

climate of a southern Canada summer. This adaptability enables Canadian firms to operate in many countries throughout the world. Working in remote regions or in foreign countries, the industry effectively utilizes local manpower, material and equipment resources.

Canada's construction industry has become an efficient construction force ready to serve developing nations.

Canada's numerous rivers provide power for its cities and for the development of timber and mineral resources. Canada occupies second place in the world's per capita production of electricity.

## Generation

Canadian engineering and construction expertise have produced electrical power generation stations from small local plants to the world's largest single generating plant at Churchill Falls, Labrador.

Canada is bordered by three oceans — the Atlantic, Arctic and the Pacific — with more than 15% of the world's known volume of fresh water. Four of the five Great Lakes lie partly in Canada. The St Lawrence River and the Great Lakes carry deep-sea shipping more than 3,670 km from the Atlantic Ocean into the heart of the country.

Container ports, bulk handling and pipeline terminals are a few of the marine specialties that the Canadian construction industry has to offer. Examples of Canadian designed construction can be seen in all corners of the globe — from the high arctic to the tropic areas.

Canada has been building pipelines since the late 1950s to carry oil and natural gas to Canadian homes and industries. Automated weldings and quality control are highly developed standard procedures among Canadian firms.

Whether on river bottoms, suspended overhead or through the mountains, Canadian construction crews specialise in handling difficult installations within budget and schedule.

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Whether tunnelling large diameter sewers or laying small diameter water pipe, water purification systems for small remote communities or sewage treatment plants for large urban centres, Canadian engineers and construction contractors can provide the equipment and technology needed.

To meet the worldwide need for housing, Canada's construction industry readily supplies timber-frame, low-rise

dwelling in either single or multiple units, prefabricated housing either in components or in complete units, building expertise and management advice, and the basic building materials of high-grade lumber and plywood in a variety of species. Canada's larger cities also reflect Canadian expertise in high-rise, multi-family construction.

## Ingenuity

Canada's CN Tower, the world's tallest free-standing structure, at a height of 553m, is the product of Canadian engineering ingenuity.

Completed in three years and two months, the tower weighs 130,000 tonnes.

Canadian contractors can provide services to meet requirements from single office buildings to complete turnkey commercial or industrial parks, either independently or in joint venture with local construction teams.

Canadian construction engineers use Canadian-designed and developed equipment and machinery to tackle construction

tasks regardless of dense forests, rugged terrain or harsh climate. This dynamic construction equipment is noted for its high quality, efficiency, durability and competitive prices.

The same systems perfected for high quality housing and commercial structures are applied equally well to many other types of building. Various types of transportable school buildings ideally suited for countries wishing to extend their school systems into rural and outlying areas are designed to be erected and fully assembled in 24 man-hours on site. Complete with fittings and furnishings, they come with beds and living quarters for residential schools.

Virtually every type of sport can be found in Canada and building experts design and construct facilities to accommodate sports fans and participants.

World visitors to the XXI Olympiad at Montreal saw the technical Canadian expertise that built the massive stadium, velodrome, swimming centre and Olympic Village. ■

## COVER STORY

# Consulting Engineers Competing Internationally

**T**he Canadian consulting engineering industry is competitive in both the domestic and international markets.

About 50% of all engineering in Canada is carried out by private consulting firms.

The industry is highly export-oriented and has gained an international reputation over the years.

In the midst of a general world-wide economic decline, Canada's consulting engineers have been able to maintain a wave of important international success. For many large firms, international business accounts represent as much as half of their total revenue. Three of the largest companies are ranked amongst the 10 largest engineering consultants in the world.

The industry is 98% Canadian owned, and the small degree of foreign ownership emanates from interests in the USA, UK and Europe. Being a bilingual country, Canadian consulting firms have enjoyed a linguistic advantage that has helped build business among English and French speaking nations.

The Third World has accounted for a

substantial share of Canada's international involvement, and much of this development has proceeded with the help of multilateral aid financing through the World Bank and other financial institutions.

## Success rate

Canadian engineering companies have a reasonable success rate in bidding for contracts from the World Bank, the Asian Development Bank and other international bodies. Project management service has been one of the strengths of Canadian engineers abroad.

Canadian consulting engineers provide a wide range of services which include: feasibility studies, planning and design development, detailed design, field services for construction, and project management.

Some of the larger Canadian-owned firms have been developing a capability in the EPC (engineer, procure, construct) field.

The principal sectors for consulting engineers in the domestic market are: