



DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2021-2022/ODD SEMESTER
INTERNAL STAFF SEMINAR – REPORT

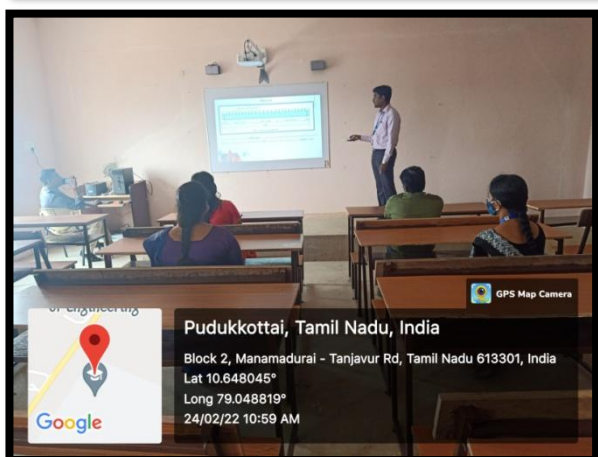
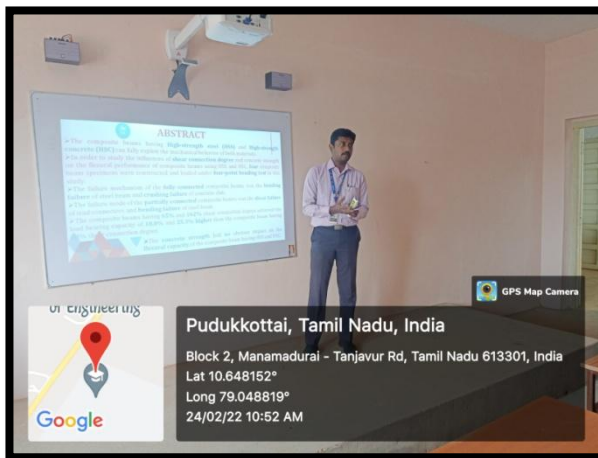
25/02/2022

Background & Objective

Department of Civil Engineering had organized an Internal Seminar for the Department staff members for accessing online journals. The purpose of this seminar is to equip the faculty in new techniques through accessing online journals like MAT, Springer etc.

Seminar Session

A Seminar was held in the Department of Civil Engineering on 24th February, 2022 at 10:30AM. **Mr.K.Arun /AP** delivered his seminar talk on **“Flexural Performance of Composite Beams using High-Strength Steel and High-Strength Concrete”**. The paper was referred from SPRINGER Journal, International Journal of Steel Structures.



Internal Seminar Session by Mr.K.Arun /AP CIVIL

Theme:

The composite beams having high-strength steel (HSS) and high-strength concrete (HSC) can fully exploit the mechanical behavior of both materials. The composite beam has been extensively used in building and bridge structures for the excellent structural behavior such as bearing capacity, stiffness, seismic performance, fire resistance and durability. Adopting high-strength steel is capable of reducing the member size, self-weight for the structure, welding and coating materials. High strength concrete characterized by high strength, early strength, small creep coefficient and large rigidity is more suitable for the harsh environment than the normal concrete for wear resistance, impermeability performance and corrosion resistance. As an efficient structural component, the composite beam is composed of the high-strength steel (HSS) beam in the tension area, the concrete slab (HSC) in the compression area and shear connectors at the interface. Therefore, the composite beam can fully exploit the mechanical behavior of both materials and expand the application field of the high-performance materials in the building and bridge construction. The objective of the research paper is to study the influences of shear connection degree and concrete strength on the flexural performance of composite beams using HSS and HSC.

Outcome:

The Seminar clearly highlighted the properties and characteristics of HSS and HSC composite beams. Staff members also got an idea about the composite beams and shear connection degrees. This seminar proves to be effective in such a way that, it highlighted the potential impact of shear connection degree in a composite beam irrespective of the concrete grades used. The failure mechanism of the fully connected composite beams was the bending failure of steel beam and crushing failure of concrete slab. The failure mode of the partially connected composite beams was the shear failure of stud connectors and bending failure of steel beam. Discussions were made among faculty members in various aspects of composite beams. Finally, Staff members shared their views regarding seminar and gave their valuable feedback.