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**The Civil Engineer**

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**Acknowledgement**

Mr John Gibson is a highly regarded educator and engineer. John taught Industrial Arts at a number of high schools before taking a position at Sydney Teachers’ College, then University of Sydney. He had an engineering education consultancy and has extensive experiencing working with NESA on Engineering Studies syllabus development and the HSC examination committee. The STEM Industry School Partnerships (SISP) Program asked John for his responses to the iTeachSTEM topic discussion questions. SISP is grateful to John for submitting these example discussion responses.

# What roles of a civil engineer might be performed before, during and after a project?

Civil engineer roles include concept development, structural analysis, site management, material and equipment management, process management, safety management and, negotiating with other professionals.

1. **Discuss how engineers research and communicate ideas.**

Research can involve engineers extracting data from research papers, electronic sources (the WWW, specialist files, and historic documents); they communicate ideas verbally, visually and through text.

1. **How might technical data be presented?**

Technical data may be presented as hard (text and images) copy, in digital format (text and images) and, audio files:

* graphs
* charts
* spreadsheets
* images
* text
1. **Describe how engineers use design processes to develop engineering solutions.**

Design processes provide a formal structure that can be used to initiate and develop ideas.

1. **Discuss examples that highlight why teamwork is important in engineering.**

Teamwork is important during engineering projects to ensure that the work progresses smoothly, without time delays, without disturbing errors and, to ensure the flow of work, without large disagreement.