

**Maharashtra Metro Rail Corporation Limited**  
(A joint venture of Govt. of India & Govt. of Maharashtra)

**Nagpur Metro Rail Project - Phase 2**

24 March 2023

**Corrigendum-II**

**Tender No: N2-004/C-01/2023 dated 15-Feb-2023**

**Name of Work:** Design and Construction of Elevated Metro Viaduct of length 6.92 km between Ch. (-)657.182 m to Ch. (-)7576.78 m in Reach 2A of NMRP Phase-2

Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
1	Part-1, Section-II, ITB 1.1 of BDS, at Page-30,	International Competitive Bid (ICB) The number of the Invitation for Bids (Tender No) is: TENDER NO. N2-004/C-01/2023	National Competitive Bid (NCB) The number of the Invitation for Bids (Tender No) is: TENDER NO. N2-004/C-01/2023
2	Part-1, Section-III, Clause-2 (Qualification) 4.2(b) at Page-89	Quality & EHS Qualification Criteria 1. The Bidder must have Environmental Management Certificate ISO: 140001 2. The Bidder must have Quality Management Certificate ISO: 9001/ DNV/ TUV/ JAS-ANZ/ equivalent	Quality & EHS Qualification Criteria 1. The Bidder must have Environmental Management Certificate ISO: 14001 or equivalent 2. The Bidder must have Quality Management Certificate ISO: 9001/ DNV/ TUV/ JAS-ANZ or equivalent
3	<b>Part-2</b> Section-VII-E, Work Requirement, Page 183	2.1 Scope Under Lumpsum Price, 2.1.1 For Viaduct, Notes:- 1) Pile foundation for viaduct shall contain a <b>minimum of three / four piles per pier</b> (in case of single pier structure) and the minimum diameter of piles shall be 1000 mm Piling shall be done using Hydraulic rotary piling rigs. Open footing/raft foundation will be provided in case pile foundation is not feasible or technically not required. In case of open foundation resting on hard rock strata, necessary shear/rock anchors shall be provided at no extra cost to the Employer.	2.1 Scope Under Lumpsum Price, 2.1.1 For Viaduct, Notes:- 1) Pile foundation for viaduct shall contain a <b>minimum of three / four piles per pier</b> (in case of single pier structure) and the minimum diameter of piles shall be 1000/1200 mm, subject to satisfying the design requirements. Piling shall be done using Hydraulic rotary piling rigs. Open footing/raft foundation will be provided in case pile foundation is not feasible or technically not required. In case of open foundation resting on hard rock strata, necessary shear/rock anchors shall be provided at no extra cost to the Employer.
4	Part-2, Section-VII-B, Cl. 7 (2) Page - 193	"as described in Design Basis Report."	The sentence may be read as "the design is to be carried out as described in the Design Basis Report"



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Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
5	Part-2, Section-VII-C, Cl. 1 (3), Page-196	The Contractor shall engage the Designer who shall undertake and prepare the design of the Permanent Works and Temporary Works. The Contractor shall establish an office for his core design team at the Site in Nagpur and upon failing to establish the office, penalty will be imposed. The core design team shall function from this office i.e., production of design and drawings shall be from this office.	The Contractor shall engage the Designer who shall undertake and prepare the design of the Permanent Works and Temporary Works. The Contractor shall establish an office for his core design team at the Site in Nagpur and upon failing to establish the office, penalty will be imposed. The core design team shall function from this office i.e., production of design and drawings shall be from this office. A penalty of Rs. 1,00,000/- per month will be imposed till the establishment of the office.
6	Part-2, Section-VII-E, Work Requirement Page 236	d) LWR FORCE - Maximum longitudinal LWR force due to Rail Structure Interaction (RSI) after taking load combination due to rail breaking and due to temperature difference with 10% dynamic augmentation shall be taken as 13.2 kN/m (for single as well as double track) for span <= 31 m and for superstructure supported on elastomeric bearing in the absence of an RSI analysis. In case RSI is done, the value obtained through RSI analysis may be adopted subjected to minimum of 5 kN/m.	d) LWR FORCE - Maximum longitudinal LWR force due to Rail Structure Interaction (RSI) after taking load combination due to rail breaking and due to temperature difference with 10% dynamic augmentation shall be taken as 13.2 kN/m (for single as well as double track) for span <= 34 m and for superstructure supported on elastomeric bearing in the absence of an RSI analysis. In case RSI is done, the value obtained through RSI analysis may be adopted subjected to minimum of 5 kN/m.



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Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
7	Part-2 clause 7.13 (g) of the Section-VII-E at page 243	Minimum number of pile in a pile group is four	Pile foundation for viaduct shall contain a <b>minimum of three / four piles per pier</b> (in case of single pier structure) and the minimum diameter of piles shall be 1000/1200 mm, subject to satisfying the design requirements. Piling shall be done using Hydraulic rotary piling rigs. Open footing/raft foundation will be provided in case pile foundation is not feasible or technically not required. In case of open foundation resting on hard rock strata, necessary shear/rock anchors shall be provided at no extra cost to the Employer.
8	Part-2 Section-VII-F Work Requirement (S.05: REINFORCEMENT) Cl. 5.1 General Page-295	6th Para:  In order to offer adequate resistance against corrosion, reinforcement bars shall be provided with a coating of "Truncated Inhibited Cement Slurry (Patent No. 109784/67 of CECRI, Karaikudi)" for non-aggressive environments (Mild and Moderate). No extra payment shall be made for the same.	6th Para:  In order to offer adequate resistance against corrosion, reinforcement bars shall be provided with a coating of "Truncated Inhibited Cement Slurry (Patent No. 109784/67 of CECRI, Karaikudi)" for non-aggressive environments (Mild and Moderate); alternatively, the bipolar corrosion inhibiting admixture in liquid or powder or any other form can be used to offer adequate and proper resistance against corrosion as per relevant standards. No extra payment shall be made for the same.



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Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
9	Part-2 Section-VII-F Work Requirement (S.05: REINFORCEMENT) Cl. 5.8 General Page-298	Last Para:  Detailed specification regarding quality control aspects and chemicals/solutions used in the process may be obtained from Central Electro Chemical Research Institute (CECRI) Karaikudi 623 006 (Tamilnadu). No extra payment shall be made for the protective coating procedure mentioned above and cost of the same shall be deemed to be included in the contract price.	Last Para:  Detailed specification regarding quality control aspects and chemicals/solutions used in the process may be obtained from Central Electro Chemical Research Institute (CECRI) Karaikudi-623 006 (Tamilnadu). Alternatively, the bipolar corrosion inhibiting admixture in liquid or powder or any other form can be used to offer adequate and proper resistance against corrosion as per relevant standards. No extra payment shall be made for the protective coating procedure mentioned above and cost of the same shall be deemed to be included in the contract price.
10	Part-2 Section-VII, Annexure-VII-3 (Appendices) Appendix-10A Approved Manufacturers and Supplier (Civil) Page-468	<b>S. No. 102 Integral Crystalline Waterproofing Method</b> • APPLE CHEMIE INDIA PVT. LTD • Fosroc • Perma • Cryton • Sika • Fairmate • Asian Paints • Penetron	<b>S. No. 102 Integral Crystalline Waterproofing Admixture</b> • APPLE CHEMIE INDIA PVT. LTD • Fosroc • Perma • Cryton • Sika • Fairmate • Asian Paints • Penetron
11	Part-2 Section-VII, Annexure-VII-3 (Appendices) Appendix-10A Approved Manufacturers and Supplier (Civil) Page-468	<b>S. No. 103 Water stopper/Bar</b> • Kanta Rubber. Green streak, Maruti, Duron • Fair Mate Chemical Pvt Ltd. • Supreme	<b>S. No. 103 Water stopper/Bar</b> • Kanta Rubber. Green streak, Maruti, Duron • Fair Mate Chemical Pvt Ltd • Supreme • Penetron



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Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
12	Part-2 Section-VII, Annexure-VII-3 (Appendices) Appendix-10A Approved Manufacturers and Supplier (Civil) Page-469-470	<b>S. No. 113</b> <b>Corrosion inhibiting admixture</b> • EPCO-KP 200 from Krishna Conchem Product Pvt. Ltd. • SUPREME BITUCHEM INDIA PVT. LTD. • ADO Additives Technologies Ltd. • BASF India Limited. (Construction Chemical Division). • Sika • Pidilite • Apple Chemie	<b>S. No. 113</b> <b>Corrosion inhibiting admixture</b> • EPCO-KP 200 from Krishna Conchem Product Pvt. Ltd. • SUPREME BITUCHEM INDIA PVT. LTD. • ADO Additives Technologies Ltd. • BASF India Limited. (Construction Chemical Division). • Sika • ConChem Labs • Pidilite • Apple Chemie • Pinnacle
13	Part-2 Section-VII, Annexure-VII-3 (Appendices) Appendix-10A Approved Manufacturers and Supplier (Civil) Page-470	<b>S. No. 121</b> <b>SS Railing</b> • Sanvijay	<b>S. No. 121</b> <b>SS Railing</b> • Sanvijay • JSW Steel
14	Part-3, Section-VIII (GCC), Clause-15.2 (g) at Page 725	The last sentence "The limit of such recovery shall not be more than Performance Security of the Contract"	The last sentence "Such recovery shall be Limited to 10% (Ten Percent) of the Contract Price"
15	Part-3, Section-VIII (GCC), Clause-15.4 (C) at Page 727	(c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.	(c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]; such recovery shall be limited to 10% (Ten Percent) of the Contract Price. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.



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Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
16	Part-3, Section-VIII (GCC), Clause-15.4 (d) at Page 727	(d) On termination of contract due to Contractor's default (except in case of part termination / de-scoping under para 15.2 (g)) the Performance Security/ Retention Money shall be forfeited by encashing the Performance Security/Performance Bank Guarantee /FDR / TDR /Cash Retention or Performance Security in any other form (as the case may be) and the balance work shall be got done independently without risk and cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a partnership firm, then every member/partner of such JV or partnership firm shall be debarred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other JV/partnership firm.	(d) On termination of contract due to Contractor's default (except in case of part termination / de-scoping under para 15.2 (g)) the Performance Security shall be forfeited/encashed. The balance work shall be got done independently at risk and cost of the failed Contractor. The Risk and Cost amount shall be recovered from the Performance Security and any other monies due to the Contractor under this contract or any other contract. However, such recovery shall be Limited to 10% (Ten Percent) of the Contract Price. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a partnership firm, then every member/partner of such JV or partnership firm shall be debarred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other JV/partnership firm.
17	Part-3, Section-IX (PCC), Clause 4.2 (Performance Security) at Page 757	Last Para "The total submitted Performance Security shall be considered adequate up to approved variation of 25% of the revised Contract Price covered by Performance Security."	Last Para Stands Deleted
18	Part-3 , Cl. 18.4 of PCC (S. No. 54) at Page-776	Contractor shall obtain Employee's Compensation Policy (Workmen's Compensation Policy) as per Employees Compensation Act 1923	Contractor shall obtain Employee's Compensation Policy (Workmen's Compensation Policy) as per Employees Compensation Act 1923 The insurance shall be maintained in full force and effect during the whole time that the Contractor's Personnel are assisting in the execution of the Works. For any person employed by a Subcontractor, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for the Subcontractor's compliance with this Sub-Clause. This shall supersede the provision at 18.2 (i) of GCC only for the purpose of Employee's Compensation Policy

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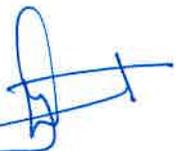
**Name of Work:** Design and Construction of Elevated Metro Viaduct of length 6.92 km between Ch. (-)657.182 m to Ch. (-)7576.78 m in Reach 2A of NMRP Phase-2

Following Modifications in the Bid Provisions shall apply:

Sr. No.	Reference	Existing Provision	Revised Provision
19	Part-3, Section-IX (PCC), S. No. 51, Cl. 18.2 (d) at Page 776	<b>Insurance Cover for one occurrence</b> INR 50 Lakhs for each occurrence under CAR insurance Policy	<b>Maximum Permissible Deductibles</b> INR 20 Lakhs for each occurrence under CAR insurance Policy
20	Part-3, Section-IX, Annexure-IX-B (Conciliation Procedure) at Page-791	<b>Interest on Arbitration Award</b> Where the arbitral award is for the payment of money, interest @ 15% per annum shall be payable on whole or any part of the money for the period it is accrued, till the date on which the award is made.	<b>Interest on Arbitration Award</b> Where the arbitral award is for the payment of money, No Interest shall be payable on whole or any part of the money for the period it is accrued, till the date on which the award is made.

