Impact Factor (SJIF): 4.542

International Journal of Advance Research in Engineering, Science & Technology

e-ISSN: 2393-9877, p-ISSN: 2394-2444

Volume 4, Issue 4, April-2017

STUDY ON CONSTRUCTION OF EXPRESSWAY

KumKum Bhattacharjee [1], Lokesh Sharma[2], Bhoopesh Gupta[3], Sunil Kumar Meena[4]

1. Assistant professor, Department of Civil Engineering Echelon Institute of Technology

2. B.Tech. Student, Department of Civil Engineering Echelon Institute of Technology

3. B.Tech. Student, Department of Civil Engineering Echelon Institute of Technology

4. B.Tech. Student, Department of Civil Engineering Echelon Institute of Technology

ABSTRACT

A Controlled-access highway is a type of highway which has been designed for high speed vehicular traffic, with all traffic/ egress regulated.They are free of any at-grade crossing with other roads, railways, or, pedestrian paths, which are instead carried by overpasses and underpasses and interchanges for entrance and exit to the highway and box culvert to drainage with major and minor bridges.The main objective of this study is to explore the construction of expresshighway effectively and avoid the problems facing in the construction.

***Keywords**: Major and Minor Bridges, Underpasses, Box culvert, Interchanges*

1. INTRODUCTION

The expressway is constructed for speedy vehicular movement crossing with different roads its including bridges, flyover for interchange, underpasses. For construction of bridges the type of foundation is should be provided it totally depend on the type of soil if the soil is soft then it acquire pile foundation and for hard soil it acquire shallow foundation.

The construction of components of express way such as bridges, box culvert, underpasses, is done by precasting or post tensioning structure.

Figure 1 : Precaste structure

2. PROBLEMS AREA

- To determine the location and no. of box culvert.
- To determine the economical section of column.
- To achieve the acquire strength of structure after curing.
- To decide the depth of pile foundation.

Figure 2: Nominal cover

3. OBJECTIVE

- To explore certain development in the region to improve quality of life
- To increase growth and balanced development of Haryana sub region between the rest of Haryana.
- To improve the efficiency of existing methods of resource mobilization and guide private investment in proper way.
- To develop infrastructure facilities such as transport, power, communication, drinking water, sewerage, drainage etc. better than those in NCTD.

4. LITERATURE REVIEW

As my study in eastern peripheral expressway at palwal on distance 22km constructed by Gaytri Project Ltd. And the cost rate is 680 crores. The proposed Kundli-Manesar-Palwal Expressway has an estimated total length of 135.650 km. The alignment of the project passes through five districts, i.e. Sonipat, Jhajjar, Gurgaon,
Mewat and Palwal. Road land width of 100m along the alignment of proposed expressway has already been acquired by HSIIDC. The alignment of the proposed road starts from NH-1 near Kundli, crosses NH-10 at Bahadurgarh, Crosses NH-8 near Manesar and finally joins NH-2 near Palwal. The proposed expressway is dual carriageway 6-lane (3+3) expressway and is divided highway intended for traffic with full control of access and provided with grade separators at intersections. No slow moving traffic will be allowed to ply on the Expressway.

The proposed expressway crosses through various seasonal streams, irrigation canals, Distributaries and nallahs, where major and minor bridges are proposed. About 132 km length out of 135.650 km of expressway has been designed in complete embankment.

