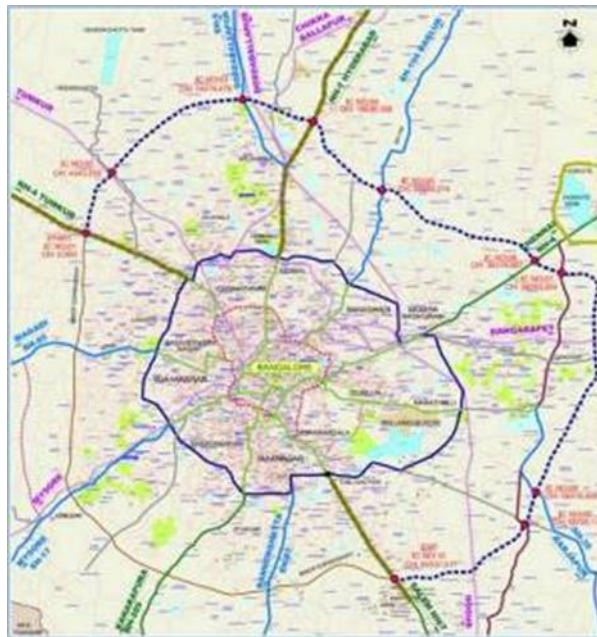


SALIENT FEATURES OF ELEVATED ROAD FROM CHALUKYA

CIRCLE TO HEBBAL

0.1. Background

Bangalore is the fifth largest city in India with an estimated population of around 95 Lakhs spread over 821 Sq Km. The present day vehicle population is close to 60 Lakhs. The city has seen an increase of over 10.2% in last 10 years while the population has increased by ~ 3.25% during the same period.



Bangalore has a radial road network with 6 primary roads (National Highways) and 5 secondary roads (State Highways) converging / diverging from the existing Outer Ring Road. The outer most road for Bangalore city at present is 65 Km long and was constructed by Bangalore Development Authority. ORR (Outer Ring Road) was constructed as bypass for the city taking away commercial vehicles and private vehicles allowing them to avoid passing through the city to reach their destination. Due to rapid ribbon development along and beyond the ORR. There has been an increase in traffic in both the ORR and its interconnected roads. This has led to traffic congestion at all major intersections and at midblock sections. The Shift of the International Airport from HAL to Devanahalli has also changed the travel pattern in the city. At present, agencies like BDA and BBMP are implementing grade separators along ORR and at important junctions in the city. But this has not relieved traffic congestion between junctions.

In addition, agencies like Bangalore Development Authority (BDA) and Bhruhat Bengaluru Mahanagara Palike (BBMP) have taken up various road improvement measures to improve traffic movement on few road networks in Bangalore to make them signal free corridors for through traffic. In this regard, grade separators were constructed and few more have been proposed at major junctions along these corridors, especially of Outer Ring Road and dense traffic city roads.

The project corridor (road section between Basaveshwara Circle to Hebbal totalling ~ 6.7 Km) is one of the busiest roads in Bangalore city which is taking traffic from southern, part of south-east and south-west extensions of Bangalore and CBD area towards northern part of Bangalore and beyond. With the shift in Bangalore Airport from HAL to Devanahalli (Kempegowda International Airport Limited (KIAL)), there has been manifold increase in passenger car and bus traffic which is predominant on the project road. Considering the increase in traffic, NHAI has built a 6 lane elevated road beyond Hebbal flyover leading to the Airport. The surface level road has also been upgraded to 6 lane main carriageway with 2 lane service road both sides. Presently the traffic from these 16 lanes is converging to 4 lane flyover at existing Hebbal flyover which is a bottleneck. In addition, NHAI has also augmented an existing 2 lane flyover bound towards Airport with an additional lane to increase the capacity. With this, there is considerable reduction in traffic congestion, which also reduces travel time between Hebbal flyover and Airport. There will be reduction in air pollution, noise pollution at surface level in and around the project area.

The road section between Hebbal and Basaveshwara Circle (via Mekhri circle) is already congested with traffic queues for longer durations during peak hours. Traffic from Airport will suddenly converges at the Hebbal flyover (2 lane) and towards the city. The existing land use pattern is such that a horizontal widening of existing road is not practically possible.