- Encls.**
1. Annexure-1 (Replies to Prebid Queries)
  2. Annexure-2 (Geotechnical Reports)
  3. Annexure-3 (Drawings in CAD format)
  4. Annexure-4 (Appendix-7: Draughting and CAD Standards)



  
Executive Director(Procurement)  
**Maha Metro**

Maharashtra Metro Rail Corporation Limited  
**Nagpur Metro Rail Project - Phase 2**

Name of Work: Design and Construction of Elevated Metro Viaduct of length 6.92 km between Ch. (-)657.182 m to Ch. (-)7576.78 m in Reach 2A of NMRP Phase-2

**Replies to Prebid Queries**

**Annexure-1 to Corrigendum-2**

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
1	Part-1, Section-III,	Evaluation and Qualification criteria	Page-94	Design Head - 25yrs Experience, Senior Design Engineer - 2 Nos - 15 Yrs , Asst. Design Engineer - 3nos - 5 Yrs	The availability of engineers of 20 years of experience of design is difficult considering the number of ongoing metro projects being constructed all over India. Particularly, if they are required to be stationed in Nagpur. We request you to revise the requirements to Design Head - 1Nos -20 Yrs, Senior Design Engineer - 2 Nos - 10 Years, Asst Design Engineer - 3 Nos - 3 Years, Draftsman - Diploma Civil / ITI trained	Bid Condition Prevails
2	Part-2	Section-VII		Reference Drawings	Alignment drawing in CAD format may please be issued	PDF files of the tender drawings are clear and are adequate to have an understanding for tender purpose; however, CAD files are attached for information at Annexure-3.
3	Part-2	Section-VII-E, Work Requirement		Alignment GAD	The portal is proposed at Ch -950.0m within the width of the Pili river. The existing road bridge is having a multicell box culvert. We understand that the portal is not mandatory and the other suitable arrangement with maximum eccentricity of 1.8m can be deployed.	required essentricity can not be provided tender GAD prevails
4	Part-2	Section-VII-E, Work Requirement	Page 183	2.1 Scope Under Lump sum Price, 2.1.1 For Viaduct, Notes:- 1) Pile foundation for viaduct shall contain a <b>minimum of three / four piles per pier</b> (in case of single pier structure) and the minimum diameter of piles shall be 1000 mm Piling shall be done using Hydraulic rotary piling rigs. Open footing/raft foundation will be provided in case pile foundation is not feasible or technically not required. In case of open foundation resting on hard rock strata, necessary shear/rock anchors shall be provided at no extra cost to the Employer.	Clause 2.1 contradicts with the clause 7.13 of the Section-VII-E, page 243, 7.13 FOUNDATION AND GEOTECHNICAL WORKS g) <b>Minimum number of pile in a pile group is four.</b> Please confirm.	Please refer Corrigendum-2
5	Part-2,	Section-VII-E, Work Requirement	Page 236	d) LWR FORCE - Maximum longitudinal LWR force due to Rail Structure Interaction (RSI) after taking load combination due to rail breaking and due to temperature difference with 10% dynamic augmentation shall be taken as 13.2 kN/m (for single as well as double track) for span <= 31 m and for superstructure supported on elastomeric bearing in the absence of an RSI analysis. In case RSI is done, the value obtained through RSI analysis may be adopted subjected to minimum of 5 kN/m.	We request that the RSI force 13.2kN/m as suggested by Mahametro be relaxed for spans upto 34m segmental box girders supported on elastomeric bearings. The same is followed for Phase-I of the Nagpur Metro project.	Please refer Corrigendum-2



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## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
6	Right of Access to the Site PART-3: Conditions of Contract and Contract Forms Section - VIII: General Conditions of Contract	2.1	Reference 1677497603 R2A Viaduct Part 3 PAGE no. 22/344 & Page 652 of (998)	After award of the work, The Engineer shall grant the Contractor right of access to, and /or possession of, the Site progressively ---- If the Contractor suffers delay from failure on the part of the Employer to grant right of access to, or possession of the Site, the Contractor shall give notice to the Engineer in a period of 28 days of such occurrence. For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time Sub-Clause 8.4 [Extension of Time for Completion] and no monetary claims whatsoever shall be paid or entertained on this account	Bidder understands that due to delay in handing over the site within 28 days Contractor will be eligible for extension of time and no monetary claims will be paid. Bidder have considered that if any delay occurs the reason not attributable to contractor for handing over of site , then contractor shall be eligible for extension of time and cost for over run of the project and idle charges for the mobilised resources as per original agreed schedule and it shall be discussed mutually and agreed upon.  Bidder request client to confirm.	Please Refer Sub-Clause: 2.1 Right of Access to the Site. 4th Paragraph is reproduced here: For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time Sub-Clause 8.4 [Extension of Time for Completion] and no monetary claims whatsoever shall be paid or entertained on this account.  Bid Condition Prevails
7	Right of Access to the Site PART-3: Conditions of Contract and Contract Forms Section - VIII: General Conditions of Contract	2.1	Reference 1677497603 R2AViaduct Part 3 PAGE no. 22/344 & Page 652 of (998)	After award of the work, The Engineer shall grant the Contractor right of access to, and /or possession of, the Site progressively ---- If the Contractor suffers delay from failure on the part of the Employer to grant right of access to, or possession of the Site, the Contractor shall give notice to the Engineer in a period of 28 days of such occurrence. For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time Sub-Clause 8.4 [Extension of Time for Completion] and no monetary claims whatsoever shall be paid or entertained on this account	Bidder request client to give the site handing over schedule to plan accordingly for bid preparation and resource mobilisation.	Site will be handed over progressively  Bid Condition Prevails
8	Part-3: Conditions of Contract and Contract Forms Section –IX: Particular Conditions of Contract (PC Delay damages for the Works ANNEXURE-IX-G	GCC Sub Clause No 8.7	Page 128/344 and Page 758 of (998)	Delay damages is applicable as detailed in Key dates (Annexure IX-G)	Bidder understands that these key dates (KD-1 TO KD 14) denotes the stage mile stone completion for which Penalty/LD for nonachieving the key dates will be implemented. Bidder requests client to implement LD on overall completion period only and not on interim key dates failure. Bidder shall submit the Detail program for approval after award of work.	Bid Condition Prevails
9	PART-3: Conditions of Contract and Contract Forms Section - VIII: General Conditions of Contract <b>Contractor's Care of the Works</b> Part 4: Financial Bid & Bill of Quantities, Preamble	17.2  SI 30	102/344 Page 980 of 998 6/24	The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued----  If work is stopped due to utilities, no claim shall be entertained on this account	Bidder Will take care of the works except Unforeseeable condition at site for underground utilities. If any existing underground utilities obstruction found during execution, it shall be rectified as per instruction of Engineer with extra time and cost. Bidder requests client to delete SI 30 of Preamble to Bill of Quantities in this regard.	Bid Condition Prevails



SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
10	1677497608R2AViaduct Part4 SCHEDULE-B: Design and Construction of Viaduct	SCHEDULE-B: Design and Construction of Viaduct	15/24	Bidder Shall Quote for "Design and Construction of Elevated Metro Viaduct (Lump sum Component)" in 'Summary of Bill of Quantities	There is a breakup of Claiming interim payment and final payment of this schedule B of the financial Bid percentage wise.. After award of contract, Bidder will submit further billing breakup for claiming Interim and final payment for smooth cash flow of the Project. And payment shall be made as per mutually agreed Stage Payment Schedule (between contractor and Engineer) Bidder requests client to confirm.	Payment shall be made as per Annexure-1 of Schedule-B (Page-994) Bid Condition Prevails
11	1677497608R2AViaduct Part4 SCHEDULE-B: Design and Construction of Viaduct Part 4: Financial Bid & Bill of Quantities, Preamble	Financial Bid Summary of Bill of Quantities - NOTE SI 32	7/24 Page 980 of 998 6/24	Note : All the amounts in the table are inclusive of all taxes, duties, royalty, cess and 18% GST Rate quoted by bidder shall be inclusive of GST as per prevailing rate at the base date (i.e. 28 days prior to the final date of submission of bid). Any changes in rate of GST or any other taxes during the execution of the work shall be adjusted both ways.	Bidder understands that this bid amount shall be inclusive of all taxes, duties, royalty, cess and 18% GST. During execution if there is a change in existing rules of taxes by Government of India, the Contractor shall be entitled for claiming the differential amount. Bidder requests client to confirm.	Please refer Cl. 13.7 of GCC/PCC Bid Condition Prevails
12	Part 4: Financial Bid & Bill of Quantities, Preamble	SI 28	Page 980 of 998 6/24	Bidder may please note that to perform this contract, nothing extra shall be payable on account of field constraints, availability of front, preparation of detailed scheme for taking necessary clearance and approval from the concerned authority and other local bodies / administration etc.	Bidder requests for time extension and cost compensation towards delays not attributable to the Contractor.	Bid Condition Prevails
13	Part 4: Financial Bid & Bill of Quantities, Preamble	SI 8	Page 978 of 998 4/24	Demolition of existing structures shall be carried out without making any damage to adjacent structures, utilities and with all safety measures. It will be deemed to include cost of all plants, labour, supervision, materials, transport, all temporary works, erection, maintenance, utility identification, contractor's profit and establishment/overheads, together with preparation of design and drawings, all general risks, insurance liabilities, compliance of labour laws, taxes and duties, and obligations set out or implied in the contract.	Please clarify under which Schedule this item shall be paid.	Cost towards demolition of structure will be paid in relevant Miscellaneous schedule-C.
14	Part-2, Section-VII-B Work Requirement	SI 39, CI 2.1.1	Page 182 of 998 19/467	Demolition/dismantling of RCC framed /steel structures/buildings, masonry buildings including basement, ground and above floors as existing at site on the alignment of viaduct as indicated in GAD without making damages to the adjacent structures, utilities, etc. including disposing off retrieved materials out of site of work.....Retrieved materials obtained from demolition/dismantling shall be property of the contractor. <b>Acquiring and evacuation of the properties will be done by the concerned authorities.</b>	Bidder requests to provide list of existing structures/ buildings to be demolished with details of foundations. Bidder understands that delay in acquiring and evacuation of the existing structures/buildings shall entitle the Contractor for claiming extension of time and idle costs. Please confirm.	Work is predominantly on Main Road; and there are minimal demolition works anticipated. Extension of time will be provided however, compensation of cost towards delays are not admissible. Bid Condition prevails.



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
15	Part-2, Section-VII-B Work Requirement	SI 40, CI 2.1.1	Page 182 of 998 19/467	The contractor has to get necessary permission/ NOC from the Railway, PWD, NMC, NHAI, Police, Traffic Police and other concerned regulatory authorities for blocking services and working in such locations. Maha-Metro will only assist the contractor (e.g. Issuance of letter to concerned departments) for getting the permission from concerned regulatory authorities for working in such locations	Bidder understands time extension and reasonable cost compensation shall be allowed in case of substantial delays in getting permissions/NOC from Authorities for reasons beyond control of the Contractor.	Extension of time will be provided however, compensation of cost towards delays are not admissible.  Bid Condition prevails.
16	Part-3: Conditions of Contract and Contract Forms, Section –IX: Particular Conditions of Contract (PC)	SI 36, GCC CI 13.8	Page 766 of 998 136/344	it is clarified that, Price Adjustment calculated under this clause shall be paid only against the works executed after original completion period and only if the Extension of Time is approved by Maha-Metro for the reasons attributable to Maha-Metro	Bidder understand that the price Variation clause will be applicable from the date of commencement of contract .Please confirm.	<b>Please refer Sub-Clause 13.8 of PCC (Adjustments for Changes in Cost)</b> It is clarified that, Price Adjustment calculated under this clause shall be paid only against the works executed after original completion period and only if the Extension of Time is approved by Maha-Metro for the reasons attributable to Maha-Metro  Bid Condition prevails.
17	Part-3: Conditions of Contract and Contract Forms, Section –IX: Particular Conditions of Contract (PC)	NIT	Page 3 of 998	Online submission up till 16.00 Hrs. on Dt. 28/03/2023 on Maha-Metro, etender portal.	Bidder Request to extend the bid submission date atleast 3 weeks from 28/03/2023 to complete the Pre tender Soil investigation ,design & pricing for bid.	Please refer separate Corrigendum for revised last date of bid submission.
18	Part -III , GCC 13.8 (Sl. No. 36 of PCC)Adjustments for Changes in Cost 13.8			(Applicable to Sch-A, Sch-B and Sch-D whereas not applicable to Sch-C (Provisional Sum)) a) The rates as per the accepted Bill of Quantities / Pricing Document shall be applicable till the completion of the Works and will be varied only to the extent of permissible price variation under this clause, which will be applicable only for the works executed after original completion period.	Escalation is payable only for extended period (Is it applicable for all the schedule or only for schedule B)	Please refer Sub-Clause 13.8 of PCC (Adjustments for Changes in Cost)  Adjustments for Changes in Cost shall be Applicable to Sch-A, Sch-B and Sch-D whereas not applicable to Sch-C (Provisional Sum) Bid Condition prevails.
19	Part -III , GCC 14.2 (Sl. No. 37 of PCC)Advance Payment / Mobilization Advance((c) Interest in case of delay in repayment of Advances)	37		Should there be delay in the progress and completion of work due to reasons attributable to the Contractor, as a result of which it is not possible to recover the advance amount within the assigned time period of completion, then the interest @ MCLR (One Year Rate) +2%, (Marginal Cost of Funds Based Lending Rate) of SBI, shall be recovered from the Contractor on balance advance amount for extended period of work till the re-payments of entire amount completes.	In case delay in the progress and completion of work due to reasons attributable to the Employer and beyond the control of contractor. Will interest charged for the extended period.	<b>Please refer Sub-Clause 14.2 (b) of PCC (Amortization / Repayment of Advance Payment):</b>  .....Mobilization Advance is recovered before payment of 80% of Contract Price or before the expiry of original currency of contract whichever is earlier  Bid Condition Prevails



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
20	Part-2 Page no 179 of 998 Sl. No		179 of 998	The portal piers of this nallah shall be round in shape.	Circular Shutter only for pier will not be cost effective for the project. We request to allow portal pier also as normal pier shape. Or make all the pier in Circular Shape.	Keeping aesthetic point of view under consideration, the circular pier has been proposed. Contractor is advised to quote accordingly. Bid Condition Prevails
21	Part-2, Typical Drawing of Barricading Board.			Typical Drawing of barricading board shows ISMB -250 beam in bottom together with three legs of same section .	It was earlier used in DMRC project but due to heavy weight and handling problem it was further simplified also simplified version has been used in Phase-I of NMRC. We request to adopt the same for phase -2 also.	Drawings in the Bid Documents to be followed. Bid Condition Prevails
22	Part-2, 2.1.2 Page 185 Of 998		185 of 998	xxi) Conducting deflection load test/Span load test as per relevant Indian standard or as specified in the specifications.	For CLC we request to allow to conduct the load test with Train. Applying of load by conventional method may not be possible practically.	Not Agreed Bid Condition Prevails
23	Part-2, 2.1.1 (10) Page 180 Of 998		180 of 998	Variation in the range of $\pm 500$ mm from rail level provided in the GAD enclosed with the bid/tender drawings is deemed to be included in the lump sum portion of contract. Variation beyond this range shall be paid or deducted as the case may be. Only the increase/decrease in height of pier(s) (i.e. concrete and steel quantity) will be considered for either payment or rebate in this case. Difference between actual executed Rail levels and Rail levels as furnished in the GAD at each Pier location shall be considered to evaluate any variation arising on account of change in Rail level.	We request to considered claim based on actual designed beyond 500mm increase or decrease in rail level.	Not Agreed Bid Condition Prevails
24	Part-2, Section-VII-A, Cl. 13.(5)	Cl. 13.(5)		All instruments necessary to carry out the inspections and monitoring that are identified in the report shall be provided by the Contractor till such time the works are handed over to the O & M department.	Please clarify if the instruments have to be handed over to O & M department during works handing over.	For handing over of viaduct structure to O&M department, necessary instruments, machineries etc. required for inspection of executed works are to be provided during the various inspections
25	Part-2, Section-VII-B, Cl. 2.0 a.	Cl. 2.0 a		The elevated Section of (Reach-2A) starts from Chainage (-) 657.182m and ends at (-) 7576.78m. However, Pier and Pier Cap at beginning of the section will not be a part of scope of works defined in this contract.	Bidder understands that the Foundation, Pier & Pier Cap at end of Chainage is included in scope. Please confirm.	Yes. The last pier structure at the end Chainage (Ch -13500m) is included in the scope however, first pier at the start Chainage (Ch -657.182m) which is already constructed in Phase-1 will not be the part of scope of the work.



SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
26	Part-2, Section-VII-B, Cl. 2.1.1. 10	Cl. 2.1.1. 10		Bidders have to make sure that while submitting their proposal and superstructure design, the rail levels as envisaged in GAD shall be final. Variation in the range of $\pm 500$ mm from rail level provided in the GAD enclosed with the bid/tender drawings is deemed to be included in the lump sum portion of contract. Variation beyond this range shall be paid or deducted as the case may be. Only the increase/decrease in height of pier(s) (i.e. concrete and steel quantity) will be considered for either payment or rebate in this case. Difference between actual executed Rail levels and Rail levels as furnished in the GAD at each Pier location shall be considered to evaluate any variation arising on account of change in Rail level.	Effect of change of rail level substantially (more than 1.5m) does have an effect on the foundations as well. It is requested to modify the clause to include the variation in foundation design be compensated/rebated as applicable, for substantial rail level change.	Bid Condition Prevails
27	Part-2, Section-VII-B, Cl. 7 (2)	Cl. 7 (2)	193	"as described in Design Basis Report."	Sentence is incomplete.	Please refer Corrigendum-2
28	Part-2, Section-VII-C, Cl. 1 (3)	Cl. 1 (3)		The Contractor shall engage the Designer who shall undertake and prepare the design of the Permanent Works and Temporary Works. The Contractor shall establish an office for his core design team at the Site in Nagpur and upon failing to establish the office, penalty will be imposed. The core design team shall function from this office i.e., production of design and drawings shall be from this office.	(i) Please specify the penalty value. (ii) By "Core design team" bidder understands that a set of working Engineers fully conversant with the design work and updated with latest status of works to be placed in Nagpur with necessary support team. They shall work in tandem with Maha-Metro in design verification and assist the reviewer in all review works. Also they shall be the key person from Contractor in Design Coordination Meetings.	Please refer Corrigendum-2 A penalty of Rs. 1,00,000/- per month will be imposed till the establishment of the office. Your understanding of Core Design team is correct. However, the requirement of the team and their deployment shall be as per Clause-7 of Section-III of Part-1
29	Access to and Possession of the Site	Part-3, Section-8, GCC, Cl.2.1	Page:652 of 998	The Engineer shall grant the Contractor right of access to, and /or possession of, the Site progressively for the completion of Works. Such right and possession may not be exclusive to the Contractor. The Contractor will draw/ modify the schedule for completion of works according to progressive possession / right of such sites. For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time Sub-Clause 8.4 [Extension of Time for Completion] and no monetary claims whatsoever shall be paid or entertained on this account.	We request to include the provision of payment of cost component for extended stay for the delays attributable to Employer, viz, shifting of Utilities, approval of design etc.	Please Refer Sub-Clause: 2.1 Right of Access to the Site. 4th Paragraph is reproduced here: For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time Sub-Clause 8.4 [Extension of Time for Completion] and no monetary claims whatsoever shall be paid or entertained on this account. Bid Condition Prevails
30	ROW Handing over schedule / Land Acquisition			Not given	Please provide Chainage wise schedule of handing over of possession of Site (ROW).	Site will be handed over progressively Bid Condition Prevails
31	Land for Casting Yard / Work Areas			No land shall be made available by the employer for casting yard, site offices, and site laboratories etc. Contractor shall make his own arrangements at his own cost.	Employer is in a better position to arrange land, request to provide land for construction depot and casting yard free of cost, appx. Area required is 65,000sqm	Not Agreed Bid Condition Prevails



SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
32	Utilities Delay			The shifting of the utility(ies) can be undertaken only in exceptional circumstances where in the opinion of the Engineer no other option is available. Such utility shifting will be executed by contractor directly and shall be paid separately. No claim as regard to delay in execution of the diversion can be entertained.	In the event of delay in project progress on account of Relocation/modification of utilities (all chartered and unchartered), for any increase in duration from baseline tender programme, contractor shall be granted Extension of Time and Monetary compensation. Please confirm and amend tender conditions accordingly.	Not Agreed Bid Condition Prevails
33	Minimum Equipment			Piling equipment hydraulic rig - 4Nos Overhead Launching Girders - 3 Nos Ground Support Launching System -2Nos	Use of equipment is based on site conditions and contractors planning of works. Kindly modify the minimum numbers required with term <As per requirement> in line with other equipment in the list.	Not Agreed Bid Condition Prevails
34	Liquidated Damages			The maximum limit of Liquidated Damages shall be 10% of the Contract Value.	We request you to kindly restrict maximum limit of liquidated damages to 5% of the total contract value.	Not Agreed Bid Condition Prevails
35	Scope for Stations	Part-2, Section-7-B, Work Requirement	Page:178 of 998	D&B contractor has to design and construct pile, pile cap, pier and pier arm to support the station platform.	We under stand casting of concourse level pier arm and dowel bars provision is not in contractor scope. Please confirm.	There is no concourse level. However, platform level pier arm and dowel bars for bearing pedestal and seismic restrainers are in the scope of this contract
36	Scope for Stations	Part-2, Station Dwg No: CV-PRM- TDR-PHASE- 02-DRP- 0005	Page:758 of 998	Additional Note: 3. For single decker Stations, the Scope under lump sum contract also includes Design and Construction of substructure and Segmental Superstructure with necessary bearing pedestals, bearings, seismic restrainer and drainage arrangement along with Pier arms at Track/ Platform level.	We under stand casting of concourse level pier arm and dowel bars provision is not in contractor scope. Please confirm.	There is no concourse level. However, platform level pier arm and dowel bars for bearing pedestal and seismic restrainers are in the scope of this contract
37	Adjustment for Changes in Cost	Part-3, Section-9, PCC, Cl.13.8	Page:766 of 998	Cost co-efficient of labour to the total cost = 0.20 Cost co-efficient of Steel to the total cost = 0.25 Cost co-efficient of Cement to the total cost = 0.17 Cost co-efficient of Fuel & Lubricants to the total cost = 0.05 Cost co-efficient of other materials, machineries, tools and plants to the total cost = 0.18 Total = 0.85	We request to modify the cost co-efficient for various components as below which are in line with actual cost components of metro works based on past experience. Cost co-efficient of labour to the total cost = 0.23 Cost co-efficient of Steel to the total cost = 0.30 Cost co-efficient of Cement to the total cost = 0.17 Cost co-efficient of Fuel & Lubricants to the total cost = 0.05 Cost co-efficient of other materials, machineries, tools and plants to the total cost = 0.10 Total = 0.85	Not Agreed Bid Condition Prevails



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
38	Muck Disposal	Part-2, Section-7-B, Work Requirement	Page:182 of 998	Disposal of surplus materials including excavation spoils, pile heads etc. to the dumping site approved by the Engineer, irrespective of lead and lift (ascent/descents). All debris that includes concrete blocks, pile heads bricks etc. may have to be disposed off by the contractor at nominated places (to be identified by contractor in consultation with local civic bodies) including all lead and lift.	We requests to specify the lead for the disposal of pile heads, debris from demolition of various structures in the alignment.	Bidder may visit the site and analyse suitably.  Bid Condition Prevails
39	Geo tech reports	Part-3, Section-8, GCC, Cl.4.1	Page:668 of 998	The Contractor shall conduct further investigations considered necessary by him at his own cost and any error, discrepancies if found in Employer's data at any stage will not constitute ground for any claim for extra time and costs.	We request you to provide Geo technical reports. We request to modify the clause such that any variation in Geo tech data becomes payable. Please confirm.	The relevant reports are attached as Annexure-2 of Corrigendum-2. These reports are only for guidance, the contractor is supposed to carry out its own Geotechnical investigation at each pier location, and nothing extra shall be paid on this account.
40	Railway Span				Please provide the approval General Arrangement Drawing of Railway Span.	Preparation and obtaining the approval of GAD from the Railways is part of the scope of work.
41	Specific Construction & Contract Management Experience.			Should have <b>**Substantially completed and have received at least INR 340 Crores towards "Construction of minimum 5.6 Km Metro Rail Viaduct in a Single Contract".</b>	Should have " <b>*Substantially completed and have received at least INR 340 Crores towards "Construction of minimum 5.6 Km Viaduct in Metro Rail / National Highways / Expressways / Railways in a Single Contract".</b>	Not Agreed  Bid Condition Prevails
42	Specific Construction & Contract Management Experience.			<b>Or</b> Should have <b>"Substantially completed and have received at least INR 213 Crores towards "Construction of minimum 3.5 Km Metro Rail Viaduct In each of the Two Contracts"</b>	Should have <b>"Substantially completed and have received at least INR 213 Crores towards "Construction of minimum 3.5 Km Viaduct In Metro Rai/ National Highways /Expressways / Railways in each of the Two Contracts"</b>	Not Agreed  Bid Condition Prevails
43	Specific Construction & Contract Management Experience.			<b>Or</b> Should have <b>"Substantially completed and have received at least INR 370 Crores towards "construction of minimum 2.8 Km of Metro Rail Viaduct In each of Three Contracts".</b>	Should have <b>**Substantially completed and have received at least INR 170 Crores towards "Construction of minimum 2.8 Km Viaduct in Metro Rail / National Highways Expressways / Railways in each of Three Contracts".</b>	Not Agreed  Bid Condition Prevails
44	Specific Construction & Contract Management Experience.			<b>Note: Similar work: Construction of Metro Rail Viaduct for any Government agencies, PSUs or Listed companies In Stock exchange.</b>	<b>Note: Similar work: Construction of Viaduct in Metro Rail National Highways / Expressways / Railways for any Government agencies, PSUS or Listed companies In Stock exchange</b>	Not Agreed  Bid Condition Prevails



SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
45	Specific Construction & Contract Management Experience.			<b>Lead Member experience:</b> Lead member must have experience of construction of the Metro Rail Viaduct of length of minimum 5.6 Km (in one contract) or 3.5 km (In each of the two contracts) or 2.8 km (In each of the three contracts)	<b>Lead Member experience :</b> Lead member must have experience of construction of the Viaduct of length of minimum 5.6 Km (in one contract) or 3.5 Km in each of the two contracts) or 2.8 km in each of the three contracts) in Metro Rail/ National Highways/Expressways / Railways etc	Not Agreed Bid Condition Prevails
46	Specific Construction & Contract Management Experience.			<b>**Other Member (JV) experience:</b> Other member of the JV must have received at least INR 85 Cr. Towards construction of Metro Rail Works up to two contracts collectively.	<b>**Other Member experience:</b> Other member of the JV must have received at least INR 85 Cr. towards construction of Metro Rail works / National Highways & Expressways ROB*s / National Highways & Expressways Major Bridges / National Highways & Expressways Flyovers etc., up to two contracts collectively.	Not Agreed Bid Condition Prevails
47	Part-2	2.1.1	180 of 998	"...Variation beyond this range shall be paid or deducted as the case may be. Only the increase/decrease in height of pier(s) (i.e. concrete and steel quantity) will be considered..."	Kindly note with increase in height, foundation cost will also be increased. Extra cost of pier & foundation shall be considered for variation instead of pier.	Bid Condition Prevails
48	Part-2	2.1.1 (Notes)	183 of 998,	"...pile foundation is not feasible or technically not required. In case of open foundation resting on hard rock strata, necessary shear anchors shall be provided at no extra cost to the Employer"	Please confirm whether shear anchors can be avoided if not required from design.	Yes. However, shear anchors to be provided if it is required as per approved design requirements.
49	Part-2		193 of 998	"..The design life of all permanent works shall be 120 years."	Please note, design life is 100 years as per referred clause of IRS CBC in viaduct DBR. Pls clarify.	Design life as mentioned in DBR shall be followed.
50	Part-2		237 of 998	"Effective Length of pier columns for simply..."	Please note, effective length of portals will be different in both the directions as specified. Pls mention the effective length criteria for portal piers.	Effective Length Criteria for Portal Piers is already mentioned at 5.2 (f) of Part-2, Section-VII-E General Planning Criteria.
51	Part-2		241 of 998	"Longitudinal sway at the top of viaduct columns due to live loads shall be restricted to a maximum of 5 mm."	Please note, there are no such requirement of restriction of longitudinal sway in any of the code. Pls clarify whether the requirement is only under vertical live loads with dynamic impact only and not due to associated longitudinal force.	"...as per RDSO Guidelines for carrying Out Rail Structure Interaction studies on Metro Systems" Tender clause is already clear and the same may be referred.
52	Part-2		565 of 998	Geotechnical Investigation	1. Kindly provide bore hole location plan. 2. Only Bore log data is provided in tender. Pls provide the lab test data to find out load carrying capacity of foundation.	The relevant reports are attached as Annexure-2 of Corrigendum-2. These reports are only for guidance, the contractor is supposed to carry out its own Geotechnical investigation at each pier location, and nothing extra shall be paid on this account.



