Bengaluru Smart Infrastructure Limited (B-SMILE)

Office of the Superintending Engineer

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"Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" on Lumpsum, Turnkey with allowable Price Escalation basis

DETAILED PROJECT REPORT

PROJECT COST – 380.00 Cr

September – 2025

Volume - I	Volume - II	Volume - III
Detailed Project Report	**1. Detailed Estimate** **2. Tender Document** **3. Technical Specifications**	**Drawings**

Consultant:

NEZ INFRATECH PRIVATE LIMITED
No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road,
Arehalli, Subramanyapura Post, Bangalore–560061.
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Phone No : + 91 80 43008989, 26731005, e-mail : nezsvy@gmail.com, nezsvy@yahoo.co.in

REF: NEZPL/OC/25-26/1762 **Date: 22-09-2025**

CERTIFICATE

Name of Project	:	"Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing"
Authority	:	The Superintending Engineer, Bengaluru Smart infrastructure Limited, No. 108, 1st Floor, Annexe-2 Building, N.R. Square, Bengaluru – 560001. E-mail: sebsmile@gmail.com.
Project Cost	:	Rs. 380.00 Crores
Name of the assignment	:	Preparation of Detailed Project Report
Tender No	:	EE/RI/EAST/TEND/05/2020-21 dated 04.02.2021
Work Order and Agreement No.	:	EE/RI-(East)/WO/07/2021-22 Dated: 16.04.2021 EE/RI-(East)/Agm/07/2021-22 Dated: 16.04.2021
Period of Preparation of Detailed Project Report	:	10.2.2021 to 14.2.2024
Report submitted to	:	**The Superintending Engineer,** Bengaluru Smart infrastructure Limited, No. 108, 1st Floor, Annexe-2 Building, N.R. Square, Bengaluru – 560001. e-mail: sebsmile@gmail.com.
Detailed Project Report Prepared by	:	Mr. H.V. Mallikarjuna, **M.E, Highways** Mr, Manjunath .S **M.Tech in Structures**
Approved by	:	**Mr. M. Kannan** Founder Chairman
No of Volumes	:	Volume-I Volume-II Volume-III
This Report Contains	:	Volume 1 of 3 (From Page No 01 to 235)
Total No. of Pages	:	235 (Two hundred Thirty Five only)

Thanking and assuring you of our best services at all times,

For Nez Infratech Pvt Ltd.

Kannan.M
Founder Chairman

Nez Infratech Pvt. Ltd.

Notes:

- The scope of detailed project report is only for the purpose of evaluating the specified project. If any substantial change in the report is noticed, the same should be brought to the notice of **Nez Infratech Pvt Ltd,** if found necessary, recommendations and appropriate modifications shall be suggested.
- The reports relates only to the specified project.
- This detailed project report should not be reproduced except in full, without written approval of **Nez Infratech Pvt. Ltd.**
- The Detailed Project Report and drawings enclosed are to be referred only for Tender purpose.

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SALIENT FEATURES

Name of Project	: Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing.
Budget Head	: Budget Allocation in the year 2023-24 Para 219, Government Order No: UDD 293 MNY 2021(E), Bengaluru Dated: 06-02-2024.
Assembly Constituency	: Sarvajna Nagar & C.V. Raman Nagara.
DPR Tender No. & Date	: EE/RI/EAST/TEND/05/2020-21 dated 04.02.2021.
Authority	: The Superintending Engineer, Bengaluru Smart infrastructure Limited, No. 108, 1st Floor, Annexe-2 Building, N.R. Square, Bengaluru – 560001. e-mail: sebsmile@gmail.com.
Consultant	: NEZ Infratech Private Limited. No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road, Arehalli, Subramanyapura Post, Bengaluru – 560061 Ph: 080 43008989. e-mail : nezsvy@gmail.com,
Total Project Cost	: Rs. 380.00 Crores including all provisions & taxes.
Amount Put to Tender	: Rs. 30406.02 Lakhs (Excluding GST)
Provisions (GST, DPR, PMC, Utility shifting and Railway supervision charges)	: Rs. 7,593.98 Lakhs
Type of Tender	: Turn key lump sum fixed price no variation contract based on tenderer's own design (KW-4 & 5 and KTPP 1999 and subsequent amended rules.
Project Duration (construction)	: 24 Months
Area Weightage	: 10% is adopted as per Schedule of Rates PWD 2023-24 within BBMP limit.

Land required for the project (Sqm):	1. Private Property (TDR)	8636.28 sqm
	2. Railway Property	15306.65 sqm
	3. BBMP Property	84.33 sqm
	4. Government Isolation Hospital	3872.77 sqm
	5. Defence Property required	4804.78 sqm
	TOTAL	**32704.81 Sqm**

: Major portion of land required for construction of Elevated Rotary approximately 15306.65 Sqmt are already agreed to handover to BBMP by Indian Railways since they are the main beneficiaries of this project.

Buildings to be Dismantled (Residential / Commercial/Temple/ Church & other Structures)	: 1. Sheet Buildings	- 26 Nos
	2. RCC Buildings	- 36 Nos
	3. G+1 Buildings	- 14 Nos
	4. G+2 Buildings	- 10 Nos
	5. G+3 Buildings	- 01 Nos
	6. G+5 Buildings	- 01 No
	7. Temple	- 03 No
	8. Church	- 01 No
	Total	**- 92 Nos**

	: Clarified Water Tank	1No
	: Clarifier Tank	1No
	: MBBR Tank No. 2	1No
	: Equalization Tank	1No

Existing structures (Banaswadi Flyover) : 1. Proposed for dismantling of existing 2 lane Banaswadi flyover connecting Maruthi Sevanagar to Banaswadi, Maruthi Sevanagar to Kammanahalli and Banaswadi to Baiyyappanahalli.

2. Additional 2 lane ROB is proposed for construction along existing ROB.

Project Proposal : Elevated Rotary connecting all 4 major approaches near IOC Junction and at grade road and Junction improvements.

Major Land Marks	: The Major land mark adjoining to the project site are as Follows. 1.Sir M. Visvesvaraya Terminal at Baiyyappanahalli Railway Station 2. Mukundha Theatre 3. Kammanhalli Main Road 4. Banaswadi Main Road 5. Defence Property (MEG Centre & ADMC Officers Mess) 6. Swami Vivekananda Road metro station 7. Old Madras Road 8. Orion East Mall 9. ITC Infotech India Ltd & ITC Limited - Foods division (Green centre).
Revenue Villages	: 1. Doddanakunte 2. Lingarajapura 3.Byataguttepalya 4. Banasawadi 5.Baiyyappanahalli Munavrthi Kaval 6. Baiyyappanahalli 7. Binnamangala
Hobali	: Kasaba (Bengaluru North) & K.R Puram
Taluk	: Bengaluru North & Bengaluru East
District	: Bengaluru Urban District
Assembly Constituency	: Sarvajna Nagar & C.V. Raman Nagar
Parliamentary Constituency	: Bengaluru Central
Name of BBMP Zone	: East Zone
Name of BBMP Ward& No	: 59 - Maruthi Sevanagar 28 - Kammanahalli 50 - Benniganahalli
Police station Jurisdiction (L&O)	: Banaswadi Police Station

Police station Jurisdiction (Traffic) : Banaswadi Traffic Police Station

Emergency Services (Fire & safety): Banaswadi

Bangalore Electricity Supply Company Ltd (BESCOM) Division	: Shivaji Nagar Division
Bangalore Electricity Supply Company Ltd. (BESCOM) Sub Division	: E5 Sub Division
Bangalore Water Supply and Sewerage Board (BWSSB) Division	: Banaswadi Division & Pulikeshi Nagar Division
Bangalore Water Supply and Sewerage Board (BWSSB) Sub Division	: AEE 23 Sub Division & AE C-3
Barath Sanchar Nigam Limited	: Lazar Road, Balaji Layout, Cooke Town, Bengaluru 560005, Karnataka, Ph: 080 2848 4220, (BSNL)Telephone Exchange
Revenue Officer, BBMP	: Sarvajna Nagar Division & C.V.Raman Nagar Division
Asst. Revenue Officer, BBMP	: Maruthi Seva Nagar Sub Division & C.V.Raman Nagar SubDivision
KRIDE (Railways)	: Samparka Soudha 1st Floor, Opposite Orion Mall, Dr. Rajkumar Road, Rajajinagara 1st Block, Bengaluru-560010. Ph: +91 6364890813 / 6364890825.
Type of Soil	: Sandy Clay
Climate	: Temperature - 28^{O} to 32^{O} Humidity - 60 % Wind Speed - 19 Kmph Rain Fall - 970mm
Seismic Zone	: Zone II (Least Active Zone)
Existing Petrol Bunk	: 1 No – Indian Oil Petrol Bunk
Existing Bus Shelter	: 1 No
Reference of Schedule of Rates (SOR)	: 1. PWD Common Schedule of Rates V-1 to V-6- 2023-2024 2. Railways Schedule of Rates 2019-20. 3. NH SR 2019-20

Design Parameters

Design considerations	: Design speed	- 30 to 40 kmph
	Design traffic	- 10 msa
	Design life	- 50 years
	Design CBR	- 10 %
Lead Location	: Hennur Bande Quarry (Kannur Village), Total Distance from centre of Project road to Hennur Bande is 15.0 Km.	

Features of Proposed Rotary

Type of structure proposed	: Elevated Rotary with Steel Box Girder
Lane configuration inside Rotary	: 4 Lane uni directional
Rotary Capacity	: 5000 PCU / hour
Design Speed	: 30.0 Kmph
Width of Rotary	: 15.0 Mtr
Rail Level to Formation Level	: 10.00 m
Lane Width	: 3.5m X 4
Size of Crash Barrier	: 0.5 X 1.0 Mtr
Weaving length	: 54.0 Mtr
Vertical Clearance from Rail Level	: 7.20 to 7.80 Mtr
Horizontal clearance from Railway Boundary	: 3.0 Mtr
Inner Dia of Rotary	: 65.0 Mtr
Outer Dia of Rotary	: 95.0 Mtr
Circumference Length of Rotary	: 255.00 Mtr (at centre of rotary)
Foundation (Rotary)	: Open / Pile Foundation
Open / Pile Foundation	: 9m X 8m to 7.5m X 5.5m
Dia of Pile	: 1000 mm
Pile Group / No	: 6 Piles / Group
Depth of Pile	: 14m to 23m
Size of Pile Cap	: 7.5m X 5.5m

Rotary sub structure Piers	: 04 Nos
Circular Piers Dia	: 3.5m
Span between Piers	: 1 X 48.0 mtr
	1 X 56.0 mtr
	1 X 68.50 mtr
	1 X 81.31 mtr
Type of Super Structure	: Steel Box Girder
Type of Steel Box Girder	: Trapezoidal shape open at Top
No of Steel Girder / Span	: 3 Nos
No of Approaches	: 4 Nos
Gradient	: 1:20
Type of Structure	: PSC I Girder

Length of Approaches From Rotary towards

- **Four lane Up/Down ramp approach to Rotary from Banasawadi road**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Two lane Up ramp approach to Rotary from Banasawadi road**

Number of Lane	: 2 lanes uni- directional
Total Width of approaches	: 8.5m
Minimum Carriageway Width	: 1 X 7.5m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Up/Down ramp approach to Rotary from Kammanahalli side**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 X 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of Solid Ramp	: 85.0 m

- **Down ramp Towards Baiyappanahalli Terminal Railway station & Up ramp to Rotary from Indiranagara (Old Madras road)**

Number of Lane	: Two lane unidirectional
Total Width of approaches	: 8.50m
Minimum Carriageway Width	: 2 X 3.5m
RCC Crash barrier	: 2 X 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Central Down ramp from rotary to Baiyappanahalli Terminal Railway station beyond and towards Old Madras road**

Number of Lane	: Two lane unidirectional
Total Width of approaches	: 8.50m
Minimum Carriageway Width	: 2 X 3.5m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 1150.00 m
Length of Viaduct Span	: 33x 30.00m
Length of Solid Ramp	: 160.0m

- **Up/Down ramp approach from Rotary to Maruthisevanagara road**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 1496.0 m
Length of Viaduct Span	: 47 x 30.00m
Length of Solid Ramp	: 86.0 m

- **Up/Down ramp approach from Rotary to Railway Maintenance Shed**

Number of Lane	: Intermediate lane bi-directional
Total Width of approaches	: 7.0m
Minimum Carriageway Width	: 1 X 6.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 210.00 m
Length of Viaduct Span	: 4 X 30.00m
	: 1 X 20
Length of Solid Ramp	: 70.0m

Details of Pedestrian underpass :

Length of PUP	: 152m (considering future track)
Type of Structure	: RCC Box Type
Width of PUP	: 5.2m
Clear height of PUP	: 2.75m
Earth cushion over slab	: 0.5m
Rail with ballast on earth cushion	: 0.75m
Entry / Exit to PUP	: Steps and Ramp width of 1.2m

Details of Proposed ROB

- **Proposed Road Over Bridge at LC No: 136A on LHS of Existing Obligatory span**

Obligatory Railway Span

Number of Lane	: 2 lanes unidirectional
Number of Span	: 2 x 35m
Total width of ROB	: 12.0m
Minimum Carriageway Width	: 1 X 7.5m
Kerb	: 2 x 0.55
Footpath	: 2 x 1.5m
Crash Barrier	: 2 x 0.20m
Vertical Clearance	: 6.525m
Camber (bi-directional)	: 2.5%

Approaches to Obligatory Railway spans

a) Towards Byyappanahalli Railway station

Total Length of Approach	: 175.0m
Viaduct Length	: 91.5m
RE- Wall Solid approach	: 83.5m
Number of Viaduct Span	: 3 x 30.5m
Number of Lane	: 2 lanes unidirectional
Total width of Approach	: 8.5m
Minimum Carriageway Width	: 2 X 3.25m
Crash Barrier	: 2 x 0.5m
Vertical Clearance	: 6.525m
Maximum Vertical Gradient	: 5% (1 in 20

Towards Old Madras side

Total Length of Approach	: 465.0m
Viaduct Length	: 274.5m
RE- Wall Solid approach	: 190.5m
Number of Viaduct Span	: 9 x 30.5m
Number of Lane	: 2 lanes unidirectional
Total width of Approach	: 8.5m
Minimum Carriageway Width	: 2 X 3.25m
Crash Barrier	: 2 x 0.5m
Vertical Clearance	: 6.525m
Maximum Vertical Gradient	: 5% (1 in 20)

Proposed Road

Total length of Road proposed for improvement	: 3.5 Km
Proposed width	: 7.0 Mtr to 18.0 Mtr
Pavement Crest details	: Subgrade - 500mm GSB - 200mm WMM - 250mm DBM - 60mm BC - 40mm
Width of Foot Path	: 1.2 Mtr to 2.5 Mtr
Size of Drain	: 1.0 Mtr X 1.0 Mtr
Utility Duct across the Road	: Provisions kept for Street light cable, Electricity UG cable, OFC Water Supply and Sewerage, Cross Duct (Road crossing)
Street Light	: LED Street Light with all its standard accessories are proposed at an interval of 30.0 Mtr
Bus Shelter	: Provisions are made for 2 Nos of Bus Shelters
Road Furnitures	: Road Markings, Sign Boards, Gantry, Guard Rails, Raised Footpath crossing, Pavement Marking etc.

Major Construction Quantities involved

1. Earth work : 99895.00 Cum
2. Plain/RCC/ PSC Concrete : 62390.00 Cum
3. Hysd Steel : 2514 Tonne
4. Structural Steel : 1572 Tonne
5. Ht Strands : 1045 Tonne
6. Granular Sub Base / Wet Mix Macadam : 16910.00 Cum
7. Dense Bituminous Macadam : 4455.00 Cum
8. Bituminous Concrete : 4059.00 Cum

Drawing for Reference : 1. Location Map - NEZPL/DWG/PRJ/204-1.

2. Topographical Survey Drawing - NEZPL/DWG/PRJ/204-2.

3. Concept and Alignment Drawing- NEZPL/DWG/PRJ/204-3.

4. General Alignment Drawings for Elevated Rotary at IOC Junction.

Plan and Section Details (66.0m Span) - NEZPL/DWG/PRJ/204-4-1.

Plan and Section Details (87.33m Span) - NEZPL/DWG/PRJ/204-4-2

Plan and Section Details (50.0m Span) - NEZPL/DWG/PRJ/204-4-3.

Plan and Section Details (48.0m Span) - NEZPL/DWG/PRJ/204-4-4.

5. General Alignment Drawings for ROB at LC No 136A.

Plan and Section Details - NEZPL/DWG/PRJ/204-4-5.

Plan and Section Details - NEZPL/DWG/PRJ/204-4.

6. General Alignment Drawings for Approaches.

NEZPL/DWG/PRJ/204-4-4.

7. Longitudinal Section & Cross Section of Pedestrian Underpass.

NEZPL/DWG/PRJ/204-7.

8. Land Acquisition Details - NEZPL/DWG/PRJ/204-5.

9. Borehole Details - NEZPL/DWG/PRJ/204-4-7.

Benefits of this Project

- Reduced travel time and delay
- Reduced congestion
- Improved Level of Service
- Reduced fuel consumption and pollution
- Reduced vehicle operation and maintenance cost.
- Reduced junction delay and number of conflicts.
- Improved connectivity to the adjacent areas.
- Accomplish future projected, generated and attracted traffic demand.
- Creating opportunity for regeneration of the site and surrounding areas.
- Ensuring adequate access and connectivity, while encouraging sustainable transit friendly environment.
- Ensuring smooth and conflict free movement of traffic in Rotary / ROB as well as around it.
- Ensuring ease of transfer between various modes of transport opted by railway passengers.
- Exploring commercial potential at developable land parcels to ensure optimum land value capture.
- Integrating the existing private retail and commercial areas in and around the site with the proposed scheme.
- For areas where redevelopment of existing building is proposed, the existing use has to be either rehabilitated within the proposed scheme or suitable relocation shall be Proposed. The same shall also be considered in the business model and implementation phasing.
- Major portion of land required for construction of Elevated Rotary approximately 15306.65 Sqmt are already agreed to handover to BBMP by Indian Railways.
- K-Ride have given their approval for construction of Elevated Rotary after verifying their future Rail network development in Urban areas within city.
- Directorate of Urban land transport (DULT) have given their approval for construction of Elevated Rotary after detailed study of the development of surrounding area near Byyappanahalli Terminal Railway Station.

Design standards referred

- IRC: 5 General Features of Design.
- IRC: 6 Loads and Stresses.
- IRC: 15 Construction of Concrete Roads.
- IRC: 18 DESIGN Criteria for Pre-Stressed Concrete Road Bridges (Post-Tensioned Concrete).
- IRC SP 19 Manual for Survey, Investigation and Preparation of Road Projects.
- IRC: 21 Standard Specifications and Code of Practice for Road Bridges.
- IRC: 22 Composite Construction (Limit State Design).
- IRC: SP: 23 Vertical Curves for Highways.
- IRC: 24 Steel Road Bridges.
- IRC: 35 Road Markings.
- IRC: SP: 37 Guidelines for Evaluation of Load Carrying Capacity of Bridges.
- IRC: 37 Design of Flexible Pavements.
- IRC: 38 Design of Horizontal Curves for Highways and Design Tables.
- IRC: 39 Standards for Road-Rail Level Crossing (I Revision).
- IRC: SP: 42 Road Drainage.
- IRC: 44 Cement Concrete Mix Design for Pavements.
- IRC: SP: 50 Urban Drainage.
- IRC: 54 Lateral and Vertical Clearances at Underpasses for Vehicular Traffic.
- IRC: SP: 56 Steel Pedestrian Bridges.
- IRC: SP: 57 Quality Systems for Road Construction.
- IRC: 58 Design of Plain Jointed Rigid Pavements for Highways.
- IRC: 65 Recommended Practices for Traffic Rotaries.
- IRC: 67 Road Signs.
- IRC: 71 Abbreviations and Symbols in Documents and Plans.
- IRC: 78 Foundation and Substructure.
- IRC: 79 Road Delineators.
- IRC: 83 (Part I) Metallic Bearings.
- IRC: 83 (Part II) Elastomeric Bearings.
- IRC: 83 (Part III) POT, POT cum PTFE, PIN and Metallic Guide Bearings.
- IRC: 86 Geometric Design Standards for Urban Roads in Plains.
- IRC: SP: 90 Manual for Grade Separators and Elevated Structures.
- IRC: 92 Designs of Interchanges in Urban Areas.
- IRC: 103 Pedestrian Facilities.
- IRC: 112 Concrete Road Bridges.
- IS: 2911 (All Parts) Pile Foundations.

Key Features and Summary of the Project Report

At a glance, this section of the status report summarizes the detailed project proposal report overview.

Name of the Project: Consultancy services for Preparation of Detailed Project Report for the work of "Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing".

The General administrative information, existing road details, Improvement proposals, and estimated cost related to project road are shown in this chapter.

1.1 General Detail and Administrative Approval

Brief information on General details of the Project road is given in Table 0-1 below.

Table 0-1 General Detail and Administrative Information

Sl. No	Description	Information
1	Sir M Visvesvaraya Terminal at Byyappanahalli railway station- East development work completed	The existing conventional flyover next to the New terminal station connects only two directions North-South due to the existing railway crossing and another very important East-West road is blocked due to the railway lane. The route to the terminal is an important issue to accommodate the future traffic of the terminal railway station.
2	BBMP has prepared an innovative design of elevated rotary concept to suit the railway junction at this place to give access to all four directions of the road.	Processed in January 2021
3	The Chief Secretary and Additional Chief Secretary to the State Government along with other senior officials of BBMP, BMRCL, K-Raid, SW-Railway reviewed the concept proposal and gave in-principle consent to go ahead with the DPR.	Site Inspected on 9/2/2021
4	The BBMP Constituted Technical Review Committee meeting under the leader ship of Chairman along with Members of the committee was held at BBMP office to review the Technical concepts and feasibility of the proposal of Elevated Rotary project	TRC meeting held on – 13/08/2021. In principle project proposal is approved

Sl. No	Description	Information
5	BBMP officials have coordinated with SW-Railways and K-Ride along with DPR consultant and SW-Railways accorded in-principle approval for GAD of Conceptual plan for construction of elevated rotary and ROB at LC 136A.	SW-Railway letter dated 14/09/2022
6	BBMP got an administrative approval for construction of elevated rotary and ROB for an amount of Rs. 345 Cr including all charges and Land acquisition based on PWD SR 2021-22	Internal correspondence of BBMP with Government
7	Consultants revised the DPR cost as per new PWD SR 2021-22 with Issue rate 9/11/2022 at a cost of Rs 345 Cr	Revised Estimate
8	Draft tender documents are ready for inviting the tender on Trunkey basis upon approval from the Authority	Ready to submit to Pre-Tender Scrutiny Committee constituted by State Government
9	Before commencement of the work, the selected/tender awarded concessionaire shall prepare a detailed GAD, detailed design for the innovative concept and shall be reviewed by IIT / IISc as per railway norms as the railway span is designed as non-standard.	After contract is awarded to tenderer
10	SW-Railway to approve the detailed GAD by their competent authority , awarded tenderer (concessionaire) should submit GAD Checklist, detailed soil investigation reports for circular ROB portion of rotary, detailed structural design analysis report for concrete and steel structure vetted by National Institute like IISc/IIT	After award of contract
11	The leading newspaper The Hindhu Bengaluru August 1st 2022 extract has published “Railway Minister Ashwini Vaishnaw inspected the terminal, BBMP officials had briefed him about the project as a long-term measure for connecting the terminal with various roads. The SWR and the BBMP held multiple rounds of the meetings to clear the decks for the project. The project has been proposed to provide easy access to the terminal from Kammanahalli Main Road, Maruthi Sevanagar, and other areas”.	The Hindhu Bengaluru dated August 1st 2022

BBMP Zonal Authority		
12	Joint Commissioner	East Zone
13	Chief Engineer	Road Infrastructure
14	Executive Engineer	Road Infrastructure (RWD) NR Square Bengaluru (East)
15	DPR Consultants	M/s. NEZ Infratech Private Limited

1.2 Existing Project Road Condition

A quick view of the existing condition of the project road is illustrated in the Table 0-2 below.

Table 0-2 Existing Project road condition details

Sl No	Description	Information
1	Existing Railway crossing at IOC Junction	This railway junction intersects the road from N-S and E-W. At present a conventional two-lane Two-way flyover is used by traffic from the N-S road while the E-W road is completely blocked for traffic. N-S traffic from Banasawadi to Maruti Sevanagar, E-W traffic from Kammanahalli to Indiranagar via new terminal station.
2	Existing Flyover configuration	The flyover is constructed for 2 lane width of 7.5m and present traffic in PCU is 31438/day. Two lanes (two ways with divider) can accommodate only 1200 vehicles/hour as per IRC-106-1990. As the divider is present the capacity will further reduces to less than 1000 Vehicles/hour Diverging loops are constructed on both the directions to connect E& W directions. Forecasted traffic in next 25 years is 63441` PCU/Day based on generated from railway traffic at new terminal station including local traffic.
3	Structural Condition of existing flyover	Two Obligatory spans are built with RCC bow string bridge and super structure of the approaches with plain beam resting on pier cap. Piers are built on Open foundations. The flyover is suspect to carry IRC Class AA loading. Approach condition is poor.
4	Loop with RE Wall approach	Diverging loops are constructed with a solid RE wall to divert traffic from either direction.

Sl No	Description	Information
5	Gradient of approaches	Maintained with 1 in 20 due to built-up section.
6	**ROB At LC 136A**	
7	Status of ROB	Recently ROB construction was completed with approaches on both sides and traffic was allowed.
8	Obligatory span at railway crossing	Two obligatory span of composite structure with steel I- Girder and RCC Slab. Span is 35m.
9	Viaduct portion	Constructed with RCC pier on pile foundation with rectangular pier cap on top. A span of 30.5 m is maintained. PSC-I girder is used and RCC slab is built on the girder.
10	Gradient	Maintained as per IRC standard in 1 : 30
11	Configuration of flyover	Two lane ROB with 7.5m wide road with Two way traffic without median.
12	Structural condition	The ROB is recently built and designed as per IRC standard and is in good condition to take IRC class loading.
13	Land on either side of ROB	One side of the ROB towards the new terminal station on the LHS is covered by railway land and on the RHS with private property and to some extent by railway land. Towards Indiranagar side on both sides of the ROB are mostly covered by defense land.

1.3 Improvement proposal

The improvement proposal detailed in the Chapter - 6 is summarized in the below for Quick review.

Table 0-3 Improvement Proposal of the Project Road

Sl. No	Description	Information
1	Existing Two lane flyover at IOC Junction	Proposed for dismantling entire structure including loop approaches.
2	Proposed new Structure at IOC Railway Junction	Elevated circular type Rotary with radius of 35m and circumferential length is 225m.
3	Super structure	RCC Slab with 3 No's of Trapezoidal shape open box steel girder in each span along rotary. Depth of girder varies at each span range from 1.4m to 2.5m.

Sl. No	Description	Information
4	No of Span along Rotary	4 No's of Circular Span with 1 spans of 81.31m,1 x68.5m, 1 x 56.0m,and 1x 48.
5	Configuration of Rotary	The rotary is designed with 4 lanes without divider, designed to handle a capacity of 5000 PCU/hour, forecasted for next 25 years to 7136 PCU/hour.
6	Sub structure and foundation	Pier cap rest on RCC pier with open/pile foundation.
7	Approaches	Two lane approaches from the N-S & W. Additional 3 No's Two lane approaches on E- side (Terminal station) One down ramp. One up ramp, and in center continuous two lane elevated flyover landing beyond Terminal station gate.
8	Structure of Approaches	Viaduct with PSC – I girder with 30m span and RCC slab.
9	Sub structure & Foundation	Pier cap rest on RCC pier on Pile/Open foundation.
10	Gradient	5 % of 1 in 20.
11	**Pedestrian Underpass at Rotary Junction.**	
12	Type of Structure	RCC Segmental box with 450mm thick 600mm at raft.
13	Configuration	RCC Box of 5.2 m width by 2.75m height of length 152m with entry and exist steps.
14	**At Grade Roads.**	
15	Roads on either sides of approaches	Intermediate lane of 5.5 m wide roads is proposed as service road in both directions of approaches due to build up areas.
16	Type of Pavement	Flexible pavement with subgrade of 300mm, GSB OF 200mm, WMM of 225mm and 100mm DBM with 40mm BC .
17	Total Length of Road	3.0 Km

1.4 Cost Estimate

After detailed study and design, the project cost based on Current PWD common SR 2023-24 has been arrived and detailed in this report at Chapter - 7 and for quick reference; Summary of the Project Cost is shown in the table below.

Table 0-4 Summary of the Project Cost

Sl. No	Description	Amount In Rs
1	Road works	21,24,10,309
2	Elevated Rotary	2,34,87,53,105
3	Pedestrian Underpass (PUP)	3,34,77,179
4	Road Over Bridge at LC No 136A	27,58,78,216
5	Reconstruction of Compound wall for Defence at ROB LC136A	7,02,83,222
6	Electrical Streetlight works	3,39,58,740
7	Design Charges and credit of dismantled materials	1,24,02,390
8	**Amount Put to Tender (Sl No 1 to Sl No 5)**	**2,98,71,63,160**
9	GST at 18%	53,76,89,369
10	Provisional cost for , Railway charges, Re-construction of railway assests, shifting of service lanes, BESCOM depositr cost, DPR Charges, PMC fees, etc.,	27,51,47,471
11	**Total Project cost (8 to 10)**	**3,80,00,00,000**
12	**Provisional cost for Land acquisition**	**TDR Process**

1.5 Cost per Unit

The project cost in terms of unit rates for roads/structures is generally estimated by comparing the average cost per unit area of the standard values for keeping the project under control. The Cost per unit is shown in the **Table 0-5** below.

Table 0-5 Statement of Cost per unit area

Sl No	Descriptions	Unit	Total area	Total amount	Rate/Unit
1	Road works	Sqmt	45315.00	21,24,10,308	4,687
2	Elevated Rotary Incliding approaches	Sqmt	54201	2,34,87,53,105	58,272
3	Pedestrian Underpass (PUP) including finshing works	Sqmt	720.00	3,34,77,179	46,496
4	Road Over Bridge at LC No 136A including approaches	Sqmt	6,356.00	27,58,78,216	67332

Introduction

1.6 Background

Bengaluru is said to have been founded by Kempe Gowda, a feudatory of the Vijaynagar Empire.

In the 1970s, the city boasted a green cover of 68%. Splendid lakes, numerous parks, and lush green trees defined it. Till the 1970s, the city was predominantly involved in the manufacturing sector. The preferential treatment shown by the Indian government, post-Independence, towards Bengaluru certainly helped its economy, with many PSUs setting up their headquarters in the city. To add to it, the city was blessed with many universities and colleges.

The State government's initiatives in the Information Technology sector, such as setting up the Karnataka State Electronics Development Corporation (Keonics) and establishing Electronics City further boosted the growth.

The availability of quality education and the emergence of new industries in Bengaluru meant new opportunities for the youth, and this resulted in large-scale migration into the city. The sudden influx created problems for the Bangalore Mahanagara Palike, which found it difficult to match the growing demands. Numerous unplanned revenue layouts cropped up all over the city to house the rising population. Most of these fell outside the purview of the City Municipal Corporation and were naturally neglected.

The city was successful in attracting large-scale private investment from across the world and this phase witnessed a significant rise in the GDP growth rate of Bengaluru. When India grew at an average rate of 7.93% between 1993 and 2004, Bengaluru clocked a GDP growth rate of 20.76% in the same period. IT sector exports, of which about 40% is contributed by Bengaluru, has helped India immensely in bridging the trade deficit.

Masking the incredible growth story of Bengaluru is the infrastructure-related issues that have really affected the image of Brand Bengaluru. Traffic congestion, deteriorating air quality, poor waste management, water scarcity and poor road maintenance have made life in Bengaluru difficult.

East Bangalore at present, the zone is one of the highly active Business Center of India and is surrounded by Marathahalli - Sarjapur Outer Ring Road, Bellandur Outer Ring Road, Marathahalli, Haralur Road, Kundalahalli, Brooke field, Old Airport Road, Banaswadi.

The categorization of Whitefield as an Industrial Hi-Tech Zone in the revised Master Plan 2015 and the brighter outlook of the IT sector are fueling Bangalore's Eastern quadrant. Areas that have been positively impacted include localities like Krishnarajapura, Banaswadi, Marathahalli, Hennur Road, Kalyan Nagar, Mahadevapura and the Ramamurthy Nagar belt.

East Bangalore is characterized by major work centers like Whitefield and the Export Promotion Industrial Park (EPIP) Zone which has accelerated the development of both commercial and residential projects over the past few years.

East Bangalore with positive Information Technology / Information Technology Enabled Services projections and a slew of social infrastructure projects drives realty market in the nearby areas as well.

East Bangalore is well-developed grade-An area targeted by the IT establishments, such as business parks and noted corporate ownerships by non-IT business houses. Moreover, there are smaller Grade-B business locations too. With slow but definite growth in the business sectors spearheaded by IT, proximity to talent pool catchments becomes a key factor for growth.

Byyappanahalli or New Byyappanahalli Extension is one of the neighborhoods in Bengaluru. It is part of C. V. Raman Nagar in East Bengaluru. The area is a transport hub and popular for Byyappanahalli metro station and Byyappanahalli railway station.

Byyappanahalli railway station is an Indian Railways train station located in Byyappanahalli, Bangalore which is located about 13 km away from the Bangalore City railway station and serves Byyappanahalli, Indiranagar, Krishnarajapuram and HAL areas.

South Western Railway (SWR) developed Byyappanahalli, located on the eastern part of the city, as the third railway terminal for the city along with facilities in 2008 due to no space around the Bangalore City railway station. Work on a third coaching terminal has been completed by end of 2022. It is a Railway Junction, dividing the direct single electrified line to Salem via Hosur - Dharmapuri and the electrified double line towards Jolarpettai via Krishnarajapuram.

After the completion of Byyappanahalli Railway Terminal, the traffic in this area will increase manifold. The state government, Bruhat Bengaluru Mahanagara Palike (BMPP) and traffic police departments are tackling the challenges of Bengaluru's mobility issues with a long - term perspective with a sense of urgency. BBMP has invited tender for consultancy services to provide conceptual design for railway crossing at IOC junction near Byyappanahalli new terminal railway station.

1.7 Project Location

The Project road Byyappanahalli new terminal railway station is located at eastern part of Bengaluru and its coordinate is 12° 59′ 28.32″ N, 77° 39′ 8.28″ E, Location of Project Road is shown in Figure 0-1and Figure 0-2 below.

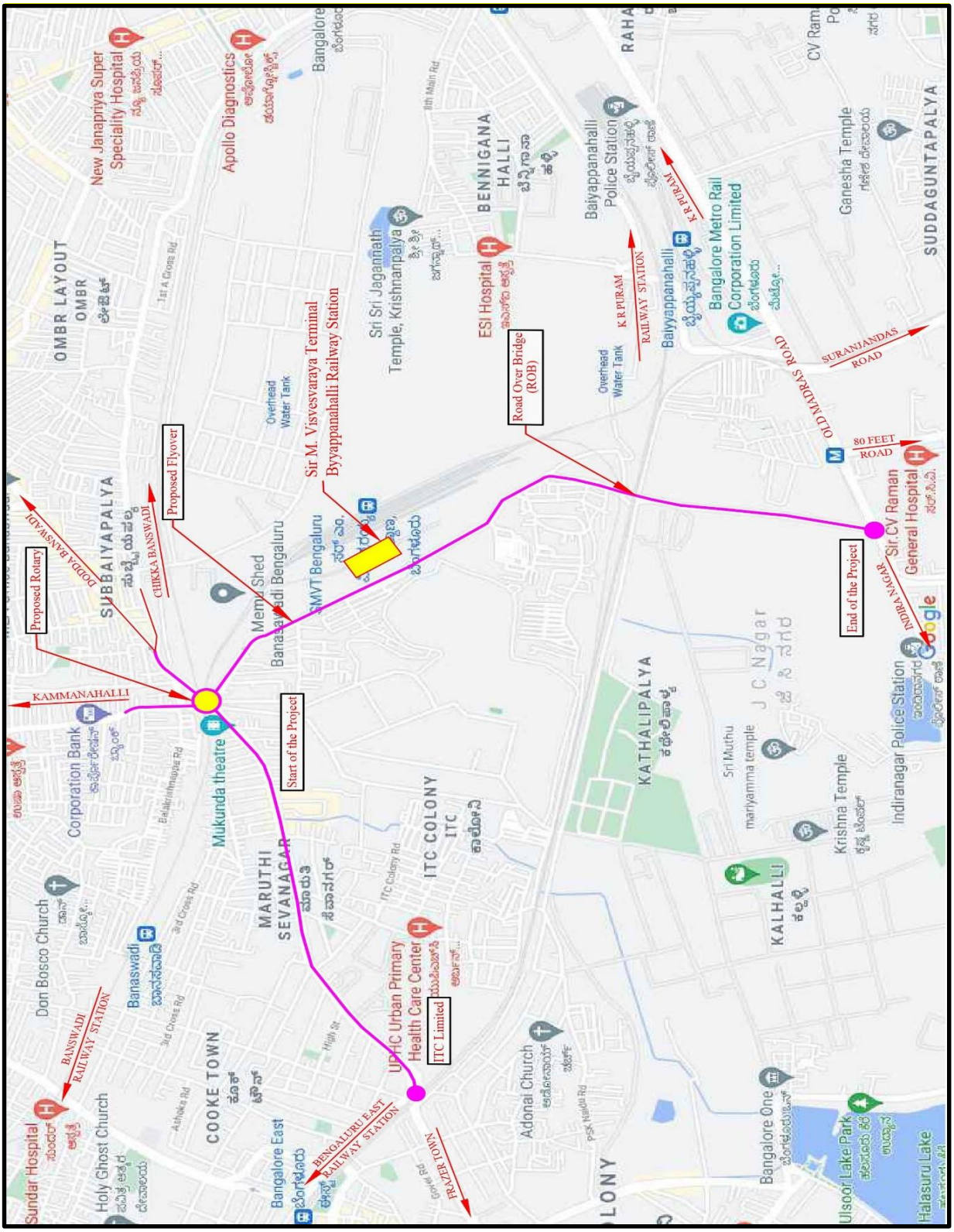


Figure 0-1 Route Map Showing Location of Project Road

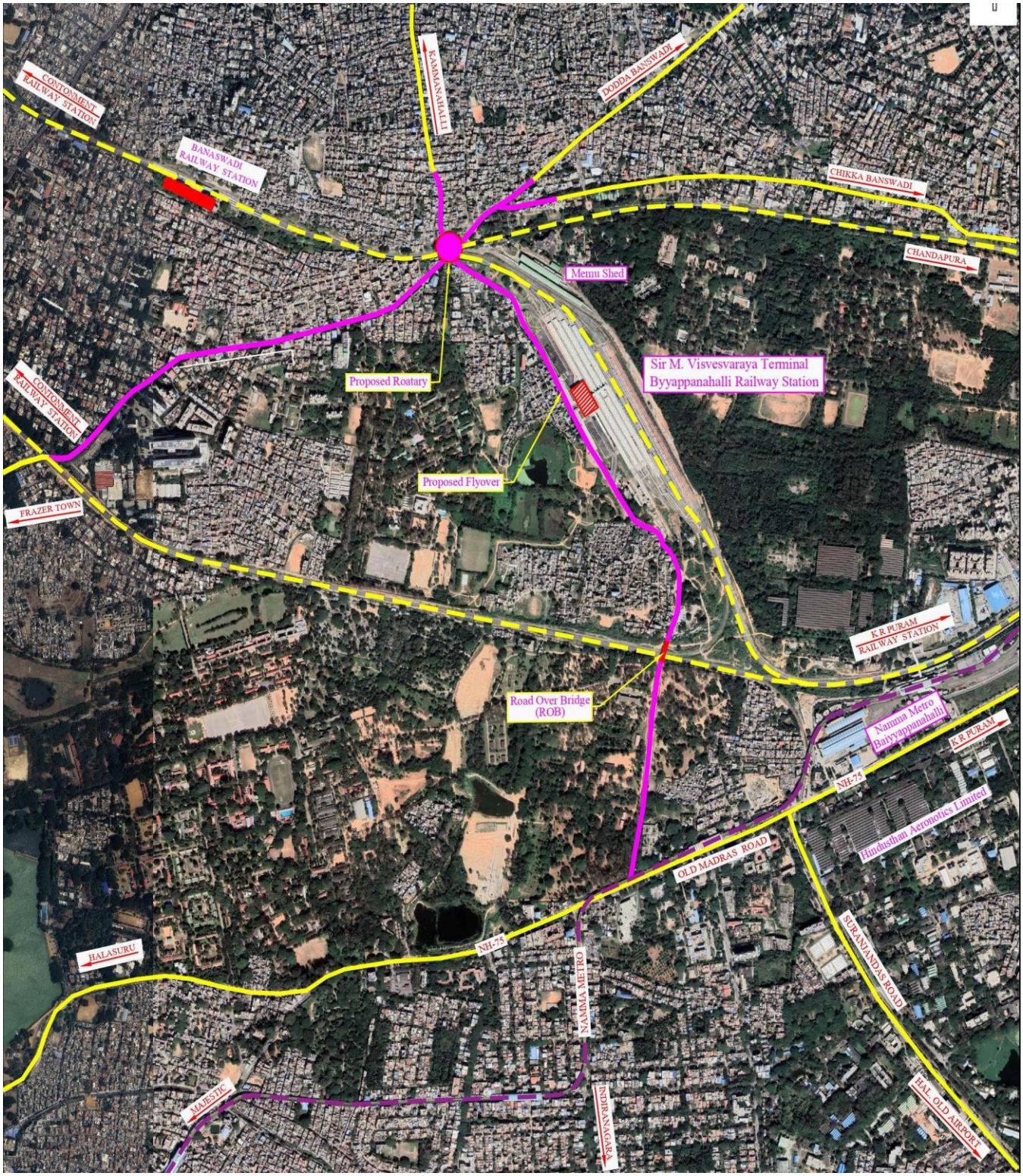


Figure 0-2 Project Road Location Showing in Google Earth

1.8 Objective of the Project

New Sir M. Visvesvaraya Terminal at Byyappanahalli has major bottlenecks in connectivity, but Indian Railways plans to open it to the public as soon as the road connectivity issues are resolved.

A railway lane crossing at the IOC junction near the railway station separates the connection between Kammanahalli on the western side and Old Madras Road on the eastern side. The only connection provided at this crossing is between Banasawadi in the south – Maruthisevanagar in the north.

The BBMP and the railway department were expecting huge growth in the generated vehicular traffic due to the development of the new terminal station and additional train traffic. The surrounding areas are already well developed by the private parties and adjoining areas of railways boundary a part of the land is surrounded by defense land. It is felt that if the railway junction at IOC crossing is not developed in an innovative way to facilitate future traffic with minimum land acquisition concept, the development of the new terminal station will not be successful.

A consultancy tender has been invited by the BBMP with an object of planning an innovative junction design with the concept of zero / Minimize land acquisition.

1.9 Objective of the Study

The primary objectives of the study are:

1. Conduct necessary engineering surveys and investigations to arrive an innovative junction design.
2. Suggest an improvement scheme at railway crossing by planning access to traffic from all the direction.
3. Suggest scheme as per Indian road standards by making maximum use of available open land by reducing the acquisition of private property.
4. Proposal of additional parallel road over bridge at LC no 136A.
5. Prepare Cost Estimate and Tender documents.

1.10 Project Scope

The scope of the consultancy study involves the following:

i. Conducting Joint site inspection along with Departmental Engineers for understanding the name of road, starting, ending location of the project road and Requirements of the project.

ii. Conducting Detailed Topographical survey, implementing Drone Technology and preparation and submission of final Auto CADD format Drawing showing Existing Right of Way (EROW) and Proposed Right of Way (PROW).

iii. Review and study of Geotechnical Investigation,

iv. Conducting Traffic Survey

v. Preparation of GAD for ROB

vi. Preliminary Structural design as per IRC Standards,

vii. Preparation of Road alignment and design

viii. Preparation of Estimate as per schedule of rates

ix. Preparation of Tender document for inviting tender for construction of ROB and related works

x. Preparation of Detailed Land Acquisition Plan and Schedule as per approved format of BBMP

xi. Conducting Joint Measurement Survey (JMS) with BBMP Revenue officials.

xii. Submission of Final Land Acquisition Plan and Schedule after updating the corrections which are noted and identified during Joint Measurement Survey

xiii. Submission of Land Register as per approved format of BBMP

xiv. Coordinating with Sub-Urban Rail to finalize location of piers to minimize impact on rail movement

xv. Obtaining in-principle approval of GAD from South Western Railway for calling tender.

Detailed Project Report including above scope of work has been prepared as part of the scope.

1.11 Broad Methodology

Below are the broad methods adopted in the present study to arrive at a viable solution for innovative design at railway crossing to improve traffic the flow from all the directions.

1. Study the existing and anticipating traffic flow.
2. Study the future plan of railways/metro/suburban railway planning.
3. Study the latest innovative technology to be adopted for widening of railway lanes at crossing within the railway land by reducing obstructions of piers/abutments with larger span.
4. Design of road to improve the traffic
5. Quantity and Cost estimate for the widening scheme.

1.12 Deliverables

As part of a detailed project report, the following are proposed to be submitted according to TOR's reporting.

VOLUME -I: Main Report

I. Detailed Project Report

1. Key Features and Summary of the Project Report
2. Introduction
3. Surveys and Investigations
4. Improvement Proposals and Design Standards
5. Design Report
6. Design Drawings
7. Project Cost
8. Site Inspections and Communication with Stake Holders
9. Departmental Correspondence Records

II. Detailed Estimate

III. Tender Documents

IV. Technical Specifications

VOLUME -II: Drawings

Survey and Investigation

1.13 General

Various engineering surveys have been carried out for the proper planning and design of the Grade separator at the proposed junction. Following surveys have been carried out:

- Topographical survey
- Trial pit/subsoil investigations
- Geotechnical investigations for foundations

The consultants visited the site along with BBMP authority accompanied by concerned Executive engineer and with his team to acquaint the site and to study the various site related constraints which should be kept in mind while preparing the various alternative solutions for improvement of junction.

1.13.1 Topographical Surveys

The basic objective of the topographic survey was to collect the essential ground features of the proposed junction using Total Station to develop a Digital Terrain Model (DTM), to take care of design requirements of grade separated facility, identifying areas of restriction and their remedies. The data collected will result in the final design and is also used for the Computation of earthwork and other quantities required. The Picture showing the survey work carried out st site is shown in the Figure 0-2 below.

Figure 0-1 Topographical Survey at Project Road

	
	 Lokesh Bike Point
	

Figure 0-2 Topographical Survey at Project Road

Detailed Survey of Topographical Features

Topographical survey using total station has been carried out to collect sufficient data to form the digital terrain model and to prepare the map of the physical features of the area.

Following existing features have been captured during the survey:

- Building lines, type of buildings (shops or houses, number of stories), trees and Right of Way boundary if available at site by presence of boundary stones.
- Road edges, centerline, shoulders/footpaths, median etc.
- Identifying all religious places, its locations, boundary lines and clear dimensions of compound walls and entrances.
- All service lines both above and below ground such as OFC cables, water and sewer pipes, gas pipes, electrical poles and cables, telephone poles and lines etc.
- Location of traffic islands, median, rotaries, dividers etc.
- Location of road side drains, clearly identifying the type (open/close), width of drain, including the beginning and end of drains.

- Positions of transformers, mast, towers etc.
- Apart from the above, the names of intersecting roads and other landmarks are also recorded and incorporated in the drawing.

Topographic survey was carried out using Total Station of 5-sec accuracy for detailed mapping and with higher accuracy total station during the traversing (min 3 sec). As part of the survey, the following activities were carried out.

Installation of Bench Mark Pillars: As first step of the survey, Bench mark pillars were installed as described below:

Bench mark pillars were constructed at every 250m interval. The pillars are in the form of concrete blocks of size 15 X 15 X 45 cm with a nail fixed at the center of the top surface were embedded up to a depth of 30cm in to the ground. The BM pillars were painted in yellow and details such as BM number and reduced level were clearly marked. Logical numbering sequence was followed.

Cross – Sections: Cross sections along the road have been taken at every 10 m interval in longitudinal direction for a minimum width of 15m or up to the building lines from the centerline of the existing carriageway on either side of the road. Cross section levels were taken at.

• Centerline of existing carriageway and median edges.

• Points between centerline and edge of carriageway.

• Shoulder/Footpath edges/carriageway edges.

• Additional points at locations of change in ground/critical points.

Longitudinal Section: Longitudinal section levels along the centerline were taken at every 10m interval. Where curves or important features were encountered, this interval was suitably reduced. Cross sections points for the required width was taken corresponding to each point in the longitudinal section.

Map Plotting: The existing features surveyed were directly imported into Computer Aided Software and the details of the same has been plotted and presented for ready reference.

1.14 Subsoil Investigations

For Pavement Design.

Objective. The objective of the investigations is to provide basis for design of pavement for the service roads keeping in view the composition and characteristics of the existing pavement/sub grade. The scope of work, thus, includes collection of information regarding the existing pavement crust composition and characteristics and existing sub grade type and sub-soil conditions.

Sub-grade Soil Testing. Necessary sub soil investigations to understand the physical particulars of soil at site to enable proper pavement designs were carried out. All investigations were executed in conformation with IRC, BIS codes and MORT&H specifications. Test pits were taken along the road stretch at specified locations for the evaluation of physical properties of the sub grade soil to enable pavement design. The size of the test pit was kept as 1m x 1m x 1m. The representative samples of excavated soil from each trial pit at depth intervals GL to 0.25m, 0.25m to 0.5m, 0.5m to 0.75m and 0.75m to 1m were collected in airtight bags and properly packed and were sent to the laboratory for the required laboratory tests on these samples. The following tests were carried out to ascertain the properties of the sub-grade, base and sub-base layers of the existing road including thickness of different layers of pavement.

• Grain Size Analysis.

• Atterberg Limits.

• Modified Proctor.

• CBR Values.

• Field Density and Moisture Content.

1.15 Geo Technical Investigations for Foundation of Structure

The geotechnical investigations as carried out by South Western railways for ROB at LC 136A were received to appreciate the subsoil layers and their properties to facilitate finalizing the foundation type, depth, size and configuration. Subsoil condition is analyzed along with field and laboratory data for determination of necessary physical and chemical characteristic of the in-situ soil strata.

Objective. The objective of Geo-Technical Investigations is to evaluate the following:

• To ascertain the sub-soil strata at foundation locations.

• To study standing Ground Water Level.

• To study the physical and engineering properties of soil strata and rock strata (if encountered).

Scope and Methodology of the Work. The scope of work includes taking bore holes at the proposed flyover location and conducting the following Field (in situ) investigations and Laboratory Tests.

Field (In-situ) Investigations.

i. Drilling bore holes of 150 mm diameter to a maximum depth of 25m or minimum of 3m in rock if rock is encountered earlier.

ii. Collecting disturbed and undisturbed soil samples at regular depth intervals Conducting field testing such as Standard Penetration Tests as per IS 2131-1981 at every 1.5m depth intervals or wherever strata change is observed to determine N values as well as relative density and stiffness of the soil strata.

iii. To study and record the standing Ground Water Table Level.

iv. To ascertain the sub-soil strata and ground topography

Field work involved drilling of nine boreholes of which six boreholes at the proposed rotary site and balance three at the ROB sites were subjected to SPT testing and collection of samples, was commenced in January 2022. The primary objective of this investigation is to obtain information about the sub-surface conditions at the site and to know the net allowable bearing stress for the design of foundations. Annexure-1: Shows the location of boreholes for the proposed construction site. The details are summarized below:

BH No.	Reference	Structure	Depth of explorations (m)	Water Table, m
At Rotary Location				
BH-1	Petrol Pump, IOC Junction Rotary	Proposed Rotary Location	16	Nil
BH-2	Inside existing loop to Kammanahalli		10.5	Nil
BH-3	Existing Flyover (Mukunda Theatre)		21.4	Nil
BH-4	Existing Ramp to Railway Station (Rotary Byyappanahalli)		16.0	Nil
BH-5	Existing Ramp to Railway Station		11.5	Nil
BH-6	Sir. M. Visvesvaraya Railway Station front side		23.5	Nil
At ROB Location				
BH-7	P0	Proposed ROB Location	6.5	Nil
BH-8	NP4		24.5	5.0 (Seepage)
BH-9	NP3		19.0	5.0 (Seepage)

Field investigation - relevant description

Boring and Drilling

The field investigation comprised of advancing 150mm boreholes using rotary drilling rig with bentonite mud circulation. Standard penetration test (SPT) was conducted at every 1.50m intervals as per IS: 2131. The number of blows for 30cm penetration of split spoon sampler was recorded as N-values. The boreholes were terminated after drilling to their respective depth. The various sub-surface strata are presented in the respective bore charts.

Standard Penetration Test (SPT) in Boreholes

Standard Penetration Test (SPT) to determine penetration resistance was conducted in the boreholes using the procedure described in IS: 2131. In this method, driving bit is replaced by split spoon sampler (50.8 mm OD and 35 mm ID) and the sampler is driven by dropping 63.5 kg hammer on the top of the driving collar with a free fall of 75 cm. The length of the sampler is 60 cm. The sampler is first driven through 15 cm as “Seating Drive”. It is furtherdriven through 30 cm. The number of blows required to drive the sampler for 30 cm beyond seating drive is termed as “Penetration Resistance, N”. Representative samples were collected using split spoon sampler. Where full 30cm penetration beyond seating drive was not possible, number of blows and corresponding penetration is mentioned in bore logs.

Refer Annexure II for Bore logs.

Sampling in boreholes

In view of sandy Silt, representative samples were mainly collected from split spoon sampler used for conducting SPT at close intervals of 1.5m up to end of respective strata. Rock formations are usually drilled by tungsten carbide core bits, representative core samples are retained and collected by core barrel.

Ground water table

At time of investigations, subsequent to completion of borehole and after allowing water level to stabilize for minimum 24 hours, water table was not encountered at any depth below natural ground level during the time of investigation; however, a point to be noted is that, water levels are invariably subjected to seasonal fluctuations.

LABORATORY TESTS ON SAMPLES

Assessment of Geotechnical Properties - Samples from Boreholes

The following Tests were carried out

- Grain size analysis
- Natural Moisture content
- Atterberg's Limits
- UCS Test Results

Test results are as shown in Annexure- III

Sub - soil profile analysis
Nature of Soil Stratification

Based on detailed analysis, the soil conditions described is summarized for the entire projectsite as under.

Layer I: Soil Overburden

The sub-soil stratification essentially comprises of sandy Silt/ silty formations with layer thickness of 1.5m – 4.5m.

Layer-II Completely Weathered Rock (Soft Disintegrated Rock).

Occurs below layer I and comprises of 'very dense' complete to highly weathered rock (SPT'N' values consistently N >100 and Nil core recovery). In 'in-situ' conditions, stratum is considered 'very dense/stiff' /incompressible with very good bearing characteristics. In this layer sample recovery was limited and sufficient for visual classification only.

Sub-Soil Stratification Description:

BH. No.	Reference	Explored Depth, m	Thickness of layer in sequence (m)			
			Layer – I Soil/CWR (N<100)	Layer – II CWR (N>100)	Layer III - MWR/HR	Remarks
At Rotary location						
BH-1	Petrol Pump, IOC Junction Rotary	16	0.0 to 4.5	4.5 to 13.5	13.5 to 16.0	HR
BH-2	Inside existing loop to Kammanahalli	10.5	0.0 to 4.5	4.5 to 10.5	--	--
BH-3	Existing Flyover (Mukunda Theatre)	21.4	0.0 to 3.0	3.0 to 20.4	20.4 to 21.4	HR
BH-4	Existing Ramp to Railway Station (Rotary Byyappanahalli)	16	0.0 to 4.5	4.5 to 15.0	15.0 to 16.0	HR
BH-5	Existing Ramp to Railway Station	11.5	0.0 to 4.5	4.5 to 10.0	10.0 to 11.5	HR
BH-6	Sir. M. Visvesvaraya Railway Station front side	23.5	0.0 to 9.0	9.0 to 23.0	23.0 to 24.5	SR/HR
At ROB Location						
BH-7	P0	6.5	0.0 to 1.5	1.5 to 4.5	4.5 to 6.5	HR
BH-8	NP 4	24.5	0.0 to 9.0	9.0 to 22.0	22.0 to 23.5	HR
BH-9	NP 3	19	0.0 to 12.0	12.0 to 16.5	16.5 to 19.0	HR

***EGL - Existing Ground Level, ROL - Rock Occurrence Level, SR - Soft Rock,**

CWR - Completely Weathered Rock, HR - Hard Rock.

Recommendations for design of foundations
Recommendations for shallow foundations

1. Foundations for all the structures shall be taken minimum 3.0m below Existing ground level.

2. Isolated / Raft footing up to minimum width 6.0m may be designed with the following allowable bearing pressure of, which gives a factor of safety of 3.0 against shear failure and for an allowable settlement of 40mm:

Borehole Number	Net SBC (t/m^2)		
	Founding depth, m		
	3.0	4.5	6.0
BH-1	32	40	60
BH-2	30	45	60
BH-3	32	40	60
BH-4	35	40	45
BH-5	35	60 (Limited)	
BH-6	35	40	45
BH-7	35	45	60
BH-8	45	60 (Limited)	
BH-9	35	40	45

Note 1: During excavations, in case any variations in strata/seepage are noticed, the same shall be brought to the notice of geotechnical engineer for review of net SBC recommended.

Note 2: Wherever the structural foundations resting over very dense strata (N>100) shall be taken with net SBC of 60.0t/m2 for foundation design.

Note 3: Whenever the deep excavation is envisaged, proper shoring / strutting is recommended with soil nails / touch piles or any other suitable precautionary measures.

3. The bottom of foundation shall be properly leveled and verified for loose pockets/weaker zones and if found, the same shall be replaced with lean concrete.

Recommendations for deep foundations

Wherever deep foundations are envisaged, RCC bored cast in-situ piles are recommended.

Inferences drawn from borehole investigations

Heavy load transfer is anticipated from the rotary flyover and Road over Bridge structure envisaged. Hence deep foundations such as Bored Cast-in-situ Piles are recommended. Pile diameter has been considered as 1.0m and 1.2m. Piles should be socketed **3 times the Pile diameter in dense weathered rock /refusal strata (N>100) layer (or) 1.5 times the Pile diameter in dense fractured rock (CR<15%) (or) 1 times the pile diameter in to hard rock (CR>20%) whichever is met earlier.**

Proposal of Deep Foundations

Since the deep foundations are conceived, RCC bored cast in-situ piles are proposed.

Reference	Pile diameter, D (m)	*Depth of pile, m	Safe axial load (tons)	Uplift Capacity, Tons	Lateral load (tons) (fixed head condition)	Depth of fixity, m
At Rotary Location						
BH - 1	1		350	100	35	7
	1.1	9.0 – 9.5	400	120	40	7.5
	1.2		450	140	48	8
BH - 2	1		350	100	35	7
	1.1	9.0 – 9.5	400	120	40	7.5
	1.2		450	140	48	8
BH - 3	1		350	100	35	7
	1.1	8	400	120	40	7.5
	1.2		450	140	48	8
BH –4	1		350	100	35	7
	1.1	14	400	120	40	7.5
	1.2		450	140	48	8
BH –5	1		350	100	35	7
	1.1	17	400	120	40	7.5
	1.2		450	140	48	8
BH - 6	1		350	100	35	7
	1.1	9.0 – 9.5	400	120	40	7.5
	1.2		450	140	48	8
At ROB Location						
BH - 7	1		350	100	35	7
	1.1	9.0 – 9.5	400	120	40	7.5
	1.2		450	140	48	8
BH - 8	1		350	100	35	7
	1.1	9.0 – 9.5	400	120	40	7.5
	1.2		450	140	48	8
BH – 9	1		350	100	35	7
	1.1	14	400	120	40	7.5
	1.2		450	140	48	8

However actual load carrying capacity of pile may be arrived

NOTE:

a. Safe load of the pile arrived is for the piles socketing in to 3 times the pile diameter in soft rock/weathered rock (N>100) or 1 times the diameter in hard rock formations. There will not be any differential settlement in foundations with one foundation resting on hard rock and other adjacent foundation resting on soft rock/hard soil strata with N>100; however maximum allowable settlement

for pile is 12mm.

b. Concreted pile lengths are estimated based on Borehole data. Actual Length of piles may vary. During actual execution, pile termination shall be decided based on chiseling / PPR deduced by SPT 'N' value or any approved criteria. Broad description of PPR criteria related to SPT N is given below.

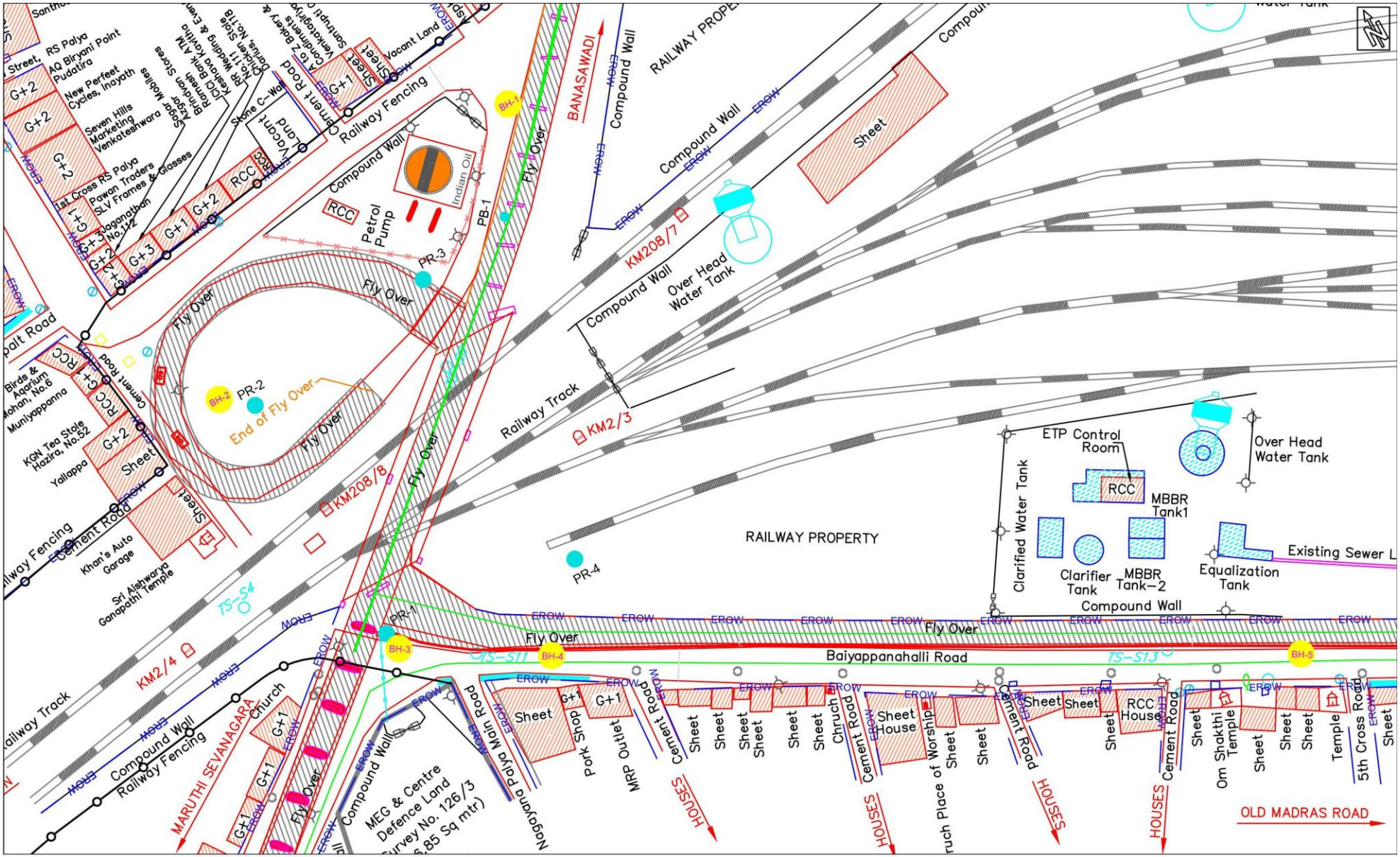
c. Pile Termination reconfirmation - For reconfirming the strata at pile termination level (socket strata) Chiseling criteria or Pile Penetration Ratio recommended in IRC-78 may be used Pile Penetration ratio (PPR) reflects the energy in ton-m required to advance pile bore of $1m^2$ cross sectional area by 1cm or 10mm. SPT Tests are used to assess this and minimum N Value /blow count of 100 may be used as a guideline.

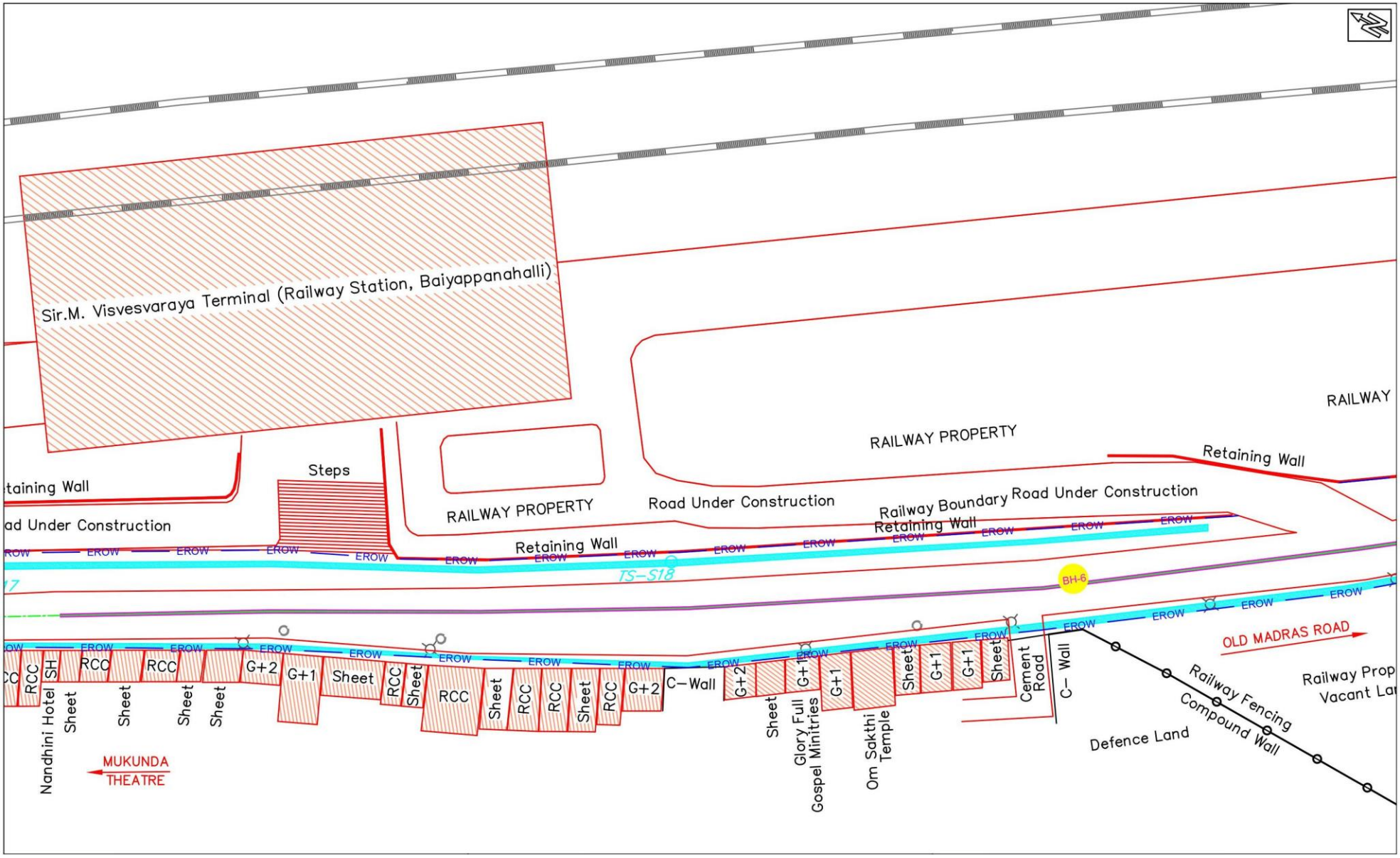
From SPT Test for N=100 (Indicative calculation)
Energy E Spent for N blows =63.5kgx 75cm x N Blows Area of SPT
Sampler = $\pi D^2/4$ = 0.785x 25.81 =$20.26cm^2$

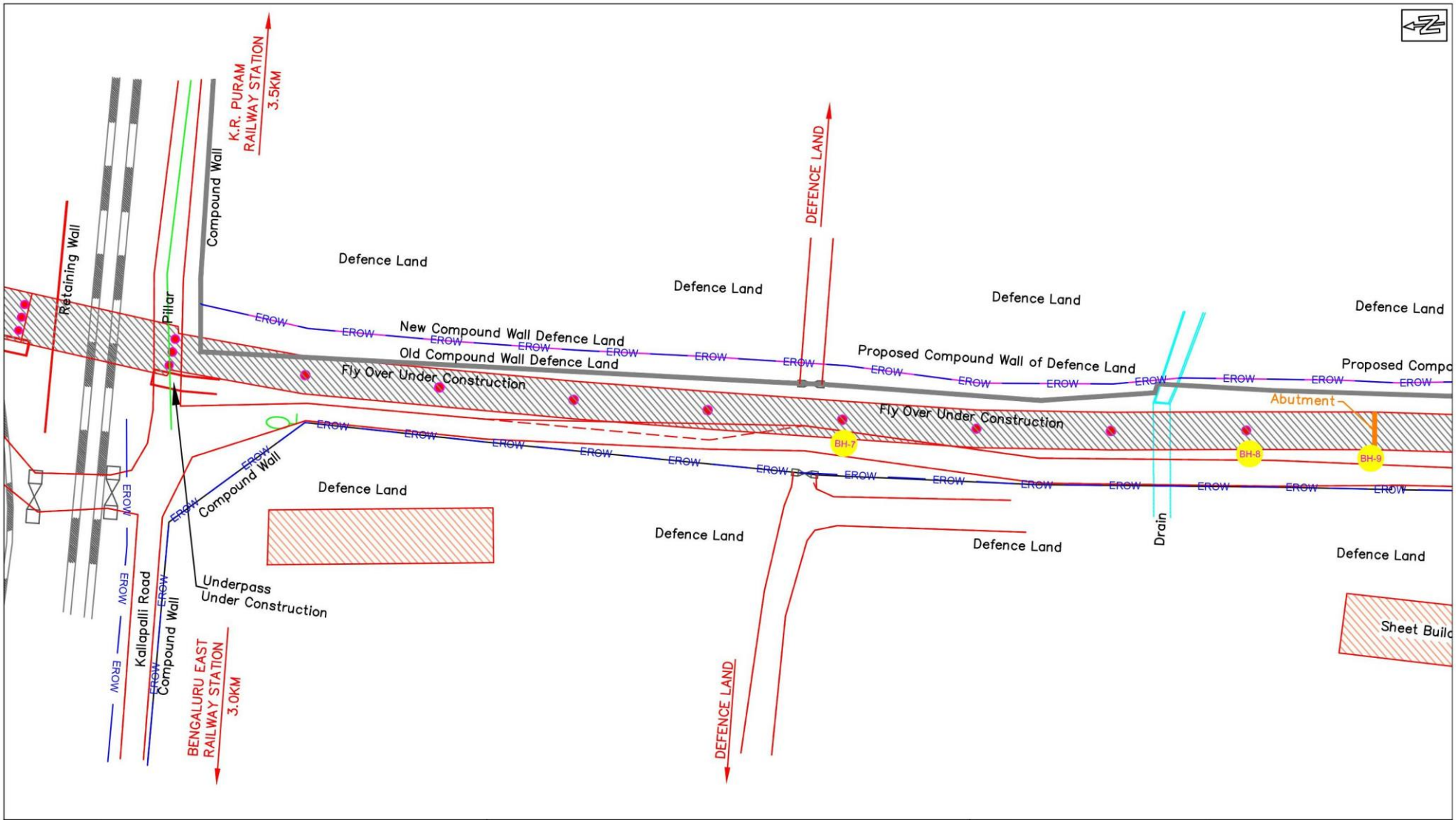
D =5.08 cm Outer diameter (Standard samplers)
For N=100, Energy E = 63.5 x 75x100x 10^{-5} t-m

The data obtained from this geotechnical investigation and sampling is based on the site conditions prevailing at the time of subsurface exploration. Geo-technical results are based on data obtained from borehole investigations. Strata differences are likely to occur. These results are considered to arrive at the preliminary design and to assess the underlying ground conditions; depth and type of existing rock and depth of the proposed pile and this report should be considered as preliminary information.

