MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Jointly owned company of Government of India and Government of Maharashtra)
Corrigendum – 2
TENDER NO.: Tender No. N2-057/RS-01/2025, Dated 07.03.2025

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
1	Part-1	Annexure IV A- Pricing Document-	Quantity Variation A.6.1	The Employer at its discretion may advise the Contractor in writing about increase of the total quantity upto 14 complete train-set of 3-car. For any increase in quantity, Employer may exercise the option on any date before six months of **the end of DLP(Refer summary of section-Contract Data).**	The Employer at its discretion may advise the Contractor in writing about increase of the total quantity upto 14 complete train-set of 3-car. For any increase in quantity, Employer may exercise the option on any date before six months **of delivery of last trainset as per delivery schedule of the contract)**
2	Part-1	Annexure IV A- Pricing Document-	Cost Centre-I	Comprehensive Annual Maintenance Contract Table	Cost Center No-I Price Schedule for CAMC Modified and attached as Attachment -1
3	part-3	ANNEXURE-1	Part A - Contract Data, SL No. 51	…… All Policy shall be obtained within Four weeks from 'date of commencement' and shall be valid for five years after date of issue of 'Performance Certificate'. ……	AOA (any one accident) limit equal to 6% of the contract value (excluding CAMC cost) with AOY (any one year) limit of 2 incidents in a year. In the. Professional Indemnity insurance Policy the deductible amount shall not be more than 5% AOA limit. **Professional Indeminity Insurance** shall be obtained within Four weeks from 'date of commencement' and shall be valid for five years after date of issue of 'Performance Certificate'. Wherever the Contractor submits policy for shorter period / annual renewable policy, the same shall be renewed before its expiry date. In such situation, the performance guarantee shall be retained till required validity period. The Contractor's submission of such shorter period / renewable policy shall be construed as their irrevocable consent for retention of the performance guarantee.
4	Part-3	Section IX: Particular Conditions of Contract (PCC)	SL No. 70 Safe Custody Bank Guarantee	The Contractor shall submit a Safe Custody Bank Guarantee in the format given in Section X. Contract Forms against payments made for Plant and Equipment received at site . The amount of safe custody Bank Guarantee shall be equal to 95% percent of the amount due as per relevant clause wherever applicable. The value of the Safe Custody Bank Guarantee would be adjusted for the equipments already commissioned.	Deleted
5	Part-1	Annexure IV A. Pricing Document	Attachment to Bid Total DETAILS OF TAXES / DUTIES / LEVIES ETC. INCLUDED IN THE FIXED LUMPSUM PRICE	(b)Customs duty on imported spares, jigs, fixtures, special tools and diagnostic equipment etc. forming part of Cost Centre-D of Section MS (Appendix J) along with rate of Customs duty. (d)GST on spares, jigs, fixtures, special tools, testing and diagnostic equipments etc. forming part of Cost Centre- D of Section MS (Appendix J) along with rate of GST. (e)GST on maintenance contract items (Appendix M: OPT – Optional Items) along with applicable tax rates	(b)Customs duty on imported spares, jigs, fixtures, special tools and diagnostic equipment etc. forming part of **Cost Centre-G** along with rate of Customs duty. (d)GST on spares, jigs, fixtures, special tools, testing and diagnostic equipments etc. forming part of **Cost Centre- G** along with rate of GST. (e)GST on maintenance contract items **Cost Center I** along with applicable tax rates
6	Part-1	Section II. Bid Data Sheet	ITB 1.6.A (new Para) Sr no. (d)	d)Certificate of Compliance An undertaking shall be taken from bidders as per **Appendix-25 and Appendix-25A** of FOT, certifying that the bidders fulfil all the requirements contained in the aforesaid clause.	d)Certificate of Compliance An undertaking shall be taken from bidders as per Bidding Forms **22A and 22B**, certifying that the bidders fulfil all the requirements contained in the aforesaid clause.
7	Part-1	Section II. Bid Data Sheet	ITB 11.3.1	The pre-qualification documents shall comprise of all information and supporting documents as per Section III: Evaluation and Qualification Criteria: •Letter of **Application**	The pre-qualification documents shall comprise of all information and supporting documents as per Section III: Evaluation and Qualification Criteria: •Letter **of BID**
8	Part-1	Section III. Evaluation and Qualification Criteria	Elegibility Criteria-4.4 Management team organization and Project Leader	Form PER – 1 and PER – 2 & declaration confirming of deployment of staff	Declaration for confirming deployment of staff is included and attached as Attachment -2 of this Corrigendum.

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
9	Part-2	Works Requirement - Technical Specification	2.25.8	The Contractor shall be fully responsible for compliance with Cybersecurity standards and implementation of their System Safety & Cyber Security Assurance Plan. Any cost associated with implementation of Cybersecurity guidelines shall be deemed to be included in the bid proposal.	The Contractor shall be fully responsible for compliance with Cybersecurity standards and implementation of their System Safety & Cyber Security Assurance Plan. Any cost associated with implementation of Cybersecurity guidelines **(license purchase, hardware setup, software development etc.,)** shall be deemed to be included in the bid proposal under Cost Centre A24. **It is responsibility of CAMC contractor to maintain the cyber security system like license extensions/new purchase, software upgradation, rectifications etc., during CAMC period. The costs related to the same shall be included in Cost Center I: CAMC.**
10	Part-1	Annexure IV A. Pricing Document	Cost Center G	Cost Center G	Cost Center G updated and Attached as Attachment-04
11	Part-3	Section IX: Particular Conditions of Contract (PCC)	SCC SN 30 Sub-Clause number 8.7 & 14.15 (b) 951 of 1193 SCC SN 31	**Delay damages for the Works** (iv) Any imposition of LD on account of delay in accomplishing Minor Key Date (except 1 to 5) will be waived and LD amount if deducted will be returned (without interest) provided Contractor is able to accomplish corresponding Major Key Date (as per Contracted Schedule) (a) There is no maximum limit in levy of LD for delays in individual Key Dates. However, maximum limit for cumulative LD for complete Contract shall not exceed 10% of the total Contract Price. Maximum amount of delay damages 10 % of the Lump Sum Contract Price excluding CAMC cost.	**Delay damages for the Works** (iv) Any imposition of LD on account of delay in accomplishing Minor Key Date (except 1 to 5) will be waived and LD amount if deducted will be returned (without interest) provided Contractor is able to accomplish corresponding Major Key Date (as per Contracted Schedule) (a) There is no maximum limit in levy of LD for delays in individual Key Dates. However, maximum limit for cumulative LD for complete Contract shall not exceed 10% of the total Contract Price **excluding CAMC Cost.** Maximum amount of delay damages 10 % of the Lump Sum Contract Price excluding CAMC cost.
12	Part-1	Annexure IV A. Pricing Document	COST CENTRE No. F	**Note:** The Minimum amount that shall be apportioned in this cost centre shall not be less than **12%** of the amount apportioned in Cost Centres 'A'. 'B', 'C', 'D', 'E' and 'F' together.	Note: The Minimum amount that shall be apportioned in this cost centre shall not be less than **10%** of the amount apportioned in Cost Centres 'A'. 'B', 'C', 'D', 'E' and 'F' together.
13	Part-3	Section IX: Particular Conditions of Contract (PCC)	S. No. 43 Minimum Amount of Interim Payment Certificates	Gross Bill Amount: 1% of the Accepted Contract Price	Gross Bill Amount: 1% of the Accepted Contract Price **excluding CAMC Cost**
14	Part-1	Annexure IV A. Pricing Document	A.6.4 Quantity Variation	MAHA-METRO shall reimburse the 'taxes and duties' for the variation **quantity** as detailed above. The reimbursement of 'taxes and duties' actually paid shall be restricted to the amount of 'taxes and duties' applicable for the quantities actually supplied to the Employer calculated on pro-rata basis from the 'Taxes & Duties' for the Contract submitted by the Bidder in the 'Appendix to Bid Total' page of Pricing Document.	MAHA-METRO shall reimburse the 'taxes and duties' for the variation as detailed above. The reimbursement of 'taxes and duties' actually paid shall be restricted to the amount of 'taxes and duties' applicable for the quantities actually supplied to the Employer calculated on pro-rata basis from the 'Taxes & Duties' for the Contract submitted by the Bidder in the 'Appendix to Bid Total' page of Pricing Document.

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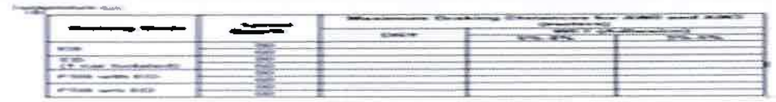
S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
15	Part-2	Works Requirement - General Specification	1.1.1	This Specification is for Rolling Stock for Phase II of Nagpur Metro Rail Project (NMRP). The phase I of the NMRP has already been commissioned and operational. The phase II of Nagpur Metro Project is basically extension of both lines at each ends. Therefore, the trains are required to be able to run in the whole section of phase 1 and phase 2. The bidders shall note that the design parameters of trains for Phase II shall be compatible with existing trains of phase 1, for example coupler, bogie base, lifting positions, PA PIS, Signalling Interface Parameters, braking charecteristics etc. The detail discussion shall be held during design stage.	This Specification is for Rolling Stock for Phase II of Nagpur Metro Rail Project (NMRP). The phase I of the NMRP has already been commissioned and operational. The phase II of Nagpur Metro Project is basically extension of both lines at each ends. Therefore, the trains are required to be able to run in the whole section of phase 1 and phase 2. The bidders shall note that the design parameters of trains for Phase II shall be compatible with existing **systems** ~~trains~~ **of phase 1, for example coupler, bogie base, lifting positions, PA PIS, Signalling Interface Parameters, braking charecteristics etc. The detail discussion shall be held during design stage.**
16	General	Allignment Drawing			Allignment drawing is atttached as Attachment-10
17	Part-1	Annexure IV A. Pricing Document	A.5	Price Variation	PVC for CAMC is as per Attachment-03.
18	Part-2	Works Requirement - General Specification	15.1	The Contractor shall provide for the use of the Engineer office accommodation, equipment, communication and drawing facilities throughout the course of the Works and for so long a period of time during the defects liability period & CAMC **Period** as the Engineer may require.**The details of the accommodation and other facilities are as under:**	The Contractor shall provide for the use of the Engineer office accommodation, equipment, communication and drawing facilities throughout the course of the Works and for so long a period of time during the defects liability period as the Engineer may require.
19	Part-2	Works Requirement - General Specification	16.5.2	Spares and Consumables (herein referred to only as Spares) shall include but shall not be limited to the following subcategories, as applicable to Rolling Stock assets, a) Unit exchange spares b) Mandatory spares c) Recommended spares; d) Consumable spares; e) Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment f) Overhauling Spares; g) Any other items required for maintenance (identified by the Contractor / MAHA METRO / OEM). Note: i. The contractor shall provide the complete list of spares as per above for final approval of Maha-Metro / Engineer separately for DLP and CAMC. **ii. The contractor to ensure that the cost of spares used during DLP period shall not be part of spares used during CAMC.**	Spares and Consumables (herein referred to only as Spares) shall include but shall not be limited to the following subcategories, as applicable to Rolling Stock assets, a) Unit exchange spares b) Mandatory spares c) Recommended spares; d) Consumable spares; e) Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment f) Overhauling Spares; g) Any other items required for maintenance (identified by the Contractor / MAHA METRO / OEM). Note: i. The contractor shall provide the complete list of spares as per above for final approval of Maha-Metro / Engineer separately for DLP and CAMC.
20	Part-2	Works Requirement - General Specification	Chapter 10 : 10.2.10	Traction power at 25kV ac will be made available to Contractor free of charge for testing and commissioning. The Contractor shall liaise with Designated Contractors for availing of the power and assuring compliance of all safety procedures. The Contractor shall provide his own EMU train drivers for Testing, Commissioning and Service Trials. **A test track is installed in each of the depots. It will be available for the testing of first prototype train.** The Contractor will be allowed use of the test track free of charge.	Traction power at 25kV ac will be made available to Contractor free of charge for testing and commissioning. The Contractor shall liaise with Designated Contractors for availing of the power and assuring compliance of all safety procedures. The Contractor shall provide his own EMU train drivers for Testing, Commissioning and Service Trials. **A test track is installed in Mihan depots. It will be available for the testing of first prototype train.** The Contractor will be allowed use of the test track free of charge.
21	Part-2	Works Requirement - Technical Specification	2.17.7	The Contractor shall also furnish the details of Power Quality for the regenerated energy including its harmonic analysis **at all mode of operation at different loads (AW0, AW2, AW3).**	The Tenderer shall also furnish the specification of Power Quality for the regenerated energy including its harmonic analysis.