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
53	Tender Drawings			AutoCAD drawings	We request you to provide us editable drawings in AutoCAD format for ease and accuracy in working.	PDF files of the tender drawings are clear and are adequate to have an understanding for tender purpose; however, CAD files are attached for information at Annexure-3.
54	Part - 1		95 of 998	Design team of Contractor should be stationed at Nagpur	1. Entire Design team is proposed to be placed at Nagpur. We propose to have one design expert stationed at Nagpur and design production to be done from HQ of design consultant. 2. Requirement of design manpower for Lump sum viaduct design is on higher side compare to already executed similar projects .	Not Agreed Bid Condition Prevails
55	Part - 1		93 of 998	Fully automatic and computerized batching plant (2 nos. of 60 cum/hr.) minimum or equivalent capacity in different configuration at casting yard with suitable arrangements for proper quality of water	2 batching plants of 60 cum /hr capacity seems to be on higher side considering the quantum of the project. It is requested that the contractor be allowed to select the capacity and numbers as per his program. Also, contractor may be asked to submit an undertaking to provide uninterrupted concrete supply for the project. Kindly consider.	Not Agreed Bid Condition Prevails
56	Part - 1		93 of 998	Piling equipment hydraulic rig(*) - Max. permissible age - 5 years	Please increase the max. permissible age of the hydraulic rig to 10 years and oblige.	Not Agreed Bid Condition Prevails
57	Part - 2		182 of 998	Permissions and clearances - Permission/ NOC from the Railway, PWD, NMC, NHAI, Police, Traffic Police and other concerned regulatory authorities for blocking services and working in such locations. Maha Metro will only assist the contractor	We request that the permissions and clearances from all the departments be taken care of by Employer and oblige.	Not Agreed Bid Condition Prevails
58	Part - 3		776 of 998	Workmen compensation policy - Validity DLP + 6 months	Since there will be no workers working at site after completion of the project, the requirement to maintain workmen compensation policy during DLP + 6 months is not required and will unnecessarily add to the cost of the project.	Workmen compensation policy shall be governed by Cl. 18.4 of GCC/PCC. For additional clarification Please refer Corrigendum-2
59	Part - 3		776 of 998	Professional indemnity insurance - 6% of awarded cost of Schedule-B of Bill of quantity, for any one incident / accident (AOA) with number of incidents / accidents two in any one year (AOY), 5% of AOA limit; Validity DLP + 3 Years	We request you to reduce the limit of professional indemnity insurance to 3% as practised by most of the government organizations. Also period for maintenance of this insurance may be kept till completion of the project. Requirement to maintain this insurance or longer period will add to the cost of the project.	Not Agreed Bid Condition Prevails



SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
60	Part - 3		758 of 998	Liquidated damages and incentive for early completion - Maximum ceiling for LD = 10%, Maximum ceiling for incentive = 12.50 Lakh	It is requested that the clauses may be suitably modified to make it equitable. We propose that maximum ceiling for LD and incentive be kept at 5% of contract price. Kindly consider and oblige.	Not Agreed Bid Condition Prevails
61	Submission date		NIT	Date and time of tender submission : 28.03.2023, upto 1600 Hrs	The tenders are invited on partly EPC and partly item rate basis. A design consultant will have to be appointed to carry out the preliminary design, site and other contractual inputs will have to be provided so as to enable consultant to prepare the BOQ. The BOQ so received shall then be verified for correctness and optimization and rates for individual items to be worked out to arrive at the price to be quoted. Also, several forms related to financial information of the company are required to be submitted with bid. Such information will have to be obtained from head office. In view of the quantum and complexity of the work involved, we hereby request you to kindly extend the due date of submission of bid to atleast 3 weeks after issue of prebid clarifications.	Please refer separate Corrigendum for revised last date of bid submission.
62		Clause No. 4.2 (a)	page no.89	<b>NIT Specific Construction &amp; Contract Management Experience</b> <b>Note - 4: ****Other Member (JV) experience:</b> Other member of the JV must have received at least INR 85 Cr. Towards construction of Metro Rail Works up to two contracts collectively.	Kindly amend this clause as Other members of the JV must have received at least INR 85 Cr. Towards construction of any viaduct Works up to two contracts collectively and also required experience with metro projects ongoing or completed work.	Not Agreed Bid Condition Prevails
63				<b>SECTION VII-B 2. SCOPE OF WORK, 2.0 GENERAL (C)</b> Whole length of the viaduct has to be designed for double line standard gauge track as shown in the GAD. System is planned with end evacuation and 25 KV AC OHE traction. The tenderer/bidder will have to use Segmental Box girder integrated with the parapet (Segmental box girder is Maha-Metro's preferred choice). Some spans will have to be designed to accommodate the emergency track cross over, special track layouts (e.g. pocket track) (Approximate locations if any are shown in the GAD for reference).	This is own design tender so, Can we design some superstructure span In cast In situ method?	Kindly refer Point 16 of 2.1.1 of Part-2 Section VII-B (page 178 of 998)
64				<b>Date &amp; Time of submission of Tender:-</b> Online submission up till 10.00 Hrs. on Dt. 28/03/2023 on Maha-Metro, etender portal	As this work is on its own design basis many aspects depend on the submission process. Also, the work is a specialized category, Thus, we request you to please extend bid submission date at least 15 days from the due date of submission.	Please refer separate Corrigendum for revised last date of bid submission.



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
65					We request you to kindly provide the softcopy (AutoCAD) of all the drawings.	PDF files of the tender drawings are clear and are adequate to have an understanding for tender purpose; however, CAD files are attached for information at Annexure-3.
66					We request you to kindly provide the Geotechnical Report for the subject project tender please.	The relevant reports are attached as Annexure-2 of Corrigendum-2. These reports are only for guidance, the contractor is supposed to carry out its own Geotechnical investigation at each pier location, and nothing extra shall be paid on this account.
67	Part 1, Section III	Clause No. 7		Requirement of Core design team	We presume that, the substantially completed (i.e. 80% & above) projects of DDC shall also be accepted for the eligibility of DDC. Please Confirm	Please refer Clause 7(iii) of Section III, Part 1 Bidding Procedure. Bid Condition Prevails
68	Part 1, Section III	Clause No. 7		Requirement of Core design team	We request you to kindly allow the DDC to deploy one competent Designer at Nagpur for day to day coordination with the site and all other required design team shall be deployed at designer's HQ for the specified duration.	Not Agreed Bid Condition Prevails
69					We presume that, the Land for the Site offices for Employer shall be provided free of cost by the Employer. Please confirm	Bidder's presumption is wrong. Contractor has to arrange Site offices (including land if any) for Employer as required under the scope of this work at his own cost. This is the part of D&B scope
70					We request the employer to provide the land for Casting yard and Material Storage at free of cost within the project alignment	Not Agreed Bid Condition Prevails
71					We request the employer to provide the land for Contractor site office at free of cost within the project alignment.	Not Agreed Bid Condition Prevails
72					We request the employer to provide the land for Contractor labour camp at free of cost within the project alignment.	Not Agreed Bid Condition Prevails



## Annexure-1 to Corrigendum-2

SI No	Tender Doc Ref.	Clause no	Page no	Details of Clause	Bidders Query/Assumptions	Maha-Metro Clarification/Remarks
73					Please specify the list of Approvals to be obtained by the contractor for the proposed works	The relevant clauses in the Bid document may please be referred.
74					Please specify the location and number of trees along with Girth details for the trees to be removed or transplanted	Bidder may visit the site and ascertain suitably. Bid Condition Prevails
75					We presume that all the related payment and contractor risks towards shifting / diversion / maintenance / restoration of all chartered and unchartered utilities and getting NOC & Approval of schemes of Diversion of Utilities from the concerned regulatory / statutory / Local Authority shall be paid separately. Please confirm	Cost towards civil (or electrical if any) works for diversion of utilities only shall be paid in relevant schedule of miscellaneous works (Schedule C)
76					We request you to please confirm the Note to Financial Bid "Bidder shall submit scanned copy of the filled up financial bid on its Letter Head" or to be filled online in the e-tender portal	Bidder shall submit scanned copy of the filled up financial bid on its Letter Head in the Financial Bid Section of eTender Portal only. Bidder must not submit this anywhere else.
77					We request you to kindly extend the due date of submission of tender for one month from the date of receipt of reply to pre bid queries, as this is Design and Build contract, which requires Design, technical study, preparation of bill of quantities, etc.	Please refer separate Corrigendum for revised last date of bid submission.



*ED/Proc*

**MAHARASHTRA METRO RAIL CORPORATION LIMITED  
(NAGPUR METRO RAIL PROJECT, PHASE-2)**

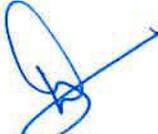
**ANNEXURE II OF CORRIGENDUM II**

**Geotechnical Investigation Borehole Reports of Elevated Metro Viaduct of length 6.92 km between Ch. -657.182 m to Ch -7576.78m in Reach 2A of NMRP Phase 2.**



**Maharashtra Metro Rail Corporation Limited  
Metro Bhawan, East High Court Road (VIP Road),  
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,  
Maharashtra, INDIA**

**Website: [www.metro railnagpur.com](http://www.metro railnagpur.com)**

  
Maha-Metro



Feb-2023

Contractor

# S & R Geotechniques Pvt. Ltd.

## GEOTECHNICAL INVESTIGATION WORK AT NAGPUR METRO REACH-2 (PHASE-II)

Document Title: Geotechnical Investigation Report for Nagpur Metro Reach-2  
(Phase-II)

Document No.: SRGeo/MC91210/Rep-01/R0

Name of Agency: M/s. S & R Geotechniques Pvt. Ltd.

Principal Client: M/s. Maha Rail Metro Nagpur.

Client: M/s. Mall Constructions Pvt. Ltd.

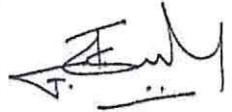
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Total No. of Pages:  
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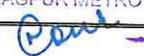
Beneath The Surface™

Action	Name	Designation	Date	Signature
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NAGPUR METRO





S & R Geotechniques Pvt. Ltd.

Document no:  
SRGeo/MC91210/Rep-01/R0

Geotechnical Investigation Report for Nagpur Metro Reach-2 (Phase-II)

Rev. No R0

**GEOTECHNICAL INVESTIGATION  
AND PREPARATION OF DETAILED  
GEOTECHNICAL REPORT OF  
NAGPUR METRO REACH-2 (PHASE-II)**

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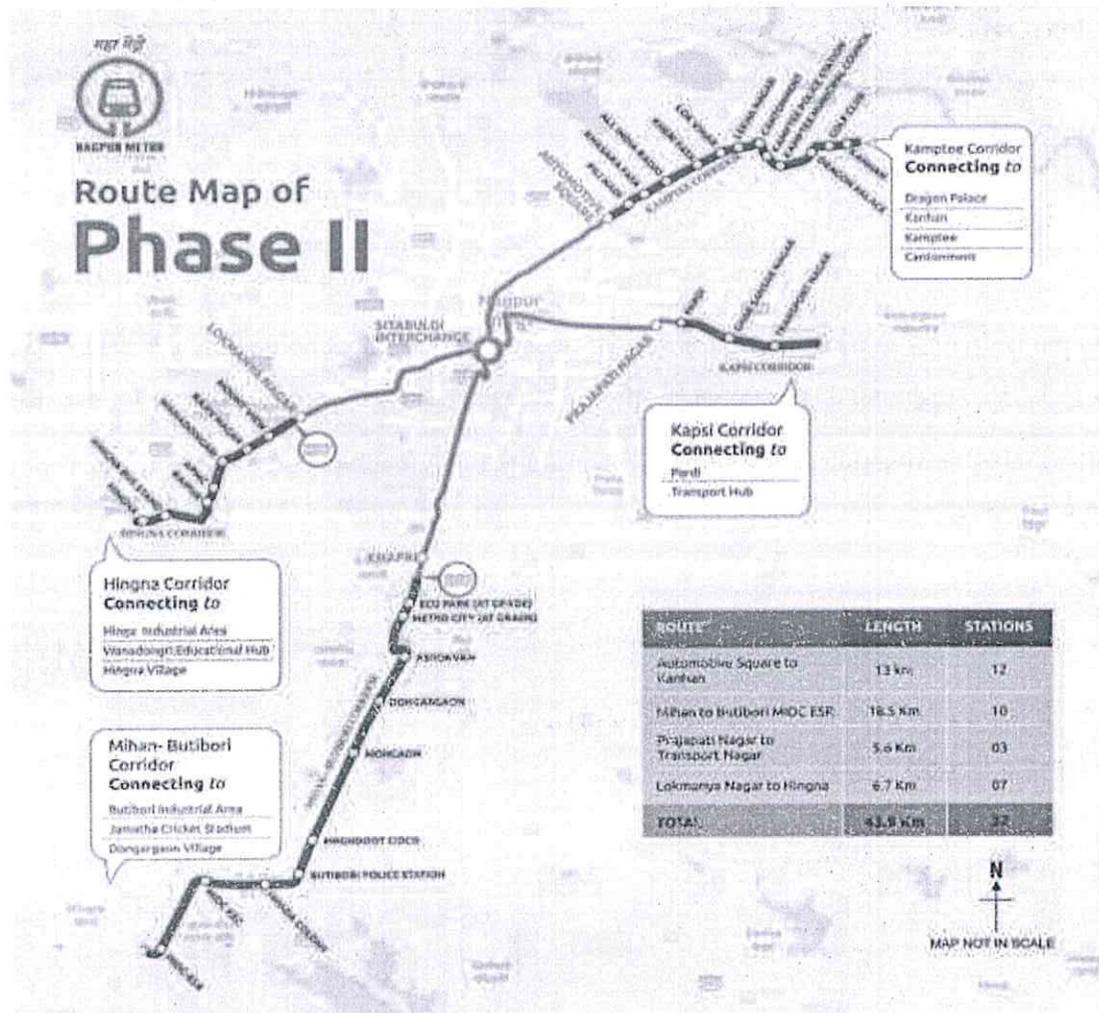
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**1. INTRODUCTION**

M/s. Maha Rail Metro Nagpur has proposed Construction of Nagpur Metro Reach-2 (Phase-II). It is required to carry out the Geotechnical investigation to check the subsurface profile. The work of Geotechnical investigation for Reach-2 (Phase-II) was awarded to M/s. S & R Geotechniques Pvt. Ltd. by Mall Constructions as per WO no. PO/MC/Metro-Nag/22-23/360 Dated 20.03.2023.