Borehole Marking Drawings




Sir.M. Visvesvaraya Terminal (Railway Station, Baiyappanahalli)
RAILWAY PROPERTY
RAILWAY
Retaining Wall
Steps
RAILWAY PROPERTY
Road Under Construction
Railway Boundary
Road Under Construction
Retaining Wall
EROW
TS–S18
BH-6
OLD MADRAS ROAD
Railway Fencing
Compound Wall
Railway Prop
Vacant La
Defence Land
Cement Road
C– Wall
C–Wall
RCC
Sheet
SH
G+1
G+2
Nandhini Hotel
MUKUNDA THEATRE
Glory Full Gospel Minitries
Om Sakthi Temple


K.R. PURAM
RAILWAY STATION
3.5KM
Compound Wall
DEFENCE LAND
Retaining Wall
Pillar
Defence Land
Defence Land
Defence Land
Defence Land
EROW
New Compound Wall Defence Land
Old Compound Wall Defence Land
Fly Over Under Construction
Proposed Compound Wall of Defence Land
Proposed Compo
Abutment
Fly Over Under Construction
BH-7
BH-8
BH-9
Compound Wall
Defence Land
Defence Land
Defence Land
Drain
Defence Land
Underpass
Under Construction
Kallapalli Road
Compound Wall
BENGALURU EAST
RAILWAY STATION
3.0KM
DEFENCE LAND
Sheet Build

Annexure-II

BORE LOG SHEET										
Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing.**									**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**									**24-1-2022**
BH No:	**1**		**Ground Water Level : Not Encountered**				**Termination Depth:**			**16.0m**
Location	**Easting : 786053.872 Northing : 1439143.541**						**Page No.**			**1**
Description of Sub-soil stratum	**Depth (m)**	**Legend**	**Sample**	**SPT TEST, Number of blows recorded**			**N value=N2+N3**	**Core Recovery, %**	**RQD %**	**Remarks**
				1st 15cm	**2nd 15cm**	**3rd 15cm**				
				N1	**N2**	**N3**				
Brownish Silty Sand with Gravel	0.0									
	0.5		DS							
Grayish Brown Silty Sand	1.5		SPT DS	14	16	17	33			
	3.0		SPT DS	10	13	15	28			
	4.5		SPT DS	13	18	22	40			
Whitish Gray Silty Sand	6.0		SPT DS	55B/7cm	R		>100			Refusal Strata
Whitish Brown SDR	7.5		SPT DS	50B/1cm	R		>100			
	9.0		SPT DS	50B/1cm	R		>100			
	10.5		SPT DS	50B/1cm	R		>100			
	12.0		SPT DS	50B/1cm	R		>100			
	13.5		SPT DS	50B/1cm	R		>100			
Whitish Gray HR	15.0		CR					47	47	
	16.0		CR					33	33	

Note :

Bore hole was terminated at 16.0m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock

DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock

SDR: Soft disintegrated rock

BORE LOG SHEET										
Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**									**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**									**25-1-2022**
BH No:	**2**		**Ground Water Level : Not Encountered**				**Termination Depth:**			**10.5m**
Location	**Easting : 785965.878 Northing : 1439116.082**						**Page No.**			**2**
Description of Sub-soil stratum	**Depth (m)**	**Legend**	**Sample**	**SPT TEST, Number of blows recorded**			**N value=N2+N3**	**Core Recovery, %**	**RQD %**	**Remarks**
				1st 15cm	**2nd 15cm**	**3rd 15cm**				
				N1	**N2**	**N3**				
Filled Up	0.0									
	0.5		DS							
Brownish to whitish gray silty Sand	1.5		SPT DS	6	10	12	22			
	3.0		SPT DS	10	13	18	31			
Whitish gray silty Sand with gravel	4.5		SPT DS	14	19	35	54			Refusal Strata
Whitish Brown SDR	6.0		SPT DS	45	50B/15cm	R	>100			
	7.5		SPT DS	50B/1cm	R		>100			
	9.0		SPT DS	50B/1cm	R		>100			
	10.5		SPT	50B/1cm	R		>100			

Note :
Bore hole was terminated at 10.5m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock
DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock
SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**		**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**		**27-1-2022**
BH No:	**3**	**Ground Water Level : Not Encountered**	**Termination Depth: 21.4m**
Location	**Easting : 785974.798 Northing : 1439048.155**		**Page No. 3**

Description of Sub-soil stratum	Depth (m)	Legend	Sample	SPT TEST, Number of blows recorded			N value=N2+N3	Core Recovery, %	RQD %	Remarks
				1st 15cm	2nd 15cm	3rd 15cm				
				N1	N2	N3				
Reddish yellow silty Sand with gravel	0.0									
	0.5		DS							
Grayish silty Sand	1.5		SPT DS	3	5	8	13			
	3.0		SPT DS	6	8	11	19			
Grayish to brownish yellow silty Sand	4.5		SPT DS	24	50B/5CM	R	>100			
	6.0		SPT DS	27	50B/6CM	R	>100			
Grayish yellow silty Sand	7.5		SPT DS	29	50B/8CM	R	>100			
Whitesh Yellow Silty Sand	9.0		SPT DS	33	50B/0CM	R	>100			
Grayish to brownish white silty Sand	10.5		SPT DS	50B/10cm	R		>100			
Grayish White CWR	12.0		SPT DS	50B/9cm	R		>100			
	13.5		SPT DS	50B/0cm	R		>100			
Grayish Brown CWR	15.0		SPT DS	50B/0cm	R		>100			
Brownish white CWR	16.5		SPT DS	50B/0cm	R		>100			
	18.0		SPT DS	50B/0cm	R		>100			
	19.5		SPT DS	50B/0cm	R		>100			
	20.4									
Brownish white HR	21.4		CR					100	100	

Note :

Bore hole was terminated at 21.4m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock

DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock

SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**										**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**										**30-1-2022**
BH No:	**4**		**Ground Water Level : Not Encountered**					**Termination Depth:**			**16.0m**
Location	**Easting : 786004.065 Northing : 1439030.565**							**Page No.**			**4**

Description of Sub-soil stratum	**Depth (m)**	**Legend**	**Sample**	**SPT TEST, Number of blows recorded**			**N value=N2+N3**	**Core Recovery, %**	**RQD %**	**Remarks**
				1st 15cm	**2nd 15cm**	**3rd 15cm**				
				N1	**N2**	**N3**				
Filled Up	0.0									
	0.5		DS							
Yellowish to brownish gray silty Sand	1.5		SPT DS	9	10	12	22			
	3.0		SPT DS	11	13	15	28			
Grayish yellow silty Sand	4.5		SPT DS	15	16	19	35			
Grayish brown CWR	6.0		SPT DS	50B/6cm	R		>100			Refusal Strata
Brownish white SDR	7.5		SPT DS	50B/1cm	R		>100			
	9.0		SPT DS	50B/1cm	R		>100			
	10.5		SPT DS	50B/1cm	R		>100			
	12.0		SPT DS	50B/1cm	R		>100			
	13.5		SPT DS	50B/1cm	R		>100			
	15.0		SPT	50B/1cm	R		>100			
Whitish Gray HR	16.0		CR					40	40	

Note :

Bore hole was terminated at 16.0m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock

DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock

SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**									**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**									**31-1-2022**
BH No:	**5**		**Ground Water Level : Not Encountered**				**Termination Depth:**			**11.5m**
Location	**Easting : 786151.479 Northing : 1438951.552**						**Page No.**			**5**
Description of Sub-soil stratum	**Depth (m)**	**Legend**	**Sample**	**SPT TEST, Number of blows recorded**			**N value=N2+N3**	**Core Recovery, %**	**RQD %**	**Remarks**
				1st 15cm	**2nd 15cm**	**3rd 15cm**				
				N1	**N2**	**N3**				
Brownish red sandy Silt	0.0									
	0.5		DS							
Brownish gray silty Sand	1.5		SPT DS	15	17	20	37			
	3.0		SPT DS	20	22	25	47			
Whitish to brownish gray silty Sand with gravel	4.5		SPT DS	25	25	25	50			Refusal Strata
Whitish brown SDR	6.0		SPT DS	35	50B/15cm	R	>100			
	7.5		SPT DS	50B/1cm	R		>100			
	9.0		SPT DS	50B/1cm	R		>100			
	10.0		SPT DS	50B/10cm	R		>100			
Whitish to brownish gray HR	11.5		CR					27	27	

Note :

Bore hole was terminated at 11.5m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock

DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock

SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**	**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**	**2-2-2022**
BH No:	**6** — **Ground Water Level : Not Encountered** — **Termination Depth:**	**23.5m**
Location	**Easting : 786494.753 Northing : 1438423.904** — **Page No.**	**6**

Description of Sub-soil stratum	Depth (m)	Legend	Sample	SPT TEST, Number of blows recorded			N value=N2+N3	Core Recovery, %	RQD %	Remarks
				1st 15cm	2nd 15cm	3rd 15cm				
				N1	N2	N3				
Brownish silty Sand with gravel	0.0									
	0.5		DS							
	1.5		SPT DS	3	4	6	10			
Grayish Brown Silty Sand	3.0		SPT DS	50B/14cm	R		>100			
	4.5		SPT DS	25	30	34	64			
	6.0		SPT DS	30	35	38	73			
Grayish to whitish yellow silty Sand	7.5		SPT DS	10	13	15	28			
	9.0		SPT DS	15	16	18	34			
Grayish yellow CWR	10.5		SPT DS	35	50B/0cm	R	>100	40	40	
Grayish white CWR	12.0		SPT DS	48	50B/5cm	R	>100	40	40	
Grayish Yellow CWR	13.5		SPT DS	25	32	36	68			
	15.0		SPT DS	30	34	38	72			
	16.5		SPT DS	31	37	40	77			
Grayish Brown CWR	18.0		SPT DS	50B/0cm	R		>100			
	19.5		SPT DS	50B/0cm	R		>100			
	21.0		SPT DS	50B/10cm	R		>100			
	22.0									
Blackish White SR	22.5		CR					34	Nil	
Blackish White HR	23.5		CR					95	95	

Note :

Bore hole was terminated at 23.5m depth below existing ground level

SPT - Standard penetration test — Refusal means SPT N>50 — R= Rebound — HR:Hard Rock

DS - Undisturbed sample — B=No. of blows — SR: Soft Rock — CWR: completely weathered rock

SDR: Soft disintegrated rock

BORE LOG SHEET										
Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**									**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**									**4-2-2022**
BH No:	**7**		**Ground Water Level : Not Encountered**				**Termination Depth:**			**6.5m**
Location	**Easting : 786737.068 Northing : 1437538.324**						**Page No.**			**7**
Description of Sub-soil stratum	**Depth (m)**	**Legend**	**Sample**	**SPT TEST, Number of blows recorded**			**N value=N2+N3**	**Core Recovery, %**	**RQD %**	**Remarks**
				1st 15cm	**2nd 15cm**	**3rd 15cm**				
				N1	**N2**	**N3**				
Brownish red sandy Silt	0.0									
	0.5		DS							
	1.5		SPT DS	8	13	16	29			
	3.0		SPT DS	50B/5cm	R		>100			Refusal Strata
Brownish white SDR	4.5		SPT DS	50B/5cm	R		>100			
Whitish gray HR	5.0									
	6.5		CR					52	39	

Note :
Bore hole was terminated at 6.5m depth below existing ground level

SPT - Standard penetration test | Refusal means SPT N>50 | R= Rebound | HR:Hard Rock
DS - Undisturbed sample | B=No. of blows | SR: Soft Rock | CWR: completely weathered rock
SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**	**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**	**5-2-2022**
BH No:	**8** — **Ground Water Level : Not Encountered** — **Termination Depth:**	**24.5m**
Location	**Easting : 786726.910 Northing : 1437447.013** — **Page No.**	**8**

Description of Sub-soil stratum	Depth (m)	Legend	Sample	SPT TEST, Number of blows recorded			N value=N2+N3	Core Recovery, %	RQD %	Remarks
				1st 15cm	2nd 15cm	3rd 15cm				
				N1	N2	N3				
Brownish silty Sand	0.0									
	0.5		DS							
	1.5		SPT DS	8	10	13	23			
Grayish yellow silty Sand with gravel	3.0		SPT DS	20	25	36	61			
	4.5		SPT DS	21	24	40	64			
Whitish brown silty Sand with gravel	6.0		SPT DS	50B/10cm	R		>100			
Yellowish gray sandy Silt	7.5		SPT DS	11	13	20	33			
	9.0		SPT DS	10 50B/10cm	15	21	36			
Brownish white CWR	10.5		SPT DS	50B/1cm	R		>100			
	12.0		SPT DS	50B/8cm	R		>100			Refusal Strata
	13.5		SPT DS	50B/2cm	R		>100			
	15.0		SPT DS	50B/0cm	R		>100			
	16.5		SPT DS	50B/0cm	R		>100			
	18.0		SPT DS	50B/0cm	R		>100			
	19.5		SPT DS	50B/0cm	R		>100			
	21.0		SPT DS	50B/0cm	R		>100			
	22.5		SPT DS	50B/0cm	R		>100			
	23.0									
Blackish to brownish white SR	23.5		CR					76	66	
Grayish to blackish white HR	24.5		CR					69	69	

Note :
Bore hole was terminated at 24.5m depth below existing ground level

SPT - Standard penetration test — Refusal means SPT N>50 — R= Rebound — HR:Hard Rock
DS - Undisturbed sample — B=No. of blows — SR: Soft Rock — CWR: completely weathered rock
SDR: Soft disintegrated rock

BORE LOG SHEET

Project:	**Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing**	**Period of Field Investigation**
Client:	**Office of the Executive Engineer, Road infrastructure, East Division, # 208, 2nd Floor, Annexe-3 Building, N.R. Square, Bengaluru - 560002.**	**7-2-2022**
BH No:	**9** — **Ground Water Level : Not Encountered** — **Termination Depth:**	**19.0m**
Location	**Easting : 786723.584 Northing : 1437419.807** — **Page No.**	**9**

Description of Sub-soil stratum	Depth (m)	Legend	Sample	SPT TEST, Number of blows recorded			N value=N2+N3	Core Recovery, %	RQD %	Remarks
				1st 15cm	2nd 15cm	3rd 15cm				
				N1	N2	N3				
Filled Up	0.0									
	0.5		DS							
Grayish brown sandy Silt	1.5		SPT DS	6	8	10	18			
	3.0		SPT DS	10	15	17	32			
	4.5		SPT DS	9	16	19	35			
	6.0		SPT DS	10	21	25	46			
Grayish brown silty sand with gravel	7.5		SPT DS	16	33	38	71			
	9.0		SPT DS	16	20	20	40			
	10.5		SPT DS	15	19	24	43			
	12.0		SPT DS	13	10	21	31			
Grayish brown CWR	13.5		SPT DS	50B/10cm	R		>100			
	15.0		SPT DS	50B/0cm	R		>100			
Brownish white CWR	16.5		SPT DS	50B/0cm	R		>100			
Brownish white Hard Rock	18.0		CR					46	46	
	19.0		CR					49	34	

Note :
Bore hole was terminated at 19.0m depth below existing ground level

SPT - Standard penetration test — Refusal means SPT N>50 — R= Rebound — HR:Hard Rock
DS - Undisturbed sample — B=No. of blows — SR: Soft Rock — CWR: completely weathered rock
SDR: Soft disintegrated rock

LABORATORY TEST REPORT ON SOIL SAMPLES																		ANNEXURE - III
Project: Construction of Elevated Rotary Flyover at IOC Junction and construction of additional 2 lane ROB at Byyappanahalli Railway Level Crossing																		Date of Test: 24.02.2022
Borehole No	Sample Type	Sample No.	Depth (m)	Grain Size Distribution (%)					Atterberg Limits (%)			Free Swell Index (%)	IS Classification (IS:1498-1970)	Natural Moisture Content (%)	Bulk Density (gm/cc)*	Specific Gravity*	Shear Parameters		Description of Soil Strata
				Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt & Clay	Liquid Limit	Plastic Limit	Plasticity Index						Cohesion (kN/m^2)	Angle of Internal Friction (deg.)	
1	SPT	354/1	1.5	1	9.6	28.8	13.8	46.8	---	---	---	---	---	8.3	---	---	---	---	Silty Sand
	SPT	354/2	3	0	2.9	32.1	16.1	48.9	---	---	---	---	---	5.9	---	---	---	---	Silty Sand
	SPT	354/3	4.5	1.9	4.7	42.3	14.1	37	---	---	---	---	---	9.1	---	---	---	---	Silty Sand
	SPT	354/4	7.5	0.1	5.9	84.2	9.1	0.7	---	---	---	---	---	7.6	---	---	---	---	Sandy Soil
	SPT	354/5	10.5	0	4.1	81.8	12.9	1.2	---	---	---	---	---	11.3	---	---	---	---	Sandy Soil
	SPT	354/6	13.5	0	1.8	87.9	10.3	0	---	---	---	---	---	10.6	---	---	---	---	Sandy Soil
2	SPT	354/12	1.5	2.6	7.9	33.1	13.2	43.2	---	---	---	---	---	14	---	---	---	---	Silty Sand
	SPT	354/13	3	0.1	3.1	34.6	17.1	45.1	---	---	---	---	---	7.6	---	---	---	---	Silty Sand
	SPT	354/14	4.5	1.4	7.1	39.2	14.3	38	36.6	---	NP	---	SM-MI	9.7	---	---	---	---	Silty Sand
	SPT	354/15	7.5	0	23.8	67	7.2	2	---	---	---	---	---	6.7	---	---	---	---	Sandy Soil
	SPT	354/16	10.5	0.5	0.8	23.4	29.9	45.4	---	---	---	---	---	12.9	---	---	---	---	Silty Sand
4	SPT	354/7	1.5	0.4	2.5	28.1	27.4	41.6	33.7	18	15.7	---	SM-MI	11.9	---	---	---	---	Silty Sand
	SPT	354/8	4.5	0	0.8	26.4	26.8	46	---	---	---	---	---	9.8	---	---	---	---	Silty Sand
	SPT	354/9	7.5	0.2	3.7	81.6	14.1	0.4	---	---	---	---	---	9.4	---	---	---	---	Sandy Soil
	SPT	354/10	10.5	0.2	3.3	79.5	15.4	1.6	---	---	---	---	---	12.8	---	---	---	---	Sandy Soil
	SPT	354/11	15	0	21.7	67.9	9.6	0.8	---	---	---	---	---	10.9	---	---	---	---	Sandy Soil
5	SPT	354/17	1.5	0	2.2	35.7	16.7	45.4	---	---	---	---	---	14.2	---	---	---	---	Silty Sand
	SPT	354/18	3	0	1.5	38.7	18.2	41.6	---	---	---	---	---	5.2	---	---	---	---	Silty Sand
	SPT	354/19	4.5	1.6	3.3	35.2	16	43.9	36	---	NP	---	SM-MI	8.6	---	---	---	---	Silty Sand
	SPT	354/20	7.5	0.4	16.8	80.1	2.3	0.4	---	---	---	---	---	12.7	---	---	---	---	Sandy Soil
	SPT	354/21	10	0	14.4	76	8.6	1	---	---	---	---	---	7.6	---	---	---	---	Sandy Soil
7	SPT	354/22	1.5	2.6	3.1	22.8	22.9	48.6	30.7	18	12.7	---	SM-MI	9	---	---	---	---	Silty Sand
	SPT	354/23	3	16.6	19.2	34.2	15.1	14.9	---	---	---	---	---	6.3	---	---	---	---	Silty Sand
	SPT	354/24	4.5	0	5.9	29.9	22.9	41.3	---	---	---	---	---	3.4	---	---	---	---	Silty Sand

Unconfined Compressive Strength for Rock Samples*		
BH No	**Depth(m)**	**UCS (t/m2)**
BH - 1	15.0 - 16.0	5326
BH - 4	15.0 - 16.0	4650
BH - 5	10.0 - 11.5	3486
BH - 7	5.0 - 6.0	5200

Abbreviations used: UDS: Undisturbed Sample, DS: Disturbed Sample, SPT: Standard Penetration Test, BH: Bore Hole, NP: Non Plastic		
Test Method Referred to:	Grain Size Distribution : IS 2720-4 1985 RA 2015	Liquid and Plastic Limit : IS 2720-5 1985 RA 2015
	Direct Shear Test : IS 2720-13 1986 RA 2015	Free Swell Index : IS 2720-40 1977 RA 2011
	Specific Gravity : IS 2720-3 SECTION 1 & 2 1980 RA 2011	
	Natural Moisture Content : IS 2720-2 1973 RA 2015	
Test Method Variation :	None	

SPECIMEN CALCULATIONS FOR SHALLOW FOUNDATIONS **ANNEXURE - IVA**

NET SBC COMPUTATIONS FOR SQUARE FOOTINGS

Soil Properties

Density of soil γ 1.70 t/m^3 Assumed

Water table 1

Design ϕ 25 (Correlation between N-Value & Limited based on Engineering Judgement) $\sqrt{N_\phi} = (\tan 45+\phi/2)$

NET SBC COMPUTATIONS FOR SQUARE FOOTINGS

B(m)	L(m)	D(m)	D/B	B/L	ϕ	$45+\phi/2$	$\sqrt{N_\phi}$	d_c	d_q	d_γ	s_c	s_q	s_γ
6	6	3.00	0.500	1	25.0	57.5	1.57	1.157	1.078	1.078	1.3	1.2	0.8

B(m)	c (t/m^2)	D (m)	N_c	N_q	N_γ	$cN_c\ s_c\ d_c\ i_c$	$\gamma D(Nq-1)\ S_q\ d_q\ i_q$	$0.5\ \gamma\ B\ N_\gamma\ S_\gamma\ d_\gamma\ i_\gamma\ w'$	Net UBC	Net SBC	Net SBC (kN/m^2)	w'
						1	2	3	4= 1+2+3	5=4/3		
6	0	3.00	20.72	10.66	10.88	0.00	63.76	47.87	111.63	37.21	372.11	1.00

Note 10 kN/m^2 = 1 t/m^2

Founding depth (D) below NGL	For footing of width, m	Footing length L	ALLOWABLE BEARING PRESSURE								
			D/ SLB	SLB / D	Design 'N' value	S_i (mm)	C_w	C_r	C_d	S_{corr} (mm)	Net ABP , 40mm settlement(t/m^2)
					(Least N-Value)						
3.00	6.00	6.00	0.50	2.00	28.00	12.00	1.00	0.80	0.80	7.68	52.08

Hence adopt net SBC of 35.0t /m^2 at 3.0m depth below Existing ground level with factor of safety of 3.0

SAFE AXIAL CAPACITY OF PILE IN ROCK WITH NIL RQD (COMPLETELY WEATHERED ROCK)

Calculations are Based on

i Amended IRC 78 formula

ii Concrete strength consideration

Safe Axial Load from Geotechnical criteria

$Qu = Cub\ Nc\ Ac + Cus\ As$ **(Amended IRC 78 Approach)**

where C_{ub} Shear strength based on N value upto a depth equal to 2 times diameter of pile or least lateral dimension and based on N value

N_c 9

C_{us} Ultimate shear strength along the socket limited to 3.0mpa (For M 35 grade concrete)
For other grades , multiply by $\sqrt{f_{ck}}/35$
L = Length of socket

For a 1000mm pile

Since RQD is nil , method 2 of appendix-5 (IRC 78) is used

Pile diameter	1.0	m				
C_{ub}	60	t/m^2 (0.60 MPa)	(Reference taken from IS 2911 ,fig3 shear strength of weathered rock)			
N_c	9					
A_c	0.79	m^2				
$C_{ub}\ N_C\ A_C$	**424**	tons				
f_{ck}	35	N/mm^2	M 35 grade adopted			
C_{us}	1.30	Mpa	say	130	t / m^2	(Considering N=150)
Socket length	3	3 times pile diameter				
A_s	9.42	m^2				
$C_{us}\ A_s$	**1225**	tons				

Alowable $(C_{ub}\ N_c\ A_c)/3 + (C_{us}\ A_s)/6$

346 **tons**

Safe Axial Load from concrete strength in direct compression criteria

Q_a Cross sectional area of pile x σ_{cc}

σ_{cc} Allowable stress in concrete in direct compression depending on concrete grade

For a 1000mm pile

Pile diameter	1.0	m		
CSA	0.79	m^2		
σ_{cc}	900	t/m^2	IS-456	For M 35 grade concrete)
Q_a	**707**	**tons**		

OVERALL SUMMARY

Pile Dia (mm)	Safe vertical load in tons Q_a computed based on		
	Amended IRC 78, 3times pile diameter	Concrete strength, M35	Recommended safeload
1000	346	707	350

SAFE AXIAL CAPACITY OF PILE IN ROCK WITH NIL RQD (COMPLETELY WEATHERED ROCK)

Calculations are Based on

i Amended IRC 78 formula

ii Concrete strength consideration

Safe Axial Load from Geotechnical criteria

$Q_u = C_{ub}\ N_C\ A_C + C_{us}\ A_S$ **(Amended IRC 78 Approach)**

where

C_{ub}	Shear strength based on N value upto a depth equal to 2 times diameter of pile or least lateral dimension and based on N value	
N_c	9	
C_{us}	Ultimate shear strength along the socket limited to 3.0mpa (For M 35 grade concrete) For other grades , multiply by $\sqrt{f_{ck}}/35$	
	L = Length of socket	

For a 1200mm pile

Since RQD is nil , method 2 of appendix-5 (IRC 78) is used

Pile diameter	1.2	m					
C_{ub}	60	t/m^2 (0.60 MPa)	(Reference taken from IS 2911 ,fig3 shear strength of weathered rock)				
N_c	9						
A_c	1.13	m^2					
$C_{ub}\ N_C\ A_C$	**611**	tons					
f_{ck}	35	N/mm^2	M 35 grade adopted				
C_{us}	1.30	Mpa	say	130	t/m^2	(Considering N=150)	
Socket length	3.6	3 times pile diameter					
A_s	13.57	m^2					
$C_{us}\ A_S$	**1764**	tons					

Alowable $(C_{ub}\ N_c\ A_c)/3 + (C_{us}\ A_s)/6$

498 **tons**

Safe Axial Load from concrete strength in direct compression criteria

Q_a	Cross sectional area of pile x σ_{cc}
s_{cc}	Allowable stress in concrete in direct compression depending on concrete grade

For a 1200mm pile

Pile diameter	1.2	m		
CSA	1.13	m^2		
σ_{cc}	900	t/m^2	IS-456	For M 35 grade concrete)
Q_a	**1018**	**tons**		

OVERALL SUMMARY

Pile Dia (mm)	Safe vertical load in tons Q_a computed based on		
	Amended IRC 78, 3 times pile diameter	Concrete strength, M35	Recommended safeload
1200	498	1018	450 (Limited)

SAFE AXIAL CAPACITY OF BORED CAST IN SITU PILE SOCKETED INROCK

Calculations are Based on

i Amended IRC 78 formula

ii Concrete strength consideration

Safe Axial Load from IRC 78 Approach

Formula $Q_u = R_e + R_{af}$

(i.e.) $Q_u = (k_{sp}\ q_s\ d_f\ A_b)\ /3 + (C_{us}\ A_s)/6$

Allowable Capacity of Pile, $Q_a = (R_e)\ /3 + (R_{af})/6$

where d = Pile diamet 1.00 m

Socket length (1time pile diameter in hard rock)

Socket length 0.7 (1 times pile diameter - 300mm) (For calculations as per IRC-78)

k_{sp}	Empirical coefficient for rocks where core recovery is reported	0.3	
q_s	Design UCS of rock (t/m^2)	3000	
d_f	1+ 0.4 (Length of socket/Diameter of socket)	1.2	adopted
A_b	0.79 m^2 Cross sectional area of pile		
C_{us}	Ultimate shear strength along the socket limited to 3 Mpa or $300 t/m^2$		
	(For M 35 grade concrete) For other grades , multiply by $\sqrt{f_{ck}}/35$		
C_{us}	3.00 Mpa or 300 t/m^2		
A_s	2.20 m^2 Surface Area of socket		
$R_e = (k_{sp}\ q_s\ d_f\ A_b)$	**848.23**	**tons**	
$R_{af} = (C_{us}\ A_s)$	**659.73**	**tons**	
$Q_a = (R_e)\ /3 + (R_{af})/6$	**392.70**	**tons**	

Safe Axial Load from concrete strength in direct compression criteria

For a 1000mm pile

Pile diameter	1.00	m	
CSA	0.79	m^2	
σ_{cc}	900.00	t/m^2	IS-456 **For M35 grade concrete)**
Q_a	**706.86**	**tons**	

OVERALL SUMMARY

Pile Dia (mm)	**Safe vertical load in tons Q_a**		
	Amended IRC 78	Concrete strength, Assumed M25	Suggested for Design
1000	392.70	706.86	**400**

SAFE AXIAL CAPACITY OF BORED CAST IN SITU PILE SOCKETED IN ROCK

Calculations are Based on

i Amended IRC 78 formula

ii Concrete strength consideration

Safe Axial Load from IRC 78 Approach

Formula $Q_u = R_e + R_{af}$

(i.e.) $Q_u = (k_{sp}\ q_s\ d_f\ A_b)\ /3 + (C_{us}\ A_s)/6$

Allowable Capacity of Pile, $Q_a = (R_e)\ /3 + (R_{af})/6$

where	d = Pile diameter	1.20	m		
	Socket length	(1time pile diameter in hard rock)			
	Socket length	0.9	(1 times pile diameter - 300mm)	(For calculations as per IRC-78)	
	k_{sp}	Empirical coefficient for rocks where core recovery is reported		0.3	
	q_s	Design UCS of rock (t/m^2)		3000	
	d_f	1+ 0.4 (Length of socket/Diameter of socket)		1.2	adopted
	A_b	1.13	m^2	Cross sectional area of pile	
	C_{us}	Ultimate shear strength along the socket limited to 3 Mpa or $300 t/m^2$			
		(For M 35 grade concrete) For other grades , multiply by $\sqrt{f_{ck}}/35$			
	C_{us}	3.00	Mpa	or 300	t/m^2
	A_s	3.39	m^2	Surface Area of socket	
	$R_e = (k_{sp}\ q_s\ d_f\ A_b)$	**1221.45**	**tons**		
	$R_{af} = (C_{us}\ A_s)$	**1017.88**	**tons**		
	$Q_a = (R_e)\ /3 + (R_{af})/6$	**576.80**	**tons**		

Safe Axial Load from concrete strength in direct compression criteria

For a 1200mm pile

Pile diameter	1.20	m		
CSA	1.13	m^2		
σ_{cc}	900.00	t/m^2	IS-456	**For M35 grade concrete)**
Q_a	**1017.88**	**tons**		

OVERALL SUMMARY

Pile Dia (mm)	**Safe vertical load in tons Q_a**		
	Amended IRC 78	Concrete strength, Assumed M25	Suggested for Design
1200	576.80	1017.88	**570**

ALLOWBALE LATERAL LOAD ON PILE - DESIGN CALCULATIONS

LATERAL LOAD DESIGN CALCULATIONS --1000mm diameter pile -FIXED HEAD		
Calculations comply with	IS-2911(Part1-Sec 2)	Appendix C
Lateral Load on pile, Q (adopted)	**40.00**	Tons
Pile diameter(d)	100.00	cm
Grade of concrete	M 35	Adopted
Characteristic strength f_{ck}	35.00	N/mm^2
$E_c = 5000 \sqrt{f_{ck}}$ (from Code IS456-2000 in N/mm^2)	295803.99	kg/cm^2 (converted)
MI of pile , $I = \pi d^4/ 64$	4908738.52	cm^4
E_cI	1452024436299.75	$kg\text{-}cm^2$
η_h vide table 5 of Annex C,**	0.35	kg/cm^3
Coefficient T	333.87	cm
Q (Lateral load)	**40000.00**	kg
L_1/T	0.00	Adopted
L_f/T	2.20	From graph
L_f = T x2.2	734.52	cm
Computed deflection y_c (cm)	**0.91**	***< 10mm okay***

Abbreviations, explanations and formula for deflection

y_c	Deflection	$Q^* (L_1+L_f)^3/12 * E_cI$	Fixed head condition
T	Coefficient	$\sqrt[5]{E_cI/k_1}$	
E_c	Young's modulus for concrete		
k_1	Constant from table 4 - Appendix C of IS-2911(Part 1-Sec2)		
MI	Moment of inertia		

ALLOWBALE LATERAL LOAD ON PILE - DESIGN CALCULATIONS

LATERAL LOAD DESIGN CALCULATIONS - 1200mm diameter pile -FIXED HEAD		
Calculations comply with	IS-2911(Part1-Sec 2)	Appendix C
Lateral Load on pile, Q (adopted)	**60.00**	Tons
Pile diameter(d)	120.00	cm
Grade of concrete	M 35	Adopted
Characteristic strength f_{ck}	35.00	N/mm^2
$E_c = 5000 \sqrt{f_{ck}}$ (from Code IS456-2000 in N/mm^2)	295803.99	kg/cm^2 (converted)
MI of pile , $I = \pi d^4/ 64$	10178760.20	cm^4
E_cI	3010917871111.17	$kg\text{-}cm^2$
η_h vide table 5 of Annex C,**	0.35	kg/cm^3
Coefficient T	386.30	cm
Q (Lateral load)	**60000.00**	kg
L_1/T	0.00	Adopted
L_f/T	2.20	From graph
L_f = T x2.2	849.86	cm
Computed deflection y_c (cm)	**1.02**	***< 12mm okay***

Abbreviations, explanations and formula for deflection

y_c	Deflection	$Q^* (L_1+L_f)^3/12 * E_cI$	Fixed head condition
T	Coefficient	$\sqrt[5]{E_cI/k_1}$	
E_c	Young's modulus for concrete		
k_1	Constant from table 4 - Appendix C of IS-2911(Part 1-Sec2)		
MI	Moment of inertia		

UPLIFT CAPACITY OF PILE AS PER IS-2911 APPROACH

UPLIFT LOAD DESIGN CALCULATIONS - 1000mm diameter pile		
Calculations comply with	IS-2911(Part1-Sec 2) Amended Formula	
Diameter of the Pile, D	1	m
Shear Strength for CWR, C_u	60.00	t/m^2 (Limited)
Bearing Capacity Factor, N_c	9.00	
Factor of Safety, F_S	3.00	Adopted
Cross Sectional Area of pile, A	0.79	m^2
ALPHA Value constant,ά	0.90	
Length of Socket in WR, L	3.00	
Uplift Capaciy of Pile, Q_{up}	**113.04**	Tons

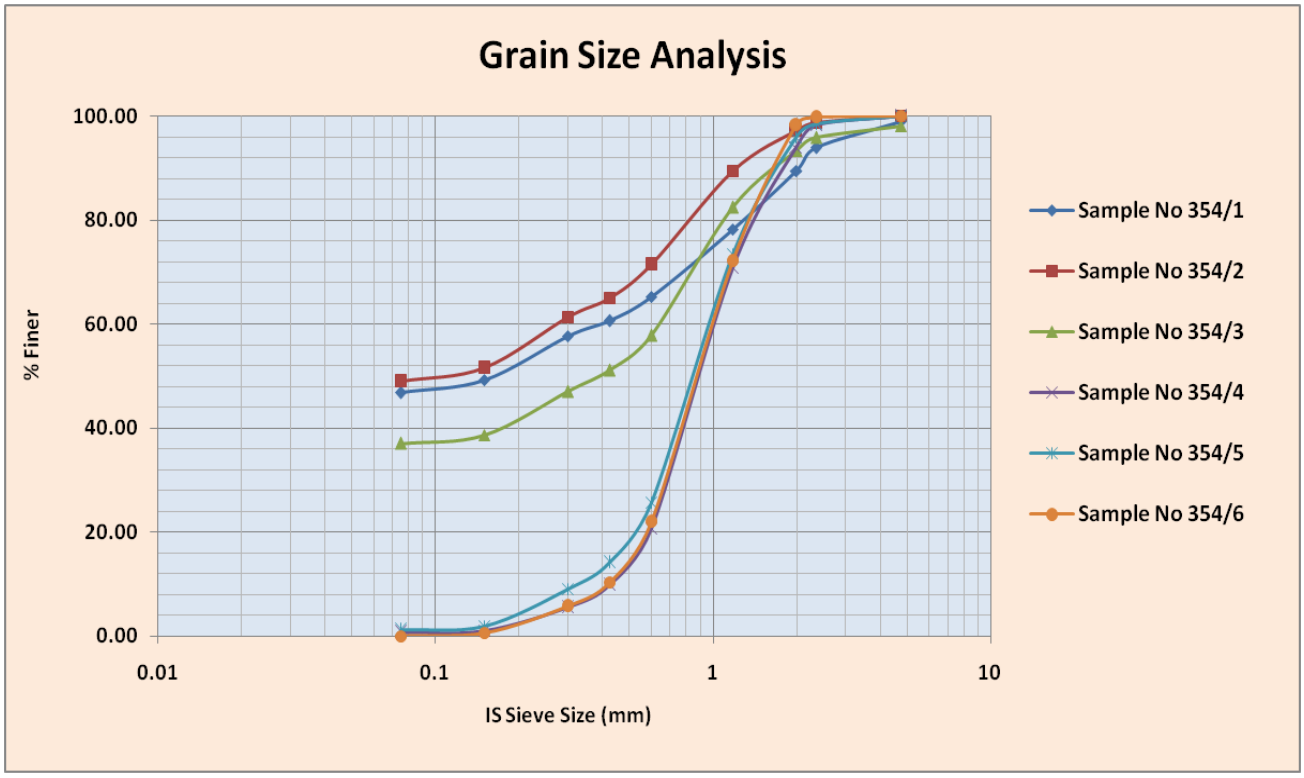
UPLIFT LOAD DESIGN CALCULATIONS - 1200mm diameter pile		
Calculations comply with	IS-2911(Part1-Sec 2) Amended Formula	
Diameter of the Pile, D	1.20	m
Shear Strength for CWR, C_u	60	t/m^2 (Limited)
Bearing Capacity Factor, N_c	9.00	
Factor of Safety, F_S	3.00	Adopted
Cross Sectional Area of pile, A	1.13	m^2
ALPHA Value constant,ά	0.90	
Length of Socket in WR, L	3.60	
Uplift Capaciy of Pile, Q_{up}	**162.78**	Tons

UPLIFT CAPACITY OF PILE AS PER IS - 2911 APPROACH

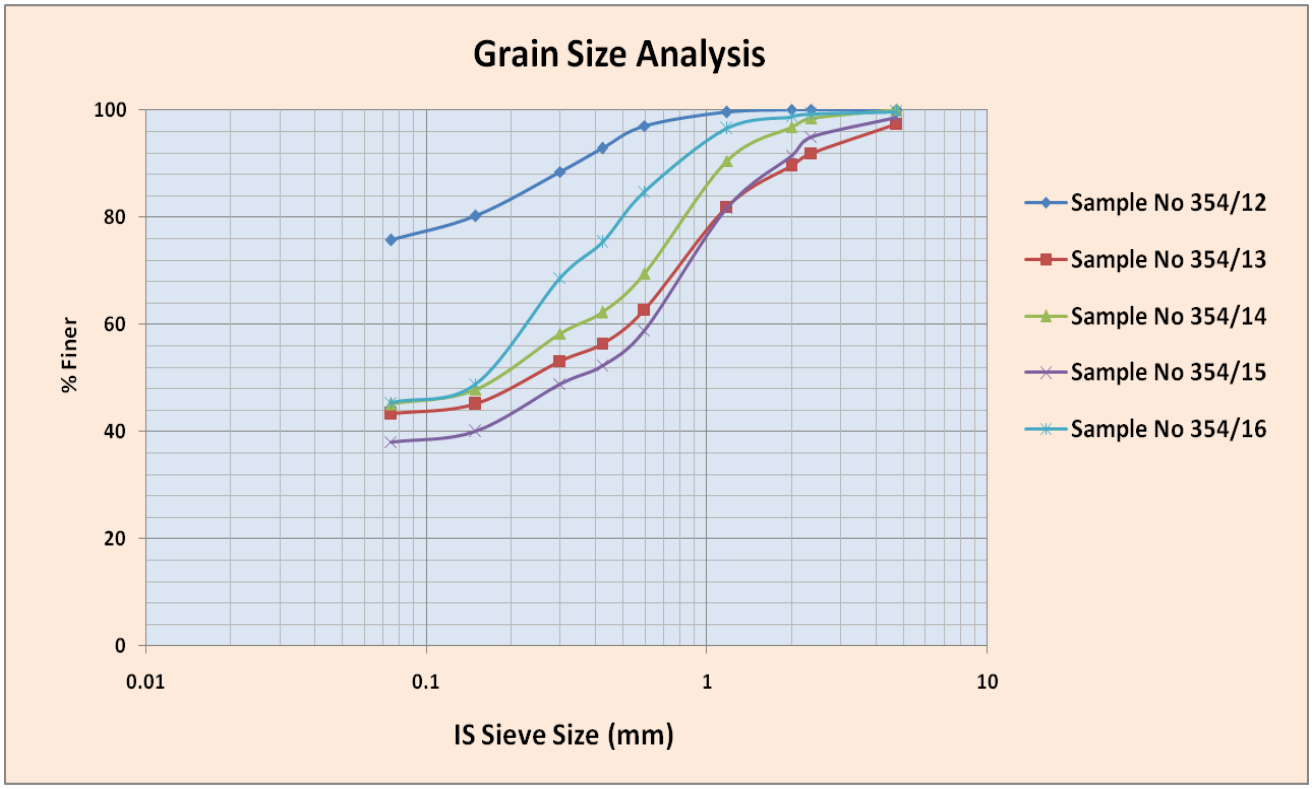
UPLIFT LOAD DESIGN CALCULATIONS - 1000mm diameter pile		
Calculations comply with	IS-2911(Part1-Sec 2)	Amended Formula
Diameter of the Pile, D	1	m
Shear Strength for Hard rock, C_u	150.00	t/m^2 (Limited)
Bearing Capacity Factor, N_c	9.00	
Factor of Safety, F_S	3.00	Adopted
Cross Sectional Area of pile, A	0.79	m^2
ALPHA Value constant,ά	0.90	
Length of Socket in HR, L	1.00	1 times the Diameter
Uplift Capaciy of Pile, Q_{up}	**94.20**	Tons

UPLIFT LOAD DESIGN CALCULATIONS - 1200mm diameter pile		
Calculations comply with	IS-2911(Part1-Sec 2)	Amended Formula
Diameter of the Pile, D	1.2	m
Shear Strength for Hard rock, C_u	150.00	t/m^2 (Limited)
Bearing Capacity Factor, N_c	9.00	
Factor of Safety, F_S	3.00	Adopted
Cross Sectional Area of pile, A	1.13	m^2
ALPHA Value constant,ά	0.90	
Length of Socket in WR, L	1.20	1 times the Diameter
Uplift Capaciy of Pile, Q_{up}	**135.65**	Tons

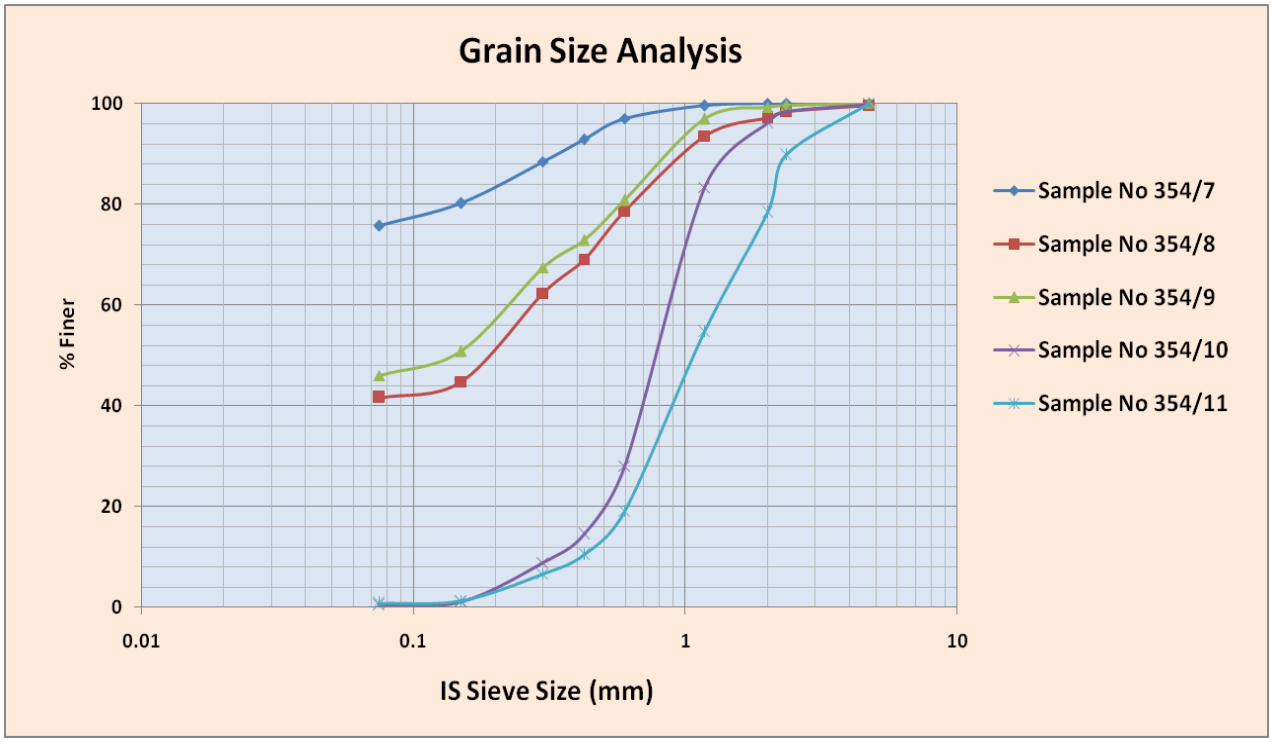
GRAIN SIZE ANALYSIS CURVES **ANNEXURE - V**



Grain size analysis Curves around BH – 1

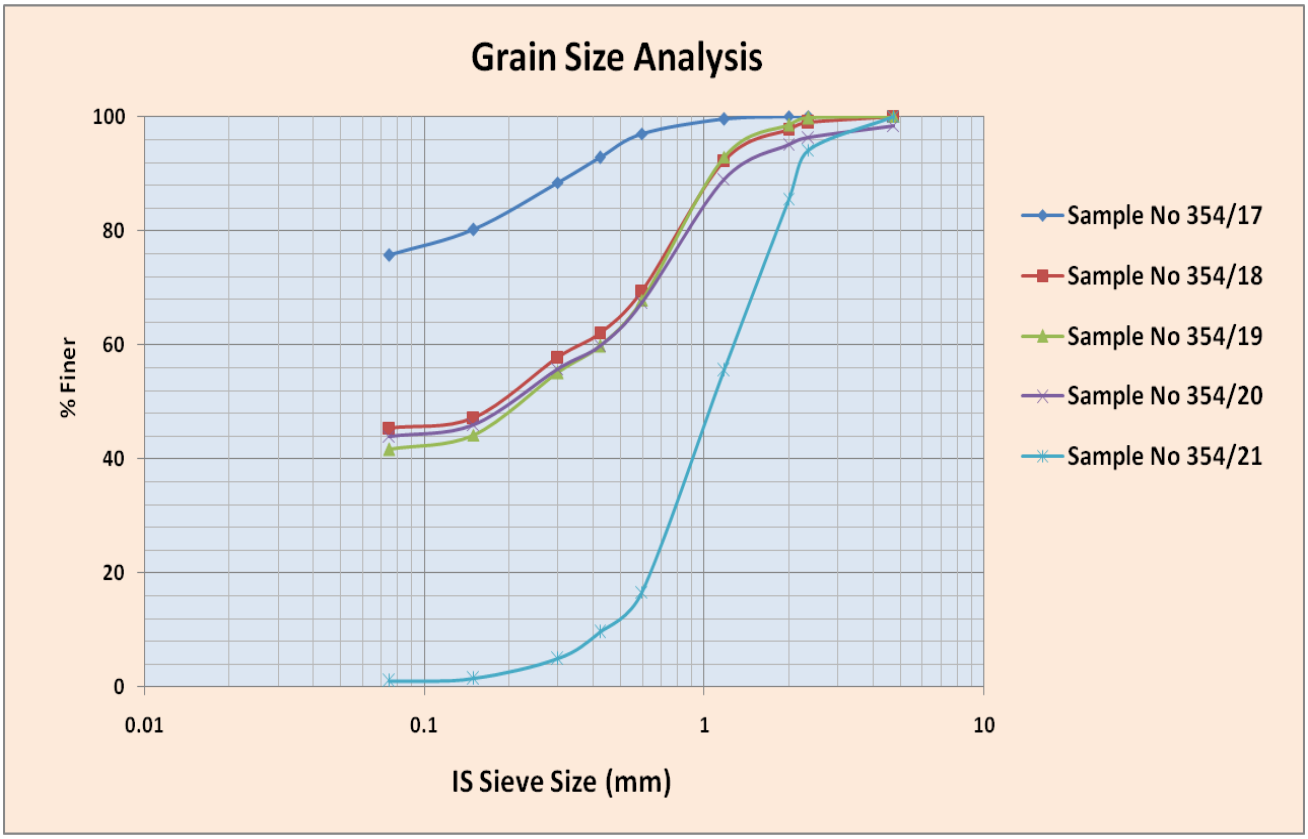


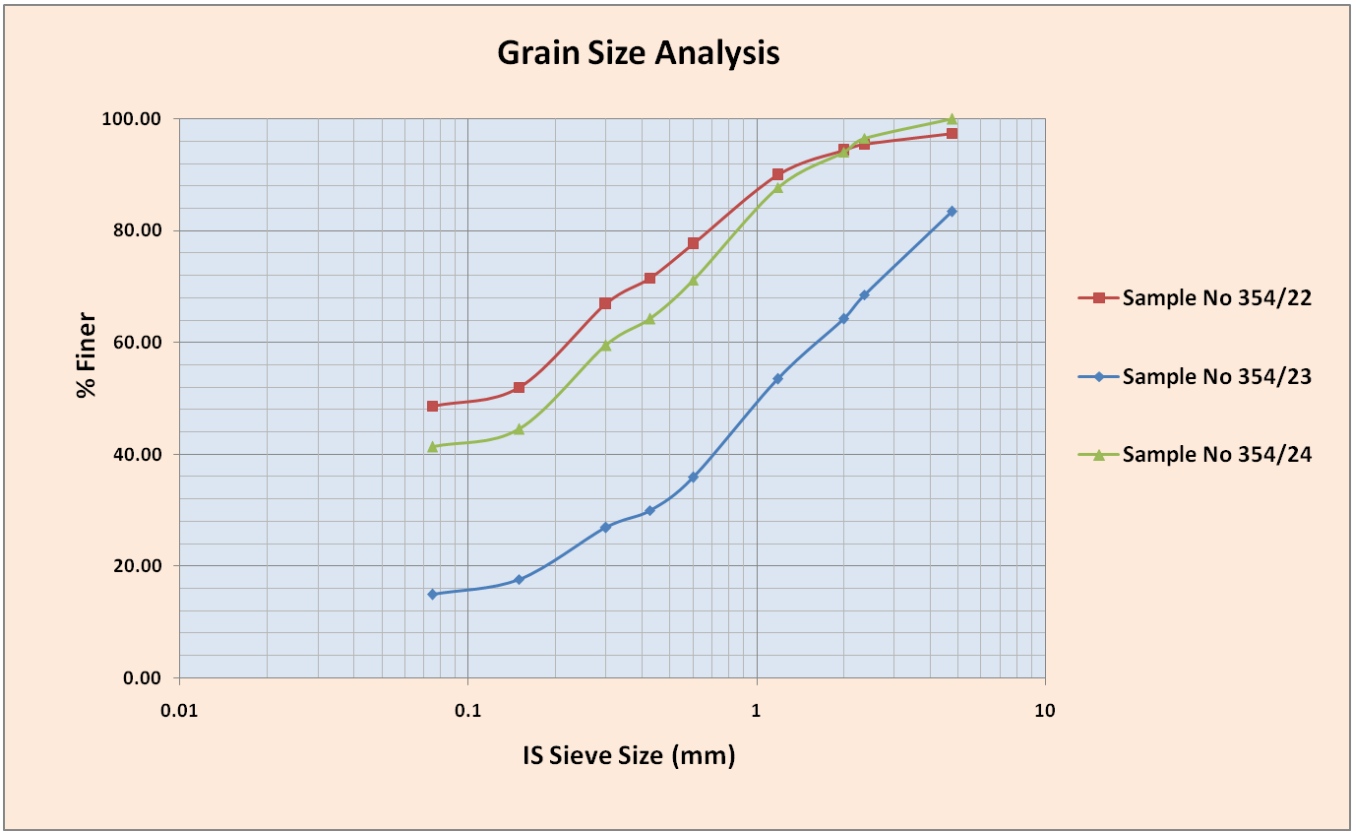
Grain size analysis Curves around BH - 2



Grain size analysis Curves around BH - 4

Grain size analysis Curves around BH - 5





Grain size analysis Curves around BH – 7

1.16 Traffic Survey

The traffic volume count surveys were conducted for Fourteen hours from morning 6am to evening 8 pm to obtain classified count at the IOC Junction. The data was collected on working day by deploying enumerators to record data for each hour within fifteen minutes intervals to obtain data on the magnitude of traffic flow, hourly variation and the traffic composition. Analysis of survey data are discussed in the chapter 5 Design Report.

1.17 Identification of Utilities and Relocations of Structures

During site studies, the presence of following utilities and structures in the area of proposed development has been identified neither for dismantling nor re location. Details are shown in the Table 0-1 below.

Table 0-1 Existing Utilities / Structure for Relocations

Sl. No	Existing Utility	Department
1	Lamp post	BBMP
2	Water Lane	S-W Railway
3	STP	S-W Railway
4	Railway Traffic Control Room	S-W Railway
5	Old Buildings	S-W Railway
6	Compound wall	Defense
7	Electrical Poles	BBMP

1.18 Existing condition at Site

The reconnaissance survey was made before detailed design and existing condition of site is captured through Photos and is apexes in the Table 0-2 below.

Table 0-2 Photos showing existing Ground condition

<table>
<tr><td colspan="2"> 
</td></tr>
<tr><td colspan="2">Top View of Existing Flyover at IOC Railway Junction</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Two lane with Two way traffic Maruthi Sevanagara to Banasavadi</td><td>Traffic Jam at approach due to inadequate width</td></tr>
</table>

	
View of Obligatory span at Railway crossing	Sub structural view with Pier with pier cap and plain beam
	
Diverging Ramp towards New Terminal station	Ramp towards Banasawadi side
	
Construction of ROB at LC136A Obligatory span	Construction of Pier cap for viaduct for approach towards Indiranagara side
	
Development of New Terminal Railway Station at Byyappanahalli	

Improvement Proposals and Design Standards

1.19 General

After the development of the new terminal station, the junction will serve heavy traffic and congested traffic throughout the day especially during peak hours. Based on the results of the traffic surveys and investigations an arrangement best suiting to the traffic pattern is proposed for improving the situation. Proposal is evolved giving due consideration to minimize land acquisition. All the site constraints have been taken care while formulating the improvement scheme.

Efforts have been made to create a conflict-free situation within the possible limits of the right of way, the main objective of which is to greatly improve the current situation and expand the flow of traffic as much as possible.

1.20 Study of Existing Flyover access

The existing flyover constructed at the junction has been studied and is currently providing main access to connect between Banasawadi to Maruti Sevanagar only and loops are provided only to divert traffic in right/left direction.

The other access perpendicular to the main traffic is completely blocked, which connects to the new railway terminal station from Kammanahalli routed from Hebbal to Indiranagar. Traffic congestion is expected to increase from Kammanahalli via Hebbal to Indiranagar via Sir MV Terminal Station Byyappanahalli

Analyzing the improvement of the existing flyover to connect Kamanahalli to Indiranagar, the consultants have re-planned to demolish the existing structure and plan for new structures to provide access in all possible directions without any collision at the junctions.

1.21 Different Options of Junction Improvement

Various structural options for designing this railway junction have been studied in all possible views to meet railway and IRC standards. The following options of structures were studied. The type of structure is chosen based on their advantages and disadvantages.

a. **Elevated Rotary**
b. **Clover leaf**
c. **Underpass**

Elevated Rotary: The elevated rotary concept was chosen based on the advantages of its circular type, which enables access from all directions without traffic conflict. Other advantages are that it can be accommodated on available land without integrating proposed and existing rail lines through land survey. High speed operations of heavy traffic movement at this junction can be handled with low speed due to short weave distance. This type of structure is a significant advantage as there is slow traffic.

The proposal of Rotary concept is shown below in Figure 0-1

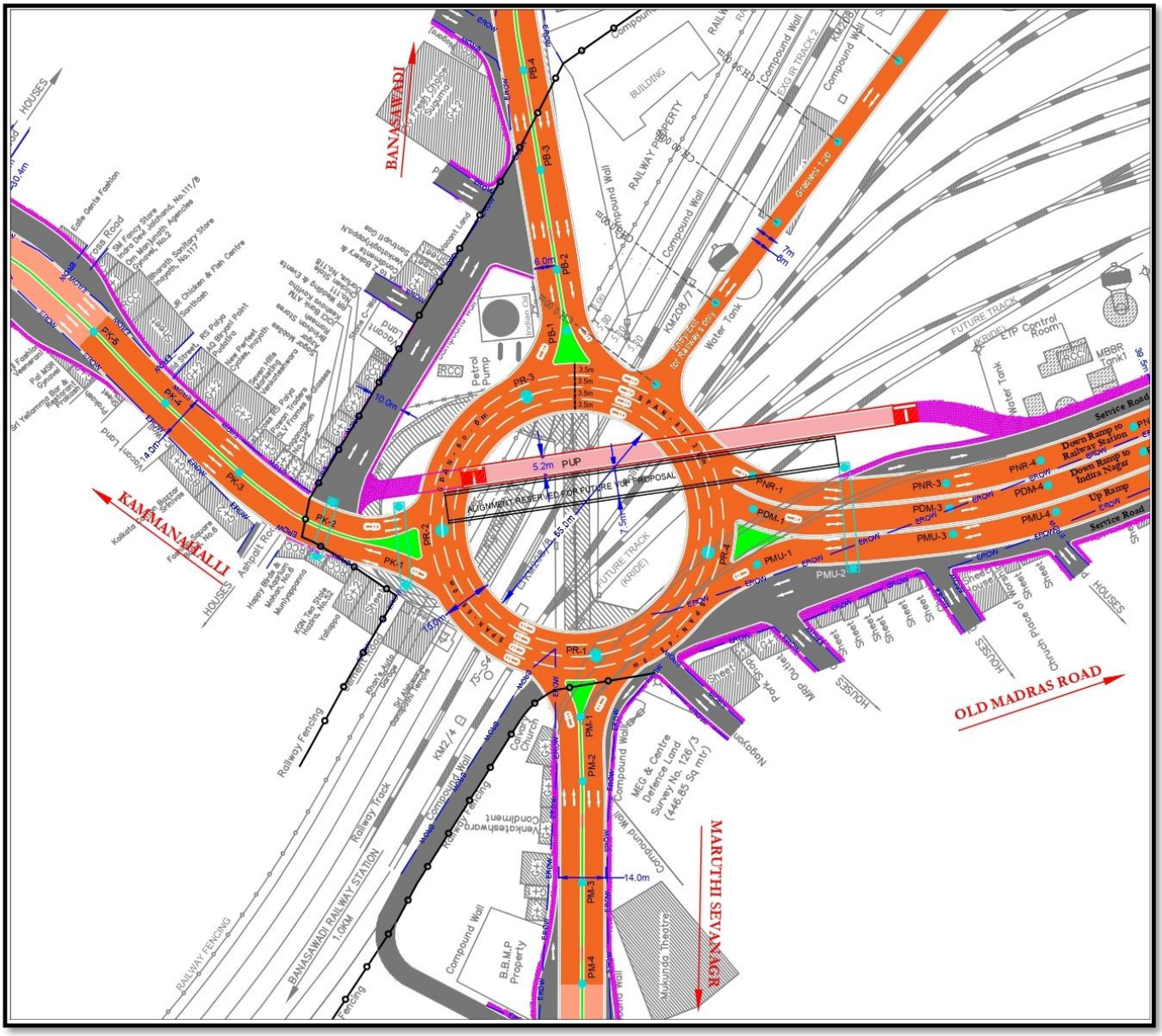


Figure 0-1 Elevated rotary concept

Clover Leaf: Options for the Clover Leaf Interchange were tried by designing one loop ramp for right-turning traffic and one outer connection for left-turning traffic in each quadrant. These types of structures require more than one structure of different levels and providing approaches is a big problem. The land acquisition area required to be more for providing service roads along the approaches.

At the planning stage it was found that this type of structure would not suit the proposed and existing railway lines. Also turns out to be very expensive.

The type of clover leaf tried at this junction is shown in Figure 0-2 below.

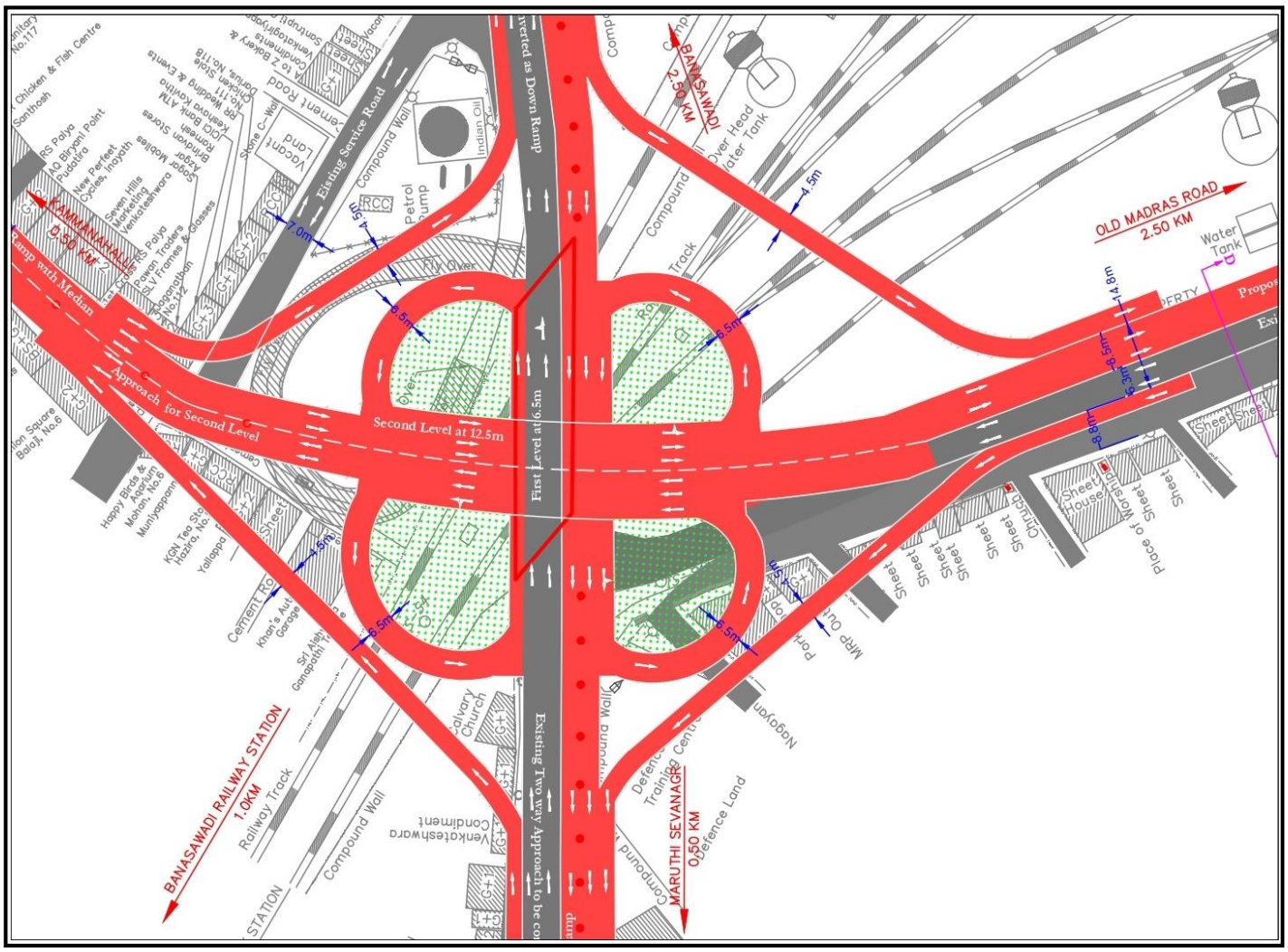


Figure 0-2 Design concept of Clover Leaf

Underpass: The scheme of underpass at this junction is inconvenient and completely blocked due to direct access without provision of left or right turns. Proper drainage system is also becoming a problem.

An underpass plan for construction has been attempted at this junction is shown in Figure 0-3 below.

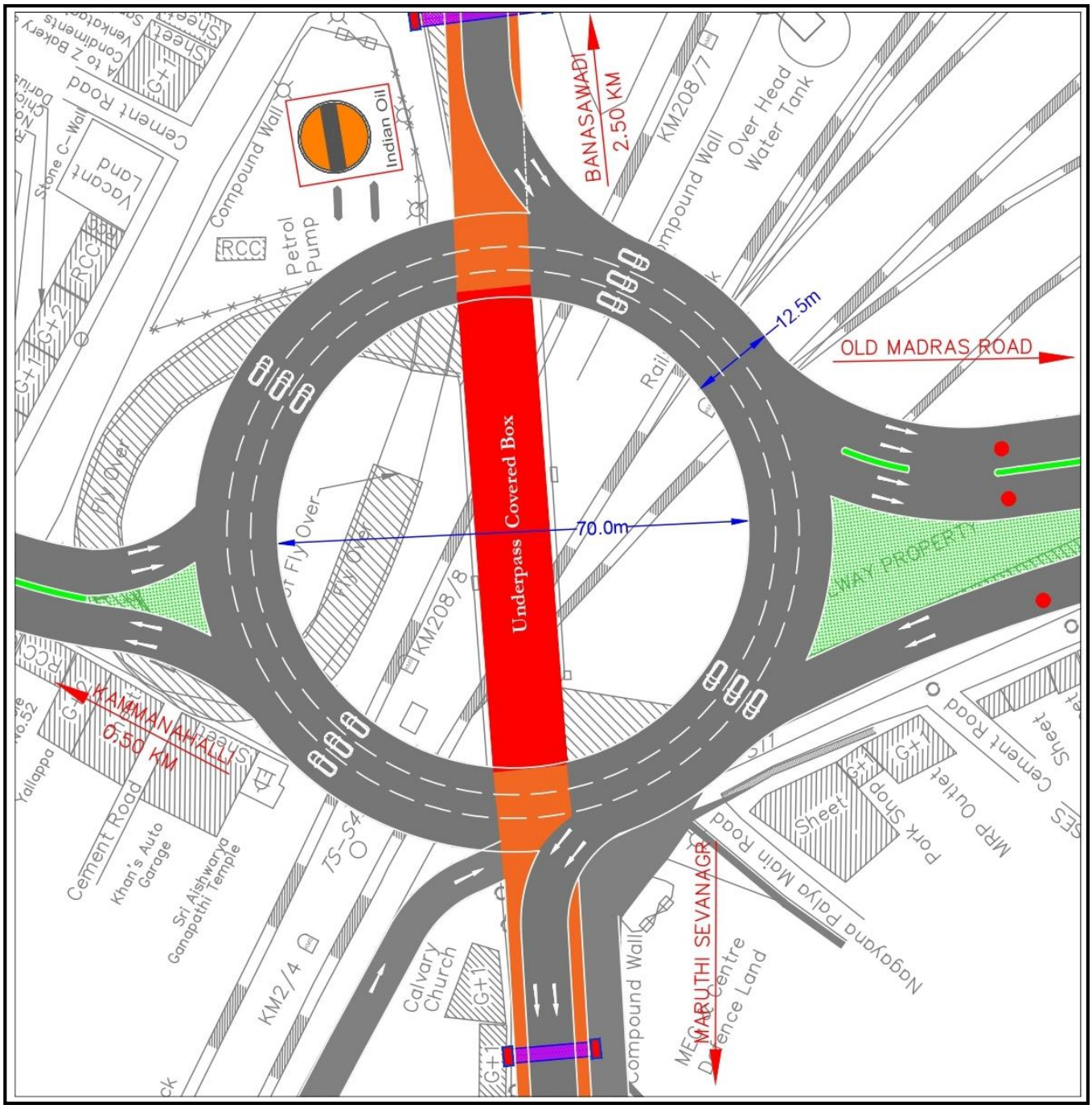


Figure 0-3 Design concept of Underpass

After analyzing the above options in consultation with the Railways/BBMP officials/Local MLA, it was finally decided to plan to provide an elevated rotary concept to ease the traffic to overcome the land issue constraint and meet the railway requirements.

1.22 Rotary concept

The concept of selecting the junction type at this location is as follows

1. Vehicles entering the rotary are forced to slow down and continue moving slower speeds prevent vehicles from stopping at intersections.
2. Traffic flow is regulated in one direction of movement only, thus eliminating severe collisions between crossing motions.
3. This is ideally suited for medium or high traffic or at intersections with at least three or four approaches.
4. Rotaries are self-governing and practically require no control by police or traffic signals.
5. Due to reduction in speed of vehicles, severe conflicts and accidents are avoided and their intensity is less in rotaries.

1.23 Geometric and Structural Design Standards

The geometry of IOC railway crossing junction includes open land in the middle having a circular shape and road development on all four sides, north-south and east-west. At present, this railway junction has a main entrance to connect the north-south dual carriageway. The main east-west access is completely blocked except for diverting traffic in loops from the current main dual carriageways.

As per the site situation and ground reality, an attempt has been made to design the junction in an innovative way by raising a circular structure in the Centre in a rotary form to utilize the currently undeveloped railway land. Allow access to connect the road in all directions conflict-free by allowing railway re-planning at the junction to accommodate additional lanes required as they are planned for future lanes. To accommodate the heavy traffic of around 2300 veh/hr and 2645 veh/hr, there is a need to channelize the traffic in the limited land with innovative design of elevated rotary as grade separator.

Traffic rotary or roundabout is a special form of at-grade intersection in which one-way traffic flows around a large center island before weaving into the respective directions from the traffic flow emanating from the center island. In our country, the 'keep left' regulation is followed and the flow around the central island is clockwise.

In a rotary intersection there is a smooth and efficient flow of traffic. All traffic proceeds at a fairly uniform speed. Frequent stopping and starting of vehicles are avoided. Crossing movements are converted into weaving or merging and diverging operations. Direct conflict is eliminated. Thus the journey is more consistent and comfortable.

The design of rotary elements requires special considerations depending on each site requirement. No standard design can be adapted to any particular site conditions. So it became necessary to design the intersection and increase the capacity of the road smooth and safe traffic movement.

As this project road falls within urban limits, relevant IRC design standards are due consideration to the Latest directives and guidelines of MOSRTH/IRC/Indian Railways have been followed as far as possible while formulating design criteria. Other national and international standards are also cited where found relevant. The criteria for various components are explained below.

1.23.1 Geometric Standards

IRC: 86 – 1983, “Geometric Design Standards for Urban Roads in Plains”.

IRC: 92-1985, “Guidelines for the design of interchanges in Urban areas”

1.23.1.1 Design Speed

The proposal at the junction is an elevated rotary. Therefore, the design speed of the rotary is less than that of the roads leading to it. Although it is possible to design a Rotary without reducing high speed, the geometry can cause large costs for large-scale construction. The normal design speed considered as 30 to 35 kmph for urban areas.

1.23.1.2 Carriageway Width.

The traffic demand on the project road is estimated to be 43448 PCU/day in 2027.Thus; a 4-lane flyover is justified from the point of view of traffic capacity.

Up/down ramps shall be established to ensure smooth access which induces efficient circulation of expected traffic in all directions.

The maximum grade of approach road is set below max 5% to ensure climbing performance on slippery surfaces and to reduce accidents on steep slopes in winter and reduce vehicle traction, as evidenced by the results of site surveys on several road sections along steep gradient.

Based on the traffic demand as per the projections, four lane configurations are proposed for rotary flyover and a two lane configuration is proposed for separate uni-directional flyover / road over bridge.

An intermediate carriageway of minimum width is proposed for service roads with footpath cum drain of 2 m.

1.23.1.3 Camber.

A camber of 2.5% is proposed for rotary flyover and carriageway of service roads.

1.23.1.4 Super Elevation.

Super elevation of rotary roads is ignored. But, here if the vehicle changes its direction to its opposite side it travels around the Central Island and changes direction. While shifting, the vehicle may turn or slip, to overcome this, a minimum lateral slope is provided which is nothing but camber. In rotary roads this camber acts as super elevation.

