



## Glenmore Park High School Assessment Task Notification

Course:	Engineering Studies	Stage: 6	Year: 12
Area/s of study:	Engineering Report	Date issued:	11/11/2019
Task number:	1	Task date:	9/12/2019
Mark out of:	100	Weighting:	20%

Task type: ***Research Report with Bridge Design & Construction***

### Task description:

For this assessment task you will be required to complete an engineering report related to the Civil Structures module along with the design and construction of a bridge.

#### SECTION 1

It would be difficult to imagine society without Bridges. Throughout history they have drastically changed many aspects of our society and culture. Select one type of bridge to answer the following questions on:

1. Briefly explain the bridge type including when it was first used in history
2. Outline how materials have changed the design and what characteristics did materials bring to the overall design of the bridge
3. Explain how technological advancements have changed the design of that style of bridge. Provide examples.
4. State and explain four direct and indirect changes to society (past or present) that have resulted from your chosen bridge.

#### SECTION 2

Design and Construct a Paddle pop stick bridge using **ONLY** 'PVA Glue' provide reasoning for your design choice. You will be given 75 Paddle pop sticks. Testing will be undertaken in school, checking the Strength to Weight ratio. The bridge must allow a test vehicle to cross over the deck unobstructed.

#### SECTION 3

An Orthogonal drawing is to be completed for the Final Design of your Paddle pop stick bridge. Complete this to a scale of 1:2 following AS1100 standards.

**Outcomes assessed by this task:**

H3.2 uses appropriate written, oral and presentation skills in the preparation of detailed engineering reports.

H4.1 investigates the extent of technological change in engineering.

H4.2 applies knowledge of historical and technological change to engineering-based problems

H4.3 appreciates social, environmental and cultural implications of technological change in engineering and applies them to the analysis of specific problems

H6.1 demonstrates skills in research and problem solving related to engineering

**Criteria for assessment:**

OUTCOME	SECTION	MARK
4.1	<b>Section 1</b> Engineering Report	25
4.2		
4.3		
6.1	<b>Section 2</b> Bridge Construction and Testing	50
3.2	<b>Section 3</b> Orthogonal drawing	25
20%	<b>Total</b>	<b>100</b>

**Additional information:**

- This is a formal assessment item. Absence due to illness must be supported by a medical certificate, presented to the Head Teacher on the **first** day of your return to school, irrespective of your timetable for this subject. You must be prepared to attempt/submit the task on the first day of your return to school – i.e. when your medical certificate expires.
- Upon submission of this task you will be required to certify that your work complies with NESAs All My Own Work rules.
- All components (Sections 1, 2, & 3) are to be handed in at the start of the lesson.

### **Paddle Pop Stick Bridge Guidelines:**

This section requires you to individually construct Paddle Pop Stick Bridge using **ONLY** PVA Glue that allows a road to go through the middle unobstructed. You will be provided with 75 paddle pops.

The dimensions for the bridge need to follow the guidelines or else marks will be deducted:

- Height  $\geq$  85mm
- Width  $\geq$  85mm
- Overall Span  $\geq$  450mm

**50** marks will be awarded for overall bridge construction and testing with an emphasis on the strength-to-weight ratio. The bridge with the highest strength to weight ratio will be awarded 50 marks.

*NOTE: You are only allowed to use the paddle pop sticks provided. You cannot add any other materials or adhesives.*

### **Key Construction Notes:**

- A point load will be taken at the middle of your bridge, you will need to design your bridge so that metal rod can be placed across the bottom chords of the bridge and weights hung off it.
- Cross bracing is **NOT** allowed.
- The bridge will be supported at the road deck level.
- **Testing will consist of the supports resting 15mm on either side on abutments. You will need to highlight these locations on your bridge.**