The report presented herein deals with the observation and findings during the Field Investigation work, Analysis of data from laboratory tests and Foundation Recommendations Reach-2 (Phase-II) and their respective boreholes.

**2. SCOPE OF WORK**



**Figure 1. Nagpur Metro Reach-2A – Kamptee Corridor from Automotive Chowk to Kanhan River**

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This report contains the following information:

- Introduction
- Scope of work
- Geological Information of the Region
- Methodology of Investigation
- Subsurface conditions/ Geotechnical Assessment

### 3. GEOLOGICAL INFORMATION OF THE REGION

The city lies on the Deccan plateau of the Indian subcontinent and has a mean altitude of 310.5 meters above sea level. The underlying rock strata are covered with alluvial deposits resulting from the flood plain of the Kanhan River. In some places, these give rise to granular sandy soil. In low-lying areas, which are poorly drained, the soil is alluvial clay with poor permeability characteristics. In the eastern part of the city, crystalline metamorphic rocks such as gneiss, schist and granites are found, while in the northern part yellowish sandstones and clays of the lower Gondwana formations are found.

#### SEISMICITY

The Geological Survey of India (G. S. I.) first published the seismic zoning map of the country in the year 1935. With numerous modifications made afterwards, this map was initially based on the amount of damage suffered by the different regions of India because of earthquakes. Color coded in different shades of the color red, this map shows the four distinct seismic zones of India. Following are the varied seismic zones of the nation, which are prominently shown in the map:

Zone - II: This is said to be the least active seismic zone.

Zone - III: It is included in the moderate seismic zone.

Zone - IV: This is considered to be the high seismic zone.

Zone - V: It is the highest seismic zone.

#### Importance of India's Seismic Zoning Map

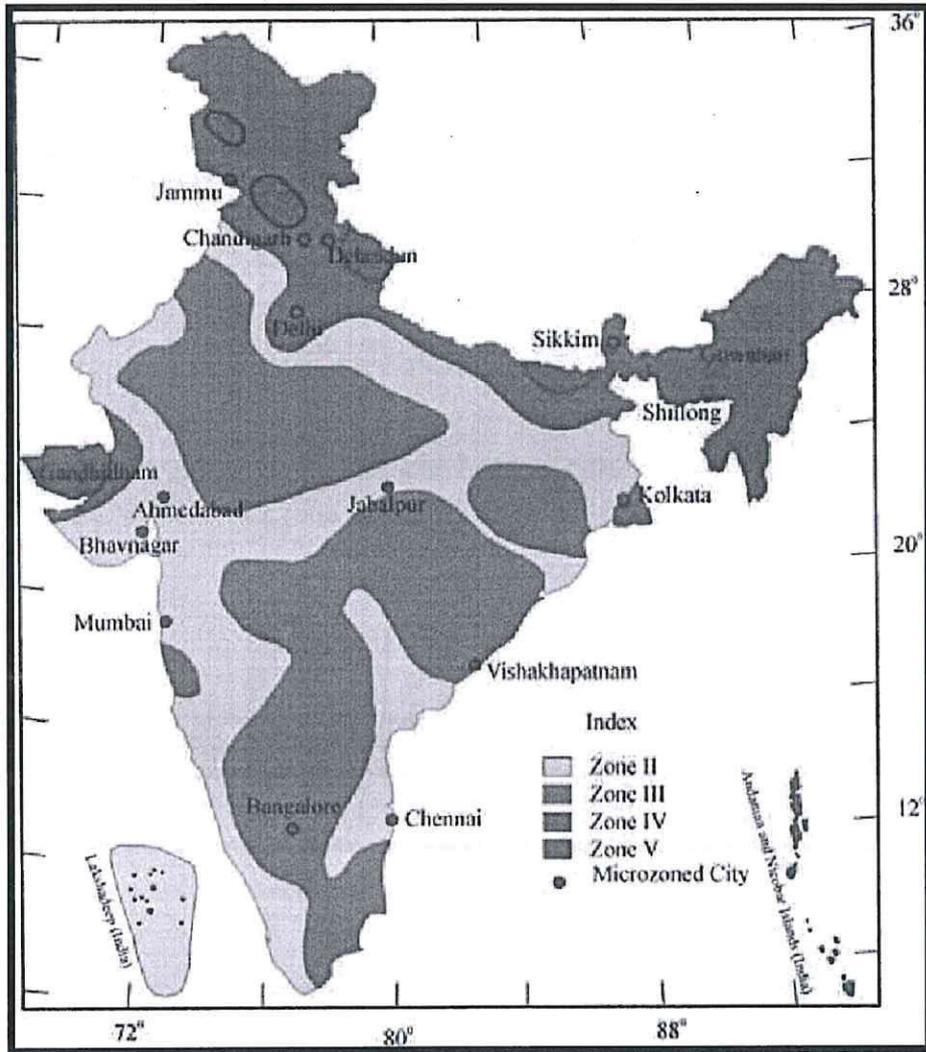
This kind of map is mainly used by the Department of Disaster Management of the different state governments in the country. This map helps them in planning for a natural disaster like earthquake. An Indian seismic zoning map assists one in identifying the lowest, moderate as well as highest hazardous or earthquake prone areas in India. Even such maps are looked into before constructing any high rise building so as to check the level of seismology in any particular area. This in turn results in saving life in the long run. The Area under Investigation falls under Zone II.

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**Table 1: Seismic zone factor, Z (Source: IS: 1893 (Part -1): 2016 – Criterion for Earthquake resistant design of Structures)**

Seismic Zone factor	II	III	IV	V
Z	0.10	0.16	0.24	0.36



**Figure 2: Seismic Zonation Map of India.**

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#### 4. METHODOLOGY OF INVESTIGATION

The investigation was planned to obtain the subsurface stratification in the proposed project site and collect soil / rock samples for laboratory testing to determine the engineering properties.

##### 4.1 BOREHOLES

For Geotechnical investigation work, drilling rig was installed at the specified borehole location. The boreholes were progressed using Rotary Hydraulic Drilling Rig. Boring was advanced at selected / specified borehole locations. The following steps will be adopted during boring operations;

- i. Rotary boring / drilling machine will be assembled at site and will be shifted and erected at the borehole location.
- ii. Drilling through soil overburden will be advanced by soil cutters attached at end of drilling rods, drilling in rock will be advanced by drilling bit fixed to the lower end of drill rods with barrel, is rotated by a suitable chuck and always kept in firm contact with the bottom of the borehole.
- iii. A mud-laden fluid is pumped continuously down the hole through drill rods, and the fluid returns to the surface in the annular space between the rods and the side of the hole, and so the protective casing may not be generally necessary. The mud returning upwards brings the cuttings to the surface.
- iv. After reaching the drill rods attached with the cutting bit attain its full depth another piece (extension rod) will be attached and continue the drilling.
- v. Rotating core barrels, provided with commercial diamond / TC bits are also used for rotary drilling and simultaneously obtaining the rock cores or samples.
- vi. The casing pipe of reduced diameter (NX) if necessary will be driven up to the required depth / level as the bore hole is advanced depending upon the rock conditions.

The following precautions were taken;

- i. Diameter of Borehole was 100mm in soil and 76mm in rock, all field work was supervised by well-trained / experienced persons.
- ii. Casing was used as per the prevailing soil conditions / rock, to stabilize the borehole.
- iii. Required field tests i.e., Standard Penetration Tests and collection of undisturbed/ disturbed samples was conducted as per requirements and specified depths / levels, the same has been discussed in detail in sampling and tests in a borehole clause of this document.

Rock core drilling was advanced using double tube core barrels with diamond bits.

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#### 4.2. STANDARD PENETRATION TESTS (SPT)

Standard Penetration Tests were conducted at 1.5 m interval as per the procedure in IS: 2131 – 1981. For conducting the test, the bottom of the borehole was properly cleaned and split spoon sampler was properly seated in position in the borehole. The split spoon sampler resting on the bottom of borehole was allowed to sink under its own weight; then the sampler was seated 15cm with the blows of the hammer of 63.5 Kg weight falling through 75 cm. Thereafter, the split spoon sampler was further driven by 30 cm. The number of blows required to affect each 15 cm of penetration was recorded. The first 15 cm of drive is considered to be seating drive.

The total blows of penetration for the second and third 15 cm of penetration is termed the penetration resistance N. The 'N' values are indicative of the compactness /relative density of cohesion less soils and consistency of cohesive soils.

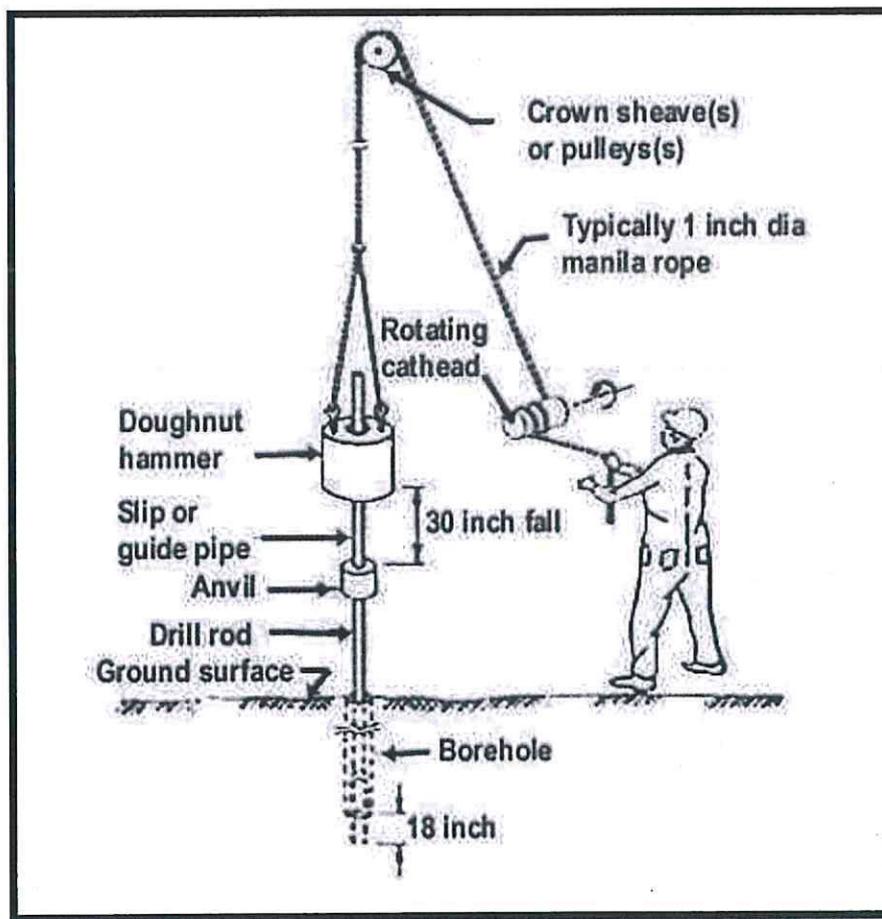


Figure 3. Schematic Diagram of SPT Test

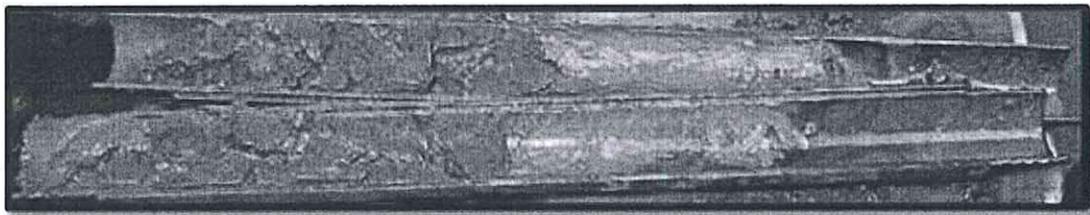
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**Table 2: Consistency and Relative Density from SPT value as per IS 2911 (Part1/sec2):2010, Page No- 14, Table No-3**

CORRELATION FOR COHESIVE SOILS		CORRELATION FOR COHESIONLESS SOILS	
Consistency	Penetration Value	Relative Density	Penetration Value
Very Soft	0 to 2 Blows	Very loose	0 to 4 Blows
Soft	3 to 4 Blows	Loose	5 to 10 Blows
Medium Stiff	5 to 8 Blows	Medium	11 to 30 Blows
Stiff	9 to 16 Blows	Dense	31 to 50 Blows
Very Stiff	17 to 32 Blows	Very Dense	Above 50
Hard	Above 32		

#### 4.3 DISTURBED SAMPLING (SOIL) IN BOREHOLES

In all boreholes, disturbed soil samples were taken at specified interval and at significant change of stratum (or as per specified). Soil from cutting edge of undisturbed samplers and from split spoon sampler used for standard penetration tests was taken as disturbed samples. These samples were placed without delay in adequately sealed polythene bags.



