

# **INDUSTRIAL VISIT REPORT ON INDIRA SAGAR (POLAVARAM) PROJECT**

**NAME OF THE PLACE:** - POLAVARAM, WEST GODAVARI DIST., A.P

**NAME OF THE PROJECT:** - INDIRA SAGAR (POLAVARAM) PROJECT

**NAME OF THE WORKS:** - EARTH-CUM-ROCKFILL DAM, SPILLWAY GATES, HYDROELECTRIC PROJECTS, CHANNELS CONSTRUCTION.

**DATE OF VISIT:** - 25/01/2020.

**LIST OF THE FACULTY ACCOMPANIED:** -

- 1) Dr.A.Manjunath.
- 2) Mr.Sanjay kumar.
- 3) Miss.Mounika.

**NO OF STUFENTS VISITED:** - 40

**BATCH:** 3<sup>rd</sup> Year B.Tech students.

All the B.Tech Third year students of Department of Civil Engineering have visited the Constructing work of Polavaram project in Polavaram. All the students observed and learned many aspects like Spillway foundation details, diaphragm wall and Polavaram Project Technical Details and project Benefits.

**PURPOSE:** -

**Polavaram Project** is a multi-purpose irrigation project which has been accorded national project status by the central government. This dam across the Godavari River is under construction located in West Godavari District and East Godavari District in Andhra Pradesh state and its reservoir spreads in parts of Chhattisgarh and Odisha States also.

The Polavaram Project's Main Three Purposes are 1<sup>st</sup> Supply Water for Irrigating these Godavari, Krishna & Utharandhra Districts. 2<sup>nd</sup> Godavari ater in diverted to Krishna River for to irrigate high lying lands. 3<sup>rd</sup> To more secure the Krishna Godavari Deltas from Drought.

Polavaram Project Water supply to these Districts are West Godavari, Krishna Districts through left Main canal and East Godavari, Vishakhapatnam, Vijayanagaram, Srikakulam District through Right Main canal. National River –Linking Project, which works under the aegis of the Indian Ministry of Water Resources, was designed to overcome the deficit in water in the State.

### **PROJECT TECHNICAL DETAILS: -**

The project reservoir has live storage 75.2 tmcft at canal's full supply level of 41.15 metres (135 ft.) MSL and gross storage 194 tmcft thereby enabling irrigation of 23,20,000 acre (including stabilisation of existing irrigated lands) in Krishna, West Godavari, East Godavari, Visakhapatnam, Vizianagaram and Srikakulam districts of Andhra Pradesh.

The silt free dead storage water of nearly 100 tmcft above the spillway crest level 24.5 metres (80 ft.) MSL, can also be used in downstream lift irrigation projects (Pattiseema lift, Tadipudi lift, Thorrigedda lift, Pushkara lift, Purushothapatnam lift, Venkatanagaram lift, Chagalnadu lift, etc.) and Dowleswaram Barrage during the summer months.