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
22	Part-2	Works Requirement - Technical Specification	6.2.6	The intake air shall be directed through a properly designed filter, suitable for the dusty atmospheric conditions prevailing in Nagpur. Filters shall be easy to clean and shall be easily accessible for cleaning and replacement. Since dust & humidity protection of the intake air is very crucial **in oil-less compressor**, specific measures shall be taken to ensure under no circumstance the dust/moisture enters in the compressor. Air intake for the compressor shall be from the atmosphere. Detail arrangement shall be decided during design.	The intake air shall be directed through a properly designed filter, suitable for the dusty atmospheric conditions prevailing in Nagpur. Filters shall be easy to clean and shall be easily accessible for cleaning and replacement. Since dust & humidity protection of the intake air is very crucial **in Oil compressor**, specific measures shall be taken to ensure under no circumstance the dust/moisture enters in the compressor. Air intake for the compressor shall be from the atmosphere. Detail arrangement shall be decided during design.
23	Part-2	Works Requirement - Technical Specification	7.6.1	All exterior doors shall be of stainless steel of same finish as sidewall and should have the same durability as the vehicle body. The interior finish of door leaves shall be powder coated / textured unpainted stainless steel and shall be compliant with the visual design and withstand severe wear and tear. It shall not be possible for a door to become detached from the vehicle under any operating conditions, including heavy side load from standing passengers or sudden pressure transients.....	All exterior doors shall be of stainless steel/**alluminium** of same finish as sidewall and should have the same durability as the vehicle body. The interior finish of door leaves shall be powder coated / textured unpainted stainless steel and shall be compliant with the visual design and withstand severe wear and tear. It shall not be possible for a door to become detached from the vehicle under any operating conditions, including heavy side load from standing passengers or sudden pressure transients.....
24	Part-2	Works Requirement - Technical Specification	15.6.1	Brake system and its components shall be subjected to type tests as per relevant UIC.	Brake system and its components shall be subjected to type tests as per relevant UIC/**EN13452/IEC 61133 .**
25	Part-2	Works Requirement - Technical Specification	13.9.1	The Passenger Saloon Surveillance System (PSSS) shall comprise of a close circuit television (CCTV) network using surveillance cameras, routers and cables, monitors and other accessories. The fully expanded system shall be designed for minimum 25fps. The minimum angle of view shall not be less than 80° (horizontal) & 50° (vertical). The picture quality will be level E as minimum at 100% Rotakin measured according to EN50132-7, BS EN 62676-4 standard (latest). Suitable provision of video analytics for cameras in saloon, cab and outside for platform view like Crowd Management (like Quarrel, Passenger Eating etc), Camera tempering detection, image recognition, passenger counting during emergency evacuation (front end evacuation), alarm to detect suspicious object along with recording etc., shall be provided, the complete details shall be finalized during design stage.	The Passenger Saloon Surveillance System (PSSS) shall comprise of a close circuit television (CCTV) network using surveillance cameras, routers and cables, monitors and other accessories. The fully expanded system shall be designed for minimum 25fps. The minimum angle of view shall not be less than 80° (horizontal) & 50° (vertical). The picture quality will be level E as minimum at 100% Rotakin measured according to EN50132-7, BS EN 62676-4 standard (latest). Suitable provision of video analytics for cameras in saloon, cab and outside for platform view like Crowd Management (like Quarrel, Passenger Eating etc), Camera tempering detection, image recognition, passenger counting during emergency evacuation (front end evacuation), alarm to detect suspicious object along with recording, **Empty Train Detection, Seat occupancy in percentage, Clear door detection, Weapon detection (Gun & Knife)** etc., shall be provided, the complete details shall be finalized during design stage.
26	Part-2	Works Requirement - Technical Specification	10.1.8	The cables which are intended to be used in emergency circuit for alarms and communication shall have intrinsic fire-survival properties in compliance with EN 50200 for PH60 and EN 50289.	The cables which are intended to be used in emergency circuit for alarms and communication shall have intrinsic fire resistant property in compliance with EN 50200 for **PH120** and EN 50289.
27	Part-2	Works Requirement - Technical Specification	2.26 (v)	Contractor shall submit PCM predictive maintenance proposal in his bid submission showing the PCM improving the efficiency in maintenance and predictive maintenance. Bidder shall quote Cost Centre A 23 for installing & commissioning the PCM system in all the supplied rolling stock.	Contractor shall submit PCM predictive maintenance proposal in his bid submission showing the PCM improving the efficiency in maintenance and predictive maintenance. Bidder shall quote Cost Centre A 23 for installing, commissioning **& any other costs related to** the PCM system in all the supplied rolling stock. **It is responsibility of CAMC Contractor to maintain the PCM system like license extension/new purchase, software/hardware upgradation, rectifications etc., during CAMC period. The costs related to the same shall be included in Cost Center I: CAMC.**
28	Part-2	Works Requirement - Technical Specification	Brake System 6.13.17	All the pneumatic control equipment, **safety** valves, governors, switches, sensors etc. in the underframe shall be provided in IP53 or higher compliant lockable boxes for dust control. These boxes shall be made of stainless steel / aluminium (anodized)	All the pneumatic control equipment,**Magnetic** valves, governors, switches, sensors etc. in the underframe shall be provided in IP53 or higher compliant lockable boxes for dust control. These boxes shall be made of stainless steel / aluminium (anodized)

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
29	Part-2	Works Requirement - Technical Specification	2.12-(i) Notes	Note: 1. The provision for seeking waiver from Maha-Metro or utilizing the provision under **table 3** for making train available with defect or deficiencies shall be used sparingly. If it is noted that contractor has made it a regular practice, Maha-Metro at its sole discretion may impose penalty of maximum Rs 20,000 / train / day.	Note: 1. The provision for seeking waiver from Maha-Metro or utilizing the provision under **table 2.2 a** for making train available with defect or deficiencies shall be used sparingly. If it is noted that contractor has made it a regular practice, Maha-Metro at its sole discretion may impose penalty of maximum Rs 20,000 / train / day.
30	Part-2	Works Requirement - Technical Specification	3.20.4	(ix) Track tolerances as detailed in Clause 3.**16.**	(ix) Track tolerances as detailed in Clause 3.15.
31	Part-2	Works Requirement - Technical Specification	4.2.10	The final mock-up shall be maintained at the Contractor's premises till the inspection of the same by the Employer / Engineer and afterwards shall be handover to Employer.	The final Digital / virtual mock-up shall be maintained at the Contractor's premises till the inspection of the same by the Employer / Engineer and afterwards shall be handover to Employer **including the tools required to view the VR digital mock-up.**
32	Part-2	Works Requirement - Technical Specification	4.14.8 (viii)	Floor covering shall have a design life of not less than **25** years.	Floor covering shall have a design life of not less than 20 years.
33	Part-2	Works Requirement - Technical Specification	4.16.3	The Contractor shall ensure adequate water drainage from the roof, such that no water shall be discharged into the vicinity of the passenger doorways or over any underframe equipment / bogie mounted equipment. The water shall not accumulate in the rain gutters and shall be easily discharged through adequately sized pipes at levels below the floor level and sufficiently away from the track. Hose / Rubber fittings are not preferred in the discharge and steel pipe fitting shall be preferred. In case, the rubber pipe connections are unavoidable due to tolerance clearance issues, they can be sued only at one location provided the life of rubber used shall be more than 15 years and **suitable window arrangement on the car body** for its replacement shall be available.	The Contractor shall ensure adequate water drainage from the roof, such that no water shall be discharged into the vicinity of the passenger doorways or over any underframe equipment / bogie mounted equipment. The water shall not accumulate in the rain gutters and shall be easily discharged through adequately sized pipes at levels below the floor level and sufficiently away from the track. Hose / Rubber fittings are not preferred in the discharge and steel pipe fitting shall be preferred. In case, the rubber pipe connections are unavoidable due to tolerance clearance issues, they can be sued only at one location provided the life of rubber used shall be more than 15 years and **sufficient accessibility for its replacement shall be available.**
34	Part-2	Works Requirement - Technical Specification	12.9.1 (11)	LED luminaires and control gears shall be sealed to **IP 52 and IP 54**, BS EN 60529:1992, respectively to prevent the ingress of dirt and foreign objects.	LED luminaires and control gears shall be sealed to **IP 54**, BS EN 60529:1992, respectively to prevent the ingress of dirt and foreign objects.
35	Part-2	Works Requirement - General Specification	12.1.2	Cost Center H Table	Cost Center Table H and Attached as Attachment-07
36	Part-2	Works Requirement - Technical Specification	2.11.1	Availability shall be assessed by the following measure: % Availability = 1 - {(DT(SC)+DT(OPM)+DT(CM)) / Total Time} * 100	% Availability = [1 - {(DT(SC)+DT(OPM)+DT(CM)) / Total Time}] * 100
37	Part-2	Works Requirement - Technical Specification	2.12 - (ii), (iii), (iv)	(ii) Trainset available with delay – A Trainset shall be considered as available with delay if such Trainset is: offered with delay that it effects its scheduled departure time as per the Train Operation Plan. Availability damage in such case shall be as per No. of trip(s) delayed/cancelled as defined in table 2.2 below. (iii) Non-Available Trainset: A trainset can be non-available on following accounts: If there is fault/defect (service failure/relevant failure) in the train(s) attributable to RS contractor and it cannot be utilized in revenue service then penalty corresponding to 3 of table 2.2 shall be applicable. (iv) Table 2.2	(ii) Trainset available with delay – A Trainset shall be considered as available with delay if such Trainset is: offered with delay that it effects its scheduled departure time as per the Train Operation Plan. Availability damage in such case shall be as per No. of trip(s) delayed/cancelled as defined in table **2.2.a** below. (iii) Non-Available Trainset: A trainset can be non-available on following accounts: If there is fault/defect (service failure/relevant failure) in the train(s) attributable to RS contractor and it cannot be utilized in revenue service then penalty corresponding to 3 of table **2.2.a** shall be applicable. (iv) Table **2.2.a**
38	Part-2	Works Requirement - Technical Specification	3.10.3	The temperature inside of an "inactive" metro train parked in the sun can easily exceed +60°C. Equipment may be designed accordingly.	DELETED
39	Part-2	Works Requirement - Technical Specification	3.21.4	Fully Loaded / Dense Crush Loaded (AW3): The minimum number of passengers required to be carried per car will be as follows: Driving Motor Car : 315 (minimum seated: 43) Trailer Car : 340 (minimum seated: 50)	**Exceptional** Crush Loaded (AW3): The minimum number of passengers required to be carried per car will be as follows: Driving Motor Car : 315 (minimum seated: 43) Trailer Car : 340 (minimum seated: 50)
40	Part-2	Works Requirement - Technical Specification	3.22.1 - Table 3.7	Service braking rate from 85 kmph Emergency braking rate from 85 kmph	Service braking rate from **80** kmph Emergency braking rate from **80** kmph

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
41	Part-2	Works Requirement - Technical Specification	4.13.2	The windscreen shall be constructed of toughened, laminated safety glass, and shall comply with the requirements of UIC 651, **EN 50152, EN15152 and UIC 566 / EN 12663.** The inner and outer surfaces of the windscreens shall be scratch resistant.	The windscreen **including glass of the detrainment door** shall be constructed of toughened, laminated safety glass, and shall comply with the requirements of **UIC 651, IS 2553 (Part-1 and 2), ECE Regulaion-43, EN 15152, and UIC 566**. The inner and outer surfaces of the windscreens shall be scratch resistant.
42	Part-2	Works Requirement - Technical Specification	4.14.2 (vi)	Each window, including glazing shall have sufficient strength to resist penetration of solid steel ball when tested as per Annexure A of IS 2553 Part II. **All glazing shall be of toughened glass and shall comply with DIN 52306 (impact strength) and EN1288 (bending strength).**	Each window, including glazing shall have sufficient strength to resist penetration of solid steel ball when tested as per Annexure A of IS 2553 Part II.
43	Part-2	Works Requirement - Technical Specification	4.14.3	Each car shall have minimum eight pairs (four per side) of electrically operated, plug type door **or externally hung, sliding bi-parting doors**, (See Chapter 7).	Each car shall have minimum eight pairs (four per side) of electrically operated, plug type door doors (See Chapter 7).
44	Part-2	Works Requirement - Technical Specification	Table 4.1	Table 4.1: Principal Notional Vehicle Dimensions maximum length over body (including end fairings)- DM 21940 mm and T car 21940 mm	**Maximum length over couplers for all cars - 23000 mm**
45	Part-2	Works Requirement - Technical Specification	6.7.2	All piping, fittings, fixtures shall be of stainless-steel conforming to the requirements of SUS 316 or equivalent with flare-less double flare compression fittings.	All piping, fittings, fixtures shall be of stainless-steel conforming to the requirements of SUS 316 or equivalent with flare-less **byte type** double compression fittings. **Pipe fittings shall confirm to the requirement of DIN 2353.**
46	Part-2	Works Requirement - Technical Specification	6.13.3	The EP brake shall so design that its control function can be taken over by the other control elements or units even in the case of failure of individual electronic or electrical control elements or units. Redundancy for WSP is also preferred, details shall be finalized during design stage. Redundant power supply and processor card for hot standby in the control unit and spare slots for I/O cards shall be ensured	The EP brake shall so design that its control function can be taken over by the other control elements or units even in the case of failure of individual electronic or electrical control elements or units. Redundancy for WSP is also preferred, details shall be finalized during design stage. Redundant power supply and processor card for hot standby in the control unit and spare slots for I/O cards shall be ensured. **However, any other suitable design for redundancy of bogie-based EP Brake control function may be proposed by the Contractor subject to approval of the Engineer.**
47	Part-2	Works Requirement - General Specification	10.2 Site Facilities	10.2.7 All buildings shall be supplied with electricity 240V, 50Hz that shall be distributed to each room in accordance with the Regulations. Lighting and electrical power points shall be provided to each room. Charges of all utilities shall be recovered by Maha-Metro. 10.2.14 The Contractor shall be responsible for making applications or requests to the concerned Authorities for availing of the above facilities. In the event that electricity or water supplies are arranged by another Designated Contractor in the Depot area, the Contractor may avail himself of those supplies from the Designated Contractor, either directly on agreed terms and conditions. The Contractor shall comply with all regulations of the utility companies and Government departments concerned.	10.2.7 All buildings shall be supplied with electricity 240V, 50Hz that shall be distributed to each room in accordance with the Regulations. Lighting and electrical power points shall be provided to each room.Electricity will be Free of charge. 10.2.14 Deleted
48	Part-2	Works Requirement - Technical Specification	6.19.1	The build-up of pneumatic brake force shall be jerk limited (for changes in brake demand) to increase passenger comfort. The jerk rate will be restricted to **0.70** m/s3. This limit shall also be respected at the time of final stoppage.	The build-up of pneumatic brake force shall be jerk limited (for changes in brake demand) to increase passenger comfort. The jerk rate will be restricted to **0.75** m/s3. This limit shall also be respected at the time of final stoppage.
49	Part-2	Works Requirement - Technical Specification	4.8.8 (466)	Suitable acoustic insulation shall be provided on the body side and roof sheet to minimise the affect of reflected noise into the saloon. The car-body shall be designed to have high thermal insulation to reduce the heat loss and heat transfer coefficient (K value) of the car-body excluding glazing/windows shall be kept within 1.6W/(mK).	Suitable acoustic insulation shall be provided on the body side and roof sheet to minimise the affect of reflected noise into the saloon. The car-body shall be designed to have high thermal insulation to reduce the heat loss and heat transfer coefficient (K value) of the car-body excluding glazing/windows shall be kept within **1.6 W/(m2-K).**