Construction of proposed elevated road to make the project corridor signal free and access controlled is essential because:

- Signal time and delay is greatly reduced
- Travel speed is increased
- There will be an unhindered movement of traffic from NH-7
- Airport bound traffic will be catered to
- Future project traffic will also be catered to

0.2. Scope of Work

Bangalore Development Authority (Client) has appointed M/s STUP Consultants Pvt. Ltd to carry out Detailed Project Report. The consultant has carried out various activities as part of the assignment which is covered in the DPR:

- Field surveys and investigations – reconnaissance, topography, traffic studies and geotechnical investigations.
- Concept plan - concept plan alternatives were developed for the project corridor, discussed and presented to BDA and best suited alternative was selected for implementation. The concept plan includes elevated road and proposal for an underpass at Hebbal junction.
- Alignment planning and design – existing road centre is followed for proposed elevated road as far as possible to avoid / minimise land acquisition.
- Vertical profile design as per IRC standards
- Junction layout and design – remodelling of existing major intersections
- Road miscellaneous items – road side drainage, road signs, lane markings, kerb stones, crash barrier and other traffic safety appurtenances
- Design and drawings for plan and profile
- Drawings for pavement typical cross sections
- Bill of Quantities, rate analysis and Cost estimate as per PWD SR.
- Presentation to BDA, Traffic Police Department and Technical Advisory Committee

0.3. Salient Features of Project

The salient features of the project are as follows:

- *Construction of Elevated road*
 - *Main Flyover between Rajbhavan and Hebbal* - 6687.000 m
 - *Up ramp towards Maharani College* - 1035.000 m
 - *Down ramp towards Maharani College* - 1111.000 m
 - *Down ramp towards VidhanaSoudha* - 378.000 m

- *Down ramp towards Race Course* - 344.000 m
- *Down ramp at Mekhri Circle(Yeshwanthpur side)* - 489.000 m
- *Down ramp at Mekhri Circle(Jayamahal side)* - 325.000m
- *Up ramp from Air force station(Mekhri Circle)* - 435.000 m
- *Down ramp at Vasanthanagar* - 330.000 m
- *Construction of Underpass*
 - *Along Rajbhavan towards Race Course* - 870.000 m
 - *Along Millers Road towards Race Course* - 285.000 m
 - *Along Cunningham Road towards Airport* - 235.000 m
- *Cross Section Configuration of Grade Separator (outer to outer)*
 - *Main Flyover* - 6 lane, 24.20 m
 - *Ramps* - 2 lane, 8.50 m
 - *Underpass along Rajbhavan and Millers road-* 2 lane, 8.50 m
 - *Underpassalong Race Course road* - 3 lane, 10.00 m
 - *Cunningham Road Underpass
(remodeling of existing geometry)* - single lane, 4.00 m
- *Cross Section Configuration of Surface Level Road*
 - *Main Road* - 9.00 m
 - *Service Road* - 7.50 m
 - *Other Roads* - 5.50 m (min)
 - *Central Median* - 4.50 m
 - *Separator Median* - 1.00 m
 - *Footpath cum Drain* - 1.50 m (min)
- *Cross Slope* - 2.5 %
- *Vertical Clearance*
 - *Flyover* - 5.50 m (min)
 - *Underpass* - 4.50 m (min)
- *Design Speed*
 - *Main Flyover* - 50 kmph
 - *Underpass and Ramps* - 30 kmph

0.4. Land Acquisition

Additional land acquisition area required for construction of comprehensive proposal is about 19110sqm (Govt. land 14986sqm&Pvt. Land = 4124 sqm).

Details of Government Land Acquisition

Sl. No.	Description	Road Name	Area (Sqm)	Area in Acres
G7	C.I.D Centre	Palace Road	380	0A 3.75G
G14	Balabrooyi Guest House	Palace Road	214	0A 2.11G
G15	Balabrooyi Guest House	Bellary Road	2957	0A 29.21G
G2	Jawaharlal Nehru Planetorium	Raj Bhavan Road	2920	0A 28.85G
G13	BWSSB	Bellary Road	309	0A 3.05G
G8	R.C College	Palace Road	82	0A 0.81G
G9	R.C College	Palace Road	19	0A 0.18G
G10	R.C College	Palace Road	13	0A 0.12G
G11	R.C College	Race Course Road	412	0A 4.07G
G12	Indira Gandhi Musical Fountain	Millars Road	34	0A 0.33G
G16	Golf course	Bellary Road(Opp. Ministers Quarters)	2776	0A 27.42G
G17	Golf course	Bellary Road(Opp. Le Meridian Hotel)	576	0A 5.69G
G18	Golf course	Bellary Road(Opp. Prestige Abyshot Apartment)	985	0A 9.73G
G21	Karnataka Agro	Bellary Road	126	0A 1.24G
G23	Air Force	Mekhari Circle	3183	0A 31.45G
		Total	14986	3A 28.07G