**Figure.4 Disturbed Soil Sample of SPT**

#### 4.4 GROUND WATER TABLE

Ground Water was encountered in the boreholes drilled. Correct method to determine ground water table is to install standpipe piezometer and monitor over long period of time. Seasonal Variations in the ground water level is expected.

Water table depths are mentioned in table 6.

#### ROCK CORE SAMPLES

Drilling was advanced by rotary core drilling method using double tube core barrels as per the guidelines of IS: 6926-1996. A double tube core barrel and NX sized bits are used for drilling and recovering rock cores.

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Core Samples were extracted by the application of a continuous pressure at one end of the core with the barrel held horizontally without vibration.

Immediately after withdrawal from the core barrel, the cores were placed in a tray and transferred into boxes specially prepared for the purpose. The boxes are made of seasoned timber. Recovered rock cores were numbered serially as specified in IS: 4078-1980. Rock core recovery and Rock Quality Designation (RQD) were computed for every run length drilled. The description of the core samples was recorded. Rock classification in terms of weathering and state of fractures and strength is carried out in the following manner. Tabulations given in below explain it briefly.

It should be understood that all grades of weathering may not be seen in a given rock mass and that in some cases a particular grade may be present to a very small extent. Distribution of the various weathering grades of rock material in the rock mass may be related to the porosity of the rock material and the presence of open discontinuities of all types in the rock mass

**Table 3: Scale of Weathering Grades of Rock Mass As Per IS 4464-1985, Page No-7**

TERMS	DESCRIPTION	GRADE	INTERPRETATIONS
Fresh	No visible sign of rock material weathering; perhaps slight discoloration on major discontinuity surfaces.	I	CR > 90%
Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering.	II	CR between 70% to 90 %
Moderately Weathered	Less than half of the rock material is Decomposed or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as core as core stones.	III	CR between 51% to 70 %
Highly Weathered	More than half of the rock material is decomposed or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as core stone	IV	CR between 11% to 50 %
Completely Weathered	All rock material is decomposed and / or Disintegrated to soil. The original mass structure is still largely intact.	V	CR between - zero to 10 %

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**RELATION BETWEEN RQD AND IN-SITU ROCK QUALITY**

Rock quality is further measured by frequency of natural joints in rock mass. Rock Quality Designation (RQD) is used to define state of fractures or massiveness of rock. Following table 4 defines the quality of rock mass.

**Table 4: Relation between RQD and In-situ Rock Quality as per IS 13365 (Part 1):1998, Annexure-B, Page No-8.**

ROCK CLASSIFICATION	RQD (%)
Excellent	90 to 100
Good	75 to <90
Fair	50 to <75
Poor	25 to <50
Very Poor	00 to <25

**CLASSIFICATION OF ROCK WRT COMPRESSIVE STRENGTH**

Rock is also classified by strength of intact rock cores collected during drilling. Rock Unconfined Compressive strength (UCS) is used to define strength of rock. Classification of rocks given in Table2 of Appendix-2 of IRC: 78-2014.

**Table 5: Relation between RQD and In-situ Rock Quality as per IRC: 78-2014, table-2, Appendix-2.**

ROCK TYPE	UNCONFINED COMPRESSIVE STRENGTH (UCS) IN MPa
Extremely Strong	>200
Very Strong	100 to 200
Strong	50 to 100
Moderately Strong	12.5 to 50
Moderately Weak	5.0 to 12.5
Weak	1.25 to 5.0
Very Weak	<1.25

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NAGPUR METRO  
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#### 4.5 LABORATORY TESTING

Selected soil and rock cores were tested in Laboratory for the following tests:

- 4.5.1 Water Absorption, Porosity - The water absorption and porosity of the rock Sample was determined on rock samples. Water absorption is expressed as the percentage of water content with respect to the dry weight of the sample. The porosity of the rock sample is the ratio of voids to the total volume of the rock sample. The relation between Specific Gravity of rock (G), Dry Density of Rock ( $\gamma_d$ ), Density of Water ( $\gamma_w$ ) and porosity (n) can be expressed as –

$$n = 1 - (\gamma_d / G \gamma_w) * 100$$

- 4.5.2 Density- The density of the rock sample was determined by mercury displacement method. The density of the rock is the weight per unit volume of the rock material. Sometimes the term "Unit Weight" is also used for Density.
- 4.5.3 Specific gravity - The specific gravity of the rock sample was determined by using pycnometer. Specific gravity 'G' is defined as the ratio of the weight of a given volume of rock at a given temperature to the weight of equal volume of distilled water.
- 4.5.4 Unconfined compression strength – The Unconfined Compressive Strength of rock samples of rock with 7 days saturation and without saturation was determined using compressive testing machine.
- 4.5.5 Tensile test by Point load method - The point load strength index of rocks samples was determined by using compression testing machine with the conical loading platens.

The results of laboratory tests are attached below in Annexure III.

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*RE/uc*



## 5. FINDINGS OF INVESTIGATION

The summary of the fieldwork for Reach-2A.

**Table 6: Summary of Fieldwork**

Sr. No.	BH. No.	UTM		Elevation (RL)
		Easting	Northing	
1	BH-01	305193.606	2344176.372	290.518
2	BH-02	305288.942	2344225.456	290.607
3	BH 23	306241.207	2344910.286	292.047
4	BH 25	306382.855	2345072.324	292.688
5	BH 27	306497.807	2345236.033	294.533
6	BH 29	306672.662	2345322.211	294.261
7	BH 31	306861.222	2345392.637	295.940
8	BH 33	307034.747	2345492.439	296.960
9	BH 35	307193.672	2345608.597	299.293
10	BH 37	307358.876	2345723.321	300.402
11	BH 39	307530.616	2345836.732	300.532
12	BH 41	307700.368	2345933.224	299.783
13	BH 43	307884.013	2346035.581	298.373
14	BH 45	308051.365	2346128.184	297.112
15	BH 47	308222.767	2346223.426	296.256
16	BH 49	308399.404	2346323.944	296.153
17	BH 51	308572.932	2346422.505	295.178
18	BH 53	308746.168	2346520.404	293.756
19	BH 55	308922.675	2346617.910	292.208
20	BH 57	309097.820	2346714.764	290.807
21	BH 59	309272.580	2346811.358	290.316
22	BH 61	309449.451	2346904.537	289.048
23	BH 63	309627.375	2346997.078	286.366
24	BH 65	309796.362	2347084.870	286.725
25	BH 67	309980.678	2347184.996	286.623
26	BH 69	310151.463	2347279.613	286.559
27	BH 71	310330.293	2347377.969	288.246
28	BH 73	310509.471	2347453.385	287.418
29	BH 75	310700.171	2347497.520	288.813
30	BH 77	310904.249	2347544.067	287.903

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Rev. No RO

## 6. CONCLUSION

The report above enumerates the factual data obtained from field records and laboratory tests through a geotechnical investigation carried out at this site. The data presented in this report and recommendations are specific for the boreholes drilled and time at which tests were performed and sampling was conducted, it may vary after physical checking of samples.

The field and Laboratory records and results reported here are relevant for the test Locations and time at which the tests have been conducted.

Laboratory testing was carried out at our NABL Accredited Laboratory. Laboratory tests were carried out as directed by client, consultant and approved laboratory schedules in accordance with the procedures described in the relevant Indian Standard Codes (IS: 2720) of practice.

For S & R Geotechniques Pvt. Ltd.

For S & R Geotechniques Pvt. Ltd.



Anup Naik  
Dy. Technical Manager  
M.Tech (Geotech)

J. S. Salunkhe, M. Tech. (Geotech. iitr)  
Professional Engineer- India (P.E No-PE7001830)  
Chartered Engineer - India (C.E No-M-1461588)  
Road Safety Auditor (RSA)



## 7. REFERENCES

### Referred Codes

The following Indian Standard Codes were referred:

1. IS 1498 - Code of Practice for Classification & Identification of Soils for General Engineering purposes.
2. IS 1892- Code of Practice for 1997Subsurface investigation for foundations.
3. IS 4078 - Code of Practice for Indexing & storage of driil cores.
4. IS 4464 - Code of Practice for Presentation of drilling information and core description in Foundation investigation.
5. IS 5313 - Code of Practice for Guide for core drilling observations.
6. IS 6926 - Code of Practice for Diamond Core Drilling for site investigation for river valleyprojects.
7. IS 6403 - Code of Practice for Determination of allowable bearing pressure on Shallow foundations.
8. IS 6926 - Code of Practice for Diamond Core Drilling for site investigation for river valleyprojects.
9. IS 9143- Code of Practice for Method for determination of unconfined compressive strength of rock materials.
10. IS 9179- Code of Practice for Method for preparation of rock specimen for laboratory testing.
11. IS 9221- Code of Practice for Method for determination of modulus of elasticity & Poisson's ratio of rock material in Uniaxial Compression.
12. IS 12070 - Code of practice for design & construction of shallow foundation on rock.
13. IS: 14040 - Code of Practice for Method of test for laboratory determination of water content, porosity, density and related properties of rock material.
14. IS:8764-1998 - Method for Determination of Point Load Strength Index of Rocks
15. IS:13030-1991 (Reaffirmed 1996) - Method of Test for Laboratory Determination of Water Content, Porosity, Density and Related Properties of Rock Material.
16. ISRM - International Society of Rock Mechanics.
17. IS:13365 (Part-I)-1998 - Quantitative Classification Systems of Rock Mass – Guidelines.
18. IS:12070 - 1987 (Reaffirmed 2020) - Code of Practice for Design and Construction of Shallow Foundation on Rocks.

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### Referred Books

The following Books were referred:

1. Deshpande G. G. (1998) – Geology of Maharashtra.
2. Foundation Analysis and Design, Joseph E. Bowles
3. Foundation Design Manual, Narayan V. Nayak

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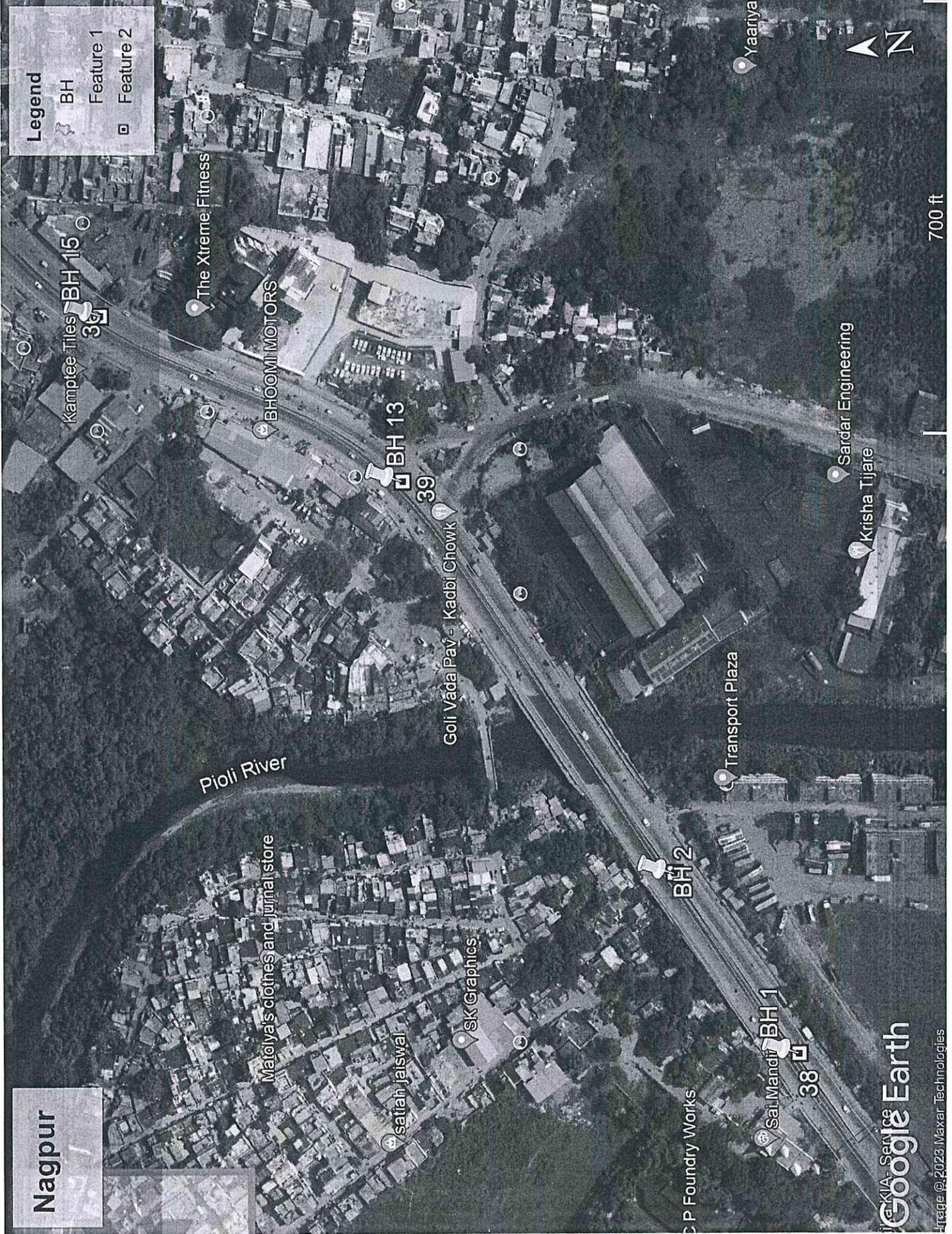


