

**Department of Civil Engineering**

**Report on**

**Visit to “Sardar Sarovar Dam, Kevadia Colony”**

Department of Civil Engineering, GCET had organized one day Educational visit to “Sardar Sarovar Dam, Kevadia Colony” on January 30<sup>th</sup>, 2018. 78 students, 3 faculty members had visited the Sardar Sarovar Dam (Main Dam & A-Frame), Statue of Unity (under construction), River Bed Power House (RBPH), Canal Head Power House (CHPH) and Narmada Main Canal head regulator (NMC – 0 m Chainage).

**About Sardar Sarovar Dam:**

Sardar Sarovar Project (SSP) - An Epitome of Engineering is a perfect example where engineering meets technology. Sardar Sarovar Project is constructed on the river Narmada which originates from Amarkontak, Madhya Pradesh and ends in Gulf of Khambhat, Gujarat trailing a length of 1312 km. The SSP is located near Navagam, Gujarat.

The dam is 1210 meters in length and with a maximum height of 163 meters above the deepest foundation level and it is located at an elevation of 146.5 m from sea level.

The dam is the third highest concrete dam (163 meters) in India. In terms of the volume of concrete involved for gravity dams, this dam is ranked as the second largest in the world with an aggregate volume of 6.82 million cu.m. This dam with its spillway discharging capacity of 85,000 cumecs (30.00 lac), is the third in the world.

The dam comprises of 30 gates each having a discharge capacity of 1 lakh cusecs. For chute spillway 7 radial gates of size 60' x 60' and for service spillway, 23 radial gates of size 60' x 55' are provided to negotiate the design flood. 10 number of temporary construction sluices, each of size 2.15 m x 2.75 m. are provided in the body of the spillway at RL 18 m. by M/S Sumitomo Corporation, Japan. The power generation capacity of the River Bed Power House is 1200MW. The minimum water head required for power generation is 128.68 m. The diameter of the penstock is 22 feet. The power generation cost is 30 paise per unit. The power generated by the SSP is shared among three states – Gujarat (16%), Madhya Pradesh (57%), and Maharashtra (27%). The share of power supply was decided on the basis of the scale of people affected due to construction of dam. Approximately 193 villages in Madhya Pradesh and 19 villages of Gujarat were submerged in the basin of the reservoir. Then we visited the control room of the River Bed Power House. It was an engineering marvel and we were explained the whole procedure of power generation.

An iconic 182-meter-tall statue called **Statue of Unity**, a tribute to the Iron Man of India, is being built at the Sadhu-Bet Island, approximately 3.5 kms south of Sardar Sarovar Dam at Kevadia in the Narmada district of Gujarat. This inspiring memorial site, with a number of edutainment components, is located between the Vindhyachal and Satpuda Ranges rising weir Narmada River, impounded by Garudeshwar, the Sardar Sarovar Dam and the town of Kevadia.

The total project cost is estimated to be Rs. 2989 crore, and will be completed in four years.

The **RBPH** is an underground power house stationed on the right bank of the river located about 165 meters downstream of the dam. It has six number of Francis type reversible turbine generators each of 200 MW installed capacity. These units can operate at minimum reservoir water level of 110.64 meters. The diameter of the penstock is 22 feet. The generation of energy depends upon inflow of water from upstream projects and need of water for irrigation in Gujarat. The power generation cost is 30 paisa per unit.

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The **CHPH** is a surface power station in a saddle dam on right bank of the reservoir having total installed capacity of 250 MW. The Canal Bed power House consists of five Kaplan turbines having generation capacity of 50 MW each. These units can be operated with minimum reservoir water level of 110.18 meters.

The energy is transmitted to party states i.e. Gujarat, Maharashtra and Madhya Pradesh in the proportion of 16:27:57 respectively through 400 KV double circuit transmission lines, namely SSP-Kasor, SSP-Asoj, SSP-Dhule and SSP-Nagda respectively.

Narmada Main Canal (**NMC**) is a contour canal. It is the biggest lined irrigation canal in the world. It is about 458.318 km. long up to Gujarat -Rajasthan border. The canal extends further in the state of Rajasthan. The Main Canal is lined with plain cement concrete to minimize seepage losses to attain higher velocity and to control the water logging in future.

The Head Regulator – off taking structure of the Narmada Main Canal at Chainage = 0 km is 82.6 m long having 5 Radial Gates of Size 12.20 m x 13.50 m.

#### **Aim of Visit:**

The main aim of visit was to make students aware and to teach them about the sardar sarovar dam and its components, power stations and their working, different other form of hydraulic structures and narmada main canal and head regulator.