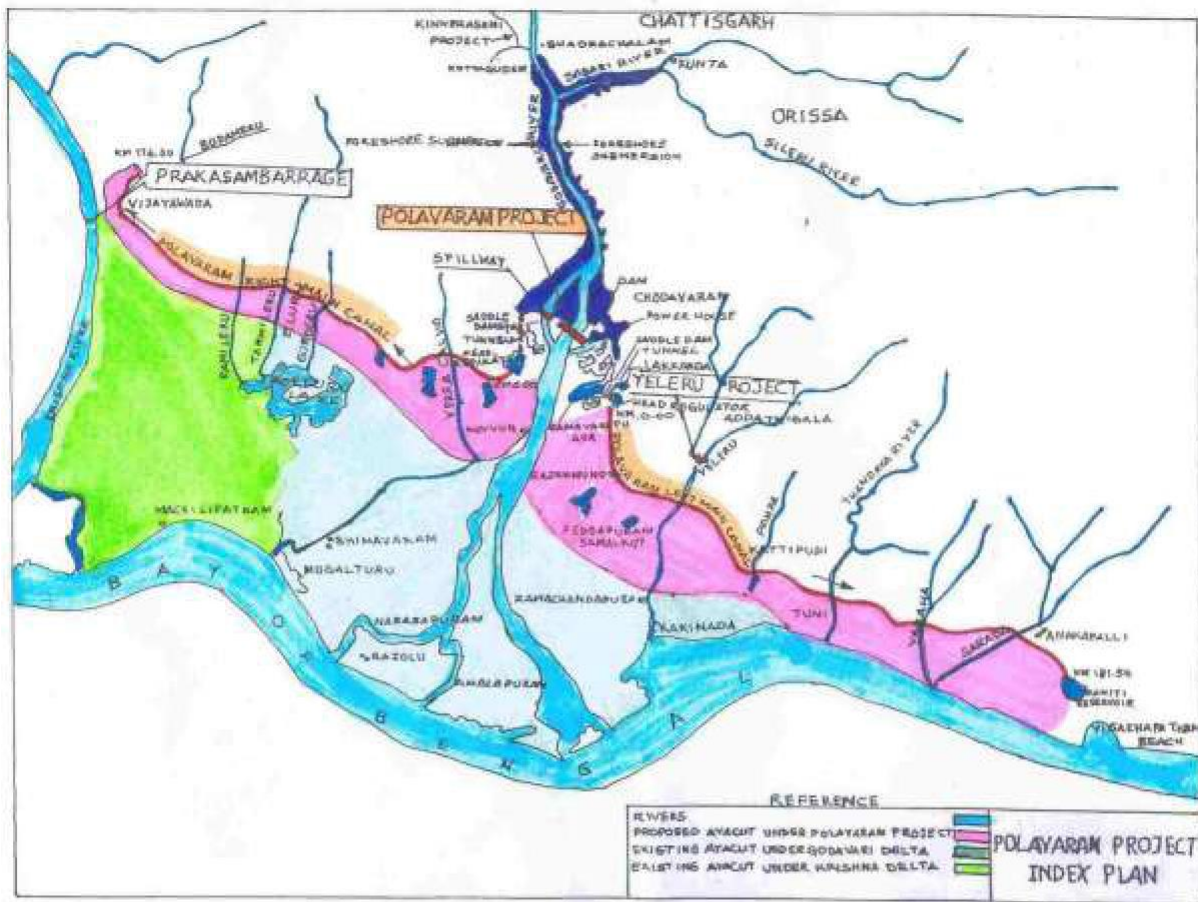
Government of AP announced the decision to construct Purushothapatnam lift irrigation scheme to transfer water at the rate of 3500 cusecs to Polavaram left bank canal and Yeleru reservoir to feed Yeleru canal which is supplying water to Vizag city. All the irrigated lands under these lift schemes can be supplied from Polavaram right and left canals by gravity flow when Polavaram reservoir level is above the canal's full supply level of 41.15 m MSL. However these lift stations are to be operated every year during the dry season to draw water from the substantial dead storage available behind the flood gates of the Polavaram dam.

The dam construction involves building of a 1.5 m thick concrete **diaphragm wall** up to depths from 40 to 120 m below the river bed under the earth dam which is first of its kind in India. The purpose of diaphragm wall is to secure the river bed stability for withstanding the water pressure across the dam. The project would constitute an **earth-cum-rock fill dam** of 2,310 metres (7,580 ft.) length, **spillway** of 907 metres (2,976 ft.) with 44 vents to enable discharge of 3,600,000 cu ft/s (100,000 m<sup>3</sup>/s) of water. The spillway is located on the right bank of the river for which nearly 5.5 km long and 1.0 km wide approach and spill channels up to river bed level is envisaged involving nearly 70 million cubic meters earth/rock excavation which is nearly 2/3rd of the project's total earth work. The maximum flood level at Polavaram is 28 metres (92 ft.) MSL and lowest water level is 10.9 metres (36 ft.) MSL. A **cofferdam** is planned up to 41

metres (135 ft.) MSL initially to facilitate faster pace of work on earth-cum-rock fill dam to complete the first phase of the project by June 2018. With coffer dam inclusion and the bed level of the approach and discharge canals of the spillway increased to 17 metres (56 ft.) MSL, the spillway related rock excavation is reduced by 70% leading to substantial cost reduction in the project's head works cost. Ultimately, the cofferdam would become peripheral portion of the main earth-cum-rock fill dam. On the left side of the river, 12 water turbines, each having 80 megawatt capacity, were to be installed. The right canal connecting to Krishna River in the upstream of Prakasam Barrage (173 kilometres (107 mi) long) discharges 17,500 cu ft/s (500 m<sup>3</sup>/s) at head works and left canal (182 kilometres (113 mi) long) discharges 17,500 cu ft/s (500 m<sup>3</sup>/s) of water.