1.23.1.5 Horizontal Geometry.

A design speed of 35 kmph is proposed at the rotary flyover and Graded roads. Rotary design is based on the traffic operations of diverging, merging and weaving. The design elements include design speed, radius at entry, exit and the central island, weaving length and width, entry and exit widths are designed as per IRC-65. The Radius of Rotary is designed with minimum radius of 1.3 times of entry curve. The entry to the rotary is not in straight, but a small curvature of about 20 and 25 meters is introduced. The exit radius provided is 1.5 to 2 times than the entry radius of the rotary so that the vehicles will discharge from the rotary at a higher rate. The width of the weaving section is kept higher than the width at entry and exit preferably between 6 to 18m and weaving length available at the intersection is between 18 to 25m. The traffic rotary is designed as per standards and is reducing the complexity of crossing traffic by forcing them into weaving operations.

1.23.1.6 Road Signage and Markings

Proper signs and markings are essential for the safety and guidance of drivers. The junction improvement is so designed to show warning and regulatory signs at appropriate locations. Signs are reflective type and can be easily noticed at night. All road signs are in compliance with the provisions of IRC 67 - 2001 - Code of Practice for Road Signs and IRC SP 31 -1992 - New traffic signs.

Rotary flyover and service roads are decorated with roadside lamps. Lampposts are attached to the edge of the flyover. Road markings conform to IRC-35 - 1997 Code of Practice on Road Markings and other IRC standards.

1.23.2 Structural Design Standards

Basic design criteria for structural designs have been adopted as per the latest editions of IRC Codes and the requirements laid down in the standard specifications and guidelines of the Ministry of Road Transport and Highways. Additional technical references of Indian Railways, international standards are used where provisions of IRC/IS Codes are found inadequate.

The Hierarchy for the following IRC / IS Codes are followed in the design

IRC: 5 General Features of Design.

IRC: 6 Loads and Stresses.

IRC: 15 Construction of Concrete Roads.
IRC: 18 DESIGN Criteria for Pre - stressed Concrete Road Bridges (Post-Tensioned Concrete).
IRC: 21 Standard Specifications and Code of Practice for Road Bridges.
IRC: 22 Composite Construction (Limit State Design).
IRC: 24 Steel Road Bridges.
IRC: 35 Road Markings.
IRC: 37 Design of Flexible.
IRC: 38 Design of Horizontal Curves for Highways and Design Tables.
IRC 39 Standards for Road-Rail Level Crossing (I Revision).
IRC: 44 Cement Concrete Mix Design for Pavements.
IRC: 54 Lateral and Vertical Clearances at Underpasses for Vehicular Traffic.
IRC: 58 Design of Plain Jointed Rigid Pavements for Highways.
IRC: 65 Recommended Practices for Traffic Rotaries.
IRC: 67 Road Signs.
IRC: 69-2005 Guidelines and Specifications of Expansion joint.
IRC: 71 Abbreviations and Symbols in Documents and Plans.
IRC: 78 Foundation and Substructure.
IRC: 79 Road Delineators.
IRC: 83 (Part I) Metallic Bearings.
IRC: 83 (Part II) Elastomeric Bearings.
IRC: 83 (Part III) POT, POT cum PTFE, PIN and Metallic Guide Bearings.
IRC: 86 Geometric Design Standards for Urban Roads in Plains.
IRC: 92 Designs of Interchanges in Urban Areas.
IRC: 103 Pedestrian Facilities.
IRC: 112 Concrete Road Bridges.
IRC SP 19 Manual for Survey, Investigation and Preparation of Road Projects.
IRC: SP: 23 Vertical Curves for Highways.
IRC: SP: 37 Guidelines for Evaluation of Load Carrying Capacity of Bridges.
IRC: SP: 42 Road Drainage.
IRC: SP: 50 Urban Drainage.
IRC: SP: 56 Steel Pedestrian Bridges.
IRC: SP: 57 Quality Systems for Road Construction.
IRC: SP: 90 Manual for Grade Separators and Elevated Structures.

MoR: Indian Railways Bridge Manual-1998.
IS: 2911 (All Parts) Pile Foundations.

For the items not covered in the above specifications, provisions of following standards are followed in the given order of priority:

- Provisions of IS codes of Practices:
- Relevant Provisions of BS codes of practices
- Sound Engineering Practices, technical Literature / Papers & Provisions of relevant codes of advanced and developing countries.

Few images showing the existing Elevated Rotary functioning successfully at several location across India


Nad Flyover Vishakapatna


Padi Flyover Chennai


Tambaram Flyover Chennai


R Block Flyover Patna


GPO Flyover Patna


MSP Flyover Tirucharapally

1.24 Details of Improvement Proposals.

1.24.1 Elevated Rotary and approaches.

Considering the traffic volume and movement pattern to reduce the junction congestion, elevated rotary of four lane uni directional flyover is proposed at IOC railway junction, the railway line crosses the Banasawadi-Maruthisevanagar sub-arterial road in one direction and the Kammanahalli to Old Madras road in the other direction, connecting the Outer Ring Road and National Highways 4 and 7 respectively. The junction is very close to the new Byyappanahalli Terminal Railway Station.

The design concept of rotary flyover is that the vehicle can be moved without breaking. Therefore, there is no opportunity to stop the vehicle but other vehicles can change their direction or cross each other without stopping. However, the speed of vehicles will decrease. Standard city road speeds do not apply at rotary intersections. It should pass at a low speed, which leads to safe transport towards one's direction without any collision. A speed control panel should be provided towards the rotary junction.

The rotary flyover is constructed in fully curved sections and all along the approaches connecting the arm roads except for a short length at the ends of the approach. Soil slopes with earth retaining structures on the sides are proposed beyond the abutments on all approach sides. A minimum vertical clearance of 6.525 m from top of rail to bottom of deck is proposed at obligatory span locations at railway junctions as per Hand book on Railway Construction under clause 10.2.2 selection of ROB/RUB Parameters mentioned at Page no 369.

1.24.2 Improvement proposals of Rotary

Elevated Rotary and its geometric standards, lane width and median are designed as per IRC norms, Rotary Carriageway is four lane width of 14.0m each lane 3.5m wide and 1.0m median with 0.5m RCC crash barriers provided on edge of rotary. The main features are shown in the section below.

1.24.2.1.1 Features of Elevated Rotary at IOC Junction

Number of Lane	: 4 lanes unidirectional
Total width of Elevated Rotary	: 15.0m
Minimum Carriageway Width	: 14 m
Minimum Vertical Clearance	: 6.525m
Radius of the Rotary	: 32.50m
Circumferential length at C/L of Rotary	: 255.0m
Viaduct Span with Steel Box Girder	: 1 x 81.31m
	: 1 x 68.50m
	: 1 x 56.00m
	: 1 x 48.00m
Shape of Steel Box Girder	: Trapezoidal shape Open at Top
Number of Box Girders at each span	: 3 Nos

Further, Length of elevated rotary viaduct span has been fixed in consultation with sub-urban railway department K-Ride and South western railway department to minimize the interference of Piers with the proposed railway lane and to minimize acquisition of the railway land at grade. Length of Viaduct Span shall be maintained with all other Requirements such as Protection to the Piers, etc. Further, Extra Widening of Carriageway at Curve Portion as per IRC: 86 with Design Speed of 30 kmph shall be provided. Typical Cross section of Elevated Rotary of span of 81.31m is shown in the Figure 0-4 below.

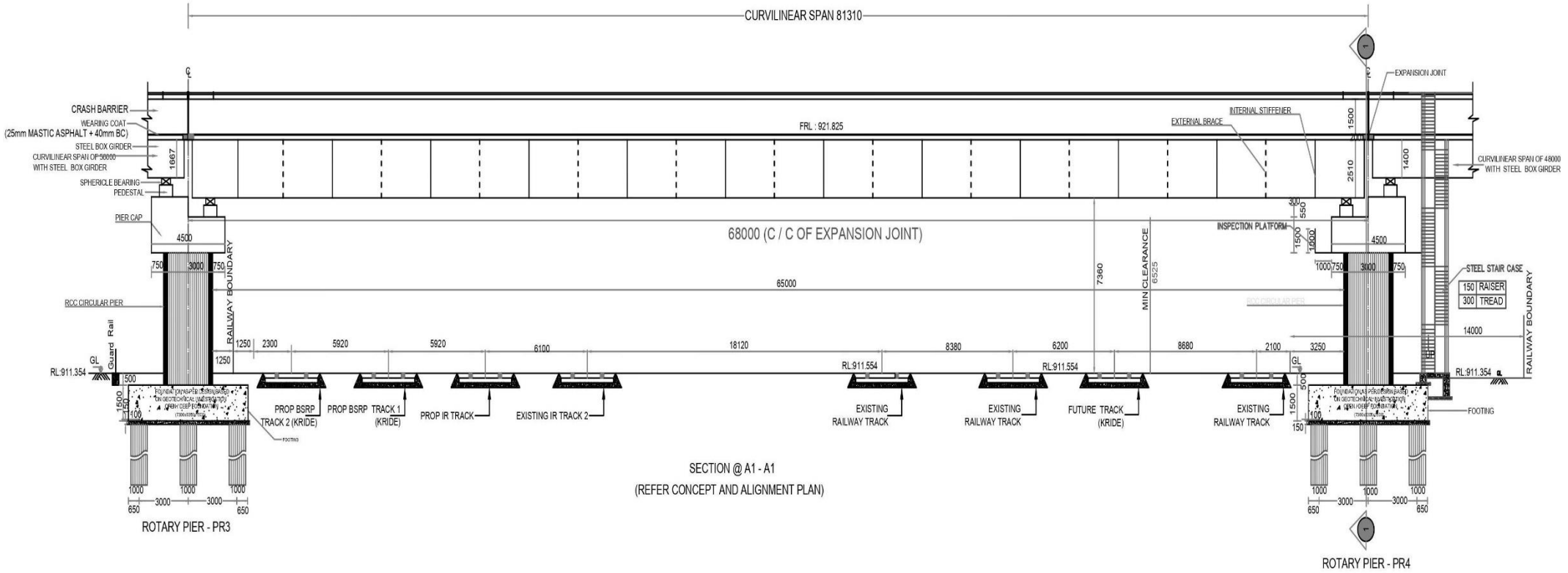


Figure 0-4 Typical Cross Section of Rotary Span of 81.31m

1.24.3 Improvement proposals of Approaches to Elevated Rotary

Elevated rotary approaches with up and down ramps are designed considering connectivity to all approach roads to facilitate users to select their options of destinations. Major 4 roads crossing railway lanes are proposed to use elevated rotary with up and down ramp roads. Details of the approaches for each road are explained below.

A. Approaches to Banasavadi road

Special care has been taken to design a rotary approach from Banasawadi road side keeping the existing traffic flow towards Marutisevanagar. Separate four-lane bi-directional approaches in this direction and one-way up ramp from the defense property side are proposed to facilitate traffic flow on this road.

B. Approaches to Kammanahalli Road

Up and down ramp approach to Kammanahalli Road is provided with two-way traffic system along with four lane wide carriage way.

C. Approaches to Baiyappanahalli Terminal Station and Indiranagara side

Following 3 approaches are proposed towards Baiyappanahalli terminal stations.

a. Down ramp to Baiyappanahalli terminal station is provided with one way traffic system with two lane wide carriage way.
b. UP ramp from Baiyappanahalli terminal station to elevated rotary is provided with one-way traffic system with two lane wide carriage way. This will facilitate the traffic coming from Indiranagar side to use the elevated rotary to choose their destinations.
c. A one-way approach is provided with a two-lane wide carriageway for the down ramp crossing Baiyappanahalli terminal station and alighting near the railway over bridge of LC 136A. This ramp will facilitate direct access from the rotary to Indiranagar Road to avoid traffic congestion at the terminal station.

   Further, Length of all viaduct spans has been fixed to maintain vertical clearance of minimum 5.5m up to New Terminal Byyappanahalli railway station and to minimize the interference of Piers with the Traffic Movement at grade. Length of viaduct span shall be maintained with all other Requirements such as Protection to the Piers, etc.

D. Approaches to Maruthiseva Nagara

An up and down ramp four lane road to Marutiseva Nagar is proposed with a length of 1416 meters to alight near the ITC corporate office to avoid congestion on the grade road. The upcoming proposal of a Sub Urban Railway station at Marutisewa Nagar by K-Ride has also been taken into consideration.

Special up/down ramp to Railway Maintenance shed

Southern Railway Departments have requested to provide access to their maintenance shed located within the railway land adjacent to the railway lanes. If a special approach is not provided to the shed, the later railways will face problem to reach the shed, as the graded roads crossing the railway lanes will be permanently closed. Considering the request of Railways, an intermediate lane width approach has been proposed for Railway Shed

The main features of UP and Down ramp for the above Four major roads are shown in the section below

1.24.3.1.1 Approaches to Elevated Rotary from Banasavadi road

- **Four lane Up/Down ramp approach to Rotary from Banasawadi road**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Two lane Up ramp approach to Rotary from Banasawadi road**

Number of Lane	: 2 lanes uni- directional
Total Width of approaches	: 8.5m
Minimum Carriageway Width	: 1 X 7.5m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Up/Down ramp approach to Rotary from Kammanahalli side**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 X 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of Solid Ramp	: 85.0 m

- **Down ramp Towards Baiyappanahalli Terminal Railway station & Up ramp to Rotary from Indiranagara (Old Madras road)**

Number of Lane	: Two lane unidirectional

Total Width of approaches	: 8.50m
Minimum Carriageway Width	: 2 X 3.5m
RCC Crash barrier	: 2 X 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 205.0 m
Length of Viaduct Span	: 4 x 30.00m
Length of End spans	: 1x20.0m
Length of Solid Ramp	: 65.0 m

- **Central Down ramp from rotary to Baiyappanahalli Terminal Railway station beyond and towards Old Madras road**

Number of Lane	: Two lane unidirectional
Total Width of approaches	: 8.50m
Minimum Carriageway Width	: 2 X 3.5m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 1150.00 m
Length of Viaduct Span	: 33x 30.00m
Length of Solid Ramp	: 160.0m

- **Up/Down ramp approach from Rotary to Maruthisevanagara road**

Number of Lane	: 4 lanes divided bi- directional
Total Width of approaches	: 17.0m
Minimum Carriageway Width	: 2 X 7.5m
Median	: 1.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 1496.0 m
Length of Viaduct Span	: 47 x 30.00m
Length of Solid Ramp	: 86.0 m

- **Up/Down ramp approach from Rotary to Railway Maintenance Shed**

Number of Lane	: Intermediate lane bi-directional
Total Width of approaches	: 7.0m

Minimum Carriageway Width	: 1 X 6.0m
RCC Crash barrier	: 2 x 0.5m
Maximum Vertical Gradient	: 5% (1 in 20)
Length of Approaches	: 210.00 m
Length of Viaduct Span	: 4 X 30.00m
	: 1 X 20
Length of Solid Ramp	: 70.0m

Typical Cross Section of Approaches to Rotary are shown in the table A to F below

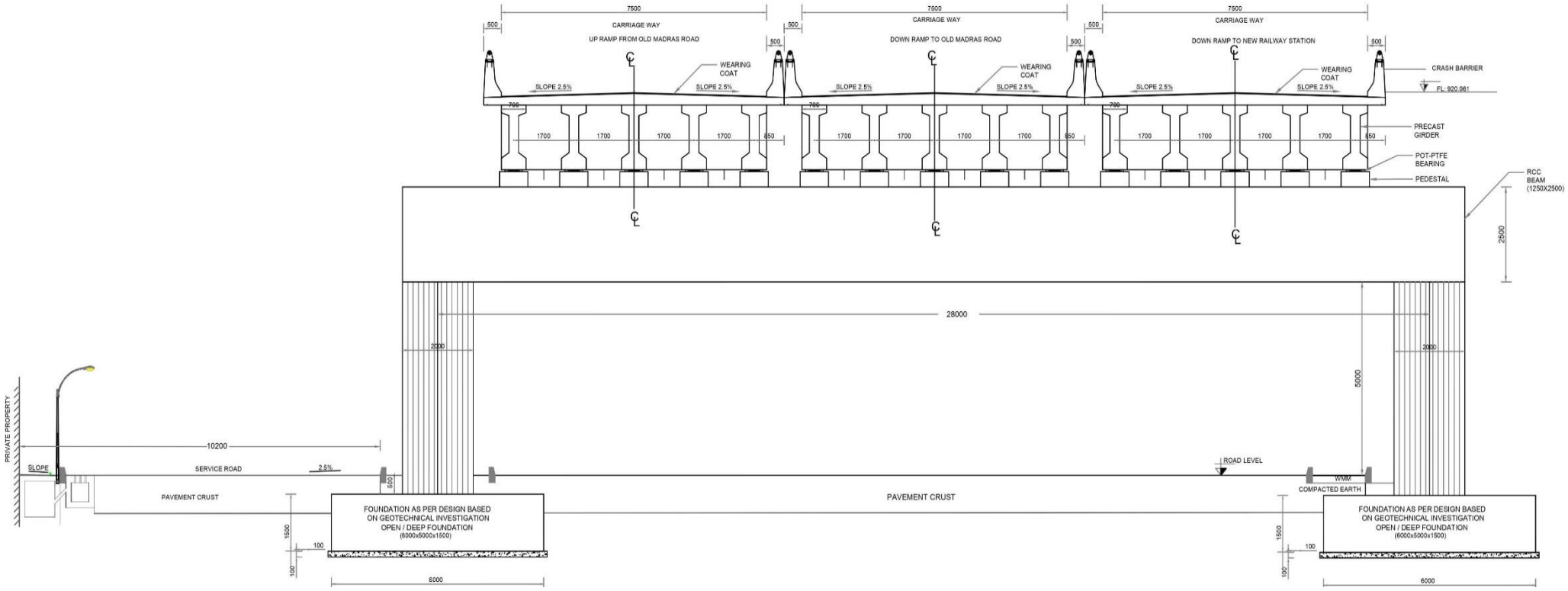


Figure 0-5 A Typical Cross Section of Approaches from Rotary to New Terminal Station

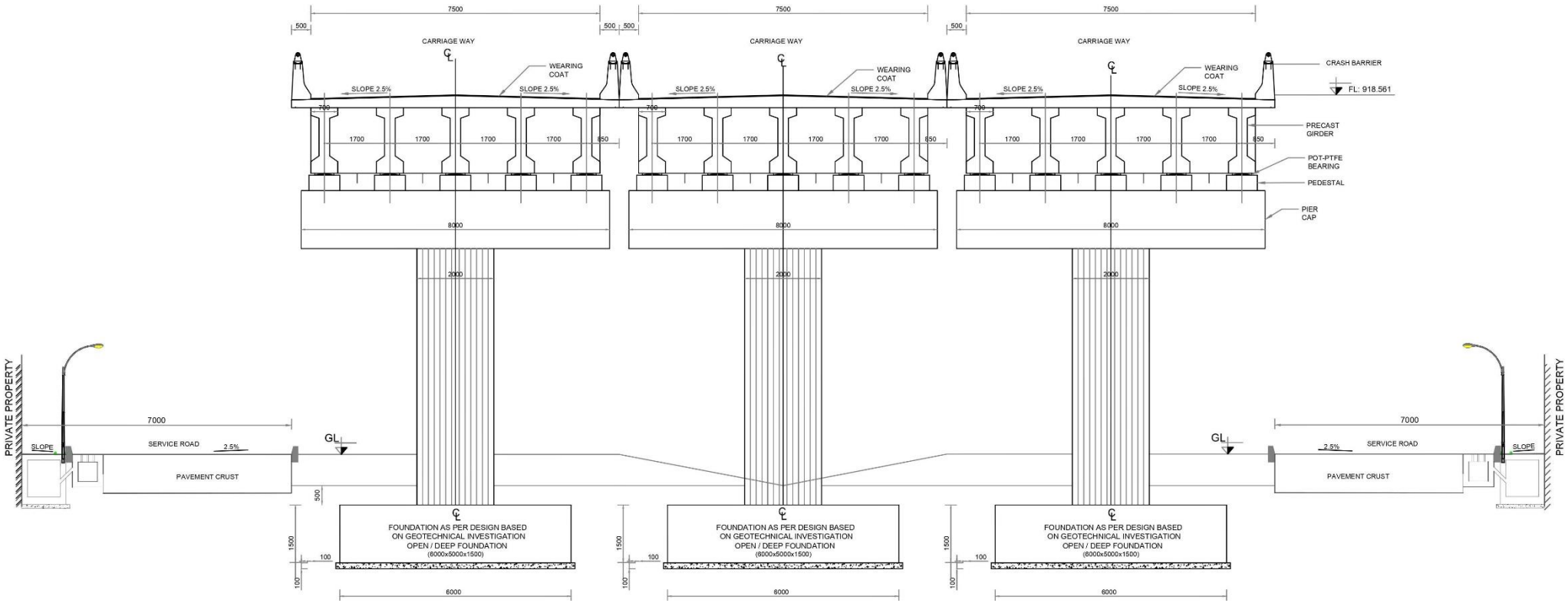


Figure 0-6 B Typical Cross Section of Approaches from Rotary to New Terminal Station

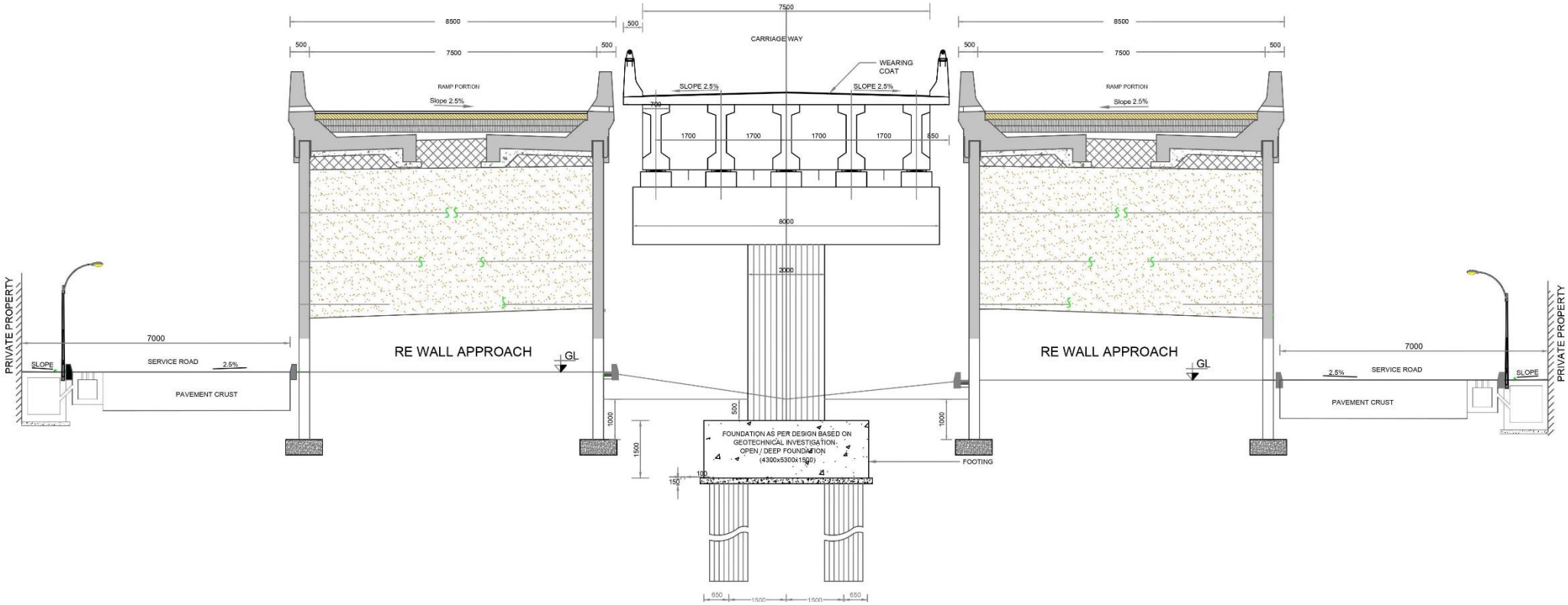


Figure 0-7 C Typical Cross Section of Approaches from Rotary to New Terminal Station

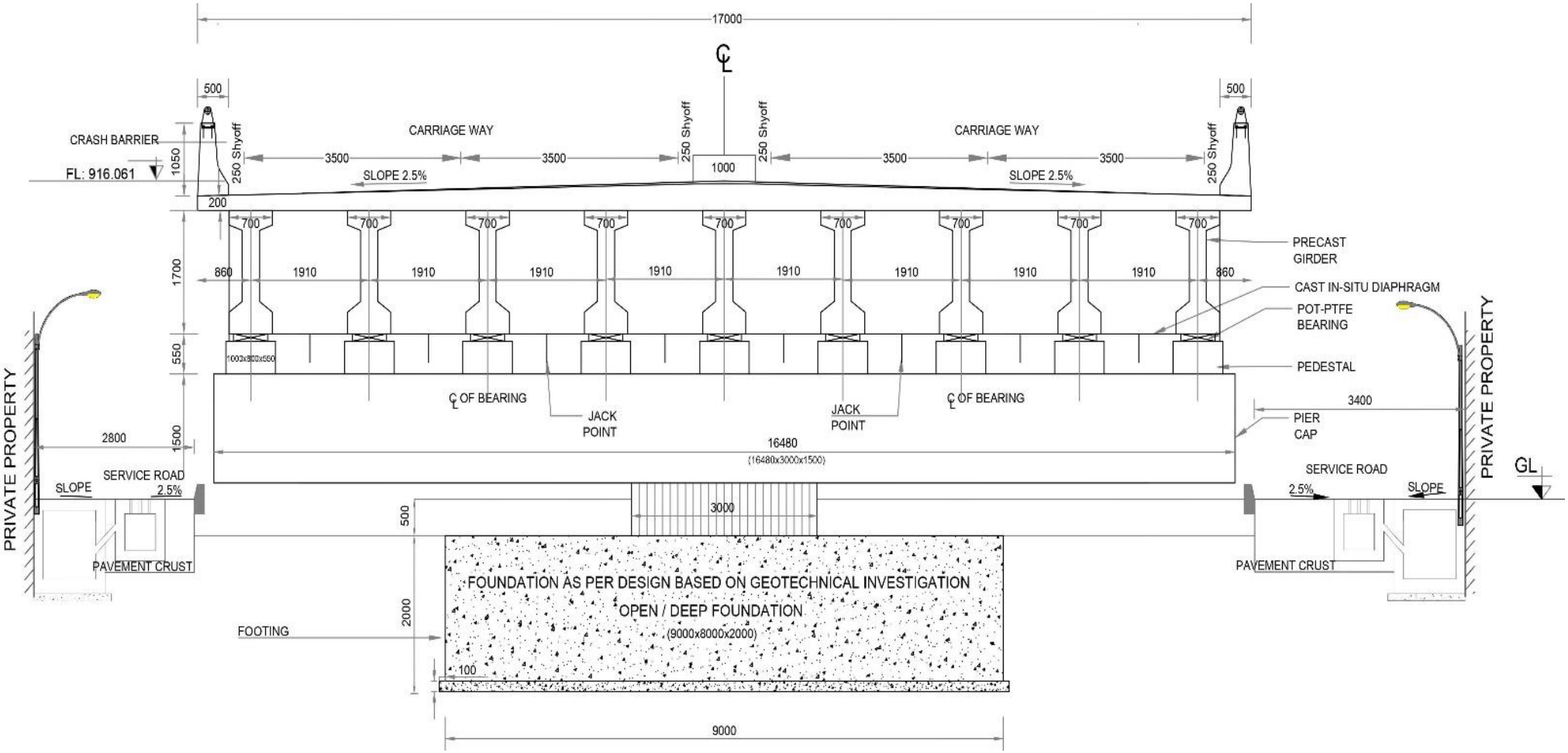


Figure 0-8 D Typical Cross Section of Approaches from Rotary to Kammanahalli

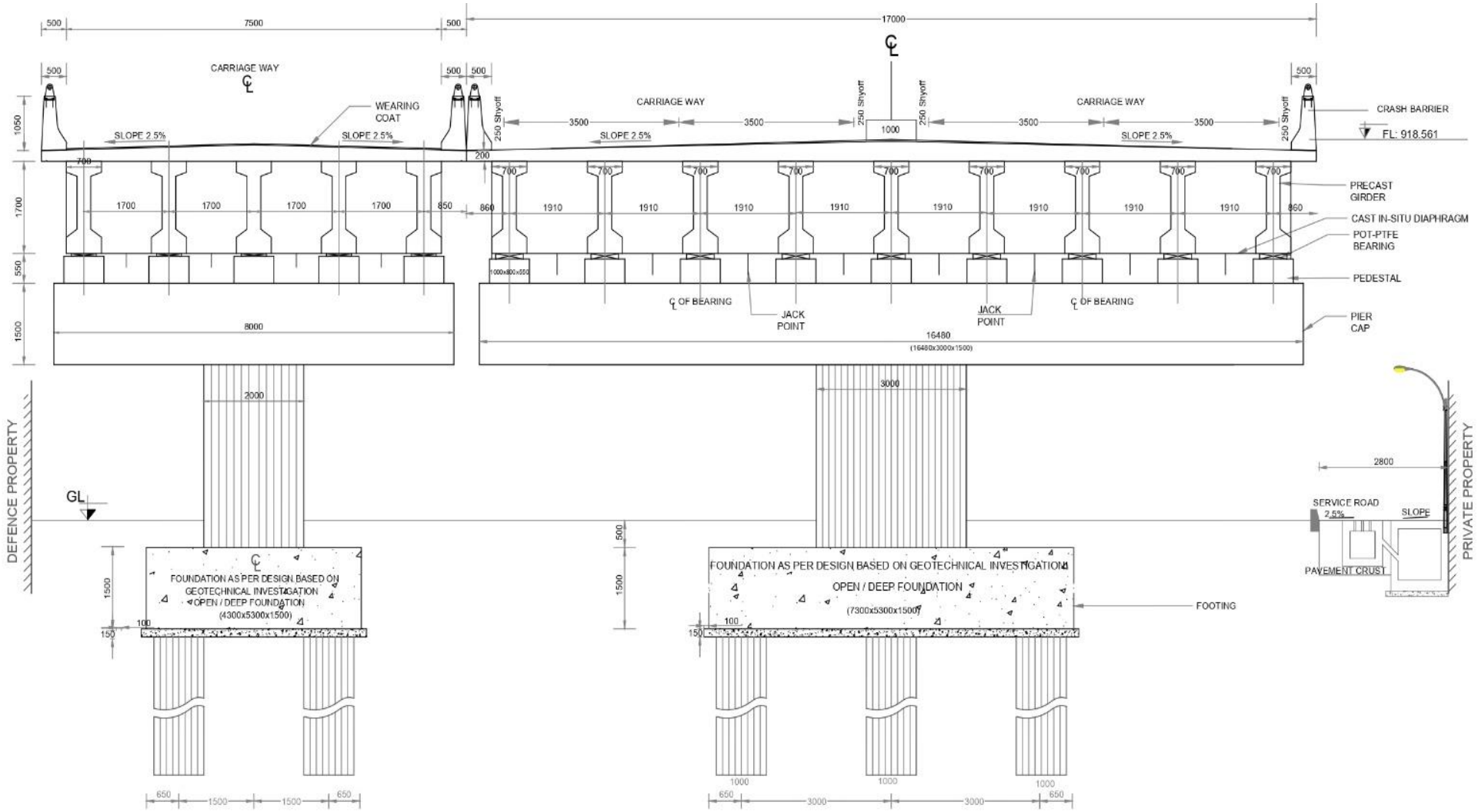


Figure 0-9 E Typical Cross Section of Approaches from Rotary to Banasawadi

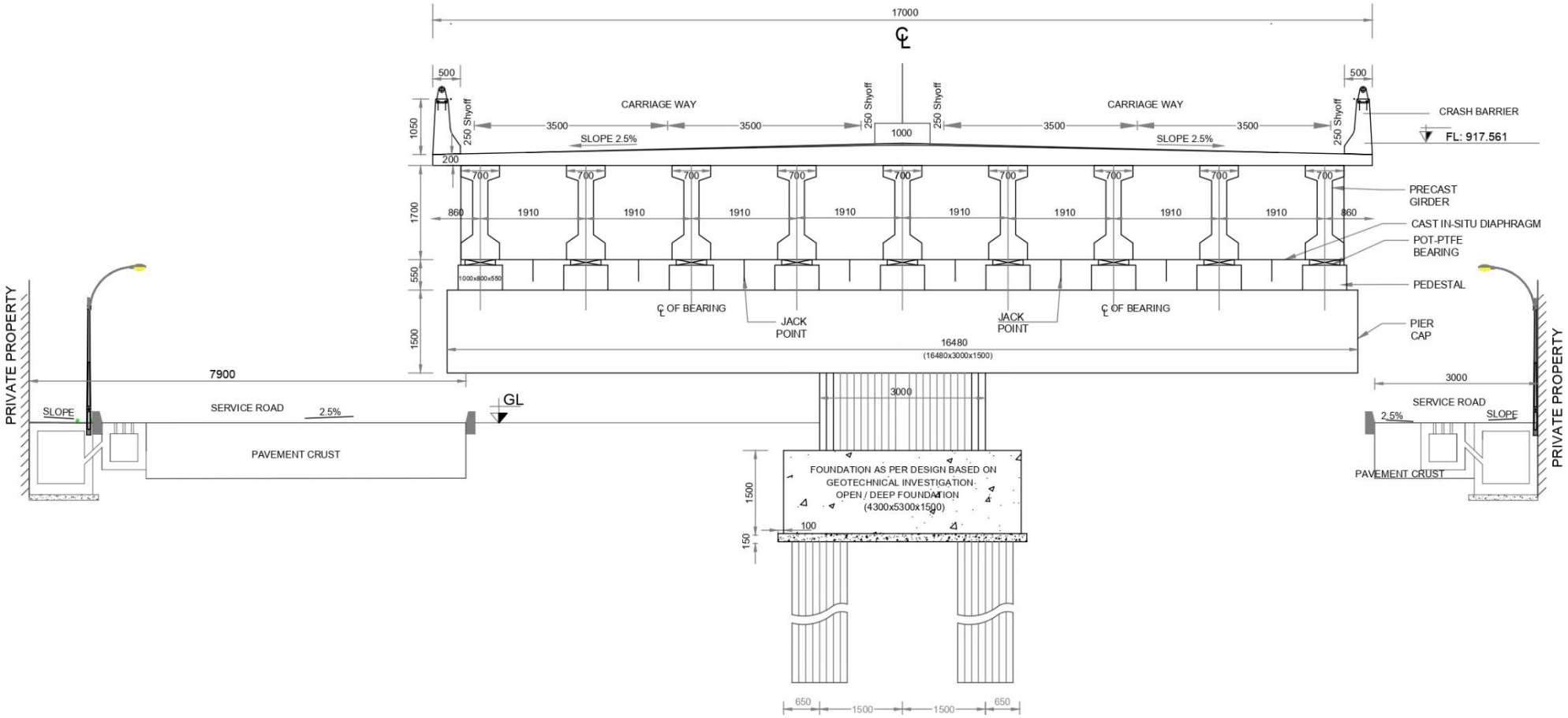


Figure 0-10 F Typical Cross Section of Approaches from Rotary to Maruthi Sevanagara

1.24.4 Pedestrian Underpass

The facility of footpaths for pedestrian movements has not been proposed on elevated rotary/approaches to avoid pedestrian conflicts with vehicular traffic. To facilitate pedestrians to cross the railway line, a separate pedestrian underpass is proposed below the rotary to meet the railway safety requirements.

The Salient Features of the Pedestrian Underpass with Approaches at Railway crossing are given below.

Length of Pedestrian Underpass	: 152m (considering future track)
Type of Structure	: RCC Box type
Width of PUP	: 5.2M
Clear height of PUP	: 2.75M
Earth cushion over slab	: 0.5m
Rail with Ballast on earth cushion	: 0.75m
Entry/Exist to PUP	: Steps and Ramp width of 1.2m

Typical Cross Section of PUP at IOC Junction Railway Crossing Below Rotary is shown in Figure 0-11 below.

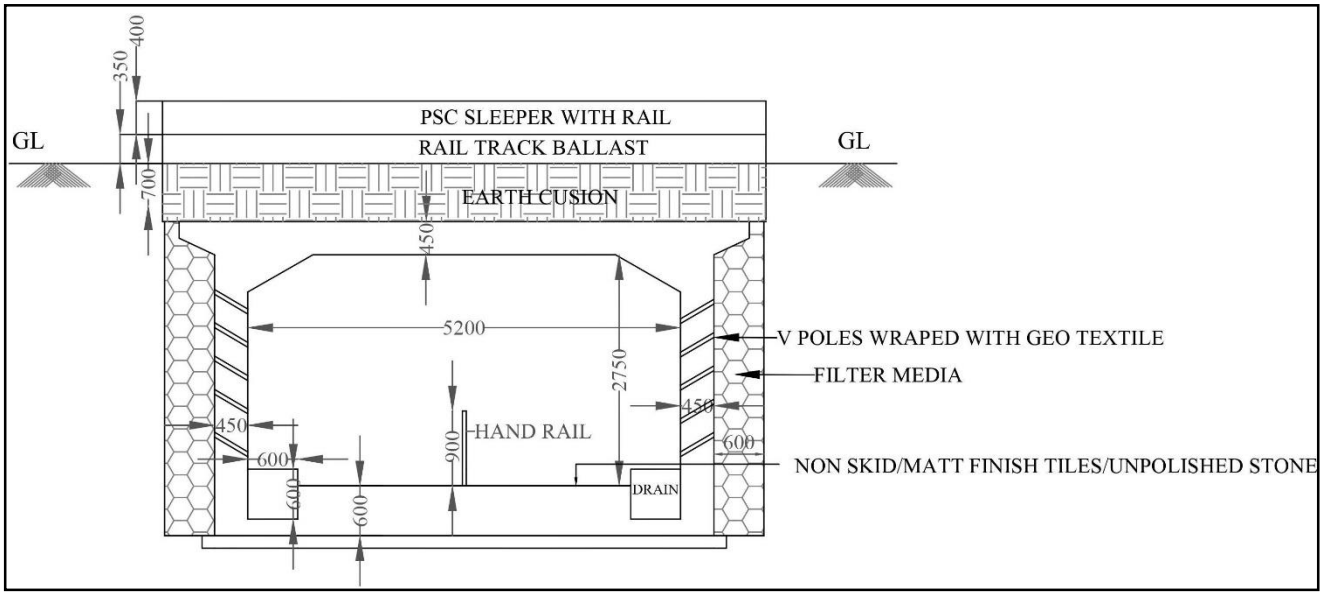


Figure 0-11 Typical Cross Section of PUP at Rotary Location

1.24.5 Road Over Bridge

Railway department has recently constructed Road Over Bridge at LC No: 136A with two lane configurations at railway KM 345/800-900 between Bengaluru Cantonment and Byyappanahalli Railway Station.

The existing ROB is connecting the new terminal railway station also proposed elevated rotary junction and the old Madras road at Indiranagar junction on NH-4. After the terminal station is fully developed and the rotary junction is constructed, the traffic flow will increase to multilane and the existing two lane configuration of the ROB will become ineffective to accommodate the future growth of traffic in both directions.

A proposal has been made to construct an additional rail over bridge parallel to the existing with the same configuration which was constructed recently. The proposed new and existing ROB in this LC 136A will facilitate one-way flow of traffic to and from directions separately.

1.24.5.1 Type of Structure at Road Over Bridge

The road over bridge is a composite type super structure with steel I girder and RCC deck slab.

The Salient Features of the New ROB with Approaches and viaducts with obligatory span at Railway crossing are given below

Proposed Road over Bridge at LC No: 136A on LHS of Existing Obligatory span

- **Proposed Road Over Bridge at LC No: 136A on LHS of Existing Obligatory span**

Obligatory Railway Span

Number of Lane	: 2 lanes unidirectional
Number of Span	: 2 x 35m
Total width of ROB	: 12.0m
Minimum Carriageway Width	: 1 X 7.5m
Kerb	: 2 x 0.55
Footpath	: 2 x 1.5m
Crash Barrier	: 2 x 0.20m
Vertical Clearance	: 6.525m
Camber (bi-directional)	: 2.5%

Approaches to Obligatory Railway spans

a) Towards Byyappanahalli Railway station

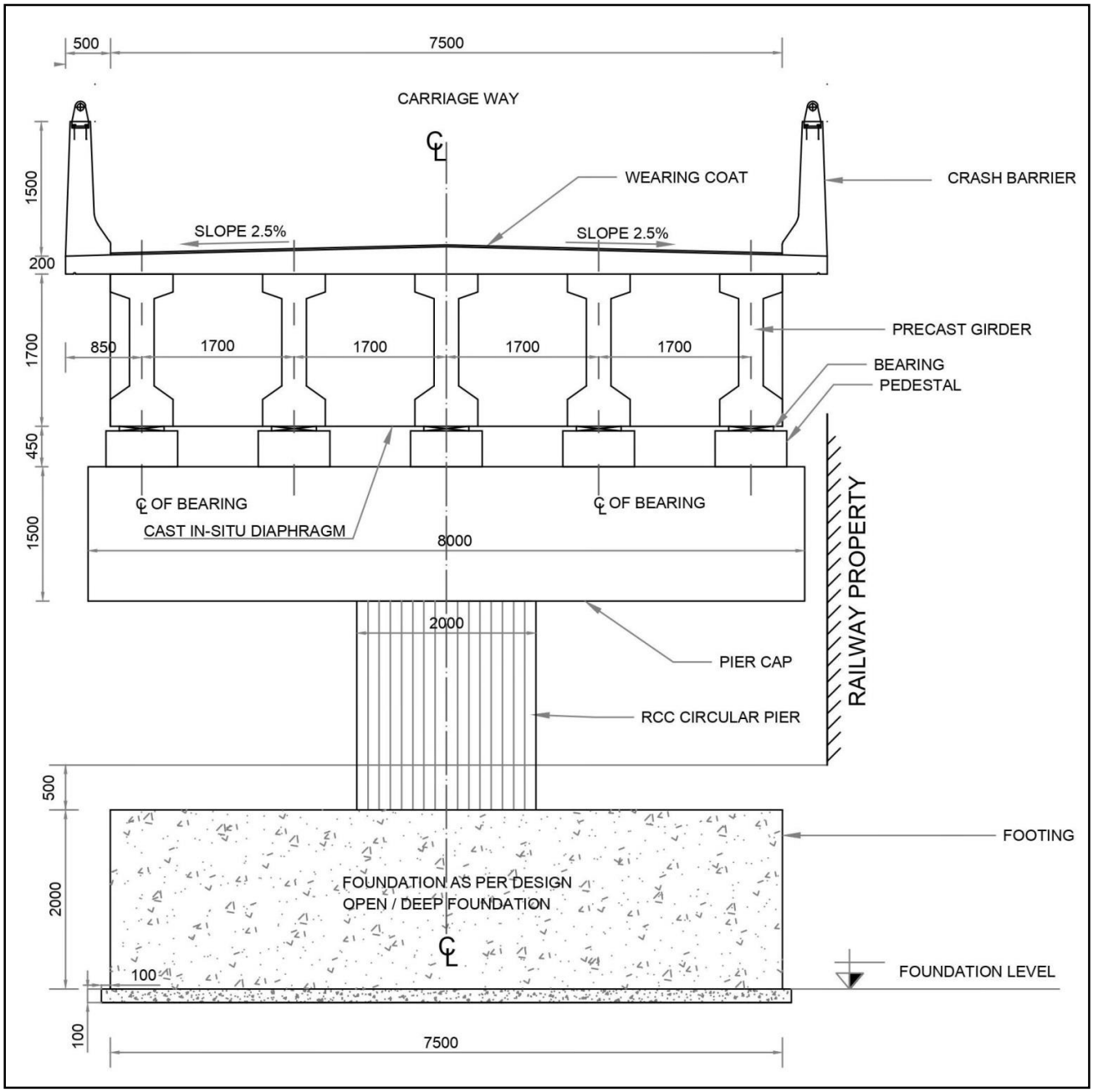
Total Length of Approach	: 175.0m
Viaduct Length	: 91.5m
RE- Wall Solid approach	: 83.5m
Number of Viaduct Span	: 3 x 30.5m
Number of Lane	: 2 lanes unidirectional
Total width of Approach	: 8.5m
Minimum Carriageway Width	: 2 X 3.25m

Crash Barrier	: 2 x 0.5m
Vertical Clearance	: 6.525m
Maximum Vertical Gradient	: 5% (1 in 20

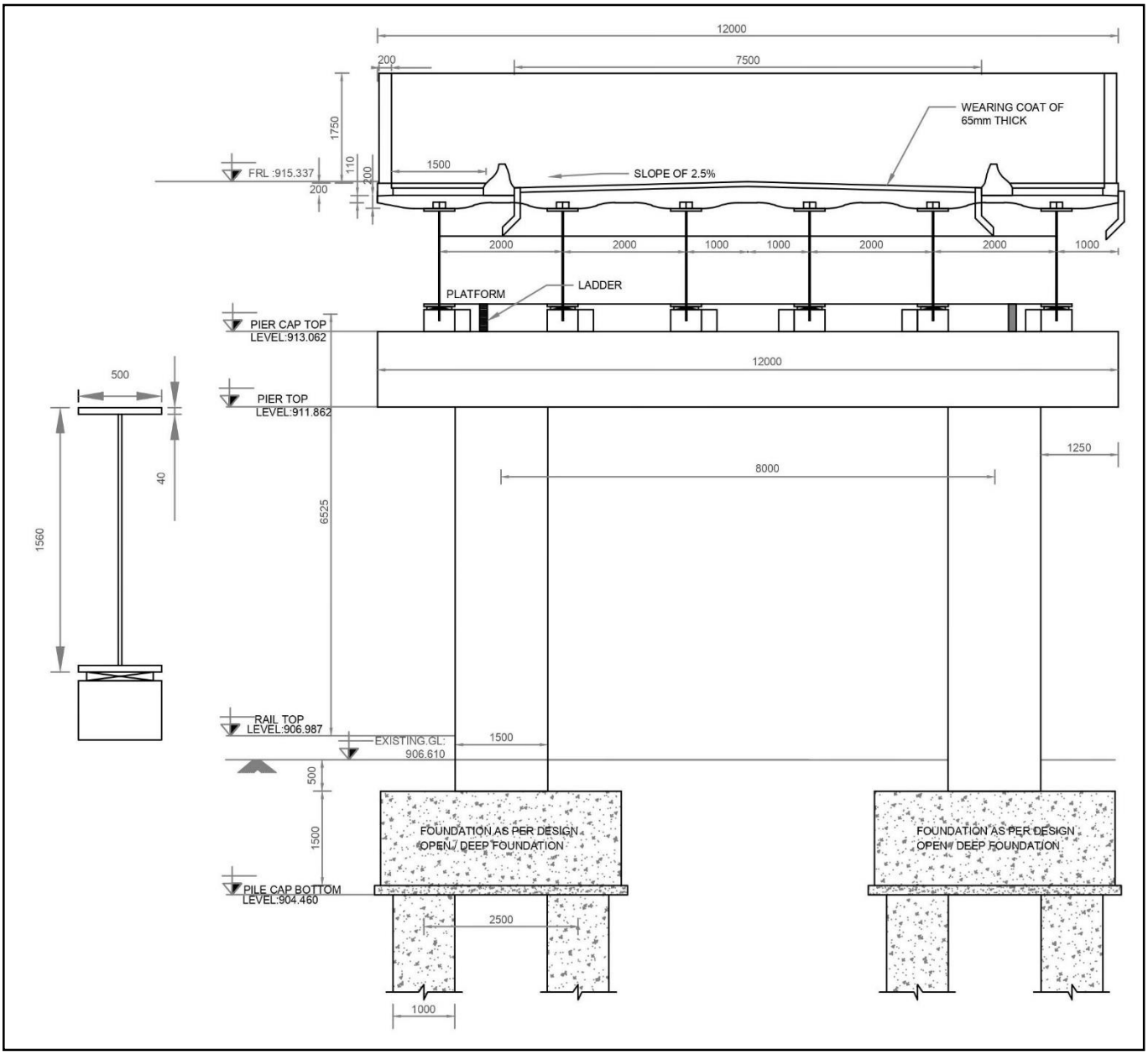
b) Towards Old Madras side

Total Length of Approach	: 465.0m
Viaduct Length	: 274.5m
RE- Wall Solid approach	: 190.5m
Number of Viaduct Span	: 9 x 30.5m
Number of Lane	: 2 lanes unidirectional
Total width of Approach	: 8.5m
Minimum Carriageway Width	: 2 X 3.25m
Crash Barrier	: 2 x 0.5m
Vertical Clearance	: 6.525m
Maximum Vertical Gradient	: 5% (1 in 20)

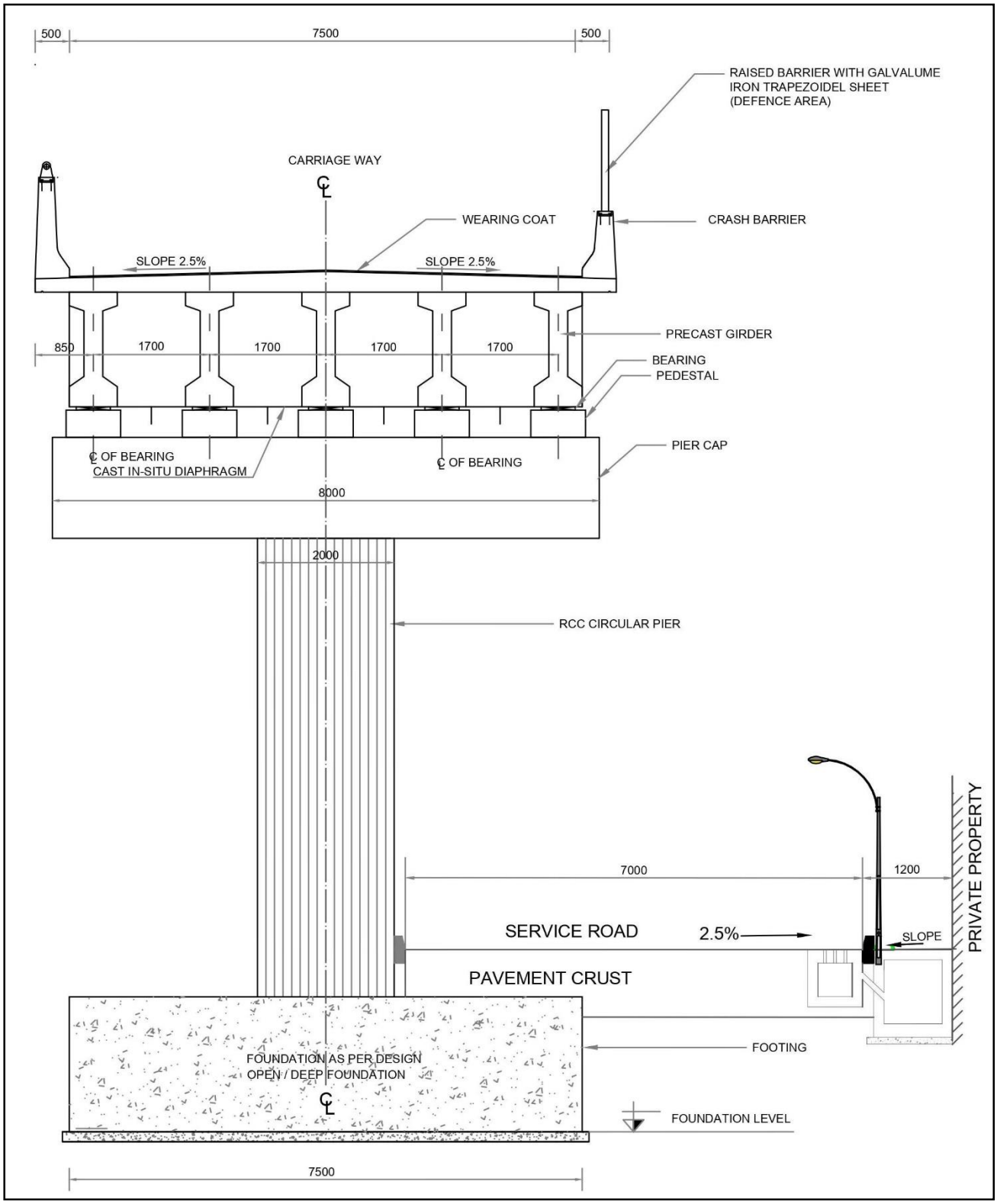
Typical Cross Section of ROB at LC 136A is shown in Figure 0-12 below



Approach towards New Terminal Station side



Obligatory Span



Approach towards New Indiranagara side

Figure 0-12 Typical Cross Section of ROB at LC 136A

1.24.6 At Grade Road improvement

An intermediate road of minimum width of 5.5 m is proposed to be laid on the available land on the grade road under the rotary approach of Banasawadi, Kammanahalli, Maruthisevanagar sides. Footpath cum drains is also proposed at the outer edges of service road. A service road towards and beyond the new terminal station is proposed with a uniform width of over 7.5 m wide road and balance added to footpath cum drain as per available ROW.

1.25 Right of Way

The area of acquisition of private land and property is minimal compared to land to be acquired by other government entities. The breakdown of land areas required for acquisition is listed below:

Sl. No	Description	Area in Sq. mtrs	Remarks
1	Private Property	8636.28	At all approaches for Service roads
2	Railway Property	15306.65	1. Exclusive at Grade Service road from Maruthi Seva Nagar to Byyappanahalli New Railway Station. 2. Down Ramp connecting from all approaches to Byyappanahalli New Railway Station. 3. Exclusive Fly Over connecting from all approaches towards Old Madras Road.
3	Government Property	3957.10	BBMP/State Government
4	Defence Property	4804.78	1. Defence land in hand: 1068.3Sqmt 2. Defence land required as per this new proposal : 3,736.48Sqmt
	Total	**32704.81**	

The Railways and Defense Departments agreed in principle to hand over the required land as identified at the site to facilitate the undertaking of construction activities. The methods of compensation for land are based on internal agreement between the states and the central government. However, for private lands and properties is compensated by BBMP as per State Government rules.

1.26 Salient Features of Proposed Rotary Flyover and ROB

Various structural arrangement options were studied for the proposed flyover based on:

- Functional requirement.
- Characteristics of subsoil.
- Facilities to be provided at grade.
- Ease in construction.
- Economy etc.
- Topography of Site condition.

Accordingly, the structural system was planned taking into account suitability of the same at the proposed location, constructability, level of impact on traffic movement during construction etc. Obligatory coverage for rotary flyover and ROB is planned based on subsoil report, future extension of railway lane

and preliminary design, it is estimated that span length of 30 to 100 m is economical. Considering the distance of coverage required for obligatory spans, a length of 48m to 82m has been adopted for rotary flyover and an obligatory span of 35 m is proposed for ROB. The remaining portion is on earthen ramps with reinforced earth on either side.

1.26.1 Superstructure Rotary flyover

The type of material proposed for the superstructure is RCC composite slab with trapezoidal shaped open steel box girder. The recommended minimum web depth for web girder is 1.5m is requirement for inspection accessibility. The minimum width for the girders bottom flange width is 1.2m to allow for workers to complete fabrication of various internal girder details. The average distance center to center of flanges of adjacent boxes have been considered not be greater than 1.2 times and not less than 0.8 times the distance center to center of the flanges of each box.

Bottom tension flanges and web plate is designed with 30mm thick; the minimum thickness of web plate should not be less than 8mm. Girders is designed with Internal K-Frames to control distortion of the box girder. The provision of opening in the middle facilitates access in walking down the middle of the box during construction or routine maintenance inspections. Wide flanges also need to be stiffened to carry sufficient load and to avoid buckling.

Since Rotary is significant plan curvature, single bearings of spherical type be used at all supports, since the curvature of the line of supports generates torsional restraint.

As the flyover is curved in shape and has a proposed span length of 48m to 82m, a steel superstructure has been adopted. The four lane deck shall consist of 3 numbered trapezoidal steel boxes exposed at the top and covered with an in-situ RCC slab. The girders are designed and spaced according to the span length. Internal and external bracing is proposed. Cross diaphragms have also been proposed at support locations. The superstructure is supported by spherical bearings.

The dimension of girder for 48m span is bottom flange width is 1.2m and top width is 2.51m. Height of girder is 1.4 and spacing of girders is 5.245m.

The dimension of girder for 56m span is bottom flange width is 1.2m and top width is 2.76m. Height of girder is 1.667 and spacing of girders is 5.12m.

The dimension of girder for 68.5m span is bottom flange width is 1.2m and top width is 3.15m. Height of girder is 2.083m and spacing of girders is 4.925m.

The dimension of girder for 81.31m span is bottom flange width is 1.2m and top width is 3.55m. Height of girder is 2.51m and spacing of girders is 4.725m.

1.26.1.1 Superstructure of Rotary approaches

As longer spans of 30m are proposed, pre-stressed concrete superstructure is adopted. The four lane deck shall consist of 9 numbers of pre-cast post tensioned I - girders with in-situ RCC slab. The girders are spaced at 1.91 m. Cross diaphragms are proposed at support locations. For two lane deck shall consists of 5 numbers of pre-cast post tensioned I- girders with in-situ RCC slab. The girders are spaced at 1.70 m. The superstructure is supported by POT - PTFE bearings.

1.26.1.2 Superstructure of Road Over Bridge

The road over bridge is a composite type super structure with steel I girder and RCC deck slab.

1.26.1.3 Pedestrian Underpass

Pedestrian Underpass is RCC box type structure has been proposed for construction below the railway tracks to facilitate for safe movement of Pedestrian to access all the four wings of railway junction.

1.26.2 Substructure

The proposed substructure is RCC straight piers with circular shape. A single pier arrangement is proposed for the four lane superstructure. The pier cap is cantilevered to accommodate the girders. The height of the pier is based on the clearance requirement. Where vehicles have to cross below, minimum required vertical clearance of 5.5 m is ensured. At other support locations, the pier height varies according to the road profile.

1.26.3 Foundation

The foundation type depends on the subsoil nature and condition at the location. Bore holes taken at site were studied to get a fair idea of the subsoil composition and to decide on the suitable founding levels. Various tests conducted at the field and laboratories were reviewed to assess the subsoil composition and nature. The Soil strata at the location of construction of Elevated Rotary and Road over Bridge at LC No: 136A is very hard and stiff with Non- cohesive soil. As could be seen from the borehole drawings based on geotechnical investigation report, the hard strata could be seen below the ground at a depth of 3-6m with N- value greater than 100. At few locations the hard strata starts varies to a depth of 10 to 13m.

Based on the test results, it is proposed that Open foundation is considered to the extent of twenty five percent of foundation for sub structures and balance area where strata of good bearing capacity is not available near the ground, and the space is restricted to allow for spread/open foundation, in those cases the foundation of the structure has to be taken deep with the purpose of attaining a bearing strata which is suitable and which ensures strictly and durability of structure.

1.26.4 At Grade Roads

At grade roads with intermediate width of 5.5 m wide carriageway and 1.0 to 1.5 m wide footpath cum drains at the outer ends are proposed below the rotary flyover to cater for the turning traffic from cross roads. These roads are to be formed widening the existing pavement at shade of flyover; the existing road level is kept for the widened portion also. The road towards new terminal station and old madras roads are designed for four lane width with median. The sub grade soil with 8% CBR is proposed for the pavement layers to be constructed.

The width of underpass and footpath has been derived from the volume of pedestrian traffic at the location. The drain shall have a width of 1.0m and is placed at the extreme end of the road.

The pavement design is carried out in accordance with the guidelines of IRC 37 – 2012. The results of the traffic survey and the projected traffic volume worked out are made use of in the pavement design. The design traffic is considered in terms of the cumulative number of standard axles to be carried by the pavement during the design life of the road and is derived from the initial volume of commercial vehicles per day, growth rate, design life in years and the vehicle damage factor (number of standard axle per commercial vehicle) to convert commercial vehicles to standard axles.

30 MSA is adopted for the pavement design of flyover and at grade road respectively to arrive at the pavement layer composition.

1.26.5 Utility Relocation Plan

Proposal for shifting the utilities which fall within the project alignment have been prepared. The details of utilities falling along the project alignment are mentioned below. There are 39 lampposts present along the project alignment, which have been removed, and lighting arrangement have been proposed in the flyover portion for both flyover and at grade roads. The cost for new lighting has been included in the cost estimates.

There are 3 trees falling along the proposed flyover alignment, which have to be felled during the construction phase. As a compensatory measure, it is proposed to plant thrice the number of trees to be felled with site specific indigenous species and also to transplant the small trees wherever possible.

1.27 Land acquisition

A land survey around the project area has been carried out and a plan has been prepared with details of property ownership. Final concept of Elevated Rotary and ROB at Lc136A was incorporated into Land Survey Map to trace the existence of land acquisition.

The complete land required for acquisition for construction of rotary, allied road works and Road over Bridge at LC136A is about 62497 Sqmt.

Out of 62497 square meters, about 40% of land amounting to 24745.22 has been used for long-term road construction for public; after the implementation of the project 14% of the railway land of 8986.427 square meters will be covered under the shadow of the elevated rotary. The remaining 46% of land is additionally acquired by Railways/Defence/State Govt / Private Agencies.

At present the total additional possession required is 28766 sqmt. Out of which about 20% from private property, 13% from defense property, about 14% from state government property and further an additional 53% railway land is to be acquired.

The Table 0-1 below is a statement showing the summary of requirement of land details from various property owners.

Table 0-1 Requirement of Land details

SL. NO	Description	Area in Sqmt
1	Private Property	8,636.28
2	Government Property	3,957.10
3	Railway Property	15,306.65
4	Defence Property	4804.78
	TOTAL	**32,704.81-A**
	Railway land already used	
5	Extent of Rotary Elevated area (above the Railway land) covered on Railway ground, including area occupancy (288Sqmt) of piers at ground level.	8,986.427
6	BBMP/Railways a very long back has constructed road for public on Railway land before this project proposal	24,745.22
	Total	**33,731.647-B**
7	Grand Total of the area required -A+B	**66,436.457**

SL. NO	DESCRIPTION	AREA IN SQMT
1	PRIVATE PROPERTY	8,636.28
2	GOVERNMENT PROPERTY	3,957.10
3	RAILWAY PROPERTY	15,306.65
4	DEFENCE PROPERTY	4804.78
	TOTAL	**32,704.81**

The Railway Authority has agreed to give its land for the implementation of the project, if the State Government land equivalent to the railway land acquired by BBMP is to be handed over anywhere in the State, which is about 49038 Sqmtr.

Land Acquisition Cost based on Karnataka Gazette Guidanaca Value

Sl. No.	Description	Area in Sqmt	Cost of Land / Sqmt as per Guidance Value No. CVC/485/2017-18, Bengaluru dated 05-12-2018, Shivjinagara Registrar		Actual Land Acquisition Amount as per LA system (1:2)	Remarks
			Rate (Rs.)	Amount (Rs.)		
1	Private Property	118.57	97630	11575989.1	23151978.20	Guidance Value Page No. 66 Sl.No. 59
2	Private Property	89.21	81400	9651598	19303196.00	Guidance Value Page No. 64 Sl.No. 47
3	Private Property	438.18	81400	7261694	14523388.00	Guidance Value Page No. 64 Sl.No. 47
4	Private Property	351.4	81400	35667852	71335704.00	Guidance Value Page No. 64 Sl.No. 47
5	Private Property	175.05	81400	28603960	57207920.00	Guidance Value Page No. 64 Sl.No. 47
6	Private Property	103.96	81400	14249070	28498140.00	Guidance Value Page No. 64 Sl.No. 47
7	Private Property	277.13	81400	8462344	16924688.00	Guidance Value Page No. 64 Sl.No. 47
8	Private Property	303.08	81400	22558382	45116764.00	Guidance Value Page No. 64 Sl.No. 47
9	Private Property	148.27	81400	24670712	49341424.00	Guidance Value Page No. 64 Sl.No. 47
10	Private Property	116.42	81400	12069178	24138356.00	Guidance Value Page No. 64 Sl.No. 47
11	Private Property	493.04	102400	50487296	100974592.00	Guidance Value Page No. 50 Sl.No. 21
12	Private Property	1917.71	102400	196373504	392747008.00	Guidance Value Page No. 50 Sl.No. 21
13	Private Property	9.67	53000	512510	1025020.00	Guidance Value Page No. 117 Sl.No. 245
14	Private Property	115.21	53000	6106130	12212260.00	Guidance Value Page No. 117 Sl.No. 245
15	Private Property	240.01	53000	12720530	25441060.00	Guidance Value Page No. 117 Sl.No. 245
16	Private Property	291.96	53000	15473880	30947760.00	PGuidance Value age No. 117 Sl.No. 245
17	Private Property	453.16	53000	24017480	48034960.00	Guidance Value Page No. 117 Sl.No. 245
18	Railway Property	5825.50	-	-	-	-
19	BBMP Park	68.08	-	-	-	-
20	Railway Property	4403.12	-	-	-	-
21	Private Property	168.68	38000	6409840	12819680.00	Guidance Value Page No. 118 Sl.No. 259
22	Railway Property	1759.25	-	-	-	-
23	Railway Property	2802.98	-	-	-	-
24	Defence Land (near ROB)	3792.49	-	-	-	-
25	Private Property (Lal Developers)	973.74	53000	51608220	103216440.00	Guidance Value Page No. 117 Sl.No. 245
26	Government Isolation Hospital	3872.77	-	-	-	-
27	Railway Property	515.80	-	-	-	-
28	Private Property	104.45	97630	10197453.5	20394907.00	Guidance Value Page No. 66 Sl.No. 59
29	Private Property	174.29	97631	17016106.99	34032213.98	Guidance Value Page No. 66 Sl.No. 59
30	Private Property	1048.16	97632	102333957.1	204667914.24	Guidance Value Page No. 66 Sl.No. 59
	TOTAL	**31151.34**	**-**	**668027686.7**	**1336055373.42**	**-**

Design report

1.28 General

Preliminary design based on conceptual plan of Elevated Rotary and Road Over Bridge is prepared based on design data of relevant standard code. The initial design stage is considered here to cover the selection of structural arrangement and member sizes, for preparation of structural layout, project costing and tendering purpose.

The project is proposed to be called on turnkey, lump sum, fixed price and No variation basis based on tenderer's own design based on prescribed parameters. After the concessionary is finalized the initial design is then followed by a detailed design stage which covers checking in accordance with the Code and which leads to confirmed structural arrangements and details. Concessionary scope is to prepare detailed structural design and drawing work for foundation, sub-structure, superstructure, fabrication drawings as per relevant IRC, BIS and other codes for the Elevated Rotary PUP and road over bridge are prepared and approved by national institutes like Indian Institute of Science (IISC)/Indian Institute of Technology (IIT). Further the design report of railway portion of Elevated Rotary/Road over Bridge to be got approved by Railway Department before commencement of work.

1.29 Geometrics

Elevated Rotary Geometrics should be based on IRC: 65 Recommended Practices for Traffic Rotaries. The Standards for Road Geometrics adopted in the Design of the Viaducts and Ramps should be essentially based on IRC: 92 "Guidelines for the Design of Interchanges in Urban Areas" and the Salient Features are as follows.

1.30 Vertical Gradient

Maximum allowable Vertical Gradient for all Entry and Exit Ramps shall be limited to 5% (1 in 20)

1.31Vertical Clearances

Minimum Vertical Clearance between Rail Formation Level and bottom level of Soffit of Elevated Rotary Flyovers/ROB shall be 6.525m as per Hand book on Railway Construction under clause 10.2.2 selection of ROB/RUB Parameters mentioned at Page no 369.

1.32 Elevated Rotary Design

Rotary design is based on the traffic operations of diverging, merging and weaving. The design elements include design speed, radius at entry, exit and the central island, weaving length and width, entry and exit widths should be as per IRC-65. The Radius of Rotary is designed with minimum radius of 1.3 times of entry curve. Design with rotary access should not be straight, but a small curvature of about 20 and 25 meters is introduced. The exit radius maintained between 1.5 to 2 times than the entry radius of the rotary so that the vehicles will discharge from the rotary at a higher rate. The width of the weaving section kept as higher than the width at entry and exit preferably between 6 to 18m and weaving length available at the intersection maintained between 18 to 90m. The traffic rotary shown in concept and alignment drawing no NEZPL/DWG/PRJ/204-3 is designed as per standards and is reducing the complexity of crossing traffic by forcing them into weaving operations.

1.33 Obligatory Span

Obligatory Span adopted for rotary is 48m to 82m and for Road Over Bridge is 35m.

1.34 Viaduct Span

Viaduct span proposed for rotary approach is 30m and for road over bridge is 30.5m.

1.35 Super structure of Rotary

Elevated Rotary flyover is proposed for design as curved bridge with Steel Box Girder of Trapezoidal in shape is proposed as the span arrangements are more than 48m and longest is 82m. The torsional Properties of the closed section is advantageous in this type in reducing and simplifying the arrangements and are also extremely efficient in carrying torsional loads found in this type bridge and these bridges special analysis and detailing are required. After award of work contractor shall provide detailed design analysis report verified by Indian Institute of Science/Technology. The detailed design phase confirms or revises the initial design called for tender purposes. The proofed design should be submitted to Indian Railway Authority for further approval of design criteria.

1.35.1 Choice of a box girder form

While box girders are thought to be more expensive, the advantages of box girder are better appearance and less maintenance, may merit considering box girder as an alternative for any bridge spanning 45m to 100m.

Curvature is a good look but the structure is unusually tight, curvature is more easily achieved with box girders; Box girders can effect curvature more easily and accommodate torsional effects more easily. Box girders are also better at sharing the load than I-beams. Hence the choice of box girders is considered.

1.35.2 Initial Design

The initial design stage is considered here to cover the selection of structural arrangement and member sizes, after the General Alignment Drawing of the layout has been finalized by the Railways, the initial design is then followed by a detailed design stage, which covers checking in accordance with the Code and which leads to confirmed structural arrangements and details.

Naturally, the choice of span length requires consideration of sub- and super-structure costs and strikes a balance for overall economy. Such balance is strongly influenced by foundation conditions and their resulting costs. While considering the cost of the superstructure, the consultants designers took full advantage by using composite box girder construction: Economic span lengths are likely to be longer than with concrete construction, span-long girder sections can be erected by mobile crane, torsional performance may reduce bearing requirements (particularly with curved girders), torsionally stiff sections are stable (after erection) without intermediate bracing.

During initial design also consider the benefits in appearance which box girders can offer the: smooth lines, on the side faces and below, clean surfaces, with no external visible web stiffeners, use of sections curved in plan, where appropriate, sloping webs.

1.35.3 Initial Design Cross section

The rotary is designed with a larger span of 4 No’s to leave space to accommodate future planning of additional lanes along the existing railway lane. The span of the bridge is chosen so as not to interfere with train movement and all foundations and substructures of piers are placed outside the right of railway land boundary.

The span lengths of rotary bridge are 1 of 48m, 1 of 56m, 1 of 68.5m, and 1 of 81.31m,. According to the span length the initial design of cross section of box is designed and details are presented under section 5.10 below.

1.35.4 Load effects and combinations

Loading Standards. The structural system is designed for loadings as per IRC 6: 2000. The basic loadings to be considered are:

- Dead load constituting of self-weight of structural members
- Superimposed dead load constituting of weight of wearing coat, crash barrier and median
- Live load constituting of loads due to 4 lanes of IRC Class A vehicles or 2 lanes of IRC class 70R vehicles whichever produces the worst effect
- Wind load as applicable to the site based on the height.
- Seismic load as per provisions in IRC code relevant for Seismic zone

The object of the analysis is to arrive at design load effects for the various elements of the structure. The most severe selection of loadings and combinations needs to be determined for each critical element. The main design load effects which are to be calculated include the following:

a. Maximum moment with co-existent shear and torsion in the most heavily loaded main girder: at mid span, over intermediate supports, and at splice positions.
b. Maximum shear with co-existent torque and moment in the most heavily loaded main girder: at supports, and at splices.
c. Maximum torque with co-existent shear and moment in the most heavily loaded main girder: at supports, and at splices.
d. Maximum distortional torques in main beams.
e. Maximum forces in transverse bracing at supports (and in intermediate bracing if it is participating).
f. Maximum and minimum reactions at bearings.
g. Transverse slab moments (to be combined with local slab moments for design of slab reinforcement).
h. Range of forces and moments due to fatigue loading (for shear connectors and any other welded details which need to be checked).

In addition, displacements and rotations at bearings will need to be calculated.

1.35.5 Design of beams

In the initial design, the main longitudinal beams provide sufficient strength in bending and shear to resist global bending, local effects (such as direct wheel load or compression on bearings) and the combined effects of structural participation with any bracing system. The torsional effects calculated in the global analysis should be considered as additional shear stresses. Distortion effects are also to be considered.

1.35.6 Intermediate web stiffeners

Vertical web stiffeners improve the shear resistance of a slender web. They also act as intermediate restraints for any longitudinal stiffeners. Stiffeners form part of cross frames which restrain the box against distortion. Stiffeners are usually simply flat, although tees are sometimes used for added stiffness and strength.

Intermediate stiffeners should be connected to the top flange to avoid fatigue problems. Their presence increases the deformation stiffness of the section (because the webs are stiffer against out-of-plane bending) and this may lead to localized bending at the top of the web unless proper connection is made.

