Techno College of Engineering Agartala

An Engineering College Approved by AICTE, MHRD, Govt. of India
Affiliated to Tripura University (A Central University),
Department of Civil Engineering

List of Laboratory Experiments

Transportation Engineering Lab							
Course Code	**Hours / Week**				**Maximum Marks**		
PC CE 606	L	T	P	C	**CIA**	**SEE**	**Total**
	0	0	2	1	40	60	100
Number of classes: 20 Hours			**Prerequisites: Transportation Engineering**				
Branch: CE			**Semester: VI**				

Course overview:

The lab is designed in such a way that the student does an in-depth analysis of aggregate, bitumen and bitumen mixes. This laboratory course is designed to complement theoretical concepts in transportation engineering through hands-on experiments, data analysis, and fieldwork.

Course objectives:

i. Conduct laboratory tests to quantify properties (e.g., Los Angeles Abrasion, Flakiness Index, etc.) & understand how these properties influence performance in real-world applications.
ii. Understand material behavior under traffic loading and environmental conditions as well as selection of appropriate materials for each pavement layer.
iii. Determine pavement thickness design as per standard design charts (e.g., IRC, AASHTO).
iv. Prepare sampling and testing plans, set acceptance/rejection criteria and implement statistical quality control methods for batch testing.
v. Conduct mix design of bituminous concrete, finding out the optimum requirement of bitumen as per the gradation criteria adopted and to learn how to prepare DBM or BC layers of flexible pavements.

Course outcomes:

CO Number	CO Description	K-level
CO-1	Explain and develop the various characteristics of road aggregates.	K-2
CO-2	Determine the CBR value for road construction.	K-3
CO-3	Infer the suitability of road aggregates for the construction of road.	K-2
CO-4	Determine and characterize the pavement materials.	K-3
CO-5	Develop quality control tests on pavements and pavement materials.	K-3
Sl. No.	**EXPERIMENT NAME**	**CO**
1.	Determination of water absorption and specific gravity of road aggregates	CO-1
2.	Determination of Impact test of aggregates	CO-1, CO-3

3.	Los Angele's abrasion and Devel's abrasion test	CO-1, CO-3
4.	Determination of Crushing Strength of Aggregates	CO-1, CO-3
5.	Determination of Flakiness and Elongation Indices of aggregates, Angularity number	CO-3
6.	Determination of CBR value (Lab) and CBR value (Field)	CO-2
7.	Determination of penetration test of bitumen	CO-4
8.	Determination of viscosity of bitumen	CO-4, CO-5
9.	Determination of Specific Gravity and Softening point of bitumen	CO-4
10.	Determination of Ductility of bitumen	CO-4
11.	Determination of Water content of bitumen	CO-4
12.	Determination of Loss on Heating of bitumen	CO-4
13.	Marshall Test	CO-5