<table>
<tr><th>S No.</th><th>Part No</th><th>Section</th><th>Clause ref</th><th>Existing Clause</th><th>Replaced With</th></tr>
<tr><td>50</td><td>Part-2</td><td>Works Requirement - Technical Specification</td><td>7.2.3 (viii)</td><td>Anti-drag function shall be provided for protection against dragging of a person or any kind of object in passenger saloon doors. The Push back feature shall be operative after the door leaves have been closed and locked. It shall be possible to manually push back each closed door leaf to enable entrapped objects such as clothing and other articles, to be withdrawn, even after the mechanical lock has engaged. the force required to push back each door leaf shall not be less than 80 N nor more than 120 N. However final value shall be decided during design. Expected door gap to be created by push back during intentinal operation should not exceeded 15 mm (the final gap shall be decided during detail design of door). Every operation of push back shall be recorded with time stamp and massage shall pop up in cab HMI. the complete scheme shall be proven type in worldwide metros.</td><td>Anti-drag function shall be provided for protection against dragging of a person or any kind of object in passenger saloon doors.</td></tr>
<tr><td>51</td><td>Part-2</td><td>Works Requirement - Technical Specification</td><td>8.11.5</td><td>Reliability of APC coils, if used, is of paramount importance for safe operation. The coils shall be tested for EMC/EMI compatibility as per international standards.</td><td>DELETED</td></tr>
<tr><td>52</td><td>Part-2</td><td>Works Requirement - Technical Specification</td><td>12.10.6</td><td>(i) Robust design fail-safe PWM generator shall be used to convert the analogue signal from the Master Controller to a PWM signal for powering and braking control. The design shall ensure no shifting of calibration once done during commissioning. The outgoing PWM signals shall be hardwired. Provision of PWM generator shall be as per the interface design with signaling contractor.</td><td>(i) Robust design fail-safe PWM generator / digital signals shall be used to convert the analogue signal from the Master Controller to a PWM signal for powering and braking control. The design shall ensure no shifting of calibration once done during commissioning. The outgoing PWM signals shall be hardwired. Provision of PWM generator shall be as per the interface design with signaling contractor.</td></tr>
<tr><td>53</td><td>Part-2</td><td>Works Requirement - Technical Specification</td><td>15.9.8</td><td>One shell out of every 4 bare shells, to be randomly selected by the Engineer, shall be subjected to water tightness test as per an agreed procedure based on IEC 61133.</td><td>One shell out of every 4 bare shells, to be randomly selected by the Engineer, shall be subjected to water tightness test as per an agreed procedure. All the fully assembled cars shall be tested as per IEC 61133.</td></tr>
<tr><td>54</td><td>Part-1</td><td>Section III. Evaluation and Qualification Criteria</td><td>EQC-4.1.General Railway/Metro System Experience</td><td>Experience in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last 10 [Ten] years .</td><td>Experience in the role of prime contractor, JV/Consortium member, subcontractor, or management contractor for at least the last 10 [Ten] years .</td></tr>
<tr><td>55</td><td>Part-2</td><td>Works Requirement - Technical Specification</td><td>15.6.1 (viii)</td><td>(viii) Train Performance test (IEC 1133): Compete train shall be subjected to the tests specified in IEC 1133 or any other tests required to be incorporated by the engineer. Detail test protocol shall be drawn and got approved from the engineer. The train performance specified in ERTS 3.22 shall also be got validated along with the final simulated performance parameters after design. The run time performance shall meet the following parameters.
<table>
<tr><th>Train Load (1)</th><th>Achieved Speed (KMPH) (2)</th><th>Maximum Distance Moved (m) in time at Column (4) (3)</th><th>Maximum Time taken to achieve the speed (sec) (4)</th></tr>
<tr><td rowspan="3">Dense Crush load @ 8 passengers / m2 and All-out run</td><td>0 to 40</td><td>61</td><td>12</td></tr>
<tr><td>0 to 60</td><td>197</td><td>22</td></tr>
<tr><td>0 to 80</td><td>649</td><td>44</td></tr>
<tr><td rowspan="3">Crush load @ 6 passengers / m2 and All-out run</td><td>0 to 40</td><td>39</td><td>10</td></tr>
<tr><td>0 to 60</td><td>182</td><td>20</td></tr>
<tr><td>0 to 80</td><td>611</td><td>42</td></tr>
</table></td><td>(viii) Train Performance test (IEC 1133): Compete train shall be subjected to the tests specified in IEC 1133 or any other tests required to be incorporated by the engineer. Detail test protocol shall be drawn and got approved from the engineer. The train performance specified in ERTS 3.22 shall also be got validated along with the final simulated performance parameters after design. The run time performance shall be provided for following and the same shall be validated during testing as per below table
<table>
<tr><th>Train Load (1)</th><th>Achieved Speed (KMPH) (2)</th><th>Maximum Distance Moved (m) in time at Column (4) (3)</th><th>Maximum Time taken to achieve the speed (sec) (4)</th></tr>
<tr><td rowspan="3">Dense Crush load @ 8 passengers / m2 and All-out run</td><td>0 to 40</td><td></td><td></td></tr>
<tr><td>0 to 60</td><td></td><td></td></tr>
<tr><td>0 to 80</td><td></td><td></td></tr>
<tr><td rowspan="3">Crush load @ 6 passengers / m2 and All-out run</td><td>0 to 40</td><td></td><td></td></tr>
<tr><td>0 to 60</td><td></td><td></td></tr>
<tr><td>0 to 80</td><td></td><td></td></tr>
</table></td></tr>
</table>

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
56	Part-2	Works Requirement - Technical Specification	Table 15.2	Values of braking at 85 kmph in table 15.2	 85 kmph is updated as 80 in the table and remaining values to be filled by contractor during testing table-15.2 Braking Distance under Dry and WSP condition shall be within the distances specified in the standard and to validate the stopping distance provided by the contractor in Table 15.2 as given below
57	Part-2	Works Requirement - Technical Specification	Table TD.2: Physical Interface Schedule (Telecom-RS) - Point: 12	Train simulator	**DELETED**
58	Part-2	Works Requirement - Technical Specification	5.2.7	The Contractor shall submit a proposal covering the scope of the analysis and the model for review by the Engineer.	The Contractor shall submit a proposal covering the scope of the analysis and the **report /** model for review by the Engineer.
59	Part-2	Works Requirement - Technical Specification	6.15.6	Brake system design shall ensure that in the event of isolation of 33% percent bogie brakes, train can safely work at least up to maximum speed of 80 kmph. In case of two bogie isolation (33%) Contractor shall ensure that no braking distance shall be effected as long as train controlling is being done by signalling system.	Brake system design shall ensure that in the event of isolation of 33% percent bogie brakes, train can safely work at least up to maximum speed of 80 kmph. **Also,** Contractor shall ensure that no braking distance shall be effected as long as train controlling is being done by signalling system
60	Part-2	Works Requirement - Technical Specification	9.3.2	The battery charger shall be capable of charging a discharged battery to 80% full charge within 4 hours. Once the battery is fully charged, float charge should stop after 10 minutes. However, alternate superior proposal such trickle charging may be accepted subject to the condition that provennes requirements are satisfied in accordance with ERTS 9.4.	The battery charger shall be capable of charging a discharged battery to 80% **full** charge within 4 hours. Once the battery is fully charged **or to the desired charge, boost charge should changeover to float charge after desired time recommended by battery manufacturer.** However, alternate superior proposal such trickle charging may be accepted subject to the condition that provennes requirements are satisfied in accordance with ERTS 9.4.
61	Part-2	Works Requirement - Technical Specification	4.14.8 (i)	The non-skid floor structure shall be of floating floor type. Aluminium honeycomb sandwiched type floating floor with suitable noise, vibration and heat insulation, duly supported on rubber cones shall be preferred. Alternatively, the floor may comprise of ply board with cork inlay, rubber cushion, glass wool insulation and floor covering subject to its conformance with EN 45545 as a minimum to achieve low noise level inside the cars and less weight. The floor shall be designed to minimize the life cycle cost of the floor over 35 years. Subject to submission of complete details and approval by the Engineer & for better noise attenuation level of the floor and conformance to EN 45545 or better / equivalent international standard as specified in ERTS 2.5.8 any suitable alternate design of floating floor can also be considered.	The non-skid floor structure shall be of floating floor type. Aluminium honeycomb sandwiched type floating floor with suitable noise, vibration and heat insulation, duly supported on rubber cones shall be preferred. Alternatively, **Phenolic Composite Floorboards,** rubber cushion, glass wool insulation and floor covering subject to its conformance with EN 45545 as a minimum to achieve low noise level inside the cars and less weight. The floor shall be designed to minimize the life cycle cost of the floor over 35 years. Subject to submission of complete details and approval by the Engineer & for better noise attenuation level of the floor and conformance to EN 45545 or better / equivalent international standard as specified in ERTS 2.5.8 any suitable alternate design of floating floor can also be considered.
62	Part-2	Works Requirement - Technical Specification	2.25.1	Notwithstanding, the cyber security requirement defined elsewhere, the design of RS system shall fully comply with cyber security requirements of the following standards. · ISO 27001, ISO 27002, ISO 27005, ISO 27017, ISO 27018 · NIST SP 800-53, NIST SP 800-82 (Corrigendum 02) · ISA 99 / IEC 62443 · TS50701	Notwithstanding, the cyber security requirement defined elsewhere, the design of RS system shall fully comply with cyber security requirements of the following standards. · ISO 27001, ISO 27002, ISO 27005, ISO 27017, ISO 27018 · ISA 99 / IEC 62443 · TS50701
63	Part-2	Works Requirement - Technical Specification	5.10.4	The gearbox shall be got subjected to a test based on the actual duty cycle on a specified Corridor with the specified torque and speed conditions. Test shall commence with gearbox oil at temperature at 30°C and temperature shall either be continuously monitored. The oil temperature shall not exceed the manufacturer's recommendation consistent with life between oil changes. Test shall be carried out in both the directions. Noise and vibration tests shall also be performed along with this test. The Contractor shall submit the Test Procedure based on Good Industry Practice / international practice for approval by the Engineer.	The gearbox shall be got subjected to a test equivalent to or more severe than based on the actual duty cycle on a specified Corridor with the specified torque and speed conditions. Test shall commence with gearbox oil at temperature at 30°C **and also additionally a test shall be done on gearbox to ensure performance at an ambeint of 45°C** and Temperature shall be continuously monitored. The oil temperature shall not exceed the manufacturers recommendation consistent with life between oil changes. Tests shall be carried out in both the directions. Noise and vibration tests shall also be performed along with this test. The Contractor shall submit the Test Procedure based on Good Industry Practice / international practice for approval by the Engineer.
64	Part-2	Works Requirement - Technical Specification	10.5.9	Single point uploading of software and down loading of faults shall be possible from TCMS nodes in each car. In-case of sub supplier's equipment like doors, PIS, HVAC etc. also, single point uploading of software and down loading of faults on unit and train basis shall be ensured. Single point uploading of all software of all subsystems / systems shall be possible in less than 10 minutes.	Single point uploading of software and down loading of faults shall be possible from TCMS nodes in each car. In-case of sub supplier's equipment like Doors, PIS, HVAC, **Brake** etc. also, single point uploading of software and down loading of faults on unit and train basis shall be ensured. Single point uploading of all software of all subsystems / systems **shall be possible in less than 45 minutes. Downloading of faults shall be possible in less than 10 min.**

