

Civil Engineers

Description

Civil engineers plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals, dams, ports and coastal installations and systems related to highway and transportation services, water distribution and sanitation. Civil engineers may also specialize in foundation analysis, building and structural inspection, surveying, geomatics and municipal planning. Civil engineers are employed by engineering consulting companies, in all levels of government, by construction firms and in many other industries, or they may be self-employed.

Duties:

- Confer with clients and other members of the engineering team and conduct research to determine project requirements
- Plan and design major civil projects such as buildings, roads, bridges, dams, water and waste management systems and structural steel fabrications
- Develop construction specifications and procedures
- Evaluate and recommend appropriate building and construction materials
- Interpret, review and approve survey and civil design work
- Conduct field services for civil works
- Ensure construction plans meet guidelines of building codes and other regulations
- Establish and monitor construction work schedules
- Conduct feasibility studies, economic analyses, municipal and regional traffic studies, environmental impact studies or other investigations
- Monitor air, water and soil quality and develop procedures to clean up contaminated sites
- Conduct technical analyses of survey and field data for development of topographic, soil, hydrological or other information and prepare reports
- Act as project or site supervisor for land survey or construction work
- Prepare contract documents and review and evaluate tenders for construction projects
- Supervise technicians, technologists and other engineers and review and approve designs, calculations and cost estimates.

Other titles:

- construction project engineer
- water management engineer
- bridge engineer
- environmental engineer
- structural engineer
- surveying engineer
- geodetic engineer
- hydraulics engineer
- geomatics engineer
- highway engineer

(Government of Canada National Occupation Classification)

Skills



Education/Training Requirements

Ontario Secondary School Diploma (OSSD)

- Most university programs in Ontario require an OSSD or Mature Student Status

Post-secondary diploma/degree

- A bachelor's degree in civil engineering or in a related engineering discipline
- A master's degree or doctorate in a related engineering discipline may be required

Certification

- Licensing by Professional Engineers Ontario is required to practice as a Professional Engineer
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Leadership in Energy and Environmental Design (LEED) certification from the Canada Green Building Council maybe required by some employers

Potential Earnings in Durham Region

The average and median wages and salaries for individuals employed in NOC Group 231 as civil, mechanical, electrical and chemical engineers are as follows. Place of Residence (POR) is defined as individuals who reside within the Durham Region. Place of Work (POW) is defined as individuals who are employed within the Durham Region.

Median Wages and Salaries (POR)	Average Wages and Salaries (POR)	Median Wages and Salaries (POW)	Average Wages and Salaries (POW)
\$85,847	\$91,369	\$92,437	\$94,797

Employment Prospects

Industry (NAICS)	Jobs in Durham Region (POW)	Durham Region Residents Employed (POR)
5413 Architectural, engineering and related services	195	230
9130 Local, municipal and regional public administration	130	100

(Ministry of Advanced Education and Skills Development 2016 data in Durham Workforce Authority's 2017 Sector Report)

Additional Resources

- Professional Engineers Ontario: <http://www.peo.on.ca/>