1.35.7 Internal K - Frames

Internal K-frames is provided to maintain the shape of the cross section against torsional forces that tend to distort the shape of the box girder. Box girder distortion is generally caused by torsional forces that are not distributed to the elements of the girder cross section in proportion to the torsional stresses. Curved girder under self-weight or gravity of concrete deck (distributed vertical load), the girder's deformation has an interaction of bending and twisting.

Torsional moments in thin-walled sections such as box girders are resisted by the shear stresses on the components that make up the girder cross-section. Torsion in thin walled members is usually categorized as either Saint-Venant torsion or warping torsion.

The torsional stiffness of a cross-section consists of both warping and Saint Venant components; however, the high torsional stiffness of boxes is primarily due to the large St. Venant component that results from a closed cross-section. Depending on the distribution of the applied torsional loads, the cross-section of a box girder may distort from its original shape. This distortion of the cross-section can lead to significant warping stresses, which are in addition to torsional warping stresses. Warping stresses that develop as a result of distortion of the cross section are appropriately referred to as distortional warping stresses. While torsional warping stresses in box girders may be relatively small, without proper bracing distortional warping stresses can be quite significant.

Box girder distortion is usually controlled by internal cross-frames that are spaced along the length of the girder. Forces develop in these cross-frames and other bracing members due to the distortion of the box section Torsion in box girders is usually the result of either horizontal curvature of the girder or unbalanced gravity loading that results in an eccentricity of the load on the cross-section.

Intermediate restraint to the cross section is provided to control distortion. Cross-frames is provided to control distortional deflections, even though the stresses might be acceptable without them. Some form of cross-frame is likely to be provided at relatively close spacing to brace an open steel box during construction.

1.35.8 Mirror Layout of Cross Frame bracing

In the mirrored layout, the top truss diagonals on both girders frame into the box girder flange at the location of the external K-frame help to distribute the force into the girder. The mirrored layout should generally be considered for girders. The following Figure 0-1 shows the Mirror Layout of Cross frame.

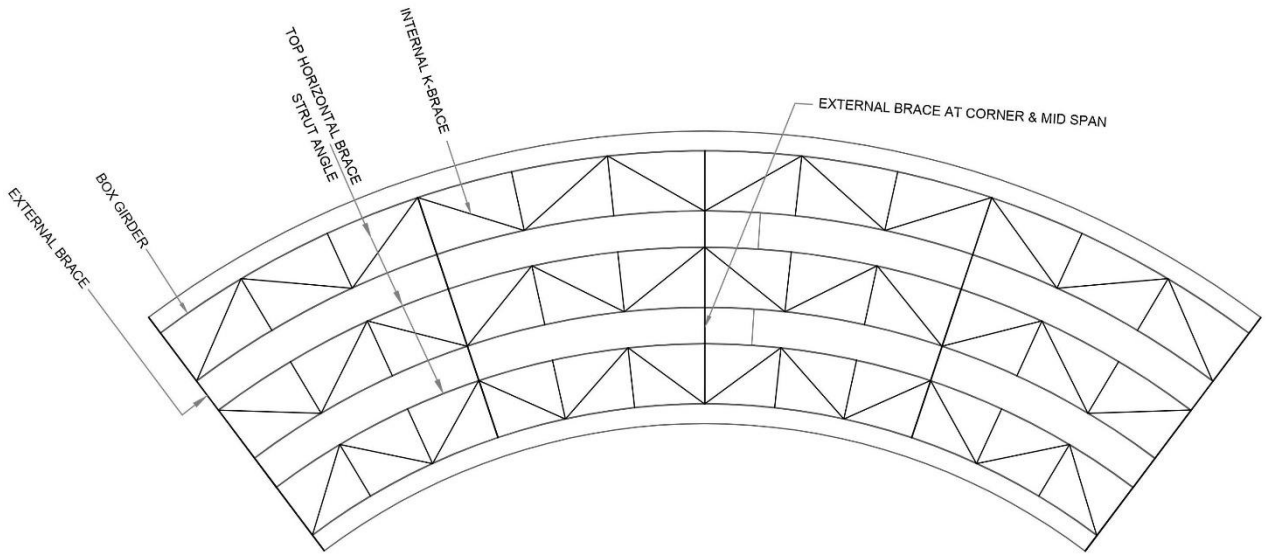


Figure 0-1 Mirror Layout of Cross Frame

1.35.9 Diaphragms and cross-frames

The primary external bracing for the box girders is consist of diaphragms that control the twist of the cross section. External diaphragms are provided at the supports and also placed at intermediate locations along the length of the bridge.

Diaphragms at the supports, forces are transferred from the box girder to the substructure below through bearings. Mainly, these forces are vertical, although lateral restraint may also need to be provided at some selected positions.

Where there is a single bearing under the box and it offers little resistance to lateral rotation (eg elastomeric pot bearings), there is no torsional restraint; the loads transferred by the two webs are equal (assuming the bearing is at the centerline).

When there are two bearings, under or near each of the webs, torsional restraint is provided to the box; the load from each web is different and there is torsional shear transfer from the flanges. Whenever lateral restraint is present, there is a combined torque, because the restraint is not at the level of the shear center of the box.

The main function of the support diaphragm is to provide an adequate load path to transfer the shear forces from the webs to the bottom bearings of the box. In doing so it maintains the cross section of the box against distortion.

The criteria consider for the solid end diaphragms for box girder applications, the most obvious consideration is the basic shear strength of the plate diaphragm. The other consideration is related to excessive shear deformations at the ends of the beams that can result in rigid body rotations of the girders along the length.

Plated diaphragms are usually provided at the supports, as they provide these functions most easily, although a rigid, adequately braced cross-frame may also do so.

Clearly, full diaphragms close the box section, yet access into the box is necessary for completion of fabrication and for future inspection and maintenance. Openings are usually provided to permit access along the box, but the effect of these openings on the performance of the diaphragm has to be carefully considered; the size and position of any opening needs to be limited. Diaphragms are provided with

vertical stiffeners above the bearings because of the large forces involved. The Figure 0-2 below shows the typical section of diaphragms.

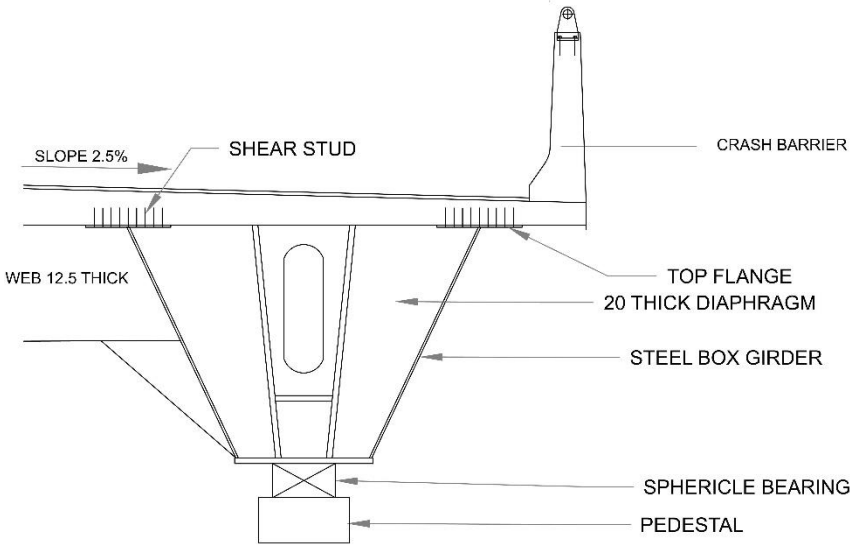


Figure 0-2 Typical Section of Diaphragms

1.35.10Bearings under diaphragms

The setting of bearings relative to the box girder can have a significant effect on the stresses in the diaphragm and needs to be considered carefully.

Any error in setting the bearing transversely to the box (i.e. parallel to the plane of the diaphragm) will have only minor effect on stresses and can usually be neglected. Transverse movements, on unguided bearings, are also likely to be minor and usually may be neglected.

Any errors in setting the bearing longitudinally (i.e. normal to the plane of the diaphragm) and any eccentricities of the reaction due to movement are much more significant.

1.35.11Access holes in diaphragms

Access is provided through diaphragms, during construction and during service. The absolute minimum requirement is for a hole 457 mm diameter, but it is generally recognized that larger holes are normally necessary.

1.35.12Bracing between main beams

For load distribution purposes, bracing may be required between main beams at supports or at selected intermediate positions. Design load effects should then be determined by global analysis. Such bracing usually takes the form of cross-beam acting in conjunction with the slab.

The cross-beams are to be joined to the main box girder beams on site. The box girders shall be provided with an intermediate diaphragm or cross-frame at that position; a stub should be provided on the outer face, to which the cross-beam can be spliced.

When each box is supported on a single bearing at intermediate supports, temporary cross-bracing may be needed for torsional restraint during construction.

1.35.13Shear connection

To provide the necessary shear transfer between the steel girder and the concrete slab, shear connectors are required at the top flange for composite action. The shear flow varies along the beam, being highest near the supports. For economy, it is customary to vary the number and spacing of connectors to provide adequate shear resistance. The most commonly used form of connector is the headed stud.

1.35.14Slab design

Bending of the main beams results in compressive stresses in mid span regions of the deck slab and these are normally well within the compressive resistance of the concrete. Tension reinforcement is provided over intermediate supports to carry global effects. The design of the deck slab transversely is determined mainly by the local effects of the wheel loads in conjunction with the distribution moments arising from bending of the main girders.

1.36 During Construction

1.36.1 Splices

Each box girder will be fabricated in a number of lengths and joined together on site, either prior to or during erection. Splice positions are normally arranged to be away from positions of maximum moment, though consistent with the use of the longest feasible individual lengths, for economy.

Splices can be either bolted or welded. Bolted splices offer quicker completion of site work and avoid the more rigorous requirements of quality control necessary for site welding. On the other hand, welded splices offer a clean finished surface with better appearance and easier maintenance of the protective treatment.

1.36.2 Open steel boxes

Open steel boxes save weight in the top flange and are usually easier to fabricate than closed boxes, but during construction require lateral bracing to the top flange (usually cross frames will be adequate); additional bracing and the sequence of concreting must be considered carefully. Some plan bracing, usually just below the top flange, is also likely to be necessary to stiffen the girder against torsional effects during erection. Cross-ties are necessary with trapezoidal sections to stop the ‘U’ opening out. Both of these must be positioned so as not to interfere with formwork for the slab. Over the box, permanent formwork is normally preferred, to avoid the subsequent difficult task of stripping out.

1.37 Initial design calculation

The initial design calculation for span of 48 m, 56m, 68.5m, and 81.31m are shown in the table 5-1 to table5-4 below.

Table 0-1 Design calculation for 48m Rotary Span

1	Span- 48m	48									
2	Cantilever	1000	mm								
3	Trapizodial Girder Top Opening										
4	Depth = spanx10^3/30	1600.00									
5	Deck depth-200mm	200.00									
6	depth of Girder -d	1400.00									
7	Bottom Flnge- b/t not>24	24.00									
8	t=thickness of plate= 50mm										
9	b	1200.00									
10	b/t =	24.00									
11	Top Flange=b+d tan(25^0)x2	2505.66									
12	slope of webs at approximately 25^0										
13	Cantilever length	1000.00	from first box								
14	Top flange length	2510.000	First box								
15	Space between Girder	2735.00	from first box								
16	Top flange length	2510.00	second box								
17	Space between Girder	2735.00	from second box								
18	Top flane length	2510.00	Third box								
19	Cantilever length	1000.00	from third box								
20	Total	15000.00									
21			width	depth of girder							
22	slope length of box girder	1545.65	655	1400.00							
23	Length of Slope Web= 2 times	3.09	thick of plate mm	0.03	Areain mm^2	0.092739	volume/mt	0.092739	Weight MT/m	0.727999791	
24	Bottom flange	1.20	thick of plate mm	0.03		0.036		0.036		0.2826	
25	Top flange =2 Times	2.00	thick of plate mm	0.03		0.06		0.06		0.471	
26											
27	Total Wight of Girder/mt/box									1.481600	
28	FOR 3 BOX/MT									4.444799372	
29	FOR 3 BOX/48 MT	48.00	SPAN							213.3503698	
30	Add 15% extra for stiffeners, diaphragam, bolts, bracings etc.,									32.00255548	MT
31	Total weight for48m span for 3 box									245.3529253	
32	Area of sspan=48x15	720.00								0.340767952	kg/sqmt
33										340.7679518	
34									say	341	kg/sqmt

Avg Steel qnty per sqmtr for 87.33,66m,50m,48m	402.3840489	kg/mt2
say with	403	kg/m2

Table 0-2 Design calculation for 56m span

1	Span- 56m	56									
2	Cantilever	1000		mm							
3	Trapizodial Girder Top Opening										
4	Depth = spanx10^3/30	1866.67									
5	Deck depth-200mm	200.00									
6	depth of Girder -d	1666.67									
7	Bottom Flnge- b/t not>24	24.00									
8	t=thickness of plate= 50mm										
9	b	1200.00									
10	Top Flange=b+d tan(25)x2	2754.36									
11											
12	Cantilever length	1000.00									
13	Top flane length	2760.000									
14	Space between Girder	2360.00									
15	Top flange length	2760.00									
16	Space between Girder	2360.00									
17	Top flange length	2760.00									
18	Cantilever length	1000.00									
19	Total	15000.00									
20											
21	slope length of box girder	1840.16	780	1666.67							
22											
23	Length of Slope Web= 2 times	3.68	thick of plate mm	0.03	Areain mm^2	0.110409	volume/mt	0.110409	Weight MT/m	0.866713946	
24	Bottom flange	1.20	thick of plate mm	0.03		0.036		0.036		0.2826	
25	Top flange =2 Times	2.00	thick of plate mm	0.03		0.06		0.06		0.471	
26											
27	Total Wight of Girder/mt/box									1.620314	
28	FOR 3 BOX/MT									4.860941838	
29	FOR 3 BOX/56MT	56.00	SPAN							272.2127429	
30	Add 15% extra for stiffeners, diaphragam, bolts, bracings etc.,									40.83191144	
31	Total weight for56m span for 3 box									313.0446544	MT
32	Area of sspan=66x15	840.00								0.372672208	
33										372.6722076	kg/sqmt
34									say	373	

Table 0-3 Design calculation for 68.50 m span

1	Span- 68.5m	68.5									
2	Cantilever	1000		mm							
3	Trapizodial Girder Top Opening										
4	Depth = spanx10^3/30	2283.33									
5	Deck depth-200mm	200.00									
6	depth of Girder -d	2083.33									
7	Bottom Flnge- b/t not>24	24.00									
8	t=thickness of plate= 50mm										
9	b	1200.00									
10	Top Flange=b+d tan(25)x2	3142.95									
11											
12	Cantilever length	1000.00									
13	Top flange length	3150.000									
14	Space between Girder	1775.00									
15	Top flange length	3150.00									
16	Space between Girder	1775.00									
17	Top flane length	3150.00									
18	Cantilever length	1000.00									
19	Total	15000.00									
20											
21	slope length of box girder	2300.20	975	2083.33							
22											
23	Length of Slope Web= 2 times	4.60	thick of plate mm	0.03	Areain mm^2	0.138012	volume/mt	0.138012	Weight MT/m	1.083392433	
24	Bottom flange	1.20	thick of plate mm	0.03		0.036		0.036		0.2826	
25	Top flange =2 Times	2.00	thick of plate mm	0.03		0.06		0.06		0.471	
26											
27	Total Wight of Girder/mt/box									1.836992	
28	FOR 3 BOX/MT									5.510977298	
29	FOR 3 BOX/68.5 MT	68.50	SPAN							377.5019449	
30	Add 15% extra for stiffeners, diaphragam, bolts, bracings etc.,									56.62529174	MT
31	Total weight for68.5m span for 3 box									434.1272366	
32	Area of sspan=68.5x15	1027.50								0.42250826	kg/sqmt
33										422.5082595	
34									say	423	kg/sqmt

Avg Steel qnty per sqmtr for 80m,67m&54m 422.9227479 kg/mt2

say with 410 kg/m2

Table 0-4 Design calculation for 81.31 m span

1	Span- 81.31m	81.31									
2											
3	Cantilever	1000		mm							
4	Trapizodial Girder Top Opening										
5	Depth = spanx10^3/30	2710.33									
6	Deck depth-200mm	200.00									
7	depth of Girder -d	2510.33									
8	Bottom Flnge- b/t not>24	24.00									
9	t=thickness of plate= 50mm										
10	b	1200.00									
11	Top Flange=b+d tan(25)x2	3541.18									
12											
13	Cantilever length	1000.00									
14	Top flange length	3550.000									
15	Space between Girder	1175.00									
16	Top flange length	3550.00									
17	Space between Girder	1175.00									
18	Top flange length	3550.00									
19	Cantilever length	1000.00									
20	Total	15000.00									
21											
22	slope length of box girder	2771.71	1175	2510.33							
23											
24	Length of Slope Web= 2 times	5.54	thick of plate mm	0.03	Areain mm^2	0.166303	volume/mt	0.166303	Weight MT/m	1.305477	
25	Bottom flange	1.20	thick of plate mm	0.03		0.036		0.036		0.2826	
26	Top flange =2 Times	2.00	thick of plate mm	0.03		0.06		0.06		0.471	
27											
28	Total Wight of Girder/mt/box									2.059077	
29	FOR 3 BOX/MT									6.177231868	
30	FOR 3 BOX/81.31 MT	81.31	SPAN							502.2707232	
31	Add 15% extra for stiffeners, diaphragam, bolts, bracings etc.,									75.34060848	
32	Total weight for 81.31m span for 3 box									577.6113317	MT
33	Area of sspan=81.31x15	1219.65								0.473587777	MT/sqmt
34										473.5877766	kg/sqmt
35									say	474	

1.38 Sectional Details of Box Girder as per design

The sectional design details for box girder for the following spans of 48m, 56m, 68m.50m, and 81.31m is shown in Figure 0-3 to Figure 0-6 below.

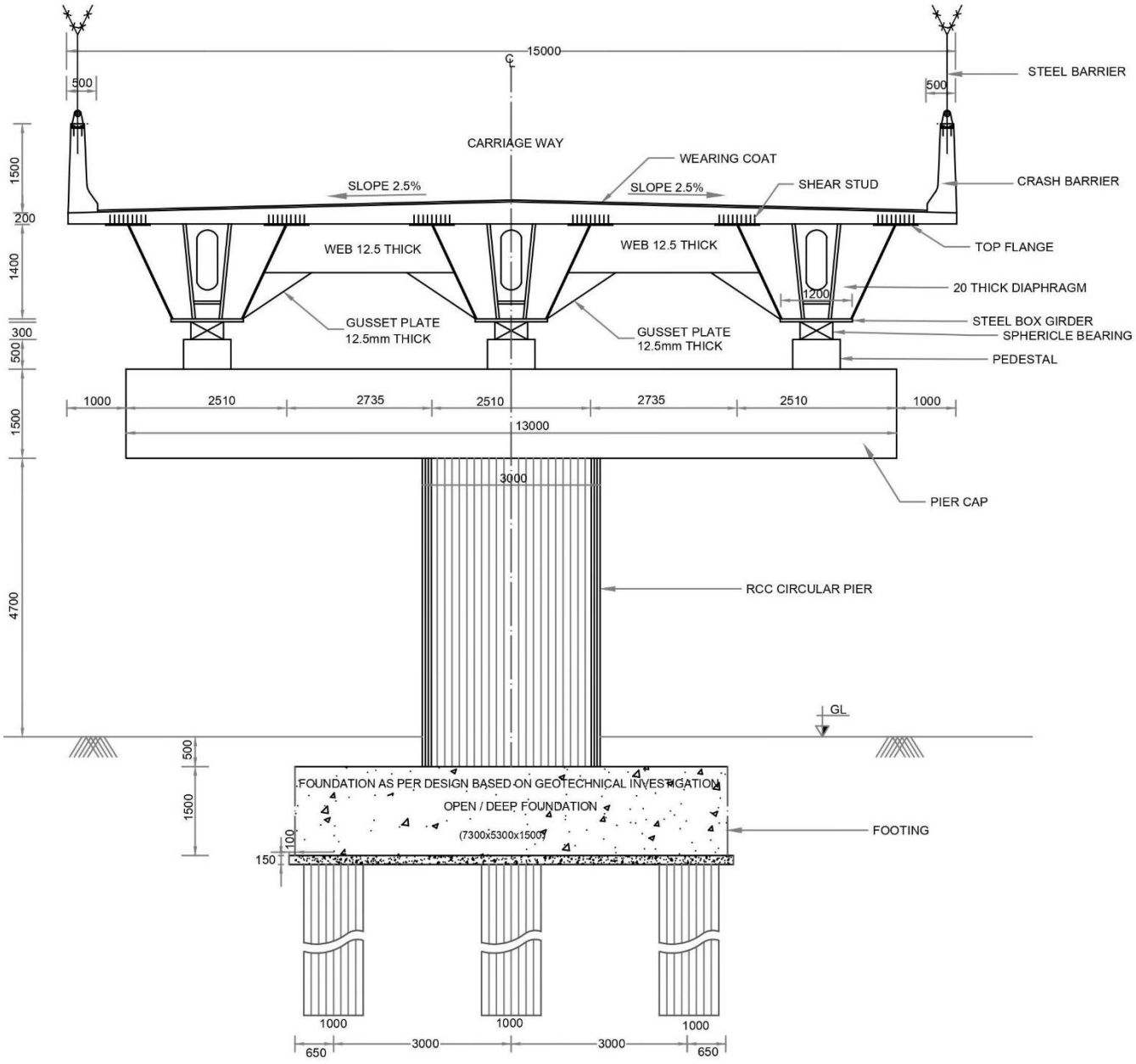


Figure 0-3 Sectional cross section of Trapezoidal box girder for 48m span

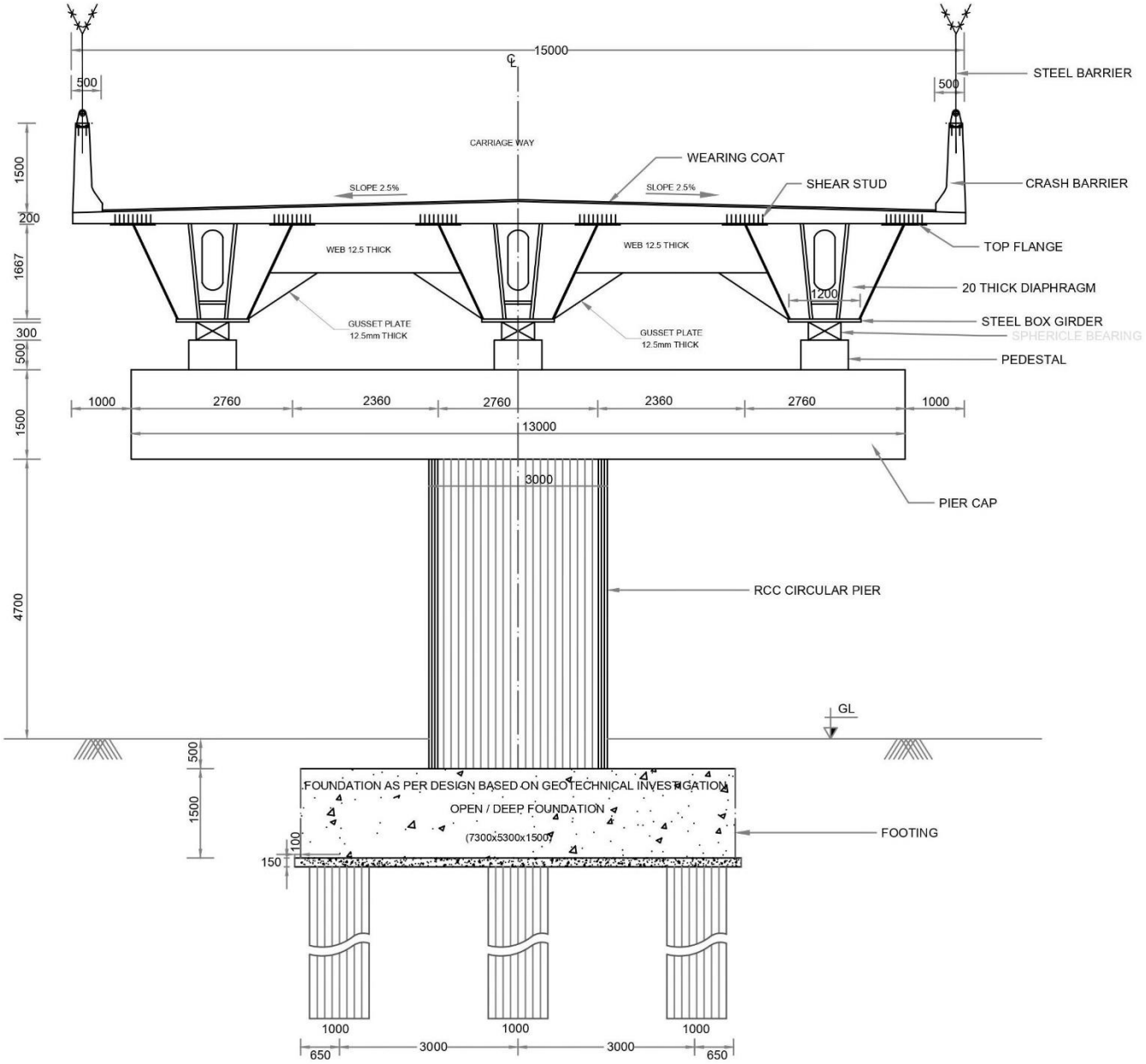


Figure 0-4 Sectional cross section of Trapezoidal box girder for 56m span

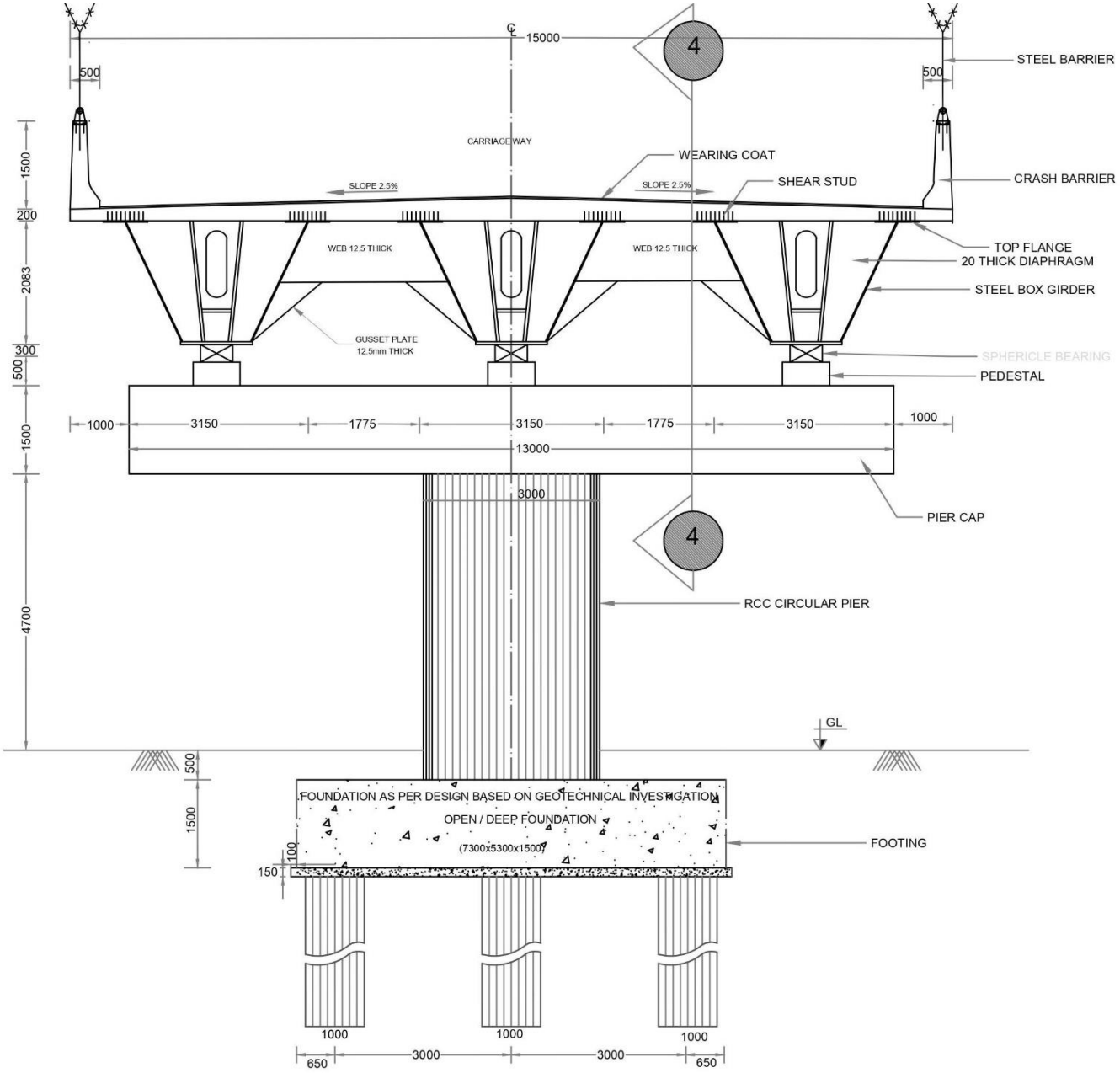


Figure 0-5 Sectional cross section of Trapezoidal box girder for 68.50m span

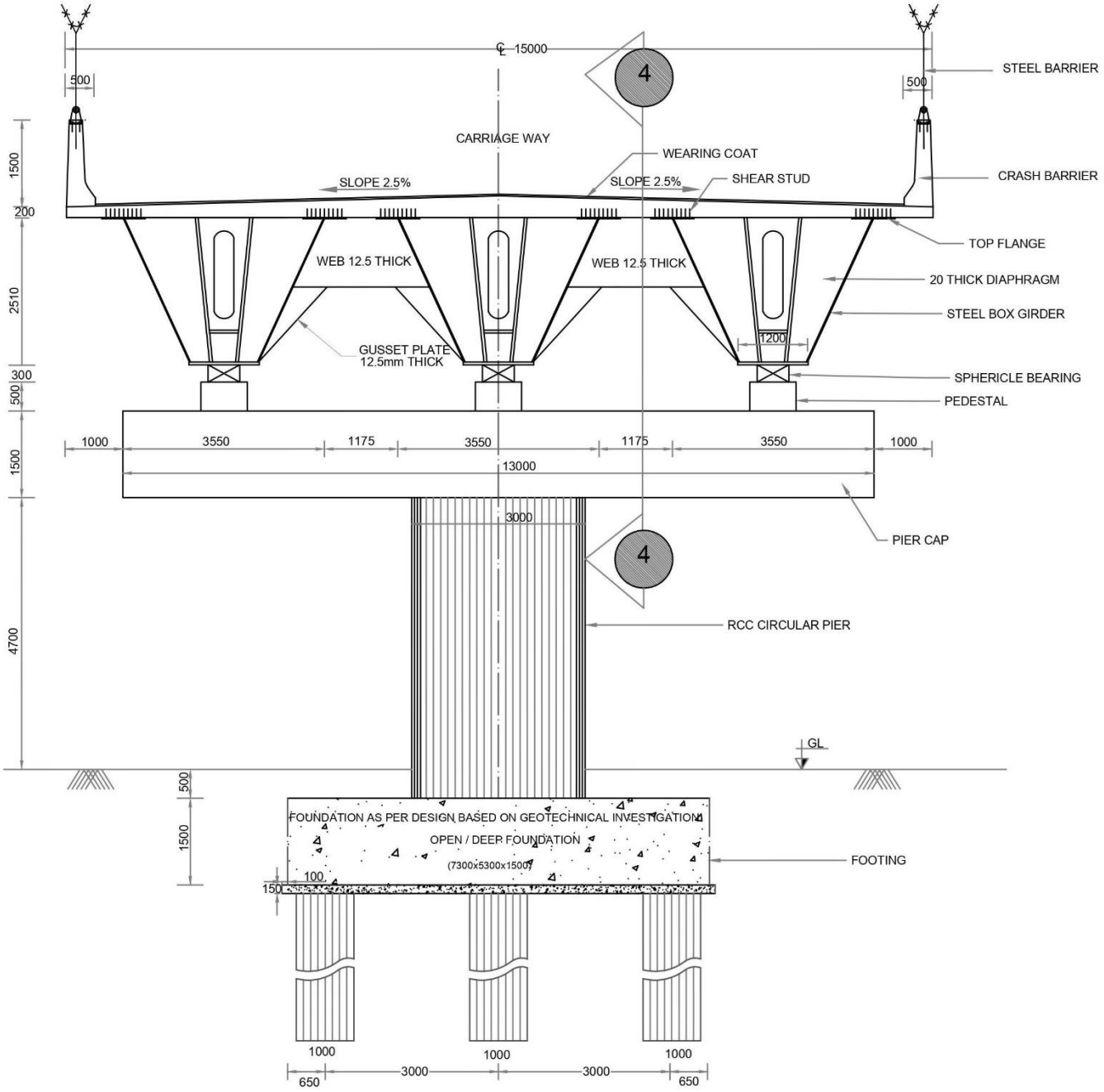


Figure 0-6 Sectional cross section of Trapezoidal box girder for 81.31 span

1.39 Design of Substructure

The initial sectional design of substructure and foundation of the flyover is based on IRC6-2000 and IRC 78-2000. The latest amendments of IRC 6:2000, IRC 78:2000 etc. are also considered during initial design. RCC piers of straight portion below are proposed. Rectangular Pier cap is provided top of the pier. Initial design of Abutments is similar to piers with no earth pressure forces. The effects of load from one side span alone are considered in the initial design of abutment.

While initial section designs the following loads are considered: (i) Dead Load: Vertical load due to dead load of the superstructure on the abutment and the self-weight of abutment. (ii) Superimposed Dead Load: Vertical load from superstructure due to superimposed dead load. (iii) Live Load: Effects due to following cases are studied and worst case of these is considered in the initial sectional design • Single lane IRC

70R placed at extreme end • Two lanes of IRC 70R • Single lane of IRC class A • Four lanes of IRC class A (iv) Braking Load: (v) Longitudinal force due to bearing friction:(vi) Seismic Load (Longitudinal and Transverse): (vii) Wind Load.

1.40 Design of Foundation

The Soil strata at the location of construction of Elevated Rotary and Road over Bridge at LC No: 136A is very hard and stiff with Non- cohesive soil. From the geotechnical report the hard strata could be seen below the ground at a depth of 3-6m with N- value greater than 100. At few locations the hard strata starts varies to a depth of 10 to 13m.

Based on the test results, it is proposed that Open foundation is considered to the extent of twenty five percent of foundation for sub structures and balance area where strata of good bearing capacity is not available near the ground, and the space is restricted to allow for spread/open foundation, in those cases the foundation of the structure has to be taken deep with the purpose of attaining a bearing strata which is suitable and which ensures strictly and durability of structure.

1.41 At Grade Roads

The at- grade roads on either side of the flyover shall be of intermediate lane configuration with Carriageway width of 5.5 m. Footpaths and drains having width 2m are provided on the outer edges. Typical arrangement of flyover and at grade road is given in the previous section.

1.41.1 Pavement Design

Design of Flexible Pavement for New Pavement as per IRC: 37-2012.

1.41.1.1 Traffic Forecast and Design Traffic.

Traffic data obtained from traffic survey and analysis have been used for design of pavements. Out of the various types of vehicles encountered during classified traffic volume counts LCV, Bus, 2-Axle and multi axle trucks have been considered as commercial vehicles in pavement design. Table 0-5 below gives the summary of ADT obtained from the traffic survey for the proposed approaches to grade separators. The Traffic Volume Count Survey data sheet is enclosed as Annexure- 5.1

Table 0-5 Traffic Survey of Commercial Vehicle

Sl. No	At IOC junction	No of Commercial Vehicles per day				
		LCV	BUS	2 Axle	MAV	Total
1	Approach roads of existing flyover from Maruthisevanagar to Banasavadi	731	274	141	37	1183
2	Approach roads of existing flyover from Banasavadi to Maruthisevanagar	718	376	247	40	1381

1.41.1.2 Design Traffic in CMSA (Cumulative Million Standard Axles).

The design traffic is considered in terms of cumulative number of standard axles to be carried during the design life of the road. Its computations involves estimates of the initial volume of commercial vehicles per day, lateral distribution of traffic, the growth rate, the design life in years and the vehicle damage factor to convert commercial vehicles to standard axles.

Out of the various types of vehicles encountered during traffic counts, Light Commercial Vehicles (LCV's), Buses, 2-Axle Trucks, 3 Axle Trucks and Multi Axle Vehicles (MAV's) have been considered as commercial vehicles.

The following equation is used to compute the design traffic Ns, in terms of the cumulative number of standard axles.

$$Ns = \frac{365 \times [(1+r)^{n}-1] \times A \times D \times F}{r}$$

Where,

r = Annual growth rate of commercial vehicle

n = Design life in years

A = Initial Traffic in the year of completion of construction in terms of the number of commercial vehicles per day- The traffic in the year of completion is estimated using the following formula:

$A = P(1+r)x$

Where, P = Number of commercial vehicles as per last count

X = Number of years between the last count and the year of completion of construction Assuming the construction period as 2 years for construction of flyover, including time taken for award of work the estimated traffic, 'A' in the year of completion of construction

Table 0-6 Statement of Number of Commercial and Initial Traffic in the year of construction

Sl. No	Road Section	P	A
1	Approach roads of existing flyover from Maruthisevanagar to Banasawadi	1183	1304
2	Approach roads of existing flyover from Banasawadi to Maruthisevanagar	1381	1523

D = Lane Distribution Factor- Since the present study is for the construction of dual two lane, D is adopted as 75% of the total number of commercial vehicles in each direction for dual two lane.

F = Vehicle Damage Factor (VDF) - defined as equivalent number of standard axles per Commercial vehicle. It is a multiplier to convert the number of commercial vehicles of different axle loads and axle configuration to the number of standard axle load repetitions. If Initial traffic volume in terms of number of commercial vehicles per day varies from 0 –150, 150 – 1500 & more than 1500 commercial vehicles per day, national average vehicle damage factor as per IRC: 37-2017 is taken as 1.5, 3.5 & 4.5 respectively.

Ns = Cumulative no. of Million Standard Axles (CMSA)- The design traffic in terms of Cumulative number of million standard axle load repetitions obtained as per IRC 37 for a design period of 15 years are given in the Table 0-7 below.

Table 0-7 Design Traffic in MSA

Sl No	Road Section	Cummulative Number of Million Standard Axle				
		LCV	BUS	2 Axle	MAV	Total
1	Approach road from Maruthisevanagar to Banasavadi	16.6	6.24	3.2	0.36	26.4
2	Approach road from Banasavadi to Maruthisevanagar	16.36	8.57	5.6	0.39	30.92

Thus, from the above Table 0-7 the design traffic in terms of cumulative number of million standard axles (CMSA) is rounded up & taken as 30 CMSA for Approach flyover.

1.41.2 Existing Sub grade and Design CBR

The samples collected from nearby project area shows good quality soil which can be used for the sub grade. The 4 days soaked CBR value of the sample tested found to be 8% and the same is proposed to be used for sub grade.

Design CBR: Keeping in view the soil characteristic as stated above, the pavement for the Project road has been designed adopting CBR value of sub grade as 8%.

Considering the sub grade soil CBR of 8% and design traffic as given in Table above, the new flexible pavement thicknesses obtained for a design life period of 15 years as per IRC 37-2012 Plate-6 (CBR 8%) at page 27 works out as under in Table 0-8 below.

Table 0-8 Statement of Pavement Crust Thickness

Road section	Pavement design thickness (mm) for design CBR of 8%					
	Design Traffic (msa)	GSB	WMM	DBM	BC	Total
Approach roads of existing flyover	30	200	250	100	40	590

Typical Cross Section showing layers of Pavement Composition is shown in Figure 0-7 below

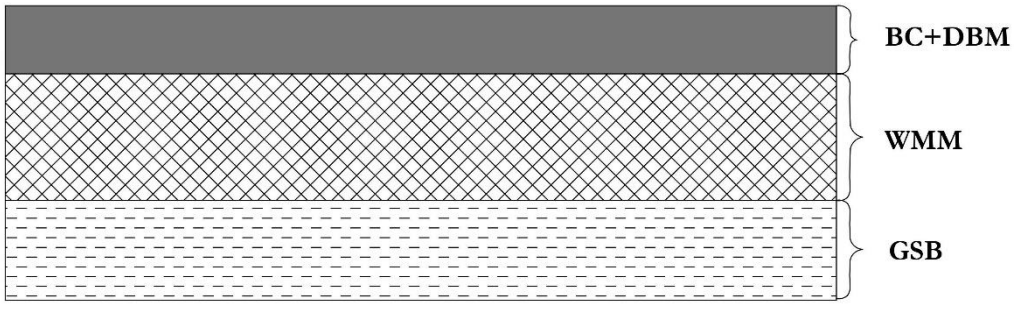


Figure 0-7 Typical Section of Pavement Composition

1.42 Analysis of Existing Traffic and Forecast

1.42.1 Traffic Survey between To & Fro from Maruthi Sevanagar to Banasavadi

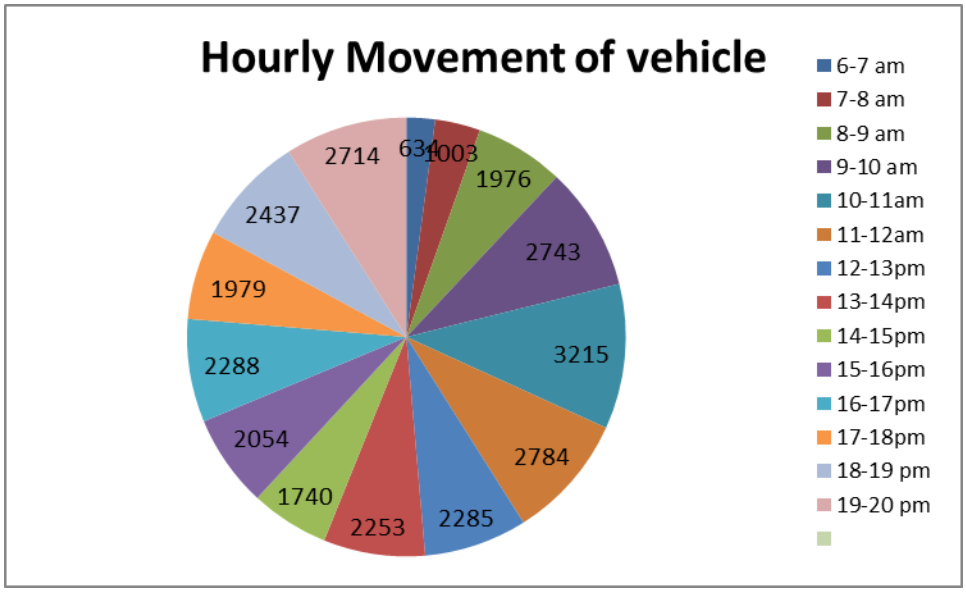
Classified Volume Count Survey is carried out during August 2021at approach of flyover from Maruthi sevanagara to Banasavadi and Banasavadi to Maruthi sevanagara . Traffic flow is two way directions with 7m CW and 0.5m wide median. CVC is done for one day count from morning 6 am to evening 8pm for 14 hours to assess the volume of traffic flow. This location survey is analyzed to obtain the following traffic characteristics:

- Average hourly variation of traffic volume
- Average Composition of traffic

The project road observes combined direction flow of traffic about 30105 Vehicles (15321 from M-B&14784 from B-M) in terms of PCU is 31438 covering Morning to Evening including Peak hours. Hourly counts of different types of vehicles are shown in the below table and composition of fast moving motorized vehicles is about 99.55 percent. The number of vehicles movement in hourly is shown in below table 5-9.

Table 0-9 Classified Volume Count of different types of vehicles

Timings	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	GOODs AUTO	Tractor Trailer	Bi-Cycles/Cycle Ricksh	Hand cart/Animal Drawn	Others	Total Vehicles	Total Vehicles in PCU
06.00-07.00	25	6	65	32	316	74	15	2	0	41	19	7	32	0	0	634	709
07.00-08.00	41	10	208	60	424	99	26	4	0	57	24	8	42	0	0	1003	1120
08.00 - 09.00	41	12	643	69	802	236	33	3	0	58	10	1	68	0	0	1976	2099
09.00 - 10.00	48	6	879	79	1384	240	27	2	0	39	16	4	19	0	0	2743	2756
10.00 - 11.00	50	8	927	106	1722	272	27	0	2	54	23	8	16	0	0	3215	3200
11.00 - 12.00	35	4	820	84	1488	212	24	1	3	71	22	6	12	0	2	2784	2753
12.00 - 13.00	23	1	682	112	1078	200	34	4	0	83	25	9	33	0	1	2285	2345
13.00 -14.00	27	2	607	132	1150	182	24	4	1	82	16	1	25	0	0	2253	2251
14.00 - 15.00	26	6	595	86	678	194	28	4	0	93	2	5	22	0	1	1740	1880
15.00 - 16.00	49	15	567	72	978	162	36	14	3	68	49	6	35	0	0	2054	2168
16.00 - 17.00	41	27	653	73	1038	230	42	10	1	49	84	12	25	3	0	2288	2468
17.00 - 18.00	34	12	783	53	676	222	30	2	3	76	42	3	41	1	1	1979	2155
18.00 - 19.00	41	18	903	45	885	256	24	5	3	80	100	4	72	1	0	2437	2616
19.00 - 20.00	34	8	867	56	1212	400	18	6	0	68	23	1	21	0	0	2714	2918
Total	**515**	**135**	**9199**	**1059**	**13831**	**2979**	**388**	**61**	**16**	**919**	**455**	**75**	**463**	**5**	**5**	**30105**	**31437.65**



Graphical Representation of Movement of Vehicle Hourly

1.42.2 Peak Hour Traffic

Peak hour traffic of combined vehicles from both the directions of flow is at 10 am to 11 am is estimated as 3215 vehicles per hour (3200 PCU),.

1.42.3 Estimated Traffic from Baiyappanahalli Terminal Station & Diversion from surrounding roads

When the Baiyappanahalli terminal station is fully operational, the number of vehicles per day is expected to be 6517 PCU and the peak hour traffic is expected to be around 362 PCU.

The proposed rotary junction is surrounded by many major arterial roads. Estimated traffic flow in a day is around 56315 PCU. When the construction of the rotary is completed, the traffic is expected to be diverted from the surrounding major roads, is estimated to be 5% of the daily traffic of 56315 that is around 2815 PCU per day. The peak hour traffic will be about 235 PCU/hr.

The combined traffic from the railway terminal station and surrounding major roads contributes about 9332 PCU in a day to rotary junction, resulting in additional peak hour traffic of about 600 PCU/hour. The details are shown in section 5.16 below.

A detailed analysis of the traffic generated from the railway terminal station and around the major roads of the proposed rotary junction is appended at the end of the report.

1.42.4 Growth of Traffic

From the CVC traffic study, the traffic growth was estimated on an hourly basis and the results were tabulated. Traffic growth in PCU is estimated for 25 years at 5-year intervals. The annual growth percentage of different types of vehicular traffic is assumed and tabulated in the following statements shown in Table 0-10 and Table 0-11 below.

Table 0-10 Assumption of Annual percentage growth of various types of vehicular traffic

Type of Vehicles	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	GOODs AUTO	Tractor Trailer	Bi-Cycles/Cycle Rickshaw	Hand cart/Animal Drawn	Others
Growth of Vehicles	4%	4%	5%	5%	4%	4%	1%	1%	1%	2%	3%	1%	1%	1%	1%

Table 0-11 A statement of progressive growth of traffic over 25 years

		Growth for 5 Years	Growth for 10 Years	Growth for 15 Years	Growth for 20 Years	Growth for 25 Years
Timime (Hours)	Present Traffic 2020-2021	2022-2026	2026-2031	2031-2036	2036-2041	2041-2046
Time(Hours)	Total Vehicles in PCU	Total Vehicles in PCU	Total Vehicles in PCU	Total Vehicles in PCU	Total Vehicles in PCU	Total Vehicles in PCU
06.00-07.00	709	841	968	1095.8	1221.8	1347.8
07.00-08.00	1120	1333	1544	1752.6	1963.6	2169.6
08.00 - 09.00	2099	2537	2965	3392.7	3820.7	4248.7
09.00 - 10.00	2756	3340	3918	4498.6	5074.6	5651.6
10.00 - 11.00	3200	3872	4538	5205.1	5872.1	6536.1
11.00 - 12.00	2753	3331	3900	4468.8	5037.8	5605.8
12.00 - 13.00	2345	2825	3300	3774.3	4247.3	4722.3
13.00 - 14.00	2251	2719	3178	3642.9	4100.9	4561.9
14.00 - 15.00	1880	2268	2648	3032.1	3410.1	3791.1
15.00 - 16.00	2168	2598	3024	3449.3	3873.3	4295.3
16.00 - 17.00	2468	2956	3442	3929.3	4415.3	4904.3
17.00 - 18.00	2155	2603	3044	3487.4	3928.4	4368.4
18.00 - 19.00	2616	3154	3687	4217.55	4748.55	5280.55
19.00 - 20.00	2918	3529	4137	4744.2	5351.2	5957.2
Total	**31437.65**	**37905.65**	**44292.65**	**50690.65**	**57065.65**	**63440.65**

1.42.5 Peak Hour Growth of Traffic

Maximum peak hour traffic at the time of traffic survey conducted on 2021 is 3200 PCU/hr. Peak hour traffic growth at 5-year intervals has been estimated for 25 years and is tabulated in below Table 0-12 .

Table 0-12 Peak hour Traffic/ Hour forecast for 25 years

Year	Peak Hour Traffic/ Hour (Existic Traffic)	Peak Hour Traffic generated from Terminal Railway station and surrounding roads	Total Peak Hour Traffic	Remarks
2020-2021	3200	600	**3800**	Within the Rotary Capacity of 5000 PCU/ hour as per IRC-SP-90-2010
2022-2026	3872	600	**4472**	
2026-2031	4538	600	**5138**	
2031-2036	5206	600	**5806**	The large portion of traffic is turning traffic, provision of rotary even outside these limit of 5000 PCU/ hour is justified.
2036-2041	5872	600	**6472**	
2041-2046	6536	600	**7136**	

1.42.6 Traffic Capacity of Rotary Approaches

The peak hour traffic / hour as estimated at this junction for the present year of count is 3800 to next 25 years will be 7136.

As per IRC-106 1990 " Guidelines for Capacity of Urban Roads in Plain Areas" the recommended design service volumes PCU/Hour for 6 lane divided two-way traffic is 4300 for sub-arterial road (with frontage access but no standing vehicles and high capacity intersections), and whereas for 4 lane divided two-way traffic is 2900.

As per IRC guide lines/recommendations, approaches should be designed for 6 lanes with divider for two way traffic to accommodate 3800 V/H traffic at this rotary junction.

After discussion with BBMP officials and keeping in mind the concept of minimum land acquisition, a two lane divided carriage way of total width of 17.0 m has been proposed with 3.5 m each, 1.0 m median and 0.5 m crash barrier on both sides.

1.42.7 Traffic Capacity of Rotary Junction and Conclusion

As per IRC-90-2010, states that, "A properly designed four arm intersection controlled by traffic rotary could be assumed to have maximum capacity of 5000 PCU during the peak hour"

According to the study the traffic flow is expected to be 5138 PCU/hour in peak hour traffic (10years growth till 2031), so the designed elevated rotary will easily accommodate the peak hour traffic of 5138 PCU/hour for next 10 years.

If the expected peak hour traffic crosses more than 5000 PCU/ hour, since the large portion of traffic is turning traffic, the movement of traffic will be fast and will not create any chock during that particular time of peak hour traffic. Hence the provision of elevated rotary even outside the limit of 5000 PCU/ hour is justified during peak hour time. The remaining hourly traffic will be less than 5000 PCU on most days for the next 25 years.

If after 25 years the traffic becomes too varied, space is provided below the rotary to construct an underpass to cater to the additional traffic.

1.43 Forecast of Traffic on development of Railway Terminal

Based on railway traffic / day as informed by railway authorities in the media, estimated traffic of passengers traveling and movement of vehicles is estimated logically and for other factors in mind of IRC. The daily traffic of the railway running (to & fro) is considered as 50 numbers per day and based on this movement of passengers and vehicle growth is estimated and presented in the Table 0-13 below and details of Traffic survey are enclosed as Annexure – 5.2

Table 0-13 Forecast of Traffic at IOC Railway Junction

Traffic at Railway Station	Proposed No of pair of Trains (to&pro) running / day	Total movement of trains including to&pro/day	No of Bogis/train	% Components		25%		20%	25%	50%	4%	1%	100%
				No of passengers/bogi	Total No of Passengers/day	Percentage of Passengers alaighting and boarding at Baiyappanahalli station including guests	No of vehicles required to carry passengers / day	Two wheelars with two passengers	Three wheelars with 3 Passengers	4 Wheelars with 5 passengers	Bus with 25 passengers	Walk	
1	2	3=2x2	4	5	6=3x4x5	7=6x75%							
	50	100	15	50	75000	18750	→ No of Passengers IN Number	3750	4687.5	9375	750	187.5	18750
						→ No of Vehicles IN Number	5343	1875	1562.5	1875	30		5342.5
							% of vehicles	35	29	35	1		100
							multiply to get in PCU	0.75	2	1	3.7		PCU-109-1990
						→ No of Vehicles in PCU	6517	1406.25	3125	1875	111		PCU
				PCU at Railway station per hour(considering 18hours movement a day)			**362**	A					
		Average PCU from all surrounding roads of Baiyappanahalli Junction/day traffic of 12 hours			56315								
		Assuming 5% of day traffic is expecting as diversion traffic to proposed Elevated Rotary Junction /day traffic of 12hrs			→ 2815.75	PCU /Hour	**235**	B					
						Total PCU/hour Estimated (A+B)	**597**	PCU/HOUR					
						The maximum volume that a traffic rotary can handle efficiently can be taken as 5000 vehicles per hour entering from four intersections. IRC-SP-90-2010						
						Present PCU - 2021	597		PCU/HOUR				
						The additional Traffic generated from Baiyappanahalli Terminal Station after fully commenced its functions and diversion of traffics from surrounding major roads is considered to be as **600 PCU/hour**						

Bruhat Bengaluru Mahanagara Palike (BBMP) **Consultant: NEZ Infratech PVT LTD**

Classified Traffic Volume Count Survey

Construction of ROB at Baiyyapanahalli ,Bangalore including constrcution of Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old Madras road to facilitate connectivity to new sir M.Visveavaraya terminal at Baiyyappanahalli railway Station

Location: Indian Oil Bus Stop		**Sketch* :**	**Enumerator: Pritam Pramanik**
Direction : Maruthi Sevanagar to Banaswadi			**Supervisor: Rajan Kundu**
Date : 24.08.2021	**Day :Tuesnday**	**Weather:**	**Sheet No.01**

Time (15 mts)	FAST MOVING VEHICLES												SLOW MOVING VEHICLES			Total
	PASSENGER VEHICLES						GOODS VEHICLES									
	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	Goods Auto	Tractor & Trailer	Bi-Cycles	Hand / Animal Drawn	Others	
06.00-06.15	3	1	10	3	36	8	3	0	0	5	1	1	6	0	0	**77**
06.15-06.30	4	0	13	4	47	7	1	1	0	4	2	0	3	0	0	**86**
06.30-06.45	4	0	11	6	45	10	2	0	0	8	0	1	5	0	0	**92**
06.45-07.00	3	1	15	3	40	12	3	0	0	6	3	1	7	0	0	**94**
07.00-07.15	3	0	12	5	44	14	5	1	0	7	1	1	5	0	0	**98**
07.15-07.30	4	0	36	7	43	12	3	2	0	6	1	1	6	0	0	**121**
07.30-07.45	4	2	49	14	62	7	5	1	0	3	0	1	5	0	0	**153**
07.45-08.00	8	2	41	12	73	11	1	0	0	13	1	1	3	0	0	**166**
08.00 - 08.15	1	0	54	8	79	21	5	0	0	6	0	0	8	0	0	**182**
08.15 - 08.30	4	1	88	8	85	32	2	2	0	3	0	0	8	0	0	**233**
08.30 - 08.45	5	0	103	7	112	26	0	0	0	5	0	1	5	0	0	**264**
08.45 - 09.00	6	0	98	9	135	29	4	1	0	6	0	0	5	0	0	**293**
09.00 - 09.15	8	1	105	5	150	32	2	0	0	2	0	1	0	0	0	**306**
09.15 - 09.30	7	1	93	11	176	28	5	1	0	5	0	1	2	0	0	**330**
09.30 - 09.45	8	1	124	5	182	19	3	1	0	2	0	0	0	0	0	**345**
09.45 - 10.00	5	1	127	15	194	31	3	0	0	5	1	0	0	0	0	**382**
10.00 - 10.15	6	0	118	25	242	24	2	0	0	7	3	0	2	0	0	**429**
10.15 - 10.30	7	0	116	23	186	31	2	0	0	12	5	0	0	0	0	**382**
10.30 - 10.45	4	1	122	21	194	28	3	0	0	10	1	3	0	0	0	**387**
10.45 - 11.00	5	0	107	18	249	43	2	0	0	11	2	1	1	0	0	**439**
11.00 - 11.15	4	1	107	19	194	21	1	0	0	13	10	0	0	0	0	**370**
11.15 - 11.30	3	0	102	8	163	32	2	1	0	14	3	0	0	0	0	**328**
11.30 - 11.45	2	0	97	14	184	24	1	0	1	11	0	2	1	0	2	**339**
11.45 - 12.00	3	0	113	10	213	19	4	0	0	8	0	1	3	0	0	**374**
12.00 - 12.15	3	0	112	21	168	29	3	0	0	6	5	2	1	0	0	**350**
12.15 - 12.30	3	0	101	12	134	19	4	0	0	7	3	2	9	0	0	**294**
12.30 - 12.45	3	1	92	10	142	26	6	3	0	13	6	0	8	0	1	**311**
12.45 - 13.00	3	0	103	9	105	16	5	1	0	12	2	1	6	0	0	**263**
13.00 - 13.15	4	0	92	17	138	28	4	0	0	4	4	0	4	0	0	**295**
13.15 - 13.30	3	1	77	16	143	13	3	1	0	7	0	0	2	0	0	**266**
13.30 - 13.45	5	0	91	13	162	17	2	2	1	7	6	0	3	0	0	**309**
13.45 - 14.00	3	0	86	30	142	23	3	0	0	12	0	0	3	0	0	**302**
14.00 - 14.15	1	1	92	15	104	12	2	1	0	15	0	3	2	0	0	**248**
14.15 - 14.30	5	1	86	10	95	18	4	0	0	10	0	1	4	0	1	**235**
14.30 - 14.45	4	0	77	11	65	26	4	0	0	11	0	0	2	0	0	**200**
14.45 - 15.00	4	1	89	11	85	31	3	0	0	16		1	3	0	0	**244**
15.00 - 15.15	7	0	76	10	105	13	2	0	0	10	3	1	0	0	0	**227**
15.15 - 15.30	6	0	72	11	126	16	3	0	0	11	2	0	3	0	0	**250**
15.30 - 15.45	5	0	76	14	116	23	1	1	0	16	4	0	2	0	0	**258**
15.45 - 16.00	7	0	83	10	152	19	0	1	0	18	5	0	0	0	0	**295**
16.00 - 16.15	3	3	78	15	185	26	5	1	0	8	2	1	1	0	0	**328**
16.15 - 16.30	4	2	93	17	106	21	6	0	0	11	3	2	2	0	0	**267**
16.30 - 16.45	6	1	77	9	142	32	1	2	1	9	3	0	0	0	0	**283**
16.45 - 17.00	5	1	82	16	96	26	0	1	0	11	4	0	0	0	0	**242**
17.00 - 17.15	2	1	94	7	106	14	2	0	2	13	3	0	4	0	0	**248**
17.15 - 17.30	3	0	102	9	62	22	2	0	0	11	4	1	1	0	0	**217**
17.30 - 17.45	5	1	88	5	85	29	2	0	1	11	5	0	5	1	0	**238**
17.45 - 18.00	6	1	94	8	95	36	1	0	0	12	7	0	4	0	0	**264**
18.00 - 18.15	4	0	112	6	102	25	1	0	0	20	3	0	8	0	0	**281**
18.15 - 18.30	3	0	80	11	125	36	1	1	1	12	6	1	14	1	0	**292**
18.30 - 18.45	3	1	82	2	136	15	1	1	1	17	8	1	9	0	0	**277**
18.45 - 19.00	4	1	112	7	142	42	2	1	0	22	13	0	7	0	0	**353**
19.00 - 19.15	5	0	92	5	126	53	1	1	0	13	3	0	7	0	0	**306**
19.15 - 19.30	5	1	127	5	136	49	1	0	0	12	4	0	2	0	0	**342**
19.30 - 19.45	4	0	129	6	185	53	0	0	0	9	3	0	1	0	0	**390**
19.45 - 20.00	3	1	117	7	196	35	2	0	0	8	6	0	1	0	0	**376**
Total	**242**	**32**	**4825**	**615**	**7135**	**1364**	**141**	**29**	**8**	**546**	**151**	**34**	**193**	**2**	**4**	**15321**

Time(Hours)	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	Goods Auto	Tractor & Trailer	Bi-Cycles	Hand /Animal Drawn	Others	Total
06.00-07.00	14	2	49	16	168	37	9	1	0	23	6	3	21	0	0	349
07.00-08.00	19	4	138	38	222	44	14	4	0	29	3	4	19	0	0	538
08.00 - 09.00	16	1	343	32	411	108	11	3	0	20	0	1	26	0	0	972
09.00 - 10.00	28	4	449	36	702	110	13	2	0	14	1	2	2	0	0	1363
10.00 - 11.00	22	1	463	87	871	126	9	0	0	40	11	4	3	0	0	1637
11.00 - 12.00	12	1	419	51	754	96	8	1	1	46	13	3	4	0	2	1411
12.00 - 13.00	12	1	408	52	549	90	18	4	0	38	16	5	24	0	1	1218
13.00 -14.00	15	1	346	76	585	81	12	3	1	30	10	0	12	0	0	1172
14.00 - 15.00	14	3	344	47	349	87	13	1	0	52	0	5	11	0	1	927
15.00 - 16.00	25	0	307	45	499	71	6	2	0	55	14	1	5	0	0	1030
16.00 - 17.00	18	7	330	57	529	105	12	4	1	39	12	3	3	0	0	1120
17.00 - 18.00	16	3	378	29	348	101	7	0	3	47	19	1	14	1	0	967
18.00 - 19.00	14	2	386	26	505	118	5	3	2	71	30	2	38	1	0	1203
19.00 - 20.00	17	2	465	23	643	190	4	1	0	42	16	0	11	0	0	1414
Total	**242**	**32**	**4825**	**615**	**7135**	**1364**	**141**	**29**	**8**	**546**	**151**	**34**	**193**	**2**	**4**	**15321**

Timings	Standard Buses	PCU 2.2	Mini Buses	PCU 1	Cars/ Jeeps	PCU 1	Pickup Vans/ Maxicabs	PCU 1	Two Wheelers	PCU 0.75	Passenger Auto	PCU 2	2-Axle Trucks	PCU 2.2	3-Axle Trucks	PCU 4	MAVs	PCU 4	LCVs	PCU 1.4	GOODs AUTO	PCU 1.4	Tractor Trailer	PCU 4	Bi-Cycles/Cycle Rickshaw	PCU 0.4	Hand cart/Animal Drawn	PCU 2	Others	Total Vehicles	Total Vehicles in PCU
06.00-07.00	14	31	2	2	49	49	16	16	168	126	37	74	9	20	1	4	0	0	23	32	6	8	3	12	21	8	0	0	0	349	383
07.00-08.00	19	42	4	4	138	138	38	38	222	167	44	88	14	31	4	16	0	0	29	41	3	4	4	16	19	8	0	0	0	538	592
08.00 - 09.00	16	35	1	1	343	343	32	32	411	308	108	216	11	24	3	12	0	0	20	28	0	0	1	4	26	10	0	0	0	972	1014
09.00 - 10.00	28	62	4	4	449	449	36	36	702	527	110	220	13	29	2	8	0	0	14	20	1	1	2	8	2	1	0	0	0	1363	1364
10.00 - 11.00	22	48	1	1	463	463	87	87	871	653	126	252	9	20	0	0	0	0	40	56	11	15	4	16	3	1	0	0	0	1637	1613
11.00 - 12.00	12	26	1	1	419	419	51	51	754	566	96	192	8	18	1	4	1	4	46	64	13	18	3	12	4	2	0	0	2	1411	1377
12.00 - 13.00	12	26	1	1	408	408	52	52	549	412	90	180	18	40	4	16	0	0	38	53	16	22	5	20	24	10	0	0	1	1218	1240
13.00 -14.00	15	33	1	1	346	346	76	76	585	439	81	162	12	26	3	12	1	4	30	42	10	14	0	0	12	5	0	0	0	1172	1160
14.00 - 15.00	14	31	3	3	344	344	47	47	349	262	87	174	13	29	1	4	0	0	52	73	0	0	5	20	11	4	0	0	1	927	990
15.00 - 16.00	25	55	0	0	307	307	45	45	499	374	71	142	6	13	2	8	0	0	55	77	14	20	1	4	5	2	0	0	0	1030	1047
16.00 - 17.00	18	40	7	7	330	330	57	57	529	397	105	210	12	26	4	16	1	4	39	55	12	17	3	12	3	1	0	0	0	1120	1171
17.00 - 18.00	16	35	3	3	378	378	29	29	348	261	101	202	7	15	0	0	3	12	47	66	19	27	1	4	14	6	1	2	0	967	1040
18.00 - 19.00	14	31	2	2	386	386	26	26	505	379	118	236	5	11	3	12	2	8	71	99	30	42	2	8	38	15	1	2	0	1203	1257
19.00 - 20.00	17	37	2	2	465	465	23	23	643	482	190	380	4	9	1	4	0	0	42	59	16	22	0	0	11	4	0	0	0	1414	1488
Total	**242**	**532**	**32**	**32**	**4825**	**4825**	**615**	**615**	**7135**	**5351**	**1364**	**2728**	**141**	**310**	**29**	**116**	**8**	**32**	**546**	**764**	**151**	**211**	**34**	**136**	**193**	**77**	**2**	**4**	**4**	**15321**	15735

LCV VEHICLES PER DAY 731 P $Ns=365x\,[(1+r)^{n}-1]xAxDxF / r$ $N_s = \frac{365.0 \quad 1.1 \quad 806 \quad 0.75 \quad 3.5}{5\%}$ = 16662519.82 = 16.66251982

A=P(1+r)^X 806 F= 3.5

BUS 274 P $Ns=365x\,[(1+r)^{n}-1]xAxDxF / r$ $N_s = \frac{365.0 \quad 1.1 \quad 302 \quad 0.75 \quad 3.5}{5\%}$ = 6245595.666 = 6.245595666

A=P(1+r)^X 302 F= 3.5

2 Axile 141 P $Ns=365x\,[(1+r)^{n}-1]xAxDxF / r$ $N_s = \frac{365.0 \quad 1.1 \quad 155 \quad 0.75 \quad 3.5}{5\%}$ = 3213974.412 = 3.213974412

A=P(1+r)^X 155 F= 3.5

MAV 37 P $Ns=365x\,[(1+r)^{n}-1]xAxDxF / r$ $N_s = \frac{365.0 \quad 1.1 \quad 41 \quad 0.75 \quad 1.5}{5\%}$ = 361450.0098 = 0.36145001

A=P(1+r)^X 40.8 F= 1.5

Total 26.48353991

r= 5%

n= 15

d= 75%

F= 3.5 1304.2575 $N_s = \frac{365.0 \quad 1.1 \quad 1304 \quad 0.75 \quad 4.5}{5\%}$ = 34669894.19 = 34.66989419

x= 2

Bruhat Bengaluru Mahanagara Palike (BBMP) | **Consultant: NEZ Infratech PVT LTD**

Classified Traffic Volume Count Survey

Construction of ROB at Baiyyapanahalli ,Bangalore including constrcution of Rotary fly over at IOC junction and construction of road integrating Banaswadi main road and Old Madras road to facilitate connectivity to new sir M.Visveavaraya terminal at Baiyyappanahalli railway Station

Location: Canera Bank ATM	**Sketch* :**	**Enumerator: Vishwanath**
Direction : Banaswadi to Maruthi sevanagar		**Supervisor: Rajen Kundu**
Date : 24.08.2021 **Day :Tuesday**	**Weather:**	**Sheet No.01**

Time (15 mts)	FAST MOVING VEHICLES												SLOW MOVING VEHICLES			Total
	PASSENGER VEHICLES						GOODS VEHICLES									
	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	Goods Auto	Tractor & Trailer	Bi-Cycles	Hand / Animal Drawn	Others	
06.00-06.15	2	1	1	4	31	12	2	0	0	3	2	1	3	0	0	**0**
06.15-06.30	3	0	5	5	42	6	0	1	0	6	3	2	2	0	0	**0**
06.30-06.45	2	2	4	3	40	11	1	0	0	4	4	0	2	0	0	**0**
06.45-07.00	4	1	6	4	35	8	3	0	0	5	4	1	4	0	0	**0**
07.00-07.15	9	1	10	4	39	14	3	0	0	2	6	2	6	0	0	**96**
07.15-07.30	2	3	9	3	38	12	2	0	0	7	8	1	3	0	0	**88**
07.30-07.45	6	1	18	8	57	17	1	0	0	10	2	1	10	0	0	**131**
07.45-08.00	5	1	33	7	68	12	6	0	0	9	5	0	4	0	0	**150**
08.00 - 08.15	6	2	58	10	74	26	6	0	0	11	3	0	10	0	0	**206**
08.15 - 08.30	5	1	68	6	80	37	3	0	0	10	1	0	10	0	0	**221**
08.30 - 08.45	5	5	63	7	107	31	6	0	0	5	2	0	14	0	0	**245**
08.45 - 09.00	9	3	111	14	130	34	7	0	0	12	4	0	8	0	0	**332**
09.00 - 09.15	7	1	91	3	145	37	2	0	0	3	1	1	3	0	0	**294**
09.15 - 09.30	5	0	90	7	171	33	6	0	0	5	8	1	8	0	0	**334**
09.30 - 09.45	5	1	110	19	177	24	3	0	0	10	4	0	3	0	0	**356**
09.45 - 10.00	3		139	14	189	36	3	0	0	7	2	0	3	0	0	**396**
10.00 - 10.15	7	2	145	5	237	29	2	0	0	2	7	1	3	0	0	**440**
10.15 - 10.30	6	2	105	6	181	36	3	0	0	4	2	1	5	0	0	**351**
10.30 - 10.45	10	1	118	5	189	33	5	0	2	6	3	0	2	0	0	**374**
10.45 - 11.00	5	2	96	3	244	48	8	0	0	2	0	2	3	0	0	**413**
11.00 - 11.15	5	2	112	2	189	26	3	0	0	1	5	1	5	0	0	**351**
11.15 - 11.30	7	0	98	2	158	37	5	0	2	0	3	1	2	0	0	**315**
11.30 - 11.45	5	0	103	6	179	29	2	0	0	10	0	1	1	0	0	**336**
11.45 - 12.00	6	1	88	23	208	24	6	0	0	14	1	0	0	0	0	**371**
12.00 - 12.15	3	0	74	18	163	34	6	0	0	15	2	2	2	0	0	**319**
12.15 - 12.30	4	0	68	11	129	24	4	0	0	8	1	0	3	0	0	**252**
12.30 - 12.45	2	0	60	12	137	31	3	0	0	12	3	0	4	0	0	**264**
12.45 - 13.00	2	0	72	19	100	21	3	0	0	10	3	2	0	0	0	**232**
13.00 - 13.15	3	0	72	13	133	33	4	0	0	12	2	1	0	0	0	**273**
13.15 - 13.30	1	0	64	16	138	18	2	0	0	15	3	0	7	0	0	**264**
13.30 - 13.45	4	0	67	15	157	22	3	1	0	12	1	0	3	0	0	**285**
13.45 - 14.00	4	1	58	12	137	28	3	0	0	13	0	0	3	0	0	**259**
14.00 - 14.15	3	1	62	11	99	17	5	1	0	13	1	0	2	0	0	**215**
14.15 - 14.30	2	1	70	9	90	23	2	0	0	7	1	0	2	0	0	**207**
14.30 - 14.45	5		54	9	60	31	3	2	0	10	0	0	2	0	0	**176**
14.45 - 15.00	2	1	65	10	80	36	5	0	0	11	0	0	5	0	0	**215**
15.00 - 15.15	3	3	70	5	100	18	2	0	0	4	15	2	11	0	0	**233**
15.15 - 15.30	6	2	80	7	121	21	12	0	2	2	15	2	7	0	0	**277**
15.30 - 15.45	10	5	45	10	111	28	3	2	1	5	1 0	0	7	0	0	**227**
15.45 - 16.00	5	5	65	5	147	24	13	10	0	2	5	1	5	0	0	**287**
16.00 - 16.15	4	5	90	2	180	31	7	2	0	1	20	2	7	0	0	**351**
16.15 - 16.30	7	7	65	3	101	26	8	1	0	2	20	2	8	2	0	**252**
16.30 - 16.45	7	3	78	5	137	37	8	1	0	3	17	2	3	1	0	**302**
16.45 - 17.00	5	5	90	6	91	31	7	2	0	4	15	3	4	0	0	**263**
17.00 - 17.15	5	0	80	7	101	19	8	0	0	10	2	0	5	0	0	**237**
17.15 - 17.30	3	2	105	8	57	27	3	2	0	9	2	0	1	0	0	**219**
17.30 - 17.45	6	3	95	6	80	34	6	0	0	5	13	1	15	0	1	**265**
17.45 - 18.00	4	4	125	3	90	41	6	0	0	5	6	1	6	0	0	**291**
18.00 - 18.15	5	1	135	5	97	30	7	0	0	2	18	1	8	0	0	**309**
18.15 - 18.30	8	3	105	3	85	41	1	0	0	2	8	0	9	0	0	**265**
18.30 - 18.45	8	3	135	5	102	20	4	1	1	3	17	1	10	0	0	**310**
18.45 - 19.00	6	9	142	6	96	47	7	1	0	2	27	0	7	0	0	**350**
19.00 - 19.15	3	0	120	10	116	58	2	1	0	10	2	0	2	0	0	**324**
19.15 - 19.30	5	3	105	6	142	54	5	3	0	4	0	0	1	0	0	**328**
19.30 - 19.45	4	2	95	9	126	58	3	0	0	7	3	0	4	0	0	**311**
19.45 - 20.00	5	1	82	8	185	40	4	1	0	5	2	1	3	0	0	**337**
Total	**273**	**103**	**4374**	**444**	**6696**	**1615**	**247**	**32**	**8**	**373**	**304**	**41**	**270**	**3**	**1**	**14784**

