

Innovative Solution to Urban Infrastructure: Special Solution to Conventional Structure Planning

Dr. B C Roy

FNAE, Hon. Member & Fellow, and Former Vice President, IABSE, F.I.Struct.E. (UK), RUPL, New Delhi, India

S Bhattacharyya

Principal Track Engineer, DB Engineering & Consulting GmbH, Bengaluru, India

Contact: bcroy1944@gmail.com

Abstract

Most ancient cities are unplanned, with most businesses in the central core and people from suburbs working there. CBD traffic loads are growing rapidly, straining commute facilities. Urban road infrastructure and unrestrained expansion severely impede mobility. Today, construction project duration and environmental impact matter most. Innovation involves applying solutions that meet new requirements through an engineering process that may not be fully new but adapts the approach to the local constraint and is more evolutionary than revolutionary. Innovative solutions must be optimal in design, cost-effective, and improved in constructability with prototype testing often being used to validate the design, constructability, loopholes to fix, and construction timeframe to adopt. This paper describes some of the creative construction approaches utilised to improve urban built environments, safety, and construction time.

Keywords: Innovation, Innovative Structure, Precast Unit

1 Introduction

In today's materialistic society, time is the most vital resource. The utilisation of time as a resource shortens the gestation period of civil infrastructure projects, hence expediting returns. Rapid construction can ensure prompt outcomes. After project conception and design, the remaining tasks can be completed rapidly.

Globally, innovation in structure design leads to a significant increase in the efficiency of the material used, thereby achieving overall economy, in addition to optimising the time and resources that are required for construction.

This paper will describe few innovations globally that culminate in achieving overall economy along with few examples in India on which the lead author is involved personally.

2 Innovation in Design and Planning of Infrastructure

In an unplanned growth, ancient city engulfs the surrounding suburbs for expansion, however, connecting roadways to the city become insufficient to serve the growing number of commuters.

Solutions to such problem usually fall into two categories: Either by creating a Mass Transit