

Why Civil and Structural Engineering?

Many objects that we refer to as structures are buildings, but plenty are not. Civil and structural engineers work on buildings of all shapes and sizes, but their skills and knowledge are also applied to large non-building structures.

Just to name a few of the structures a Civil and Structural Engineering graduate might work on: viaducts; stadiums; tunnels; bridges; television and radio masts and towers; pipelines; storage tanks; chimneys; sewers; cooling towers; roller coasters; wharves; retaining walls; aqueducts; piers; dams; parking structures; cranes; offshore oil platforms; electric power transmission towers; Ferris wheels; observation platforms; distillation equipment and structural supports at chemical and petrochemical plants and oil refineries; buildings of all kinds, constructed of masonry, concrete, stone, steel, wood.

Design and analysis of structures

Civil and structural engineers specialise in the design and analysis of the structural elements and materials of which these sorts of structures, as well as buildings, are constructed. The particular focus is on the elements that hold the structure together and keep it upright, so that it can safely serve the purpose for which it was built.

Sports arenas. Think, for example, about a stadium, such as the MCG or AAMI Stadium. These large structures have to stand up to enormous stresses from the weight and movement of the people who clamber into and around in them, and from their own intrinsic weight, which is tugged at by gravity and pushed at by the wind.

We tend to take their existence and their safety for granted, but just how thick should the floors be to support 95,000 people (the seating capacity of the MCG)? How many beams are needed to support the seating levels or the roof? How thick should beams, pylons or columns be? What should they be made from? Where should they be placed? What would happen if a supporting beam failed for some reason? As a civil & structural engineer, you will know answers to these questions, and be able to advise and design.

Varied and challenging career

As this example shows, the job of a structural engineer can be very varied, involving knowledge of all sorts of materials, from cast iron to steel, or from concrete to mudbrick.

It's challenging. It's hard work. But it's stimulating, exciting and fulfilling. As a civil and structural engineering graduate, your knowledge of engineering principles and design codes, of mathematics and physics, your creativity and your common sense will allow you to help construct a built environment that is safe and functional, and contributes to the economy and the society of its location.

The continued demand for engineers

Employment opportunities are increasing for engineers worldwide as infrastructure demand increases along with populations. Graduates with expertise in analysing and designing the structural elements of structures, who have project management skills, and who show creativity, along with old fashioned common sense, are sought after by local, state and federal governments, consulting firms, educational institutions, and contracting and building firms.

The first stand to be built at The Melbourne Cricket Ground was a members' stand built from wood in 1854. This was followed by a series of wooden, brick and concrete stands over the next 150 years.

Below is a view of the new Ponsford stand under construction prior to the 2006 Commonwealth Games.