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
65	Part-2	Works Requirement - Technical Specification	6.13.24	The speed measurement devices and couplings required for measurement of train speed in a fail-safe manner by the Signalling and Train Control Contractor shall be installed on one non-powered axle in each 3-car unit (DM+TC+DM) which shall be:	The speed measurement devices and couplings required for measurement of train speed in a fail-safe manner by the Signalling and Train Control Contractor shall be installed on one non-powered axle **(if feasible)** in each 3-car unit (DM+TC+DM) which shall be:
66	Part-2	Works Requirement - Technical Specification	13.9.8	Provision shall be made and tested to enable train operator to relay CCTV images to dedicated server at OCC by pressing a pushbutton in case of emergency. The server for this purpose shall be provided by the Employer / other Designated Contractor. As a minimum, the images should be selectable for a time or time interval as required. Final scheme shall be worked out during design. The Contractor shall provide the on-board equipment and commission the system based on the communication link provided by the Employer. Full details shall be submitted for Engineer's review.	DELETED
67	Part-2	Works Requirement - Technical Specification	13.12	In-train Wi-fi NMRCL intends to provide in train wi-fi system for passengers. The wi-fi system will require on-board equipment which will be under the scope of other designated contractors. The RS contractor shall interface with wi-fi contractor and provide appropriate space in the train for wi-fi equipment as well as make provisions for Ethernet network (through inter car jumpers) and emergency power supply for this purpose.	DELETED
68	Part-2	Works Requirement - Technical Specification	11.5.8	Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulator shall be provided in the driving console, signalling cubicles and electrical cabinets to achieve uniform cooling.	Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulator **/ Fan** shall be provided in the driving console, signalling cubicles and electrical cabinets to achieve uniform cooling.
69	Part-2	Works Requirement - Technical Specification	12.5.3	Fire resistant cables shall be proposed for circuits, which would survive for long periods during fire, as per applicable international standards. As a minimum, the cables and wires for Public Address System, Emergency lighting, Door opening and warning system, Emergency brake loop shall be fire resistant (survival) cables in compliance to EN 50200.	Fire resistant cables shall be proposed for circuits, which should survive for long periods during fire, as per applicable international standards such as EN 45545-5. As a minimum, the cables and wires for Public Address System, emergency lighting, Passenger door & Emergency door, opening, TCMS and warning systems brake control, propulsion control, and warning systems shall be **fire Survival** in compliant to EN 50200 for control cables and EN 50289 for data/communication cables. Details shall be submitted during design stage for Engineer's review and approval.
70	Part-2	Works Requirement - Technical Specification	7.2.1 (i)	Each car shall have minimum eight pairs (four per side) of plug type **or sliding bi-parting doors.** The clear door opening width of each door pair shall be minimum 1400 mm and a clear height of at least 1900 mm. The doors shall be electrically driven.	Each car shall have minimum eight pairs (four per side) of **plug type doors.** The clear door opening width of each door pair shall be minimum 1400 mm and a clear height of at least 1900 mm. The doors shall be electrically driven.
71	Part-2	Works Requirement - Technical Specification	13.10.	The TCMS HMI screen shall be used as CCTV screen on demand or event actuated. The TCMS screen shall have provision to have to show simultaneous multiple views of CCTV/TCMS/PA/PIS. CCTV images can be display on the TCMS VDU on demand or event generated. The TCMS VDU shall have provision of displaying multiple screens as per the requirements. Separate HMI for CCTV need not to be provided. The Contractor shall submit the details for Engineer's review.	The TCMS HMI screen shall be used as CCTV screen on demand or event actuated. The TCMS screen shall have provision to have to show simultaneous multiple views of CCTV/TCMS/PA/PIS. The TCMS VDU shall have provision of displaying multiple screens as per the requirements. **The final screen shall be decided during design stage.**
72	Part-2	Works Requirement - Technical Specification	13.9.7	The visual images from each camera shall be recorded in non-volatile SSD memory in a redundant video recorder (NVR) without any limitation of repetitive writing of the data. The records shall be easily downloadable. The Contractor shall provide equipment and means for the same. At least one set of such equipment shall be provided to each depot.	The visual images from each camera shall be recorded in redundant non volatile SSD memory in a video recorder (NVR) without any limitation of repetitive writing of the data. **The capacity of the recorder shall be of at least 7 days or 120 hrs whichever is higher and shall have the provision of First in First out (FIFO). The memory shall be expandable by simple plug in of commercially available memory media**. The records shall be easily downloadable. The Contractor shall provide equipment and means for the same. At least two set of such equipment shall be provided to the depots.
73	Part-1	Pricing Document	Annx-IV-A Pricing Document Cost Center A	Preliminaries & General Requirements and Design of Rolling Stock and Provision of Mock-ups	Cost Center A notes and Payment term of A22,23 & 24 and Attached as Attachment-06
74	Part-1	Pricing Document	Annx-IV-A Pricing Document Cost Center G Table	<table><tr><th rowspan="2">SN</th><th rowspan="2">Description</th><th rowspan="2">Part No.</th><th rowspan="2">Unit*</th><th rowspan="2">Qty</th><th colspan="2">Unit Cost</th><th colspan="2">Total Cost</th><th colspan="2">Escalation pa (%)</th></tr><tr><th>FC</th><th>LC (INR)</th><th>FC</th><th>LC (INR)</th><th>FC</th><th>LC (INR)</th></tr></table>	Table updated(escalation colum removed) and attached as Attachment - 4
75	Part-2	Works Requirement - Technical Specification	10.10.3	Remote Downloading Provision The Contractor shall provide equipment and install the system to enable remote downloading of all the stored TCMS data, data recordings, environment data and linked files, if any, through wireless / GPRS / radio communication network of Signaling system.	Remote Downloading Provision The **Rolling Stock** Contractor shall provide equipment and install the system to enable remote downloading of all the stored TCMS data, data recordings, environment data and linked files, if any, through wireless / GPRS / radio communication network of Signaling system. .....
76	Part-1	Pricing Document	Annx-IV-A Pricing Document Price variation A1.1	Price Variation A1.1	Included Cost Center G in (P0) defination. and removed Cost Center G From Notes. Refer Attachment-5
77	Part-1	Pricing Document	Annx-IV-A Pricing Document "BID TOTAL"	Note-3.Cost centre G will only be considered for price bid evaluation. Spares will be procured after completion of CAMC.	Note:-3 Cost centre G will be considered for price bid evaluation .

S No.	Part No	Section	Clause ref	Existing Clause	Replaced With
78	Part-2	Works Requireme-General Specification	Chapter-16 CAMC clause 16.5.4	16.5.4 The Price List shall remain applicable for the **full** duration of the CAMC Period; **The** Contractor shall also ensure that all items remain available for purchase by MAHA METRO after the CAMC Period.	The Price List shall remain applicable for the full duration of the CAMC Period **in accordance with price adjustment provisions defined in Part-1 Annexure IV-A: Pricing Document -A.1 Price variation.** The Contractor shall also ensure that all items remain available for purchase by MAHA METRO during the CAMC Period.
79	Part-2	Works Requireme-General Specification	Chapter-16 CAMC clause 16.5.18	The Contractor shall also be responsible for the **initial** provisioning, maintenance and replenishment of any tools and/or tackles required its workforce to undertake any part of the works during the CAMC Period.	The Contractor shall also be responsible for the provisioning, maintenance and replenishment of any tools and/or tackles required its workforce to undertake any part of the works during the CAMC Period.
80	Part-1	Pricing Document	COST CENTRE No. B: Offshore Manufacture-Milestone Activity	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: -Issue of Inspection Certificate on satisfactory completion of all Factory Tests / running -Marine Insurance -Documents for shipment to Indian Port(receipt of train) -Transit insurance from Port in India to Depot Site in Nagpur . for:	Refer Attachment-08
81	Part-1	Pricing Document	COST CENTRE No. C: Indigenous Manufacture-Milestone Activity	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: -Issue of Inspection Certificate on satisfactory completion of all Factory Tests / running -Marine Insurance -Documents for shipment to Indian Port(receipt of train) -Transit insurance from Port in India to Depot Site in Nagpur . for:	Refer Attachment-09

The other conditions shall remain same. Further modifications/amendments (if any) regarding aforesaid tender will be uploaded as and when required.

Executive Director (Procurement)
Maha Metro

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

Attachment-1
(Corrigendum-2)

COST CENTRE NO. I: Comprehensive Annual Maintenance Contract

Scope of Cost Centre:

This cost Centre comprises of all those obligations and activities connected with the Comprehensive annual maintenance of Rolling Stock, Supply and maintenance of unit exchange spares, Mandatory spares, DLP spares, overhauling spares, consumables, special tools, jigs, fixtures, gauges, testing and diagnostic equipment including supervision of maintenance and provision of maintenance manpower in the Depot for Rolling stock during CAMC as specified.

1. Payment of CAMC will be made quarterly. The tenderer shall quote the Lump Sum Annual Maintenance Cost (in four quarters) for the described scope of works as per ERGS Chapter 16 during the CAMC as per the attached milestone schedule for cost Centre I

2. For all milestones under this cost Centre I, the tenderer shall note that the maintenance cost quoted for all four quarters of a particular year shall be the same for each quarter i.e. one-fourth of the Annual Lump Sum Maintenance Cost for that particular year.

3. The tenderer shall note that the quoted cost under this cost Centre shall cover the overall maintenance requirement as per the described scope of work as per ERGS Chapter 16.

4. The costs indicated in this Cost Centre for all the Milestones of cost Centre I shall be the ACTUAL COSTS and not the apportioned cost.

5. Important notes is mentioned below regarding Evaluation of cost quoted under this Cost Centre and Working Out of Cash Flows.

COST CENTRE NO. I: Comprehensive Annual Maintenance Contract

Milestone No.	Work Description Milestone Activity	Cost of CAMC per Trainset without NPV in INR	Cost of CAMC per train with NPV factor @10% p.a. (INR)	Qty of Trainsets	Total Cost of CAMC without NPV (in INR)	Total Cost of CAMC with NPV (in INR)
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer for the completion of CAMC of each Trainsets					
I 1	Apportioned Amount for each 3 car Trainsets for First year comprehensive CAMC			16		
I2	Apportioned Amount for each 3 car Trainsets for Second year comprehensive CAMC			16		
I3	Apportioned Amount for each 3 car Trainsets for Third year comprehensive CAMC			16		
I4	Apportioned Amount for each 3 car Trainsets for Fourth year comprehensive CAMC			16		
I5	Apportioned Amount for each 3 car Trainsets for Fifth year comprehensive CAMC			16		
I6	Apportioned Amount for each 3 car Trainsets for Sixth year comprehensive CAMC			16		
I7	Apportioned Amount for each 3 car Trainsets for Seventh year comprehensive CAMC			16		
I8	Apportioned Amount for each 3 car Trainsets for Eight year comprehensive CAMC			16		
I9	Apportioned Amount for each 3 car Trainsets for Ninth year comprehensive CAMC			16		
I10	Apportioned Amount for each 3 car Trainsets for Tenth year comprehensive CAMC			16		
I11	Apportioned Amount for each 3 car Trainsets for Eleventh year comprehensive CAMC			16		
I12	Apportioned Amount for each 3 car Trainsets for Twelfth year comprehensive CAMC			16		
I13	Apportioned Amount for each 3 car Trainsets for Thirteen year comprehensive CAMC			16		
I14	Apportioned Amount for each 3 car Trainsets for Fourteen year comprehensive CAMC			16		
I15	Apportioned Amount for each 3 car Trainsets for Fifteen year comprehensive CAMC			16		
	COST CENTRE TOTAL					

	Without NPV	With NPV*
***Total cost of CAMC for 16 train set**		

Notes:

1. The year on year price of CAMC shall be balanced and not front-loaded.

2. Contractor shall load
   i. Not more than 20% of the cost centre I cost in 1st to 5th year , price shall be distributed in equal proportion .
   ii. Not More than 45% of the cost centre I cost in 5th to 10th year . , price shall be distributed in equal proportion
   iii. Balance 35% in last 5 year 11th to 15th year. , price shall be distributed in equal proportion.

3. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.
4. Discounted cost will be used for financial evaluation of the bid.
5. * The Total cost of CAMC for 16 trains with NPV will be used for evaluation of Bid.

COST CENTRE NO. I: Comprehensive Annual Maintenance Contract

(Quarter wise breakup of CAMC COST without NPV)

Milestone No.	Work Description Milestone Activity	Indian Rupees
I	Obtain the “Notice of No Objection” or “Notice of No Objection Subject to ____” from the Engineer for the completion of CAMC of each Trainsets	
I I	Payment for the 1st year of 'CAMC	
I 1.1	Payment for the 1st quarter of 1st year of CAMC	
I 1.2	Payment for the 2nd quarter of 1st year of CAMC	
I1.3	Payment for the 3rd quarter of 1st year of CAMC	
I1.4	Payment for the 4th quarter of 1st year of CAMC	
I2	Payment for the 2nd year of CAMC	
I2.1	Payment for the 1st quarter of 2nd year of CAMC	
I2.2	Payment for the 2nd quarter of 2nd year of CAMC	
I2.3	Payment for the 3rd quarter of 2nd year of CAMC	
I2.4	Payment for the 4th quarter of 2nd year of CAMC	
I3	Payment for the 3rd year of CAMC	
I3.1	Payment for the 1st quarter of 3rd year of CAMC	
I13.2	Payment for the 2nd quarter of 3rd year of CAMC	
I3.3	Payment for the 3rd quarter of 3rd year of CAMC	
I3.4	Payment for the 4th quarter of 3rd year of CAMC	
I4	Payment for the 4th year of CAMC	
I4.1	Payment for the 1st quarter of 4th year of CAMC	
I4.2	Payment for the 2nd quarter of 4th year of CAMC	
I4 3	Payment for the 3rd quarter of 4th year of CAMC	
I4.4	Payment for the 4th quarter of 4th year of CAMC	
I5	Payment for the 5th year of CAMC	
I5.1	Payment for the 1st quarter of 5th year of CAMC	