Details of Private Land Acquisition				
Sl No	Description	Road Name	Area (Sqm)	Area in Acres
L2	Chalukya Hotel	Palace Road	18	0A 0.17G
L3	Private Land (Opp to BDA)	Bellary Road	9	0A 0.08G
L4	Mahindra Showroom	Bellary Road	3	0A 0.02G
L5	Palace Ground	Palace Road(towards Vasanthnagar)	2626	0A 25.94G
L6	Palace Ground	Bellary Road(Opp. Guttahalli Bus stop)	1250	0A 12.35G
L7	Palace Ground	Bellary Road(Opp. Palace view Apartment)	126	0A 1.24G
L8	Palace Ground	Bellary Road(Opp. RMV Extension 10th Main)	92	0A 0.9G
Total			4124	1A 0.74G

0.5. Project Cost

The estimated cost for construction of proposed elevated road excluding land acquisition cost works out to **Rs.1350** Crores based on 2014-15 PWD Schedule of Rates, Bangalore Circle. The project cost has to be updated for the present year since the estimate was based on schedule of Rates of 2014-15 which was considered at the time of inviting tender. Besides, certain other components like additional Tax implications (which are Revenue to state Govt.) were not considered. The VAT of 5% on raw steel was considered in the estimated cost whereas 14.5% is levied on fabricated steel. The contractor has to pay at the rate of 14.5%. Hence, the cost is reasonable.

CLARIFICATION OF CERTAIN POINTS PERTAINING TO ELEVATED ROAD FROM CHALUKYA CIRCLE TO HEBBAL

1) Why flyover from Chalukya Circle to Hebbal Flyover is required at all between the stretches?

The road section between Chalukya circle and Hebbal has 9 major intersections. They are Chalukya junction, Millers road, Highground Police Station, Kumarakrupa junction, Cauvery theatre junction, Mekhri circle, Sanjay Nagar junction, CBI junction and Hebbal. The daily traffic in these junctions are given below:

Junction	Daily Traffic	Peak hour traffic
Basaveshwara circle	235769	19675
Miller road junction	78650	6286
Highgrounds junction	183941	17857
Kumarakrupa road junction	229378	18038
Cauvery theatre junction	207947	15080
Mekhri circle junction	294639	22898
Sanjaynagar road junction	219424	19261
CBI junction	187250	13153
Hebbal flyover & junction	343505	23799

Out of the total traffic plying on this section, more than 45% of the traffic is a passenger car (taxi or personal vehicle) which has originated beyond Chalukya junction and destination beyond Hebbal flyover. The surface level road which is generally 3 + 3 lane has generally not changed and cannot be expanded horizontally or additional Lane cannot be added due to adjoining buildings all along this stretch. The increase in traffic and peak hour traffic has often lead to traffic congestion.

While on the other side of Hebbal, NHAI has already constructed 6 lane Flyover with 6 lane surface level road and 2+2 lane service road. The road section from NHAI flyover (which is 6 lanes) will suddenly get bottled up as it reaches Hebbal (2 lanes) while coming from Airport direction towards the city. Often traffic queue and piling up is seen between Mekhri circle and Hebbal section.

As a solution to this, in order to segregate the through traffic (traffic going towards airport), the existing road capacity is increased by provision of elevated 6 lanes flyover.

2) Will it not increase the congestion at Rajbhavan or Chalukya Circle or near Race Course Road?

No. The present scenario is that the traffic entering Chalukya circle is from Maharani College and Rajbhavan side. We have provided up and down ramp between Maharani College underpass and AG office so that traffic can use the flyover without getting stopped at Chalukya junction. Like-wise, up and down ramp is proposed on Rajbhavan side so that through traffic towards Hebbal need not come towards Chalukya junction. We have also provided down ramp for traffic from Hebbal towards Jayamahal and at Vasanthanagar main road to distribute the exit traffic. As far as Race course road is concerned, down ramp is provided for traffic from Hebbal towards Race course road (this will avoid traffic congestion at Kumarakrupa road junction). Traffic going towards airport from Race course road will not come towards Chalukya junction in any case. The project also includes underpasses at Chalukya junction (for traffic from Chalukya junction towards Vasanthanagar) and from Miller road towards Race course road to integrate with underpass proposed from Rajbhavan road towards race course road.

