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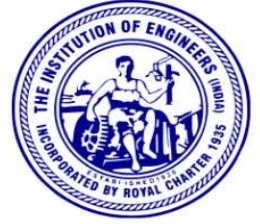
Gujarati Linguistic Minority Institution

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THE BENCHMARK



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Editor's Desk



We are pleased to present January 2022 edition of Benchmark. In this edition you will find an article on The Monticello Dam and contribution by Students and Faculty members of Department of Civil Engineering highlighted in the month of December. News update and departmental activities are the part along with Canva.

Department Vision:

- To excel in every area of Civil Engineering, inculcate research oriented study to explore hidden talent.
- Providing Opportunity to display creativity, out of the box thinking & innovativeness, aimed at providing cutting edge technology for sustainable development.

Department Mission:

- Providing qualified, motivated faculties to deliver the content using updated teaching methodology, inviting industry experts from various areas to disseminate subject knowledge in Civil Engineering.
- Motivating students to undertake the Research Oriented studies, participate in competitions at all levels, grasping new techniques and methods which can be improved on further.
- Conducting and participating in seminars, workshops and training programs with a view to make the students industry ready and improve their employability factor for global career ahead.
- To create quality professionals capable of planning, designing and analytical skills for better infrastructural development in the field of Civil Engineering.

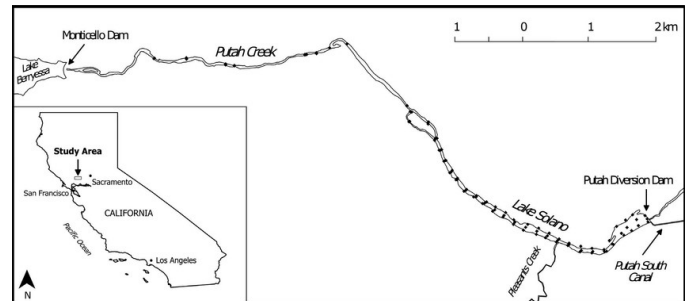
MONTICELLO DAM

Monticello Dam is a 304-foot (93 m) mighty concrete Arch dam situated in Napa County, California, United States. The construction started in 1953 and the commencement was held in 1957. The dam impounded Putah Creek to make Lake Berryessa within the Vaca Mountains. Lake Berryessa is currently the seventh-largest man-made lake in California. Water from the reservoir primarily supplies agriculture within the Sacramento Valley downstream. The dam is noted for its classic, uncontrolled morning-glory-type spillway. The diameter at the lip is 72 ft (22 m). Locally, the spillway is additionally referred to as the "Glory Hole".



Despite the fact that the dam and its 26-mile-long (42-km) reservoir are fully in eastern Napa County, the dam is only about 500 feet (150 meters) west of the Yolo County line. Parts of the lake's catchment also reach into Lake County. Monticello is a concrete medium-thick arch dam with a height of 304 feet (93 meters) from the foundations, a length of 1,023 feet (312 meters), and a height of 239 feet (73 meters) above the riverbed. At the base, the dam is 100 feet (30 meters) thick, tapering to 12 feet (3.7 meters) at the crest. There are 326,000 cubic yards of construction materials in total (249,000 m³). The reservoir has a capacity of 1,602,000 acre ft (1.976×10⁹ m³) and a total surface area of 20,700 acres (8,400 ha). Any greater water levels will pour over the dam's spillway; the maximum operating elevation is 440 feet (130 meters). The reservoir receives around 375,000 acre-feet (0.463 km³) of

runoff each year from its 566-square-mile (1,470-square-kilometer) watershed.



