

JOB DESCRIPTION:

CIVIL ENGINEER

PREREQUISITES



APPROX INCOME

\$100,000 + per year



**KICKASS
WOMEN**

CIVIL ENGINEER

Civil engineers plan, design, construct, operate and maintain roads, bridges, dams, water supply schemes, sewerage systems, transportation systems, harbours, canals, dockyards, airports, railways, factories and large buildings.

Civil engineers may work in offices or on site. Consulting and contracting engineers often travel interstate, and some travel overseas.

It may be necessary for some civil engineers to change residence every few years as their work takes them from one major engineering site to another.

They may be required to work long hours and meet strict deadlines while working under minimal supervision.

Civil engineers deal with various professional, skilled and semi-skilled people

They may have contact with customers.

PERSONAL REQUIREMENTS

- Able to identify, analyse and solve problems
- Good oral and written communication skills
- Aptitude for computing and design
- Practical and creative
- Able to work without supervision
- Able to work as part of a team
- Able to accept responsibility
- Willing to contribute and adhere to the safety requirements of the operation

WHAT THEY DO

Civil engineers may perform the following tasks:

- Design, construct and maintain the buildings, bridges, dams, roads and other types of infrastructure that make up our cities and towns
- Investigate sites to determine the most suitable foundation for a proposed construction
- Research and advise on the best engineering solution to meet a client's needs and budget
- Prepare engineering calculations required for the design of projects, and supervise the drafting of plans
- Produce detailed designs and documentation for the construction and implementation of civil engineering projects
- Organise the delivery of materials, plant machinery and equipment needed for the construction project and supervise labour
- Develop detailed programmes for the coordination of site activities
- Work with other engineers, architects, landscape architects and environmental scientists
- Assist government bodies in preparing yearly works programmes (such as work on car parks, drainage, roads, aerodromes or sewerage systems) within set budgets
- Operate computers to assist with the design of civil engineering projects
- Coordinate and direct research, development and testing of materials, processes or systems related to civil engineering works
- Research, advise on and plan the control and minimisation of air, water and solid waste pollution, and the management of water resources
- Supervise the testing and commissioning of completed works
- Analyse and interpret reports on loading, labour, productivity, quality, materials and performance
- Analyse risks associated with natural disasters (including cyclones, earthquakes, fires and floods), and design structures and services to meet appropriate standards
- Arrange for geological and geophysical investigations and carry out feasibility studies



WHAT THEY DO

Civil engineers visit building sites and assess proposed plans to determine the environmental impact of large scale projects, and whether the building materials will be sufficient to create a safe and stable structure.

Civil engineers work in offices and on building sites. When they are on buildings sites, they may experience all types of weather conditions. They work on projects throughout Western Australia, from building new skyscrapers in Perth, to designing systems to transport and store water at remote minesites in regional areas. Civil engineers generally work regular office hours, however, they may be required to work evenings and weekends to meet deadlines. Some civil engineers also work on call, in case of emergencies, such as a burst water or gas pipe.

SPECIALISATIONS - TOOLS & TECHNOLOGIES

AIRPORT ENGINEER - specialises in preparing designs for airports, hangars and control towers.

Geotechnical/Soil Engineer - inspects proposed construction sites to determine soil and foundation conditions by conducting drilling and sampling programmes. Duties may include preparing specifications of soil mixtures for use in roads, embankments and other construction projects.

Harbour Engineer - designs and supervises the construction of harbour facilities such as breakwaters, navigation aids, navigation channels, jetties, wharves, heavy-duty pavement surfaces, cargo sheds, and bulk handling plants for grain, ore and other cargo.

Highway Engineer - specialises in analysing population and growth statistics, traffic patterns and volume to project future requirements.

Duties may include designing efficient and safe traffic systems, studying roadway and embankment design, reviewing the geometry of highway interchanges and maintaining facilities such as culverts and overpasses.

Hydraulic/Water Resources Engineer - designs and supervises construction and advises on the operation, maintenance and repair of water resource facilities such as dams, aqueducts, hydro-electric plants, and water supply, drainage and sewerage systems.

Irrigation/Drainage Engineer - uses tests and measurements to analyse the characteristics of soil, such as salinity, water table level, areas of below-average plant growth, soil type and surface profile.

Local Government Engineer - administers and supervises the design, construction and maintenance of projects within a local government area, such as roads, drainage systems, pedestrian and cyclist facilities, bridges, buildings, recreation areas, parks, waste disposal systems and water treatment schemes.

Materials and Testing Engineer - conducts research, development, testing and evaluation of the quality or suitability of materials and products such as asphalt, concrete, steel, cement, timber and plastics, taking into account factors such as stresses and strains, estimated load, water pressures, wind resistance and temperature fluctuations related to projects.

Pipeline Engineer - specialises in preparing design proposals for pipelines and pipeline equipment, facilities and structures in consultation with petroleum and mechanical engineers.

Railway Engineer - studies design proposals and advises on the construction, maintenance and repair of railway systems, including tracks, terminals and yards.

Structural Engineer - designs the frameworks of buildings, towers, bridges, water treatment facilities, tunnels and other structures to ensure strength and rigidity.

Civil engineers cross-check building plans against a range of reference materials to ensure that a finished structure will be strong enough and able to withstand dangerous weather conditions. They must also be familiar with surveying equipment, such as Geographic Information Systems (GIS), so that they can gather information about a particular site in case special precautions need to be taken during construction. When working on a building site they will also be required to wear appropriate safety equipment including hard hats and high-visibility clothing.

EDUCATION & TRAINING

To become a civil engineer you usually have to complete a degree in engineering at university with a major in civil engineering. To get into these courses you usually need to gain your HSC Year 12.

Prerequisite subjects, or assumed knowledge, in one or more of English, mathematics, chemistry and physics are normally required. Most universities in Australia offer degrees in engineering with a major in civil engineering.

Universities have different prerequisites and some have flexible entry requirements or offer external study. Contact the universities you are interested in for more information as requirements may change.

Most universities in Western Australia offer relevant courses. Contact the universities you are interested in for more information.

ADDITIONAL INFORMATION

Civil engineers work in a range of areas, including structural engineering, water resources, foundation engineering, transport, town planning and construction. They are employed by government departments and agencies, municipal authorities, civil engineering contractors, consulting engineers and mining companies.

There may also be opportunities for self-employment as a contractor or consultant. Much of the work previously undertaken by government departments is contracted out to consulting engineers.

A small proportion of engineers work in research activities and teach in industrial, government and university research establishments.

PREREQUISITES



APPROX INCOME

\$100,000 + per year



0427 291 440
jody@kickasswomen.com.au
www.kickasswomen.com.au

