



## The Design Process for Rail Stations and Modal Integration: Delhi Metro

### B C ROY

Executive Director,  
Consulting Engineering Services (India)  
Pvt. Ltd., India

**Roy B C**, born in 1944, holds a Ph. D degree subsequent to the Masters Degree in structural engineering. In a career of over 40 years, Dr. Roy has dealt with many multi-disciplinary projects; experience ranging from concept plan to execution and is known for his innovative designs. He is the Team Leader for the design of many stations of Delhi Metro.

### Raghuram

### EKAMABARAM

Chief General Manager,  
Consulting Engineering Services  
(India) Pvt. Ltd., India

**Ekambaram, R.** born in 1954, holds a Ph. D in Civil Engg. He has extensive experience in numerical modelling and has published a number of papers in technical journals. His design experience extends to bridges, industrial structures and transmission line towers.

### Tanmoy GUHA

Project Manager,  
Consulting Engineering  
Services (India) Pvt. Ltd., India

**Guha, T.** born Feb 1964, holds BE degree in Civil Engineering and an MBA degree. He has experience in construction supervision, planning & design of different types of civil structures. Along the Delhi Metro line, he has carried out cost estimation for a number of stations.

## Summary

The design process for an infrastructure facility is becoming more and more involved, with input from disparate disciplines and with an eye on the process end-to-end. While Delhi started late in the provisions of mass rapid transit system, the process has picked up speed and the paper will highlight a few of the features of the various stations, citing in particular a few of them.

## 1. Introduction

Delhi enjoys a good level of infrastructure but the rapid rise in population and the extent of the urban area is putting tremendous pressure. Transportation, reckoned as a lynchpin in the



Delhi Metro

developmental program, has not kept up with the growth of the city. The clear indication in this regard is that the number of vehicles plying in Delhi outnumbers those of Mumbai, Chennai and Kolkata taken together. These numbers, quite impressive they maybe point to overdependence on private modes of travel. Of course, the general high economic growth has also fed the appetite for personalized modes of travel. It is in this context of providing a public transport system that will be attractive to the citizens of Delhi was conceived.

The Delhi Metro conceived in four phases namely Phases I to IV extending over about 250 km, now sports a line of 65 km with 59 stations. Phase I comprise three lines and it has