The Monticello Dam Power-plant, which has three generators with a combined capacity of 11.5 megawatts, was built in 1983. (MW). The Solano Irrigation District runs and maintains the power plant. The electrical power is primarily sent to the San Francisco Bay Area's North Bay region. The dam was constructed as part of the Solano Project, which was designed to provide complete irrigation to 96,000 acres (39,000 ha) of prime agricultural bottomland in Solano and Yolo counties. Since the 1840s, the project lands have been cultivated, but irrigation has been challenging due to a lack of a stable summer water supply. The dam and reservoir are located in the Berryessa Valley, which was once part of Rancho Las Putas, a 35,500-acre (14,400 ha) land grant to José and Sixto Berryessa in 1843. The rancho had been subdivided into several smaller lots by the 1860s; prior to damming, the valley had been one of California's most fruitful agricultural regions, centered on the town of Monticello, which had a population of around 250 people.



The Glory Hole, the dam's morning glory-style spillway, is 72 feet (22 meters) in diameter at lake level and narrows to around 28 feet (8.5 meters) at the exit. The spillway can drain 48,400 cubic feet per second (1,370 m³/s) at the lake's peak level, which happens when the lake level rises to 15.5 feet (4.7 m) above the funnel's elevation.

When the lake reaches 1,602,000 acre-feet and a reservoir elevation of 440 feet (130 m) above sea level, water spills over the lip. On the afternoon of February 26, 2019, the reservoir spontaneously poured down the glory hole for the last time.

-BY YASH PATIL
B.E. CIVIL

DID YOU KNOW

The Monticello Dam is noted for its **classic, uncontrolled morning-glory-type spillway**. The diameter at the lip is 72 ft (22 m). Locally, the spillway is also known as the “**Glory Hole**”

*To know more about Monticello Dam,
Scan the QR Code*



SOLVE THE CROSSWORD

H	S	L	U	I	C	E	S	E	D	N	E	G	C	T	A	B	intake
E	D	O	E	S	R	X	B	A	S	Y	D	V	B	F	X	E	electricity
V	B	M	L	P	O	O	M	J	E	A	T	Z	M	G	I	N	turbines
E	R	C	E	W	Z	M	E	F	N	W	C	I	I	Y	G	E	hydroelectric
J	E	K	C	I	M	S	N	M	I	L	C	T	V	E	B	R	sluices
D	S	H	T	N	C	Z	I	F	B	L	I	C	P	A	G	G	force
G	E	S	R	L	O	Y	Z	O	R	I	R	I	B	E	R	Y	gravity
Y	R	F	I	A	L	B	B	R	U	P	T	T	X	Z	R	G	kinetic
U	V	B	C	I	K	E	S	C	T	S	C	E	T	C	E	C	potential
W	O	M	I	T	S	C	X	E	F	L	E	N	D	J	Q	U	spillway
L	I	H	T	N	H	X	V	I	E	J	L	I	F	I	R	Y	energy
M	R	P	Y	E	I	K	P	L	M	I	E	K	L	D	E	L	floods
Q	S	G	U	T	J	C	D	H	N	G	O	B	O	K	X	D	reservoirs
S	K	E	M	O	O	P	N	T	P	Z	R	V	O	J	D	L	Dam
F	S	Y	W	P	O	S	A	I	F	X	D	Q	D	Y	Y	O	
F	D	T	E	M	Y	K	P	Q	E	J	Y	O	S	C	B	R	
M	S	C	N	B	E	V	M	G	S	W	H	W	V	N	I	B	

TRAFFIC CONDITION BACK TO PRE-PANDEMIC STAGE IN BIG CITIES OF INDIA

Highlight: In terms of traffic congestion, Mumbai, Bangalore, and Delhi were ranked second, sixth and eight respectively of 416 cities globally. Mumbai had 133 days with less traffic while Bangalore had 147 days



Road traffic congestion in India's four biggest cities--Mumbai, Bangalore, Delhi, and Pune--have crawled back to pre-pandemic levels after almost a year of lockdown-induced decline, according to a report by TomTom, an Amsterdam-headquartered independent location technology specialist.