3) Compared to concrete flyover, why steel is considered?

The existing road between Rajbhavan / Chalukya junction up to Hebbal is main spine for airport bound traffic. Hence, this road cannot be blocked for traffic movement at any point of time or the construction activity should be carried out with minimum disturbance to road users. Steel structure is a prefabricated in casting yard and placed in-site after pier is erected. Even the pier / column are with structural steel which can be assembled in-situ after pile cap is constructed. The weight of the superstructure is in order of 10 to 15T in steel as against 70T to 100T in case of concrete. This implies that the foundation can be prepared with less space (lesser width of pile cap) and extent of barricading is also less when compared to concrete flyover.

4) Will it not destroy Heritage buildings?

No. The Heritage buildings and other important buildings in the area include Carlton House, Balabrooie Guest House, Vidhanasoudha, Rajbhavan etc. None of these buildings will be destroyed. Only a portion of compound wall of Balabrooie Guest House will be demolished and reconstructed in the original pattern.

5) 812 trees will be cut. What action will BDA take to compensate tree removal?

BDA has already proposed to plant 60,000 numbers of city trees and urban planting (urban forestry) in lieu of trees to be removed in the project area.

6) Cost of project is high. Is it not?

No. There is a notion that the project cost is for only 6.68 Km of the flyover. Actually, the total cost of the project includes main flyover, up and down ramps, 3 underpasses, surface level road, drainage system, illumination and traffic safety appurtenances. The breakup of length is as follows:

FlyoverDescription	Length in Mtr
Main Flyover	6687
Maharani College Up Ramp	1035
Maharani College Down Ramp	1111
Vidhana Soudha Down Ramp	378
Race Course Down Ramp	344
Vasanthanagar Road Down Ramp	330
Mekhri Circle Down Ramp	489
Mekhri Circle Up Ramp	435
Jayamahar Road Down Ramp	325
Length of Flyover	11134
Underpass Description	Length in Mtr
Chalukya Junction Underpass	870
Millers Road Underpass	285
Cunningham Road Underpass	235
Length of Underpass	1390

Further the cost of the project is not really high compared to the Advantages the Road User will have after construction of flyover, much Less compared to the Fuel Loss due to Traffic Block, Less compared to the detrimental effect of Pollution due to vehicle Exhaust gasses Etc.

7) Cost of project is inflated deliberately. Is it not so?

No. DPR for the project was prepared by consultant M/s STUP consultant privateLtd., Bangalore. The estimated cost of the project was 1350 Crores as per the PWD Bangalore circle 2014 -15. The project cost had to be updated for the present year since the estimate was based on schedule of Rates of 2014-15 was considered at the time of inviting tender. Besides this, certain other components like additional Tax implications (which are Revenue to state Govt.) were not earlier considered. The VAT of 5% on raw steel was considered in the estimated cost whereas 14.5% is levied

on fabricated steel. The contractor has to pay at the rate of 14.5%. Hence, the cost is reasonable and there is no deliberate attempt to inflate the project cost.

8) Public consultation is not done. Why?

The Bangalore Development Authority has issued Press release on 27.06.2016 inviting suggestions on this project from experts and interested persons either by contacting or through email. Accordingly, 299 suggestions have been received through emails. Out of which 73% have opined in favour of implementing flyover project. The remaining persons have requested to identify alternative route, conventional concrete method and to exhibit detail project. All the requests have been examined. Salient features of DPR are also being shared.

9) Why environmental clearance is not obtained?

The environment clearance is not required as per the MOEF notification dated 22nd August 2013. This project is covered under sub-item (ii) of Section 2 of the notification.

10) Why social impact of the project is not done?

Social impact assessment is not required for this project because there is no involuntary displacement of families as per national R & R policy issued in the year 2007.

11) Why permission from Bangalore Metropolitan Planning Committee is not obtained?

Permission from BMPC is not required since BMPC has jurisdiction to suggest overall plan and projects. Approval of each and every project need not be obtained from BMPC. The Cabinet has already accorded approval.