**ANNEXURE I**  
**LOCATION PLAN**

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Nagpur

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- Feature 2

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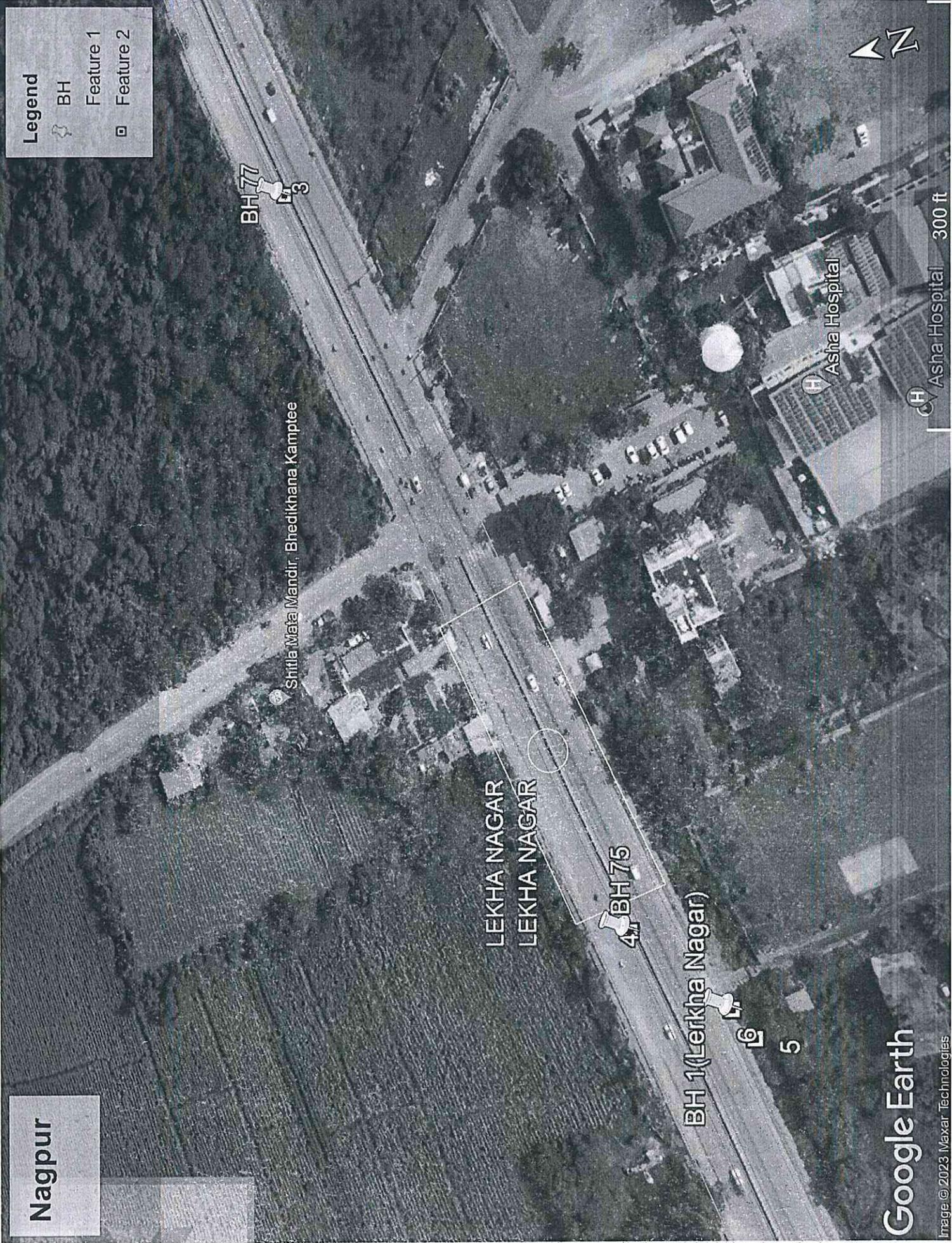
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- BH
- Feature 1
- Feature 2

**Nagpur**



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**Legend**

- BH
- Feature 1
- Feature 2

**Nagpur**

BH77

Shitla Mata Mandir, Bhedikhana Kamptee

LEKHA NAGAR  
LEKHA NAGAR

BH75

BH 1(Lekha Nagar)

16

5

Asha Hospital

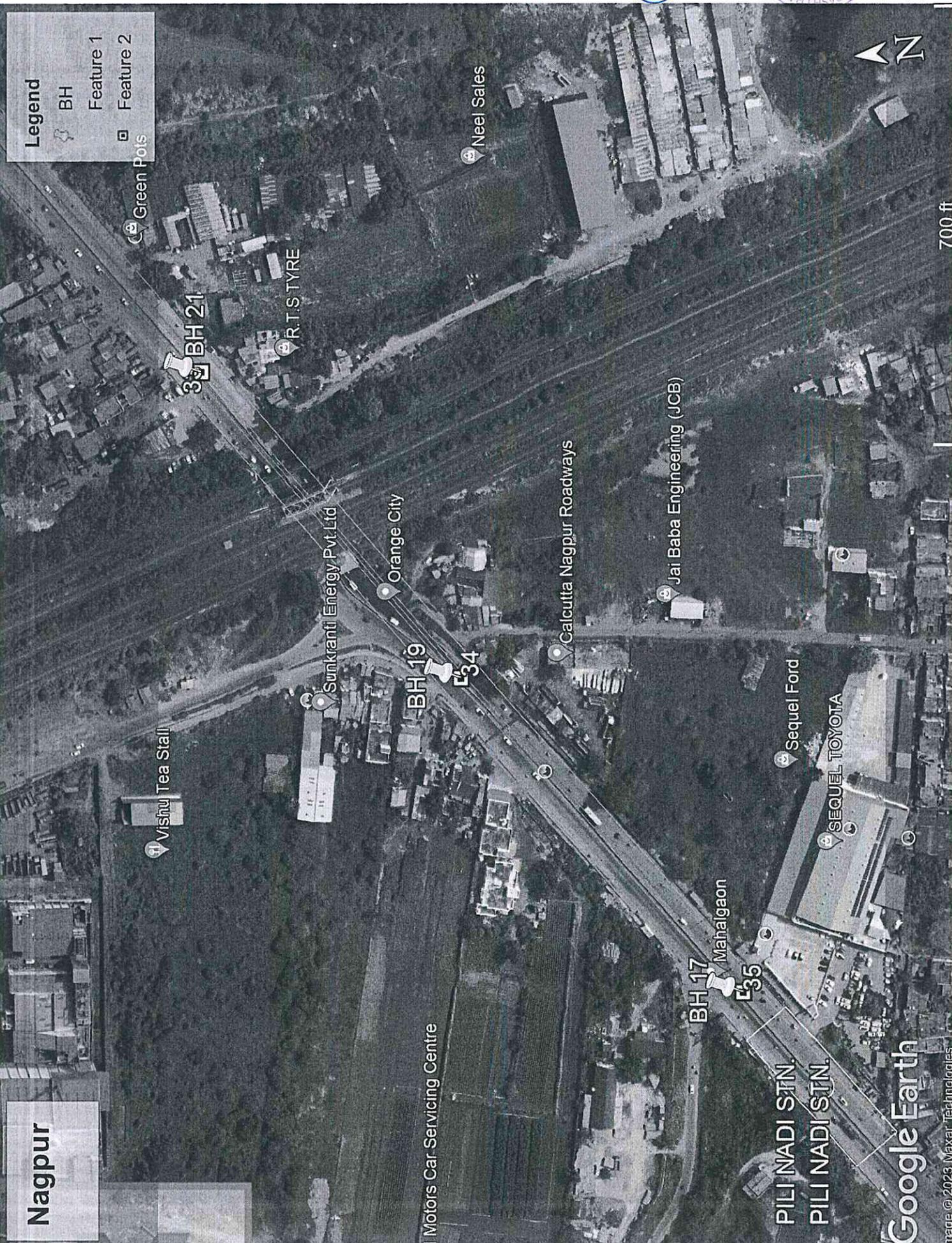
Asha Hospital 300 ft



Google Earth

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# Nagpur



## Legend

- BH
- Feature 1
- Feature 2

Green Pits

Vishu Tea Stall

BH 21

R.T.STYRE

Sunkranti Energy Pvt.Ltd

Orange City

BH 19

Neel Sales

L 34

Calcutta Nagpur Roadways

Jai Baba Engineering (JCB)

BH 17

Mahalgaon

L 35

PILI NADI STN.

PILI NADI STN.

Sequel Ford

SEQUEL TOYOTA

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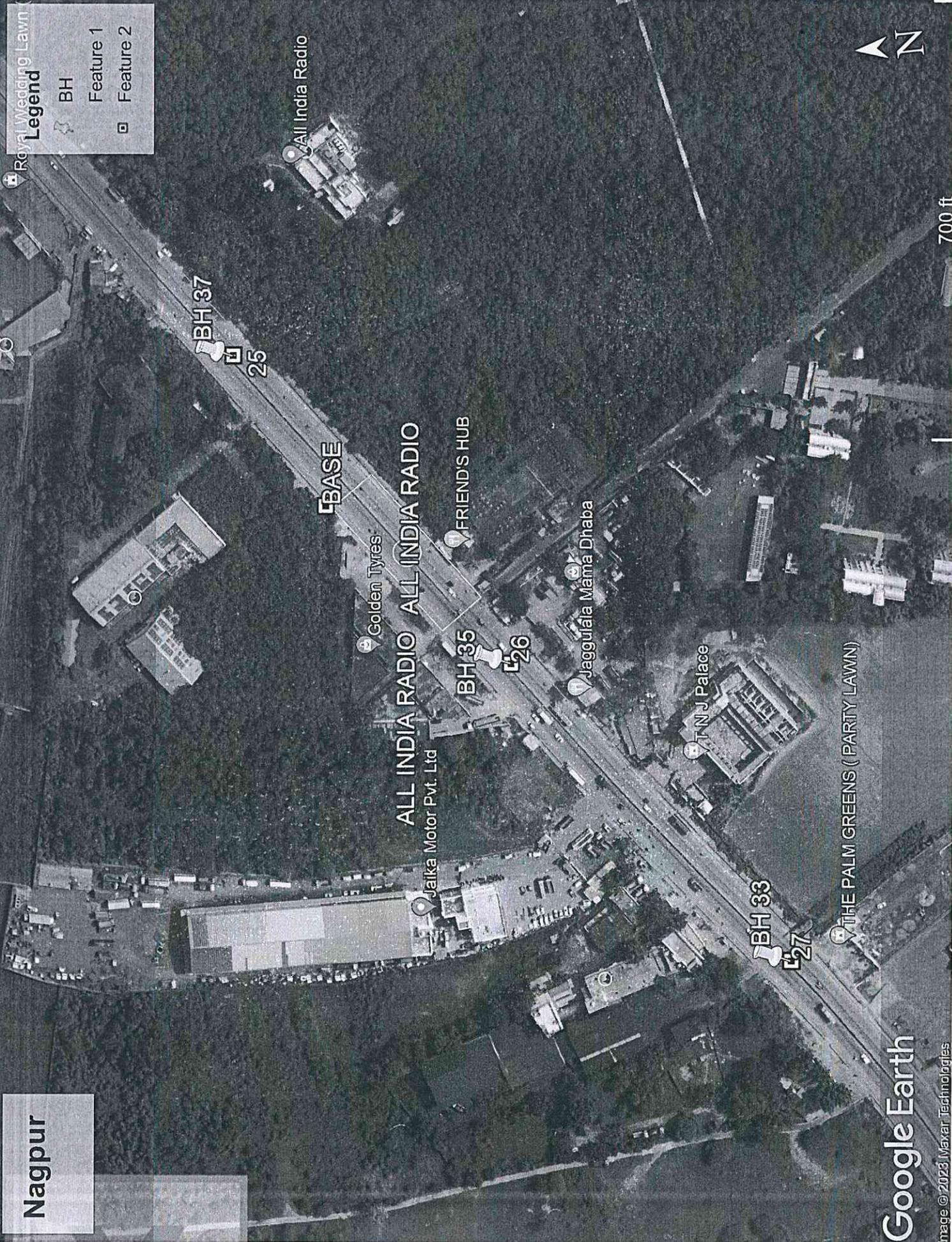
- BH
- Feature 1
- Feature 2
- Lamba Celebrations

**Nagpur**

Jayramde Sai Clinic

Google Earth

Nagpur



Royal Wedding Lawn

**Legend**

- BH
- Feature 1
- Feature 2

All India Radio

BH 37

25

BASE

Golden Tyres

ALL INDIA RADIO

Jaika Motor Pvt. Ltd

BH 35

26

FRIEND'S HUB

Jaggulala Mama Dhaba

T N J Palace

BH 33

27

THE PALM GREENS ( PARTY LAWN)