Likewise, Bangalore, which was ranked the number one city globally for traffic congestion in 2019, saw traffic slump from 70% in January to 6% in April and rise back to around 48% in December, according to the report. Bangalore was one of the first cities to impose lockdown but was also the first to lift curbs to allow economic activity to resume.

Despite the drop in congestion level, Mumbai, Bangalore, and Delhi were second, sixth and eight respectively of 416 cities globally. Mumbai had 133 days of the 365 days with low traffic while Bangalore had 147 days, the report shows. "Last year, we announced that both global and India congestion levels in 2019 had increased for the ninth consecutive Traffic Index. In 2020, we saw a vastly different picture. From lockdowns to closed borders, people movement changed – and it changed very fast," Werner van Huyssteen, General Manager, India, TomTom, said in a statement on Wednesday.

Adoption of work from home policies by large employers, TomTom says, contributed to fall in traffic congestion. TomTom, however, says the trends are unlikely to continue "unless there's a concerted and deliberate change in driver behaviour, supported by policy makers and, importantly, employers."

Reduced traffic congestion during rush hours in all four Indian cities, TomTom says, is encouraging and testimony to the fact that flexible work hours lead to lesser traffic.

"Although traffic congestion in India was down in 2020, it's not going to become a trend unless we take action. We might even see traffic levels shoot up again as people get back to work and back into old routines. That's why now is the time that India's city planners, policy makers, employers – and drivers – must take stock of what they will do to make the roads less congested in the future," Werner added.

Globally, 13 of 416 cities saw an increase in traffic congestion.

-PROF. ASIR KHAN
Assistant Prof.
Dept. of Civil Engg; UCoE

Mobile Storm Water Cleaning System

The storm water channels in Mumbai and many other metropolitan cities get clogged very often because of solid waste accumulation in these channels at almost every interval. This ultimately leads to water logging which further leads to flooding in many regions of these metropolitan cities during the monsoon season. To resolve this issue, the storm water channels are cleaned every year before monsoon. Most of this cleaning is done by manual scavengers. This results in high exposure to insects, bacteria, fungi, mosquitoes, etc. which serve as a major cause of various diseases among these scavengers and their families. According to the Ministry of Social Justice and Empowerment, since 1993, over 620 manual scavengers have died in the country, 88 in the last three years. In addition to this, health conditions of the people living in the vicinity of the cleaned channel is also compromised as in most cases the mounds of waste removed from these channels rest besides the respective channels for weeks due to negligence by workers.



Fig. 1 QGIS mapping of Charkop (location in Kandivali (W), Mumbai)

As India is on the path of curbing manual scavenging with the motto of replacing ‘Manholes’ with ‘Machine holes’. This modern integrated mobile system of efficiently cleaning the storm water drains/sewers/channels can prove highly effective for this cause as this essentially eliminates health hazards. Moreover, this is a safer, faster and more efficient system than manual scavenging. This will effectively collect, treat and dispose of the solid waste that accumulates in storm water channels and hence will curb the risk of flooding in urban/metropolitan areas. The first figure shows the schematic diagram over the map of the location (Charkop) from where the experimental data is collected. The second figure shows the assembly of the vehicular system that is designed to collect the solid waste from the street side storm water drains.