Time(Hours)	Standard Buses	PCU 2.2	Mini Buses	PCU 1	Cars/ Jeeps	PCU 1	Pickup Vans/ Maxicabs	PCU 1	Two Wheelers	PCU 0.75	Passenger Auto	PCU 2	2-Axle Trucks	PCU 2.2	3-Axle Trucks	PCU 4	MAVs	PCU 4	LCVs	PCU 1.4	Goods Auto	PCU 1.4	Tractor & Trailer	PCU 4	Bi-Cycles	PCU 0.4	Hand /Animal Drawn	PCU 2	Others	Total Vehicles	Total Vehicles in PCU
06.00-07.00	11	24	4	4	16	16	16	16	148	111	37	74	6	13	1	4	0	0	18	25	13	18	4	16	11	4	0	0	0	285	326
07.00-08.00	22	48	6	6	70	70	22	22	202	152	55	110	12	26	0	0	0	0	28	39	21	29	4	16	23	9	0	0	0	465	528
08.00 - 09.00	25	55	11	11	300	300	37	37	391	293	128	256	22	48	0	0	0	0	38	53	10	14	0	0	42	17	0	0	0	1004	1085
09.00 - 10.00	20	44	2	2	430	430	43	43	682	512	130	260	14	31	0	0	0	0	25	35	15	21	2	8	17	7	0	0	0	1380	1392
10.00 - 11.00	28	62	7	7	464	464	19	19	851	638	146	292	18	40	0	0	2	8	14	20	12	17	4	16	13	5	0	0	0	1578	1587
11.00 - 12.00	23	51	3	3	401	401	33	33	734	551	116	232	16	35	0	0	2	8	25	35	9	13	3	12	8	3	0	0	0	1373	1376
12.00 - 13.00	11	24	0	0	274	274	60	60	529	397	110	220	16	35	0	0	0	0	45	63	9	13	4	16	9	4	0	0	0	1067	1105
13.00 -14.00	12	26	1	1	261	261	56	56	565	424	101	202	12	26	1	4	0	0	52	73	6	8	1	4	13	5	0	0	0	1081	1091
14.00 - 15.00	12	26	3	3	251	251	39	39	329	247	107	214	15	33	3	12	0	0	41	57	2	3	0	0	11	4	0	0	0	813	890
15.00 - 16.00	24	53	15	15	260	260	27	27	479	359	91	182	30	66	12	48	3	12	13	18	35	49	5	20	30	12	0	0	0	1024	1121
16.00 - 17.00	23	51	20	20	323	323	16	16	509	382	125	250	30	66	6	24	0	0	10	14	72	101	9	36	22	9	3	6	0	1168	1297
17.00 - 18.00	18	40	9	9	405	405	24	24	328	246	121	242	23	51	2	8	0	0	29	41	23	32	2	8	27	11	0	0	1	1012	1116
18.00 - 19.00	27	59	16	16	517	517	19	19	380	285	138	276	19	42	2	8	1	4	9	13	70	98	2	8	34	14	0	0	0	1234	1358
19.00 - 20.00	17	37	6	6	402	402	33	33	569	427	210	420	14	31	5	20	0	0	26	36	7	10	1	4	10	4	0	0	0	1300	1430
Total	**273**	**601**	**103**	**103**	**4374**	**4374**	**444**	**444**	**6696**	**5022**	**1615**	**3230**	**247**	**543**	**32**	**128**	**8**	**32**	**373**	**522**	**304**	**426**	**41**	**164**	**270**	**108**	**3**	**6**	**1**	**14784**	15703
	515	1133	135	135	9199	9199	1059	1059	13831	10373.25	2979	5958	388	853.6	61	244	16	64	919	1286.6	455	637	75	300	463	185.2	5	10	5	30105	31437.65

LCV VEHICLES PER DAY 718 P Ns=365x [(1+r) n-1]xAxDxF / r

$N_s = \frac{365.0 \quad 1.1 \quad 792 \quad 0.75 \quad 3.5}{5\%}$ = 16366195.94 = 16.36619594

B-M 15703

Average PCU To & Pro for (14Hrs) 23570.23

PCU /Hr 1683.588

A=P(1+r)^X 792 F= 3.5

BUS 376 P Ns=365x [(1+r) n-1]xAxDxF / r

$N_s = \frac{365.0 \quad 1.1 \quad 415 \quad 0.75 \quad 3.5}{5\%}$ = 8570598.432 = 8.570598432

A=P(1+r)^X 415 F= 3.5

2 Axile 247 P Ns=365x [(1+r) n-1]xAxDxF / r

$N_s = \frac{365.0 \quad 1.1 \quad 272 \quad 0.75 \quad 3.5}{5\%}$ = 5630153.757 = 5.630153757

A=P(1+r)^X 272 F= 3.5

MAV 40 P Ns=365x [(1+r) n-1]xAxDxF / r

$N_s = \frac{365.0 \quad 1.1 \quad 44 \quad 0.75 \quad 1.5}{5\%}$ = 390756.7674 = 0.390756767

A=P(1+r)^X 44.1 F= 1.5

Total 30.9577049

1522.5525

$N_s = \frac{365.0 \quad 1.1 \quad 1523 \quad 0.75 \quad 4.5}{5\%}$ = 40472632.18 = 40.47263218

Classified Traffic Volume of Different Vehicles Combined Traffic (To & Fro)

Maruthi Sevanagara & Banasavadi **(in terms of vehicles)**

Timings	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	GOODs AUTO	Tractor Trailer	Bi-Cycles/Cycle Rickshaw	Hand cart/Animal Drawn	Others	Total Vehicles	Total Vehicles in PCU
06.00-07.00	25	6	65	32	316	74	15	2	0	41	19	7	32	0	0	634	709
07.00-08.00	41	10	208	60	424	99	26	4	0	57	24	8	42	0	0	1003	1120
08.00 - 09.00	41	12	643	69	802	236	33	3	0	58	10	1	68	0	0	1976	2099
09.00 - 10.00	48	6	879	79	1384	240	27	2	0	39	16	4	19	0	0	2743	2756
10.00 - 11.00	50	8	927	106	1722	272	27	0	2	54	23	8	16	0	0	3215	3200
11.00 - 12.00	35	4	820	84	1488	212	24	1	3	71	22	6	12	0	2	2784	2753
12.00 - 13.00	23	1	682	112	1078	200	34	4	0	83	25	9	33	0	1	2285	2345
13.00 -14.00	27	2	607	132	1150	182	24	4	1	82	16	1	25	0	0	2253	2251
14.00 - 15.00	26	6	595	86	678	194	28	4	0	93	2	5	22	0	1	1740	1880
15.00 - 16.00	49	15	567	72	978	162	36	14	3	68	49	6	35	0	0	2054	2168
16.00 - 17.00	41	27	653	73	1038	230	42	10	1	49	84	12	25	3	0	2288	2468
17.00 - 18.00	34	12	783	53	676	222	30	2	3	76	42	3	41	1	1	1979	2155
18.00 - 19.00	41	18	903	45	885	256	24	5	3	80	100	4	72	1	0	2437	2616
19.00 - 20.00	34	8	867	56	1212	400	18	6	0	68	23	1	21	0	0	2714	2918
Total	**515**	**135**	**9199**	**1059**	**13831**	**2979**	**388**	**61**	**16**	**919**	**455**	**75**	**463**	**5**	**5**	**30105**	**31437.65**

Classified Traffic Volume of Different Vehicles Combined Traffic (To & Fro)

Maruthi Sevanagara & Banasavadi **(in terms of PCU)**

Timings	Standard Buses	Mini Buses	Cars/ Jeeps	Pickup Vans/ Maxicabs	Two Wheelers	Passenger Auto	2-Axle Trucks	3-Axle Trucks	MAVs	LCVs	GOODS AUTO	Tractor Trailer	Bi-Cycles/Cycle Rickshaw	Hand cart/Animal Drawn	Others	Total Vehicles	Total Vehicles in PCU
06.00-07.00	55	6	65	32	237	148	33	8	0	57	27	28	13	0	0	0	709
07.00-08.00	90	10	208	60	318	198	57	16	0	80	34	32	17	0	0	0	1120
08.00 - 09.00	90	12	643	69	602	472	73	12	0	81	14	4	27	0	0	0	2099
09.00 - 10.00	106	6	879	79	1038	480	59	8	0	55	22	16	8	0	0	0	2756
10.00 - 11.00	110	8	927	106	1292	544	59	0	8	76	32	32	6	0	0	0	3200
11.00 - 12.00	77	4	820	84	1116	424	53	4	12	99	31	24	5	0	2	0	2753
12.00 - 13.00	51	1	682	112	809	400	75	16	0	116	35	36	13	0	1	0	2345
13.00 - 14.00	59	2	607	132	863	364	53	16	4	115	22	4	10	0	0	0	2251
14.00 - 15.00	57	6	595	86	509	388	62	16	0	130	3	20	9	0	1	0	1880
15.00 - 16.00	108	15	567	72	734	324	79	56	12	95	69	24	14	0	0	0	2168
16.00 - 17.00	90	27	653	73	779	460	92	40	4	69	118	48	10	6	0	0	2468
17.00 - 18.00	75	12	783	53	507	444	66	8	12	106	59	12	16	2	1	0	2155
18.00 - 19.00	90	18	903	45	664	512	53	20	12	112	140	16	29	2	0	0	2616
19.00 - 20.00	75	8	867	56	909	800	40	24	0	95	32	4	8	0	0	0	2918
Total	**1133**	**135**	**9199**	**1059**	**10373.25**	**5958**	**853.6**	**244**	**64**	**1286.6**	**637**	**300**	**185.2**	**10**	**5**	**0**	**31437.65**

Combined Traffic	
Type of Vehicles	**No**
Standard Buses	515
Mini Buses	135
Cars/ Jeeps	9199
Pickup Vans/ Maxicabs	1059
Two Wheelers	13831
Passenger Auto	2979
2-Axle Trucks	388
3-Axle Trucks	61
MAVs	16
LCVs	919
GOODs AUTO	455
Tractor Trailer	75
Bi-Cycles/Cycle Rickshaw	463
Hand cart/Animal Drawn	5
Others	5
Total	**30105**

Maruthi Nagara to Banasavadi	Banasavadi to Maruthi Sevanagara
No	**No**
242	273
32	103
4825	4374
615	444
7135	6696
1364	1615
141	247
29	32
8	8
546	373
151	304
34	41
193	270
2	3
4	1
15321	**14784**

Year	Peak Hour Traffic/ Hour (Existic Traffic)	Peak Hour Traffic generated from Terminal Railway station and surrounding roads	Total Peak Hour Traffic	Remarks
2020-2021	3200	600	**3800**	Within the Rotary Capacity of 5000 PCU/ hour as per IRC-SP-90-2010
2022-2026	3872	600	**4472**	
2026-2031	4538	600	**5138**	
2031-2036	5206	600	**5806**	The large portion of traffic is turning traffic, provision of rotary even outside these limit of 5000 PCU/ hour is justified.
2036-2041	5872	600	**6472**	
2041-2046	6536	600	**7136**	

Analysis for Generated Traffic from Byyappanahalli Terminal Railway Station

	Vehicles		PCU	Peack hour traffic	Remarks
Existing Traffic at IOC Juction ROB					
Traffic at Junctions nearer to IOC junctions on west to east as per COMPREHENSIVE TRAFFIC AND TRANSPORTATION PLAN FOR BANGALORE					
ROB near Yeshwanthpur on Tumkur Rd (NH4)	61218		68620		CTTP for Bengaluru Table 3.2-Page 10 of 29
Tumkur Road	36257		62401		
Bellary Road	15903		27468		
Traffic at Junctions nearer to IOC					
RUB near Benniganahalli on NH – 4	80876		83078	Peack hour traffic	
Benniganahalli (ORR) to PRR along Old Madras Road Expected Maximum Traffic (PHPDT)	10,000				CTTP for Bengaluru 6.7 Page 15 of 17
Old madras road both the directions (Bengaluru to K R Puram& KR puram to Bengaluru)	23347		39999		CTTP for Bengaluru Table 3.3 - Page 12 of 29

The population of the BMA is expected to grow from 61 lakh in 2001 (70 lakh in 2006) to 88 lakh in 2015 and 122 lakh in 2025.

The proposed growth of population and economy is expected to generate high travel demand. As per travel demand modeling exercise, daily travel demand is expected to grow from 57.2 lakh person trips in year 2006 to 127 lakh in year 2025. Thus while population is expected to become 1.74 times in 19 years, the travel demand is likely to become 2.25 times. Similarly inter-city travel demand from/ to Bangalore and through traffic are also expected to more than double of present levels. Transport network will also need to be augmented to cater to the expected travel demand.

CTTP for Bengaluru 6.1.2 Page 1 of 17

Traffic at Railway Station	Proposed No of pair of Trains (to&pro) running / day	Total movement of trains including to&pro/day	No of Bogis/train	% Components		25%		20%	25%	50%	4%	1%	100%
				No of passengers/bogi	Total No of Passengers/day	Percentage of Passengers alaighting and boarding at Baiyappanahalli station including guests	No of vehicles required to carry passengers / day	Two wheelars with two passengers	Three wheelars with 3 Passengers	4 Wheelars with 5 passengers	Bus with 25 passengers	Walk	
1	2	3=2x2	4	5	6=3x4x5	7=6x75%							
	50	100	15	50	75000	18750	No of Passengers IN Number	3750	4687.5	9375	750	187.5	18750
							No of Vehicles IN Number	5343	1875	1562.5	1875	30	5342.5
							% of vehicles	35	29	35	1		100
							multiply to get in PCU	0.75	2	1	3.7		PCU-109-1990
							No of Vehicles in PCU	6517	1406.25	3125	1875	111		PCU
				PCU at Railway station per hour(considering 18hours movement a day)			**362**	A					
		Average PCU from all surrounding roads of Baiyappanahalli Junction/day traffic of 12 hours			56315								
		Assuming 5% of day traffic is expecting as diversion traffic to proposed Elevated Rotary Junction /day traffic of 12hrs			2815.75	PCU /Hour	**235**	B					
						Total PCU/hour Estimated (A+B)	**597**	PCU/HOUR					
						The maximum volume that a traffic rotary can handle efficiently can be taken as 5000 vehicles per hour entering from four intersections. IRC-SP-90-2010						
						Present PCU - 2021	597		PCU/HOUR				
						The additional Traffic generated from fully Baiyappanahalli Terminal Station after fully commenced its functions anddiversion of traffics from surrounding major roads is considered to be as **600 PCU/hour**						

Design Drawings

The initial design for the proposed concept of elevated rotary and proposed ROB at LC 136A is prepared and design drawings also prepared accordingly. These drawings are prepared to provide guidance for detailed design and to prepare detailed cost estimates.

Engineering, procurement and construction (EPC) contracts (a type of turnkey contract) are called for tender, based on this concept of the project. This type of contract is a form of contract for undertaking construction works by the private sector in large-scale and complex infrastructure projects. An EPC contractor will coordinate all detailed design; Ensure procurement and construction work and entire project is completed as required and on time.

The following list of design drawings shown in Table 0-1 below are prepared and submitted as a part of project report as Volume-II.

Table 0-1 List of Drawings

List of Drawings			
Sl. No	**Drawing Title**	**Drawing Number**	**Sheet No**
1	Location Map	NEZPL/DWG/PRJ/204-1	01 of 01
2	Topographical Survey Drawing	NEZPL/DWG/PRJ/204-2	01 of 01
3	Concept and Alignment Drawing	NEZPL/DWG/PRJ/204-3	01 of 01
4	General Alignment Drawings for Elevated Rotary at IOC Junction		
	Plan and Section Details (68.5m Span)	NEZPL/DWG/PRJ/204-4-1	01 of 04
	Plan and Section Details (81.31m Span)	NEZPL/DWG/PRJ/204-4-2	02 of 04
	Plan and Section Details (56.0m Span)	NEZPL/DWG/PRJ/204-4-3	03 of 04
	Plan and Section Details (48.0m Span)	NEZPL/DWG/PRJ/204-4-4	04 of 04
5	General Alignment Drawings for ROB at LC No 136A		
	Plan and Section Details	NEZPL/DWG/PRJ/204-4-5	01 of 02
	Plan and Section Details	NEZPL/DWG/PRJ/204-4-6	02 of 02
6	General Alignment Drawings for Approaches	NEZPL/DWG/PRJ/204-4-4	01 of 01
7	Longitudinal Section & Cross Section of Pedestrian Underpass	NEZPL/DWG/PRJ/204-7	01 of 01
8	Borehole Details	NEZPL/DWG/PRJ/204-4-7	01 of 01
9	Land Acquisition Details	NEZPL/DWG/PRJ/204-5	01 of 01

Project Cost

1.44 Bill of Quantities

Total item wise quantities for Elevated Rotary and Road Over Bridge proposal for the project road are calculated as per the detailed drawings. Separate heads for all different items of work is included in the BOQ. The separate heads considered are detailed below: Civil Works, GST, Provisional cost, and Total project cost.

1.44.1 Civil Works

The project cost under civil works includes everything related to implementation of civil works including roads, bridges, street lighting electrical works, reconstruction of civil related works for defiance land due to land acquisition and environmental works of plantation of trees, rain water harvesting works. Following are the subhead estimates under civil works.

1.44.1.1 Road works

Bill-1 Site Clearance & Dismantling:

The quantity has been worked out for clearing and grubbing, dismantling of existing structures, tree cutting, dismantling of existing pavement and side drains. Clearing and grubbing has been worked out based on the Proposed Typical cross sections.

Bill-2 Earth Work for Excavation and Subgrade:

The quantification of the earth work including cutting, embankment, formation of sub grade etc., are based on the linear measurement as per widening proposal shown in the typical cross sections. All kinds

Bill No - 3 Cement Concrete and Steel works (Drain, Box Culvert)

The quantities related to drainage items of pipe drain, intercepting drains/inspection chambers for utility ducts, Gully trap, etc., are based on the typical cross sections in linear measurements.

Bill- 4 Sub base courses for GSB & WMM

The quantities of sub base courses like Granular sub base and wet mix macadam of pavement crust is based on the typical cross sections showing the thickness and width of various pavement layers. The quantity calculation for sub base has been worked out based on detailed LB&D dimension as per drawings.

Bill - 5 Masonry and Finishing work

The quantification of Guard Rail, Compound wall, Kerb, Footpath, Duct pipe, plastering, painting etc., and pavement is based on the typical cross sections. The quantity calculation for these items has been worked out based on detailed LB&D dimension as per drawings.

Bill- 6 Base and Surface course

The quantification of base and surface course is based on the typical cross sections showing the thickness and width of various pavement layers

Bill-7 Pavement marking and other Appurtenances

Quantity of pavement marking and road appurtenances are estimated based on the standard design of IRC and quantification is based on road drawings and alignment plan.

Bill No - 8 Elevated Rotary

The detailed quantity estimates for different components of elevated rotary and its approaches like foundation, sub-structure, super structure, wearing course of bituminous layers, concrete pavement for approaches, steel stair case at rotary portion for maintenance for these items has been worked out based on detailed LB&D dimension as per drawings.

Bill No -9 Pedestrian Underpasses (PUP)

A separate quantity estimate has been worked out under this bill for structural components of pedestrian under pass at rotary portion proposed under railway lane. The estimate is based on drawings prepared for PUP.

Bill No - 10 Road over Bridge at LC No 136A

The quantity estimate for Road over bridge proposed at LC No 136A has been worked out separately under this head. The estimate is based on drawings prepared for ROB.

Bill No - 11 Reconstruction of Compound wall for Defence at ROB LC136A

Estimates of civil works for defense land are prepared separately. Related works are like construction of compound wall, gate, and security room. The existing compound wall should be demolished and reconstructed on the shifted land as per their request, similar to the earlier structures.

Bill – 12 Re construction of Railway properties viz, STP, Signal room, Go down shed.

1.44.2 The Project Amount Called in the Tender

The total amount estimated under the above bills from Bill-1 to 15 is the amount of civil works indicated as tender amount based on the current schedule of rate in the EOT proposal.

1.44.3 Gross Service Tax (GST)

As per the latest GST rules the GST rate on works contract is 18% as per which the total amount is estimated to be kept as a provisional sum to be paid to the contractor at the time of passing the running bills.

1.44.4 Provisional Sum

As contingency expenditure, a provisional sum is reserved on the basis of percentage of civil construction cost to meet the following objectives.

1. Lump sum BESCOM deposit and service connection supervision charges.
2. Railway charges: Plan and Estimate approval charges @ 2% DG (Directin and General) charges shall be 10% of the estimated cost of Rotary & ROB, if the bridge is constructed by State Govt = Total 12%.
3. Amount reserved for, shifting of electrical cables, waterlines, reconstruction of building of signal maintance room, water treatment plant, Removing and Realigning the Railway lane at Rotary Junction to facilitate for Construction of Pedestrian Underpass for a length of 125m below multiple railway lanes at IOC Junction, etc., inside the railway boundary, as Lump sum provision.
4. Provision for Consultancy service for preparation of Detailed project Report (DPR) including Topographical survey , Road & Structure inventory, Carrying out Geo technical investigation, Traffic Survey, Preparation of Detailed Land Acquisition Plan & Schedule, Joint Measurement Survey (JMS), Preparation of Alignment Registers and documents for Processing TDR as per the

standard of BBMP Revenue Department , preparation of Rotary concept junction and GAD drawing at IOCL Railway crossing & Railway crossing at LC No 136A, Preparation of Tender drawings, Tender document for EPC Contract, etc.,

5. Utility Shifting Charges @ 2.0% on Amount put to Tender including GST (during flyover construction on existing road outside the railway boundary)
6. Provision for Consultancy service for Project Management, Validation of DPR, Construction support, issue of good for construction drawings, @1.5% of amount put to tender.

1.45 Rate Analysis

The unit rates have been arrived by considering the basic rates, lead distances, man power, machinery, and materials. The unit rate for every individual item will be arrived based on PWD common SR Schedule 2023-2024.

An additional percentage for shuttering works as specified in the SR has been considered in the unit rate of the particular concrete items, according to which the total unit rates have been assessed.

Project area of construction of Rotary and ROB shall be executed in the BBMP limits, according to PWD SR 2023-24; the weightages of 10 percentages is added for finished items of BOQ in rate analysis.

Indian Railway Unified Standard Schedule of Rates 2019 is used to estimate the cost of structural steel for steel box girder used in super structure for innovative structure of rotary also for I-Girder for ROB. This SR is also used to derive the data rate.

The Items which are not available in any of state SR, the rate analysis for such items are derived from the available SR items and are shown in rate analysis estimate sheets enclosed in the separate volume.

1.46 Estimated Costs

Costs summary of the proposed Elevated Rotary project is presented in the following table 7.1

The total estimated cost is INR 380.00 Cr. Detailed item-wise estimated bill of quantities and rate analysis is enclosed in separate volume-II as Bill of Quantities along with this report.

Table 0-1 Project Cost Estimate

Abstract of Estimate (KPWD SOR 2023-24)				
Sl. No	**Descriptions of Provisions**		**Amount (Rs.)**	**Percentage (%) of Components**
Civil Work - A				
1	**Road works**		**9,04,04,893**	**2.97**
2	Site Clearance & Dismantling of ROB at IOC Junction	2,50,84,744.61		
3	Earth work	32,48,646.42		
4	Cement Concrete and Steel works (Drain, Box Culvert)	78,21,793.64		
5	Sub Base work (GSB,WMM)	1,79,19,858.75		
6	Masonry and Finsihing work	45,05,122.60		
7	Base and Surface work (Bituminious work)	1,58,70,954.00		
8	Road marking and Appartunanace (Thermoplastic,Studs,letter paint,sign boards,)	1,59,53,773.04		
9	**Elevated Rotary and including construction of integrated flyover from ITC factory junction to Byyappanahalli Junction**		**2,47,37,64,328**	**81.36**
	Rotary & Connected Ramps Foundation	29,76,89,366.41		
	-DO- Sub Structure	43,06,96,990.51		
	-do- Super Structure	1,63,73,60,026.76		
	-do- RE wall approaches	8,53,46,170.79		
	-do- Bituminous AC layer on Bridge portions	2,20,50,273.30		
	-do- Construction of STEEL Staircase for Maintenance for Rotary Steel box Girder- 1 Nos	6,21,500.00		
10	**Pedestrian Underpass (PUP)**		**6,42,61,688**	**2.11**
11	**Road Over Bridge at LC No 136A**		**29,56,79,750.27**	**9.72**
	Pier and Abutment Foundation	3,09,70,057.66		
	-DO- Sub Structure	3,59,01,223.47		
	-do- Super Structure	20,26,80,388.10		
	-do- RE wall approaches	2,32,75,166.13		
	-do- Bituminous AC layer on Bridge portions	22,31,414.90		
	-do- Construction of STEEL Staircase for Maintenance for Rotary Steel box Girder- 1 Nos	6,21,500.00		
12	Reconstruction of Compound wall for Defence at ROB LC136A, at Railway property near Railway protection force station, after acquisition and dismantling compound wall at few locations		**1,30,36,168.30**	**0.43**
13	Re constrction of Railway Properties, viz, STP, Signal room,Gowden Shead,		**1,59,22,400.00**	**0.52**
14	Electrical and street light works		**3,39,58,740.00**	**1.12**
15	Unit rate of SR for all the items does not include the detailed Structural designs including Structural drawings (for Bridges) charges, as the project is not Item rate, where depatment has to issue the Structural design drawing. Since Consissanery has to design on his own and get approval for Structural portions occupaied in Railway portions from National institue of IISc/IIT/as approved authority for design by Railways on behalf of Authority , 0.5% on COST OF Bill No-8,9,&10 (Elevated rotary+PUP+ROB) is reserved as per SR 2023-24 Vol-1 Addendum-IV at Sl No 1 of Page 117 only for design . Authority will separately reemberse the National Institute fee to tenderer on payment receipt.		**1,41,68,528.83**	**0.47**
16	Maintenance Charges @ 1.5% on estimated amount of Elevated rotary & ROB		**4,15,41,661.17**	**1.37**

Sl. No	Descriptions of Provisions		Amount (Rs.)	Percentage (%) of Components
17	Deduct for credit for Dismantled Materials , assessment value for segregated reused material is arrived based on basic materials cost shown in the SR 2023-24		**-21,36,047.73**	**-0.07**
18	**Amount Put to Tender of civil works**		**3,04,06,02,109**	**100.000**
19	Add GST 18 %		54,73,08,380	
20	**Sub Total Cost - Civil work+GST**		**3,58,79,10,489**	
21	**Provisional Cost - B**			
22	Railway charges: Plan and Estimate approval charges @ 2% DG (Directior and General) charges shall be 6% of the estimated cost of Rotary & ROB, if the bridge is constructed by State Govt = Total 8%. Cost of Rotary structure inside Railway boundary (Area of Railway portion Steel Box Girder 3,825sqmt @ 1,53,131/ Sqmt is Rs 58,57,24,840/- ROB at LC 136 A is area of Railway span 805sqmt @ Rs 1,18,335/- /sqmt is Rs 9,52,59,815/- including Foundation to Super structures)=Grand Total Rs68,09,84,65 X8% =5,44,78,772/-		5,44,78,772	
23	Provision for Consultancy service for preparation of Detailed project Report (DPR) including Topographical survey , Road & Structure inventary, Carrying out Geo technical investigation, Traffic Survey, Preparation of Detailed Land Acquisition Plan & Schedule, preparation of Rotary concept junction and GAD drawing at IOCL Railway crossing & Railway crossing at LC No 136A, Preparation of Tender drawings, Tender document for EPC Contract, etc., @ 0.4% on amount put to tender		1,06,42,107	
24	Provision for Consultancy service for Project Management, Validation of DPR, Construction support, issue of good for constuction drawings, @1.0% of amount put to tender		3,04,06,021	
25	Provision for Thirdparty charges for proof/verification of design for Railway portion structures in Rotary and ROB through Tenderer in National institute like NIT/IIT/IISc @ 0.5% on amount put to tender (as per PWD SR V-3 Addendum-IV Table at Sl No 5 page 117		1,52,03,011	
26	Utility Shifting Charges about @3.50% on Amount put to Tender (during flyover construction on existing road outside the railway boundary) as per damand letter od BWSS&SB, BESCOM		10,13,59,600	
27	**Provisional cost - Sub Total-B**		**21,20,89,511**	
28	**Grand total of the project C =** (Sub Total A+B)		**3,80,00,00,000**	
Rupees in Words : Three Hundred Eighty Crores Only				

1.46.1 Components of Key Items

The following key items of work are estimated to be Rs. 30406.02 Lakhs The quantity of main items, its cost and its components in the total cost are shown in Table 0-2 below.

Table 0-2 Quantity and Cost components of the Key Items

Sl. No	Description	Unit	Qnty	Amount(Rs)	% of Components
1	Earth work excavation/Embankment/Constuction of Median/Filling avilable earh	M^3	27530.67	4481007.17	0.15
2	Concrete works of all Grades including PSC	M^3	65181	1274938776	41.93
3	Hysd Steel	Tonne	6580	627729461	20.64
4	Structural steel USED FOR Fabrication of Composite Steel Girders	Tonne	2112.98431	438305143.67	14.42
5	Ht strands	Tonne	892	0	0.00
6	GSB/WMM	M^3	8179.75	22662194.70	0.75
7	DBM	M^3	716.25	7695963	0.25
8	BC	M^3	2468.6	30806893.7	1.01
9	Miscelleneous items of works			633982671	20.85
10	Grand Total of the Project-A			3040602109	100.00
11	Other provisions like GST/Railway charges/DPR/PMC/Land cost-etc.,			759397891	
12	Grand Total of the Project-C=A+B			**3800000000**	

1.47 Compensatory afforestation

According to the NGT and the Ministry of Environment, it is proposed to plant the trees at a ratio of 1:10, i.e. planting ten trees against losing one tree.

In this project, there is no possibility of felling of trees as these will not hinder the implementation of the project but it is planned to plant around 200 to 225 fresh plantations wherever possible.

An amount of 7.83 lacks towards plantation is estimated in the detailed cost.

1.48 Re-usage of released materials

Various items of materials dismantled from existing RCC flyover, drain, footpaths, curbs and covered drains, etc., are proposed for to maintain a proper account and are proposed for recycled or auctioned based on quality of the items observed. The amount of material intended to be recycled is listed in Table 0-3 Schedule of Credit for Dismantled materials below with a salvage value of Rs 8,88,153 which is savings to BBMP.

In this report it is proposed that all the dismantled materials should be disposed away from the site other than items mentioned in the following Schedule of Credit having salvage value shall be handed over to department at BBMP store. However, the demolished materials which have no salvage value as decided

by the department engineers, rubbish shall be filled in low lying areas or disposed off at the site as directed by Engineer in charge.

BBMP have been requested to put a following specific condition in the Tender document for re-usage materials from dismantled items that,

1. All salvage materials as listed in the following Schedule of Credit shall become the property of contractor (when the work is awarded on tender basis) and salvage is already affected as deduction in the total project cost.

2. The materials enumerated below shall become the property of the contractor. These materials shall be allowed to be removed from site as the salvage value is already adjusted in the project cost.

3. The rate fixed by department is firm. The contractor shall have no claim whatsoever against the department if actual rate turns out to be different from the rates inserted by the department.

4. The amount of credit in respect of items shown below shall be provisional and actual quantities shall be measured in MB against each item shall be considered for arriving total amount of credit.

5. Items if any obtained from demolition/dismantling but not listed below shall become the property of government and accordingly shall be handed over to BBMP without any extra payment.

Table 0-3 Schedule of Credit for Dismantled materials

Sl No / Item No	Items	Unit	Quantity in BOQ	Quantity of Re usage materials Can seggregated/Unit	Current Material Rate as per SOR 23-24 Material	Salvage rate considered/Unit	Amount(Rs)	Remarks
1	2	3	4	5	6	7	8=5x7	9
1	Telephone/ Name board/signal post/Electrical poles	Nos	39	0		25	0	All Electri poles are very old and entilre poles to be handed over to BBMP/BESCOM Electrical maintanance department.
3	Brick/Size Stones	Cum	1440	432	5999/cum	200/cum	86400	30% can be re used
5	RCC with Hysd steel	Cum	11354.8	Hysed steel 15kg/cum=152393.96kg (152.393MT) for 10159.6 cum	Rs60170/tonne V-1 SR 2023-24 PAGE A-40	Rs12034/tonne (20% of SR value is considered)	2049648	Scrape material =152.393x12034
						Total Salvage	2136048	

1.49 Commitment of Work by BBMP / Govt. with Defence wing

As per the GOI, Ministry of Defense, Letter No 970/US (L)D9 Lands/2016 dated 26/2/2019 BBMP shall construct/Re construct /Shift all assets and services located on Defense land proposed to be transferred at the cost of BBMP prior to demolition/removal of existing assets. Accordingly, BBMP has to re construct the compound wall which now exists in defense land which is required to be shifted to new boundary after defense land is acquired for construction of approaches to ROB at LC 136A. Following details to include in the project cost.

a. Standard Design of Compound wall as approved by the Defense.

b. List of assets to be re located within the land which is under the control of Defense.

According to the detailed estimates for re locating/re construction of assets of Defense is estimated to Rs. 5.45 Cr which is included in the Project cost of Rs. 380.00 Cr. Expenditure towards Defense works is summarized below in Table 0-4.

Table 0-4 Summary of Defence work Cost estimate

Sl. No	Item description	Amount in Rs
1	Reconstruction of Compound wall for Defense at ROB LC136A, at Railway property near Railway protection force station, and at Private properties after acquisition and dismantling compound wall at few locations	1,30,36,168.30
2	GST about 18%	23,46,510.29
	Total	**1,53,82,678.59**

1.50 Commitment of Work by BBMP / Govt. with Railway department

As BBMP is taking land from Railways to construct the Elevated Rotary and ROB in lieu of this assured the Railways to construct/Re construct /Shift all assets and services located on acquired Railway land proposed to be transferred at the cost of BBMP prior to demolition/removal of existing assets.

Accordingly, BBMP has to re construct the compound wall which now exists in Railway land which is required to be shifted to new boundary after railway land is acquired for construction of approaches to Elevated Rotary and ROB at LC 136A. Following details to include in the project cost.

c. Standard Design of Buildings/Godown/Control Room
as approved by the Railways.

d. List of assets to be re located within the land which is under the control of Railways like Septic Tank.

According to the detailed estimates for re locating/re construction of assets of Defense is estimated to Rs. 6.41 Cr which is included in the Project cost of Rs. 380.00 Cr. Expenditure towards Defense works is summarized below in Table 0-5

Table 0-5 Summary of Railway work Cost estimate

Sl. No	Item description	Amount in Rs
1	Reconstruction of Sewerage Treatment Plant and Godown inside the railway property	1,59,22,400
2	GST about 18%	28,66,032
	Total	**1,87,88,432**

Site Inspections and Communication with Stakeholders

1.51 Purpose for Interactive

After assigning the task of preparing a detailed feasibility project report to the consultant, the consultant has started the work and studied the land required for acquisition, utility service lines and their relocation requirement in detail, especially during reconnaissance survey.

The innovative concept design for IOC Junction has been prepared in consultation with BBMP engineers and is the most expensive structure and most important railway junction and as a prestigious work for BBMP. BBMP organized an on-site review meeting with Secretary level officials to seek in-principle approval from the government and other relevant stakeholders like K-Ride, South Western Railway, high-level officers. Site inspection observation proceedings and other activities are described below.

Most of the land for acquisition required for the improvement of the project has been put up along with railway and defense land. Relocation/reconstruction of many existing structures within the land requires discussions with landowners regarding relocation/reconstruction methods.

Initially discussed with BBMP officials, coordinated with various concerned authorities on behalf of BBMP to simplify the procedure and reduce the delay in finalizing the land acquisition process.

While finalizing the project report, the total land to be acquired by the Department of Railways, Defense and private land is assessed by conducting a land project schedule survey as per standard procedure and land acquisition cost for acquisition of private land and building cost is included in the total project cost.

Apart from the above, improvement proposals were discussed in detail with officials of Government, local representatives of the Legislative Assembly, local public, the Suburban Railway Department, South Western Railway and the Defense Department.

The following sections describe the coordination of various departments related to land acquisition relocation of service lines / structures.

1.52 Technical Review Committee Meeting

The Feasibility Proposal of Elevated Rotary Concept was reviewed by the Technical Review Committee constituted by BBMP headed by Chairman and Committee Members on 13/08/2021 in the evening 2.30 PM at BBMP office. The committee reviewed the concept and general technical feasibility of the project. The copy of the TRC Meeting notice is appended as Annexure 8.1 in the report. The consultant presented the following technical presentation to the committee.

1. Described the existing ground situation.
2. Current traffic condition and its circulation are explained.
3. Elevated rotary and traffic circulation were described for all possible directions.
4. Design concept of rotary and ROB in LC 136A is described as per IRC standard.
5. Geotechnical condition of the project site is described.
6. Structure type and selection of structure type are discussed.
7. Drainage was also discussed in the meeting.

The committee also suggested estimating the future traffic considering the full development of the new terminal station. The committee has proposed to provide pedestrian underpass as per requirement of Railways and designed as per IRC norms.

The committee has given in-principle approval to the concept of elevated rotary scheme.

1.53 Coordination with various Departments

Consultants are associated with the following departments as shown in the Table 0-1 **Department Details of Coordination with State officers**below for the purpose of approving the innovative design of railway crossing and leave their land for improvement proposal.The photos of the respective department officers captured while their vist to site for inspection are also annexed in the following.

Table 0-1 Department Details of Coordination with State officers

Sl No	Department Officers	Department	Purpose	Date of Interaction
1	Chief Secretary, Additional chief secretary (DEVELOPMENT COMMISIONER), ACS Urban department,	State Government of Karnataka	Onsite inspection and to know the suitability of the conceptual plan for the innovative design at the railway junction.	09/02/2021
2	Administrator, Chief Commissioner, Joint Commissioner East, Chief Engineer (RI),	BBMP		
3	Managing Director	BMRCL		
4	Managing Director	K-Ride		
5	Chief Engineer	South western Railway		
6	Founder Chairman Executive Director	NEZ Infratech Private Limited		

The photos captured during the state officers visited at site are shown in the Figure 0-1,Figure 0-2,and Table 0-3 **Department Details of Coordination with South-Western Railway officers** below.

	
The Chief Secretary, BBMP Administrator, Commissioner discussion on Concept Plan	**The Chief Secretary, ACS, MD Metro**
	
Inspection at ROB at LC136A	Inspection at proposed Rotary Location existing Level crossing
	

Figure 0-1 Photos of State Officers Visited at Site

Table 0-2 Department Details of Coordination with K-Ride officers

Sl. No	Department Officers	Department	Purpose	Date of Interaction
1	General Manager	K-Ride	NEZ has presented the concept of Elevated Rotary proposal incorporating the future proposal of K-Ride railway line with existing line.	2/08/2021
2	General Manager /Civil/P&D	K-Ride	Accorded approval of conceptual plan of Rotary	K-Ride letter No-K-RIDE/Projects/BSRP/2021/BBMP/002 dated 18/11/2021
Correspondences letters with K-Ride is enclosed at the end of this chapter.				

Table 0-3 Department Details of Coordination with South-Western Railway officers

Sl. No	Department Officers	Department	Purpose	Date of Interaction
1	a. Senior Divisional Engineer- East, b. Divisional Engineer-South c. Assistant Divisional Engineer d. Senior Section Engineer e. SSE Land Railways	South-western Railways	Inspection of Railway boundary, Rotary pier locations at railway lane, etc.,	f. 06/01/2022, g. 10/1/2022, h. 10/5/2022 i. 26/01/2022, j. 12/02/2022, k. 13/5/2022 l. 13/6/2022
	Executive Engineer -East Assistant Engineer	BBMP HO	To show the locations of Rotary pillars	
	Founder Chairman Executive Director	NEZ Infratech Private Limited		
2	In Principle approval for conceptual plan for Elevated Rotary has been accorded by Sr. Divisional Engineer/Co-ordination	South-western Railway	South western Railway Letter No B/W/352/BBMP/Rotary/ROB/MS Nagar/SMVB/BYPL/537A/SA-SBC/171 dated 14/09/2022	
All Correspondences with Southwestern Railway department are enclosed at the end of this chapter				

Site inspection on 6 /1/2022

Site inspection on 10 /1/2022

Site inspection on 10 /5/2022

Site inspection on 12 /2/2022

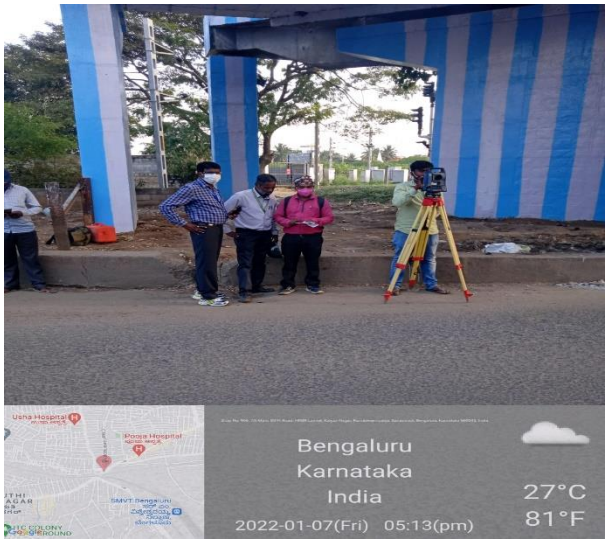
Site inspection on 13/05/2022

Site inspection on 13/06/2022

Figure 0-2 South Western Railway officers Site Inspection

1.54 Marking of Rotary Pier Locations

Consultants have identified all pier locations at the junction of railway crossings to show the Railway Departments that the designs of piers are outside the boundary of the future railway lane and do not encroach on the railway boundary. The photos of locations of piers marking at site are shown in Figure 0-3 Survey for Fixing the Pier Locations at Elevated Rotary Junction below.


Bengaluru
Karnataka
India
27°C
81°F
2022-01-07(Fri) 05:13(pm)


Bengaluru
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India
27°C
81°F
2022-01-07(Fri) 04:26(pm)


Bengaluru
Karnataka
India
27°C
81°F
2022-01-07(Fri) 03:57(pm)

Figure 0-3 Survey for Fixing the Pier Locations at Elevated Rotary Junction

Departmental Correspondence Records

The correspondence letters/email addressed by the following departments pertained to proposal of elevated rotary project is appended as Annexure-9.

1. BBMP
2. K-Ride
3. South Western-Railways
4. Publicity of Elevated Rotary Published in leading Newspaper.

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

ವಿಷಯ: ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು ಮೇಲ್ಸೇತುವೆ ನಿರ್ಮಾಣ ಕಾಮಗಾರಿಗೆ ಸರ್ಕಾರದ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಓದಲಾಗಿದೆ:
1. 2023-24ನೇ ಸಾಲಿನ ಸರ್ಕಾರದ ಆಯವ್ಯಯ ಘೋಷಣೆ.
2. ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ(ರ.ಮೂ.ಸೌ)/105/2021-22, ದಿನಾಂಕ: 08-09-2021.
3. ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ/ಪಿಆರ್/312/2022-23, ದಿನಾಂಕ: 14-12-2022.
4. ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ/ಪಿಆರ್/193/2023-24, ದಿನಾಂಕ: 08-11-2023.

* * * * *

ಪ್ರಸ್ತಾವನೆ:

ಮೇಲೆ ಕ್ರಮ ಸಂಖ್ಯೆ: (1) ರಲ್ಲಿ ಓದಲಾದ ಆಯವ್ಯಯ 2023-24ರ ಕಂಡಿಕೆ: 219 ರಲ್ಲಿ ಈ ಕೆಳಗಿನಂತೆ ಘೋಷಿಸಲಾಗಿದೆ:

"ನೈರುತ್ಯ ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನಿರ್ಮಿಸಿರುವ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ಟರ್ಮಿನಲ್ ಅನ್ನು ತಲುಪಲು ಸರಿಯಾದ ಮೆಟ್ರೋ ಮತ್ತು ರಸ್ತೆಗಳ ಸಂಪರ್ಕ ಇಲ್ಲದೇ ಇರುವುದರಿಂದ ಲಕ್ನಾಂತರ ಪ್ರಯಾಣಿಕರಿಗೆ ಅನಾನುಕೂಲ ಹಾಗೂ ಸಂಚಾರ ದಟ್ಟಣೆಗೆ ಕಾರಣವಾಗಿದೆ. ಈ ಸಮಸ್ಯೆಯ ನಿವಾರಣೆಗೆ 263 ಕೋಟಿ ರೂ.ಗಳ ವೆಚ್ಚದಲ್ಲಿ ಒಂದು ಹೊಸ ಮೇಲ್ಸೇತುವೆಯನ್ನು ನಿರ್ಮಿಸಲಾಗುವುದು."

ಮೇಲೆ ಕ್ರಮ ಸಂಖ್ಯೆ: (2), (3) ಮತ್ತು (4) ರಲ್ಲಿ ಓದಲಾದ ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ರವರ ಪ್ರಸ್ತಾವನೆಗಳಲ್ಲಿ, ಸರ್ವಜ್ಞನಗರ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ನೂತನವಾಗಿ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಆದ 'ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್' ಅನ್ನು ನಿರ್ಮಿಸಿದ್ದು, ಪ್ರಸ್ತುತ ಕಾರ್ಯಗತವಾಗಿರುತ್ತದೆ. ಸದರಿ ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶವು ಅತ್ಯಂತ ಹಿಂದುಳಿದ ಪ್ರದೇಶವಾಗಿದ್ದು, ಈ ಹಿಂದೆ ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನು ಸರಕು ಸಾಗಾಣಿಕೆಗೆ ಮಾತ್ರ ಉಪಯೋಗಿಸಲಾಗುತ್ತಿತ್ತು. ಈಗ ಸದರಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನು ಮೇಲ್ದರ್ಜೆಗೆ ಏರಿಸಿ ಹವಾ ನಿಯಂತ್ರಿತ ಪ್ರಯಾಣಿಕರ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನಾಗಿ ಪರಿವರ್ತಿಸಲಾಗಿರುತ್ತದೆ.

ಸದರಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣಕ್ಕೆ ಹಾಲಿ ಇರುವ ಸುತ್ತಮುತ್ತಲಿನ ರಸ್ತೆಗಳು ಅತ್ಯಂತ ಕಿರಿದಾಗಿದ್ದು ವಾಹನ ದಟ್ಟಣೆಯಿಂದ ಕೂಡಿದ್ದು ತುಂಬಾ ಸಮಸ್ಯೆ ಉಂಟಾಗುತ್ತಿರುವುದು

ಕಂಡುಬಂದಿರುತ್ತದೆ. ಇದಕ್ಕೆ ಪರ್ಯಾಯ ಮಾರ್ಗವಾಗಿ ಹಾಗೂ 3ನೇ ರೈಲ್ವೇ ಟರ್ಮಿನಲ್ ಸುತ್ತಮುತ್ತ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ನಿಯಂತ್ರಿಸಿ ಸರಾಗವಾಗಿ ತಲುಪಲು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ವತಿಯಿಂದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಕರ್ನಾಟಕ ಸರ್ಕಾರ 2023-24ನೇ ಸಾಲಿನಲ್ಲಿ ರೂ.263.00 ಕೋಟಿಗಳ ಅನುದಾನವನ್ನು ಒದಗಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಕಾಮಗಾರಿಗೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ತಯಾರಿಸಲಾಗಿದ್ದು, ಸಂಕ್ಷಿಪ್ತ ಮಾಹಿತಿಯನ್ನು ಈ ಕೆಳಗಿನಂತೆ ವಿವರಿಸಲಾಗಿದೆ.

Sl. No.	Description	Amount in Rs.
1	Construction of Elevated Rotary	148,67,15,501
2	Construction of Subways	3,36,56,118
3	Construction of ROB at LC 136A	32,34,62,199
4	Reconstruction of Defence & Railways Properties	6,85,33,974
5	Construction of at Grade roads	15,27,25,380
6	**Amount Put to Tender(1to5)**	**206,50,93,172**
7	GST 18%	37,17,16,771
8	Supervision Charges by Railways pertaining to Rotary and Railway Over Bridge	8,00,00,000
9	Utility Shifting/Electrical/Water Supply line and Sanitary line	6,00,00,000
10	DPR & PMC Charges (1+1.5%)=2.5%	5,16,27,330
11	Miscellaneous and Rounding off Charges	15,62,726.74
	Total Project Cost	**263,00,00,000**

ಈ ಯೋಜನೆಗೆ Sub Urban Railway Authority (K-Ride) ಮತ್ತು South Western Railway (SWR) ಸಂಸ್ಥೆಗಳಿಂದ ನಿರಾಕ್ಷೇಪಣಾ ಪತ್ರ ಮತ್ತು ಸಮ್ಮತವನ್ನು ವ್ಯಕ್ತಪಡಿಸುವ ಪತ್ರವನ್ನು ಪಡೆಯಲಾಗಿರುತ್ತದೆ.

ಸರ್ಕಾರದಿಂದ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಪಡೆದ ನಂತರ ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಅಇ 522 ಪೆಚ್ಚ-12/2021, ದಿನಾಂಕ: 13-12-2021 ಮತ್ತು ದಿನಾಂಕ: 07-05-2022 ರನ್ವಯ ರೂ.50.00 ಕೋಟಿ ಮತ್ತು ಮೇಲ್ಪಟ್ಟು ಯೋಜನೆಗಳಿಗೆ ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿಯ ಮುಂದೆ ಮಂಡಿಸಿ, ಯೋಜನೆಯ ಅಂದಾಜು ಪಟ್ಟಿ ಮತ್ತು ಟೆಂಡರ್ ದಸ್ತಾವೇಜುಗಳಿಗೆ ಅನುಮೋದನೆ / ತೀರುವಳಿ ಪಡೆಯಲು ಕ್ರಮವಹಿಸಿ ಯೋಜನೆಯನ್ನು

Design Build Transfer and Lumpsum - Turnkey - No Variation - No Escalation ಮಾದರಿಯಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ. ಮುಂದುವರೆದು, ದಿನಾಂಕ: 27-06-2023 ರಂದು DULT ಸಂಸ್ಥೆಯವರು ಯೋಜನಾ ಸಮಾಲೋಚಕರಾದ ಮೆ|| ಎನ್‌ಇಜ್ಹೆಡ್ ಇನ್ಫ್ರಾಟೆಕ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್‌ರವರನ್ನು ಸಂಪರ್ಕಿಸಿ ಮಾಡಿದ ಶಿಫಾರಸ್ಸಿನ ಅನುಸಾರ K-Ride ಸಂಸ್ಥೆಯವರ ಕೋರಿಕೆಯಂತೆ ಕೆಲವೊಂದು ಬದಲಾವಣೆಗಳನ್ನು ಸದರಿ ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ಅಳವಡಿಸಿ ದರಪಟ್ಟಿಯೊಂದಿಗೆ ವಿಸ್ತೃತ ಯೋಜನಾ ವರದಿ ತಯಾರಿಸಲಾಗಿರುತ್ತದೆ.

ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ: 11-07-2023 ರಂದು ನಡೆದ ಉನ್ನತ ಮಟ್ಟದ ಸಭೆಯಲ್ಲಿ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ಗಮನದಲ್ಲಿರಿಸಿ ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ರೋಟರಿ ಮೇಲ್ಸೇತುವೆಯಿಂದ ಮಾರುತಿ ಸೇವಾನಗರದ ಮುಖ್ಯರಸ್ತೆಯ ಕಡೆಗೆ ಮೇಲ್ಸೇತುವೆಯನ್ನು ಮುಕುಂದ ಥಿಯೇಟರ್ ಬಳಿ ಇಳಿಸುವ ಬದಲು ಐ.ಟಿ.ಸಿ. ಲಿಮಿಟೆಡ್ ಕಂಪೆನಿಯವರೆಗೆ ಅಂದರೆ ಸುಮಾರು 1.50 ಕಿ.ಮೀ. ಉದ್ದದಷ್ಟು ವಿಸ್ತರಿಸಲು ತಾಂತ್ರಿಕವಾಗಿ ಪರಿಶೀಲಿಸಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮರು ಸಲ್ಲಿಸಲು ನಿರ್ದೇಶಿಸಲಾಗಿರುತ್ತದೆ.

ದಿನಾಂಕ: 26-07-2023 ರಂದು ಮಾನ್ಯ ಉಪ ಮುಖ್ಯಮಂತ್ರಿಯವರು, ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರು (ಸರ್ವಜ್ಞನಗರದ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರದ ಶಾಸಕರು) ಮತ್ತು ಇನ್ನಿತರ ಇಲಾಖೆಯ ಮುಖ್ಯಸ್ಥರೊಂದಿಗೆ Elevated Rotary Flyover at Baiyyappanahalli ಯ ವಿವರವಾದ ಸ್ಥಳ ಪರಿವೀಕ್ಷಣೆ ನಡೆಸಲಾಗಿದೆ. ದಿನಾಂಕ: 22-09-2023 ರಂದು K-RIDE ತಾಂತ್ರಿಕ ಮುಖ್ಯಸ್ಥರೊಂದಿಗೆ ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತಾವನೆ ಮತ್ತು ಅಗತ್ಯತೆಯ ಕುರಿತು ವಿವರವಾಗಿ ಚರ್ಚಿಸಲಾಗಿರುತ್ತದೆ.

ಮೆ|| ಎನ್‌ಇಜ್ಹೆಡ್ ಇನ್ಫ್ರಾಟೆಕ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್ ರವರು ಪ್ರಮುಖ ಮಾರ್ಪಾಡುಗಳನ್ನು ವಿವರವಾದ ಯೋಜನಾ ವರದಿಯಲ್ಲಿ ಅಳವಡಿಸಿ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು 2021-22ರ ಏಕರೂಪ ದರಪಟ್ಟಿ ಹಾಗೂ ದಿನಾಂಕ: 04-01-2023ರ ಚಾಲ್ತಿ ದರಪಟ್ಟಿಯಂತೆ ತಯಾರಿಸಿದ್ದು, ಈ ಯೋಜನೆಯಲ್ಲಿ ಮೇಲೆ ನೀಡಿರುವ ಯೋಜನೆಯ ಜೊತೆಗೆ 1.50 ಕಿ.ಮೀ ಉದ್ದದ ಮೇಲ್ಸೇತುವೆಯನ್ನು ಒಳಗೊಂಡು ಯೋಜನೆಯನ್ನು ಸಂಯೋಜಿಸಲಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ, ಸದರಿ ವೆಚ್ಚವು ಹೆಚ್ಚಾಗಿ ಸದರಿ ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" + "Construction of Elevated Rotary and including Construction of Integrated Flyover from ITC Factory Junction to Byyappanahalli Junction (1.50Km)" ಯೋಜನಾ ವೆಚ್ಚವು ರೂ.380.00 ಕೋಟಿಗಳಾಗಿರುತ್ತದೆ. ಸಂಕ್ಷಿಪ್ತ ಮಾಹಿತಿಯನ್ನು ಈ ಕೆಳಗಿನಂತೆ ನೀಡಿರುತ್ತಾರೆ.

Sl. No.	Description	Amount in Rs.
1	Construction of Elevated Rotary and including Construction of integrated flyover from ITC factory junction to Byyappanahalli junction (1.50Km)	235,03,34,568.00

2	Construction of Subways	3,36,56,118.00
3	Construction of ROB at LC 136A	32,34,62,199.00
4	Reconstruction of Defence & Railways Properties	6,85,33,974.00
5	Construction of at Grade roads	21,18,45,682.00
6	**Amount Put to Tender(1to5)**	**298,78,32,541.00**
7	GST 18%	53,78,09,857.00
8	Supervision Charges by Railways pertaining to Rotary and Railway Over Bridge	8,00,00,000.00
9	Utility Shifting/Electrical/Water Supply line and Sanitary line	11,90,00,000.00
10	DPR & PMC Charges (1+1.5%)=2.5%	7,46,95,813.00
11	Miscellaneous and Rounding off Charges	66,17,89.00
	Total Project Cost	**380,00,00,000.00**

ಸದರಿ ಯೋಜನೆಯು ಹೆಚ್ಚಿನ ಉಪಯೋಗಕಾರಿಯಾಗಿ ಕಂಡುಬಂದಿರುತ್ತದೆ ಹಾಗೂ ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರು ಮತ್ತು ಸ್ಥಳೀಯ ಶಾಸಕರು ಸಹ ಸಾರ್ವಜನಿಕ ಹಿತದೃಷ್ಟಿಯಿಂದ ಸದರಿ ಯೋಜನೆಗೆ ಒತ್ತು ನೀಡಿರುತ್ತಾರೆ.

ಈ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಪ್ರಸ್ತುತ 2023-24ನೇ ಸಾಲಿನಲ್ಲಿ ರೂ.263.00 ಕೋಟಿಗಳು ಲಭ್ಯವಿದ್ದು 2024-25 ರಲ್ಲಿ ರೂ.117.00 ಕೋಟಿಗಳ ಹೆಚ್ಚುವರಿ ಅನುದಾನವನ್ನು ಒದಗಿಸಿಕೊಂಡು ಕಾಮಗಾರಿಯನ್ನು ನಿರ್ವಹಿಸಬಹುದಾಗಿರುತ್ತದೆ.

ಸದರಿ ಯೋಜನೆಗೆ ಕಮ್ಮನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆ, ಮಾರುತಿ ಸೇವಾನಗರ, ಬೈಯಪ್ಪನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆ ಮತ್ತು ಬಾಣಸವಾಡಿ ಮುಖ್ಯರಸ್ತೆಗಳಲ್ಲಿ ಭೂ-ಸ್ವಾಧೀನಪಡಿಸಿಕೊಳ್ಳಬೇಕಾಗಿದ್ದು, ಸದರಿ ಭೂ-ಸ್ವಾಧೀನ ವೆಚ್ಚವು ಸುಮಾರು ರೂ.68.00 ಕೋಟಿಗಳೆಂದು ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ರೂ.68.00 ಕೋಟಿಗಳ ಭೂ-ಸ್ವಾಧೀನ ವೆಚ್ಚವನ್ನು ಟಿ.ಡಿ.ಆರ್ ಯೋಜನೆ ಅಡಿಯಲ್ಲಿ ವಶಪಡಿಸಿಕೊಳ್ಳಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ. ಇದರೊಂದಿಗೆ ಸದರಿ ಯೋಜನೆಯನ್ನು "ನೂತನ ಪರಿಕಲ್ಪನೆಯ" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಹಾಗೂ ಕಾಮಗಾರಿಯ ಸ್ವರೂಪ, ಸಂಕೀರ್ಣತೆ, ಕಾಲಾವಧಿ, ವಿನ್ಯಾಸದ ಸಾಮರ್ಥ್ಯ, ತಾಂತ್ರಿಕ ವೈಶಿಷ್ಟ್ಯತೆ ಮತ್ತು ಇನ್ನಿತರ ಅಂಶಗಳನ್ನು ಪರಿಗಣಿಸಿ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Transfer and Lumpsum-Turnkey-No Variation–No Escalation ಮಾದರಿಯಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ. ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ದೇಶದ ಪ್ರತಿಷ್ಠಿತ ಸಂಸ್ಥೆಗಳಾದ ಭಾರತೀಯ ತಂತ್ರಜ್ಞಾನ ಸಂಸ್ಥೆ ಅಥವಾ ಭಾರತೀಯ ವಿಜ್ಞಾನ ಸಂಸ್ಥೆಯವರಿಂದ ಅಧಿಕೃತವಾಗಿ ದೃಢೀಕರಿಸಿ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ / ರೈಲ್ವೆ ಇಲಾಖೆ / K-Ride ಸಂಸ್ಥೆಯವರಿಂದ ಅನುಮೋದನೆ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸರ್ಕಾರದ ವತಿಯಿಂದ ಮೇಲೆ ವಿವರಿಸಿರುವ

ಪ್ರಸ್ತಾವನೆಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆಯನ್ನು ಹಾಗೂ ಕೆ.ಟಿ.ಪಿ.ಪಿ ಮುಖಾಂತರ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ನೀಡುವಂತೆ ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ರವರು ಕೋರಿರುತ್ತಾರೆ.

ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬಿಬಿಎಂಪಿ ರವರ ಪ್ರಸ್ತಾವನೆಗಳನ್ನು ಪರಿಶೀಲಿಸಲಾಗಿ, ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೇ ಟರ್ಮಿನಲ್ ಗೆ ಸುಗಮ ಸಂಪರ್ಕ ಕಲ್ಪಿಸಲು ಹಾಗೂ ರೈಲ್ವೇ ಟರ್ಮಿನಲ್ ಸುತ್ತ ಮುತ್ತ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ನಿಯಂತ್ರಿಸಿ ಸಾರ್ವಜನಿಕರ ಸುಗಮ ಸಂಚಾರಕ್ಕಾಗಿ ರೂ.380.00 ಕೋಟಿ ವೆಚ್ಚದಲ್ಲಿ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" + "Construction of Elevated Rotary and including Construction of Integrated Flyover from ITC Factory Junction to Byyappanahalli Junction (1.50Km)" ಕಾಮಗಾರಿ ಕೈಗೊಳ್ಳುವುದು ಸಮಂಜಸವಾಗಿರುತ್ತದೆ ಎಂದು ನಿರ್ಣಯಿಸಿ ಈ ಕೆಳಗಿನಂತೆ ಆದೇಶ ಹೊರಡಿಸಲಾಗಿರುತ್ತದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎನ್‌ವೈ 2021 (ಇ),
ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 06-02-2024

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಸರ್ವಜ್ಞನಗರದ ವಿಧಾನ ಸಭಾ ಕ್ಷೇತ್ರದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಬೈಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ ಸುಗಮ ಸಂಪರ್ಕ ಕಲ್ಪಿಸಲು ಹಾಗೂ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಸುತ್ತಮುತ್ತ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ನಿಯಂತ್ರಿಸಿ ಸಾರ್ವಜನಿಕರ ಸುಗಮ ಸಂಚಾರಕ್ಕಾಗಿ ಸಾರ್ವಜನಿಕ ಹಿತದೃಷ್ಟಿಯಿಂದ ಹಾಗೂ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಬೆಳವಣಿಗೆಯ ದೂರ ದೃಷ್ಟಿಯಿಂದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" ಎಂಬ ಯೋಜನಾ ಕಾಮಗಾರಿ ಹಾಗೂ ಹೆಚ್ಚುವರಿ ಕಾಮಗಾರಿಗಳನ್ನು ಒಳಗೊಂಡಂತೆ ರೂ. 380.00 ಕೋಟಿ ವೆಚ್ಚದಲ್ಲಿ ಕೈಗೆತ್ತಿಕೊಂಡು, 2023-24ನೇ ಸಾಲಿನಲ್ಲಿ ರೂ. 263.00 ಕೋಟಿಗಳನ್ನು ಒದಗಿಸಲು ಹಾಗೂ 2024-25ನೇ ಸಾಲಿನಲ್ಲಿ ರೂ. 117.00 ಕೋಟಿಗಳನ್ನು ಒದಗಿಸಲು ಈ ಕೆಳಕಂಡ ಷರತ್ತುಗಳಿಗೊಳಪಟ್ಟು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡಿ ಆದೇಶಿಸಿದೆ.

ಯೋಜನಾ ವಿವರ

Sl. No.	Description	Amount in Rs.
1	Construction of Elevated Rotary and including Construction of integrated flyover from ITC factory junction to Byyappanahalli junction (1.50Km)	235,03,34,568.00
2	Construction of Subways	,36,56,118.00
3	Construction of ROB at LC 136A	32,34,62,199.00

4	Reconstruction of Defence & Railways Properties	6,85,33,974.00
5	Construction of at Grade roads	21,18,45,682.00
6	**Amount Put to Tender(1to5)**	**298,78,32,541.00**
7	GST 18%	53,78,09,857.00
8	Supervision Charges by Railways pertaining to Rotary and Railway Over Bridge	8,00,00,000.00
9	Utility Shifting/Electrical/Water Supply line and Sanitary line	11,90,00,000.00
10	DPR & PMC Charges (1+1.5%)=2.5%	7,46,95,813.00
11	Miscellaneous and Rounding off Charges	66,17,89.00
	Total Project Cost	**380,00,00,000.00**

ಈ ಆದೇಶವನ್ನು ದಿನಾಂಕ: 01-02-2024 ರಂದು ನಡೆದ ಸಚಿವ ಸಂಪುಟ ಸಭೆಯ ವಿಷಯ ಸಂಖ್ಯೆ: ಸಿ: 77/2024 ರ ನಿರ್ಣಯದಂತೆ ಹೊರಡಿಸಲಾಗಿದೆ.

ಷರತ್ತುಗಳು:

1) ಈ ಕಾಮಗಾರಿಗಳನ್ನು ಆಯವ್ಯಯದ ಘೋಷಣೆಯಂತೆ ಸಕ್ಷಮ ಪ್ರಾಧಿಕಾರಗಳಿಂದ ತಾಂತ್ರಿಕ ಮತ್ತು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಪಡೆದು, ಟೆಂಡರ್ ಪ್ರಕ್ರಿಯೆಗಳನ್ನು ಕೆ.ಟಿ.ಪಿ.ಪಿ. ಕಾಯ್ದೆ 1999 ಮತ್ತು ಕೆ.ಟಿ.ಪಿ.ಪಿ ನಿಯಮಗಳು 2000 ಹಾಗೂ ಇ-ಪ್ರೊಕ್ಯೂರ್‌ಮೆಂಟ್ ಪೋರ್ಟಲ್ ಮುಖಾಂತರ ಕೈಗೊಂಡು, ಟೆಂಡರ್‌ಗಳಿಗೆ ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ನಅಇ 47 ಎಸ್‌ಎಫ್‌ಸಿ 2016, ಬೆಂಗಳೂರು ದಿನಾಂಕ 14-06-2016 ಹಾಗೂ ದಿನಾಂಕ: 03-11-2016 ರಂತೆ ಸಕ್ಷಮ ಪ್ರಾಧಿಕಾರದ ಅನುಮೋದನೆಯನ್ನು ಪಡೆದು ಕಾಮಗಾರಿಗಳನ್ನು ಅನುಷ್ಠಾನಗೊಳಿಸುವುದು.

2) ಈ ಕಾಮಗಾರಿಗಳು ದೀರ್ಘಾವಧಿ ಬಾಳಿಕೆಯುಳ್ಳ ಆಸ್ತಿ ಸೃಜನೆ ಸ್ವರೂಪದ್ದಾಗಿದ್ದು ಉತ್ತಮ ಗುಣಮಟ್ಟವನ್ನು ಕಾಯ್ದುಕೊಳ್ಳುವ ಸಾರ್ವಜನಿಕ ಹಿತದೃಷ್ಟಿಯಿಂದ ಹಾಗೂ ಇವುಗಳನ್ನು ನಿರ್ದಿಷ್ಟ ಕಾಲಮಿತಿಯೊಳಗೆ 2023-24, 2024-25ನೇ ಸಾಲಿನಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಿ ಸಾರ್ವಜನಿಕ ಉಪಯೋಗಕ್ಕೆ ಲಭ್ಯವಾಗಿಸುವ ಸಲುವಾಗಿ ಹಾಗೂ ಈ ರಸ್ತೆಗಳು ಬೆಂಗಳೂರು ನಗರದ ಸಾರ್ವನಿಕರ ಸಾರಿಗೆ ಸಂಪರ್ಕ ಮಟ್ಟವನ್ನು ಅಂತರಾಷ್ಟ್ರೀಯ ಮಟ್ಟಕ್ಕೆ ಒಯ್ಯುವ ನಿಟ್ಟಿನಲ್ಲಿ ಮಹತ್ವದ್ದಾಗಿರುವುದರಿಂದ, ಇವುಗಳ ಪ್ರಗತಿಯನ್ನು ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳ ಅಧ್ಯಕ್ಷತೆಯ ಅಧಿಕಾರಯುಕ್ತ ಸಮಿತಿಯಿಂದ ಮಾಸಿಕ ಪ್ರಗತಿ ಪರಿಶೀಲನೆ ನಡೆಸುವುದು.

3) ಕ್ರಿಯಾ ಯೋಜನೆಯಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಬೇಕಿರುವ ಕಾಮಗಾರಿಗಳನ್ನು ಅನಿವಾರ್ಯ ಮತ್ತು ಅನಿಯಂತ್ರಿತ ಕಾರಣಗಳಿಂದಾಗಿ ಬದಲಿಸಿ ಅನುಷ್ಠಾನ ಗೊಳಿಸಬೇಕಾದಲ್ಲಿ ಮುಖ್ಯ ಆಯುಕ್ತರ ಸ್ಪಷ್ಟ ಶಿಫಾರಸ್ಸಿನ ಮೇರೆಗೆ ಇಲಾಖಾ ಸಚಿವರ ಅನುಮೋದನೆ ಪಡೆದುಕೊಂಡು ಅನುಷ್ಠಾನಗೊಳಿಸುವುದು.

4) ಅಗತ್ಯ ತಾಂತ್ರಿಕ ಅನುಮೋದನೆಗಳನ್ನು ಸಕ್ಷಮ ಪ್ರಾಧಿಕಾರಗಳಿಂದ ಟೆಂಡರ್ ಕರೆಯುವ ಪೂರ್ವದಲ್ಲೆ ಪಡೆದುಕೊಳ್ಳತಕ್ಕದ್ದು.

5) ತದನಂತರ ಟೆಂಡರ್ ಅನುಮೋದನೆಗೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸುವುದು.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

(ಲಕ್ಷ್ಮೀಸಾಗರ್ ಎನ್.ಕೆ.)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ (ಬಿ.ಬಿ.ಎಂ.ಪಿ.)

ಇವರಿಗೆ:

1) ಮಹಾಲೇಖಪಾಲರು, ಲೆಕ್ಕ ತಪಾಸಣೆ/ಲೆಕ್ಕಪತ್ರ, ಕರ್ನಾಟಕ ಬೆಂಗಳೂರು.
2) ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
3) ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ, ಆರ್ಥಿಕ ಇಲಾಖೆ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
4) ಮಾನ್ಯ ಮುಖ್ಯಮಂತ್ರಿಯವರ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
5) ಆಡಳಿತಗಾರರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆರವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ, ಬೆಂಗಳೂರು.
6) ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
7) ವಿಶೇಷ ಆಯುಕ್ತರು(ಯೋಜನೆ), ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
8) ಮಾನ್ಯ ಉಪ ಮುಖ್ಯಮಂತ್ರಿಯವರ ಕಾರ್ಯದರ್ಶಿ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
9) ಪ್ರಧಾನ ಅಭಿಯಂತರರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
10) ಸರ್ಕಾರದ ಜಂಟಿ ಕಾರ್ಯದರ್ಶಿಗಳು, ಸಚಿವ ಸಂಪುಟ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು. (ಪ್ರಕರಣ ಸಂಖ್ಯೆ: ಸಿ: 77/2024, ದಿನಾಂಕ: 01-02-2024).
11) ಮಾನ್ಯ ಉಪ ಮುಖ್ಯಮಂತ್ರಿಯವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
12) ಮುಖ್ಯ ಲೆಕ್ಕಾಧಿಕಾರಿಗಳು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
13) ಮುಖ್ಯ ಅಭಿಯಂತರರು (ಯೋಜನೆ), ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
14) ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ ರವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ಬೆಂಗಳೂರು.
15) ಸರ್ಕಾರದ ವಿಶೇಷ ಕಾರ್ಯದರ್ಶಿಯವರ ಆಪ್ತ ಸಹಾಯಕರು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ (ಬಿಬಿಎಂಪಿ & ಸಮನ್ವಯ), ಬೆಂಗಳೂರು.
16) ಶಾಖಾ ರಕ್ಷಾ ಕಡತ/ಹೆಚ್ಚುವರಿ ಪ್ರತಿಗಳು.

