

# Life Cycle Cost Analysis and Use of Continuously Reinforced Concrete Pavement (CRCP) in the Bharatmala Pariyojana Project

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## 1. INTRODUCTION

Transport is a vital infrastructure for rapid economic growth of the country. Speedy transportation of natural resources (such as raw materials), finished goods and perishable materials to all parts of the country including the points of export outlets are basic inputs to economic growth. Recently there has been a major shift in transportation mode from Railways towards the Road sector in India.

Now a day's about 60% of freight and 87% of passenger transport is met by Road transport in India. Transport infrastructure has found to be woefully inadequate to accommodate the growing needs of the steep rise of vehicles. Congestion, delays, waste of fuel, accidents and pollution has reached intolerable limits, which demonstrates the need for development of a good road network.

Roads do more than mere providing connection between towns and villages. They pave the way for increased commerce, trade and prosperity. It is often said that a country pays for its roads whether it has them or not. It only pays more if it does not have them. Considering the importance of development of National Highways and Expressways for fast movement of goods and passengers, the Government of India has taken up Bharatmala Project a mega road and highway project.

Since the investments in road building are very high, proper investigation needs to be made while

choosing the right type of pavement. One has to carefully exercise the choice, considering various factors such as traffic, environmental conditions, availability of materials and initial cost of construction, serviceability life of pavement, cost of maintenance, road user cost, resistance to overloading and life cycle costs. Fuel saving and vehicle operating costs also play an important role in deciding the pavement type. Out of the total commercial energy 20% is used in transport sector. Road sector is completely dependent on oil, which accounts for 80% of total fuel consumption. Any little amount of fuel saving is a huge benefit to the nation, because major portion of oil is imported.

Vehicle operating costs studies made in several countries including India show that rigid pavements offer fuel savings of upto 20% in comparison to flexible pavements. Hence, any advantage of flexible pavement on account of low initial cost is not significant on life cycle costs.

Also the concrete's white surface reduces the street lighting cost. Since, concrete road surface has light colour compared to asphalt pavement, the heat generation is lower. Cooler surfaces and air reduce the need for air conditioning, saving energy. Cooler air can also reduce air pollution by slowing the chemical reactions that produce pollution.

Institute for Steel Development and Growth (INS DAG) with its mission to provide and promote the cost effective and efficient designs has carried out a study to establish the techno-economic