



**A  
REPORT  
ON**

**Expert Lecture of Prof. Dinesh J Dave**

**March 10<sup>th</sup>, 2018**

**Organized By  
Department of Civil Engineering  
G H Patel College of Engineering & Technology  
Bakrol Road, Vallabh Vidyanagar – 388 120**

***Report on a talk on “An Overview Of Design Aspect of conventional And special (Satellite) Structures” by Prof. Dinesh J Dave***

On 10<sup>th</sup> March, 2018, Civil Engineering Department organized a expert lecture on “An Overview of Design Aspect of Conventional and Special (Satellite) Structures”. The speaker of the seminar was Prof. Dinesh J Dave who has more than 27 years of experience in Indian Space Research organization (ISRO). He has been mainly associated with structural design/ analysis of Rockets/ Satellites/ Payloads/ launcher structures. He has also worked as a Professor and Head of Civil Engineering Department in GCET.

In the beginning of the lecture he has explained the difference between Conventional Structures & Special (Satellite) Structures. The structures like frame structures, water tank, bridges etc. comes under conventional type structures. And special structures are generally termed as design of satellite etc. He has also explained that for conventional structures design codes are available and uniformity in design is there. But in special structure due to different location and weight uniform design is not possible so design code is not available.

After this, he explained different orbits of the earth and they are, Low Earth Orbit, Polar orbit and Geo-stationary orbit. Polar orbit is used to upload the satellite which is used for deciding the north axis or direction. Low earth orbit is used for remote sensing and Geo-stationary orbit is used for communication related details. This all orbits are many kilometers away from the earth.

He has also explained the loads acting on the satellite structures. The main loads acting are dead load, Payloads, Thermal loads, Pre launch load, Post launch Loads. They also explained that in design of satellites mainly dead load and thermal loads are considered. And at the pre-launched stage the highest load is acting while after the launching the satellite it revolve around its orbit by its own. The launching process of satellite is step by step process.

At last he has given brief knowledge of design consideration. The satellite is designed for deflection criteria and it is checked for stress later while in

conventional structures it is designed for stresses and checked for deflection. The satellite is encased in the rocket with fewer gap, if some hit happened between the rocket and satellite than satellite may gets damaged and it may not be further in use. So deflection design is necessary in design of satellite structures.

The materials used in satellite construction are different alloys like Al, Be, Mg, Carbon Fiber Reinforced Plastics. Solar Panel is also fitted in the satellite. During launching all the parts of satellite is dismantling step by step.

Overall, the lecture was a very good informative for design special structures. Prof. D J Dave has widened our scopes and area of knowledge regarding the satellite design, so we are very thankful to him for taking such a wonderful initiative to enlighten us with this knowledge.