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಮುಖ್ಯ ಆಯುಕ್ತರುರವರ ಕಛೇರಿ, ಎನ್.ಆರ್. ಚೌಕ, ಬೆಂಗಳೂರು–560002.

ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ./ಪಿಆರ್/193/2023-24 ದಿನಾಂಕ: 8/11/23

ಇವರಿಗೆ,
ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ಕರ್ನಾಟಕ ಸರ್ಕಾರ,
ವಿಕಾಸಸೌಧ, ಬೆಂಗಳೂರು–560 001.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಸರ್ವಜ್ಞನಗರದ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಬೈಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ **"3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್"** ಅನ್ನು ಸಂಪರ್ಕಿಸಲು **"Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing"** ಎಂಬ ಯೋಜನಾ ಕಾಮಗಾರಿಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ:

1. ಈ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಅ(ರ.ಮೂ.ಸೌ)/ಪಿಆರ್/105/2021-22, ದಿನಾಂಕ: 08-09-2021.
2. ರೈಲ್ವೆ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: B/W/352/Rotary ROB/MS Nagar / SMVB BYPL / 537A / SA-SBC / 171 ದಿನಾಂಕ: 14.09.2022.
3. K-Ride ಸಂಸ್ಥೆಯವರ ಪತ್ರದ ಸಂಖ್ಯೆ: K-RIDE / Projects / BSRP / 2021 / BBMP / 002, ದಿನಾಂಕ: 18.11.2021.
4. ತಮ್ಮ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎನ್‌ಐ 2021(ಇ) ದಿನಾಂಕ: 30.11.2021.
5. ಈ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ./ಪಿಆರ್/312/2022-23, ದಿನಾಂಕ: 14.12.2022.
6. ತಮ್ಮ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎನ್‌ಐ2021(ಇ) ದಿನಾಂಕ: 28.02.2023.
7. ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ: 11.07.2023 ರ ಮಂಗಳವಾರ 03.30
   ಘಂಟೆಗೆ ವಿಧಾನಸೌಧದ ಕೊಠಡಿ ಸಂಖ್ಯೆ 313, ಸಮಿತಿ ಕೊಠಡಿಯಲ್ಲಿ ಭೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ
   ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ ಸಂಪರ್ಕ ಕಲ್ಪಿಸುವುದರ ಕುರಿತು ನಡೆದ ಸಭೆ.
8. K-Ride ಸಂಸ್ಥೆಯವರ ಪತ್ರದ ಸಂಖ್ಯೆ: GM/P&D/K-RIDE/ PLANNING/21/ 2021/86
   ದಿನಾಂಕ: 11.07.2023.

ಸಂಖ್ಯೆ ..... ದಿನಾಂಕ: 14/11/23
ವಿಧಾನ ಸೌಧ, ಬೆಂಗಳೂರು-1
(ಸ್ವೀಕೃತಿ ಮತ್ತು ರವಾನೆ ಶಾಖೆ)
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

9. ಮಾನ್ಯ ಉಪಮುಖ್ಯಮಂತ್ರಿಗಳು ಕರ್ನಾಟಕ ಸರ್ಕಾರ ರವರಿಂದ ದಿನಾಂಕ: 26-07-2023 ರಂದು ಉದ್ದೇಶಿತ ಮಾರುತಿ ಸೇವಾನಗರ ಮೇಲ್ಸೇತುವೆ (Elevated Rotary Flyover at Baiyyappanahalli) ಯ ಸ್ಥಳ ಪರಿವೀಕ್ಷಣೆ.
10. ತಮ್ಮ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ಅ.ಸ. ಪತ್ರ ಸಂ. ನಅಇ 22 ಪಿಎನ್‌ಜಿ 2023, ದಿನಾಂಕ: 10.08.2023.

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ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಸರ್ವಜ್ಞನಗರದ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಬೈಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ನೂತನವಾಗಿ ಬೆಂಗಳೂರು ನಗರದ **"3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್"** ಅನ್ನು ನಿರ್ಮಿಸಿದ್ದು, ಪ್ರಸ್ತುತ 3ನೇ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಕಾರ್ಯಗತವಾಗಿರುತ್ತದೆ.

ಸದರಿ ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶವು ಅತ್ಯಂತ ಹಿಂದೂಳಿದ ಪ್ರದೇಶವಾಗಿದ್ದು, ಈ ಹಿಂದೆ ಸದರಿ ಬೈಯಪ್ಪನಹಳ್ಳಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣವು "ಸರಕು ಸಗಾಣಿಕೆ ಮಾತ್ರ" ಉಪಯೋಗಿಸಲಾಗುತ್ತಿರುತ್ತದೆ. ಈಗ ಸದರಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನು ಮೇಲ್ದರ್ಜೆಗೆ ಏರಿಸಿ ಹವಾ ನಿಯಂತ್ರಿತ ಪ್ರಯಾಣಿಕರ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನಾಗಿ ಪರಿವರ್ತಿಸಲಾಗಿರುತ್ತದೆ.

ಈಗ ಸದರಿ ರೈಲ್ವೆ ನಿಲ್ದಾಣಕ್ಕೆ ಮತ್ತು ನಗರ ಪ್ರದೇಶದ ನಾಗರೀಕರಿಗೆ ಸಂರ್ಪಕ ಕಲ್ಪಿಸಬೇಕಾಗಿದ್ದು, ಹಾಲಿ ಇರುವ ಸುತ್ತಮುತ್ತಲಿನ ರಸ್ತೆಗಳು ಅತ್ಯಂತ ಕಿರಿದಾಗಿದ್ದು, ವಾಹನ ದಟ್ಟಣೆಯಿಂದ ಕೂಡಿದ್ದು ತುಂಬಾ ಸಮಸ್ಯೆ ಉಂಟಾಗುತ್ತಿರುವುದು ಕಂಡುಬಂದಿರುತ್ತದೆ. ಇದಕ್ಕೆ ಪರ್ಯಾಯ ಮಾರ್ಗವಾಗಿ ಹಾಗೂ 3ನೇ ರೈಲ್ವೇ ಟರ್ಮಿನಲ್‌ನ ಸುತ್ತಾಮುತ್ತಾ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ನಿಯಂತ್ರಿಸಲು ಹಾಗೂ 3ನೇ ರೈಲ್ವೇ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸರಾಗವಾಗಿ ತಲುಪಲು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ವತಿಯಿಂದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಕರ್ನಾಟಕ ಸರ್ಕಾರದ 2023–24ನೇ ಸಾಲಿನಲ್ಲಿ ರೂ.263.00 ಕೋಟಿಗಳ ಅನುದಾನವನ್ನು ನೀಡಲಾಗಿರುತ್ತದೆ.

ಸದರಿ ಅನುದಾನದಂತೆ ಪ್ರಸ್ತುತ, Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing ಎಂಬ ಕಾಮಗಾರಿಗೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ತಯಾರಿಸಲಾಗಿದ್ದು, ಕೋಷ್ಟಕ–1ರಲ್ಲಿ ವಿವರಣೆ ನೀಡಲಾಗಿರುತ್ತದೆ.

ಕೋಷ್ಟಕ–1

Sl No	Description	Amount in Rs.
1.	Construction of Elevated Rotary	1486715501
2.	Construction of Subways	33656118
3.	Construction of ROB at LC 136a	323462199
4.	Reconstruction of Defense & Railways properties	68533974
5.	Construction of at Grade roads	152725380
6.	Amount Put to Tender (1 to 5)	**2065093172**
7.	GST 18%	371716771
8.	Supervision Charges by Railways pertaining to Rotary and Railway Over Bridge	80000000
9.	Utility Shifting / Electrical / Water Supply line and Sanitary line	60000000
10.	DPR & PMC Charges (1+1.5%) = 2.5%	51627330
11.	Miscellaneous and Rounding off Charges	1562726.74
	Total Project Cost	**2630000000**

ಸದರಿ ಪ್ರಸ್ತುವನೆಗೆ ಸರ್ಕಾರದ ವತಿಯಿಂದ ಉಲ್ಲೇಖ (10)ರ ಪತ್ರದಲ್ಲಿ ಸ್ಪಷ್ಟನೆಗಳನ್ನು ಕೋರಿದ್ದು, ಸದರಿ ಸ್ಪಷ್ಟನೆಗಳಿಗೆ ಕಂಡಿಕೆವಾರು ವಿವರಗಳನ್ನು ತಯಾರಿಸಲಾಗಿರುತ್ತದೆ. ಕೋಷ್ಟಕ–2ರಲ್ಲಿ ವಿವರಿಸಲಾಗಿದೆ.

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಕೋಷ್ಟಕ–2

ಕ್ರಮ ಸಂಖ್ಯೆ	ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆಯಿಂದ ಕೋರಿರುವ ಸ್ಪಷ್ಟನೆಗಳು	ಕಂಡಿಕೆವಾರು ವಿವರ
1	Sub Urban Railway Authority (K-Ride) ಮತ್ತು South Western Railway (SWR) ಸಂಸ್ಥೆಗಳಿಂದ ನಿರಾಪೇಕ್ಷಣೆ ಪತ್ರ ಮತ್ತು ಸಹಮತಿ ವ್ಯಕ್ತಪಡಿಸುವ ಪತ್ರವನ್ನು ಪಡೆದು ಸಲ್ಲಿಸುವುದು.	South Western Railway (SWR), Sub Urban Railway Authority (K-Ride) ಮತ್ತು ಸಂಸ್ಥೆಗಳಿಂದ ನಿರಾಪೇಕ್ಷಣೆ ಪತ್ರ ಮತ್ತು ಸದರಿ ಯೋಜನೆಗೆ ಸಮ್ಮತವನ್ನು ವ್ಯಕ್ತಪಡಿಸುವ ಪತ್ರವನ್ನು ಪಡೆಯಲಾಗಿರುತ್ತದೆ ಹಾಗೂ ಸದರಿ ಪತ್ರಗಳನ್ನು ಉಲ್ಲೇಖ 2, 3 ರಲ್ಲಿ ಲಗತ್ತಿಸಲಾಗಿದೆ.
2	2021-22 ರ ಏಕರೂಪ ದರಪಟ್ಟಿಯು ಜಾರಿಗೆ ಬಂದಿದ್ದು ಜಿ.ಎಸ್.ಟಿ. ದರವು ಶೇ.12% ರಿಂದ ಶೇ.18%ಕ್ಕೆ ಏರಿಕೆಯಾಗಿರುವ ಹಿನ್ನಲೆಯಲ್ಲಿ, ದಿನಾಂಕ: 09.11.2022 ರ ಚಾಲ್ತಿ ದರಪಟ್ಟಿಯಂತೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ರೂ. 345.00 ಕೋಟಿಗಳಿಗೆ ಪರಿಷ್ಕರಿಸಿರುವ ಅಂದಾಜು ಪಟ್ಟಿ.	2021-22 ರ ಏಕರೂಪ ದರಪಟ್ಟಿಯು ಜಾರಿಗೆ ಬಂದಿದ್ದು ಜಿ.ಎಸ್.ಟಿ. ದರವು ಶೇ.12% ರಿಂದ ಶೇ.18%ಕ್ಕೆ ಏರಿಕೆಯಾಗಿರುವ ಹಿನ್ನಲೆಯಲ್ಲಿ, ದಿನಾಂಕ: 04.01.2023 ರ ಚಾಲ್ತಿ ದರಪಟ್ಟಿಯಂತೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ರೂ. 345.00 ಕೋಟಿಗಳಿಗೆ ಹೋಲಿಸಿ ಪರಿಷ್ಕರಿಸಿದಾಗ ರೂ. 352.00 ಕೋಟಿಗಳಾಗಿದ್ದು ಇದಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವಿವರವಾದ ಯೋಜನಾ ವರದಿಯೊಂದಿಗೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ಲಗತ್ತಿಸಲಾಗಿದೆ.
3	ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ No Variation - No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ ಎಂದು ನಮೂದಿಸಿದ್ದು ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ ಆಇ 522 ವೆಚ್ಚ–12/2021, ದಿನಾಂಕ: 13.12.2021 ಮತ್ತು ದಿನಾಂಕ: 07.05.2022 ರನ್ವಯ ರೂ. 50.00 ಕೋಟಿ ಮತ್ತು ಮೇಲ್ಪಟ್ಟು ಯೋಜನೆಗಳಿಗೆ "ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿ"ಯ ಮುಂದೆ ಮಂಡಿಸಿ, ಯೋಜನೆಯ ಅಂದಾಜು ಪಟ್ಟಿ ಮತ್ತು ಟೆಂಡರ್ ದಸ್ತಾವೇಜುಗಳಿಗೆ ಅನುಮೋದನೆ/ತೀರುವಳಿ ಪಡೆಯಬೇಕಿರುತ್ತದೆ. ಅದರಂತೆ, ಕ್ರಮವಹಿಸಿ ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿಯ ಶಿಫಾರಸ್ಸಿನನ್ವಯ ಪರಿಶೀಲಿಸಿ, ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸುವುದು.	ಸರ್ಕಾರದಿಂದ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಪಡೆದ ನಂತರ ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಆಇ 522 ವೆಚ್ಚ–12/2021 ದಿನಾಂಕ: 13.12.2021 ಮತ್ತು ದಿನಾಂಕ: 07.05.2022 ರನ್ವಯ ರೂ. 50.00 ಕೋಟಿ ಮತ್ತು ಮೇಲ್ಪಟ್ಟು ಯೋಜನೆಗಳಿಗೆ ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿಯ ಮುಂದೆ ಮಂಡಿಸಿ, ಯೋಜನೆಯ ಅಂದಾಜು ಪಟ್ಟಿ ಮತ್ತು ಟೆಂಡರ್ ದಸ್ತಾವೇಜುಗಳಿಗೆ ಅನುಮೋದನೆ/ತೀರುವಳಿ ಪಡೆಯಲು ಕ್ರಮವಹಿಸಿ ಯೋಜನೆಯನ್ನು Design Build Transfer and Lumpsum - Turnkey - No Variation - No Escalation ಮಾದರಿಯಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ.
4	ಪ್ರಸ್ತಾಪಿತ ಯೋಜನೆಗೆ ಸರ್ಕಾರದ ವತಿಯಿಂದ ಅಂದರೆ ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಅಥವಾ ಮೂಲಭೂತ ಸೌಲಭ್ಯ ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆಯಿಂದ ಅನುದಾನವನ್ನು ಒದಗಿಸಲು ಕೋರಲಾಗಿರುತ್ತದೆ. ಈ ಬಗ್ಗೆ ಸ್ಪಷ್ಟ ಅಭಿಪ್ರಾಯದೊಂದಿಗೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸಲ್ಲಿಸುವುದು.	ಪ್ರಸ್ತಾಪಿತ ಯೋಜನೆಗೆ ಸರ್ಕಾರದ ವತಿಯಿಂದ ಅಂದರೆ ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆಯಿಂದ ಅನುದಾನವನ್ನು ಒದಗಿಸಲು ಕೋರಿದೆ.

ಮುಂದುವರೆದು ದಿನಾಂಕ 27.06.2023 ರಂದು DULT ಸಂಸ್ಥೆಯವರು ಯೋಜನಾ ಸಮಾಲೋಚಕರಾದ ಮೆ॥ ಎಸ್ಇಜ್ಹೆಡ್ ಇನ್ಫ್ರಾಟೆಕ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್ ರವರನ್ನು ಸಂಪರ್ಕಿಸಿ K-Ride ಸಂಸ್ಥೆಯವರ ಉಪನಗರ ರೈಲ್ವೆ ಯೋಜನೆಯ ಮೂಲಭೂತ ಸೌಕರ್ಯಗಳಲ್ಲಿ ಕೆಲವೊಂದು ಬದಲಾವಣೆಯಾಗಿದ್ದು ಅವುಗಳನ್ನು ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳುವಂತೆ ಕೋರಿಕೊಂಡಿದ್ದರು. ಅದರಂತೆ ಯೋಜನಾ ಸಮಾಲೋಚಕರು DULT ಸಂಸ್ಥೆಯವರ ತಾಂತ್ರಿಕ ಮುಖ್ಯಸ್ಥರ ನೇತೃತ್ವದಲ್ಲಿ K-Ride ಸಂಸ್ಥೆಯವರ ತಾಂತ್ರಿಕ ಮುಖ್ಯಸ್ಥರನ್ನು ಸಂಪರ್ಕಿಸಿ ಪ್ರಸ್ತಾವನೆಯ ಕುರಿತು ಚರ್ಚಿಸಿ ಅದರಂತೆ K-Ride ಸಂಸ್ಥೆಯವರು ಕೆಲವೊಂದು ಬದಲಾವಣೆಗಳ ಅವಶ್ಯಕತೆಯನ್ನು ವಿವರಿಸಿ ಸದರಿ ಯೋಜನೆಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಲು ಪತ್ರ ಮುಖೇನ ದಿನಾಂಕ 11.07.2023 ರಂದು ಕೋರಿರುತ್ತಾರೆ.

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

K-Ride ಸಂಸ್ಥೆಯವರ ಕೋರಿಕೆಯನ್ನು ಪರಿಗಣಿಸಿ ಸದರಿ ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ಅಳವಡಿಸಿ ದರಪಟ್ಟಿಯೊಂದಿಗೆ ವಿಸ್ತೃತ ಯೋಜನಾ ವರದಿ ತಯಾರಿಸಲಾಗಿರುತ್ತದೆ.

ಮುಂದುವರೆದಂತೆ, ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ 11.07.2023 ವಿಧಾನಸೌಧದ ಸಮಿತಿ ಕೊಠಡಿಯಲ್ಲಿ ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ಆಯುಕ್ತರು (DULT) ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ, ಮಾನ್ಯ ಉಪಮುಖ್ಯಮಂತ್ರಿಯವರ ತಾಂತ್ರಿಕ ಸಲಹೆಗಾರರು, ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು (ಭೂಸ್ವಾಧೀನ), ರೈಲ್ವೆ, K-Ride, ಬಿ.ಎಂ.ಟಿ.ಸಿ ಹಾಗೂ ಇನ್ನಿತರ ಸದರಿ ಯೋಜನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ಮುಖ್ಯಸ್ಥರೊಂದಿಗೆ ಸುಧೀರ್ಘವಾಗಿ ಚರ್ಚಿಸಿ, ಸಚಿವರು ಖುದ್ದಾಗಿ ಪ್ರಸ್ತುತ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ಮನದಲ್ಲಿರಿಸಿ ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ರೋಟರಿ ಮೇಲ್ಸೇತುವೆಯಿಂದ ಮಾರುತಿಸೇವಾನಗರದ ಮುಖ್ಯರಸ್ತೆಯ ಕಡೆಗೆ ಮೇಲ್ಸೇತುವೆಯನ್ನು ಮುಕುಂದ ತಿಯೇಟರ್ ಬಳಿ ಇಳಿಸುವ ಬದಲು ಐ.ಟಿ.ಸಿ. ಲಿಮಿಟೆಡ್ ಕಂಪೆನಿಯವರೆಗೆ **ಅಂದರೆ ಸುಮಾರು 1.50 ಕಿ.ಮೀ. ಉದ್ದದಷ್ಟು ವಿಸ್ತರಿಸಲು ತಾಂತ್ರಿಕವಾಗಿ ಪರಿಶೀಲಿಸಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮರು ಸಲ್ಲಿಸಲು ನಿರ್ದೇಶಿಸಿರುತ್ತಾರೆ.** ಮುಂದುವರೆದು ಮುಂದಿನ ದಿನಗಳಲ್ಲಿ ವಾಹನ ದಟ್ಟಣೆಯನ್ನು ನಿಯಂತ್ರಿಸಲು ಮೇಲ್ಸೇತುವೆಯನ್ನು ಐ.ಟಿ.ಸಿ. ಲಿಮಿಟೆಡ್ ಕಂಪೆನಿಯವರೆಗೆ ವಿಸ್ತರಿಸುವುದು ಸೂಕ್ತ ಎಂದು ಸಭೆಯಲ್ಲಿ ಹಾಜರಿದ್ದ ಮುಖ್ಯಸ್ಥರು ಅಭಿಪ್ರಾಯ ಪಟ್ಟಿರುತ್ತಾರೆ. ಅದರಂತೆ ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ಕೆಲವೊಂದು ಮಾರ್ಪಾಡುಗಳ ಅವಶ್ಯಕತೆ ಇದ್ದು ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ಅಳವಡಿಸಿ ಅನುಮೋದನೆಗಾಗಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರಕ್ಕೆ ಮರು ಸಲ್ಲಿಸಲು ನಿರ್ದೇಶಿಸಿರುತ್ತಾರೆ.

ದಿನಾಂಕ 26.07.2023 ರಂದು ಮಾನ್ಯ ಉಪಮುಖ್ಯಮಂತ್ರಿಯವರು ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರು (ಸರ್ವಜ್ಞನಗರದ ವಿಧಾನಸಭಾ ಕ್ಷೇತ್ರದ ಶಾಸಕರು) ಮತ್ತು ಇನ್ನಿತರ ಇಲಾಖೆಯ ಮುಖ್ಯಸ್ಥರೊಂದಿಗೆ Elevated Rotary Flyover at Baiyyappanahalli ಯ ಸ್ಥಳ ಪರಿವೀಕ್ಷಣೆ ನಡೆಸಿದ ಸಂದರ್ಭದಲ್ಲಿ ಸದರಿ ಯೋಜನೆಗೆ ತಗಲುವ ವೆಚ್ಚ, ಪ್ರಾಮುಖ್ಯತೆ ಹಾಗೂ ಅವಶ್ಯಕತೆಯನ್ನು ವಿವರಿಸಲಾಯಿತು. ಮುಂದುವರೆದು ಪ್ರಸ್ತಾವನೆಯನ್ನು ಅನುಮೋದನೆಗಾಗಿ ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸಲು ನಿರ್ದೇಶಿಸಿರುತ್ತಾರೆ.

ದಿನಾಂಕ 21.09.2023 ರಂದು DULT ಕಛೇರಿಯ ಮುಖ್ಯಸ್ಥರು ಯೋಜನಾ ಸಮಾಲೋಚಕರನ್ನು ಸಂಪರ್ಕಿಸಿ ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತಾವನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ವಿಷಯವಾಗಿ ಚರ್ಚಿಸಲು ದಿನಾಂಕ 22.09.2023 ರಂದು DULT ಕಛೇರಿಗೆ ಆಗಮಿಸಲು ಕೋರಿರುತ್ತಾರೆ. ಅದರಂತೆ ದಿನಾಂಕ 22.09.2023 ರಂದು DULT ಕಛೇರಿಯ ತಾಂತ್ರಿಕ ಮುಖ್ಯಸ್ಥರೊಂದಿಗೆ ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತಾವನೆಯ ಕುರಿತು ಚರ್ಚಿಸಿ ಯೋಜನೆಯ ಅಗತ್ಯತೆಯ ಕುರಿತು ವಿವರವಾಗಿ ಚರ್ಚಿಸಲಾಗಿರುತ್ತದೆ.

ಮೇಲಿನ ಎಲ್ಲಾ ಅಂಶಗಳನ್ನು ಪರಿಗಣಿಸಿ ಮೆ॥ ಎನ್‌ಇಜ್ಹೆಡ್ ಇನ್ಫ್ರಾಟೆಕ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್ ರವರು ಪ್ರಮುಖ ಮಾರ್ಪಾಡುಗಳನ್ನು ವಿವರವಾದ ಯೋಜನಾವರದಿಯಲ್ಲಿ ಅಳವಡಿಸಿ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು 2021-22 ರ ಏಕರೂಪ ದರಪಟ್ಟಿ ಹಾಗೂ ದಿನಾಂಕ: 04.01.2023 ರ ಚಾಲ್ತಿ ದರಪಟ್ಟಿಯಂತೆ ತಯಾರಿಸಿದ್ದು, ಈ ಯೋಜನೆಯಲ್ಲಿ ಕೋಷ್ಟಕ-1ರಲ್ಲಿ ನೀಡಿರುವ ಯೋಜನೆಯ ಜೊತೆಗೆ 1.50ಕಿ.ಮೀ ಉದ್ದದ ಮೇಲ್ಸೇತುವೆಯನ್ನು ಒಳಗೊಂಡು ಯೋಜನೆಯನ್ನು ಸಂಯೋಜಿಸಲಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ, ಸದರಿ ವೆಚ್ಚವು ಹೆಚ್ಚಾಗಿ ಸದರಿ ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" + "Construction of Elevated Rotary and including Construction of Integrated flyover from ITC factory junction to Byyappanahalli junction (1.50km)" ಯೋಜನಾ ವೆಚ್ಚವು ರೂ.380.00 ಕೋಟಿಗಳಾಗುತ್ತಿರುತ್ತದೆ. ಕೋಷ್ಟಕ-3ರಲ್ಲಿ ತೋರಿಸಲಾಗಿದೆ.

ಕೋಷ್ಟಕ-3

Sl No	Description	Amount in Rs.
1.	Construction of Elevated Rotary and including Construction of Integrated flyover from ITC factory junction to Byyappanahalli junction (1.50km)	2350334568.00
2.	Construction of Subways	33656118.00
3.	Construction of ROB at LC 136a	323462199.00
4.	Reconstruction of Defense & Railways properties	68533974.00

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Sl No	Description	Amount in Rs.
5.	Construction of at Grade roads	211845682.00
6.	**Amount Put to Tender (1 to 5)**	**2987832541.00**
7.	GST 18%	537809857.00
8.	Supervision Charges by Railways pertaining to Rotary and Railway Over Bridge	80000000.00
9.	Utility Shifting / Electrical / Water Supply line and Sanitary line	119000000.00
10.	DPR & PMC Charges (1+1.5%) = 2.5%	74695813.00
11.	Miscellaneous and Rounding off Charges	661789.09
	Total Project Cost	**3800000000.00**

ಮೇಲೆ ವಿವರಿಸಿರುವಂತೆ ಕೋಷ್ಟಕ-1 ಮತ್ತು ಕೋಷ್ಟಕ-3ರ ಯೋಜನೆಗಳ ಪೈಕಿ ಕೋಷ್ಟಕ-3ರಲ್ಲಿ ವಿವರಿಸಿರುವ ಯೋಜನೆಯು ಹೆಚ್ಚಿನ ಉಪಯೋಗಕಾರಿಯಾಗಿ ಕಂಡುಬಂದಿರುತ್ತದೆ ಮತ್ತು ಮಾನ್ಯ ಸಚಿವರು ಇಂಧನ ಇಲಾಖೆ ಮತ್ತು ಸ್ಥಳೀಯ ಶಾಸಕರು ಸಹ ಸದರಿ ಯೋಜನೆಗೆ ಒತ್ತು ನೀಡಿರುತ್ತಾರೆ.

ಈ ಹಿನ್ನಲೆಯಲ್ಲಿ ಪ್ರಸ್ತುತ, 2023-24ರಲ್ಲಿ ರೂ.263.00 ಕೋಟಿಗಳು ಲಭ್ಯವಿದ್ದು, 2024-25ರಲ್ಲಿ ರೂ.117.00 ಕೋಟಿಗಳ ಹೆಚ್ಚುವರಿ ಅನುದಾನವನ್ನು ಒದಗಿಸಿಕೊಂಡು ಕಾಮಗಾರಿಯನ್ನು ನಿರ್ವಹಿಸಬಹುದಾಗಿರುತ್ತದೆ.

ಸದರಿ ಯೋಜನೆಗೆ ಕಮ್ಮನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆ, ಮಾರುತಿ ಸೇವಾನಗರ, ಬೈಯಪ್ಪನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆ ಮತ್ತು ಬಾಣಸವಾಡಿ ಮುಖ್ಯರಸ್ತೆಗಳಲ್ಲಿ ಭೂ-ಸ್ವಾಧೀನ ಪಡಿಸಿಕೊಳ್ಳಬೇಕಾಗಿದ್ದು, ಸದರಿ ಭೂ-ಸ್ವಾಧೀನ ವೆಚ್ಚವು ಸುಮಾರು ರೂ. 68.00 ಕೋಟಿಗಳೆಂದು ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ರೂ.68.00 ಕೋಟಿಗಳ ಭೂ-ಸ್ವಾಧೀನ ವೆಚ್ಚವನ್ನು ಟಿ.ಡಿ.ಆರ್ ಯೋಜನೆ ಅಡಿಯಲ್ಲಿ ವಶಪಡಿಸಿಕೊಳ್ಳಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ.ಇದರೊಂದಿಗೆ ಸದರಿ ಯೋಜನೆಯನ್ನು "ನೂತನ ಪರಿಕಲ್ಪನೆಯ" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಹಾಗೂ ಕಾಮಗಾರಿಯ ಸ್ವರೂಪ, ಸಂಕೀರ್ಣತೆ, ಕಾಲಾವಧಿ, ವಿನ್ಯಾಸದ ಸಾಮರ್ಥ್ಯ, ತಾಂತ್ರಿಕ ವೈಶಿಷ್ಟ್ಯತೆ ಮತ್ತು ಇನ್ನಿತರ ಅಂಶಗಳನ್ನು ಪರಿಗಣಿಸಿ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Transfer and Lumpsum - Turnkey - No Variation - No Escalation ಮಾದರಿಯಲ್ಲಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ದೇಶದ ಪ್ರತಿಷ್ಠಿತ ಸಂಸ್ಥೆಗಳಾದ ಭಾರತೀಯ ತಂತ್ರಜ್ಞಾನ ಸಂಸ್ಥೆ ಅಥವಾ ಭಾರತೀಯ ವಿಜ್ಞಾನ ಸಂಸ್ಥೆಯವರಿಂದ ಅಧಿಕೃತವಾಗಿ ದೃಢೀಕರಿಸಿ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ/ರೈಲ್ವೆ ಇಲಾಖೆ/ K-Ride ಸಂಸ್ಥೆಯವರಿಂದ ಅನುಮೋದನೆ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಘನ ಸರ್ಕಾರದ ವತಿಯಿಂದ ಕೋಷ್ಟಕ-1 ಅಥವಾ ಕೋಷ್ಟಕ-3ರ ಪ್ರಸ್ತಾವನೆಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆಯನ್ನು ಹಾಗೂ ಕೆ.ಪಿ.ಪಿ.ಪಿ ಮುಖಾಂತರ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ಕೋರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಂಡಿಸಿದೆ.

ವಂದನೆಗಳೊಂದಿಗೆ,

ತಮ್ಮ ವಿಶ್ವಾಸಿ

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಮುಖ್ಯ ಆಯುಕ್ತರು ರವರ ಕಛೇರಿ, ಎನ್.ಆರ್.ಚೌಕ, ಬೆಂಗಳೂರು–560002

ಸಂಖ್ಯೆ:ಬಿಬಿಎಂಪಿ/ಮು.ಅ(ರ.ಮೂ.ಸೌ)/ಪಿಆರ್/ 105 /2021–22 ದಿನಾಂಕ: 08-09-2021

ರವರಿಗೆ,
ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ,
ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬೆಂಗಳೂರು–560001

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ (ಸರ್.ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್)ಅನ್ನು ಸಂಪರ್ಕಿಸಲು ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1) ಮಾನ್ಯ ಮುಖ್ಯ ಆಡಳಿತಾಧಿಕಾರಿಗಳು, ನೈರುತ್ಯ ರೈಲ್ವೆ ಇಲಾಖೆ ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: W193CNBNCTCTB, ದಿನಾಂಕ:04.08.2021.
2) ಮಾನ್ಯ ಮುಖ್ಯ ಆಡಳಿತಾಧಿಕಾರಿಗಳು, ನೈರುತ್ಯ ರೈಲ್ವೆ ಇಲಾಖೆ ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: W193CNBNCTCTB, ದಿನಾಂಕ:05.05.2021
3) ಮಾನ್ಯ ಮುಖ್ಯ ಆಡಳಿತಾಧಿಕಾರಿಗಳು, ನೈರುತ್ಯ ರೈಲ್ವೆ ಇಲಾಖೆ ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: W193CNBNCTCTB, ದಿನಾಂಕ:02.03.2021
4) ಮಾನ್ಯ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕರ್ನಾಟಕ ಸರ್ಕಾರ ರವರ ಸ್ಥಳ ಪರಿವೀಕ್ಷಣೆ ದಿನಾಂಕ:10.02.2021.

* * * * *

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ಇದ್ದಂತಹ ಸಗಟು/ಸರಕು ಸಾಗಣಿಕೆ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಘಟಕವನ್ನು "ಪ್ರಯಾಣಿಕರ ಟರ್ಮಿನಲ್ ಘಟವನ್ನಾಗಿ" ಪರಿವರ್ತಿಸಿದ್ದು, ಈ ಹಿಂದೆ ಸದರಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಘಟಕಕ್ಕೆ ಉತ್ತರ ಭಾಗದಿಂದ ಮಾರುತಿ ಸೇವಾನಗರದ ಕಡೆಯಿಂದ ಸಣ್ಣ 6.00 ಮೀಟರ್‌ಗಳ ರಸ್ತೆಯಿಂದ ಮತ್ತು ಹಳೆ ಮದ್ರಾಸ್ ರಸ್ತೆಯಿಂದ 9.00 ಮೀಟರ್‌ಗಳ ರಸ್ತೆಯಿಂದ ಸಂಪರ್ಕ ಹೊಂದಿರುತ್ತದೆ.

ಹಳೆ ಮದ್ರಾಸ್ ರಸ್ತೆಯಿಂದ ಸದರಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಘಟಕದ ಮಧ್ಯೆ ರೈಲ್ವೆ ಹಳಿಗಳ ಮೇಲೆ 02 ಪಥದ ರೈಲ್ವೆ ಓವರ್ ಬ್ರಿಡ್ಜ್ ರಸ್ತೆ ನಿರ್ಮಿಸುವುದನ್ನು 2009ರಲ್ಲಿ ಪ್ರಾರಂಭಿಸಿ ರಕ್ಷಣಾ ಇಲಾಖೆಯಿಂದ ಜಾಗವನ್ನು ಪಡೆಯಲು ಅರ್ಜಿ ಸಲ್ಲಿಸಲಾಗಿರುತ್ತದೆ.

2019ರಲ್ಲಿ ಸದರಿ ರಕ್ಷಣಾ ಇಲಾಖೆಯವರು ಜಾಗವನ್ನು ಬಿಟ್ಟುಕೊಟ್ಟ ನಂತರ ಸದರಿ 02 ಪಥದ ರೈಲ್ವೆ ಓವರ್ ಬ್ರಿಡ್ಜ್ ರಸ್ತೆಯು ನಿರ್ಮಾಣ ಹಂತದಲ್ಲಿರುತ್ತದೆ. ಈಗ ಸದರಿ ಸಗಟು/ಸರಕು ಸಾಗಣಿಕೆ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಘಟಕವನ್ನು "ಪ್ರಯಾಣಿಕರ ಟರ್ಮಿನಲ್ ಘಟವನ್ನಾಗಿ" ಪರಿವರ್ತಿಸಿದ್ದು, ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ಸದರಿ ಘಟಕಕ್ಕೆ ಪ್ರತಿ ದಿನ 01 ಲಕ್ಷ ಪ್ರಯಾಣಿಕರು ಸದರಿ ಟರ್ಮಿನಲ್‌ನ್ನು

ಉಪಯೋಗಿಸಬಹುದೆಂದು ತಿಳಿಸಿ ಸದರಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಪ್ರದೇಶಕ್ಕೆ ಉನ್ನತ ಮಟ್ಟದ ರಸ್ತೆ ಸಂಪರ್ಕ ಕಲ್ಪಿಸಿಕೊಡಬೇಕೆಂದು ಫೆಬ್ರವರಿ 2021 ರಲ್ಲಿ ಕೋರಿರುತ್ತಾರೆ.

ಸದರಿ ಕೋರಿಕೆಯಂತೆ ಮಾನ್ಯ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಮಾನ್ಯ ಅಭಿವೃದ್ಧಿ ಆಯುಕ್ತರು, ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಮಾನ್ಯ ಆಡಳಿತಗಾರರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಮಾನ್ಯ ಆಯುಕ್ತರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಮತ್ತು ರೈಲ್ವೆ ಇಲಾಖೆಯ ಸಿಬ್ಬಂದಿಯೊಂದಿಗೆ ದಿನಾಂಕ:10.02.2021 ಸ್ಥಳ ಪರಿಶೀಲಿಸಿ ಬೃಹತ್ ಗಾತ್ರದ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನು ವೀಕ್ಷಿಸಿ ಸದರಿ ರೈಲ್ವೆ ಇಲಾಖೆಯವರಿಗೆ ಈ ದೊಡ್ಡ ಗಾತ್ರದ ರೈಲ್ವೆ ನಿಲ್ದಾಣವನ್ನು ನಿರ್ಮಿಸಲು ಉದ್ದೇಶಿಸಿದ ಸಮಯದಲ್ಲೇ ಸಂಪರ್ಕ ರಸ್ತೆಗಳನ್ನು ನಿರ್ಮಿಸಲು ಸಹ ಕೋರಬಹುದಾಗಿತ್ತು ಎಂದು ಅಭಿಪ್ರಾಯಿಸಿ ಸದರಿ ಸಂಪರ್ಕ ರಸ್ತೆಗಳನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳಲಾಗುವುದೆಂದು ತಿಳಿಸಿ ಮುಖ್ಯ ಅಭಿಯಂತರರು, ರಸ್ತೆ ಮೂಲಭೂತ ಸೌಕರ್ಯ ರವರಿಗೆ ಸದರಿ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್‌ಗೆ ಸಾರ್ವಜನಿಕರು/ರೈಲ್ವೆ ಪ್ರಯಾಣಿಕರಿಗೆ ಅನುಕೂಲವಾಗುವಂತೆ ಯೋಜನೆಯನ್ನು ತಯಾರಿಸಬೇಕೆಂದು ಸೂಚಿಸಲಾಗಿರುತ್ತದೆ.

ಅದರಂತೆ, ಮುಖ್ಯ ಅಭಿಯಂತರರು, ರಸ್ತೆ ಮೂಲಭೂತ ಸೌಕರ್ಯ ಶಾಖೆಯಿಂದ ಸದರಿ ಪ್ರದೇಶದ ಸಮಗ್ರ ಸರ್ವೆಯನ್ನು ನಡೆಸಿ ಸದರಿ ಪ್ರದೇಶಕ್ಕೆ ಅನುಕೂಲವಾಗುವಂತೆ ಕೆಳಕಂಡ ಪರಿಕರಗಳನ್ನು ನಿರ್ಮಿಸುವುದು ಸೂಕ್ತವೆಂದು ಯೋಜನೆಯನ್ನು ಮಂಡಿಸಿರುತ್ತಾರೆ.

Sl No	Description	Remarks
1	Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely: Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Byyappanahalli on the Southern side after demolition of existing ROB at IOC junction.	
2	Construction of Bypass Uni-directional Flyover from Elevated Rotary along Railway Terminal to facilitate direct connectivity to Old Madras road from Maruthisevanagar.	
3	Construction of Additional 2 lane ROB in addition to the present under construction of 2 lane ROB (Bi-directional 2 lane ROB).	
4	Widening of 20ft road in front of Byyappanhalli Railway Terminal by utilization of Railway Land and Widening of road from ROB Ramp to Old Madras Road (Swamy Vivekananda road) by utilizing the land of Govt Isolation Hospital.	
5	Construction of link road from Mukunda Theater to Byyappanahalli Railway Terminal.	
6	Providing Pedestrian Underpass from Byyappanahalli Railway Terminal towards Kammanahalli under railway line.	

ಸದರಿ ಯೋಜನೆಯಂತೆ ಸವಿಸ್ತಾರವಾದ ನಕ್ಷೆ/ಸಮಗ್ರ ಯೋಜನಾ ವರದಿಯನ್ನು ತಯಾರಿಸಲು ನುರಿತ ಯೋಜನಾ ಸಲಹೆಗಾರರನ್ನು ನೇಮಿಸಿಕೊಳ್ಳಲು ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲಾಗಿ, M/s.NEZ Infra Tech Pvt ltd ರವರು ಕನಿಷ್ಠ ದರ ನಮೂದಿಸಿದ ವಾಸ್ತು ಶಿಲ್ಪಿಗಾರರಾಗಿರುತ್ತಾರೆ. ಸದರಿ ಸಲಹೆಗಾರರು ಸದರಿ ಪ್ರದೇಶದ ಸಮಗ್ರ ಸರ್ವೆ ಕಾರ್ಯವನ್ನು ಕೈಗೆತ್ತಿಕೊಂಡು ಮೇಲ್ಕಂಡ 06 ಅಂಶಗಳಂತೆ ಯೋಜನಾ ನಕ್ಷೆ ಮತ್ತು ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ತಯಾರಿಸಿರುತ್ತಾರೆ.

ಸದರಿ ನಕ್ಷೆಯನ್ನು ನುರಿತ ತಾಂತ್ರಿಕ ತಜ್ಞರೊಂದಿಗೆ ಹಲವಾರು ಸುತ್ತಿನ ಚರ್ಚೆಯನ್ನು ನಡೆಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಯೋಜನೆಯೊಂದಿಗೆ ಕಮ್ಮನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆಯಿಂದ ಬೈಯಪ್ಪನಹಳ್ಳಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ ಕೆಳ ಮಾರ್ಗವನ್ನು ಸಹ ನಿರ್ಮಿಸಲು ಉದ್ದೇಶಿಸಿ ನಕ್ಷೆಯನ್ನು ತಯಾರಿಸಿದ ಹಿನ್ನಲೆಯಲ್ಲಿ ಸದರಿ ಯೋಜನೆಯ ವೆಚ್ಚವು ಹೆಚ್ಚಾಗಿ ಭೂಸ್ವಾಧೀನದ ಗಾತ್ರವು ಹಿಗ್ಗಿರುತ್ತದೆ.

ಈ ಹಿನ್ನಲೆಯಲ್ಲಿ ಸದರಿ ರೋಟರಿಯನ್ನು 3 ಪಥದ ಬದಲಾಗಿ 4 ಪಥದ ಎಲಿವೇಟೆಡ್ ರೋಟರಿಯನ್ನಾಗಿ ಪರಿವರ್ತಿಸಿ ಕೆಳಸೇತುವೆ ಯೋಜನೆಯನ್ನು ಕೈಬಿಡಲಾಗಿರುತ್ತದೆ.

ಪ್ರಸ್ತುತ, ಸದರಿ ಯೋಜನೆಯನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆಯ ತಾಂತ್ರಿಕ ಸಲಹಾ ಸಮಿತಿಯ ಮುಂದೆ ದಿನಾಂಕ:13.08.2021 ರಂದು ಮಂಡಿಸಿ ಸದರಿ ರೂಪುರೇಷಕ್ಕೆ ಅನುಮೋದನೆಯನ್ನು ಪಡೆಯಲಾಗಿರುತ್ತದೆ.

ಸದರಿ ಯೋಜನೆಯಂತೆ M/s.NEZ Infra Tech Pvt ltd ರವರು ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ತಯಾರಿಸಿದ್ದು, ಸದರಿ ಯೋಜನೆಯ ವೆಚ್ಚವು ಕೆಳಕಂಡಂತೆ ಇರುತ್ತದೆ.

Sl No	Description	Estimated Cost (In Lakhs)
1	Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely: Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Byyappanahalli on the Southern side after demolition of existing ROB at IOC junction. Construction of Bypass Uni-directional Flyover from Elevated Rotary along Railway Terminal to facilitate direct connectivity to Old Madras road from Maruthisevanagar. Construction of Additional 2 lane ROB in addition to the present under construction of 2 lane ROB (Bi-directional 2 lane ROB). Providing Pedestrian Underpass from Byyappanahalli Railway Terminal towards Kammanahalli under railway line. (Including Electrical street lighting works)	16530.00
	Add GST at 12%	1984.00
	Add for Railway Charges, Plan & Estimate approval charges cost at 12% (Rotary Cost Rs.16,81,58,417 + additional ROB Cost Rs.5,95,70,856 =Rs.22,77,29,273)	273.00
	Add for DPR charges at 0.5%	83.00
	Add for PMC charges at 2%	310.00
	Utility Shifting charges at 4.5% (Including GST charges)	744.00
	BESCOM Deposit	50.00
	Lumpsum and Miscellaneous Cost	26.00
	Total	**20000.00**

ಸದರಿ ಯೋಜನೆಗೆ ಕಮ್ಮನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆಯ, ಮಾರುತಿ ಸೇವಾನಗರ ಮತ್ತು ಬೈಯಪ್ಪನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆಯಲ್ಲಿ ಭೂ-ಸ್ವಾಧೀನ ಪಡಿಸಿಕೊಳ್ಳಬೇಕಾಗಿದ್ದು, ಸದರಿ ಭು-ಸ್ವಾಧೀನ ವೆಚ್ಚವು ಸುಮಾರು ರೂ.50.00 ಕೋಟಿಗಳೆಂದು ಪ್ರಥಮಿಕವಾಗಿ ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಯೋಜನೆಯ ವೆಚ್ಚವು ರೂ.250.00 ಕೋಟಿಗಳು ತಗಲುತ್ತದೆಂದು ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಯೋಜನೆಯನ್ನು **"ನೂತನ**

ಪರಿಕಲ್ಪನೆಯ" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ Lumpsum-Turnkey-No Variation-No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ/ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ.

ದಿನಾಂಕ:05.09.2021 ರಂದು **ಮಾನ್ಯ ಕೇಂದ್ರ ರೈಲ್ವೆ ಸಚಿವರು, ಸದರಿ ಬೈಯಪ್ಪನಹಳ್ಳಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ** ಬೇಟಿ ನೀಡಿದು, ಸದರಿ ಯೋಜನೆಗೆ/ರಸ್ತೆ ಅಗಲೀಕರಣ ಮತ್ತು ಮೇಲ್ಸೇತುವೆಗೆ ಬೇಕಾಗಬಹುದಾದ ಕನಿಷ್ಠ ಭೂಮಿಯನ್ನು ನೀಡಲು ಸಹ ಒಪ್ಪಿರುತ್ತಾರೆ (ಛಾಯಾಚಿತ್ರಗಳನ್ನು ಲಗತ್ತಿಸಿದೆ).

ಈ ಹಿನ್ನಲೆಯಲ್ಲಿ ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಂಡಿಸುತ್ತಾ, ಕೆಳಕಂಡ ಅಂಶಗಳಿಗೆ ಅನುಮೋದನೆ ಕೋರಿ ಪ್ರಸ್ತಾವನೆ ಮಂಡಿಸಿದೆ.

1. ಸದರಿ ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯ ಅಂದಾಜು ವೆಚ್ಚವಾದ ರೂ.250.00 ಕೋಟಿಗಳಿಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಕೋರಿದೆ.
2. ಸದರಿ ಕಾಮಗಾರಿಯನ್ನು ನವ ನಗರೋತ್ಥಾನ ಯೋಜನೆಯಡಿಯಲ್ಲಿ ನೀಡಲಾಗುವ ಹೆಚ್ಚುವರಿ ಅನುದಾನದ ಕ್ರಿಯಾ ಯೋಜನೆಯಡಿಯಲ್ಲಿ ಕೈಗೊಳ್ಳಲು ಅನುಮೋದನೆ ಕೋರಿದೆ.
3. ಸದರಿ ಯೋಜನೆಯನ್ನು **"ನೂತನ ಪರಿಕಲ್ಪನೆಯ"** ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ Lumpsum-Turnkey-No Variation-No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ/ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಅನುಮೋದನೆ ಕೋರಿದೆ.
4. ಸದರಿ ಯೋಜನೆಗೆ ಇ-ಪ್ರಕ್ಯೂರ್‌ಮೆಂಟ್ ಆಧಾರದಲ್ಲಿ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ಕೋರಿದೆ.

ಮೇಲ್ಕಂಡ 04 ಅಂಶಗಳಿಗೆ ಅನುಮೋದನೆ ಕೋರಿ ವಿಸ್ತೃತ ಯೋಜನಾ ವರದಿಯೊಂದಿಗೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಂಡಿಸಿದೆ.

ವಂದನೆಗಳೊಂದಿಗೆ

ತುಷಾರ್ ಗಿರಿನಾಥ್

ಮುಖ್ಯ ಆಯುಕ್ತರು

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಬಿ. ಬಿ. ಎಂ. ಪಿ. ಮುಖ್ಯ ಆಯುಕ್ತರವರ ಆಪ್ತ ಕಾರ್ಯಾಲಯ
ಸಂಖ್ಯೆ ಪಿ. ಎಸ್. ಆರ್. (1) 6418
ದಿನಾಂಕ 3/12/2021

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎನ್‌ವೈ 2021 (ಇ)

ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಸಚಿವಾಲಯ,
ವಿಕಾಸಸೌಧ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 30-11-2021.

ಇವರಿಂದ:

ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ,
ಬೆಂಗಳೂರು.

CE (RT)
ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಇವರಿಗೆ:

ಮುಖ್ಯ ಆಯುಕ್ತರು,
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ,
ಬೆಂಗಳೂರು.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸ ಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ರೂ.250.00 ಕೋಟಿಗಳ ಅಂದಾಜು ಮೊತ್ತದಲ್ಲಿ ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಸರ್ಕಾರದ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: ತಮ್ಮ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ(ರ.ಮೂ.ಸೌ)/ಪಿಆರ್/ 105/2021-22, ದಿನಾಂಕ: 08-09-2021.

* * * * *

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಪತ್ರಗಳ ಕಡೆಗೆ ತಮ್ಮ ಗಮನವನ್ನು ಸೆಳೆಯಲಾಗಿದೆ. ಸದರಿ ಪತ್ರದಲ್ಲಿ, "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಅಂದಾಜು ವೆಚ್ಚವಾದ ರೂ.250.00 ಕೋಟಿಗಳ ಅಂಧಾಜು ಮೊತ್ತದಲ್ಲಿ ನವನಗರೋತ್ಥಾನ ಯೋಜನೆಯಡಿ ನೀಡಲಾಗುವ ಹೆಚ್ಚುವರಿ ಅನುದಾನದ ಕ್ರಿಯಾಯೋಜನೆಯಡಿ ಕೈಗೊಳ್ಳಲು ಹಾಗೂ ನೂತನ ಪರಿಕಲ್ಪನೆಯ ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ Lumpsum-Turnkey-No Variation-No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ / ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಹಾಗೂ ಸದರಿ ಯೋಜನೆಗೆ ಇ-ಪ್ರೊಕ್ಯೂರ್‌ಮೆಂಟ್ ಆಧಾರದಲ್ಲಿ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ನೀಡುವಂತೆ ಕೋರಿರುವುದು ಸರಿಯಷ್ಟೆ.

ಮುಖ್ಯ ಅಭಿಯಂತರವರ ಕಛೇರಿ (ರ.ಮೂ.ಸೌ.)
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಸಂಖ್ಯೆ 1610 ದಿನಾಂಕ:07/12/2021

EE (EM)

Chief Engineer
Road Infrastructure
Mahanagara Palike

...2/-

ಸದರಿ ಪ್ರಸ್ತಾವನೆಯ ಪರಿಶೀಲನೆಗಾಗಿ ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಯೋಜನೆಯ ಪ್ರಸ್ತುತ ಹಂತದ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ಜರೂರಾಗಿ ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸುವಂತೆ ತಮ್ಮನ್ನು ಕೋರಲು ನಿರ್ದೇಶಿತನಾಗಿದ್ದೇನೆ.

ತಮ್ಮ ನಂಬುಗೆಯ,

(ಲಕ್ಷ್ಮೀಸಾಗರ್ ಎನ್.ಕೆ.)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ (ಬಿ.ಬಿ.ಎಂ.ಪಿ.)

30/11

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಮುಖ್ಯ ಆಯುಕ್ತರುರವರಕಛೇರಿ, ಎನ್.ಆರ್.ಚೌಕ, ಬೆಂಗಳೂರು-560002

ಸಂಖ್ಯೆ:ಬಿಬಿಎಂಪಿ/ಮು.ಆ./ಪಿಆರ್/ತಿಇ/2022-23 ದಿನಾಂಕ: 14/12/2022

ಇವರಿಗೆ,

ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ,
ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬೆಂಗಳೂರು-560001.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಭೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ರೂ.345.00ಕೋಟಿಗಳ ಅಂದಾಜು ಮೊತ್ತದಲ್ಲಿ ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಸರ್ಕಾರದ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1. ಈ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ:ಬಿಬಿಎಂಪಿ/ಮು.ಆ(ರ.ಮೂ.ಸೌ)/ಪಿಆರ್/105/ 2021-22, ದಿನಾಂಕ:06.09.2021

2. ತಮ್ಮ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎಮ್ಸೈ 2021 (ಇ) ದಿನಾಂಕ:30.11.2021.

3. K-Ride ರವರ ಪತ್ರದ ಸಂಖ್ಯೆ:K-RIDE/Projects/BSRP/2021/BBMP/002 ದಿನಾಂಕ:18.11.2021.

4. ರೈಲ್ವೇ ಕಛೇರಿಯ ಪತ್ರದ ಸಂಖ್ಯೆ:B/W/352/Rotary ROB/MSNagar /SMVB/BYPL/537A/SA-SBC/171, ದಿನಾಂಕ:14.09.2022.

ಮೇಲ್ಕಂಡ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಭೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ಮಾನ್ಯ ಪ್ರಧಾನಮಂತ್ರಿಗಳು, ಭಾರತ ಸರ್ಕಾರರವರು ದಿನಾಂಕ:20.06.2022ರಂದು ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ನೂತನವಾಗಿ ಬೆಂಗಳೂರು ನಗರದ "3ನೇ ಟರ್ಮಿನಲ್-ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್"ಅನ್ನು ಲೋರ್ಕಾಪಣೆ ಮಾಡಿರುತ್ತಾರೆ.

ಪ್ರಸ್ತುತ, 3ನೇ ಟರ್ಮಿನಲ್ ಕಾರ್ಯಗತವಾಗಿದ್ದು, ಸದರಿ 3ನೇ ಟರ್ಮಿನಲ್-ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ ಸಂಪರ್ಕ ರಸ್ತೆಗಳು ಅತ್ಯಂತ ಕಿರಿದಾಗಿರುತ್ತದೆ. ಈ ನಿಟ್ಟಿನಲ್ಲಿ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ವತಿಯಿಂದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ರೂ.250.00 ಕೋಟಿಗಳ ಅಂದಾಜು ಮೊತ್ತದಲ್ಲಿ ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಮತ್ತು ಅನುದಾನ ಒದಗಿಸಲು ದಿನಾಂಕ:08.09.2021ರಲ್ಲಿ ಮನವಿ ಸಲ್ಲಿಸಲಾಗಿರುತ್ತದೆ.

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಉಲ್ಲೇಖ (2)ರ ಪತ್ರದಲ್ಲಿ ಸದರಿ ಯೋಜನೆಯ ಪ್ರಸ್ತುತ ಹಂತದ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ಸಲ್ಲಿಸುವಂತೆ ಕೋರಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಯು ರೈಲ್ವೆ ಹಳಿಗಳ ಮೇಲೆ ಮೇಲ್ಸೇತುವೆ ನಿರ್ಮಿಸುವ ಕಾಮಗಾರಿಯಾಗಿದ್ದ ಹಿನ್ನಲೆಯಲ್ಲಿ ಉಲ್ಲೇಖ (3) ಮತ್ತು (4)ರಂತೆ "Sub Urban Railway Authority (K-RIDE)" ಮತ್ತು "South Western Railways (SWR)" ಸಂಸ್ಥೆಗಳಿಂದ ನಿರಾಕ್ಷೇಪಣೆ ಪತ್ರ ಮತ್ತು ಸದರಿ ಯೋಜನೆಗೆ ತಮ್ಮ ಸಮ್ಮತವನ್ನು ವ್ಯಕ್ತಪಡಿಸುವ ಪತ್ರವನ್ನು ಪಡೆಯಲಾಗಿರುತ್ತದೆ.

ಮುಂದುವರೆದು, 2021-22ರ ಸಾಮಾನ್ಯ ದರಪಟ್ಟಿಯು ಚಾಲ್ತಿಗೆ ಬಂದಿದ್ದು ಮತ್ತು ಜಿ.ಎಸ್.ಟಿ ದರವು ಶೇ.12% ರಿಂದ ಶೇ.18%ಕ್ಕೆ ಏರಿಕೆಯಾಗಿರುವ ಹಿನ್ನಲೆಯಲ್ಲಿ, ದಿನಾಂಕ:09.11.2022ರ ದರಪಟ್ಟಿಯಂತೆ ಸದರಿ ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyyappanahalli Railway Level Crossing"ನ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ರೂ.345.00 ಕೋಟಿಗಳಿಗೆ ಪರಿಷ್ಕರಣೆ ಮಾಡಲಾಗಿರುತ್ತದೆ (ಅಂದಾಜು ಪಟ್ಟಿ ಲಗತ್ತಿಸಿದೆ).

ಸದರಿ ಯೋಜನೆಯಂತೆ **M/s.NEZ Infra Tech Pvt ltd** ರವರು ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ತಯಾರಿಸಿದ್ದು, ಸದರಿ ಯೋಜನೆಯ ವೆಚ್ಚವು ಕೆಳಕಂಡಂತೆ ಇರುತ್ತದೆ.

Sl No	Description	Estimated Cost (Rs. in Lakhs)
1	Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely: Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Byyappanahalli on the Southern side after demolition of existing ROB at IOC junction. Construction of Bypass Uni-directional Flyover from Elevated Rotary along Railway Terminal to facilitate direct connectivity to Old Madras road from Maruthisevanagar. Construction of Additional 2 lane ROB in addition to the present under construction of 2 lane ROB (Bi-directional 2 lane ROB). Providing Pedestrian Underpass from Byyappanahalli Railway Terminal towards Kammanahalli under railway line. (Including Electrical street lighting works)	22196.56
	Add GST at 18%	3995.30
	Add for Railway Charges, Plan & Estimate approval charges cost at 12% (Rotary Cost Rs.16,81,58,417 + additional ROB Cost Rs.5,95,70,856 =Rs.22,77,29,273)	297.41
	Add for DPR charges at 0.5%	83.00
	Add for PMC charges at 1.5%	332.94
	Utility Shifting charges at 4.5% (Including GST charges)	744.00
	BESCOM Deposit	50.00
	Lumpsum and Miscellaneous Cost	0.79
	Total	**27700.00**

ಸದರಿ ಯೋಜನೆಗೆ ಕಮ್ಮನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆಯ, ಮಾರುತಿ ಸೇವಾನಗರ ಮತ್ತು ಬೈಯಪ್ಪನಹಳ್ಳಿ ಮುಖ್ಯರಸ್ತೆಯಲ್ಲಿ ಭೂ-ಸ್ವಾಧೀನ ಪಡಿಸಿಕೊಳ್ಳಬೇಕಾಗಿದ್ದು, ಸದರಿ ಭೂ-ಸ್ವಾಧೀನ ವೆಚ್ಚವು ಸುಮಾರು ರೂ.68.00

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಕೋಟಿಗಳೆಂದು ಪ್ರಥಮಿಕವಾಗಿ ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಯೋಜನೆಯ ವೆಚ್ಚವು ರೂ.345.00 ಕೋಟಿಗಳು ತಗಲುತ್ತದೆಂದು ಅಂದಾಜಿಸಲಾಗಿರುತ್ತದೆ. ಸದರಿ ಯೋಜನೆಯನ್ನು "**ನೂತನ ಪರಿಕಲ್ಪನೆಯ**" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು **Design Build Operate and Transfer** ಮಾದರಿಯಲ್ಲಿ **Lumpsum-Turnkey-No Variation-No Escalation** ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ/ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ.

ದಿನಾಂಕ:05.09.2021 ರಂದು <u>ಮಾನ್ಯ ಕೇಂದ್ರ ರೈಲ್ವೆ ಸಚಿವರು, ಸದರಿ ಬೈಯಪ್ಪನಹಳ್ಳಿ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್‌ಗೆ</u> ಬೇಟಿ ನೀಡಿದು, ಸದರಿ ಯೋಜನೆಗೆ/ರಸ್ತೆ ಅಗಲೀಕರಣ ಮತ್ತು ಮೇಲ್ಸೇತುವೆಗೆ ಬೇಕಾಗಬಹುದಾದ ಕನಿಷ್ಠ ಭೂಮಿಯನ್ನು ನೀಡಲು ಸಹ ಒಪ್ಪಿರುತ್ತಾರೆ (ಛಾಯಾಚಿತ್ರಗಳನ್ನು ಲಗತ್ತಿಸಿದೆ).

ಈ ಹಿನ್ನಲೆಯಲ್ಲಿ ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಂಡಿಸುತ್ತಾ, ಕೆಳಕಂಡ ಅಂಶಗಳಿಗೆ ಅನುಮೋದನೆ ಕೋರಿ ಪ್ರಸ್ತಾವನೆ ಮಂಡಿಸಿದೆ.

1. ಸದರಿ ಕಾಮಗಾರಿಯಾದ "**Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing**" ಎಂಬ ಕಾಮಗಾರಿಯ ಅಂದಾಜು ವೆಚ್ಚವಾದ ರೂ.345.00 ಕೋಟಿಗಳಿಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ಕೋರಿದೆ.
2. ಸದರಿ ಕಾಮಗಾರಿಯನ್ನು ಸರ್ಕಾರದ ವತಿಯಿಂದ ಅಂದರೆ ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಅಥವಾ ಐ.ಡಿ.ಡಿ ಇಲಾಖೆಯಿಂದ ಅನುದಾನವನ್ನು ಒದಗಿಸಲು ಕೋರಿದೆ.
3. ಅವಶ್ಯವಿರುವ ಅನುದಾನವನ್ನು ಲಭ್ಯಸಿದ್ದಲ್ಲಿ, ಸದರಿ ಯೋಜನೆಯನ್ನು "**ನೂತನ ಪರಿಕಲ್ಪನೆಯ**" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು **Design Build Operate and Transfer** ಮಾದರಿಯಲ್ಲಿ **Lumpsum-Turnkey-No Variation-No Escalation** ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ/ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಅನುಮೋದನೆ ಕೋರಿದೆ.
4. ಸದರಿ ಯೋಜನೆಗೆ ಸೂಕ್ತ ಅನುದಾನ ಹಾಗೂ ಇ-ಪ್ರಕ್ಯೂರ್‌ಮೆಂಟ್ ಆಧಾರದಲ್ಲಿ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ಕೋರಿದೆ.

ಮೇಲ್ಕಂಡ 04 ಅಂಶಗಳಿಗೆ ಅನುಮೋದನೆ ಕೋರಿ ವಿಸ್ತೃತ ಯೋಜನಾ ವರದಿಯೊಂದಿಗೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಂಡಿಸಿದೆ.

ವಂದನೆಗಳೊಂದಿಗೆ,

ತಮ್ಮ ವಿಶ್ವಾಸಿ

ಮುಖ್ಯ ಆಯುಕ್ತರು

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

9/12

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ: ನಅಇ 293 ಎಂಎಸ್‌ವೈ 2021 (ಇ)

ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಸಚಿವಾಲಯ,
ವಿಕಾಸಸೌಧ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 28-02-2023.

ಇವರಿಂದ:
ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ,
ಬೆಂಗಳೂರು.

ಇವರಿಗೆ:
ಮುಖ್ಯ ಆಯುಕ್ತರು,
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ,
ಬೆಂಗಳೂರು.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ರೂ.345.00 ಕೋಟಿಗಳ ಅಂದಾಜು ಮೊತ್ತದಲ್ಲಿ ಕೈಗೆತ್ತಿಕೊಳ್ಳಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1. ಸರ್ಕಾರದ ಸಮ ಸಂಖ್ಯೆಯ ಪತ್ರ ದಿನಾಂಕ: 30-11-2021.
2. ತಮ್ಮ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿಬಿಎಂಪಿ/ಮು.ಆ/ಪಿಆರ್/312/2022-23, ದಿನಾಂಕ: 14-12-2022.

* * * * *

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಪತ್ರಗಳ ಕಡೆಗೆ ತಮ್ಮ ಗಮನವನ್ನು ಸೆಳೆಯಲಾಗಿದೆ. ಉಲ್ಲೇಖ (1)ರ ಸರ್ಕಾರದ ಪತ್ರದಲ್ಲಿ, ಬೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸ ಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಯೋಜನೆಯ ಪ್ರಸ್ತುತ ಹಂತದ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ಜರೂರಾಗಿ ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸುವಂತೆ ತಮ್ಮನ್ನು ಕೋರಲಾಗಿತ್ತು.

ಉಲ್ಲೇಖ (2)ರ ತಮ್ಮ ಪತ್ರದಲ್ಲಿ, 1) ಸದರಿ ಕಾಮಗಾರಿಯಾದ "Construction of Elevated Rotary Flyover at IOC Junction and Construction of additional 2 Lane ROB at Baiyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯ ಅಂದಾಜು ವೆಚ್ಚವಾದ ರೂ.345.00 ಕೋಟಿಗಳಿಗೆ ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ 2) ಸದರಿ ಕಾಮಗಾರಿಯನ್ನು ಸರ್ಕಾರದ ವತಿಯಿಂದ ಅಂದರೆ

...2/-

ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಅಥವಾ ಐ.ಡಿ.ಡಿ ಇಲಾಖೆಯಿಂದ ಅನುದಾನವನ್ನು ಒದಗಿಸಲು 3) ಅವಶ್ಯವಿರುವ ಅನುದಾನವನ್ನು ಲಭ್ಯಸಿದ್ದಲ್ಲಿ, ಸದರಿ ಯೋಜನೆಯನ್ನು "ನೂತನ ಪರಿಕಲ್ಪನೆಯ" ಯೋಜನೆಯನ್ನಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಿರುವುದರಿಂದ ಸದರಿ ಯೋಜನೆಯನ್ನು ಸಾಂಪ್ರದಾಯಿಕ ಟೆಂಡರ್ ಮಾದರಿಯನ್ನು ಅನುಸರಿಸದೇ ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ Lumpsum Turnkey-No Variation –No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದ್ದು, ಸದರಿ ಯೋಜನೆಗೆ ಒಳಪಡುವ ವಿನ್ಯಾಸವನ್ನು ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ / ರೈಲ್ವೆ ಇಲಾಖೆಯಿಂದ ಪಡೆದುಕೊಳ್ಳುವ ಸಂಪೂರ್ಣ ಜವಾಬ್ದಾರಿಯನ್ನು ಟೆಂಡರ್ ಪಡೆಯುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ವಹಿಸಲು ಅನುಮೋದನೆ ಮತ್ತು 4) ಸದರಿ ಯೋಜನೆಗೆ ಸೂಕ್ತ ಅನುದಾನ ಹಾಗೂ ಇ-ಪ್ರೊಕ್ಯೂರ್ ಮೆಂಟ್ ಆಧಾರದಲ್ಲಿ ಟೆಂಡರ್ ಆಹ್ವಾನಿಸಲು ಅನುಮೋದನೆ ನೀಡುವಂತೆ ಕೋರಲಾಗಿರುತ್ತದೆ.

ಸದರಿ ಪ್ರಸ್ತಾವನೆಯ ಪರಿಶೀಲನೆಗಾಗಿ, ಈ ಕೆಳಕಂಡ ಅಂಶಗಳನ್ನೊಳಗೊಂಡ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಜರೂರಾಗಿ ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸುವಂತೆ ತಮ್ಮನ್ನು ಕೋರಲು ನಿರ್ದೇಶಿತನಾಗಿದ್ದೇನೆ.

1. "Sub Urban Railway Authority (K-RIDE) & South Western Railway (SWR)" ಸಂಸ್ಥೆಗಳಿಂದ ನಿರಾಕ್ಷೇಪಣಾ ಪತ್ರ ಮತ್ತು ಸಹಮತಿ ವ್ಯಕ್ತಪಡಿಸುವ ಪತ್ರವನ್ನು ಪಡೆದು ಸಲ್ಲಿಸುವುದು.

2. 2021-22ರ ಏಕರೂಪ ದರಪಟ್ಟಿಯು ಜಾರಿಗೆ ಬಂದಿದ್ದು, ಜಿ.ಎಸ್.ಟಿ ದರವು ಶೇ.12% ರಿಂದ ಶೇ.18% ಕ್ಕೆ ಏರಿಕೆಯಾಗಿರುವ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ದಿನಾಂಕ: 09-11-2022 ರ ಚಾಲ್ತಿ ದರಪಟ್ಟಿಯಂತೆ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ರೂ 345.00 ಕೋಟಿಗಳಿಗೆ ಪರಿಷ್ಕರಿಸಿರುವ ಅಂದಾಜು ಪಟ್ಟಿ.

3. ಯೋಜನೆಯನ್ನು Design Build Operate and Transfer ಮಾದರಿಯಲ್ಲಿ Lumpsum Turnkey - No Variation – No Escalation ಆಧಾರದ ಮೇಲೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ ಎಂದು ನಮೂದಿಸಿದ್ದು, ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಆಇ 522 ವೆಚ್ಚ-12/2021, ದಿನಾಂಕ: 13.12.2021 ಮತ್ತು ದಿನಾಂಕ: 07-05-2022 ರನ್ವಯ ರೂ.50.00 ಕೋಟಿ ಮತ್ತು ಮೇಲ್ಪಟ್ಟ ಯೋಜನೆಗಳಿಗೆ "ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿ"ಯ ಮುಂದೆ ಮಂಡಿಸಿ, ಯೋಜನೆಯ ಅಂದಾಜು ಪಟ್ಟಿ ಮತ್ತು ಟೆಂಡರ್ ದಸ್ತಾವೇಜುಗಳಿಗೆ ಅನುಮೋದನೆ / ತೀರುವಳಿ ಪಡೆಯಬೇಕಿರುತ್ತದೆ. ಅದರಂತೆ, ಕ್ರಮವಹಿಸಿ, ರಾಜ್ಯ ಟೆಂಡರ್ ಪೂರ್ವ ಪರಿಶೀಲನಾ ಸಮಿತಿ"ಯ ಶಿಫಾರಸ್ಸಿನನ್ವಯ ಪರಿಶೀಲಿಸಿ, ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸುವುದು.

4. ಪ್ರಸ್ತಾಪಿತ ಯೋಜನೆಗೆ ಸರ್ಕಾರದ ವತಿಯಿಂದ ಅಂದರೆ ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಅಥವಾ ಮೂಲಭೂತ ಸೌಲಭ್ಯ ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆಯಿಂದ ಅನುದಾನವನ್ನು ಒದಗಿಸಲು ಕೋರಲಾಗಿರುತ್ತದೆ. ಈ ಬಗ್ಗೆ ಸ್ಪಷ್ಟ ಅಭಿಪ್ರಾಯದೊಂದಿಗೆ ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸುವುದು.

ತಮ್ಮ ನಂಬುಗೆಯ,

(ಲಕ್ಷ್ಮೀಸಾಗರ್ ಎನ್.ಕೆ.)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ (ಬಿ.ಬಿ.ಎಂ.ಪಿ.)

ರಾಕೇಶ್ ಸಿಂಗ್, ಭಾ.ಆ.ಸೇ.
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ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ

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ಬೆಂಗಳೂರು-560 001

ಅ.ಸ.ಪತ್ರ ಸಂ. ನಅಇ 22 ಪಿಎನ್‌ಜೆ 2023

ದಿನಾಂಕ: 10.08.2023

ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಮುಖ್ಯ ಆಯುಕ್ತರವರ ಆಪ್ತ ಕಾರ್ಯಾಲಯ
ಸಂಖ್ಯೆ ಪಿ.ಎಸ್.ಆರ್. (1) 3889
ದಿನಾಂಕ 14/8/23 E-97617

ಮಾನ್ಯರೆ,

ಮಾನ್ಯ ಮುಖ್ಯ ಮಂತ್ರಿಗಳು 2023-24ನೇ ಸಾಲಿನ ಜುಲೈ ಮಾಹೆಯಲ್ಲಿ ರಾಜ್ಯದ ಆಯವ್ಯಯವನ್ನು ಮಂಡಿಸಿರುತ್ತಾರೆ. ಸದರಿ ಸಂದರ್ಭದಲ್ಲಿ, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆಯ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆಗೆ 16/8/23 ಸಂಬಂಧಿಸಿದಂತೆ ಈ ಕೆಳಕಂಡ ಯೋಜನೆಗಳನ್ನು ಕೈಗೊಳ್ಳುವುದಾಗಿ 2023-24ನೇ ಸಾಲಿನ ಆಯವ್ಯಯ ಭಾಷಣದಲ್ಲಿ ಘೋಷಿಸಿರುತ್ತಾರೆ.