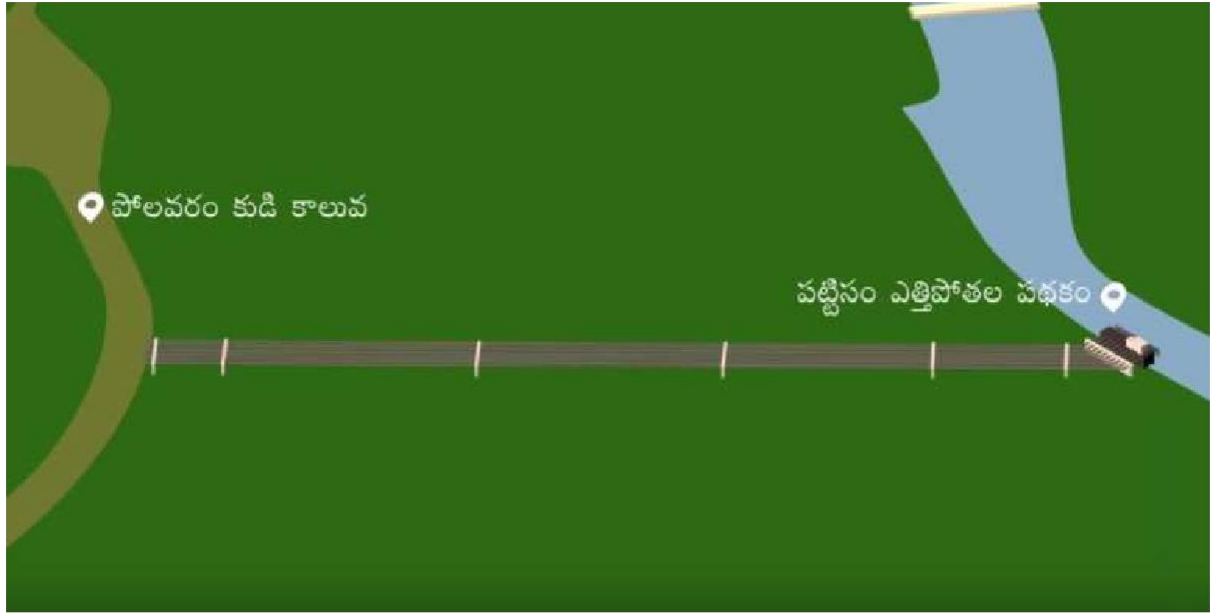
### **SOME KNOWN FACTS ABOUT PROJECT: -**

Polavaram project which is under construction on River Godavari in Andhra Pradesh state aims to give water to River Krishna at Vijayawada and to Vishakapatnam City and the lands enroute to it through its left and right canals. Due to the huge budget of the Polavaram Project and dependency on the central government, it is estimated to take another 5-7 years to complete. The right canal that connects Polavaram project with Krishna River at Vijayawada was 70-80% complete.



**FIG: 1. POLAVARAM PROJECT MAP**

The Pattiseema lift irrigation project would lift the surplus flooding water from river Godavari into the Right Canal. Under the Bachawat tribunal and inter-state agreement between Maharashtra, Madhya Pradesh and Andhra Pradesh, 80 tmc of water can be diverted from River Godavari to River Krishna. Pattiseema project will bring the 80 TMC water to River Krishna.