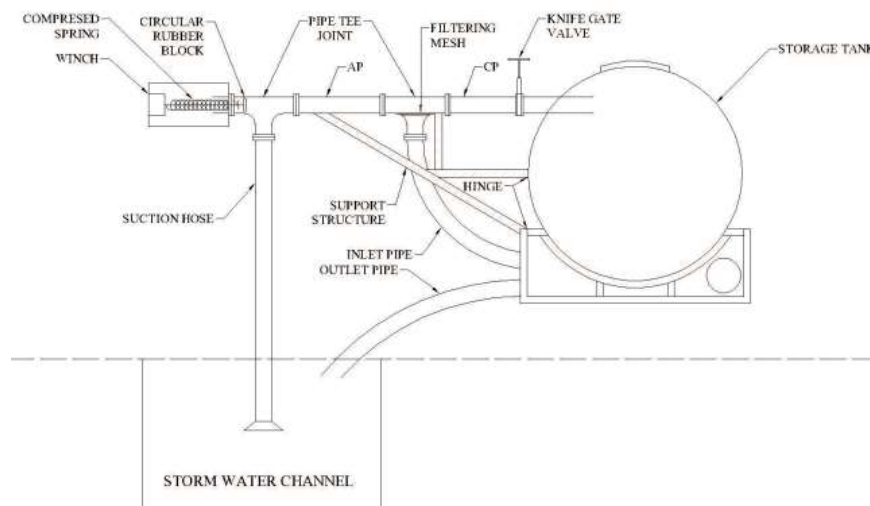


Fig. 2. Assembly of the machine

- Mandeep Singh Saini, Abhi Sanghvi, Krunal Darji.
Under the guidance of **Prof. Sachin Pawar**

STRENGTHENING OF 100 YEAR OLD AQUEDUCT BY JACKETING.



These aqueducts were constructed during British era as a part of Nira Canal System conveying water from Vir dam to drought prone area under Pune, Satara and Solapur district of Maharashtra. Length of Nira Right Bank Canal is 169km and is irrigating more than 250000 ha area. RCC Jacketing is carried out in order to enhance life of structure and make it safe.



-BY PRAVIN KOLHE

Superintending Engineer at Water resource department, government of Maharashtra

DID YOU KNOW

The construction of Monticello Dam (1957), 15 miles (25 km) to the north, furnished water for the irrigation of tens of thousands of acres and boosted traditional crop production (fruits, cereals) and livestock raising

News Bulletin



inshorts

Pune civic body to undertake survey of illegal overhead cables

The Pune Municipal Corporation (PMC) has decided to undertake a survey of illegal overhead cables across the city. "There is no provision in the Maharashtra Municipal Corporations Act, 1949 for laying overhead cables of TV, internet, broadband, optical fibre cables. These illegally laid cables are spoiling the skyline," said Vijay Kulkarni, chief engineer of the civic road department.



inshorts

AI-based device that raises alarm when driver is sleepy developed

The Military College of Electronics and Mechanical Engineering has developed a device that uses AI to prevent road accidents by raising an alarm if the driver is found sleepy. The Accident Prevention System has been handed over to the Telangana government for considering its due utilisation in the civil domain. The device uses sensors to monitor the eyes.



inshorts

4 civic engineers suspended over poor road conditions in Thane

Thane Municipal Corporation's Commissioner Dr Vipin Sharma on Saturday suspended four civic engineers over the bad conditions of roads in the city. Sharma ruled that the four allegedly neglected the work of filling potholes and also ignored the shoddy work by the contractor. The decision was taken following a survey of city roads by Guardian Minister Eknath Shinde on Friday.



inshorts

35% work on 24x7 water supply project in Pune completed: PMC

The Pune Municipal Corporation (PMC) has completed 35% of the work on its ₹3,312-crore 24x7 water supply project. "A total of 82 reservoirs needed to be constructed and 38 of them have been completed, while construction of 31 reservoirs is in progress," an official said. "The work on 13 reservoirs is pending due to land issues," the official added.



inshorts

KT Rama Rao launches APJ Abdul Kalam flyover at Owaisi junction in Hyd

Telangana minister KT Rama Rao inaugurated the 1,365 meters long multilevel APJ Abdul Kalam Flyover constructed at the Owaisi-Midhani Junction on Tuesday. "We've decided to name it after honourable former President APJ Abdul Kalam Ji. A small tribute to a great man who worked at DRDO & also lived in the neighbourhood for over a decade," Rao tweeted.