ಕ್ರ. ಸಂ.	ಆಯವ್ಯಯ ಕಂಡಿಕೆ ಸಂ.	ಆಯವ್ಯಯ ಭಾಷಣದ ವಿವರ	ಮುಂದುವರೆದ / ಹೊಸ ಯೋಜನೆ / ಹೇಳಿಕೆಗಳು
1.	215. (BBMP)	ನಮ್ಮ ಸರ್ಕಾರದ ಹಿಂದಿನ ಅವಧಿಯಲ್ಲಿ ನಗರಾಭಿವೃದ್ಧಿಗೆ ವಿಶೇಷ ಆದ್ಯತೆಯನ್ನು ನೀಡಿ ಪ್ರಾರಂಭಿಸಿದ ನಗರೋತ್ಥಾನ, ಇಂದಿರಾ ಕ್ಯಾಂಟೀನ್ ನಂತಹ ಹಲವಾರು ಜನಪರ ಯೋಜನೆಗಳನ್ನು ನಿರ್ಲಕ್ಷಿಸುವ ಮೂಲಕ ಹಿಂದಿನ ಸರ್ಕಾರದ ಅವಧಿಯಲ್ಲಿ ನಗರಗಳ ಅಭಿವೃದ್ಧಿಯು ಕುಂಠಿತಗೊಂಡಿರುತ್ತದೆ. ಅಲ್ಲದೇ, 2022-23ನೇ ಸಾಲಿಗೆ 45,000 ಕೋಟಿ ರೂ.ಗಳ ಅಪೂರ್ಣ ಕಾಮಗಾರಿಗಳ ಮತ್ತು ಬಾಕಿ ಮೊತ್ತದ ಹೊರೆಯನ್ನು ಹಿಂದಿನ ಸರ್ಕಾರ ನಮ್ಮ ಸರ್ಕಾರದ ಮೇಲೆ ಹೊರೆಸಿರುತ್ತದೆ. ಪ್ರಸ್ತುತ ಇರುವ ಆಯವ್ಯಯದ ಮಿತಿಯಲ್ಲಿ ಬಾಕಿ ಹೊರೆಯನ್ನು ತೀರಿಸಲು ಕನಿಷ್ಠ 6-8 ವರ್ಷಗಳ ಕಾಲಾವಕಾಶದ ಅಗತ್ಯತೆ ಇರುತ್ತದೆ. ಇದು ಅವರ ಅಶಿಸ್ತು ಮತ್ತು ಅವಿವೇಚನೆಗೆ ಹಿಡಿದ ಕನ್ನಡಿಯಾಗಿರುತ್ತದೆ. ಆದಾಗ್ಯೂ, ನಮ್ಮ ಸರ್ಕಾರ ನಗರಗಳ ಅಭಿವೃದ್ಧಿಗಾಗಿ ಅಗತ್ಯವಿರುವ ಎಲ್ಲಾ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳಲಿದೆ.	ಹೇಳಿಕೆ
2.	216 (BBMP)	ಬೆಂಗಳೂರು ನಗರದ ಮೂಲಸೌಕರ್ಯ ಅಭಿವೃದ್ಧಿಗಾಗಿ ಅಮೃತ ನಗರೋತ್ಥಾನ, ಹೈಡೆನ್ಸಿಟಿ ಕಾರಿಡಾರ್, ಮೆಟ್ರೋ ಫೀಡಿಂಗ್ ರಸ್ತೆ, ತ್ಯಾಜ್ಯ ನಿರ್ವಹಣೆ, ರಾಜಕಾಲುವೆಗಳ ತೆರವು ಮತ್ತು ದುರಸ್ತಿ, ರಸ್ತೆ ಗುಂಡಿ ಮುಚ್ಚುವುದು ಮತ್ತಿತರ ಹಲವಾರು ಪ್ರಗತಿಯಲ್ಲಿರುವ ಯೋಜನೆಗಳಿಗೆ ಪ್ರಸ್ತುತ 12,000 ಕೋಟಿ ರೂ.ಗಳಿಗೂ ಹೆಚ್ಚು ಮೊತ್ತ ವ್ಯಯಿಸಲಾಗುತ್ತಿದೆ. ಇದಲ್ಲದೆ ಸಂಚಾರ ದಟ್ಟಣೆ ನಿವಾರಣೆಗಾಗಿ 30,000 ಕೋಟಿ ರೂ.ಗಳಿಗೂ ಹೆಚ್ಚಿನ ಅಂದಾಜು ವೆಚ್ಚದಲ್ಲಿ ನಮ್ಮಮೆಟ್ರೋ ಹಾಗೂ ಬೆಂಗಳೂರು ಉಪನಗರ ರೈಲು ಯೋಜನೆ ಜಾರಿಗೊಳಿಸಲಾಗುತ್ತಿದೆ. ಈ ಯೋಜನೆಗಳು ಪೂರ್ಣಗೊಳ್ಳಲು ಐದು ವರ್ಷಗಳ ಕಾಲಾವಕಾಶದ ಅಗತ್ಯವಿದೆ. ಇಷ್ಟು ಬೃಹತ್ ಮೊತ್ತದ ಕಾಮಗಾರಿಗಳು ಅನುಷ್ಠಾನಗೊಳ್ಳುತ್ತಿದ್ದರೂ ಹಿಂದಿನ ಸರ್ಕಾರದ ಮಿತಿ ಮೀರಿದ ಭ್ರಷ್ಟಾಚಾರ ಹಾಗೂ ಅಸಮರ್ಪಕ ನಿರ್ವಹಣೆಯ ಕಾರಣದಿಂದ ನಗರದ ಮೂಲ ಸೌಕರ್ಯಗಳಲ್ಲಿ ಗಮನಾರ್ಹ ಬದಲಾವಣೆ ಕಂಡು ಬಂದಿರುವುದಿಲ್ಲ.	ಹೇಳಿಕೆ
3.	217 (BBMP)	ಬ್ಯಾಂಡ್ ಬೆಂಗಳೂರು' ಪರಿಕಲ್ಪನೆಯು ಬೆಂಗಳೂರು ನಗರದ ಸುರಕ್ಷತೆ ಹಾಗೂ ಅನುಕೂಲವನ್ನು ನಿವಾಸಿಗಳ ಕೇಂದ್ರಬಿಂದುವಾಗಿಸಿದೆ. ಈ ಪರಿಕಲ್ಪನೆಯು ನಗರದ ಸಂಚಾರ ವ್ಯವಸ್ಥೆ, ಪರಿಸರ, ಘನತ್ಯಾಜ್ಯ ನಿರ್ವಹಣೆ, ಸಾರ್ವಜನಿಕ ಸ್ಥಳಗಳ ಸದ್ಬಳಕೆ, ಸಾರ್ವಜನಿಕರ ಆರೋಗ್ಯ, ಪ್ರಾಣಿಗಳ ಆರೋಗ್ಯ, ಜನಸ್ನೇಹಿ ಇ-ಆಡಳಿತ, ನೀರಿನ ಭದ್ರತೆ ಹಾಗೂ ಪ್ರವಾಹ ನಿರ್ವಹಣೆ ಈ ಒಂಬತ್ತು ಸವಾಲುಗಳನ್ನು ಯಶಸ್ವಿಯಾಗಿ ಎದುರಿಸುವ ಮೂಲಕ ಬೆಂಗಳೂರನ್ನು ಅಂತರಾಷ್ಟ್ರೀಯ ಮಟ್ಟಕ್ಕೆ ಏರಿಸುವುದು ನಮ್ಮ ಗುರಿಯಾಗಿದೆ.	ಹೊಸ ಯೋಜನೆ

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ಪ್ರಧಾನ ಅಭಿಯಂತರರ ಕಛೇರಿ
ಸಂಖ್ಯೆ: 62/
ದಿನಾಂಕ: 18/8/23

4.	219 (BBMP)	ನೈಋತ್ಯ ರೈಲ್ವೆ ಇಲಾಖೆಯವರು ಬೈಯ್ಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನಿರ್ಮಿಸಿರುವ ಸರ್ ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ಟರ್ಮಿನಲ್ ಅನ್ನು ತಲುಪಲು ಸರಿಯಾದ ಮೆಟ್ರೋ ಮತ್ತು ರಸ್ತೆಗಳ ಸಂಪರ್ಕ ಇಲ್ಲದೇ ಇರುವುದರಿಂದ ಲಕ್ಷಾಂತರ ಪ್ರಯಾಣಿಕರಿಗೆ ಅನಾನುಕೂಲ ಹಾಗೂ ಸಂಚಾರ ದಟ್ಟಣೆಗೆ ಕಾರಣವಾಗಿದೆ. ಈ ಸಮಸ್ಯೆಯ ನಿವಾರಣೆಗಾಗಿ 263 ಕೋಟಿ ರೂ.ಗಳ ವೆಚ್ಚದಲ್ಲಿ ಒಂದು ಹೊಸ ಮೇಲ್ಸೇತುವೆಯನ್ನು ನಿರ್ಮಿಸಲಾಗುವುದು.	ಹೊಸ ಯೋಜನೆ
5.	220 (BBMP)	ಪದೇ ಪದೇ ದುರಸ್ತಿಗೆ ಮರುಕಳಿಸುವ ವೆಚ್ಚವನ್ನು ತಪ್ಪಿಸಲು ನಗರದ ರಸ್ತೆಗಳನ್ನು ಫೈಟ್ ಟಾಪಿಂಗ್ ಮಾಡಲು ಕ್ರಿಯಾ ಯೋಜನೆ ರೂಪಿಸಲಾಗಿದೆ. ನಮ್ಮ ಸರ್ಕಾರದಿಂದ 2016-17 ಮತ್ತು 2017-18ರಲ್ಲಿ ಫೈಟ್ ಟಾಪಿಂಗ್ ರಸ್ತೆಗಳಾಗಿ ಅಭಿವೃದ್ಧಿಪಡಿಸಲಾದ 190 ಕಿ.ಮೀ. ರಸ್ತೆಗಳು ಇಂದಿಗೂ ಅತ್ಯುತ್ತಮ ಸ್ಥಿತಿಯಲ್ಲಿವೆ. ತದನಂತರ, ಹಿಂದಿನ ಸರ್ಕಾರ ಯಾವುದೇ ಫೈಟ್ ಟಾಪಿಂಗ್ ಯೋಜನೆಯನ್ನು ಕೈಗೊಂಡಿರುವುದಿಲ್ಲ. ಈ ಯೋಜನೆಯನ್ನು ಪುನರಾರಂಭಿಸಿ 2023-24ನೇ ಸಾಲಿನಲ್ಲಿ 800 ಕೋಟಿ ರೂ. ವೆಚ್ಚದಲ್ಲಿ 100 ಕಿ.ಮೀ. ಉದ್ದದ ಮುಖ್ಯ ರಸ್ತೆಗಳನ್ನು ಫೈಟ್ ಟಾಪ್ ರಸ್ತೆಗಳಾಗಿ ಅಭಿವೃದ್ಧಿಪಡಿಸಲಾಗುವುದು.	ಹೊಸ ಯೋಜನೆ
6.	221. (BBMP)	ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿರುವ ಹೆಚ್ಚಿನ ಸಂಚಾರ ದಟ್ಟಣೆಯನ್ನು ಹೊಂದಿರುವ 192 ಕಿ.ಮೀ. ಉದ್ದದ ವಿವಿಧ 12 ಪ್ರಮುಖ ರಸ್ತೆಗಳನ್ನು ಹೈ ಡೆನ್ಸಿಟಿ ಕಾರಿಡಾರ್ ಗಳೆಂದು (High Density Corridor) 2016ರಲ್ಲಿ ಗುರುತಿಸಲಾಗಿರುತ್ತದೆ. ಈ ಪೈಕಿ 92ಕಿ.ಮೀ. ಉದ್ದದ ರಸ್ತೆಗಳನ್ನು ಈಗಾಗಲೇ ಅಭಿವೃದ್ಧಿಪಡಿಸಲಾಗಿದೆ. 2023-24ನೇ ಸಾಲಿನಲ್ಲಿ 83 ಕಿ.ಮೀ. ಉದ್ದದ ರಸ್ತೆಗಳನ್ನು 273 ಕೋಟಿ ರೂ. ವೆಚ್ಚದಲ್ಲಿ ಅಭಿವೃದ್ಧಿಪಡಿಸಲಾಗುವುದು.	ಮುಂದುವರೆದ
7.	223. (BBMP)	ಬೆಂಗಳೂರಿನಲ್ಲಿ ಮಳೆನೀರು ಸರಾಗವಾಗಿ ಹರಿಯದಿರಲು ರಾಜಕಾಲುವೆಗಳ ಒತ್ತುವರಿ ಪ್ರಮುಖ ಕಾರಣವಾಗಿದ್ದು, ಇದರಿಂದಾಗಿ ಪ್ರವಾಹ ಉಂಟಾಗುವುದಲ್ಲದೆ, ಮಳೆ ಬಂದಾಗ ರಸ್ತೆಗಳಲ್ಲಿ ನೀರು ನಿಂತು, ಮನೆಗಳಿಗೆ ನೀರು ನುಗ್ಗಿ, ಅನಾಹುತಗಳು ಸಂಭವಿಸುತ್ತಿವೆ. ಈ ಸಮಸ್ಯೆಯನ್ನು ನಿವಾರಿಸಲು ಕಂದಾಯ ಇಲಾಖೆ ಗುರುತಿಸಿರುವ ಒತ್ತುವರಿಗಳನ್ನು ಆದ್ಯತೆ ಮೇಲೆ ತೆರವುಗೊಳಿಸಲಾಗುವುದು.	ಹೊಸ ಯೋಜನೆ
8.	224 (BBMP)	ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ ವೈಜ್ಞಾನಿಕ ತ್ಯಾಜ್ಯ ವಿಲೇವಾರಿಗೆ ನಮ್ಮ ಸರ್ಕಾರ ಆದ್ಯತೆ ನೀಡಲಿದೆ. ಬೆಂಗಳೂರು ನಗರದ 97 ಲಕ್ಷ ಟನ್ ನಷ್ಟು ಹಳೆ ತ್ಯಾಜ್ಯವನ್ನು (legacy waste) ಜೈವಿಕ ಗಣಿಗಾರಿಕೆ ಮತ್ತು ಜೈವಿಕ ಪರಿಹಾರದ ಮೂಲಕ ಸಂಸ್ಕರಿಸಲಾಗುವುದು ಮತ್ತು ಮುಂದಿನ ಐದು ವರ್ಷಗಳ ಅವಧಿಯಲ್ಲಿ ಇಂತಹ 256 ಎಕರೆ ಭೂಮಿಯನ್ನು ಉದ್ಯಾನವನಗಳಾಗಿ ಪರಿವರ್ತಿಸಲಾಗುವುದು.	ಹೊಸ ಯೋಜನೆ
9.	232 (BBMP)	ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹಣೆ ಮತ್ತು ಸಂಸ್ಕರಣೆಯನ್ನು ಹೆಚ್ಚು ವೈಜ್ಞಾನಿಕವಾಗಿ ಮತ್ತು ಸುಸ್ಥಿರ ರೀತಿಯಲ್ಲಿ ವಿಲೇವಾರಿ ಮಾಡಲು ಬೆಂಗಳೂರು ಘನತ್ಯಾಜ್ಯ ನಿರ್ವಹಣಾ ಸಂಸ್ಥೆಯ (BSWMCL) ಪರಿಣಾಮಕಾರಿ ಕಾರ್ಯಾಚರಣೆಗಾಗಿ 100 ಕೋಟಿ ರೂ.ಗಳನ್ನು ಒದಗಿಸಲಾಗುವುದು.	ಹೊಸ ಯೋಜನೆ

ಮೇಲ್ಕಂಡ ಹೊಸ ಘೋಷಣೆಗಳಿಗೆ ಆರ್ಥಿಕ ಇಲಾಖೆ ಮತ್ತು ಯೋಜನಾ ಇಲಾಖೆಯ ಸಹಮತಿ ಪಡೆದು ನಂತರ ಸರ್ಕಾರದ ಆದೇಶ ಹೊರಡಿಸಬೇಕಾಗಿದ್ದು, ಕೂಡಲೇ ಈ ಕುರಿತು ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸುವುದು ಹಾಗೂ ಮುಂದುವರೆದ ಯೋಜನೆಗಳ ಪ್ರಸ್ತುತ ಹಂತದ ಮಾಹಿತಿಯನ್ನು ಸಹ ಸಲ್ಲಿಸುವಂತೆ ತಮ್ಮನ್ನು ಕೋರಲಿಚ್ಛಿಸುತ್ತೇನೆ.

ಶುಭಾಶಯಗಳೊಂದಿಗೆ,

ತಮ್ಮ ವಿಶ್ವಾಸಿ,

10/08.

ಶ್ರೀ ತುಷಾರ್‌ಗಿರಿನಾಥ್, ಭಾ.ಆ.ಸೇ.
ಮುಖ್ಯ ಆಯುಕ್ತರು,
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ,
ಬೆಂಗಳೂರು.

BRUHAT BENGALURU MAHANAGARA PALIKE

OFFICE OF THE CHIEF ENGINEER, ROAD INFRASTRUCTURE, ROOM NO.405, 4TH FLOOR, ANNEXE-3 BUILDING, N.R.SQUARE, BENGALURU-560 002

No.BBMP/CE(RI)/PR/1652/2021-22 **Date:13.12.2021**

To,
Hon'ble Divisional Railway Manager
South Western Railways,
Gubbi Thotadappa Road, Kempegowda,
Gandhi Nagar, Bengaluru-560023.

Sir,

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main road (Banaswadi IOC Junction) and Construction of Additional two lane adjacent to ongoing two lane ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New Constructed Sir M Vishveshwaraiah Railway Terminal at Baiyappanahalli.

Ref: Joint inspection on 16.02.2021 and 19.10.2021

* * * * *

With reference to the above subject, the South Western Railways has Newly converted the Baiyappanahalli Goods Terminal into Passenger Terminal and is been requesting the BBMP to provide better road connectivity to the Newly Built Sir M Vishveshwariah Railway Terminal.

As per the request made a detailed survey was conducted by BBMP and prepared a road map for connectivity of the terminal. The said road map was inspected by Hon'ble Chief Secretary, GOK along with Hon'ble Additional Chief Secretary and Development Commissioner, GOK, Hon'ble Administrator, BBMP and Hon'ble Commissioner, BBMP along with your Chief Engineer Sri.Rajesh Singh in the month of February 2021.

During the course of the inspection it was found that there is poor connectivity of roads from all the adjacent areas of the said terminal namely Maruthisevanagar, Banaswadi, Indiranagar and Kammanahalli. It was found that Short Term and Long Term Transportation Measures is to be adopted to augment the future requirements.

The Chief Engineer, South Western Railways (Construction) informed that the Railway Authorities are excepting/anticipating more than one lakh passengers in the terminal.

Therefore, the BBMP under the guidance of the Hon'ble Chief Secretary, GOK has proposed to take up works as mentioned below:

Sl No	Name of the work	Remarks
1	Construction and improvements to road from Maruthisevanagara main road and Old Madras road connecting to Sir M Vishveshwariah Railway	This proposal consists of immediate/short term measures like Construction of link road from Maruthisevanagara main road on the Northern side and improvements to road connecting Old

13/12/21.

Sl No	Name of the work	Remarks
	Terminal Baiyappanahalli.	madras road on Southern Side to Sri M Vishveshwariah Railway terminal Baiyappanahalli – Rs.15.00 Crores
2	Construction of Rotary Flyover connecting all the main roads from Maruthisevanagar, Banaswadi, Indiranagar and Kammanahalli areas of Sir M Vishveshwariah Railway Terminal over existing Railway over Bridge on Northern side and Construction of Additional 2 lane to existing ROB at Baiyappanahalli level crossing for connecting	This proposal consists of long term measures like Construction of Rotary Flyover and additional 2 lane ROB – Rs.250.00 Crores (Including Land Acquisition Cost)

To provide immediate connectivity from Maruthisevanagara main road to Sir M Vishveshwariah Railway Terminal Baiyappanahalli it is found necessary that the space by side of the Railway compound falling within the Railway boundary is being utilized for construction of temporary access road. The sketch showing the temporary access road is enclosed for reference.

Further, now as a long term measure BBMP has prepared the Detailed Project Report (DPR) for Construction of Rotary Flyover at Maruthi Sevanagara Main road (Banaswadi IOC Junction) and Construction of Additional two lane adjacent to ongoing two lane ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New Constructed Sir M Vishveshwaraiah Railway Terminal at Baiyappanahalli. M/s.NEZ Infratech Pvt ltd., has prepared the Detailed Project Report.

It is proposed to take up all the work through single contract agency under EPC mode.

Therefore, the copy of the Detailed Project Report is enclosed for concurrence, so that the Government of Karnataka/BBMP can further process the project for approval. Sri.Kannan, Founder Chairman (Mob No.9845725070) and Sri.Mallikarjun, Technical Advisor (Mob No.9845344679) of M/s.NEZ Infratech Pvt ltd., can be contacted for further information on the project.

Thanking you,

Yours Faithfully

13/12/2024

Chief Engineer
Road Infrastructure, BBMP

Copy submitted to:

1. Hon'ble Administrator, BBMP for kind information.
2. Hon'ble Chief Commissioner, BBMP for kind information.
3. Special Commissioner (Projects), BBMP for kind information.
4. Chief Engineer, South Western Railways for kind information.
5. Office copy.

BRUHAT BANGALORE MAHANAGARA PALIKE
Office of the Executive Engineer, Road Infrastructure - East Division,
2nd Floor, Annex-3, N.R.Square, Bangalore-560 002
Email.rieastdivisionbbmp@gmail.com

No: EE/RI(East)/PR/ 83 /2022-23 Date:08.06.2022

To,

Divisional Railway Manager (Works),
Divisional Office Bangalore Division,
South Western Railway,
Bengaluru-5600023.

Dear Sir,

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) And Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New constructed Sir M Vishweshwaraiah Railway Terminal at Baiyappanahalli.

Reg:- Approval of GAD.

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With reference to the above subject, please find the minutes of meeting held at proposed elevated rotary site at Baiyyappanahalli on 11-5-2022 & 13-5-2022. The modified & final drawing is submitted by DPR Consultant M/s Nez Infratech Private limited on 20.05.2022, on for taking necessary action at your end for processing approval of GAD.

Executive Engineer 08/6/22
Road Infrastructure-East Division

Copies to;

1. Chief Engineer (Road Infrastructures), BBMP for kind information.
2. Office copy.

BRUHAT BENGALURU MAHANAGARA PALIKE

Office of the Executive Engineer, Road Infrastructure – East Division
2nd Floor, Annexe-3, N.R. Square, Bengaluru-560002.
Email: rieastdivisionbbmp@gmail.com

No: EE/RI (East)/PR/PR / 89 /22-23 **Date: 16-06-2022**

To,

Divisional Railway Manager (Works),
Divisional Office Bangalore Division,
South Western Railway,
Bengaluru-560023.

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) and Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway Level crossing to facilitate additional traffic movement connecting New Constructed Sir. M. Visvesvaraya Railway Terminal at Baiyappanahalli – Regarding Approval of GAD.

Reference: 1. This Office letter No. EE/RI(East)/PR/83/2022-23 dated: 08-06-2022.
2. Consultant letter No. NEZPL/OC/22-23/1271 dated: 19-05-2022.
3. Consultant letter No. NEZPL/OC/22-23/1303 dated: 15-06-2022.

Dear Sir,

Regarding the subject and references cited above, please find the revised drawing submitted by M/s. NEZ Infratech Pvt. Ltd. on 15-06-2022 incorporating comments given on 13-06-2022 for taking necessary action at your end for processing approval of GAD.

16/6/22

Executive Engineer
Road Infrastructure - East Division

Copies to:

1. Chief Engineer (Road Infrastructures), BBMP for kind information.
2. Senior Divisional Engineer East (Railway)
3. Divisional Engineer South (Railway)
4. Office Copy.

Received. A. Chandra

(A. Chandra Sekharam)

18/6/22

8123445554

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ: ನಅಇ 365 ಎಂಎನ್‌ಪೈ 2022 (ಇ)

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಸಚಿವಾಲಯ,
ವಿಕಾಸಸೌಧ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 03-08-2022

ಸಭಾ ಸೂಚನಾ ಪತ್ರ

ಬಿಬಿಎಂಪಿ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಈಶಾನ್ಯ ಬೆಂಗಳೂರಿನ ನಾಗರೀಕರ ಕಲ್ಯಾಣ ಮಹಾವೇದಿಕೆ (ನೋಂ), ಬೆಂಗಳೂರು ರವರು ಬೈಯಪ್ಪನಹಳ್ಳಿಯಲ್ಲಿ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಗೆ ಸಂಪರ್ಕ ರಸ್ತೆಯನ್ನು ಬೆಂಗಳೂರು ಮೆಟ್ರೋ ರೈಲು ನಿಗಮ ನಿಯಮಿತದ ವತಿಯಿಂದ ಕಲ್ಪಿಸುವಂತೆ ಕೋರಿ ಮಾನ್ಯ ಮುಖ್ಯಮಂತ್ರಿಯವರಿಗೆ ಮನವಿ ಸಲ್ಲಿಸಿರುತ್ತಾರೆ. ಸದರಿ ವಿಷಯದ ಕುರಿತು ಚರ್ಚಿಸಲು ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಇವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ: 09-08-2022ರ ಅಪರಾಹ್ನ 03-00 ಗಂಟೆಗೆ ಸಭೆಯನ್ನು ನಿಗಧಿಪಡಿಸಲಾಗಿತ್ತು. ಆದರೆ, ಆ ದಿನ ಸಾರ್ವತ್ರಿಕ ರಜಾ ದಿನವಾದ್ದರಿಂದ **ಸದರಿ ಸಭೆಯನ್ನು ಮುಂದೂಡಿ ದಿನಾಂಕ: 10-08-2022 ರಂದು ಅಪರಾಹ್ನ 12-00 ಗಂಟೆಗೆ ಕೊಠಡಿ ಸಂಖ್ಯೆ: 436, 4ನೇ ಮಹಡಿ, ವಿಕಾಸಸೌಧ, ಬೆಂಗಳೂರು ಇಲ್ಲಿ ಸಭೆಯನ್ನು ಏರ್ಪಡಿಸಲಾಗಿರುತ್ತದೆ.** ಸದರಿ ಸಭೆಗೆ ಅಗತ್ಯ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಪ್ಪದೇ ಹಾಜರಾಗುವಂತೆ ಕೋರಲಾಗಿದೆ.

(ಲಕ್ಷ್ಮೀಸಾಗರ್ ಎನ್.ಕೆ.)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ (ಬಿ.ಬಿ.ಎಂ.ಪಿ)

ಇವರಿಗೆ:

1) ಮುಖ್ಯ ಆಯುಕ್ತರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
2) ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಬೆಂಗಳೂರು ಮೆಟ್ರೋ ರೈಲು ನಿಗಮ ನಿಯಮಿತ, ಬಿ.ಎಂ.ಟಿ.ಸಿ. ಬಸ್ ನಿಲ್ದಾಣ, ಟಿ.ಟಿ.ಎಂ.ಸಿ. ಕಟ್ಟಡ, ಶಾಂತಿನಗರ, ಬೆಂಗಳೂರು.
3) ಮುಖ್ಯ ಅಭಿಯಂತರರು (ರ.ಮೂ.ಸೌ), ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.
4) ಮುಖ್ಯ ಅಭಿಯಂತರರು (ಯೋಜನೆ ಕೇಂದ್ರ), ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು.

ಮುಖ್ಯ ಅಭಿಯಂತರರು (ರ.ಮೂ.ಸೌ.)
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಸಂಖ್ಯೆ 1069 ದಿನಾಂಕ 4/8/2022

ಮುಖ್ಯ ಅಭಿಯಂತರರು
ರಸ್ತೆ ಮೂಲಭೂತ ಸೌಲಭ್ಯಗಳು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಸತೀಶ್‌ಕುಮಾರ್ ಡಿ.ಎಂ., ಕೆ.ಎ.ಎಸ್ (ಆಯ್ಕೆ ಶ್ರೇಣಿ)
ಇಂಧನ ಸಚಿವರು ಹಾಗೂ
ಚಿಕ್ಕಮಗಳೂರು ಜಿಲ್ಲಾ ಉಸ್ತುವಾರಿ
ಸಚಿವರ ಆಪ್ತಕಾರ್ಯದರ್ಶಿ

ಕೊಠಡಿ ಸಂಖ್ಯೆ: 317-317ಎ,
3ನೇ ಮಹಡಿ, ವಿಧಾನಸೌಧ,
ಬೆಂಗಳೂರು-560 001
ದೂರವಾಣಿ: 080-22253835
ಇ-ಮೇಲ್: energyminister.gok@gmail.com

ಸಂಖ್ಯೆ: ಇ.ಸ/ಆಕಾ/ 49 /2023

ದಿನಾಂಕ 10.07.2023

ಮಾನ್ಯರೇ,

ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ 11.07.2023ರ ಮಂಗಳವಾರ 03.30 ಘಂಟೆಗೆ ವಿಧಾನಸೌಧದ ಕೊಠಡಿ ಸಂಖ್ಯೆ 313, ಸಮಿತಿ ಕೊಠಡಿಯಲ್ಲಿ ಭೈಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಗೆ ಸಂಪರ್ಕ ಕಲ್ಪಿಸುವುದಕ್ಕಾಗಿ "Construction of Elevated Rotary Flyover at IOC Junction & Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಅನುಷ್ಠಾನಗೊಳಿಸುವ ಸಂಬಂಧವಾಗಿ ಸಂಬಂಧಪಟ್ಟ ಅಧಿಕಾರಿಗಳ ಸಭೆಯನ್ನು ಆಯೋಜಿಸುವಂತೆ ಕೋರಲು ಮಾನ್ಯ ಸಚಿವರಿಂದ ನಿರ್ದೇಶಿಸಲ್ಪಟ್ಟಿದ್ದೇನೆ.

ಗೌರವಗಳೊಂದಿಗೆ,

ತಮ್ಮ ವಿಶ್ವಾಸಿ,

ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ

ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿರವರು,
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, 4ನೇ ಮಹಡಿ,
ವಿಕಾಸಸೌಧ, ಬೆಂಗಳೂರು.

ಸತೀಶ್‌ಕುಮಾರ್ ಡಿ.ಎಂ., ಕೆ.ಎ.ಎಸ್ (ಆಯ್ಕೆ ಶ್ರೇಣಿ)
ಇಂಧನ ಸಚಿವರು ಹಾಗೂ
ಚಿಕ್ಕಮಗಳೂರು ಜಿಲ್ಲಾ ಉಸ್ತುವಾರಿ
ಸಚಿವರ ಆಪ್ತಕಾರ್ಯದರ್ಶಿ

ಕೊಠಡಿ ಸಂಖ್ಯೆ: 317-317ಎ,
3ನೇ ಮಹಡಿ, ವಿಧಾನಸೌಧ,
ಬೆಂಗಳೂರು-560 001
ದೂರವಾಣಿ: 080-22253835
ಇ-ಮೇಲ್: energyminister.gok@gmail.com

ಸಂಖ್ಯೆ: ಇ.ಸ/ಆಕಾ/ 50 /2023

ದಿನಾಂಕ 10.07.2023

ಸಭಾ ಸೂಚನಾಪತ್ರ

ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ 11.07.2023ರ ಮಂಗಳವಾರ 03.30 ಘಂಟೆಗೆ ವಿಧಾನಸೌಧದ ಕೊಠಡಿ ಸಂಖ್ಯೆ 313, ಸಮಿತಿ ಕೊಠಡಿಯಲ್ಲಿ ಭೈಯಪ್ಪನಹಳ್ಳಿ ಬಳಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಗೆ ಸಂಪರ್ಕ ಕಲ್ಪಿಸುವುದಕ್ಕಾಗಿ "Construction of Elevated Rotary Flyover at IOC Junction & Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಅನುಷ್ಠಾನಗೊಳಿಸುವ ಸಂಬಂಧವಾಗಿ ಸಂಬಂಧಪಟ್ಟ ಅಧಿಕಾರಿಗಳ ಸಭೆಯನ್ನು ಆಯೋಜಿಸಲು ಉದ್ದೇಶಿಸಲಾಗಿದೆ.

ಆದುದರಿಂದ, ಸಭೆಯ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಅಗತ್ಯ ಮಾಹಿತಿಗಳೊಂದಿಗೆ ತಪ್ಪದೆ ಸಭೆಗೆ ಹಾಜರಾಗಲು ತಮ್ಮನ್ನು ಕೋರುವಂತೆ ಮಾನ್ಯ ಸಚಿವರಿಂದ ನಿರ್ದೇಶಿಸಲ್ಪಟ್ಟಿದ್ದೇನೆ.

ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ

1) ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿರವರು, ನಗರಾಭಿವೃದ್ಧಿ, ಇಲಾಖೆ, ವಿಕಾಸಸೌಧ, ಬೆಂಗಳೂರು.
2) ಆಯುಕ್ತರು ಹಾಗೂ ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯಕಾರ್ಯದರ್ಶಿರವರು, DULT, ಬೆಂಗಳೂರು.
3) ಡಿ.ಆರ್.ಎಂ, ಎಸ್.ಡಬ್ಲ್ಯು.ಆರ್, ಬೆಂಗಳೂರು.
4) ಡಿ.ಜಿ.ಎಂ, ರೈಲ್ವೆ ಇನ್‌ಫ್ರಾಸ್ಟ್ರಕ್ಚರ್, ಬೆಂಗಳೂರು ಈಸ್ಟ್ ಡಿವಿಷನ್, ಬೆಂಗಳೂರು.
5) ಡಿ.ಜಿ.ಎಂ, ಸಬ್ ಅರ್ಬನ್ ರೈಲ್ವೆ, ಬೆಂಗಳೂರು ಈಸ್ಟ್ ಡಿವಿಷನ್, ಬೆಂಗಳೂರು.
6) ಮಾನ್ಯ ಉಪಮುಖ್ಯಮಂತ್ರಿರವರ ತಾಂತ್ರಿಕ ಸಲಹೆಗಾರರು, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
7) ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಬಿ.ಎಂ.ಟಿ.ಸಿ, ಬೆಂಗಳೂರು.
8) ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಕರ್ನಾಟಕ ರೈಲು ಮೂಲಭೂತ ಸೌಕರ್ಯಅಭಿವೃದ್ಧಿ ನಿಗಮ,(ಕೆ-ಆರ್.ಐ.ಡಿ.ಇ), ಬೆಂಗಳೂರು
9) ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು (ಭೂಸ್ವಾಧೀನ), ಬೆಂಗಳೂರು ಜಿಲ್ಲೆ, ಬೆಂಗಳೂರು.
10) ಚೀಫ್ ಇಂಜಿನಿಯರ್, ಮೂಲಭೂತ ಸೌಕರ್ಯ, ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು
11) ಇಂಜಿನಿಯರ್ ಇನ್ ಚೀಫ್, ಬಿ.ಬಿ.ಎಂ.ಪಿ (ರಸ್ತೆ ಮೂಲಭೂತ ಸೌಕರ್ಯ), ಬೆಂಗಳೂರು;
12) ಸಿ.ಟಿ.ಎಂ/ಡಿ.ಟಿ.ಒ (ಆಪರೇಷನ್), ಬಿ.ಎಂ.ಟಿ.ಸಿ, ಬೆಂಗಳೂರು.
13) ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಎನ್.ಇ.ಜಡ್, ಬೆಂಗಳೂರು.
14) ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳು, ಐ.ಟಿ.ಸಿ, ಬೆಂಗಳೂರು.
15) ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು, ರಸ್ತೆ ಮೂಲಭೂತ ಸೌಕರ್ಯ, ಇವರು ಐ.ಒ.ಸಿ ಫ್ಲೈಓವರ್‌ಗೆ ಸಂಬಂಧಪಟ್ಟ Consultant ರವರನ್ನು ಸಭೆಗೆ ಕರೆತರುವುದು.
16) ಅಧೀಕ್ಷಕರು, ಐ.ಒ.ಸಿ ಮತ್ತು ಕನ್ಸಲ್ಟೆಂಸಿ ಟೀಮ್, ಬೆಂಗಳೂರು.

ಸತೀಶ್‌ಕುಮಾರ್ ಡಿ.ಎಂ., ಕೆ.ಎ.ಎಸ್ (ಆಯ್ಕೆ ಶ್ರೇಣಿ)
ಇಂಧನ ಸಚಿವರು ಹಾಗೂ
ಚಿಕ್ಕಮಗಳೂರು ಜಿಲ್ಲಾ ಉಸ್ತುವಾರಿ
ಸಚಿವರ ಆಪ್ತಕಾರ್ಯದರ್ಶಿ

ಕೊಠಡಿ ಸಂಖ್ಯೆ: 317-317ಎ,
3ನೇ ಮಹಡಿ, ವಿಧಾನಸೌಧ,
ಬೆಂಗಳೂರು-560 001
ದೂರವಾಣಿ: 080-22253835
ಇ-ಮೇಲ್: energyminister.gok@gmail.com

ಸಂಖ್ಯೆ: ಇ.ಸ/ಆಕಾ/ 48 /2023

ದಿನಾಂಕ 10/07/2023

ಟಿಪ್ಪಣಿ

ದಿನಾಂಕ: 11.07.2023ರ ಮಂಗಳವಾರ ಮಧ್ಯಾಹ್ನ 03.30 ಘಂಟೆಗೆ ಮಾನ್ಯ ಇಂಧನ ಸಚಿವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಭೈಯಪ್ಪನಹಳ್ಳಿ ಪ್ರದೇಶದಲ್ಲಿ ನೂತನವಾಗಿ ನಿರ್ಮಿಸಲಾಗಿರುವ ಬೆಂಗಳೂರು ನಗರದ 3ನೇ ಟರ್ಮಿನಲ್ ಆದ ಸರ್.ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ರೈಲ್ವೆ ಟರ್ಮಿನಲ್ ಅನ್ನು ಸಂಪರ್ಕಿಸಲು "Construction of Elevated Rotary Flyover at IOC Juntion & Construction of additional 2 Lane ROB at Byyappanahalli Railway Level Crossing" ಎಂಬ ಕಾಮಗಾರಿಯನ್ನು ಕೈಗೆತ್ತಿಕೊಳ್ಳುವ ಸಂಬಂಧವಾಗಿ ಸಂಬಂಧಪಟ್ಟ ಉನ್ನತಾಧಿಕಾರಿಗಳ ಸಭೆಯನ್ನು ಆಯೋಜಿಸಲು ಉದ್ದೇಶಿಲಾಗಿದೆ.

ಆದ ಕಾರಣ, ದಿನಾಂಕ 11.07.2023ರ ಮಧ್ಯಾಹ್ನ 03.15 ರಿಂದ ವಿಧಾನಸೌಧದ ಮೂರನೇ ಮಹಡಿಯ ಕೊಠಡಿ ಸಂಖ್ಯೆ 313ರ "ಸಮಿತಿ ಕೊಠಡಿ"ಯನ್ನು ಕಾಯ್ದಿರಿಸುವಂತೆ ತಮ್ಮನ್ನು ಕೋರಲು ಮಾನ್ಯ ಸಚಿವರಿಂದ ನಿರ್ದೇಶಿಸಲ್ಪಟ್ಟಿದ್ದೇನೆ.

ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ.

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ಸಿ.ಆ.ಸು.ಇ (ಕಾರ್ಯಕಾರಿ),
ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.

Hon'ble Deputy Chief Minister is visiting Sarvagna Nagar Constituency on 26-07-2023 (Wednesday).

For the Inspection of following works:

Time	Venue
2.00 P.M	Inspection of proposed Maruthi Seva Nagar Flyover, Byappanahalli 10C.
2.15 P.M	Inspection of Banaswadi Lake.
2.45 P.M	Inspection of Kacharakanahalli Lake.
3.15 P.M	Inspection of Hennur Bande Sy.No.30.

NEZ Infratech Private Limited
Civil Engineering Consultants
CIDC Regd No 220929
CIDC
No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road, Arehalli, Subramanyapura Post, Bengaluru - 560061
Phone No : + 91 80 26731005, 40397979 e-mail : nezsvy@gmail.com info@nezpl.com website:www.nezpl.com
CIN:U70100KA2015PTC084544, PAN:AAFCN1036R, GSTIN 29AAFCN1036R1ZZ

REF: NEZPL/OC/22-23/1206 **Date: 03-03-2022**

To,
The Executive Engineer,
Road Infrastructure-East Division,
#206, 2nd Floor, Annexe Building-3,
N.R.Square, Bengaluru-560002.

Sub: Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely ; Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Baiyyappanahalli on the Southern side after demolition of existing ROB at IOC Junction.

Reference: 1. South Western Railway letter No. 25/TCTB dated 05-01-2022
2. South Western Railway letter No. B/W.352/ROB/-RUB/Rotary/SMVB dated 10.02.2022

Dear Sir,
This letter is refers to Railway's comments under references above, where they have requested compliance for their comments.

As you were know, the BBMP (EE, AE, EE) officers and consultants jointly inspected with the Railway Officers at the proposed location of the Rotary on 6-1-2022, 10-01-2022, 26-01-2022, 2-2-2022 and 12-02-2022.

During the inspection, the Railway officials were requested to identify the locations of the proposed rotary pier locations on the site as shown in the concept plan.

Accordingly, consultants were marked all rotary pier locations at site and, after marking, jointly checked with the railways and found that the two pier's points were infringing with the railway line.

During the inspection, it was requested to modify the locations of the piers so that they do not infringe with the railway line. The locations of the rotary piers have been modified with the span system to suit KRIDE's future track requirements and are slightly modified in the plan.

All four modified rotary pier locations, as marked in the plan, have been relocated and verified on site for inspection and found to be order, the modified design is retained.

According to the modified span arrangements, the following are changes in the span system compared to the initial design.

Sl No	Initial Span	Revised span	Remarks
1	PR1 - PR2 67M	PR1 - PR2 66M	Refer Annexure-1
2	PR3 - PR4 80M	PR3 - PR4 87.33M	Refer Annexure-2
3	PR2 - PR3 54M	PR2 - PR3 50M	Refer Annexure-3
4	PR1 - PR4 54M	PR1 - PR4 48M	Refer Annexure-8

We have prepared a compliance report for the railway observations and attached it as a compliance report -1 along with its Annexures 1 to 8, for taking necessary action to communicate the Railways.

We assure you; the consultants will meet shortly with the Railway Officers in person and explain the compliance report to resolve the issues of their comments.

Thanking and assuring you of our best services at all times,

For Nez Infratech Pvt Ltd.

Nez Infratech Pvt. Ltd.

Kannan. M
Founder Chairman

Compliance Report

Sl No	Drawing No	Railway Observations	Compliance	Remarks
1	NEZ/DWG/PRJ/204-4-1 Sheet no 1 of 3 Page No 111	**a)** Railway boundary at Maruthi sevanagara side to be shown.	The railway border/boundary is now shown in the Maruthi savanagar side	Shown in Topographical drawing attached as **Annexure-5**
		b) Tracks indicated in section A-A is not confirming with the number of tracks shown in plan view.	Section A-A has been modified and the section A-A details match with the number of tracks shown in the plan view (6 tracks)	Modified section of A-A is enclosed as **Annexure-1** Initially Span was 67m now reduced to 66 m after verification at site
		c) Railway boundary at Maruthi sevanagara side to be indicated in section A-A also	In Section A-A , the railway border/boundary is now shown in the Maruthi sevanagara side	Refer Drawing enclosed as **Annexure-1**
		d) Foundation of PR-1 is very close to future Railway track which will infringe the track	After modifying section A-A with reference to tracks and railway boundaries, the foundation of the PR-1 does not infringe the track	Refer Drawing enclosed as **Annexure-1** foundation of PR-1 is away from future Railway track
2	NEZPL/DWG/PRJ/204-4-2 Sheet No 2 of 3 Page No 112	**e)** Distance from Railway boundary to PR-3 is not matching with plan view when compared with section view of section A1-A1.	The PR3 position has been changed after inspection on site and the span between the PR3-PR4 has been changed to 87.33m compared to the initial span of 84m.	Plan and section A1-A1 is now matching and attached as **Annexure-2**
		f) Foundation of PR-3 is very close to future Railway track which will infringe the future Railway racks and to be adjusted accordingly.	After modification of PR-3 location, foundation of PR-3 is now far away from railway track	Refer **Annexure-2** Pile Foundation is proposed for PR-3 and shown in Section A1-A1
		g) PB-1 is located inside the railway land is infringing to	The PB-1 location is now designed and	Refer Modified in

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Sl No	Drawing No	Railway Observations	Compliance	Remarks
		future proposed track	aligned to the outside of the railway property to prevent the infringing of foundation with proposed BSRP railway track-2	the concept plan Attached as **Annexure-4**
		h) Cross section view is not matching with direction indicated in plan A1-A1 with respect to orientation of piers, tracks and other features	The details of Section A1-A1 are now modified in accordance with the orientation features depicted in the plan at this section	Refer Attachment of **Annexure-2**
		i) In plan of Maruthi sevanagar side only one future track is shown where as in section at A1-A1 two future tracks are shown which is to be corrected	Section A1-A1 is modified with Only one future railway track and is now matches with plan.	Refer Attachment of **Annexure-2**
3	NEZPL/DWG/PRJ/204-4-3 Sheet no. 3 of 3 Page no. 110	**j)** Reduce level is mentioned as 911.554 and vertical clearance is shown with respect to ground whereas the same is required to be shown with respect to rail level in section A2-A2	The vertical clearance in section A2-A2 is with respect to Rail level and the Ground level is now shown in the drawings.	Refer attachment of **Annexure-3**
4	NEZPL/DWG/PRJ/204-4-4 Sheet no. 1 of 1 Page no. 113	**k)** Railway boundary on SMVB (Old madras road) side is not indicated	Railway boundary on SMVB (Old madras road) side is now indicated	Refer concept plan and Topo plan of attachment of **Annexure-4 & 5**
5	NEZPL/DWG/PRJ/204-5 Sheet no. 1 of 1 Page no. 118	**l)** Parcel office, siding, P-Way/ depot, old running room and proposed Crew/ running staff rest room to be shown in plan	Some of the old buildings on the railway land as noted in the comments that were missed during the topographical survey were recaptured and shown in the concept plan	Refer concept plan and Topo plan of attachment of **Annexure-4 & 5**
		m) Boundaries indicated in drawing shall be confirmed with land section, DRM office, South Western Railways near City Railway station	The railway boundaries specified in the concept plan are reviewed and confirmed with the relevant railway	Requested details of contact person concerned for land

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Page-3

Sl No	Drawing No	Railway Observations	Compliance	Remarks
			authorities as specified.	acquisition
		n) Existing Road from Mukunda theatre to Fly over towards old madras road is in Railway land which is not reflected in land acquisition details	The road referred to in the comment is marked in the LA Plan. LA Area shown as 24745.22 Sqmt (6.11 Acre)	Refer Modified L A Plan enclosed as **Annexure-7**
		o) Railway land is shown as defence land opposite IOC petrol pump (old IOC lube oil shed) same to be corrected	After your comments, the land is renamed in drawing as Railway Land from Defense Land	Refer **Annexxure-4 & 5**
6	NEZPL/DWG/PRJ/204-7 Sheet no. 1 of 1 Page no. 116	**p)** Subway to be extended beyond track at SMVB yard side	The subway has been extended beyond existing railway track	Refer modified concept plan **Annexure-4**
		q) Earth cushion is shown as only 500mm. there should be a minimum earth cushion is shown as only 700mm above subway for future pipeline crossing with casing pipes, construction yard drains etc.	The earth cushion has now been modified to ensure a minimum of 700mm cushion, allowing pipelines with casing that carry water, sewer, toxic or other non-combustible materials under pressure or without pressure to pass under railway rails.	Modified Cross section at AA for Subway is enclosed as **Annexure- 6**
		r) Drains outlet discharge point of subway to be shown	The drain outflow of the subway follows the original ground slope towards the old Madras road	Refer **Annexure-6**

During a joint inspection with railway authorities on 26/1/2022, they pointed out additional details on the site other than the above list and requested to include in the revised drawings to be submitted.

Nez Infratech Pvt. Ltd.

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The following are additional details incorporated in the submitted modified drawings.

Sl No	Railways Observations	Compliance to Observations	Remarks
1	Place for service road to be provided from Railway entry/exist gate to Railway Police station near ROB at LC 136A	Provision of Service road is provided on Left side of flyover & RE wall approaches towards Old madras road.	Refer Modified Concept plan **Anneure-4**
2	Requested for providing a route from Rotary exclusively to Railway staffs to access Railway Maintenance Building within Railway Property	Approach is planned to be used only for railway staffs to access the railway maintenance building within the railway property. Approach width is designed to be 6.5 m and the minimum carriageway width is 5.5 m	Refer Concept plan **Annexure-4**

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Page-5.

NEZ Infratech Private Limited
Civil Engineering Consultants
CIDC Regd No 220929 CIDC
No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road, Arehalli, Subramanyapura Post, Bengaluru - 560061
Phone No : + 91 80 26731005, 40397979 e-mail : nezsvy@gmail.com info@nezpl.com website:www.nezpl.com
CIN:U70100KA2015PTC084544, PAN:AAFCN1036R, GSTIN 29AAFCN1036R1ZZ

REF: NEZPL/OC/22-23/1303

Date: 15-06-2022

To,
The Executive Engineer
Road Infrastructure – East Division,
2nd Floor, Annexe-3 Building, N.R. Square
Bengaluru-560002.

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) and Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New Constructed Sir M Vishweshwaraiah Railway Terminal at Baiyappanahalli.- Submission of Revised Drawing.

Reference: 1. This office letter No. NEZPL/OC/22-23/1254 dated: 25-04-2022.
2. This office letter No. NEZPL/OC/22-23/1271 dated: 19-05-2022.
3. Your Office letter No. EE/RI(East)/PR/83/2022-23 dated: 08-06-2022.

Dear Sir,

In response to the request made by Railways and with your permission we visited Baiyyappanahalli Rotary project site on 13-06-2022, following railway officials were present at site for site inspection.

1. Senior Divisional Engineer East – Mr. Sathyajit Harne
2. Divisional Engineer South – Mr. Prashant Tripathi
3. Assistant Divisional Engineer – Mr. Ram Mohan
4. Senior Section Engineer – Mr. Unnikrishnan
5. SSE Land Railways – Mr. Ravikumar
6. Executive Director - Mr. H.V. Mallikarjuna, NEZ Infratech Pvt. Ltd.
7. Sr. Surveyor – Mr. Arunkumar .M, NEZ Infratech Pvt. Ltd.

Following points were discussed in order to finalize the drawing for obtaining approval for GAD from Railways.

1. Text written as Proposed Railway Boundary is changed as Railway Boundary in drawing no. NEZPL/DWG/PRJ/204-4-1 & NEZPL/DWG/PRJ/204-4-2 as per direction of Railways.
2. Railway Boundary limit shown near Kammanahalli Road is changed as per SSE Land Railways directions.
3. Proposed Pier location (PDM-29) at chainage 1060.0m is shifted as per the directions of Senior Divisional Engineer East Railways.
4. Turning radius near pier no PDM-29 is in order as per IRC standard.

So we have finalized and prepared final drawing incorporating the correction given by Railways and submitting to you for your records and further processing of tender etc.

Thanking and assuring you of our best services at all times,

For Nez Infratech Pvt Ltd.

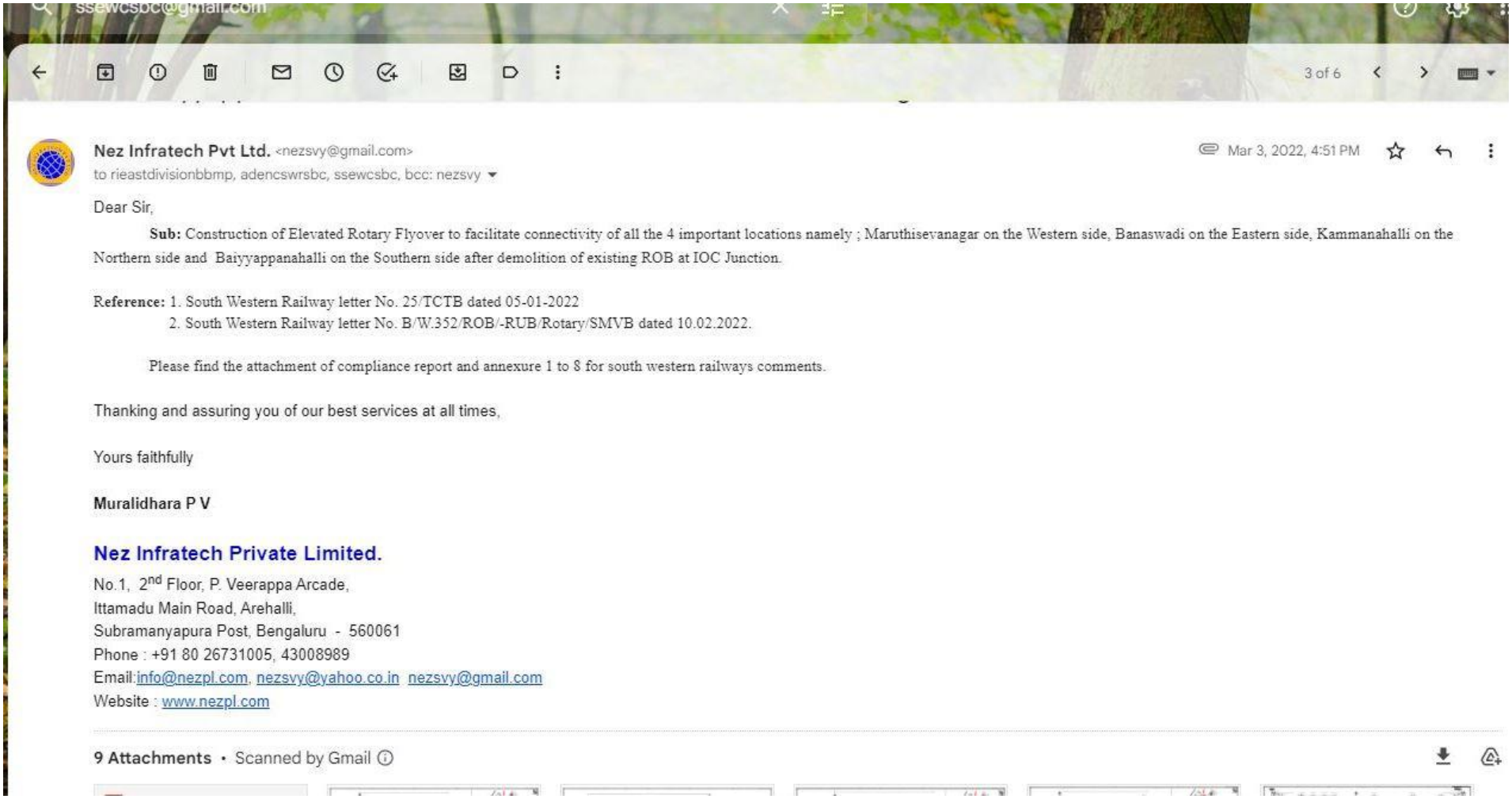
Nez Infratech Pvt. Ltd.

Kannan. M
Founder Chairman

ದಿನಾಂಕ 15/6/2022

Enclosures: 1. Final Drawings

Copy to: 1. Chief Engineer Road infrastructure, BBMP, for kind information.
2. Divisional Railway Manager (Works)
3. Senior Divisional Engineer East
4. Divisional Engineer South
5. Assistant Divisional Engineer South Western Railway
6. Office Copy.



3 of 6

Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to rieastdivisionbbmp, adencswrsbc, ssewcsbc, bcc: nezsvy

Mar 3, 2022, 4:51 PM

Dear Sir,

Sub: Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely ; Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Baiyyappanahalli on the Southern side after demolition of existing ROB at IOC Junction.

Reference: 1. South Western Railway letter No. 25/TCTB dated 05-01-2022
2. South Western Railway letter No. B/W.352/ROB/-RUB/Rotary/SMVB dated 10.02.2022.

Please find the attachment of compliance report and annexure 1 to 8 for south western railways comments.

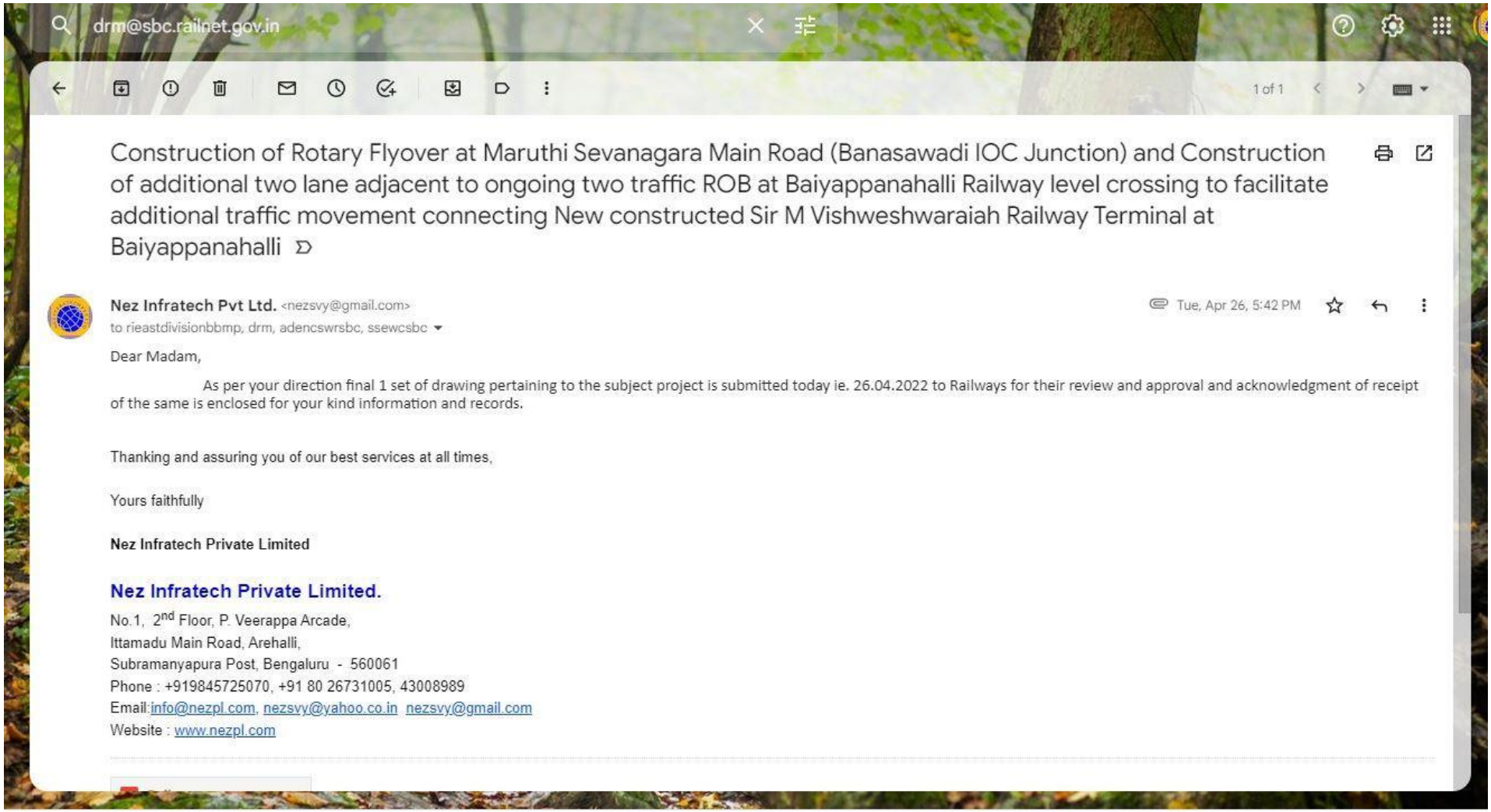
Thanking and assuring you of our best services at all times,

Yours faithfully

Muralidhara P V

Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com

9 Attachments • Scanned by Gmail


drm@sbc.railnet.gov.in
1 of 1
Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) and Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New constructed Sir M Vishweshwaraiah Railway Terminal at Baiyappanahalli
Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to rieastdivisionbbmp, drm, adencswrsbc, ssewcsbc
Tue, Apr 26, 5:42 PM
Dear Madam,
As per your direction final 1 set of drawing pertaining to the subject project is submitted today ie. 26.04.2022 to Railways for their review and approval and acknowledgment of receipt of the same is enclosed for your kind information and records.
Thanking and assuring you of our best services at all times,
Yours faithfully
Nez Infratech Private Limited
Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +919845725070, +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com

AGENDA

Technical Advisory Committee Meeting to review the Roads, Grade separators and Buildings work DPR's prepared under 2016-17, 2017-18 & 2018-19 GoK Grants.

On 13.08.2021 at 2.30 PM

Chief Engineer- Road Infrastructure

Executive Engineer, RI- East

Subject No-01	Construction of ROB at Byyappanahalli Bengaluru including Rotary Flyover at IOC junction and Construction of Road integrating Banasawadi Main Road and Old Madras Road to facilitate connectivity to New Sri.M.Vishweswaraiah terminal at Byyappanahalli Railway Station. **DPR Consultants - M/s. NEZ Infratech Pvt. Ltd.**

Executive Engineer, Road Infra

Subject No-02	Construction of Grade Separator in the Junction of Surnjandas Road and Old Madras Road Bengaluru **(Scope of Work Changing from 6 Lane Under Pass to 4 Lane Fly Over).** **DPR Consultants -M/s. Infra Support Consultants**

Chief Engineer-West

Executive Engineer, Mahalakshmipuram

Subject No-03	Comprehensive development of Roads and drains in Mahalakshmi layout Constituency **DPR Consultants - Mecadez Core Technologies Pvt. Ltd.**

Sl No	Name of work	Amount (in lakhs)
1	Providing Asphalting to Pipeline Road Near Bhagyajyothi Colony and surrounding area in Ward No.67	75.00
2	Providing Asphalting to 10th A Cross, 11th A Cross, 4th C Main, 1st Main road and surrounding area near Rajajinagar Metro station in Ward No.67	81.00
3	Construction Of CC Road and RCC Drain Near BGS School In Ward No.67	99.00
4	Construction of RCC Drain to 19th Main in Muniswamappa Badavane & Surrounding area in Ward No-75 Shankar mutt	70.00
5	Construction of RCC Drain to 2nd Main & 4th Main in Kirloskar Colony & Surrounding Area in Ward No-75 Shankar mutt	55.00
6	Construction of RCC Drains to 4th Cross, 5th Cross, & 6th Cross in Kirloskar Colony & Surrounding area in Ward No-75 Shankar mutt	60.00
7	Construction of RCC Drains to 1st Cross, 5th Cross & 1st Main in KEC Layout & Surrounding Area in Ward No-75 Shankar mutt	60.00
8	Improvements to Roads and Drains at Nanjappa Layout, Andanappa Layout and Surrounding Areas in Ward no 102 Vrushabavathinagara.	95.00
9	Improvements to Roads and Drains at 6th main road and cross road near market road and Surrounding Areas in Ward no 102 Vrushabavathinagara.	90.00
10	Improvements to Roads and Drains at Church Road, 1st Main Road Ngos Colony, Badrappa Layout and Surrounding Areas In Ward No 102 Vrushabhavathinagara	80.00
11	Development of CC Roads and CC Road Patches in Vrushabavathinagara Ward no 102	80.00
12	Improvements to CC Roads and Drain desilting to Sannakkibaylu and Vinayaka nagar cross roads in Ward no 102 Vrushabavathinagara.	60.00
13	Providing New R.C.C Drain and CC Road Near Strom Water Drain in Ward No 102 Vrushbavathi Nagara	95.00
		1000.00

Chief Engineer-RR Nagar Zone

Executive Engineer, Kengeri Division

Subject No-04	Comprehensive Development of Roads and Drains surrounding villages of Seegehalli SWM Plant in Yeshwanthapura Constituency. Package No.01 (G.O No.UDD 57 MNY 2019 E-Part 1 Bangalore, Dated: 02.06.2021). **DPR Consultants - Civil Quality Consultants and Engineers.**

Subject No-05	Comprehensive Development of Roads and Drains surrounding villages of Kannahalli SWM Plant in Yeshwanthapura Constituency. Package No.02 (G.O No.UDD 57 MNY 2019 E-Part 1 Bangalore, Dated: 02.06.2021). **DPR Consultants - Civil Quality Consultants and Engineers.**

Subject No-06	Improvements to Roads and drains and Developmental works to Seegehalli and kannahalli SWM plant and Surrounding in Yeshwanthapura Constituency. Package No.03 (G.O No.UDD 57 MNY 2019 E-Part 1 Bangalore, Dated: 02.06.2021). **DPR Consultants - Civil Quality Consultants and Engineers.**

Note:-Additional subjects with the permission of the chairman.

• • www.kride.in

Rail Infrastructure Development Company (Karnataka) Limited

(A Joint Venture of Govt. of Karnataka & Ministry of Railways)

ರೈಲು ಮೂಲಸೌಲಭ್ಯ ಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ನಿಯಮಿತ

(ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಮತ್ತು ರೈಲ್ವೆ ಸಚಿವಾಲಯದ ಜಂಟಿ ಉದ್ಯಮ)

No. K-RIDE/Projects/BSRP/2021/BBMP/002 Date: 18.11.2021

To,
The Chief Commissioner
Bruhat Bengaluru Mahanagara Palike,
Hudson Circle,
Bengaluru- 560002

ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಮುಖ್ಯ ಆಯುಕ್ತರವರ ಆಪ್ತ ಕಾರ್ಯಾಲಯ
ಸಂಖ್ಯೆ ಪಿ. ಎಸ್.ಆರ್. (1) 5943/21-22.
ದಿನಾಂಕ 19/11/21

CE (R-I)

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Sub: Baiyyappanahalli Rotary near Sewanagar BSRP station.

Ref: 1. HPC meeting point no. 6.1, dtd. 02.08.2021
2. Email from Nez Infratech Pvt. Ltd., dtd. 03.07.2021

****

With reference to above mentioned subject a meeting was held between K-RIDE and BBMP officials. After the meeting a drawing was submitted to K-RIDE via mail cited in Ref 2, showing the Baiyyappanahalli rotary with changed pier locations and rearrangement of span of rotary, incorporating the BSRP C-2 alignment.

This proposal is acceptable to K-RIDE and as token of acceptance we are submitting the signed copy of the drawing with this letter.

This is for your information please.

Yours Sincerely,

18/11/21

(N. Subramanian)
General Manager/Civil/P&D

Encl.: - As above.

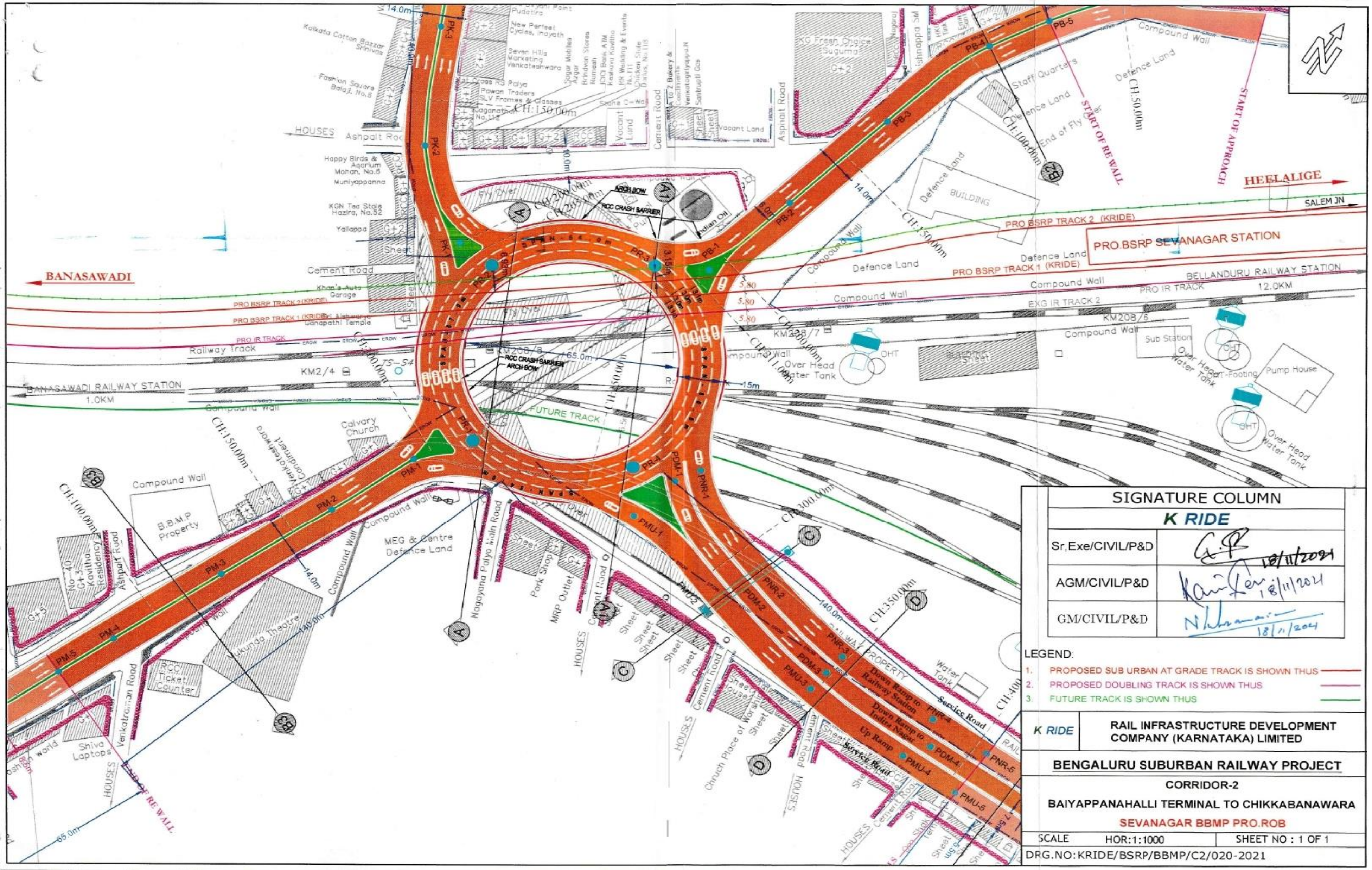
ಮುಖ್ಯ ಅಭಿಯಂತರರವರ ಕಛೇರಿ (ರ.ಮೂ.ಸೌ.)
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಸಂಖ್ಯೆ 1524 ದಿನಾಂಕ 26/11/2021

EE/ East - RI)
pl. file. This is very important Document.
26/11/2021

Chief Engineer
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike

Reg. Office :
Samparka Soudha, 1st Floor, Opp. Orion Mall,
Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore -560010.

CIN : U60100KA2000PLC028171
Ph: +91 6364890813
Email: md@kride.in


BANASAWADI
HEELALIGE
SALEM JN
PRO.BSRP SEVANAGAR STATION
PRO BSRP TRACK 2 (KRIDE)
PRO BSRP TRACK 1 (KRIDE)
BELLANDURU RAILWAY STATION
12.0KM
BANASAWADI RAILWAY STATION
1.0KM
PRO IR TRACK
EXG IR TRACK 2
FUTURE TRACK
Railway Track
Defence Land
Compound Wall
Calvary Church
B.B.M.P Property
MEG & Centre Defence Land
Mukunda Theatre
Over Head Water Tank
Pump House
Sub Station
START OF RE WALL
START OF APPROACH
End of Fly Over
Down Ramp to Railway Station
Down Ramp to Indira Nagar
Up Ramp
Service Road
SIGNATURE COLUMN
K RIDE
Sr.Exe/CIVIL/P&D
AGM/CIVIL/P&D
GM/CIVIL/P&D
LEGEND:
1. PROPOSED SUB URBAN AT GRADE TRACK IS SHOWN THUS
2. PROPOSED DOUBLING TRACK IS SHOWN THUS
3. FUTURE TRACK IS SHOWN THUS
K RIDE
RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED
BENGALURU SUBURBAN RAILWAY PROJECT
CORRIDOR-2
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA
SEVANAGAR BBMP PRO.ROB
SCALE
HOR:1:1000
SHEET NO : 1 OF 1
DRG.NO:KRIDE/BSRP/BBMP/C2/020-2021

K RIDE

www.kride.in

Rail Infrastructure Development Company (Karnataka) Limited

(A Joint Venture of Govt. of Karnataka & Ministry of Railways)

ರೈಲು ಮೂಲಸೌಕರ್ಯ ಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ನಿಯಮಿತ

CE (R-1)

No: BYPL – HSRA/BSRP/CORRIDOR-2/135 Date:29.09.2021

To,
The Commissioner
Bruhat Bengaluru Mahanagara Palike
Bengaluru

ಮುಖ್ಯ ಆಯುಕ್ತರು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Sub: Bangalore Suburban Rail Project: Elimination of 6 Level Crossings between Hebbal & Banaswadi stations of Indian Railways.