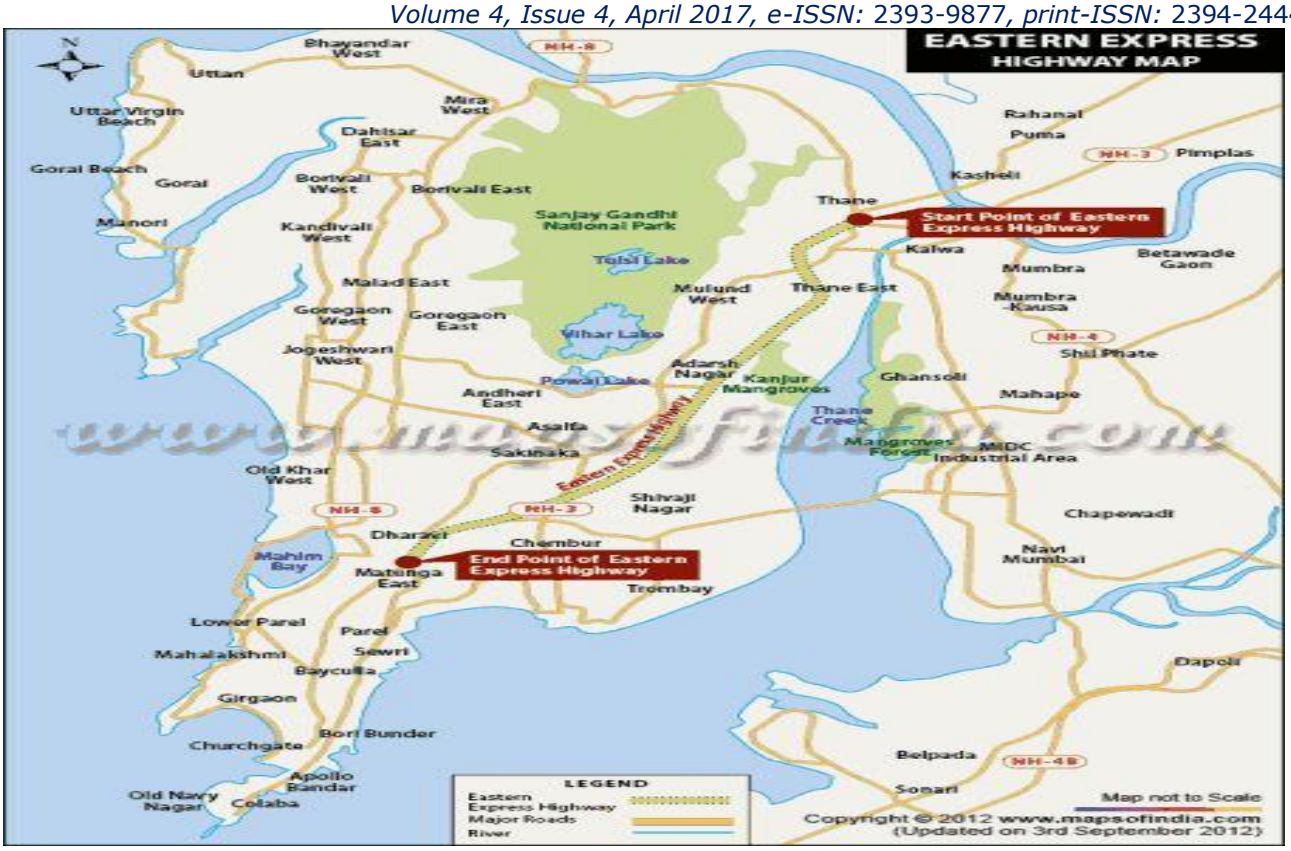

Figure 3. Route map

5. NEED AND IMPORTANCE OF PROJECT

5.1. To reduce the traffic load & incremental pollution levels

The Hon'ble Supreme Court of India has ordered on 16.12.2001 and 15.07.2002 in write petition (Civil) 13029 of 1985 that no heavy, medium and light goods vehicle will ply on interstate route through Delhi or New Delhi. The KMP expressway passing through the State of Haryana has been conceived in the light of the order of hon'ble Supreme Court of India. The construction of Kundli-Manesar-Palwal Expressway intends to relocate the heavy traffic, plying through Delhi to lessen the traffic and the pollution load in the capital and nearby areas.

5.2. Enhance connectivity with Cities, other NHs and accessibility:

Project is also designed to increase connectivity by providing access to various National and State highways at selective locations. Its strategic location in the NCR region, connectivity with NH-1, NH-8, NH-10 and NH-1 aim to bypass the heavy traffic plying through National Capital, thus makes the project desirable

6. Estimated Raw material

About 68% of the construction work for road and supporting structure has already been finished. For remaining work, requirement per kilometer:

1. Earth work- 60,000 MT/ km
2. Stone ballast-8000 MT/ km
3. Grit- 6000 MT/ km

Figure 4: Fly ash

Figure 5: Grits

7. SITE ANALYSIS

7.1. Connectivity

The project is a 135.650 km expressway construction, passing through five districts in the state of Haryana viz. Sonipat, Jhajjar, Mewat, Gurgaon and Palwal.

7.2. Land Form, Land use and Land ownership

The project falls in 5 districts of Haryana. The development of expressway in the area will definitely bring substantial change in the land use pattern of the area. The land acquired for the purpose is predominantly agriculture. About 70% length of the proposed expressway passes through cultivated land and remaining 30% length traverse through forest, barren and inhabited area. About 3846.67 acres of land have been already acquired for the project which also includes 35.63 ha (88.04 acre) of forest land.
Hence 3846.67 acres of land has been diverted from agriculture/forest or other landuse to road construction. The impact caused due to change in landuse pattern will be direct and of long term and irreversible in nature.

7.3. Soil Profile of the state

The soil in Haryana is continuous part of the Punjab plain, but the area is not leveled at some parts. Over most of the district the soil is fine loam with rich color. However some areas have sandy soil and some areas have kallar. Overall the soil of Haryana State is rich and suitable for agriculture.

7.4. Topography

The alignment of the proposed passes through plain and undulating terrain, and passes through agricultural area. The terrains and the road alignment are moderate with flat gradients. The state is bounded by river Yamuna on the east and Ghaggar River in the west. But the southern part is undulating due to Aravali hills region and sand dunes.

8. CONCLUSION

The expressway connected kundli and palwal covering a total length of 135.6km in length. After completion it connects four national highways namely NH1 near kundli, NH2 near palwal, NH8 near manesar NH10 near bahadurgarh and state highway 13. Several bridges and underpass are constructed to connect to major and minor projects. The project is still underconstruction and estimated to complete till august 2018.after completed the project will provide high speed traffic to connect northen Haryana to southern districts such as Faridabad and palwal.

Reference

1. Pre feasibility report (PFR) of environmental impact assessment and environmental management plan for KMP expressway.
2. International journal of latest trends in engineering and technology (IJLTET) by Ar. Manoj panwar (assistant professor, faculty of architecture, DCR University of science & technology, murthal, Haryana, India) & Er. Pardeep Sindhu (sub divisional office, PWD B&R, Shona Haryana, India)
3. www.tcpharyana.gov.in
4. Principles and practices of highway engineering. Dr.L.R.Kadyali, Dr.N.B.Lal.
5. www.hindustan times news .com