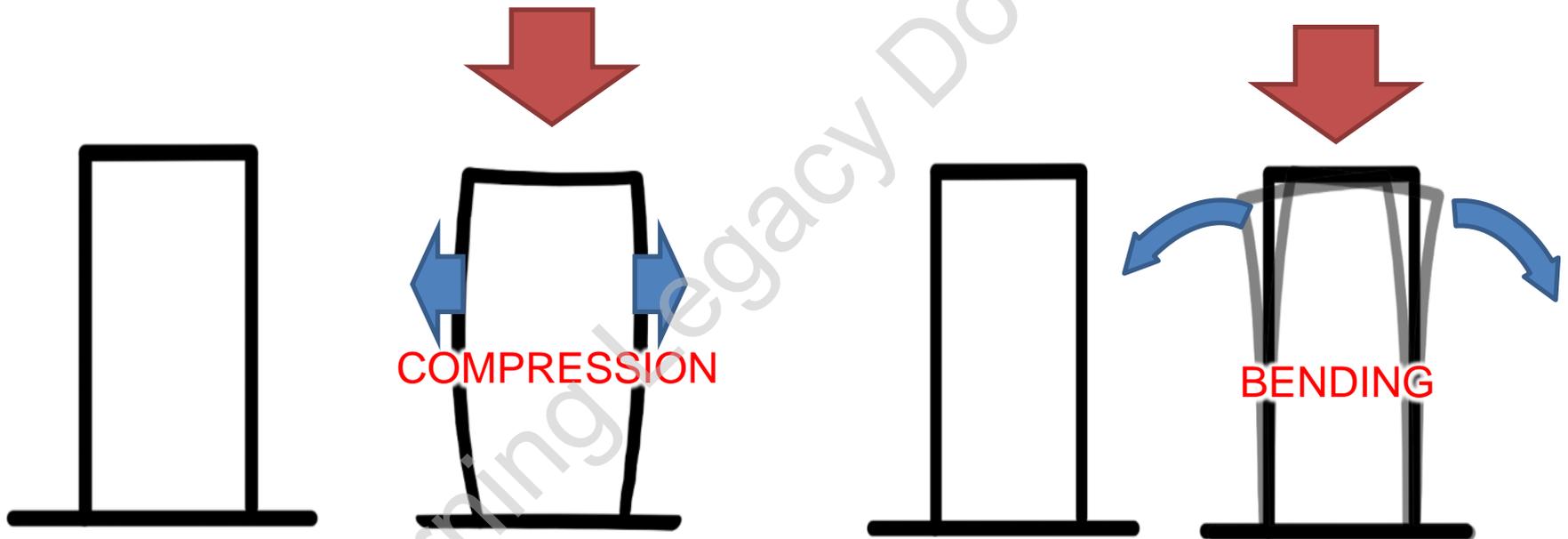


Force Distribution



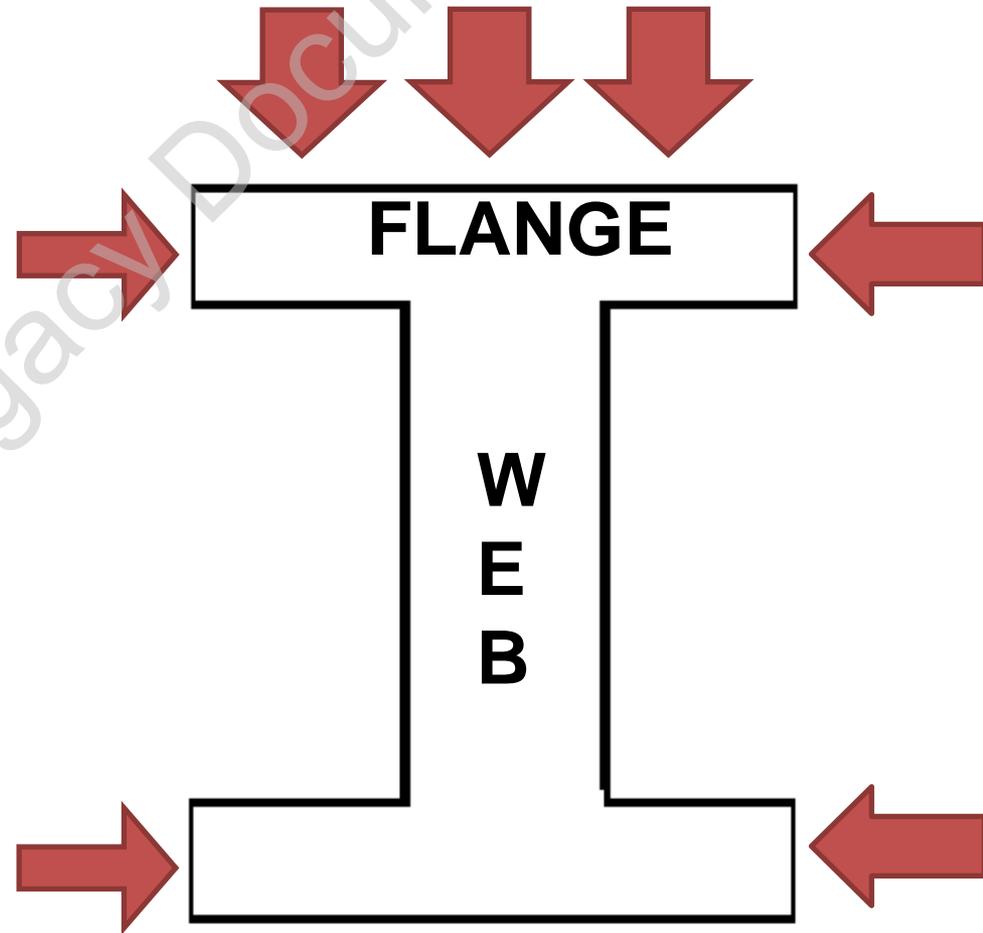
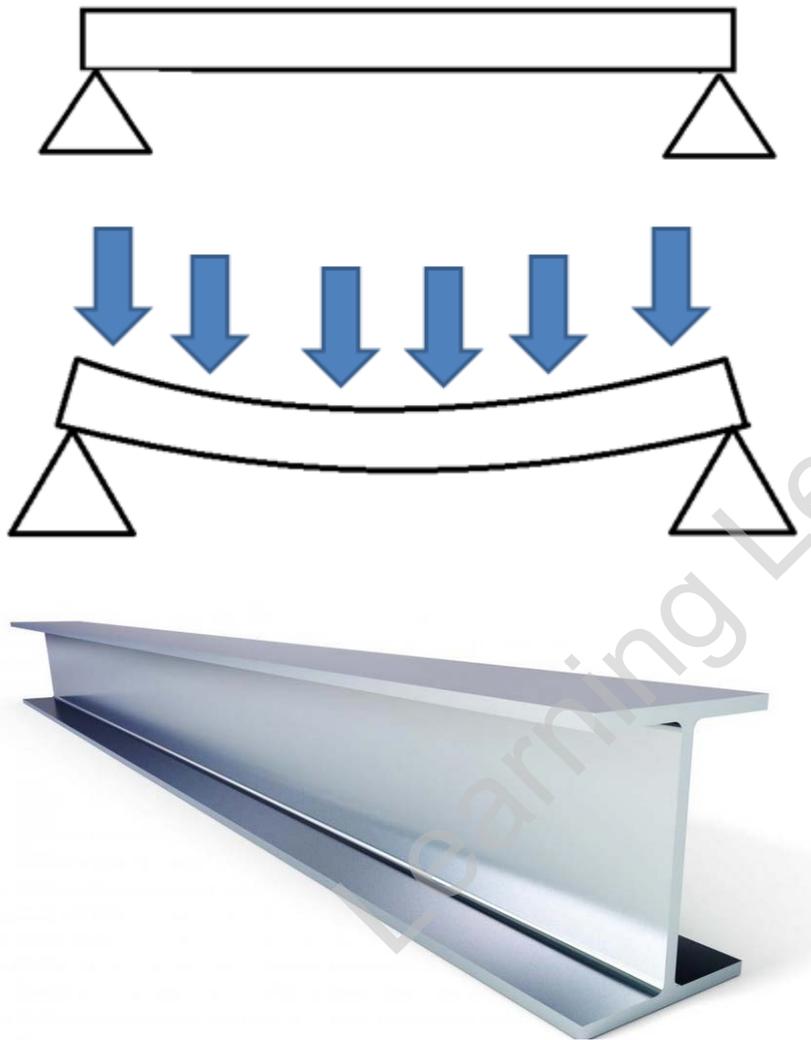


FLEXURAL STIFFNESS



Learning Legacy Document

Resist Bending





Keep in Mind



Learning Legacy Environment



What Could go Wrong?





◀ Engineering Challenge: Build a structure that withstands weight

◀ How strong is your paper structure?

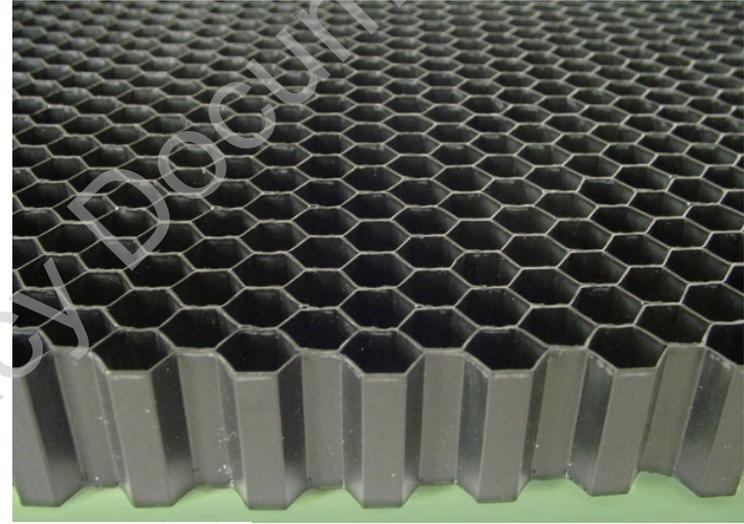
Learning Legacy Document

Now it is your turn



- ◆ **Part 1: Build a platform that we can place 1kg of weight on.**
 - ◇ The platform must be at least 8cm tall.
- ◆ **Part 2: Build a bridge that lies across a 15cm gap.**
 - ◇ Weights must be placed above the gap, and not on the supporting sides.
 - ◇ The team that can withstand the most weights wins a prize!

WHAT WORKS?



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▶ KEEP IN MIND

- ◆ Take 5 to 10 minutes to plan your design before you start building.
- ◆ Build with caution. You are working with fragile materials!
- ◆ Don't be afraid to test your structure, you are allowed replacement paper!



◀ DISCUSSION AND PRESENTATION

◀ Talk about your structure design

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Discussion



- ▶ **What design did you use?**
- ▶ **What principles learnt in the lesson were applied?**
- ▶ **Did your design work? Could it be improved? How?**

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Additional activity time

- ▶ Lets make this a bit more challenging

HOW LOW CAN YOU GO