Sir,

Bangalore suburban rail project (BSRP) has been sanctioned by Railway Board at a cost of Rs. 15767 crores and comprises of the four corridors in which dedicated railway lines will be constructed parallel to existing railway lines within the Railway's RoW.

As of now, detailed alignment planning of Corridor-2 has been done based on field survey, land availability and construction feasibility. Corridor-2 of BSRP starts from Benniganahalli, goes via Yeshwanthpur and terminates at Chikkabanawara.

In Corridor-2, there are 6 Level Crossings in a stretch of 2.50 km in Hebbal-Banaswadi section which need to be eliminated by providing ROB or RUB.

Among these 6 LCs, LC no. 142 was sanctioned for ROB by MoR about 8 years ago and construction on this LC has not started due to problem in land acquisition in this thickly populated area. Another LC no. 143 is proposed as a RUB on Deposit terms by BBMP, which will have issues due to lack of proper storm water drainage arrangement etc.

Conventional construction of ROB/RUB requires land acquisition on the approaches and also needs proper drainage. As per the survey data, these LCs fall in highly populated residential area. Therefore, execution is likely to be delayed due to complex & costly land acquisition.

To overcome problem of such land acquisition, a proposal has been made to **lift the existing railway tack** from IR Ch 211/625 to 216/275 (4.65 km including ramp length) **by a height of about 4m to 7m, to eliminate these 6 LCs and insert limited height subways at the locations of the Level Crossings**. The advantages of this proposal are:

1. Minimum land acquisition will be required as approach length will be reduced due to the fact that RUB's bed level will be same as existing road level itself.
2. Drainage issues will be sorted out as no water accumulation will happen.
3. Significant cost savings to the government.

for nla

Chief Engineer
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike

ಮುಖ್ಯ ಆಡಳಿತಾಧಿಕಾರಿ ಕಛೇರಿ (ಪ.ಮಾ.ಪಾ.)
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಸಂಖ್ಯೆ 1160 ದಿನಾಂಕ 04/10/2021

Reg. Office :
Samparka Soudha, 1st Floor, Opp. Orion Mall,
Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore -560010.

CIN : U60100KA2000PLC028171
Ph: +91 6364600813
Email : md@kride.in

General arrangement drawings (GAD) of the 6 RUB's have been prepared & are being sent for your approval herewith. Signed GADs may kindly be returned to us. After approval of BBMP, the detailed engineering design will be developed for approval of South Western Railway.

Amit Garg
Managing Director

Encl.: 7 drawings: GAD of RUB's for elimination of LC. No-140, 141, 142, 143, 144 & 144A (6Nos) and master GAD.

Copy of the letter to: Chairman / KRIDE & Chief Secretary / GoK for kind information.
ACS/IDD for kind information.
Chief Engineer / BBMP
DRM/SBC/SWR

K RIDE

Rail Infrastructure Development Company (Karnataka) Limited
(A Joint Venture of Govt. of Karnataka & Ministry of Railways)
ರೈಲು ಮೂಲಸೌಕರ್ಯ ಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ಸೀಮಿತ
(ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಮತ್ತು ರೈಲ್ವೆ ಮಂತ್ರಾಲಯದ ಜಂಟಿ ಉದ್ಯಮ)

www.kride.in

No: GM/P&D/K-RIDE/PLANNING/21/2021/86

Date 11.07.2023

To,
The Engineer in Chief,
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike
Hudson Circle
Bengaluru 560002, Karnataka.

Sub: Baiyyappanahalli Rotary near Sewanagar BSRP station - regarding

Ref: K-RIDE letter no. K-RIDE/Projects/BSRP/2021/BBMP/002 dated 18.11.2021.

In connection to the captioned subject and the letter cited in reference, it is to bring to your kind notice that the executing agency for BSRP Corridor-2 project is on board , detailed ground survey works carried out for the same and to provide multi modal integration with Sir M. Visvesvaraya Railway Terminal with the BSRP Sewanagar station and also providing better road connectivity , the Baiyyappanahalli Rotary drawing is enclosed herewith incorporating the BSRP Corridor-2 alignment . Minor change in Pier P2 & P3 may be noted.

This is for your kind information and necessary action please.

(Vijay Kumar)
General Manager/C-2 and P&D

ಪ್ರಧಾನ ಅಭಿಯಂತರರು (ರಸ್ತೆ ಮೂಲಸೌಕರ್ಯ)
ಸಂಖ್ಯೆ 39
ದಿನಾಂಕ 31/07/23
ಬೆಂಗಳೂರು

Encl: As above. (2 Pages)

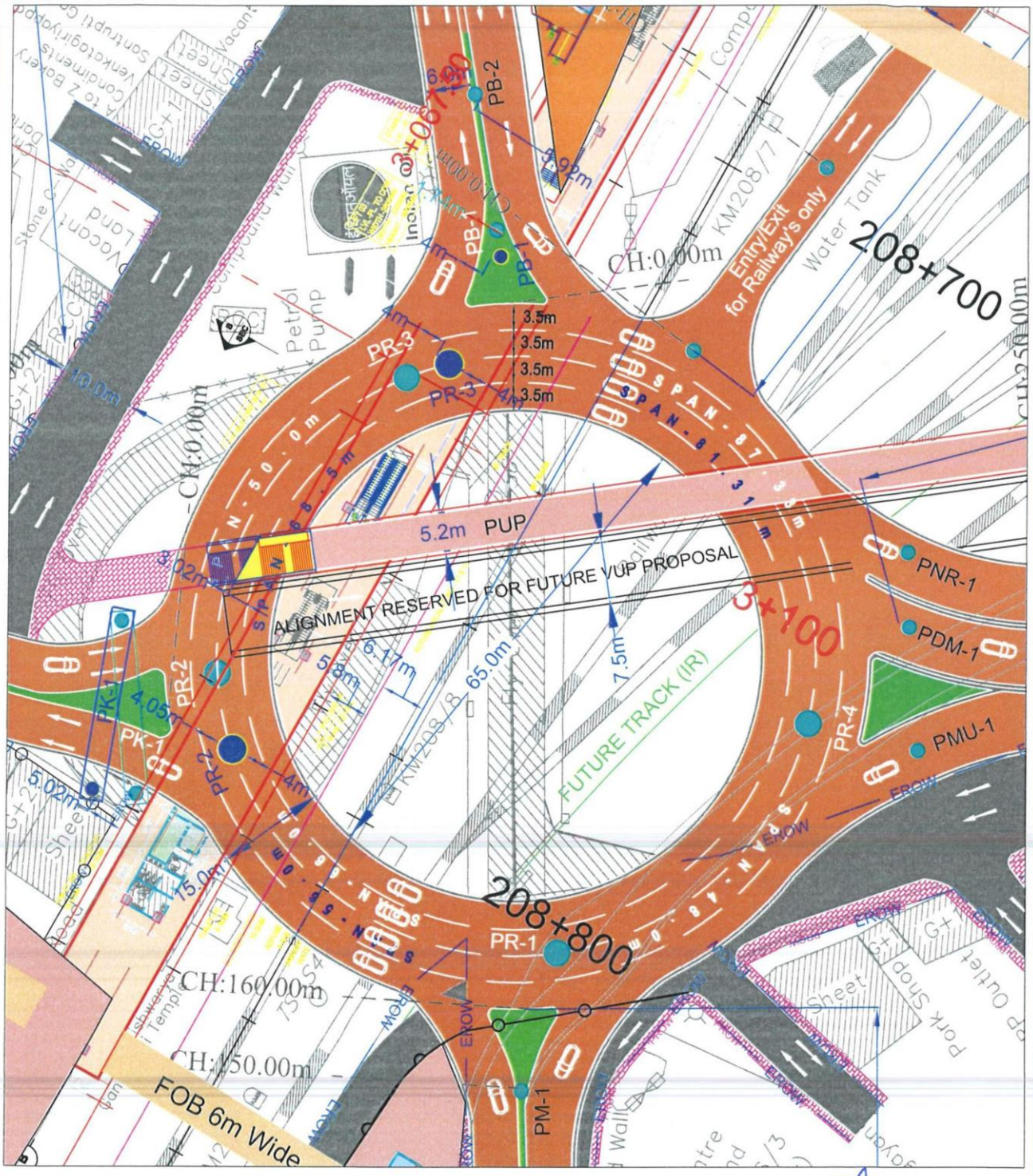
Copy of the letter to : 1.MD / K-RIDE for kind information please.
2.Commissioner/BBMP for kind information and necessary action please.
3. DPP / K-RIDE for kind information please.

ಪ್ರಧಾನ ಅಭಿಯಂತರರು
ಸಂಖ್ಯೆ 413/23-24
ದಿನಾಂಕ 21/07/23

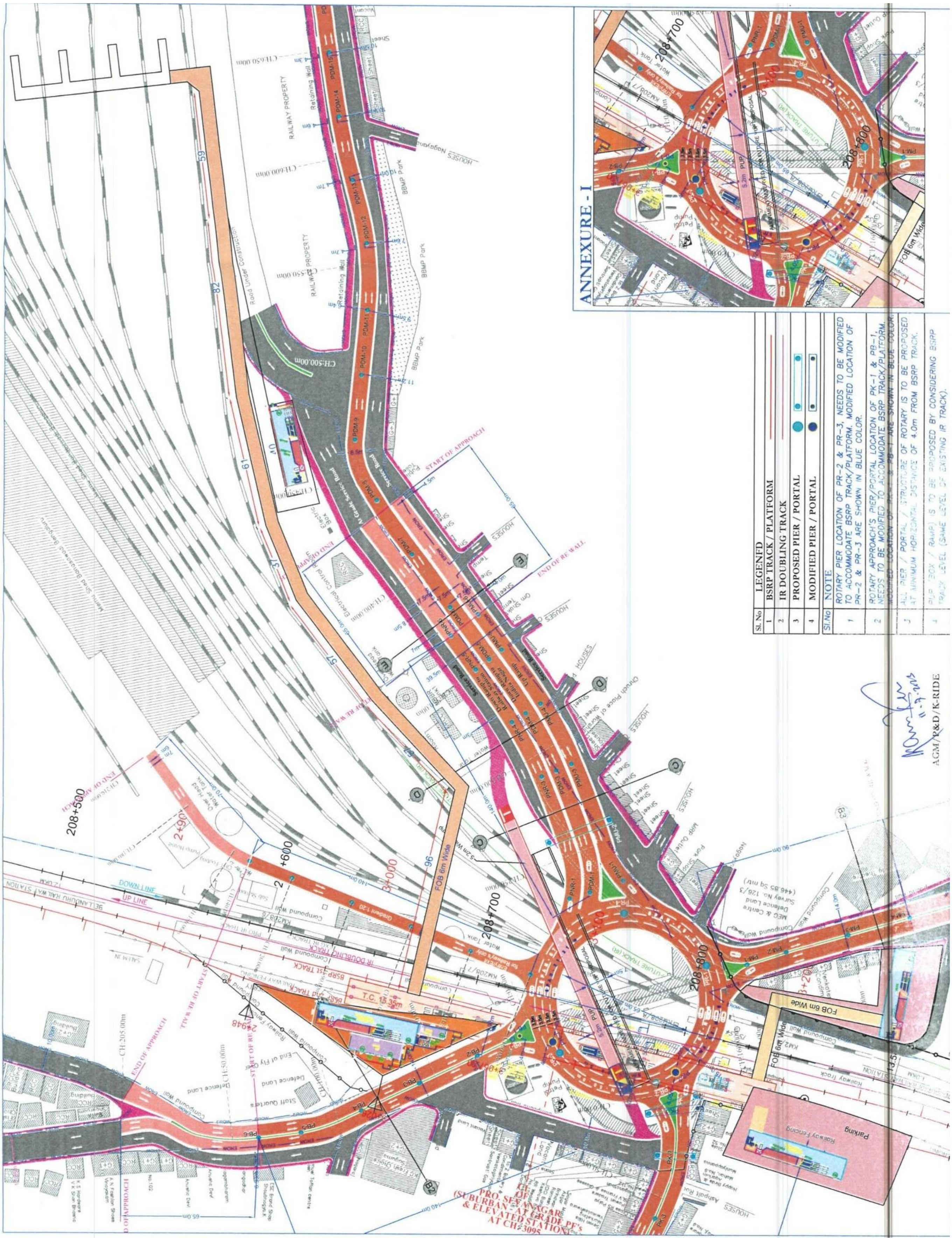
Reg. Office :
Samparka Soudha, 1st Floor, Opp. Orion Mall,
Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore -560010.

CIN : U60100KA2005GC028171
Ph: +91 6364890846
Email: md@kride.in

ANNEXURE - I



AGM/P&D/K-RIDE


ANNEXURE - I
Sl. No | LEGEND
1 BSRP TRACK / PLATFORM
2 IR DOUBLING TRACK
3 PROPOSED PIER / PORTAL
4 MODIFIED PIER / PORTAL
Sl.No NOTE
1 ROTARY PIER LOCATION OF PR-2 & PR-3, NEEDS TO BE MODIFIED TO ACCOMMODATE BSRP TRACK/PLATFORM. MODIFIED LOCATION OF PR-2 & PR-3 ARE SHOWN IN BLUE COLOR.
2 ROTARY APPROACH'S PIER/PORTAL LOCATION OF PK-1 & PB-1, NEEDS TO BE MODIFIED TO ACCOMMODATE BSRP TRACK/PLATFORM. MODIFIED LOCATION OF PK-1 & PB-1 ARE SHOWN IN BLUE COLOR.
3 ALL PIER / PORTAL / STRUCTURE OF ROTARY IS TO BE PROPOSED AT MINIMUM HORIZONTAL DISTANCE OF 4.0m FROM BSRP TRACK.
4 PUP (BOX / RAMP) IS TO BE PROPOSED BY CONSIDERING BSRP TRACK LEVEL (SAME LEVEL OF EXISTING IR TRACK).
AGM/P&D/K-RIDE
208+500
208+700
208+800
FOB 6m Wide
RAILWAY PROPERTY
BBMP Park
Road Under Construction
Service Road
START OF APPROACH
END OF APPROACH
END OF RE-WALL
START OF RE-WALL
Parking
Railway Fencing
UP LINE
DOWN LINE

K RIDE

Rail Infrastructure Development Company (Karnataka) Limited
(A joint Venture of Govt. of Karnataka and Ministry of Railways)

ರೈಲು ಮೂಲಸೌಲಭ್ಯ ಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ನಿಯಮಿತ
(ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಮತ್ತು ರೈಲ್ವೆ ಸಚಿವಾಲಯದ ಜಂಟಿ ಉದ್ಯಮ)

No: GM/P&D/K-RIDE/PLANNING/21/2021/109

Date 28.08.2023

ಬೃ. ಬೆ. ಮ. ಪಾ. ಮುಖ್ಯ ಆಯುಕ್ತರವರ ಆಪ್ತ ಕಾರ್ಯಾಲಯ
ಸಂಖ್ಯೆ ಪಾ. ಎಸ್. ಆರ್. (1) HH65
ದಿನಾಂಕ 2/9/23 E-101383
4/9/23

To,
The Engineer in Chief,
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike
Hudson Circle
Bengaluru 560002, Karnataka.

Sub: Baiyyappanahalli Rotary near Sewanagar BSRP station.

Ref: K-RIDE letter no. GM/P&D/K-RIDE/PLANNING/21/2021/86 dated 11.07.2023.

In connection to the captioned subject and letter cited in reference, the schematic plan of Baiyyappanahalli Rotary near Sewanagar BSRP station with incorporating the BSRP Corridor-2 alignment was submitted to your good office for kind information and necessary action. However, till date our office has failed to receive any development/conceptual GAD from your end.

Your attention to the fact that Corridor-2 work has already started. Hence, it is requested to kindly expedite the process for timely execution of BSRP Corridor-2 project. Your early action in this regard will be highly solicited.

AEE(T) 15/9/23
CE(Tech) A(M) for nla
EIC

(Vijay Kumar)
General Manager/C-2 and P&D

Encl: K-RIDE letter no. GM/P&D/K-RIDE/PLANNING/21/2021/86 dtd 11.07.2023.

Copy of the letter to : 1.MD / K-RIDE for kind information please.
2.Commissioner/BBMP for kind information please.
3. DPP / K-RIDE for kind information please.

ಪತ್ರವನ್ನು ಅಭಿಯಂತರರು ಪಡೆದಿರುವ ಸಂಖ್ಯೆ: 7.12.23-24 ದಿನಾಂಕ: 8/9/23

125 15/9/23

Reg. Office:
Samparka Soudha, 1 st Floor, Opp. Orion Mall,
Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore - 560010.

CIN : U60100KA2005SGC038171
Ph : +91 080-24487800
Email : mdkride@gmail.com
www.kride.in

www.kride.in
Rail Infrastructure Development Company (Karnataka) Limited
(A Joint Venture of Govt. of Karnataka & Ministry of Railways)
ರೈಲು ಮೂಲಸೌಕರ್ಯ ಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ಸೀಮಿತ
(ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಮತ್ತು ರೈಲ್ವೆ ಸಚಿವಾಲಯದ ಜಂಟಿ ಉದ್ಯಮ)

No: GM/P&D/K-RIDE/PLANNING/21/2021/163 **Date** 22.01.2024

To,
The Engineer in Chief,
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike
Hudson Circle
Bengaluru 560002, Karnataka.

Sub: Baiyyappanahalli Rotary near Sewanagar BSRP station – reminder 2.

Ref: 1) K-RIDE letter no. GM/P&D/K-RIDE/PLANNING/21/2021/86 dated 11.07.2023.
2) K-RIDE letter no. GM/P&D/K-RIDE/PLANNING/21/2021/109 dated 28.08.2023.

In connection to the captioned subject and letter cited vide above references, the schematic plan of Baiyyappanahalli Rotary near Sewanagar BSRP station with incorporating the BSRP Corridor-2 alignment was submitted to your good office for kind information and necessary action. However, till date our office has failed to receive any development/conceptual GAD from your end.

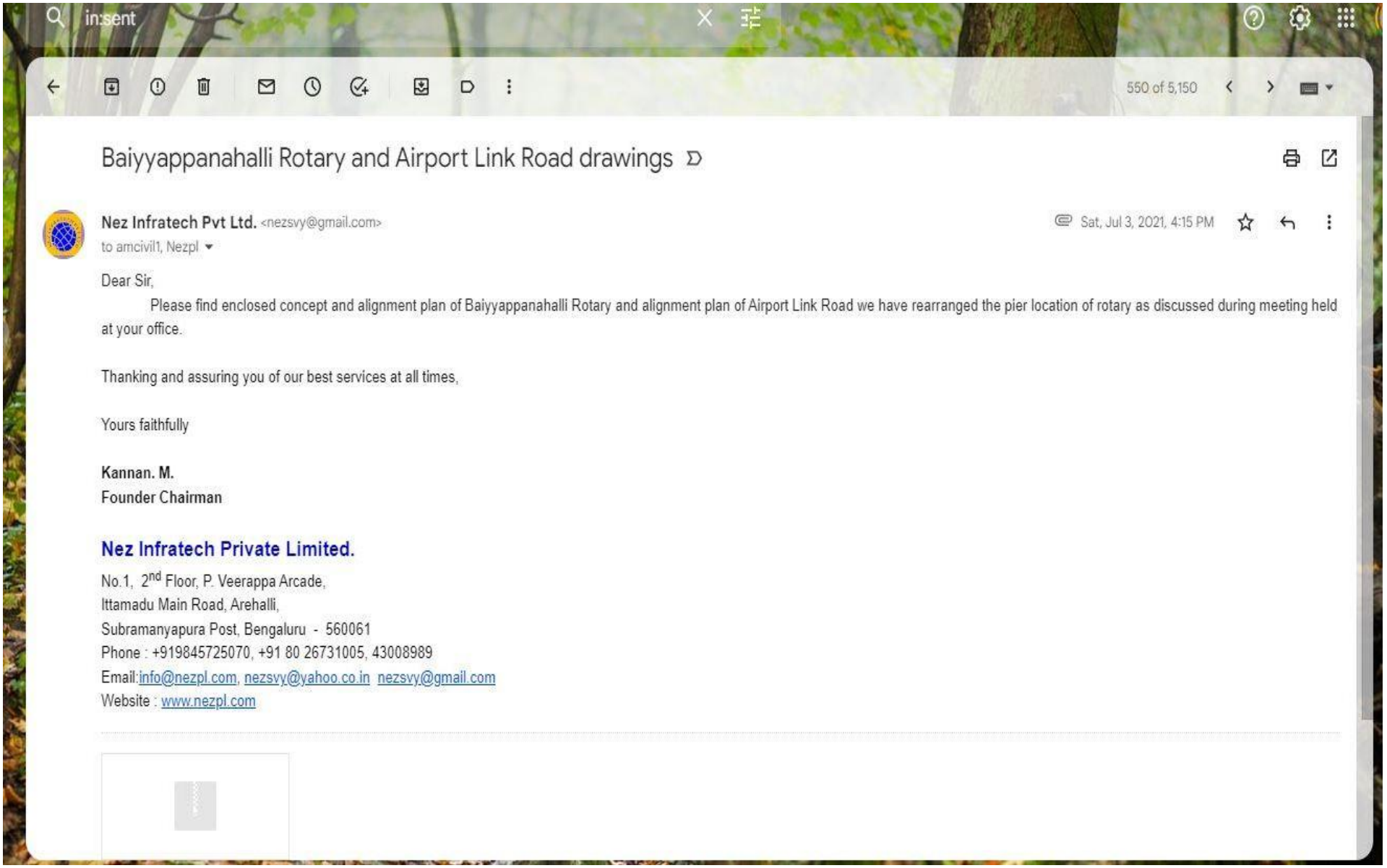
Therefore, it is requested to kindly look into this matter. An early action on your part will enable timely completion of this project .

VIJAY KUMAR Digitally signed by VIJAY KUMAR Date: 2024.01.22 14:17:46 +05'30'

(Vijay Kumar)
General Manager/C-2 and Planning

Encl: As above.

Copy of the letter to : 1.MD / K-RIDE for kind information please.
2.Commissioner/BBMP for kind information and necessary action please.
3. DPP / K-RIDE for kind information please.


in:sent
550 of 5,150
Baiyyappanahalli Rotary and Airport Link Road drawings
Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to amcivil1, Nezpl
Sat, Jul 3, 2021, 4:15 PM
Dear Sir,
Please find enclosed concept and alignment plan of Baiyyappanahalli Rotary and alignment plan of Airport Link Road we have rearranged the pier location of rotary as discussed during meeting held at your office.
Thanking and assuring you of our best services at all times,
Yours faithfully
Kannan. M.
Founder Chairman
Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +919845725070, +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com

South Western Railway

No.25/TCTB.

Office of the,
ADEN/C/SBC,
Date: 05.01.2022.

Sr. DEN/E/SBC.

Sub: - Construction of Rotary Flyover at Maruthi Sevanagara Main road (Banasawadi IOC Junction) and Construction of Additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New constructed Sir M Vishvehawaraiah Railway Terminal at Baiyappanahalli.-Reg.

Ref: - Chief Engineer road Infrastructure BBMP Lr. No.BBMP/CE(RI)/PR1652/2021-22. Dt.13.12.2021.

***

In connection with the above, the following observations are made by Railways.

S#	Drawing No.	Observation
1	NEZPL/DWG/PRJ/204-4-1 Sheet no.1 of 3 Page no.111	• Railway boundary at Maruthi sevanagara side to be shown. • Tracks indicated in section A-A is not confirming with the number of tracks shown in plan view. • Railway boundary at Maruthi sevanagara side to be indicated in section A-A also. • Foundation of PR-1 is very close to future Railway track which is likely to infringe.
2	NEZPL/DWG/PRJ/204-4-2 Sheet no.2 of 3 Page no.112	• Distance from Railway boundary to PR-3 is not matching with plan view when compared with section view of section A1-A1. • Foundation of PR-3 is very close to future Railway track which is likely to infringe. • PB-1 is located inside the Railway land is infringing to future proposed track. • Cross section view is not matching with direction indicated in plan A1-A1 with respect to orientation of piers, tracks and other features. • In plan on Maruthi sevanagara side only one future track is shown where as in section at A1-A1 two future tracks are shown which is to be corrected.
3	NEZPL/DWG/PRJ/204-4-3 Sheet no.3 of 3 Page no.110	• Reduce level is mentioned as 911.554. and vertical clearance is shown with respect to ground level whereas the same is required to be shown with respect to rail level in section A2-A2.
4	NEZPL/DWG/PRJ/204-4-4 Sheet no.1 of 1 Page no.113	• Railway boundary on SMVB (Old madras road) side is not indicated.
5	NEZPL/DWG/PRJ/204-5 Sheet no.1 of 1 Page no.118	• Parcel office, siding, P-Way/ depot, old running room and proposed Crew/running staff rest room to be shown in plan. • Boundaries indicated in drawing shall be confirmed with land section, DRM office, South Western Railways near City Railway station. • Existing Road from Mukunda theatre to Fly over towards

		old madras road is in Railway land which is not reflected in land acquisition details. • Railway land is shown as defence land opposite IOC petrol pump (old IOC lube oil shed).
6	NEZPL/DWG/PRJ/204-7 Sheet no.1 of 1 Page no.116	• Subway to be extended beyond track at SMVB yard side. • Earth cushion is shown as only 500mm. sufficiency of cushion for future pipeline crossing with casing pipes and construction of side drains for yard drainage purposes to be reviewed with such minimum cushion. • Drain outlet discharge point of subway to be shown.

For further action please.

ADEN/C/SBC

Copy to : SSE/W/C/SBC for information and n.a. Pl.

SOUTH WESTERN RAILWAY

Divisional Office
3rd Floor Works Branch
Bengaluru – 560023
Date: 10.02.2022

B/W.352/ROB-RUB/Rotary/SMVB

CE/Road Infrastructure/BBMP
N.R square,
Bengaluru, Karnataka 560002,

Sub: - Construction of Rotary Flyover at Maruthi Sevanagara Main road (Banasawadi IOC Junction) connecting New Sir M Vishvehawaraiah Railway Terminal at Baiyappanahalli.-Reg.

Ref: - Chief Engineer road infrastructure BBMP Lr. No.BBMP/CE(RI)/PR1652/2021-22. Dt.13.12.2021.

***

With reference to above, a joint inspection was conducted with BBMP authorities and their consultants on 05.01.2022 and the following observations were made by Railways officials which was advised at site for correction in GAD:

S#	Drawing No.	Observation
1	NEZPL/DWG/PRJ/204-4-1 Sheet no.1 of 3 Page no.111	• Railway boundary at Maruthi sevanagara side to be shown. • Tracks indicated in section A-A is not confirming with the number of tracks shown in plan view. • Railway boundary at Maruthi sevanagara side to be indicated in section A-A also. • Foundation of PR-1 is very close to future Railway track which will infringe the track.
2	NEZPL/DWG/PRJ/204-4-2 Sheet no.2 of 3 Page no.112	• Distance from Railway boundary to PR-3 is not matching with plan view when compared with section view of section A1-A1. • Foundation of PR-3 is very close to future Railway track which will infringe the future track and to be adjusted accordingly. • PB-1 is located inside the Railway land is infringing to future proposed track. • Cross section view is not matching with direction indicated in plan A1-A1 with respect to orientation of piers, tracks and other features. • In plan on Maruthi sevanagara side only one future track is shown where as in section at A1-A1 two future tracks are shown which is to be corrected.
3	NEZPL/DWG/PRJ/204-4-3 Sheet no.3 of 3 Page no.110	• Reduce level is mentioned as 911.554. and vertical clearance is shown with respect to ground level whereas the same is required to be shown with respect to rail level in section A2-A2.
4	NEZPL/DWG/PRJ/204-4-4 Sheet no.1 of 1 Page no.113	• Railway boundary on SMVB (Old madras road) side is not indicated.
5	NEZPL/DWG/PRJ/204-5 Sheet no.1 of 1 Page no.118	• Parcel office, siding, P-Way/ depot, old running room and proposed Crew/running staff rest room to be shown in plan.

Chief Engineer
Road Infrastructure
Bruhat Bengaluru Mahanagara Palike

ಮುಖ್ಯ ಅಭಿಯಂತರರ ಕಛೇರಿ (ರಸ್ತೆ ಮೂಲಸೌಕರ್ಯ)
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಸಂಖ್ಯೆ: 2235 ದಿನಾಂಕ: 10/2/2022

		• Boundaries indicated in drawing shall be confirmed with land section, DRM office, South Western Railways near City Railway station. • Existing Road from Mukunda theatre to Fly over towards old madras road is in Railway land which is not reflected in land acquisition details. • Railway land is shown as defense land opposite IOC petrol pump (old IOC lube oil shed).same to be corrected
6	NEZPL/DWG/PRJ/204-7 Sheet no.1 of 1 Page no.116	• Subway to be extended beyond track at SMVB yard side. • Earth cushion is shown as only 500mm. There should be a minimum earth cushion of 700mm above subway for future pipeline crossing with casing pipes, construction of yard drains etc. • Drain outlet discharge point of subway to be shown.

Further, again on 26.01.2022, the undersigned has inspected the proposal along with BBMP consultant but the above observations were unattended and during inspection it was advised to mark the alignment of proposed rotary flyover at site for enabling Railways to assess the exact Railway land which will be utilized for rotary flyover for processing the proposal further. Consultant assured that marking at site will be done in a week time but, so far site marking has not been done for joint inspection.

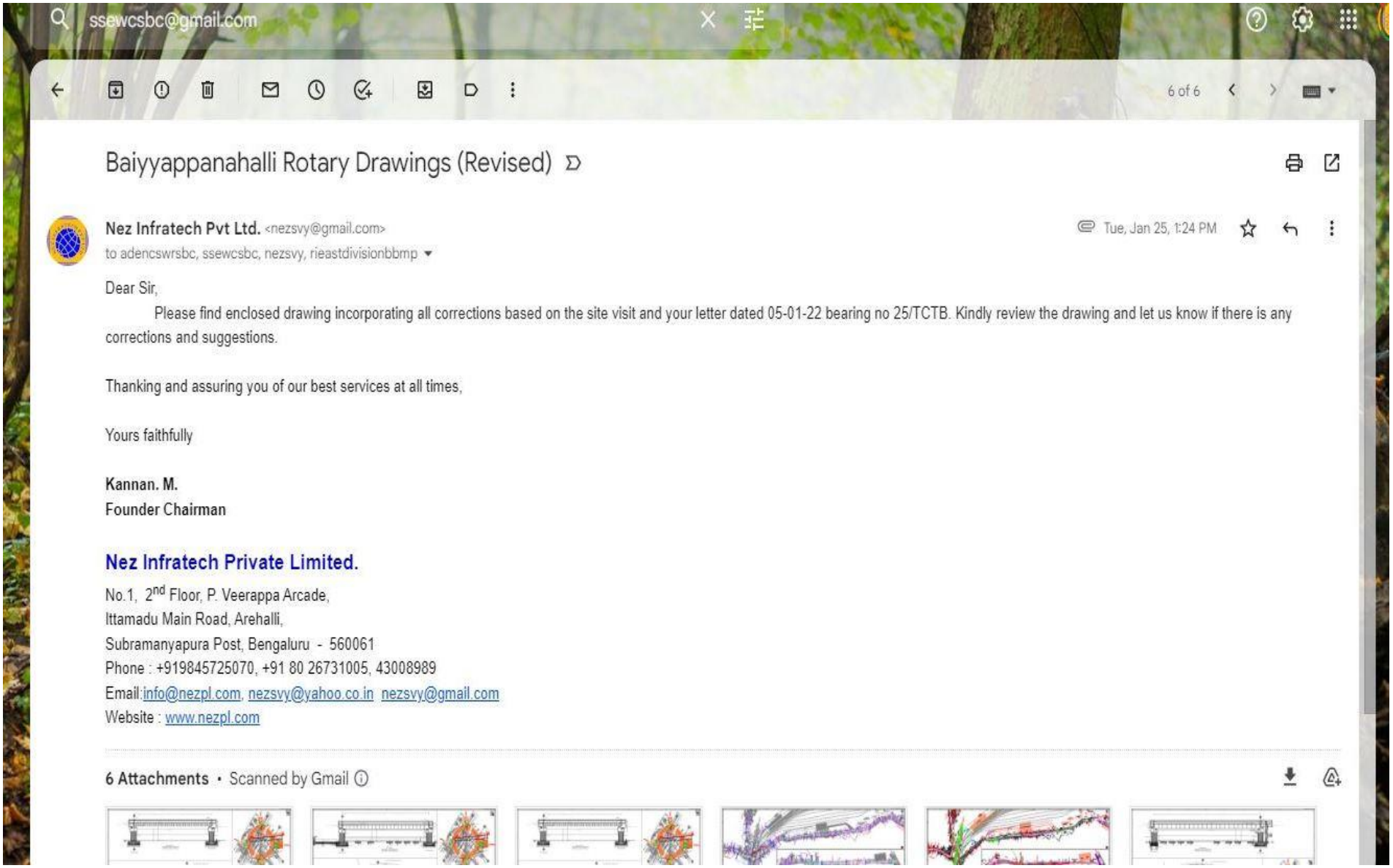
This is for your kind information and further necessary action please.

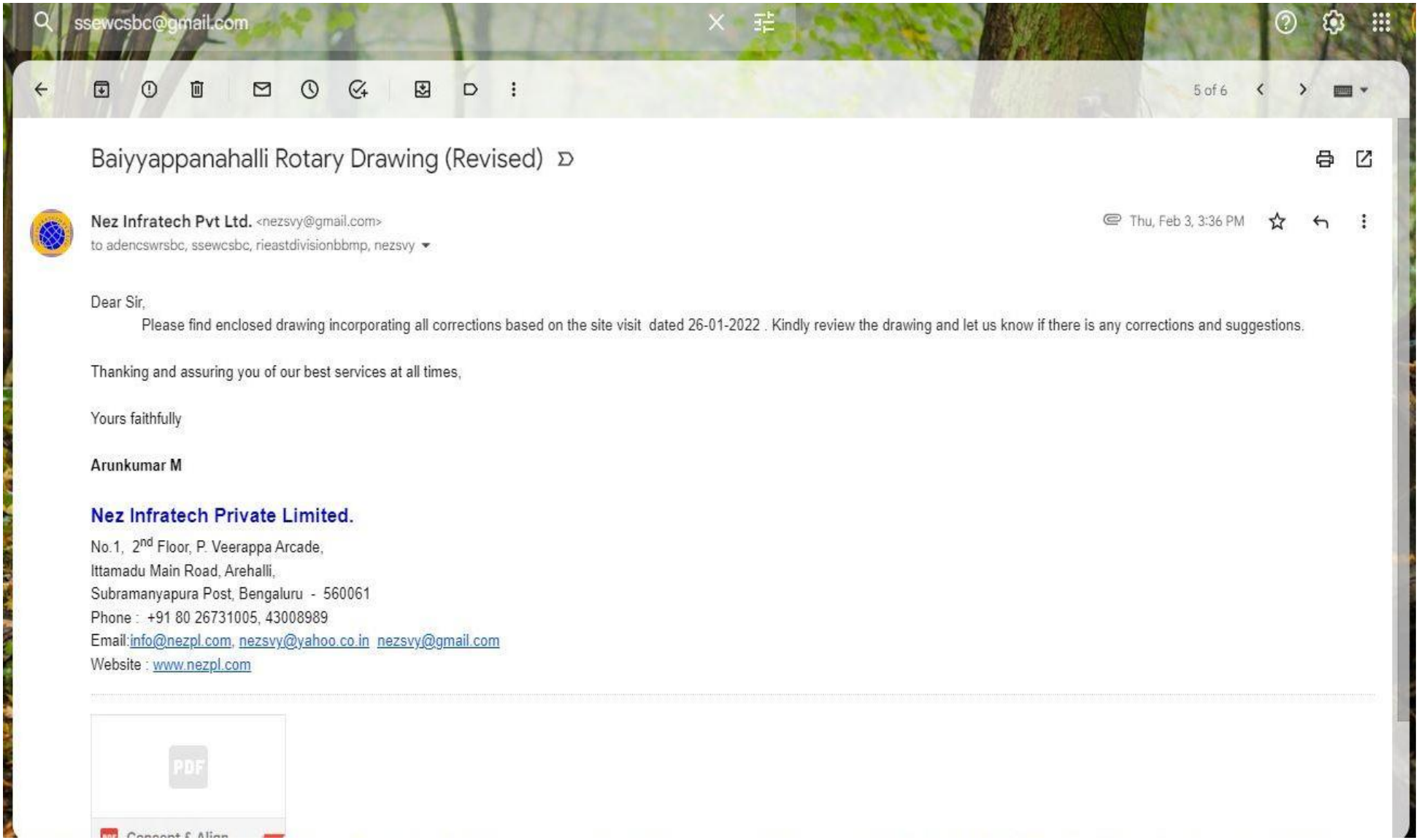
10/2/2022

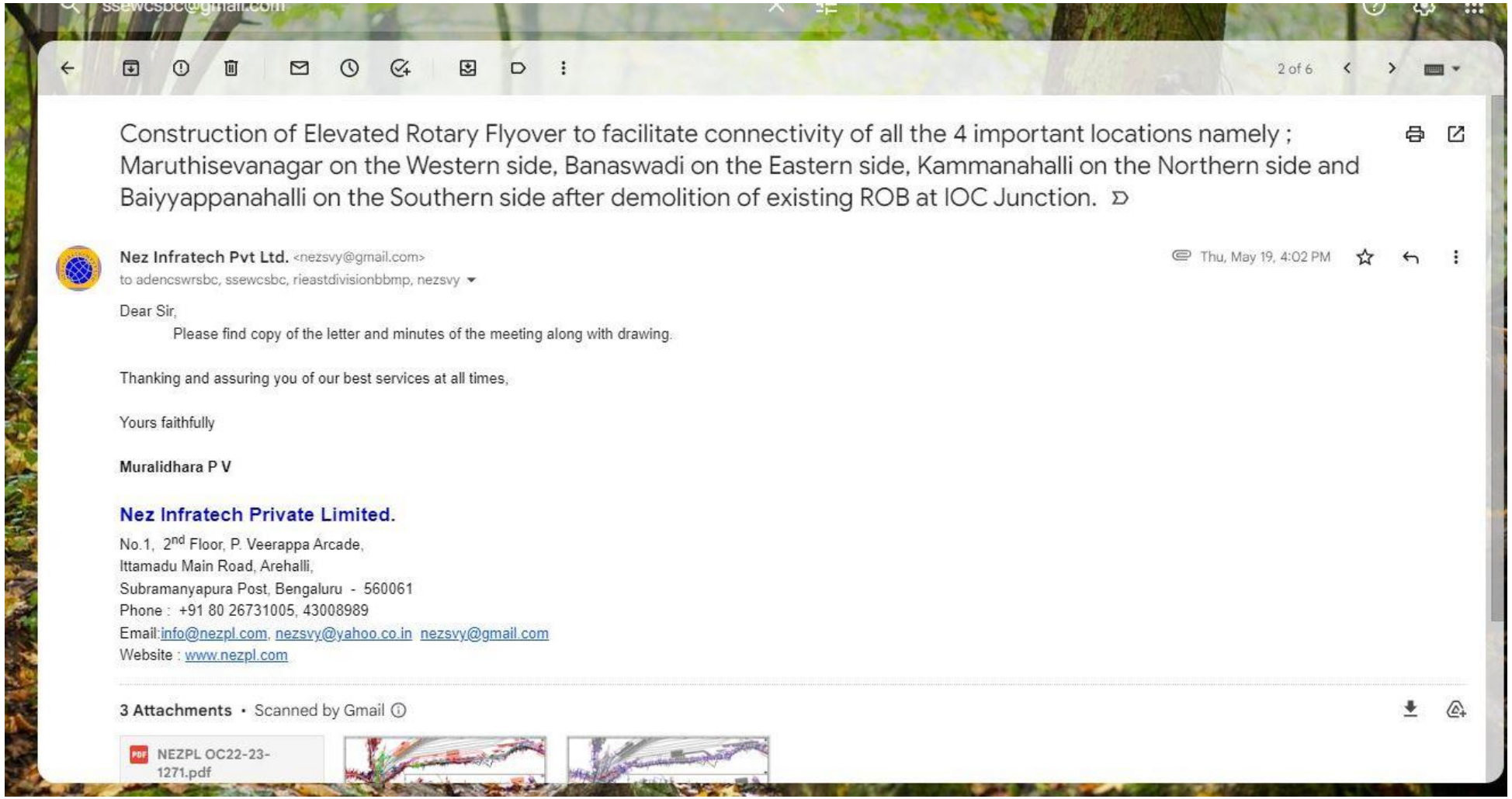
Sr.Divisional Engineer/East
Bangalore division
South Western Railway

Copy to: DRM/SBC for kind information
ADRM/T/SBC for kind information
Sr.DEN/CO/SBC for kind information

SOUTH WESTERN RAILWAY


ssewcsbc@gmail.com
6 of 6
Baiyyappanahalli Rotary Drawings (Revised)
Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to adencswrsbc, ssewcsbc, nezsvy, rieastdivisionbbmp
Tue, Jan 25, 1:24 PM
Dear Sir,
Please find enclosed drawing incorporating all corrections based on the site visit and your letter dated 05-01-22 bearing no 25/TCTB. Kindly review the drawing and let us know if there is any corrections and suggestions.
Thanking and assuring you of our best services at all times,
Yours faithfully
Kannan. M.
Founder Chairman
Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +919845725070, +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com
6 Attachments • Scanned by Gmail


ssewcsbc@gmail.com
5 of 6
Baiyyappanahalli Rotary Drawing (Revised)
Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to adencswrsbc, ssewcsbc, rieastdivisionbbmp, nezsvy
Thu, Feb 3, 3:36 PM
Dear Sir,
Please find enclosed drawing incorporating all corrections based on the site visit dated 26-01-2022 . Kindly review the drawing and let us know if there is any corrections and suggestions.
Thanking and assuring you of our best services at all times,
Yours faithfully
Arunkumar M
Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com
PDF



Construction of Elevated Rotary Flyover to facilitate connectivity of all the 4 important locations namely ; Maruthisevanagar on the Western side, Banaswadi on the Eastern side, Kammanahalli on the Northern side and Baiyyappanahalli on the Southern side after demolition of existing ROB at IOC Junction.

Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to adencswrsbc, ssewcsbc, rieastdivisionbbmp, nezsvy

Thu, May 19, 4:02 PM

Dear Sir,

Please find copy of the letter and minutes of the meeting along with drawing.

Thanking and assuring you of our best services at all times,

Yours faithfully

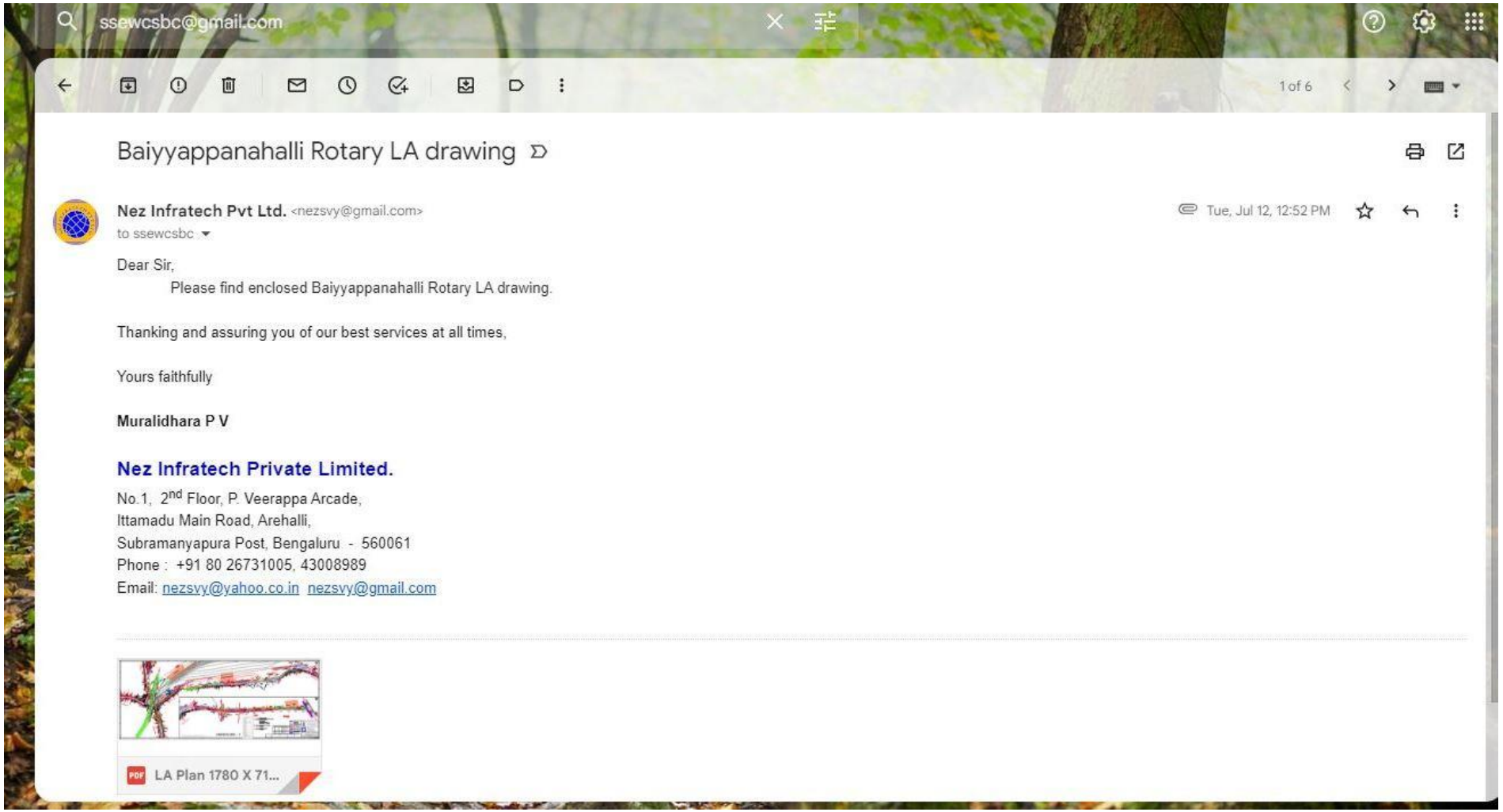
Muralidhara P V

Nez Infratech Private Limited.

No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +91 80 26731005, 43008989
Email:info@nezpl.com, nezsvy@yahoo.co.in nezsvy@gmail.com
Website : www.nezpl.com

3 Attachments • Scanned by Gmail

NEZPL OC22-23-1271.pdf


ssewcsbc@gmail.com
1 of 6
Baiyyappanahalli Rotary LA drawing
Nez Infratech Pvt Ltd. <nezsvy@gmail.com>
to ssewcsbc
Tue, Jul 12, 12:52 PM
Dear Sir,
Please find enclosed Baiyyappanahalli Rotary LA drawing.
Thanking and assuring you of our best services at all times,
Yours faithfully
Muralidhara P V
Nez Infratech Private Limited.
No.1, 2nd Floor, P. Veerappa Arcade,
Ittamadu Main Road, Arehalli,
Subramanyapura Post, Bengaluru - 560061
Phone : +91 80 26731005, 43008989
Email: nezsvy@yahoo.co.in nezsvy@gmail.com
LA Plan 1780 X 71...

NEZ Infratech Private Limited
Civil Engineering Consultants
CIDC Regd No 220929
CIDC
No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road, Arehalli, Subramanyapura Post, Bengaluru - 560061
Phone No : + 91 80 26731005, 40397979 e-mail : nezsvy@gmail.com info@nezpl.com website:www.nezpl.com
CIN:U70100KA2015PTC084544, PAN:AAFCN1036R, GSTIN 29AAFCN1036R1ZZ

REF: NEZPL/OC/22-23/1254 **Date: 25-04-2022**

To,
Divisional Railway Manager, (Works)
Divisional Office Bangalore Division,
South Western Railway,
Bengaluru-5600023.

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) and Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New constructed Sir M Vishweshwaraiah Railway Terminal at Baiyappanahalli.- Submission of Drawing Regarding.

Reference: 1. Your office letter no: 25/TCTB, Dated: 05.01.2022.
2. Our Replay Email dated: 25.01.2022.
3. Your office letter no: B/W.352/ROB-RUB/Rotary/SMVB, Dated: 10.02.2022.
4. Our Replay Email dated: 03.03.2022.
5. Site visit by Mr. Unnikrishanan Senior Section Engineer on 12-02-2022.
6. Conference telephone call with Executive Engineer Road infrastructure, East Division, BBMP and Assistant Divisional Engineer Mr. Rammohan on 21.04.2022.

Dear Sir,

Regarding the subject and references cited above, we have incorporated all the corrections and suggestions given by you, and final soft copy was mailed to your office on 03.03.2022 for your approval.

Further on 21.04.2022 in a conference telephone call with us and Mr. Rammohan Assistant Divisional Engineer by the Executive Engineer of East Division, Road infrastructure, BBMP about the subject project and directed us to submit the final hard copy of drawings on request of Assistant Divisional Engineer for review and approval. Hence we are submitting 1 set of final hard copy of drawings. Kindly acknowledge the receipt.

Thanking and assuring you of our best services at all times,

For Nez Infratech Pvt Ltd.

Nez Infratech Pvt. Ltd.

Kaman. M
Founder Chairman

Copy to: 1. Chief Engineer Road infrastructure, BBMP, for kind information
2. Executive Engineer Road infrastructure – East Division, BBMP for records
3. Divisional Engineer South Western Railway for information
4. Assistant Divisional Engineer South Western Railway for records
5. Office Copy

Works Branch
26/4/22

NEZ Infratech Private Limited
Civil Engineering Consultants
CIDC Regd No 220929
CIDC
No.1, 2nd Floor, P. Veerappa Arcade, Ittamadu Main Road, Arehalli, Subramanyapura Post, Bengaluru - 560061
Phone No : + 91 80 26731005, 40397979 e-mail : nezsvy@gmail.com info@nezpl.com website:www.nezpl.com
CIN:U70100KA2015PTC084544, PAN:AAFCN1036R, GSTIN 29AAFCN1036R1ZZ

REF: NEZPL/OC/22-23/1271 **Date: 19-05-2022**

To,
Divisional Railway Manager (Works),
Divisional Office Bangalore Division,
South Western Railway,
Bengaluru-5600023.

Sub: Construction of Rotary Flyover at Maruthi Sevanagara Main Road (Banasawadi IOC Junction) and Construction of additional two lane adjacent to ongoing two traffic ROB at Baiyappanahalli Railway level crossing to facilitate additional traffic movement connecting New constructed Sir M Vishweshwaraiah Railway Terminal at Baiyappanahalli.- Submission of Drawing Regarding.

Reference: 1. This office letter No. NEZPL/OC/22-23/1254 dated: 25-04-2022.

Dear Sir,

In continuation to this office letter under reference above, please find the minutes of meeting held at proposed elevated rotary site at Baiyyappanahalli on 11-5-2022 & 13-5-2022. The modified & final drawing is enclosed for taking necessary action at your end for processing approval of GAD.

Thanking and assuring you of our best services at all times,

For Nez Infratech Pvt Ltd.

Nez Infratech Pvt. Ltd.

Kannan. M
Founder Chairman

Enclosures: 1. Minutes of meeting
2. Final Drawing

Copy to: 1. Chief Engineer Road infrastructure, BBMP, for kind information.
2. Executive Engineer Road infrastructure – East Division, BBMP for records.
3. Assistant Divisional Engineer South Western Railway for records.
4. Office Copy.

Divisional Office, Works Branch, Bangalore

20/05/22

O/C

MINUTES OF MEETING

Project Name: Detailed Project Report for Rotary Intersection at Byappanahalli Bengaluru East BBMP.

Description: Site Inspection and Verification of Railway land Acquisition with Railway officers.

Venue : At the ground of Rotary Intersection Byappanahalli New Terminal Railway Station.

Date: 11.05.2022. Time: 10.00 AM & Date: 13.05.2022. Time 11.30 AM.

Department Officials Present

BBMP

1. Mrs. Geetha — Executive Engineer (RI-East)
2. Mr. Srinivas — Assistant Executive Engineer
3. Mr. Krishna Swamy — Assistant Engineer

South Western Railway

4. Mr. Ram Mohan — Assistant Divisional Engineer
5. Mr. Unnikrishnnan — Senior Section Engineer

M/s. NEZ Infratech Pvt. Ltd.

6. Mr. Kannan. M — Founder Chairman
7. Mr. H.V. Mallikarjuna — Executive Director
8. Mr. Arun Kumar M — Sr. Surveyor

Following points were discussed

Sl. No.	Description	Action by	Remarks
1	**Verification of Nomenclature and Type of lane and colour indication for Railway boundary**	M/s NEZ	Inspection on 11.05.2022
a	Railways officials suggested indicating the boundary of their land as "Railway Fencing" instead of Railway Boundary.	M/s NEZ	

NEZ Infratech Pvt. Ltd.

b	Different colour to be indicated for identification of 1. Existing Road in Railway land 2. Proposed Railway Land to be Acquired 3. Defence Land 4. Private Property 5. Shaded area of Rotary portion elevated	M/s NEZ	
2	The total extant area of land indicated should be authenticated.	BBMP/NEZ	
3	The extant of Railway land acquisition at Proposed Railway Parcel near Railway Police Station to be re-consider minimising the acquisition.	BBMP/NEZ	
4	**Compliance to Railways requirement as mentioned from Sl No 1 to 3 above and all the above officers were present at site on 13.05.2022 and reviewed the same**		
	In place of Railway Boundary , "Railway Fencing" is indicated in the LA drawing	Railways	Compliance to Sl No 1a above and reviewed the drawings by Railways at site on 13.05.2022. No Comments
	Following Legend were indicated in the drawing **Line Legend** 1. Proposed Right of Way 2. Existing Right of Way 3. Railway Compound wall/Fencing **Colour Legend** 4. Railway Land to be Acquired 5. Private Land to be Acquired 6. Government Land to be Acquired 7. Defence Land to be Exchanged already available with BBMP 8. Defence Land with BBMP	Railways	Compliance to Sl No 1b above and reviewed the drawings by Railways at site on 13.05.2022. No Comments
5	The extant of Acquisition areas indicated in the drawing is realistic to the drawing which is in realistic to the land coordinates.	NEZ	Compliance to Sl No 2 above and Authenticated by NEZ/BBMP and confirmed.

6	The proposal of Railways regarding Management of Traffic at inside the Railway parcel platform is reviewed, and drawing at that location is modified to suit the junction for separate entry and exit to platform without conflict to traffic movement		Compliance to Sl No 3 above and the modification of junction at that location was reviewed by Railways at site and agreed with no other alternative.

The BBMP's Executive Engineer has spearheaded the compliance of all the observations raised by the Railway on 11.05.2022. The officer replied to the Railway's officers about the structural design of the rotary components, the structural design shown in the drawing is the initial design to initiate the tender process and to get GAD approval from Railways. At the time of execution, the detailed design must be done according to the approved railway GAD and the execution begins after the design approval of the railways.

The railway agreed on all compliances to their observations as indicated in the LA drawings, and requested to submit soft copies by mail within a couple of days and hard copies to facilitate the commencement of the process of sending the report to the senior officials of the railway for processing of obtaining approval for Rotary General Alignment Drawings.

The Railways were agreed all the compliances of observations as indicated in the drawings and requested to submit the soft copies through mail in a couple of days to facilitate them to initiate the process of sending the report to Railways higher officers to obtain approval for General Alignment Drawings of Rotary.

The BBMP has agreed to send the revised drawings as agreed and instruction has given to Consultants to expedite the process of submission.

The joint meeting at site is concluded with vote of Thanks.

The Proceeding of the meeting at site is prepared and circulated to all the members present for review and approval.

SOUTH WESTERN RAILWAY

Divisional office
Works Branch
Bangalore-23
Date. 13.06.2022

No. B/W/352/BBMP/Rotary ROB/BYPL-BAND/SA-SBC

To,
Executive Engineer,
Road Infrastructure-East Division,
2nd Floor, Annex-3, NR Square, Bangalore-560002

Sir,

Name of work:- Salem-Bengaluru Section: Pro. Construction of Rotary ROB in Maruthi Sevanagara between BYPL/BAND Stations in lieu of existing ROB 537A at Km. 208/742-770.

Ref: BBMP Letter No. EE/R1(East)/PR/83/2022-23 Dt. 08-06-2022

*****

With reference to the above subject, it is to inform you that, the joint inspection may be conducted with Sr.DEN/East/SBC (Ph. 9731666201) & DEN/South/SBC (Ph. 9731666206) duly prefixing the date and time with detailed proposed GAD. Arrange to submit the GAD & detailed feasibility report in prescribed format as per practice duly signed by inspecting Railway and Executive Engineer, BBMP.

(PERVESH KUMAR)
For Sr. Divisional Engineer/Co-ord,
Bengaluru-23

Copy to: Sr.DEN/East/SBC & DEN/South/SBC for conducting joint inspection.

ROB
AEE. / PMC

SOUTH WESTERN RAILWAY

Divisional office
Works Branch
Bangalore-23
Date: 14-09-2022

No. B/W/352/BBMP/Rotary ROB/ MS Nagar/SMVB/BYPL/537A/SA-SBC/171.

To,
Executive Engineer,
Road Infrastructure-East Division (BBMP)
2nd Floor, Annexe-3, N.R.Square,
Bangalore – 560002.

Sir,

Name of work: Salem-Yeshvanthapur Section : Proposed Construction of New Rotary ROB in lieu of Existing ROB No. 537A in Maruthi Sevanagar locality in Sir. M. Vishveshvaraya Railway Terminal (SMVB) at Railway Km. 208/750 in Bayyappanahalli by BBMP.

Ref: 1. Your office letter No. EE/RI(East)/PR/PR/89/22-23 dated. 16-06-2022.
2. Conceptual plan No. NEZPL/DWG/PRJ/204-3 dated. 15-06-2021 sheet 1 of 1.
3. Annexure-I.
4. Note No. B/W.352/ROB-RUB/ROTARY/SMVB dt. 12-07-2022 (Annexure-II).

*****

In connection with above subject and reference, Conceptual plan of Rotary ROB in Maruthi Sevanagara locality viz. Drawing No. NEZPL/DWG/PRJ/204-3 dated. 15-06-2021 sheet 1 of 1 and Land acquisition plan No. NEZPL/DWG/PRJ/204-5 dt. 15-06-2021 sheet 1 of 1 are submitted in white paper (check prints) by BBMP for approval.

The in principle approval is hereby accorded for construction of Rotary ROB at above mentioned location by the BBMP as per conceptual plan No. NEZPL/DWG/PRJ/204-3 dated. 15-06-2021 sheet 1 of 1 subject to the remarks and conditions laid down in Annexure I & II (Copy enclosed).

Arrange to-

1. Submit the detailed General arrangement Drawing GAD) in A0 Size in white paper check print similar to copy of approved GAD. No. SWR/2021/GAD-18 (Annexure-III) to process further by this office for approval of competent authority.
2. Submit the GAD check-list similar to specimen (Annexure-IV) enclosed.
3. Submit the detail Estimate of Proposed Circular portion of ROB only.
4. Submit the detailed Soil investigation reports for each column of circular ROB portion duly signed by investigating authority with seal on each page, showing the reduced levels on top of each bore hole and showing SBC of soil of each type of soil strata.

14/09/22

(Rajeev Sharma)
Sr. Divisional Engineer/Co-ordination
Bengaluru : 560023

Publicity of Elevated Rotary Published in leading Newspaper.

THE HINDU

SPECIAL CORRESPONDENT

BENGALURUAUGUST 01, 2022 02:41 IST
UPDATED: AUGUST 01, 2022 12:09 IS

Green signal for flyover to ease access to Sir M. Visvesvaraya Terminal in Bengaluru

BBMP has proposed building an elevated rotary flyover at IOC junction

Seamless access to the **newly opened Sir M. Visvesvaraya Terminal at Baiyappanahalli** got a shot in the arm with South Western Railway (SWR) giving in-principle approval for an elevated rotary flyover at IOC junction that has been envisaged by the Bruhat Bengaluru Mahanagara Palike (BBMP).

Almost a year ago, when Railway Minister Ashwini Vaishnaw inspected the terminal, BBMP officials had briefed him about the project as a long-term measure for connecting the terminal with various roads. The SWR and the BBMP held multiple rounds of the meetings to clear the decks for the project. The project has been proposed to provide easy access to the terminal from Kammanahalli Main Road, Maruthi Sevanagar, and other areas.

B.S. Prahalad, chief engineer (Road and Infrastructure), BBMP, said, “Due to the presence of railway lines at the junction, the only solution is to build an elevated rotary flyover. Other than people living in the localities nearby, passengers travelling to the terminal will be benefited as we are providing access to the terminal as well.” He said when the project was conceptualised, it was estimated to cost ₹ 260 crore, but the revised estimation is likely to touch ₹300 crore.
From Old Madras Road side, the authorities have built a railway overbridge that was opened in January. At present, a two-lane road is available from Old Madras Road to the terminal.

Divisional Railway Manager of Bengaluru Division Shyam Singh said, “In principle, we have given consent to the BBMP. The civic body will come out with a detailed plan for the project. The proposed flyover will be much wider and will benefit vehicles coming from multiple directions.”

The SWR has built the terminal with various amenities to decongest the Yeshwantpur and KSR Bengaluru railway stations by running 32 long-distance trains from the point.

The SWR started commercial operations from the terminal in the first week of June. The services were introduced with three pairs of long-distance trains and now there are close to 20 pairs. Barring this, the SWR is also running local trains from the point to Majestic, Bangarpet and others. The newly opened station witnessed a footfall of 1,000 to 1,500 passengers (both boarding and deboarding), and the number is expected to increase in the coming days. Barring passengers, the station is also attracting visitors who are buying platform tickets to get a glimpse of it.

Passengers who are relying on public transport are having a tough time reaching the terminal. “Unlike other railway stations in the city, this new station is located in an interior place. Bus services are limited to the place and people have to depend on autos or taxis,” said a passenger. The BMTC runs feeder services to the terminal from Benniganahalli, Channasandra, and various points on the Outer Ring Road.

In the past, both the SWR and the BBMP have come under attack for not implementing road infrastructure projects before the opening of the terminal, instead coming up with plans after the completion of the project which was built at cost of ₹314crore.

21

Proceedings of the Technical Advisory Committee Meeting to review Roads / Grade Separators and Building work DPR's prepared under 2016-17, 2017-18 and 2018-19 GOK Grants

Meeting Venue: Chief Engineer, Road Infrastructure, Room No.405, 4th Floor, Annexe-3 Building, N.R.Square, Bengaluru

Date and Time- 13.08.2021 at 2.30 PM

Ref:-1. Government Order UDD 863 MNY 2015, Bangalore, Dated: 11/05/2016.
2. Government Order UDD 199 SFC 2016 (part-1) Bangalore dated: 21/06/2016.
3. Office order of Special Commissioner, (Projects) BBMP No.Sp.Commr (Projects)/PR/5617/16-17 dt: 17/10/2016.
4. Office order No.B12(6)PR/54/2020-21, dated:07.08.2021

Presentees:

Shri Prof. H.S.Jagadeesh	:	Chairman
Shri R.K.Jaigopal	:	Member
Shri Prof. Anjaneyappa	:	Member
Shri B.S.Prahallad, CE (RI)	:	Member
Shri S.Manjunathaswamy	:	Member Secretary

Other Participants:

Shri Vishwantha.P	:	Chief Engineer, West Zone
Shri Vijaykumar.N	:	Chief Engineer, RRNagar Zone
Shri Rajesh.S.V	:	Superintendent Engineer (RI)

The Meeting started by welcoming the participants, The Chairman informed the Chief Engineers to ask his representative Executive Engineers / Consultants to present the DPRs/Projects to the Technical Advisory Committee of BBMP.

Chief Engineer- Road Infrastructure

Executive Engineer, RI- East

Subject No-01	Construction of ROB at Byyappanahalli Bengaluru including Rotary Flyover at IOC junction and Construction of Road integrating Banasawadi Main Road and Old Madras Road to facilitate connectivity to New Sri.M.Vishweswaraiah terminal at Byyappanahalli Railway Station. **DPR Consultants - M/s. STUP Consultants**

The Executive Engineer, RI-East informed that the South Western Railways have built 3rd Railway Terminal at Byyappanahalli Bangalore East to cater the needs of the commuters of Bengaluru East.

The South Western Railways has requested the BBMP to provide good connectivity network from Old Madras road(Swamy Vivekananda Road), Banaswadi & Kammanahalli main road.

A detailed study was carried out and to the existing availability of land, one of the Consultant M/s.NEZ Associates gave a detailed concept plan with a Rotary Intersection at IOC Junction connecting Banaswadi main road on one side, Kammanahalli main road on the other side, Maruthisevanagara road and Byyappanahalli road and further additional ROB at Byyappanahalli Railway Level Crossing.

Further, M/s.Stup Consultants showed the second concept plan wherein in addition to the Rotary Concept of M/s.NEZ Associates they have proposed an RUB at the below the Rotary Junction for direct connectivity of Kammanahalli main road and Byyappanhalli road stating that the commuters of Kammanahalli and Byyappanahalli need not use the Rotary inter change. However, this concept needs heavy Land Acquisition and also the ramp length towards Kammanahalli main road is getting increased.

The Chairman and Members of the Committee appreciated the work of the Consultant in bringing the new Methodologies for de-congestion of traffic. The Chairman, TAC advised the consultants to conduct traffic studies by interpolation of the existing data.

The Consultants informed the TAC that the proposal will cater more than 6000 PCU per hour and informed that since Byyappanahalli Railway Terminal is not open, it is difficult to get the exact Traffic Count Survey.

The Chairman and Members unanimously approved the concept plan of Elevated Rotary Flyover over the Railway lines with Pedestrian Underpass.

Executive Engineer, Road Infra

Subject No-02	Construction of Grade Separator in the Junction of Suranjandas Road and Old Madras Road Bengaluru **(Scope of Work Changing from 6 Lane Under Pass to 4 Lane Fly Over).** **DPR Consultants -M/s. Infra Support Consultants**

Executive Engineer, Road Infrastructure informed the Chairman and Members, TAC that Bruhat Bengaluru Mahanagara Palike had proposed to construct a 3 Lane Vehicular Underpass and accordingly the tenders were called & work was awarded to M/s.PJB Engineers Pvt ltd.

Further, Ground Breaking ceremony was conducted on 03.09.2018 & service road on HAL property was to be commenced. But M/s.HAL ltd., refuse to part their land for Construction of service road and hence the project came to a Grinding Halt. Many rounds of negotiation with HAL did not yield any result. Finally the HAL informed that since they

have already parted their land on Old Airport road they are unable to part their land in this junction. Hence, the proposal to acquire the land from the HAL property could not materialized. Since, the Work Order issued to M/s.PJB Engineers Pvt ltd and Mobilization advance was also paid, the Bruhat Bengaluru Mahanagara Palike have come under great stress in abandoning the project since the contracting agency has mobilized the requirements for the project.

Therefore, a win win situation was worked out wherein the Design Consultants of the construction agency (M/s.PJB Engineers Pvt ltd.) i.e., M/s.Infra Support informed the Bruhat Bengaluru Mahanagara Palike that, It has designed an alternative to present issues and informed that the agency can be given permission to construct a Bi-Directional 2 Lane Flyover in place of 3 Lane Bi-Directional Underpass which will not only help BBMP in land acquisition cost but also without additional payment for Construction of Flyover.

The proposal of the agency was examined and the PMC was asked to verify the proposal of the agency and also to work out the cost estimate for Construction of Flyover at Suranjandas junction. M/s.Manasa Consultants have worked out the cost estimates and have submitted the same in sealed cover for confidentiality. The sealed covers were opened and found that the proposal of the agency is found to be advantageous to BBMP.

Design Consultants of the construction agency (M/s.PJB Engineers Pvt ltd.) i.e., M/s.Infra Support presented the detailed plan for Construction Bi-directional 2 Lane Flyover.

After detailed discussions and due to the space constraint at the said junction and also since the agency has come forward to construct Bi-directional 2 Lane Flyover at the same cost of 3 Lane Bi-Directional Underpass, the TAC Committee unanimously approved the proposal of Construction Bi-directional 2 Lane Flyover in lieu of 3 Lane Bi-Directional Underpass.

Chief Engineer-West

Executive Engineer, Mahalakshmipuram

Subject No-03	Comprehensive development of Roads and drains in Mahalakshmi layout Constituency **DPR Consultants - Mecadez Core Technologies Pvt. Ltd.**

Sl No	Name of work	Amount (in lakhs)
1	Providing Asphalting to Pipeline Road Near Bhagyajyothi Colony and surrounding area in Ward No.67	75.00
2	Providing Asphalting to 10th A Cross, 11th A Cross, 4th C Main, 1st Main	81.00

	road and surrounding area near Rajajinagar Metro station in Ward No.67	
3	Construction Of CC Road and RCC Drain Near BGS School In Ward No.67	99.00
4	Construction of RCC Drain to 19th Main in Muniswamappa Badavane & Surrounding area in Ward No-75 Shankar mutt	70.00
5	Construction of RCC Drain to 2nd Main & 4th Main in Kirloskar Colony & Surrounding Area in Ward No-75 Shankar mutt	55.00
6	Construction of RCC Drains to 4th Cross, 5th Cross, & 6th Cross in Kirloskar Colony & Surrounding area in Ward No-75 Shankar mutt	60.00
7	Construction of RCC Drains to 1st Cross, 5th Cross & 1st Main in KEC Layout & Surrounding Area in Ward No-75 Shankar mutt	60.00
8	Improvements to Roads and Drains at Nanjappa Layout, Andanappa Layout and Surrounding Areas in Ward no 102 Vrushabavathinagara.	95.00
9	Improvements to Roads and Drains at 6th main road and cross road near market road and Surrounding Areas in Ward no 102 Vrushabavathinagara.	90.00
10	Improvements to Roads and Drains at Church Road, 1st Main Road Ngos Colony, Badrappa Layout and Surrounding Areas In Ward No 102 Vrushabhavathinagara	80.00
11	Development of CC Roads and CC Road Patches in Vrushabavathinagara Ward no 102	80.00
12	Improvements to CC Roads and Drain desilting to Sannakkibaylu and Vinayaka nagar cross roads in Ward no 102 Vrushabavathinagara.	60.00
13	Providing New R.C.C Drain and CC Road Near Strom Water Drain in Ward No 102 Vrushbavathi Nagara	95.00
	Total	**1000.00**

The Consultant M/s.Mecadez Core Technologies Pvt Ltd., gave the presentation of the project. During the course of the presentation TAC members informed that the thickness of the concrete layer is not adequate to withstand the incoming loads on the road and hence advised to have a minimum PQC thickness of 150mm.

The TAC committee resolved that the Chief Engineer, West Zone should confirm the same and the concept was approved by the Committee.

The Committee in principle approved the project and further suggested that actual SBC of the soil and existing structural details to be checked before starting the work and accordingly designs has been made and verified before execution.

After detailed deliberations on the above package works, the following observations and guidelines suggested by the Committee are as below:

1. Plain Cement Concrete works M20 grade to be adopted
2. Signages should be adopted in all roads as per IRC Guidelines.
3. Even though VG30 does not suggest adding waste plastic as admixture, it was suggested by the Committee to add waste plastic at 8% by weight of asphalt in all roads, keeping in mind the eradication of waste plastic in the city.

4. Geo-textile material layer should be provided where acute distress of earlier layers of asphalt was found.
5. For footpath development works Interlock pavers to be used with cut joints and Bollards to be used.
6. For Rain water Harvesting Recharging pits Perforation holes to be covered with 150 GSM filter cloth/mesh.
7. For Rain water Harvesting Recharging pits left open for Water Storage and Pipe can be fixed up to permeable layer.

The Chief Engineer of the concerned roads was instructed to verify the Road History and inspect the roads personally and see the status of the present condition of the roads. After the inspection, the Chief Engineer may go ahead with the clearance of proposal based on the ground realities. The design aspects may be looked into and standard footpath and Uniform carriageway shall be maintained.

The Chief Engineer in charge of the work should technically scrutiny the estimates in detail as per the Government Orders. The TAC while approving the concept, the concerned Chief Engineers should verify other aspects of the estimates.

The Chairman thanked all the members present and meeting was concluded with vote of thanks.

Member Secretary
Technical Advisory Committee
Bruhath Bengaluru Mahanagara Palike

Shri Prof. H.S.Jagadeesh
Chairman
Technical Advisory Committee
Bruhath Bengaluru Mahanagara Palike

Copies to:
1. Hon'ble. Chief Commissioner, BBMP
2. Hon'ble. Spl.Commissioners (Admin/ Finance/Project) BBMP.
3. EIC, BBMP.
4. Concerned Chief Engineers.
5. Concerned Executive Engineers.
6. Office File.