I5 2	Payment for the 2nd quarter of 5th year of CAMC	
I5.3 '	Payment for the 3rd quarter of 5th year of CAMC	
I 5.4	Payment for the 4th quarter of 5th year of CAMC	
I6	Payment for the 6th year of CAMC	
I6 1	Payment for the 1st quarter of 8th year of CAMC	
I6.2	Payment for the 2nd quarter of 6th year of CAMC	
I6 3	Payment for the 3rd quarter of 6th year of CAMC	
I6.4	Payment for the 4th quarter of 6th year of CAMC	
I7	Payment for the 7th year of CAMC	
I7 1	Payment for the 1st quarter of 7th year of CAMC	
I7.2	Payment for the 2nd quarter of 7th year of CAMC	
I7.3	Payment for the 3rd quarter of 7th year of CAMC	
I7.4	Payment for the 4th quarter of 7th year of CAMC	
I8	Payment for the 8th year of CAMC	
I8.1	Payment for the 1st quarter of 8th year of CAMC	
I8.2	Payment for the 2nd quarter of 8th year of CAMC	
I8.3	Payment for the 3rd quarter of 8th year of CAMC	
I8.4	Payment for the 4th quarter of Bth year of CAMC	
I9	Payment for the 9th year of CAMC	
I9.1	Payment for the 1st quarter of 9th year of CAMC	
I9.2	Payment for the 2nd quarter of 9th year of CAMC	
I9.3	Payment for the 3rd quarter of 9th year of CAMC	
I9.4	Payment for the 4th quarter of 9th year of CAMC	
I10	Payment for the 10th year of CAMC	
I10 1	Payment for the 1st quarter of 10th year of CAMC	
I10 2	Payment for the 2nd quarter of 10th year of CAMC	
I10.3	Payment for the 3rd quarter of 10th year of CAMC	
I10.4	Payment for the 4th quarter of 10th year of CAMC	
I11	Payment for the 11th year of CAMC	
I11.1	Payment for the let quarter of 11th year of CAMC	
I11.2	Payment for the 2nd quarter of 11th year of CAMC	

I11.3	Payment for the 3rd quarter of 11th year of CAMC	
I11.4	Payment for the 4th quarter of 11th year of CAMC	
I12	Payment for the 12th year of CAMC	
I12.1	Payment for the 1st quarter of 12th year of CAMC	
I12.2	Payment for the 2nd quarter of 12th year of CAMC	
I12.3	Payment for the 3rd quarter of 12th year of CAMC	
I12.4	Payment for the 4th quarter of 12th year of CAMC	
I13	Payment for the 13th year of CAMC	
I13.1	Payment for the 1st quarter of 13th year of CAMC	
I13,2	Payment for the 2nd quarter of 13th year of CAMC	
I13.3	Payment for the 3rd quarter of 13th year of CAMC	
I13.4	Payment for the 4th quarter of 13th year of CAMC .	
I14	Payment for the 14th year of CAMC	
I14.1	Payment for the 1st quarter of 14th year of CAMC	
I14.2	Payment for the 2nd quarter of 14th year of CAMC	
I14.3	Payment for the 3rd quarter of 14th year of CAMC	
I14.4	Payment for the 4th quarter of 14th year of CAMC	
I15	Payment for the 15th year of CAMC	
I15.1	Payment for the 1st quarter of 15th year of CAMC	
I1 5.2	Payment for the 2nd quarter of 15th year of CAMC	
I15.3	Payment for the 3rd quarter of 15th year of CAMC	
I15.4	Payment for the 4th quarter of 15th year of CAMC	
	Cost Centre TOTAL	

23. Undertaking for confirming deployment of Project Management team

(To be submitted on Bidder's Letterhead)

Dated:……..

Letter of Undertaking

CONTRACT No. N2-057/RS-01/2025

DESIGN, MANUFACTURE, SUPPLY, TESTING, COMMISSIONING OF PASSENGER ROLLING STOCK (16NOS of TRAIN SETS) AND TRAINING OF PERSONNEL WITH COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (15 YEAR) FOR NAGPUR METRO RAIL PROJECT PHASE-II

I _____ (State Name of Director/Partner/ Karta/Authorized Person) in capacity of _____ of _____(State name of the undertaking organization) here by submit the declaration for confirming deployment of Project Management team as defined in the Bidding Documents (Eligibility and Qualification Criteria -EQC-4.4 Management team organization and Project Leader) as per 4.1 Staffing Schedule and Organization Chart of Bidding Forms.

I state that everything declared by me is true and correct to my belief.

Signed……..
For on behalf of
(Name of Bidder / Consortium)

Attachment-3
Corrigendum-2

Price Adjustment for Cost Centre I: Comprehensive Annual Maintenance contract

1. For Cost Centre I (Comprehensive Annual Maintenance contract), the Adjustment on Local currency (Indian Rupees) Portion shall be applied to the amount otherwise payable to the Contractor on completion of Works under different milestones as per the following formula:

Pn = a +b(Bn/Bo) + c(Cn/Co)

In which:

- Pn = adjustment multiplier to be applied to the Local currency portion.
- 'a' is a fixed coefficient representing the non-adjustable portion in contractual payments
- 'b' and 'c', are coefficients representing the proportion of each cost element related to the execution of the Works.
- 'Bn' and 'Cn,' are the current cost indices for period 'n' (to which the particular interim payment certificate relates) for Local Currency portion applicable to Cost Centre **I.**
- 'Bo', and 'Co' are the base cost indices for Local Currency applicable to the Cost Centre I as on 28 days prior to the date of Submission of Bid.

Note:

i. Labor Index: "All India Consumer Price Index for Industrial Workers (CPI-IW) (Base Year: 2016=100)" published by Labour Bureau of Ministry of Labour & Employment, Government of India.

ii. Wholesale Price Indices: Base 2011-12: Published by Economic Adviser, Ministry of Commerce & Industry, Government of India.

iii. In case the indices as indicated in the Table below, changes in composition, it shall be replaced by any index which subsequently substitutes the corresponding indices.

2. The Price Adjustment for each milestone will be made at the time of payments for Milestones under Cost Centre I.
3. The above Index codes are as per the following Sources of Index
4. Total admissible price variation amount shall be subject to a ceiling of (+/-) 10% (Ten Percentage) of the total CAMC cost.

I	II	III	IV
Index Code	**Index description**	**Source Index**	**Weightage**
'a'	Nonadjustable	NA	0.20
'b'	All India ConsumerPrice index for Industrial Workers (CPI - IW)	Note-i	0.40
'c'	Wholesale PriceIndex for all Commodities (WPI)	Note-ii	0.40

COST CENTRE No. G: Unit Exchange Spares, Mandatory Spares, Recommended Spares, Special tools, testing and diagnostic equipment. Special jigs, fixtures and gauges for repair and maintenance and Intermediate Overhauling Spares

This Cost Centre comprises of all different types of spares.
This includes but is not limited to:

1. Unit exchange spares, Mandatory Spares, Recommended Spares.
2. consumable spares up to expiry of Defect Liability Period.
3. Special tools, testing and diagnostic equipment.
4. Special jigs, fixtures and gauges for repair and maintenance.
5. Intermediate Overhauling Spares
6. Any other item considered necessary to comply with the scope of works.

Notes:

1. Bidder shall furnish the list and unit price for each item.
2. Cost of entire Cost centre G will be considered for price bid evaluation .
3. Contractor to furnish current price of the spares in BID. The spares of cost centre G will be purchased after CAMC period (with PVC as per clause A.1 Price variation of part-1 Bidding procedure- Annexure -IV A- Pricing Document) .
4. The costs indicated in this Cost Centre for Milestones G1 shall be the actual costs and not the apportioned costs.
5. Milestone and supply date will be finalised before 6 month of expiry of CAMC period.

COST CENTRE No. G: Unit Exchange Spares, Mandatory Spares, Recommended Spares.

Milestone No.	Work Description	Foreign Currency	Indian Rupees	Weeks from Commencement Date
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer for the delivery of the following:			
G1	Unit Exchange Spares **(Details to be given as per Annexure GA1)**			
G2	Mandatory Spares **(Details to be given as per Annexure GA2)**			
G3	Recommended Spares (As per Chapter 8 of the Employer's requirement – General Specifications) (Details to be given as per Annexure GA3)			
G4	Consumable Spares for tendered quantity for period upto expiry of Defect Liability Period: (Details to be given as per Annexure GA4)			
G5	Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment: (Details to be given as per Annexure GA5)			
G6	Intermediate Overhauling Spares for 1 Train Set of 3-cars (Details to be given as per Annexure GA6)			
	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

Annexure GA1
Unit Exchange Spares
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
1	Transformer		Set	1				
2	Traction Motor with half coupling		No.	2				
3	Power Converter and Inverter		Set	1				
4	Auxiliary Power Supply with Battery Charger		Set.	1				
5	Vacuum Circuit Breaker		No.	4				
6	All type of Complete Motored Bogie equipped with Traction Motors with power and earthing cables, Connector, Pins, required crimping tools, pin removal tool ,wheel sets and brake units etc.		Set	1				
7	All types of Complete Trailer Bogie equipped with earthing cables, Connector, Pins, required crimping tools , pin removal tool, Wheel Sets and brake units etc.		Set	1				
8	Battery cell for 3-car unit with inter connectors and nozzles		Set	2				
9	Pantograph with base insulators, control panel & all bus bar and connecting cables with lugs and crimping tools.		Set	3				
10	All electrical monitoring control and protection panels / cubicles etc. comprising of relays, MCBs, switches, displays, pneumatic gauges, sensors duly wired used therein as applicable including Pins, connector & its Crimping and pin removal tools (list to be furnished by the Bidder)		Set	1				
11	Complete assembly of Couplers: Automatic, Semi-permanent (Each)		No.	1				
12	Gangways (set comprising of single type (used within unit) and two-halves used between unit) along with covers.		No.	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
13	Master Controller & Mode Selector		Set.	2				
14	PWM Generator with interface panel		Set	1				
15	Complete Main Compressor Set for pneumatic system with Starter box / Control box		Set	2				
16	Complete Auxiliary motor compressor set		Set	6				
17	Air dryer		Set	1				
18	Filters for compressed air lines (Each type) (Bidder to specify)		Set	4				
19	Secondary suspension (air suspension)		No.	6				
20	Primary suspension (each type)		No.	8				
21	Disc brake unit with callipers, pads complete set excluding disc (LHS & RHS Each)		No.	4				
22	Brake control unit (electronic and pneumatic) (Each)		No	4				
23	Complete PA/PIS and CCTV set including NVR/DVR, connectors (Male & female), cards		Set	2				
24	Complete saloon door operating mechanism (Including different parts like motors, shaft etc.) (Bidder to specify)		No	8				
25	Saloon air-conditioning Unit		No.	4				
26	Cab air-conditioning unit		No.	4				
27	TCMS Equipment set		Set	1				
28	Surge Arrester		Nos.	4				
29	Complete battery control box		No.	2				
30	All type of boxes hang underframe (like BCU, battery box, ACCB box, CI, etc.)		Set	1				

Note: **Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.

Annexure GA2
Mandatory Spares
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
1	**Air Conditioning Unit**							
2	Microprocessor based control unit (Each type)		Nos.	4				
3	Set of temperature sensor (Each type)		No.	6				
4	Humidity Sensor		Nos.	6				
5	Smoke Sensor (Each type)		Nos.	8				
6	Fresh & Return air Damper motors (Each)		Nos.	4				
7	Compressor unit with motor and mounts (Each type)		Nos.	4				
8	Condenser & Evaporator fans with motor (Each type)		Nos.	4				
9	Emergency Inverter with control unit		Nos.	4				
10	Transformer		No.	4				
11	Heating Coil		No.	4				
12	Condenser Coil set		Nos.	2				
13	Evaporator Coil		Nos.	2				
14	HVAC filter frame (Each type)		Set	2				
15	High pressure switch with transducer		Nos.	2				
16	Low pressure switch with transducer		Nos.	2				
17	DC-DC Converter (Each type)		Nos.	4				
18	Line filter		Nos.	6				
19	Differential Pressure Valve		Nos.	6				
20	Expansion Valve (Each type)		Nos.	6				
21	Set of MCBs, contactor, relays, lugs, pins, etc. (Each type)		Set	2				
22	Drain plugs (Each type)		Set	4				
23	Cab HVAC booster fan assembly		No.	4				
24	HVAC Cover rubber gasket		Mtr	30				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
25	Booster Fan for cab Ventilation		No	2				
26	Thermal Magnetic Circuit Breaker		No	2				
27	Speed regulating transformer for cab Ventilation		No	2				
28	Control switch for Cab ventilation		No	2				
2	**Brake & Pneumatics**							
1	PCB cards of all types for Brake electronic control unit (Each)		No.	10				
2	Speed Sensor		No.	8				
3	Set of pneumatic valves (Each type) (Bidder to specify)		Set	1				
4	Set of magnet valves (Each type) (Bidder to specify)		Set	1				
5	Set of safety valves (Each type) (Bidder to specify)		Set	1				
6	Set of gauges (Each type) (Bidder to specify)		Set	2				
7	Set of sensors (Each type) (Bidder to specify)		Set	2				
8	Set of Pressure switches / Governor (Each type) (Bidder to specify)		Set	2				
9	Set of all types of isolating cocks (Each type) (Bidder to specify)		Set	1				
10	Driver's brake valve (BP backup brake control unit)		No.	2				
11	Analogue Converter/ Charging Venting Valve/ Digital Control Loop		No.	4				
12	Set of Pneumatic Pipe fittings (Each type) (Bidder to specify)		Set	1				
13	STV Valve		No.	10				
14	PRV Valve		No.	4				
15	EBCU Memory Card		No.	8				
16	Horn Assembly with magnet valve (Low & High) (Each)		No.	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
17	Reservoirs drain cocks (Each Type)		Set	2				
18	ADPS with control card		No.	4				
19	PBMV		No.	4				
20	All type of hoses (Bidder to specify)		Set	2				
21	Compressor Fan		Set	2				
22	Remote control for emergency release of parking brake		No.	4				
23	Timer card for Air dry unit		No	2				
3	**PA / PIS & CCTV**							
1	Front Train Number/ Destination Indicator		No.	4				
2	Passenger Information Board (External side display board)		No.	8				
3	Noise Monitor		No.	4				
4	Speaker (Cab, Internal & External) (Each)		No.	8				
5	Main operating Panel with Microphone		No.	4				
6	Auxiliary operating panel		No.	4				
7	Passenger emergency activation device		No.	8				
8	LCD based Route map & displays (DRM)		No.	20				
9	DRM Pins, connectors (male & female), crimping tool & Pin removal tool		Set	2				
10	Saloon, Front, Cab and rear-view cameras complete with hardware.		Set	1				
11	SLCD		No.	20				
12	SLCD Pins, connectors (Male & Female), crimping tool & Pin removal tool		Set	2				
13	NVR Hard Disk		No.	10				
14	Passenger emergency activation device indicator light		No	8				
15	SLCD AD Card		No	5				
16	MDS (CCTV Monitor)		No	2				
4	**Doors**							

