SITE VISIT FOR CIVIL ENGINEERING STUDENTS

OF IITRAM ON 18TH NOVEMBER, 2017

On 18th November, 2017, one day site visit was organized for Civil Engineering students of IITRAM to Watrak Dam, Sabarkantha and Canal Syphon site at Karai, Gandhinagar. Total 63 students were present for the site visit which included 38 students from 3rd Year B. Tech Civil Engineering, 18 students from Final year B. Tech Civil Engineering and 7 students of M. Tech 1st year Civil Engineering. Prof. A. U. Digraskar (Director, IITRAM); Dr. Yogesh Shah (Coordinator, Civil Engineering Department, IITRAM), Dr. Vikas Pratap Singh, Dr. Mahesh Mungule, Dr. Manoj Langhi and Dr. Kannan Iyer were also present during the site visit.

Technical Details of Site Visit to Watrak Dam, Sabarkantha

Watrak dam (located in Sabarkantha) is a composite dam constructed for irrigation purpose. The main section of the dam is earthern dam and the Spillway portion is concrete. The dam receives water from a catchment area of 1114 km^2 and the reservoir area (full reservoir level) is 44.75 km^2. The gross storage capacity of the reservoir is 176.90 Mm^3 and effective storage capacity is 154.30 Mm^3. The full reservoir level of the dam is RL 136.25m, the top of dam Level is RL 145.00m, the crest level of Spillway is RL 128.00m. The highest flood level recorded was RL 140.49m. The upstream and downstream slopes of the earthern dam are protected with Riprap (stone pitching). The dam has central core, cutoff wall and chimney drain system installed for controlling seepage of water in earthern section of dam. The foundation bed is rocky strata (Quartz and Phyllite) with gravelly soil at some locations. The maximum height of dam above the lowest point of foundation is 43.31m and the length at the top of the dam is 313m. The dam has 6 nos of Ogee type Spillways with radial gates of size 12.5m x 8.23m. The total Spillway discharge capacity is 5669 m^3/s. The stilling basin on the downstream side has provision of energy dissipation blocks for reducing the erosion effect of flowing water on downstream side of the dam. Transition walls are provided on either sides of the Spillway end for guiding the flow of water. There are two canal intake structures at the dam location. The left bank canal intake structure (with head regulator) with discharge capacity about 200 cusecs of water irrigates upto 12000 Ha of agriculture land. The right bank canal intake structure (with head regulator) has discharge capacity of 130 cusecs with irrigation capability of about 3500 Ha.

Earthern Dam Portion and Reservoir of Watrak Dam

Ogee type Spillway at Watrak Dam

Radial Gates of Ogee type Spillway at Watrak Dam

Downstream side of Watrak Dam with Energy Dissipators

Stone Pitching on Upstream Side of Watrak Dam

Left Bank Canal Intake Structure at Watrak Dam Site

Erosion on Downstream side due to Overflow of water from Spillway Section

Full Reservoir Level for Watrak Dam

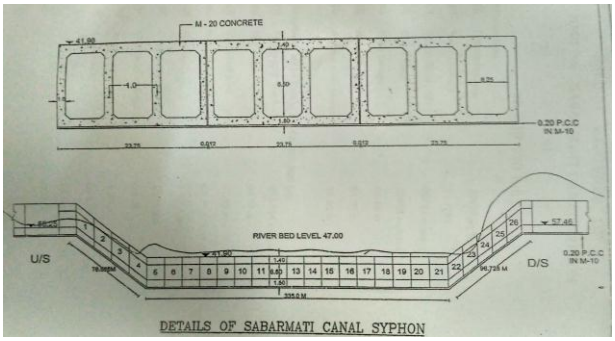





Watrak Dam Site Visit Photographs

Technical Details of Site Visit to Sabarmati Canal Syphon, Karai, Gandhinagar

The Sabarmati Canal Syphon is one of the largest Canal Syphon in the world. The total length of the Canal Syphon is 614 m and is constructed to cross the Narmada Main Canal across the Sabarmati river. Out of the total length of the Syphon, 335m is in the river bed, 72.75m on left bank and 93.84m on the right bank. The discharge capacity of the Canal Syphon is about 881.6 cumecs discharging water through 9 reinforced concrete barrels of 6.25m x 6.25m opening size. There are radial gates provided in each barrel of size 6.25m x 8.3m to regulate the flow through the Canal Syphon. The Canal Syphon was constructed from 1994 to 2001.



Cross Section of Sabarmati Canal Syphon

Water entering Sabarmati Canal Syphon

Acknowledgement:

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All photographs courtesy: Civil Engineering Students of IITRAM
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