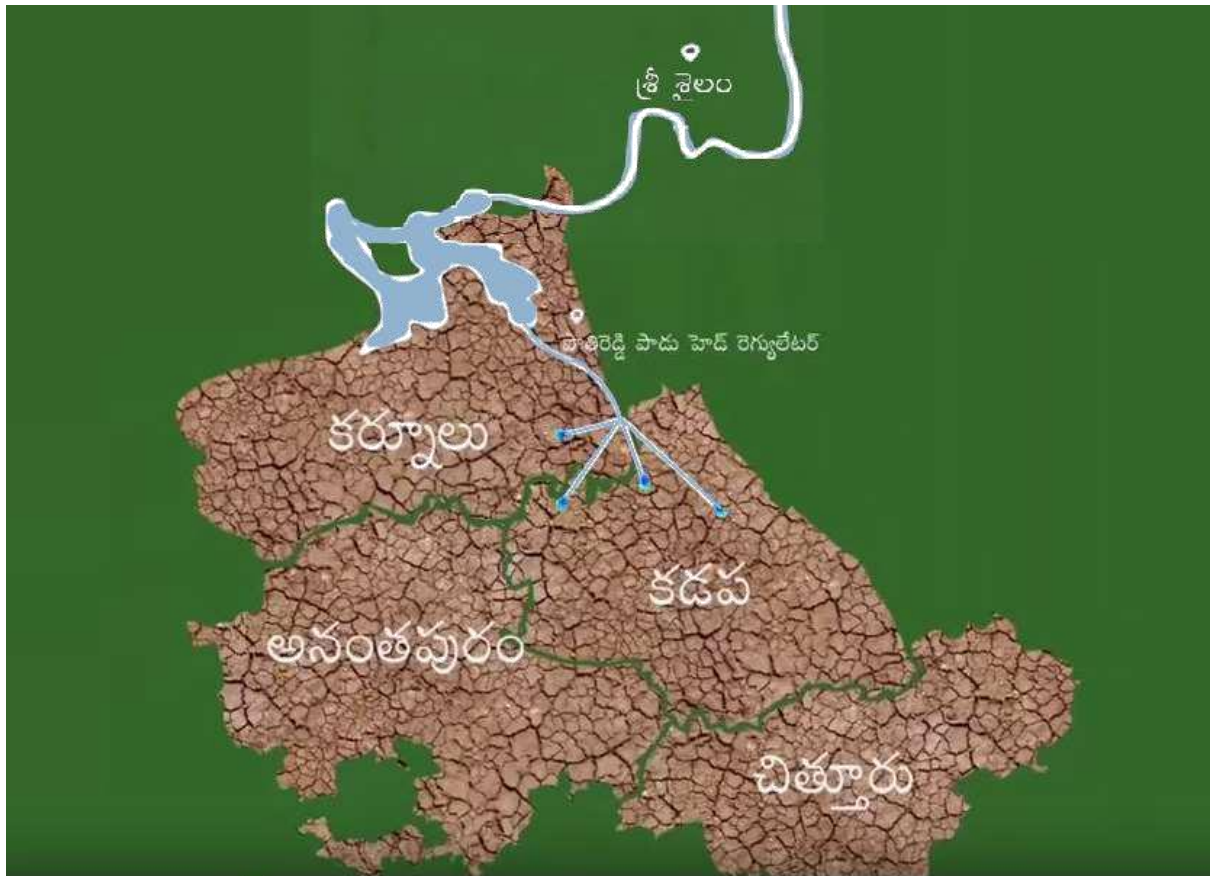
**FIG: 2. LIFT IRRIGATION PROJECT WOULD PUMP WATER INTO RIGHT CANAL.**

Andhra Pradesh is making Nation's dream true by integration 2 major rivers Godavari and Krishna. The water from Pattiseema project will travel approx. 160 Km and will join River Krishna at Vijayawada in the up waters of prakasam barrage.



**FIG: 3. 80 TMC OF GODAVARI WATER WILL REACH KRISHNA RIVER AT VIJAYAWADA.**

Every year, water allocated to Andhra Pradesh on river Krishna are shared throughout the catchment area. Water from Srisailam will be released further down to Nagarjuna Sagar project and then further down to Prakasam Barrage to serve the needs of Krishna Delta. Now that, water from Godavari is filling up Krishna River at Prakasam barrage we wouldn't need the water from Srisailam Dam which is the upstream of River Krishna. Saved water in River Krishna is distributed to the Rayalaseema through Pothireddypadu head regulator for its Irrigational and Domestic needs making it a drought free region.



**FIG: 4. SAVED WATER IN RIVER KRISHNA IS DISTRIBUTED TO RAYALASEEME.**



**A MODEL VIEW OF POLAVARAM PROJECT.**

**CONSTRUCTION SITE VIEW OF POLAVARAM PROJECT.**