UPCOMING EVENT

One Week Short Term Training Program (STTP) On “Soil Exploration, Investigation, Characterization and Ground Improvement”

Probable dates: First week of January 2022 (3rd January 2022 to 07th January 2022)

Venue: Online Platform (G-Meet)

Learning Objectives:

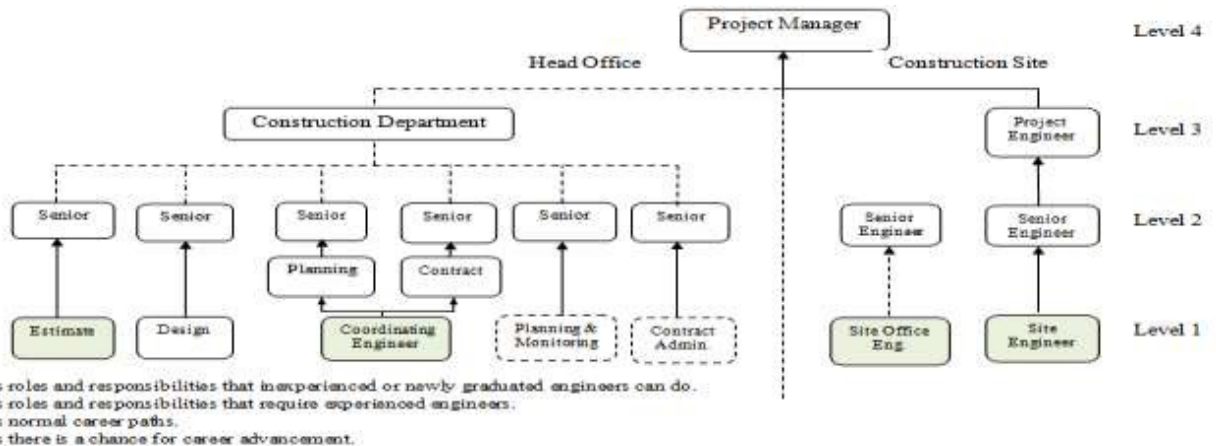
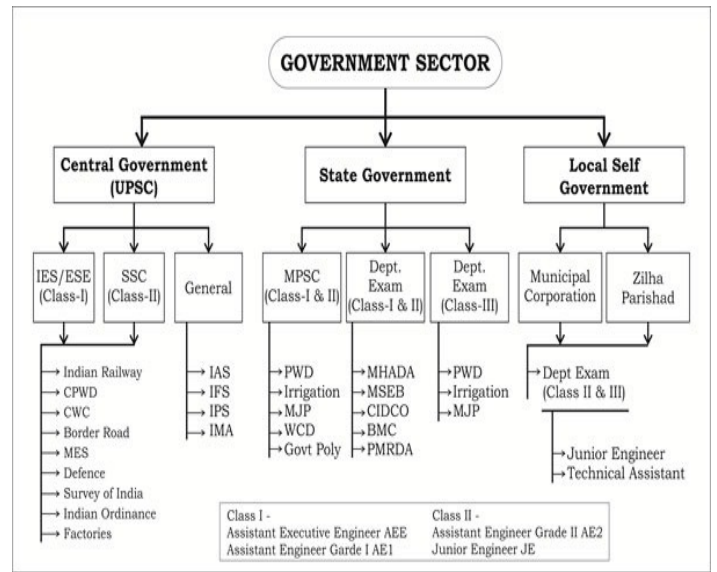
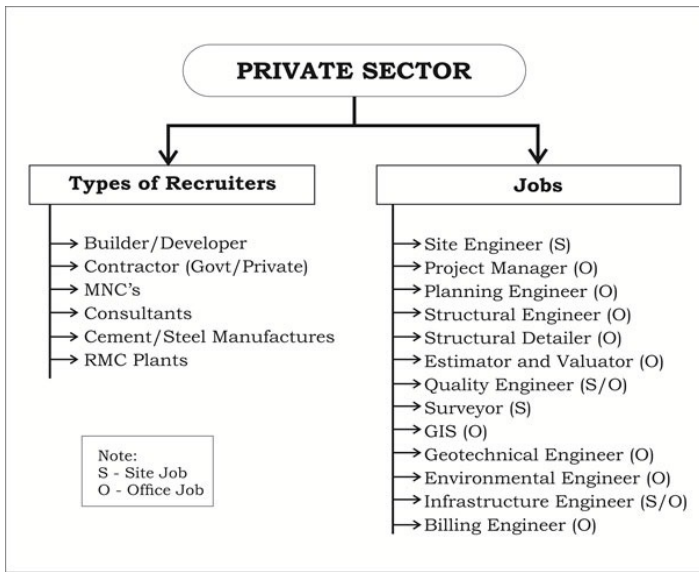
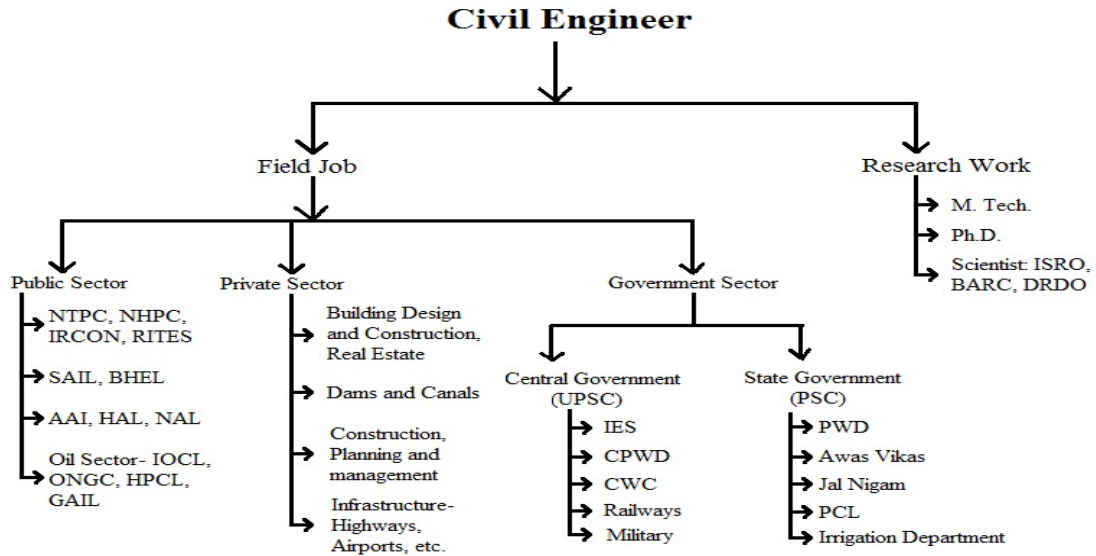
1. To understand the objectives, necessity and scope of sub-soil exploration methods understand the soil investigation report
2. To learn the field and laboratory components of a geotechnical investigation
3. To gain competence in interpretation of the investigation data
4. Describes Soil Improvement and Ground Modification Methods including Application of Geosynthetics.
5. Recognize the Recent Developments in Mega Infrastructure Projects such as Metro rail, Bullet train, Tunnels, Bridges, Roads, Fly-overs.

Resource Persons: Practicing Professions from Industries, Academicians from IIT and well known Institutes, Research Scholars

Programme outcomes: Participant will be able to

1. Ability to understand the requirement of geotechnical investigations of project, select suitable method of investigation and planning
2. Identify & Analyse the problematic soil and their solution with various advance techniques
3. Competence in the investigation methods including collection of samples, performing laboratory and field tests
4. Focus on recent developments in the area of ground improvement techniques with few case studies.

CAREER PATH FOR CIVIL ENGINEERING STUDENTS



CANVAS



PRAJAKTA PANDIT
B.E. CIVIL



OMKAR SANKHE
T.E. CIVIL



YASH PATIL
B.E. CIVIL