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
1	Door control unit (Each Type)		No.	8				
2	Door leaves (LHS & RHS) (Each Type)		No.	4				
3	Set of rollers (Each Type)		Set	1				
4	Set of sensors /Limit switches of saloon doors, Cab Door (Each Type)		No	4				
5	Cab-saloon partition door panels locking mechanism		No.	6				
6	Set of sensors / switches of emergency doors		Set	4				
7	Cab door operating & locking mechanism		No.	6				
8	Complete Cab Door with operating and locking mechanism and hardware		Set	1				
9	Cab-saloon partition door panels with locking mechanism		Set	1				
10	Partition door limit switch		No	20				
11	Cab door, saloon door and partition door locking, Bowden cables and fittings (Each type)		Set	2				
12	Led Strip (Saloon Door)		Set	1				
13	External indicator Lamp		Set	1				
14	Complete Emergency door unit with mechanism		Set	2				
15	Emergency door operating mechanism, ratchet handle and sockets (each type)		No	4				
16	Emergency door all damper (Each type)		No	8				
17	Emergency door connecting rod and support (each type)		Set	2				
18	Circlip/ End fittings		Set	2				
19	Door connectors, pins (Male and female), terminal block, pin removal tool and crimping tool (Each Type)		Set	2				
20	Emergency door limit switch with mounting (Each type)		No.	8				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
21	EED Device assembly		No	4				
22	End Unlocking device		No	4				
23	Door leaf carrier		No	4				
24	Finger protection rubber		No	10				
25	Peripheral Rubber		No	10				
26	Front Door Rubber		No	10				
27	Swing arm body assembly, Left and Right		No	4				
28	Buffer Stop (Buffering head on door leaf carrier)		No	20				
29	DCU MCB		No	4				
30	Isolating lock assembly		No	4				
31	EAD Device assembly		No	4				
32	Emergency evacuation ramp assembly		No	4				
33	Emergency door Locking Fork		No	4				
34	Emergency door Hinge pin		No	4				
35	Emergency door Support leg rod		No	4				
36	Emergency door Door lock component		No	4				
37	Partition Door Limit switch		No	10				
38	Partition Door EED Device assembly		No	10				
39	Partition Door lock assembly		No	10				
40	Partition Door Hinge		No	4				
41	Cab Door Closed switch		No	4				
42	Cab Door Isolation switch		No	4				
43	All type Square key lock assembly		No	30				
5	**Converter / Inverter**							
1	Set of PCB cards		Set	2				
2	Converter Power Unit		No.	2				
3	Set of contactors		Set	2				
4	Current transformer		No.	4				
5	Potential transformer		No.	4				
6	Inverter Power Unit		No.	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
7	Gate Control Unit		No.	2				
8	DC link Charging circuit module		No.	4				
9	DC link capacitor		No.	4				
10	Earthing protection circuit module		No.	4				
11	All types of sensors used (traction motor, transformer, etc.)		Set	2				
6	**Auxiliary Power Supply**							
1	Set of PCB cards		Set	2				
2	Auxiliary Power Supply Unit		No.	2				
3	Set of Contactor (Each Type)		Set	4				
4	Battery Charger Unit		No.	2				
5	Gâte Control Unit		No.	2				
6	ACC filter capacitor unit		No.	2				
7	Discharging switch (Ground Switch)		No.	2				
8	Shore supply cable with connector		No.	2				
9	Power Extension box		No.	2				
10	Shore supply box		No.	2				
11	All types of sensors used in battery and APS		Set	2				
7	**Transformer**							
1	Oil pump		No.	4				
2	Radiator blower including fan		No.	4				
3	Set of valves and relays		Set	2				
4	Set of sensors / gauges		Set	2				
5	Breather		No.	20				
6	Dial type thermometer		No	4				
7	Complete ACCB box		No.	2				
8	**TCMS**							
1	Set of PCB cards (CCU, CN, RIO) (Each type)		Set	2				
2	Display Unit		No.	6				
3	Backlight of Display Unit		No.	10				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
4	Ethernet cable connecting other sub system with connector, pins, crimping tool and pin removal tool		Set	1				
9	**Master Controller**							
1	Set of switches		Set	2				
2	Potentiometer		set	2				
10	**Pantograph**							
1	Control panel		No.	4				
2	Regulator, filter, magnetic valve, pressure switches etc. (Each type)		No.	4				
3	Overhead detection valve MED and ADD (Each type)		No.	4				
4	Pantograph pan		No.	10				
5	Pantograph raising cylinder		No.	4				
6	Air feed insulator pipe		Set	4				
7	Pantograph foot insulator		No.	6				
8	Suspension plate		No.	8				
9	Damper (Each Type)		No.	4				
10	Lower supporting rod		No.	4				
11	Upper supporting rod		No.	4				
12	Shunting wires (Each Type)		No.	10				
13	Inter locking key box and mechanism		Set	4				
14	Aluminium Horn (Each Type)		Set	2				
15	Lower arm end stop		No	6				
16	Upper arm end stop		No	6				
17	Collector head end stop		No	6				
18	ADD valve assembly		No	6				
19	Auxiliary Compressor		No	5				
11	**Vacuum Circuit Breaker**							
1	Control box including auxiliary contact, pressure regulator etc.		Nos.	4				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
2	VCB pressure regulator		Nos	10				
12	**Coupler**							
1	Proximity Sensor (each type)		Set	2				
2	Set of Pneumatic hoses		Set	2				
3	Set of electrical jumpers with connectors		Set	2				
4	MR and BP Valve (Each Type) and its gaskets (each type)		No's	4				
5	Semi-permanent coupler supporting plate with hardware		Nos	8				
6	Spring each type		Nos	2				
7	Muff coupler fixing hardware		Set	2				
13	**Bogie**							
1	Set of hydraulic dampers (each type)		Set	2				
2	Reaction rod / traction links / axle box links/anti-roll bar/safety rope etc.		Set	1				
3	Complete WFL Control Unit with cable connectors, piping, hoses and pins		Set	2				
4	Levelling rod		No	4				
5	WFL nozzle		No	20				
6	WFL hoses		Set	2				
7	WFL electromagnetic valves		Set	2				
8	WFL oil pump		No	4				
9	WFL distributor valve		No.	4				
10	Backstop both side		No.	8				
11	Earth cable bogie (Each type)		Set	1				
12	Temperature Sensor (Traction Motor)		No	4				
13	PG sensor (Traction Motor)		No	4				
14	Heat detector (Traction Motor Terminal Box)		No	4				
14	**Electrical/Lighting system**							

Attachment-4
(Corrigendum-2)

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
1	Set of luminaires – Saloon Light, Grab pole light , Flasher light, console light, Cab light and gangway light etc.		Set	1				
2	Set of DC-DC converter (Each Type)		Set	1				
3	Saloon light inverter / choke (Each Type)		Set	1				
4	Cab light invertor/ choke (Each Type)		Set	1				
5	Connectors, pins (Male and female), terminal block, pin removal tool and crimping tool (Each Type) (Bidder to specify)		Set	2				
6	Set of MCBs all type (Each type)		Set	2				
7	Automatic power controller sensor, Dimming Controller (each type)		No.	4				
8	Set of housing – Saloon Light, Grab pole light, Flasher light, console light, Cab light and gangway light etc. (Each Type)		Set	1				
9.	Head Light (Complete Unit)		Set	2				
10.	Tail Light (Complete Unit)		Set	2				
11.	Marker Light (Complete Unit)		Set	2				
12.	Flasher Light (Complete Unit)		Set	2				
13.	Cab Light		No	4				
14.	Saloon door state indication lamp internal		No	10				
15.	Battery temperature sensor		No	5				
16.	Battery Fuse		No	5				
17.	Battery Braker		No	2				
18.	Battery Voltage Sensor		No	2				
19.	Set of Battery Box Diode		Set	2				
20.	Safety Key Box		No	2				
21.	Diode box assembly		No	1				
22.	Mobile/laptop charging power socket		Set	2				
23.	Earthing ground switch		Nos	4				
24.	Current Transformer		No.	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
25.	Potential Transformer		No.	2				
15	**Wiper System**							
1.	Complete Wiper Assembly Set (Including Motor, Switch, Connecting rods, Tank)		Set	4				
2.	Wiper motor		No.	6				
3.	Wiper Pump		No.	20				
4.	Wiper Sélecter switch		No	10				
5.	Wiper Tank		Set	2				
6.	Wiper operating mechanism (including connecting rod, hardware, crank, water pipe, etc.)		Set	2				
7.	Wiper DC-DC convertor (Each Type)		No.	4				
8.	Wiper Nozzle (Each Type)		No.	20				
16	**Miscellaneous Items**							
1	Set of all hardware – mounting, bolts, washers etc. for converter / inverter		Set	2				
2	Set of all hardware – mounting, bolts, washers etc. for auxiliary ~~converter~~ power supply		Set	2				
3	Set of all hardware – mounting, bolts, washers, pads, etc. for pneumatic compressor		Set	2				
4	Set of all hardware – mounting, bolts, washers etc. for transformer		Set	2				
5	Set of all hardware – mounting, bolts, washers etc. for Air reservoirs		Set	2				
6	Set of all hardware – mounting, bolts, washers etc. for valve boxes		Set	2				
7	Set of all hardware – mounting, bolts, washers etc. for Door		Set	2				
8	Set of all hardware – mounting, bolts, washers etc. for Air conditioning unit		Set	4				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
9	Set of all hardware – mounting, bolts, washers etc. for Traction Motor		Set	4				
10	Set of all connectors with pins of Make A, B, ... (Bidder to specify)		Set	1				
11	Set of all relays of Make A, B, ... (Bidder to specify)		Set	1				
12	Set of all push buttons of Make A, B, ... (Bidder to specify)		Set	1				
13	Set of all contactors of Make A, B, ... (Bidder to specify)		Set	1				
14	Set of all MCBs of Make A, B, ... (Bidder to specify)		Set	1				
15	Set of all indicators of Make A, B, ... (Bidder to specify)		Set	1				
16	Set of all fuses of Make A, B, ... (Bidder to specify)		Set	1				
17	Set of all type of Terminal blocks (Bidder to specify)		Set	1				
18	Set of All type of Diodes used in VCC (Bidder to specify)		Set	1				
19	Set of all type of resistors used in VCC (Bidder to specify)		Set	1				
20	Set of glasses of window (Each Type)		Set	3				
21	Set of glasses of door (cab, saloon and emergency)		Set	1				
22	Windshield glass		Set	10				
23	Draught screen including Glass & Fitting		Set	1				
24	Set of selector switches (Each Type) (Bidder to specify)		Set	2				
25	Set of Cable Glands (Each Type) (Bidder to specify)		Set	1				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
26	Set of Connectors (Each Type) (Bidder to specify)		Set	1				
27	Set of Connector crimping pins(male and female), pin removal tool		Set	1				
28	Set of all Push Button cover (Each Type) (Bidder to specify)		Set	2				
29	All type of car to car inter connections jumper câbles,		Set	2				
30	All type of car to car inter connections jumper cables pins, crimping tools and pin removal tools .		Set	1				
31	Pneumatic Test fitting adoptor for guage connection (each type)		Nos	8				
32	TO seats and assistant TO seats with complete mechanism in cab (Each Type)		Set	2				
33	TO seat footrest complete assembly		Set	2				
34	Sun Blind complete assembly		Set	2				
35	TO seat footrest spring and hardware (Each Type)		No.	10				
36	Sun blind assembly supporting components (Each Type)		No.	10				
37	TO seat different parts and hardwares (Each Type)		Set	1				
38	Sqaure key lock (Each Type)		No.	20				
39	Sqaure Keys (Each Type)		No.	40				
40	All type of hardwares used in primary spring along with tools (Each type)		No.	2				
41	Gangway components (Each type) (Bidder to specify)		Set	1				
42	All type of buzzer (Bidder to specify)		Set	2				
43	Center Pivot Bolt-washer		No.	12				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
44	Fire Extinguisher (Cab and saloon)		Set	2				
45	230v power socket (Each Type)		Set	2				
46	First Aid box		No.	8				
47	Grab Handle		Set	2				
48	All push Button Cover		Set	4				

**Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.
*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No', it means 'Numbers'.

