

A Study of Construction and Material management during Construction of Integrated Structure at Chandani Chowk Junction on NH-4, Pune

M. S.Wabale¹, Prof. Rahul Shinde²

¹(PG Student) Department of Civil Engineering, RMD Sinhgad School of Engineering, Warje, Pune-411058, India.

²Department of Civil Engineering, RMD Sinhgad School of Engineering, Warje, Pune-411058, India.

Abstract—Chandani Chowk is one of the busiest and most important road junctions in Pune city. Despite several attempts by the civic and police authorities to resolve the traffic issues, the spot is constantly beset by traffic snarls and accidents, owing to the lack of planning and management. This constant flow of traffic at the Chowk is because it is the intersection where many important roads meet, including the heavy and high-speed traffic of the Pune-Bengaluru Bypass. Also, at the location NDA Road, Bavdhan, Paud/ Mulashi, Kothrud, VedBhavan service road and the bypass from Mumbai and Katraj intersects. The Detailed Project Report (DPR) for construction of integrated structure is prepared by NHAI recently to resolve the traffic issue at the location. The improvement proposal includes construction of road networks and flyovers/underpasses etc. The present study includes the construction planning and management for completing the work within estimated budget and Specified time and Material management to improve the productivity and cost efficiency of a project and help to ensure its timely completion.

Key words—Construction Management, Material Management, and Construction Methodology.

1 INTRODUCTION

Chandani Chowk is one of the busiest and most important road junctions in Pune city. There is constant flow of traffic at the junction. It is the western entry gate of Pune city. Chandani Chowk junction interconnects four local roads with NH-4. Due to lack of planning and proper traffic management, the junction location is constantly beset by traffic snarls and accidents. At this junction, road coming from NDA side, Bavdhan side, Paud side, Kothrud side, VedBhavan service road and the bypass road (NH-4) from Mumbai -Katraj intersects.

On an average, about 1,50,000 vehicles, converge daily at the junction from six different directions. The traffic consists of two-wheelers, cars, buses and trucks. The stretch also comprises a narrow bridge, and a narrow service road (LHS). The never-ending traffic flow, the flagrant flouting of traffic rules and poor infrastructure are the prime reasons for the ensuing chaos at the spot.

Efficient planning and management of traffic are the burning needs to resolve the issues at Chandani Chowk. Adequate and capable policing is sorely needed, along with the curbing of lawlessness by road-users.

2 IMPROVEMENT PROPOSAL BY NHAI

2.1 Background

The main objective of the study by NHAI is to establish the technical, economical and financial viability of the project and prepare a report for "Road Improvement network of NH-4 at Chandani Chowk at Pune, Maharashtra with development of Service Roads, as per the best practices for Urban roads, meeting the City requirements for the roads.

2.2 Proposed Structures and Road works by NHAI Roads work

- i. NH-4: Widening of Main Carriageway (3 Lanes each) and development of Service Roads on LHS and RHS as well as Outer Service roads on LHS and RHS within PMC D P land.
- ii. NDA- Mulashi Road section of SH 60.
 - a) NDA Junction to Mulashi Toll Plaza Location

- b) Mulashiroad old Toll Plaza to Mulashi Road
- c) Ramp-1: Mulashi towards Satara.
- d) Ramp-2: Mulashi towards Mumbai.
- e) Ramp-3: Mulashi towards Pashan.
- f) Ramp-4: From Outer Service road towards Mulashi.
- g) Ramp-5: Pashan/NDA towards Mumbai.
- h) Ramp-6: Pashan towards Satara.
- i) Ramp-7: Satara/Kothrud towards Pashan.
- j) Ramp-8: NH-4 Exit towards Outer Service roads.
- iii. NDA to Pashan Road.
- iv. Pashan Connector Road (24m DP road).
- v. Ved-Vihar towards NDA Junction Road.
- vi. Pashan towards PMC Water supply Road.
- vii. Existing VUP towards Kothrud Road.
- viii. VUP-1 towards Kothrud Road.
- ix. Rotary at Pashan.
- x. Rotary at NDA

List of Structures to be constructed across NH-4:

- i. VUP-1: New Vehicular underpass.
- ii. NDA-Pashan VOP: Replacement of Existing NDA-Pashan VOP.
- iii. Ramp-1: Flyover from Mulashi towards Satara.
- iv. Ramp-3 & Ramp-7: Vehicular Underpass on Mulashi to Pashan and Satara/Kothrud to Pashan road.
- v. Ramp-5: Vehicular Underpass on Pashan towards Mumbai road.
- vi. Ramp-6: Flyover from Pashan towards Satara.

2.3 Objectives of the Study

The objectives of the study are as follows-

- Effective Construction Planning and Construction Management for completing the work within estimated budget and Specified time.

- Material management during construction to improve the productivity and cost efficiency of project and to help for ensuring its timely completion.

3 CONSTRUCTION MANAGEMENT

3.1 Construction Sequence of Project

The project location is within Municipal limits of PMC. There is rapid development taking place on both sides of the road. Due to site constraints at the project location and being located within municipal corporation area of Pune, it felt necessary to decide the project construction sequence. The main objective of preparing construction sequence is to observe minimum disturbance for the traffic movement on NH -4. To achieve this, project activities are divided into nine stages. Each stage is having four to five activities planned. Also, traffic movement is shown in black arrow during construction. The detailed description of these stages is as follows-

Stage- I: In this stage construction of road works proposed are as below. These road works are not affecting the main carriageway traffic of NH-4. In this stage following road works are proposed:

- 1) Construction of LHS and RHS Service roads from Km. 841.400 to Km. 842.160.
- 2) Construction of LHS and RHS outer service roads from Km. 841.400 to Km. 842.160.
- 3) Construction of LHS and RHS Service roads from Km. 842.640 to Km. 843.600.
- 4) Construction of LHS and RHS outer service roads from Km. 842.640 to Km. 843.600.
- 5) Construction of Pashan Connector DP Road & Pashan Rotary.
- 6) Construction of new NDA - Mulshi Road.
- 7) Construction of Kothrud to Vehicular Underpass (VUP-1) Road.

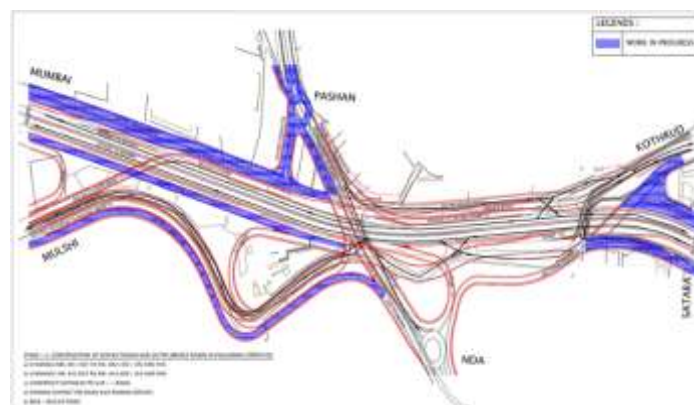


Fig. 1: Stage-I

Stage- II: After Completion of Stage – I, Construction of Stage – II can be started. Stage – II includes construction of following road works and Structures.

- 8) Construction of Ramp - 1: Mulshi to Satara road.
- 9) Construction of Mulshi Flyover.

