Justification For Project location.

1.1 Alignment Proposals

Various alignment options have been attched. Comparison of various options on the basis of cost of construction, engineering standards, safety, environment and social impact of project. Each of the parameters will be marked on 0 to 10 scales to determine final alignment.

1.2 Option Analysis

Alignment options are analysed considering factors such as engineering standards, cost of project, social impact and environmental impact. Detailed value engineering analysis is presented and summary in Table 1.1.

1.3 Comparison Detail of Alignment Option 5 and Option 6

Alignment option 6 and option 5 are same; however for Parsik hill section vertical alignment were differ to achieve three tunnels or single tunnel respectively. To make final decision between these options comparison describe below

1.3.1 Engineering standards

Alignment option-6 with three tunnels having vertical grade 2 % up and down, but alignment option-5 with single tunnel having maximum vertical grade 1% up and down.

1.3.2 Safety standards

Lighting

As per IRC:SP:91-2010 the light luminance level in Interior Zone is generally kept at around 15 to 20 candelas/sq.m. of road surface. In three tunnels option continuous change in light luminance level from 20 candelas/sq.m to day light and again 20 candelas/sq.m level within four open portion in three tunnels. Due to east-west entry and exit of tunnel this change create big problem of darkness effect to driver's eye. But in single tunnel this problem can come only at entry and exit in single tunnel.



Figure 10.1 Natural Lights in Tunnel Section

1.3.3 Forest Area Clearance

The adit and approach road may need forest clearance for 3 tunnels. For open faces at either ends of single tunnel no such clearance is needed. The finding of study indicated that a large area of forest land will be required for various purposes for construction of tunnel portals & approach roads. Very less forest land will be required for construction of portals & approach road because of only 2 nos. of portals have to construct in spite of 6 nos. of portals Trees/Vegetation

The finding of study indicated that in 3 tunnels alternative many standing trees are to be cut for implementation of the project. In Single tunnel alignment very few/No trees are to be cut.

Based on option analysis table and comparison, alignment option 5 is recommended for the project.

1.4 Implementation

This project holds an important strategy for the future development of Mumbai metropolis. Project having different constraints, therefore after discussion with MMRDA, the project road has been divided into three phases for implementation purpose.

1.4.1 Project Phases

The project divided into three stages as given below.

- 1. Phase-A- Thane Belapur Road to NH-4
- 2. Phase-B- Airoli Bridge to Thane Belapur Road

3. Phase-C- NH-4 to Katai Naka Junction

As per present conditions, the implementation of Phase –A will take place first, followed by phase-B and lastly Phase-C.

Phase –**A**: - This phase starts from Thane Belapur Road and end on NH-4 after crossing Parsik hill. The proposed alignment passes through Bharat Bijlee Limited land, and then crosses the central road, after which it enters Parsik hill forest land and ends on NH-4 near Bharat Gear Company. Length of this section is about 3300 m (Km. 2+650 to Km. 5+950). The proposal for this stretch includes an elevated section, Single tunnels and cutting section with two interchanges (one at start and other at end point). Cost of construction of this phase is about Rs. 4,628,739,467.

Phase –**B**: - This phase starts from Airoli Bridge and ends on Thane Belapur Road. Length of this section is about 2650 m (Km. 0+000 to Km. 2+650). Fully elevated section is proposed for this section with one interchange and one ROB. Cost of construction of this phase is about Rs. 2,044,971,314.

Phase –**C**: - This phase starts from NH-4 and ends at Katai Naka Junction. The proposed alignment passes through DP road and private land, then crosses the Creek, Diva Panvel railway line and ends at Katai Naka junction. Length of this section is about 6350 m (Km. 5+950 to Km. 12+300). The proposal for this stretch includes at-grade section with bridge, ROB and an interchange (end of the road). Cost of construction of this phase is about Rs. 2,268,307,735.

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