700 ft

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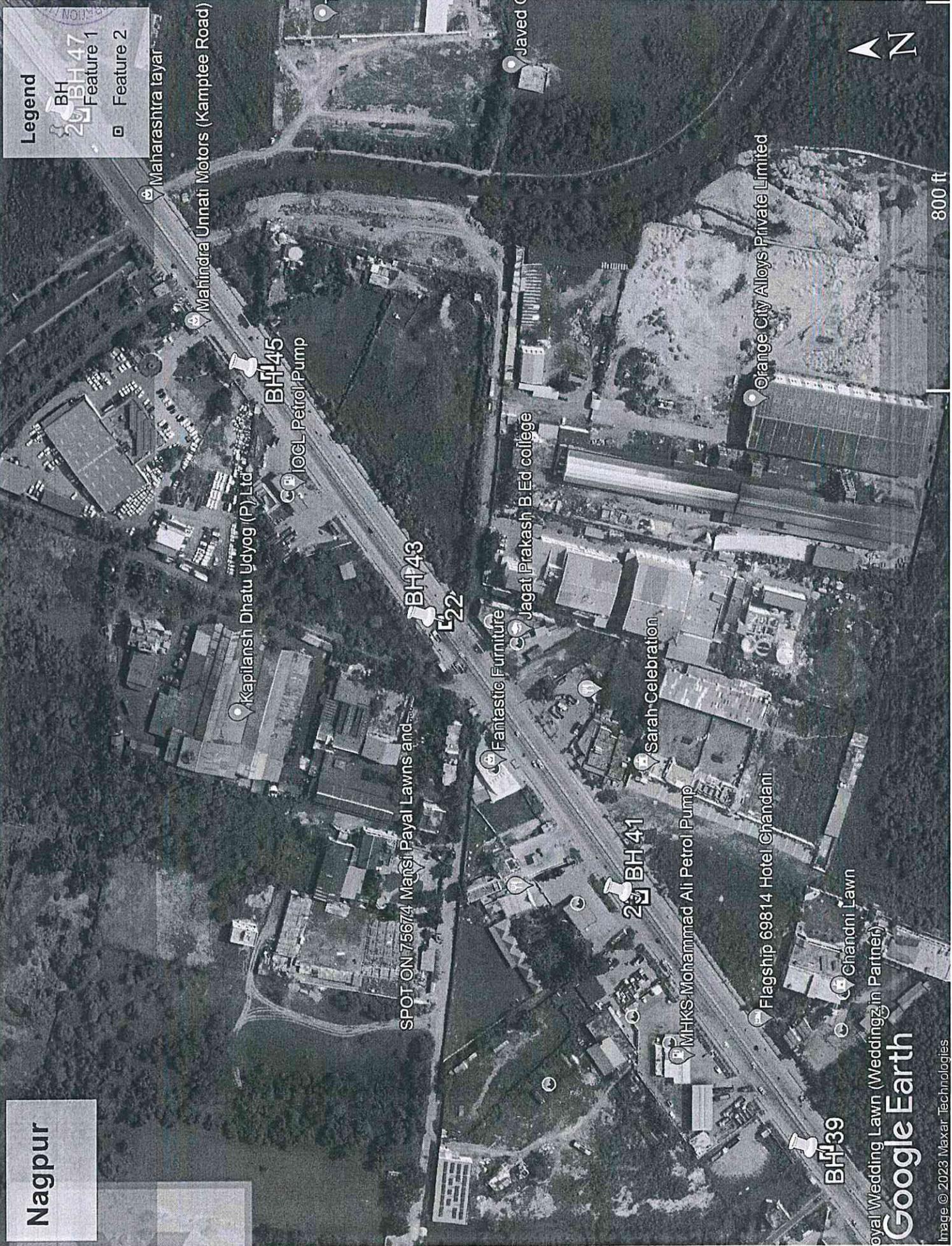
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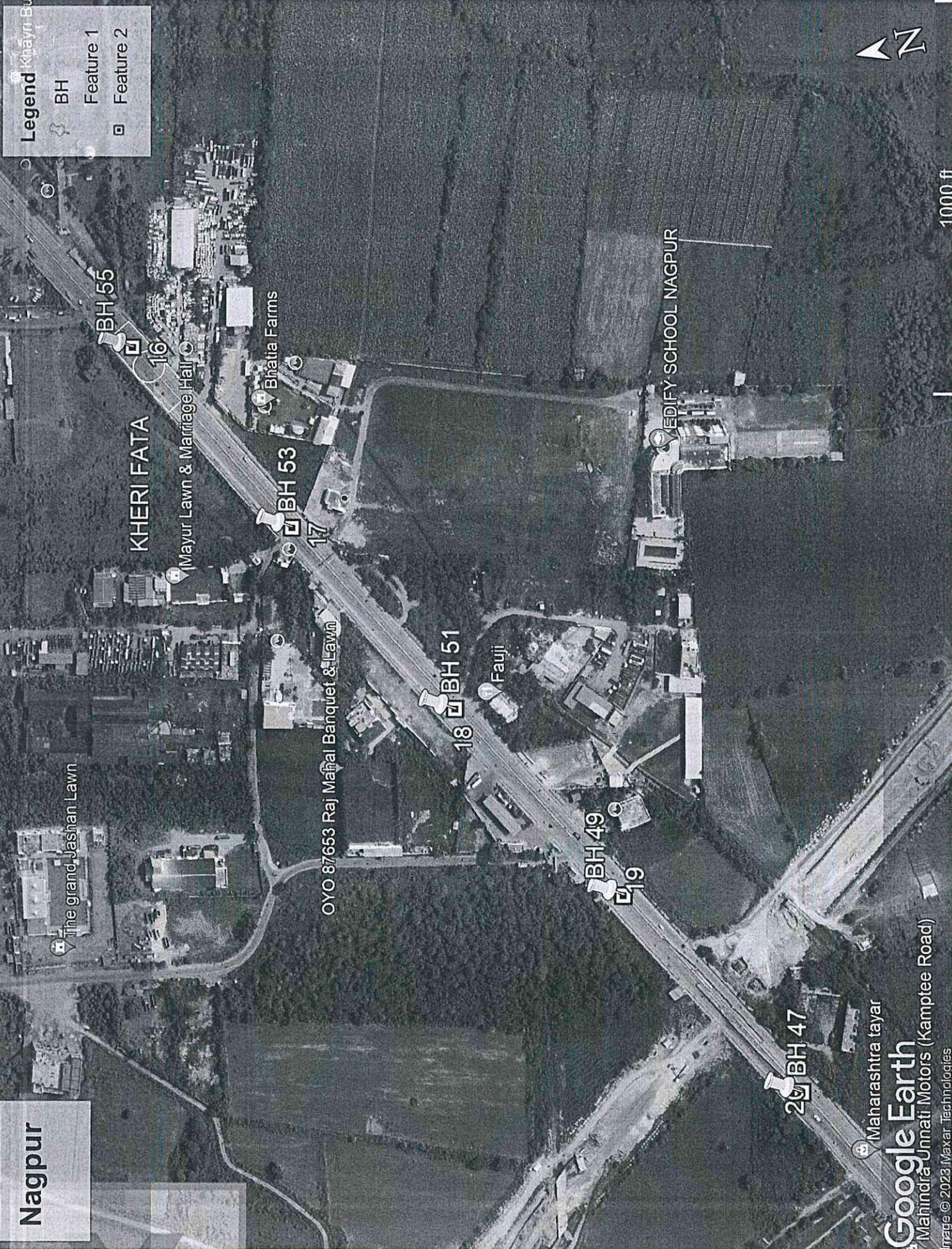


**Nagpur**

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- BH 47 Feature 1
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- Maharashtra tayar

# Nagpur



## Legend

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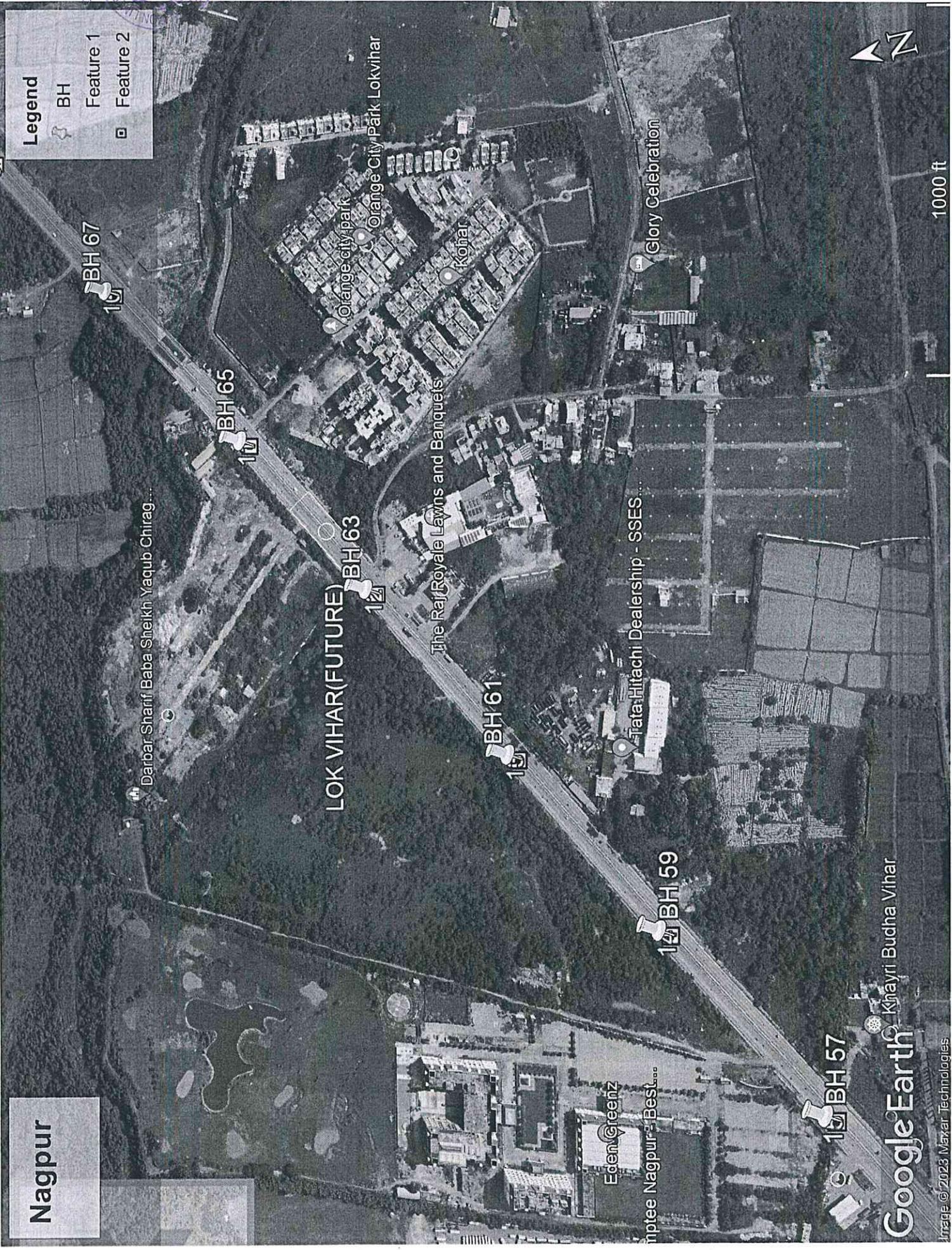


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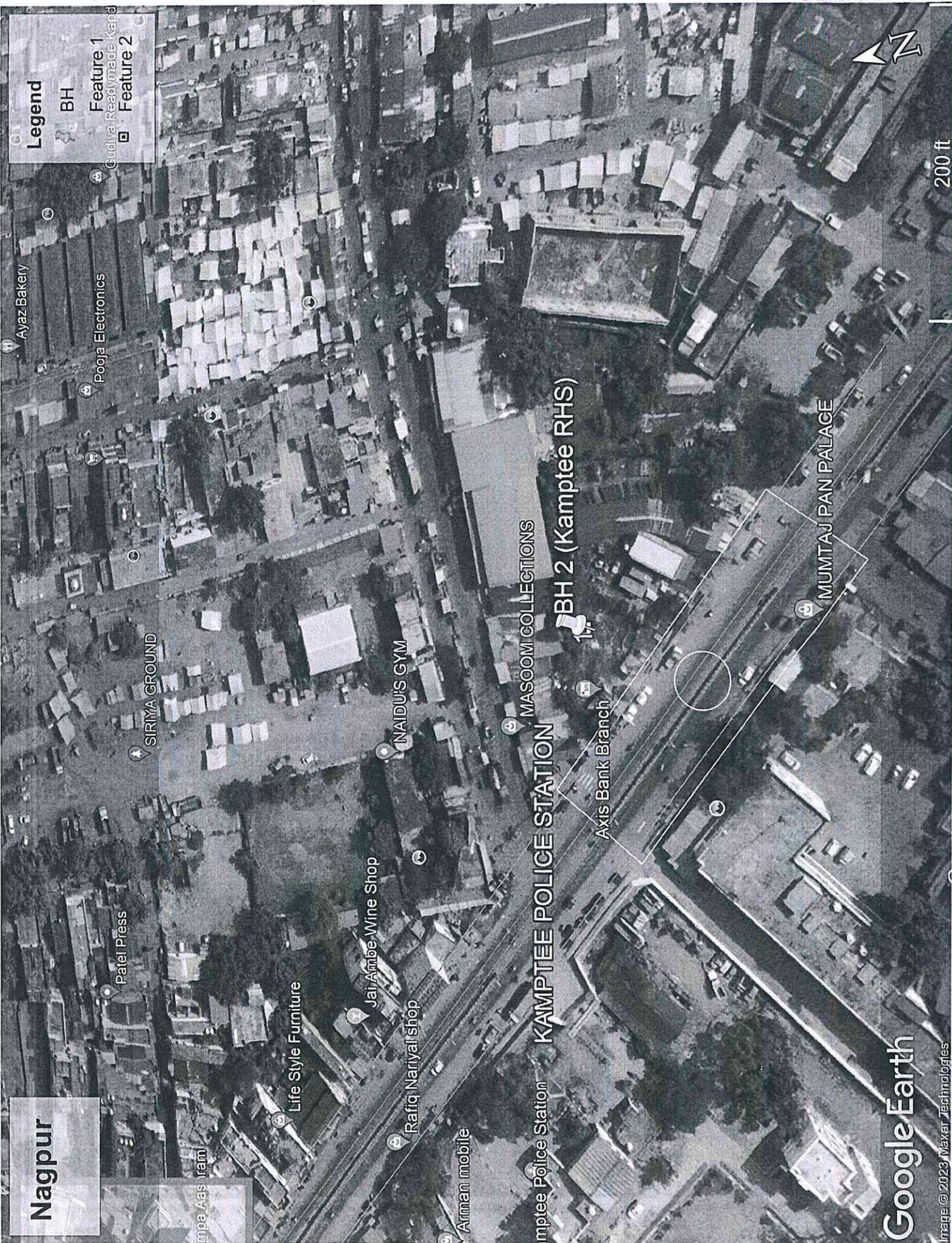
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- Feature 1
- Feature 2

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1000 ft

# Nagpur



Legend

BH

Feature 1

Cudhva Ready made Kapad

Feature 2

Google Earth

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200 ft



*Reference*

