

## **HCC Vertical Expertise**

### **Hydroelectric Power**

HCC is well known and acknowledged for its expertise and long civil engineering experience in the hydroelectric power sector. HCC has unrivalled expertise in large, 10m diameter tunneling works required for power transmission, where precision of the work is a vital factor along with the quality of concrete used. HCC undertakes such projects on EPC basis as well.

Hydropower projects have been successfully undertaken in areas such as Tala, Bhutan, in adverse geological conditions, while diversion of rivers ahead of time has been achieved in the Himalayan Mountains at Chamera, Himachal Pradesh, Chutak and Uri in Jammu and Kashmir. 30 per cent of the power generating capacity in the country is built by HCC.

### **Dams**

HCC has been actively engaged in the construction of dams since the 1950's. Over the years, the company has built over 25 dams in almost all parts of India. While 6 dams were built for irrigation projects, 16 were built for hydel power projects.

### **Tunneling**

HCC's experience in tunneling is unmatched, and dates back to the twenties, when it constructed tunnels at Borghat for the Mumbai-Pune section of the Central Railway formerly known as G.I.P. It has tackled the toughest terrain, ranging from the geologically complex Himalayas to the soft soil of West Bengal. The company uses modern and efficient tunneling methods, which include the Tunnel Boring Machines, Pneumatic shields and gasket segments for tunneling lining. The total length of tunneling work executed by HCC is over 140 kms. The company has built tunnels for all types of projects ranging from water supply, sewage, transportation and power generation.

### **Power Houses**

HCC constructed the country's first underground power house at Maithon in Bihar, for Damodar Valley Corporation during 1954-56, and the first major underground power house with an installed capacity of 580 MW at Koyna Hydro Electric Power Project in Maharashtra. Since then, the company has constructed 13 surface and underground power houses in almost all parts of India.

## **Nuclear Power and Special Projects**

HCC is the undisputed leader in civil engineering works for Pressurised Heavy Water Reactor type nuclear power projects in India. It was the first Indian engineering construction company to undertake civil engineering work for Pressurized Heavy Water Reactor (PHWR) type nuclear power project at units 1 & 2 (235 MW each) at Kota in Rajasthan in 1965.

The Company has built 50% of the nuclear generation capacity in the country. All 6 phases of the Rajasthan Atomic Power Project have been built by HCC since the first Unit completed in 1972.

HCC specializes in prestressed containment structures for reactor buildings. Standardised formwork has also been developed for containment walls, slabs and domes facilitating in-time quality work. For the Narora Atomic Power Plant HCC won the Award for Excellence from the American Concrete Institute (India Chapter) in 1988.

At present the company is executing two nuclear power projects including the Asia's largest nuclear power plant in Kudankulam (2 X 1000 MW) and unit 5 & 6 of Rajasthan Atomic Power plant.

## **Marine Projects**

HCC's experience in marine projects span ports, jetties breakwater and sea links. The company has executed projects on both coastlines of India. The company has constructed an impounded dock at Haldia port in 1967, an ore berth at Madras Harbour in 1975, a new oil jetty at old Kandla port and an Oil Tanker Terminal in Cochin in 1984, a fertilizer berth at Cochin port in 1985 and breakwater for Ennore port, Chennai in 2001.

## **Transportation**

HCC's experience in the construction of transportation project spans over mass transit systems, bridges, highways and marine projects. Over a span of more than 5 decades, HCC has developed unique depth of knowledge and expertise from a spectrum of diverse projects comprising over 300 road and rail bridges, the country's first two metro rails and over 2200 km of roads. As a key player in this sector, HCC is involved in major contracts awarded under the prestigious National Highways Development Program.

The company has more than 3600 lanes-Km of highway construction experience for both flexible and rigid pavements. Notably, the Mumbai-Pune Expressway project in Maharashtra, India's first access controlled rigid pavement expressway project was successfully completed within a tight time frame.

One of the most challenging of current road projects is the redevelopment of the historic Mughal Road, in Jammu & Kashmir, at 3494 metres elevation through the Pir Panjal Mountains in the Himalayas.

### *Capacity*

HCC's project execution capacity is an outstanding crushing capacity of 25,000 MT per day, concrete paving capacity of 10m width, 4km a day and ---- 50,000 – per day.

### *Equipped for complex ground conditions*

HCC owns one of Asia's largest fleets of modern equipment enabling the use of specialized machinery for work on roadways, in areas posing geological and climatic challenges.

### *Mass Rapid Transit Systems*

HCC has constructed India's first and second Mass Rapid Transit system (MRTs) projects, at Kolkata and Delhi. It includes the construction of subway structure by both Cut and cover method, as well as the Shield Tunneling method. The Delhi Metro project was undertaken on EPC basis, and HCC completed the project seven months ahead of schedule.

### *Bridges*

Since early fifties, HCC has constructed over 173 road bridges, the combined length of which would approximately be 46,458 meters and over 130 railway bridges. These include cable stayed, steel, and cantilever as well as bow-string arch bridges.

The company constructed its first bridge across river Brahmaputra at Pandu Assam, as early as in 1961. It built its second bridge with a length of 3015 meters at Kalia Bhomora near Tezpur, Assam. It is one of the longest bridges in India and was completed 38 months ahead of schedule.

The first cable stay bridge of India across river Naini near Allahabad, UP was built by HCC in 2004. This bridge was completed seven months ahead of schedule. The company is also building the Bandra Worli Sea Link in Mumbai which will be the first bridge constructed in open sea in India.

HCC's overseas performance in the construction of bridges has also been incredible some other word. In Iraq, HCC designed and built 34 bridges, and has to its credit an outstanding work of constructing a bridge across river Garmat Ali, near Basrah, with a swinging span for facilitating marine transport. HCC has also built 43 road bridges in Nepal.

### *Expressways and Highways*

HCC entered the domain of expressways and highways in 1998 with the construction of "Mumbai Pune Expressway Project, Section B". This was India's first concrete pavement expressway, and HCC constructed the most challenging Khandala ghat section of the entire stretch. This project was completed within a tight timeframe of 27 months.

Since then, the company has executed more than 1047 km of expressways / highways including some of the largest and most prestigious projects under National Highway Development programme.