Annexure GA3
Recommended Spares
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
…								
…								

Annexure GA4
Consumable Spares for a period up to expiry of Defect Liability Period
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
…								
…								

Annexure GA5
Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

(A) Mandatory special tools, jigs, fixtures, gauges, testing and diagnostic equipment

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
1.	Pantograph	Pantograph test bench equipped with contact pressure measuring system, raising & lowering times, alignment fixtures etc.		No.	2				
2.		Movable Trolley/stand with roller		No.	8				
3.		Panto lifting jig along with slings with hardware		No.	2				
4.	VCB	VCB test bench with handling trolley including jigs and fixtures		Set	2				
5.		VCB stand/trolley with roller		No.	4				
6.	Main transformer	BDV Kit		No.	0				
7.	Converter Inverter	Mounting / dismounting trolley & tools		No.	0				
8.	Traction Motor	Test bench complete with hardware / software. Assembly / disassembly tools		No.	2				
9.		Dust Blowing Kit `		No.	2				
10.		Fiber scope camera for Rotor hole inspection		No.	2				
11.		Traction Motor stand		No.	2				
12.	Auxiliary power supply with	Portable test unit & repair jigs with tools and Test Bench for post repair commissioning.		No.	0				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
13.	hardware / software	Mounting / dismounting trolley & tools		No.	2				
14.	Battery	Capacity measuring instrument of battery bank, charging and discharging equipment		No.	2				
15.		Insulated torque wrench		No.	2				
16.		Automatic Battery water topping up machine with pressure measuring device		No.	2				
17.		Battery Cell stand with roller		No.	2				
18.		Tool to measure the electrolyte level		No.	2				
19.		Battery cell lifting tool for removal		No.	2				
20.	Main Compressor, air supply unit, pneumatic & brakes	Compressor test bench & overhauling tools including air quality test facilities of complete system.		No.	2				
21.		Automatic Pneumatic valve test bench complete with brake electronics, Calibration		No.	2				
22.		Brake Calliper test bench		No.	2				
23.		Main compressor stand		No.	2				
24.		Main compressor trolley for mounting/dismounting in Inspection bay and repair bay. (Each)		No.	2				
25.		Pressure Regulator (0-10 Bar)		No	4				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
26.	Axle	Ultrasonic testing machine for UST of axles, go gauge / no go gauge for end screw		No.	1				
27.	PA/PIS & CCTV	Portable test unit, software for PIS/CCTV changes (application level)		No.	2				
28.	Air Conditioning equipment	Portable test unit and leakage detectors		No.	2				
29.		Lifting jig / tackles along with slings and hardwares		No.	2				
30.		Oil less refrigerated changing / reclaiming unit including vacuum pump, suction equipment, leakage detector etc.		No.	2				
31.		Pressure measuring gauges		No.	2				
32.		Equipment for duct cleaning		No.	2				
33.		Air conditioning unit stand		No.	2				
34.		Air condition unit handling trolley with roller		No.	2				
35.	Door	Portable test unit including drive control unit		No.	2				
36.		Alignment tool		No.	2				
37.		Special tools, pins, connectors, crimping tool, pin removal tool, Vaccum cup tool for door maintenance (Bidder to specify the list)		No.	2				
38.		Door leaf stand vertical with rollers		No.	2				
39.	Coupler	Profile/ Wear/alignment checking gauge		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
40.		Coupler Stand		No.	2				
41.		Assembly / disassembly tools / jig		No.	1				
42.	Bogie	Battery operated tools for Assembly / Disassembly of Bogie suspensions, WFL, bearings, Components including rubber items used in transmission & suspension, connecting rods, gear case with transmission arrangement mounted on wheel set etc.		No.	2				
43.		Jig along with slings for lifting bogie (Each Type)		No.	2				
44.	Wheel	Laser Profile checking gauge with memory and card to card compatibility, Measurement gauges for wheel, back to back, brake disc thickness, diameter of wheel, flange width, flange height, etc.		No.	2				
45.	Secondary suspension	Suspension lifting jig along with slings movable		No.	1				
46.		Secondary Suspension stand		No.	2				
47.	Gangway	Gangway lifting jig along with slings		No.	2				
48.		Gangway handling trolley with roller		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
49.	Master Controller	Assembly / disassembly tools with calibration and test facilities		No.	1				
50.	Programming & Diagnostic tools	Laptop, Interface boards / accessories / software and any other item required for meeting specification requirements, uploading/down loading & trouble shooting of propulsion, Door, HVAC, Brake, PAPIS, CI, APS, WFL, Event recorder, TCMS, etc.		No.	2				
51.		Door software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
52.		PAPIS software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
53.		HVAC software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
54.		Brake software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
55.		CI software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
56.		APS software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
57.		TCMS software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
58.		Event Recorder software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
59.		WFL software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
60.	TCMS	Ethernet Cable Analyzer		No	2				
61.	Brake system	Hygrometer (for measuring relative humidity)		No	2				
62.	Vehicle control circuit	Pin Crimping tools for All type connectors Pins (Male and Female) used in VCC (Each Type) (Bidder to specify)		No	2				
63.	Vehicle control circuit	Pin Removal tools for All type connectors Pins used in VCC (Each Type) (Bidder to specify)		No	2				
64.	Miscellaneous	All special Sealant Gun required for glass replacement		No	2				
65.		Sound level meter digital		No	2				
66.		Air flow meter digital		No	2				
67.		Lux level meter digital		No	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
68.		Laser temperature thermometer		No	2				
69.		Laser distance measuring device		No	2				
70.		Digital depth gauge		No	2				
71.		Pressure Gauge for Pneumatic testing along with QRC		No	2				
72.		Variable DC power supply 110-0 volt		No	2				
73.		Megger 500V - 5KV		No	2				
74.		Vibration meter		No	2				
75.		Bearing puller for HVAC motors		No	2				
76.	Supply, Installation, Testing and Commissioning of of Test & Repair facilities for all type of Printed Circuit Board.	i. Pro rack 128-128/4 system – 128 digital channels, Digital and Analog testing, Programmable power supply, Boundary scan software, Test Sequencer, IDTE Software, External Controller, Oscilloscope 2 channel 200Mhz, TPS and Test fixture set for PCBs. ii. Handheld digital Multimeter- 750 v dc, 1000 V ac, 600 Ohm to 60 MOhm, 600		Set	1				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
		Micro Amp to 20 A, 60 Hz to 10 Mhz iii. 3 D engineering Microscope- 2D/3D angel lens with 360 degree rotation 1:7 Zoom ratio, lens assembly, VGA/HDMI Monitor, camera and OSD. iv. EPROM Programmer with two type adapter- Vcc from 1.2 V to 5 V, file support up to 256 GB with OV and OC protection. v. EPROM Programmer with two type adapter- Vcc from 1.2 V to 5 V, file support up to 256 GB with OV and OC protection. vi. LCR meter tweezer type- with test frequency 100 Hz, 120 Hz, 1 Khz, 10 Khz, 100 khz, 100 ohms impedence, Test voltage 0.2 Vrms, 0.5 Vrms, 100kHz, Resistance-							

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
		20 mili ohm to 10 Mega ohm. vii. Complete work station model viii. D-soldering station through hole component. ix. 1 KVA ups with 30 Min back up x. ESD safe wrist wrap- Anti static xi. Shoe cover dispenser xii. ESD checker and neutralizer- +/- 1999 V, +/- 10% accuracy. xiii. ESD safe Trolley xiv. ESD safe chair with IEC 61340-5-1 or equivalent compactible. xv. ESD Rack- 1200 L X 600 W X 1800 H xvi. ESD work station- W-1500 X D 600 X H 1920 approx. xvii. ESD knee length coats- Polyster + carbon filament, with surface resistivity 105-107 Ohm/Sq.							

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)
		xviii. ESD PVC slip on made of polyurethane with person to ground resistance less than 36 Mega ohms. xix. Antistatic cloth gloves Coating solvent base, Foamed polyutherene, Nylon fabric. xx. ESD compatible brush with handle-130 mm dimension with bristle 15 h X 90 l X 20 W mm. xxi. 2 channel Mixed signal Oscilloscope – 300 MHz, 2 GSa/s. xxii. 60 MHz Dual Channel Function generator. xxiii. HV DC regulated Power Supply 230 V-150 v Dc, 0 to 30 A. xxiv. LCR Meter- 20Hz-300kHz xxv. DC electronics Load-600 W, 120 v, 120 A. xxvi. Conformal Coating Removal Machine Model Turbo Max CCR Part No. CCR-Max-CE							

Attachment-4
(Corrigendum-2)

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						Foreign Currency	Local Currency (INR)	Foreign Currency	Local Currency (INR)

**Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.

Annexure GA6
Intermediate Overhauling Spares for 1 train set of 3-car
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
…								
…								

A.1 Price Variation

A.1.1 The Contract Price, shall be adjusted for increase / decrease of the price of Steel, Aluminium and Copper as per the Price Adjustment Formula detailed below:

Price Adjustment for Coaches with Stainless Steel Car-body:

$$P_1 = P_0 * \left[0.7 + 0.1 * \frac{S_1}{S_0} + 0.05 * \frac{C_1}{C_0} + 0.03 * \frac{IA_1}{IA_0} + 0.12 * \frac{L_1}{L_0}\right] - P_0$$

Where:

P_1	Price Adjustment (increase / decrease) amount per car in respective currencies.
P_0	Contract value per car (in respective currencies) calculated by total value of the Contract Price Cost Centre B, C, & **G** less discount, if any, divided by 48 number of cars ordered (without considering the quantity variation). In case of acceptance of deviation(s), price quoted for withdrawal of deviation(s), conditions etc. shall not be included while computing P_0.
S	Stainless Steel Price Index as published by CRUspi
C	Price index of Copper per MT as published by LME in USD
L	Consumer Price Index for Industrial Workers (with Base2016=100), published in the bulletin Labour Bureau of India, as applicable to place/region of work for the month in which the Original Completion period gets over
IA	Wholesale Price index (simple average of below individual indices) for Non-IEEMA items as given below (with base 2011-12=100) as published in the RBI Bulletins for the period of work under consideration. Below Non-IEEMA Items shall be eligible for PVC subject to availability of indices in RBI Bulletin. a. Other Rubber Products b. Glass Products
Subscript '0' refers to indices as on 28 days prior to date of submission of Bid Subscript '1' refers to indices as on 120 days prior to date of shipment of last car of a trainset.	

Price Adjustment for Coaches with Aluminium Carbody:

$$P_1 = P_0 * \left[0.7 + 0.05 * \frac{A_1}{A_0} + 0.05 * \frac{S_1}{S_0} + 0.03 * \frac{IA_1}{IA_0} + 0.12 * \frac{L_1}{L_0} + 0.05 * \frac{C_1}{C_0}\right] - P_0$$

Where:

P_1	Price Adjustment (increase / decrease) amount per car in respective currencies.
P_0	Contract value per car (in respective currencies) calculated by total value of the Contract Price Cost Centre B, C, & G less discount, if any, divided by 48 number of cars ordered (without considering the quantity variation). In case of acceptance of deviation(s), price quoted for withdrawal of deviation(s),

	conditions etc. shall not be included while computing P_0.
A	Price index of Aluminium per MT as published by LME in USD.
S	Stainless Steel Price Index as published by CRUspi
C	Price index of Copper per MT as published by LME in USD
L	Consumer Price Index for Industrial Workers (with Base2016=100), published in the bulletin Labour Bureau of India, as applicable to place/region of work for the month in which the Original Completion period gets over
IA	Wholesale Price index (simple average of below individual indices) for Non-IEEMA items as given below (with base 2011-12=100) as published in the RBI Bulletins for the period of work under consideration. Below Non-IEEMA Items shall be eligible for PVC subject to availability of indices in RBI Bulletin. a. Other Rubber Products Glass Products
Subscript '0' refers to indices as on 28 days prior to date of submission of Bid Subscript '1' refers to indices as on 120 days prior to date of shipment of last car of a trainset.	

Note : The above PVC clauses shall not be applicable on Cost Center I (CAMC)

Attachment-06
Corrigendum-02

COST CENTRE No. A: Preliminaries & General Requirements and Design of Rolling Stock and Provision of Mock-ups

This Cost Centre comprises all those obligations and on-going activities throughout the Contract not associated directly with any other Cost Centre.

This includes but is not limited to:

- Submission of Project Management Plan;
- Submission of Interface Management Plan and Detailed Interface Documents;
- Submission of Works Programme;
- Submission of Design Submission Programme;
- Submission of Quality Assurance Plan;
- Submission of Safety Assurance plan and Site Safety Plan;
- Submission of Environmental Plan;
- Submission of Software Quality Assurance Plan;
- Submission of Inspection, Testing & Commissioning (including Integrated Testing & Commissioning) Plan;
- Liaison with other Designated Contractors during the design process;
- Submission of the Preliminary Design, the pre-Final Design (for 3 car train sets);
- Preparation of Mock-up for Rolling Stock;
- Submission of the Final Design Document (for 3 car train sets)
- Submission of "As-Built drawings";
- SHE and IT requirements
- Deployment of key personnel
- Work related to integration with available Maintenance Management information system
- Predictive and Condition based Monitoring (PCM)
- Cyber Security
- Any other item considered necessary to comply with the Scope of Work.

Note:

1. Refer Para B.5 for price apportionment at *Annexure IV A. Pricing Document*

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' in the Financial Package.

SIGNATURE OF BIDDER

COST CENTRE No. A: Preliminaries & General Requirements and Design of Rolling Stock and Provision of Mock-ups

Milesto-ne No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer for:			
A1	Project Management Plan			18
A2	Interface Management Plan and Detailed Interface Documents			18
A3	Works Programme including interface items			18
A4	Design Submission Programme			18
A5	Quality Assurance Plan			18
A6	System Safety Assurance Plan and Site Safety Plan			18
A7	Environmental Plan			18
A8	Software Quality Assurance Plan			18
A9	Inspection, Testing, and Commissioning and Integrated Testing and Commissioning Plan			18
A10	Preliminary Design Submission			18
A11	Updated Preliminary Design Submission incorporating Engineer's comments			24
A12	Pre-Final Design Submission including DLP & CAMC Plan			27
A13	Updated Pre-Final Design Submission incorporating Engineer's comments			35
A14	Digital Mock-up inspection			54
A15	Final Design Submission*			50
A16	Final Design Document Delivery			60

Milesto-ne No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
A17	"As-Built Drawings" delivery			156
A18	Deployment of SHE personnel as per SHE Manual. The payment shall be made on monthly basis starting from 3 months after the Commencement Date **Notes:** 1. 80% of the apportioned payment as per this Milestone shall be equally spread over 30 months (after initial 15 months) for the purpose of payment. 2. Remaining 20% payment shall be released on completion of work, subject to continued deployment of SHE personnel in the period beyond 45 months. 3. Any shortfall of deployment of SHE personnel from the numbers indicated in the SHE Manual will attract penalty at the rate of 3 times the prorate shortfall. For example, if the SHE Manual requires 17 staff and the deployment is 16 staff for a particular month, then [3*1/17=] 17.65% of the payment due for that month will be permanently deducted. Likewise, shortage of 2 staff will result in 35.3% lesser payment and so on. This penalty shall also apply to 20% final payment also on prorate manner.			
A19	IT requirements of MAHA-METRO (online project management platform, documentation management system, enterprise work program platform, 5D BIM modelling etc.) – Refer Para 4.2 under Employer's Requirements (General Specifications) for details. **Notes:** 1. 30% of the apportioned payment under this Milestone shall be released after Contractor put in place the necessary hardware, IT center and software licenses. This should be accomplished not later than 3 months from commencement date.			

Milesto-ne No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
	2. 50% of the apportioned payment under this Milestone shall be equally spread over a period from 4th month till scheduled completion time and deployment of requisite IT staff in full as per requirement. Shortfall of staff shall attract penalty in similar manner as for SHE staff as per A18 above. Balance 20% will be released on completion of work, subject to continued deployment of IT staff in the period beyond scheduled completion period.			
A20	Deployment of on-site(Nagpur) Key Personnel as per Section IV. Bidding Forms Item 4.1 (4) Staffing Schedule, viz. • Project Manager • Dy Project Manager • Interface Manager • Chief Maintenance Engineer • T&C commissioning engineer-in-charge • Maintenance Engineer • Safety Manager • Quality Assurance Manager Payment for this Milestone shall be made quarterly starting after 3 months from the Commencement Date. 80% of the apportioned amount shall be paid in this manner till Completion Date, while remaining 20% shall be paid (in similar manner) during DLP. Delayed mobilization of the staff compared with agreed deployment schedule will attract penalties @Rs 20,000/- for each day of delay for any of the above staff. This penalty shall be twice of this rate (i.e. Rs 40,000/- for each day of delayed deployment) in case of Project Manager and Interface Manager.			08
A 21	Deleted			

Milesto-ne No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
A22	Work related to integration with available Maintenance Management information system: 1. 50% of the apportioned payment will be paid after successful implemetation & satisfactory integration with existing Maintenance Management information system with 70% of the train sets (11 trainsets). 2. 30% of the opportioned payment will be paid after successful completion of the integration with existing Maintenance Management information system with remaining 30% of the train sets (5 train sets). 3. Balance 20% will be released on completion of DLP of last train set.			
A23	Cost related to Predictive and Condition based Monitoring (PCM): 1. 20% of the apportioned payment under this Milestone shall be released after Contractor put in place the necessary hardware, software and their licenses. This should be accomplished not later than 3 months from the delivery of prototype train. 2. 50% of the apportioned payment under this Milestone shall be paid after successful implementation & satisfactory commissioning of PCM in all train sets. 3.Balance 30% will be released on completion of DLP of last train set.			
A24	Cyber Security: Cybersecurity plan shall be provided during design stage for Maha-Metro approval. 1. 50% of the apportioned payment will be paid after successful implementation & satisfactory			

Milesto-ne No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	commissioning of cyber security system in 70% of the train sets (11 trainsets). 2. 50% of the apportioned payment will be paid after successful completion of the cyber security system in remaining 30% of the train sets (5 train sets).			
A25	Any other item considered necessary by the contractor to comply with the Scope of Work			
	COST CENTRE TOTAL			

Note:

1. Refer Para B.5 for price apportionment at *Annexure IV A. Pricing Document*

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' in the Financial Package.

SIGNATURE OF BIDDER

COST CENTRE No. H: Training and Manuals

This Cost Centre comprises:

1. All those obligations and activities throughout the Contract associated with training of operating and maintenance personnel
   This includes but is not limited to:
   - Deputation of Instructors by the Contractors for training of operating and maintenance personnel of the Employer in India.
   - Training of operating and maintenance personnel of the Employer at the Contractor's facilities off-shore.
   - Furnishing of Training Manual and connected Materials.
   - Any other item considered necessary for the Contractor to comply with the Scope of Works.

   Notes:

   a. The Bidder shall not complete the column "Weeks for completion of Milestone from commencement date" for above activities.
   b. The dates of operation of the Milestone Activities will be at the discretion of the Employer.
   c. The monthly cash flow to be worked out will exclude the amount of this cost center H though these cost center shall be included in the bid total.
   d. The travel, boarding and lodging expenses for the Employer's trainees sent overseas will be borne by the Employer.

2. All those obligations and activities throughout the Contract associated with the provision of Manuals. This includes but is not limited to:
   - Provision of Operating Manuals (Hard copies and in Electronic format).
   - Provision of Maintenance Manuals (Hard copies and in Electronic format).
   - Provision of Spare parts Catalogue (Hard copies and in Electronic format).
   - Any other item considered necessary by the Contractor to comply with the Scope of Works.

   N**otes:**

a. Amount quoted in this Cost Centre shall be the actual cost and not the apportioned cost.
b. It is certified that 'Annexure-1' annexed in Technical Package is a "True Copy" (with prices blanked off) of the said 'Annexure-1' in the Financial Package.

COST CENTRE NO. H: Training and Manuals

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer for the completion of all training including delivery of final training manuals for the following:			
H1	Training of Employer's Driving Instructors and Drivers (4 man months) in operation of MRTS off-shore.			
H2	Training of Employer's maintenance personnel (20 man months) in Contractor's / Sub Contractor's Works and MRTS offshore.			
H3	Provision of Contractor's Driving Instructors (2 man months) for Training of Employer's operating personnel in India.			
H4	*Provision of Contractor's Instructors or OEM's Experts (24 man months) for on job Training and supervision of Employer's maintenance personnel in the in India.			
H5	Submission of Training manuals (Original plus five hard copies) and in Electronic format.			
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to___" from the Engineer on delivery of the following final Manuals**:			
H6	Operating Manual (Original plus 6 Hard copies).			74

H7	Operating Manual in Electronic format (interactive version)			74
H8	Maintenance Manual (Original plus 6 hard copies).			86
H9	Maintenance Manual in Electronic format (interactive version)			86
H10	Spare parts Catalogue (Original plus 6 Hard copies).			120
H11	Spare parts Catalogue in Electronic format			120
	Obtain the “Notice of No Objection” or “Notice of No Objection Subject to----- “ from the Engineer for completion of the following:			
H12	Any other item considered necessary by the Contractor to comply with the scope of works			
	COST CENTRE TOTAL			

COST CENTRE No. B: Offshore Manufacture

This Cost Centre comprises all those obligations and on-going activities throughout the Contract not associated directly with any other Cost Centre. This includes but is not limited to:

- Selection of suppliers for major system and sub-systems for trains;
- Completion of all routine and type testing of equipment;
- Completion of Main Tooling for manufacture;
- Completion of all Factory Acceptance Tests;
- Completion of test running in factory;
- Completion of manufacture, testing, running etc. and inspection / clearance of first prototype train by the Engineer and shipping to port in India.
- Completion of the shipment to port in India;
- Provision of Marine and Transit Insurance from off-shore Factory to Depot Site in Nagpur
- Completion of manufacture, testing, running and inspection, shipping to port in India of balance trains.
-

COST CENTRE No. B: Offshore Manufacture

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Issue of Inspection Certificate on satisfactory completion of all Factory Tests including running test in factory - Receipt of train at maha metro depot - Documents for shipment to Indian Port as applicable. - Marine/Transit insurance from manufacturing plant to depot site in nagpur for:			
B1	First 3-car train (prototype)			78
B2	Obtain as above for 2nd 3-car train			92
B3	Obtain as above for 3rd 3-car train			92
B4	Obtain as above for 4th 3-car train			106
B5	Obtain as above for 5th 3-car train			106
B6	Obtain as above for 6th 3-car train			106
B7	Obtain as above for 7th 3-car train			106
B8	Obtain as above for 8th 3-car train			106
B9	Obtain as above for 9th 3-car train			118
B10	Obtain as above for 10th 3-car train			118
B11	Obtain as above for 11th 3-car train			118
B12	Obtain as above for 12th 3-car train			118
B13	Obtain as above for 13th 3-car train			118
B14	Obtain as above for 14th 3-car train			132
B15	Obtain as above for 15th 3-car train			132
B16	Obtain as above for 16th 3-car train			132
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to the cost centre.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to insure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

Attachment-09
Corrigendum-02

COST CENTRE No. C: Indigenous Manufacture

This Cost Centre comprises all those obligations and on-going activities throughout the Contract not associated directly with any other Cost Centre.

This includes but is not limited to:

- Selection of suppliers for major system and sub-systems for trains;
- Completion of all routine and type testing of equipment;
- Completion of Main Tooling for manufacture;
- Completion of all Factory Acceptance Tests;
- Completion of test running in factory;
- Completion of manufacture, testing, running etc. and inspection / clearance by the Engineer
- Provision of Insurance, dispatch, transit insurance ex-Factory to Depot Site in Nagpur.

COST CENTRE No. C: Indigenous Manufacture

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Issue of Inspection / Clearance Certificate on satisfactory completion of all Factory Tests including running test in factory. - Document for shipment to Indian port as applicable. - Marine/ Transit insurance from manufacturing plant to depot site in nagpur for:			
C1	First 3-car train (prototype)			78
C2	Obtain as above for 2nd 3-car train			92
C3	Obtain as above for 3rd 3-car train			92
C4	Obtain as above for 4th 3-car train			106
C5	Obtain as above for 5th 3-car train			106
C6	Obtain as above for 6th 3-car train			106
C7	Obtain as above for 7th 3-car train			106
C8	Obtain as above for 8th 3-car train			106
C9	Obtain as above for 9th 3-car train			118
C10	Obtain as above for 10th 3-car train			118
C11	Obtain as above for 11th 3-car train			118
C12	Obtain as above for 12th 3-car train			118
C13	Obtain as above for 13th 3-car train			118
C14	Obtain as above for 14th 3-car train			132
C15	Obtain as above for 15th 3-car train			132
C16	Obtain as above for 16th 3-car train			132
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to this cost centre.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to ensure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

EAST- WEST METRO CORRIDOR

SHEET NO. 01

PRAJAPATI NAGAR

LOKMANYA NAGAR

PRAJAPATI NAGAR
CH: (-) 0/116.97

METRO ALIGNMENT CROSSING THE PROPOSED NHAI FLYOVER
CHAINAGE (-)0/496 TO CH 0/450
PROPOSED NHAI FLYOVER ROAD TOP LEVEL = 10.5M
DIFF. BETWEEN Ex. GL TO METRO RAIL LEVEL = ~21M

SCISSOR CROSS OVER

Level Datum =285.000

Vertical	
Horizontal	
LEVEL DIFF	21.265 21.715 21.027 20.791 21.235 20.704 21.016 21.170 21.090 20.916 21.071 21.323 21.425 21.612 21.867 21.552 21.466 21.018 20.794 20.346 19.643 19.705 19.299 19.123 19.256 19.662 20.144 20.569 20.808 20.814 20.787 20.644 20.707
RAIL LEVELS	308.000 308.000
GROUND LEVELS	287.112 286.735 287.285 286.973 287.210 286.766 287.297 286.984 286.831 286.910 287.084 286.930 286.678 286.566 286.388 286.114 286.448 286.534 286.982 287.207 287.625 288.357 288.294 288.711 288.877 288.744 288.339 287.857 287.432 287.192 287.187 287.213 287.257 287.293
Chainage	-500.000 -475.000 -450.000 -425.000 -400.000 -375.000 -350.000 -325.000 -300.000 -275.000 -250.000 -225.000 -200.000 -175.000 -150.000 -125.000 -100.000 -75.000 -50.000 -25.000 0.000 25.000 50.000 75.000 100.000 125.000 150.000 175.000 200.000 225.000 250.000 275.000 300.000 325.000

Notes:-
1) Station areas are tentative & provided for information only.
2) The L-Section (except in Prajapati Nagar Station) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to achieve minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
3) The plans of proposed NHAI flyover mentioned in the drawings are based on the drawings as received from NMRCL.
4) The Rail levels have been decided based on the DTM generated from the survey data supplied by NMRCL. However, it is suggested to validate the ground levels by conducting the Final Location survey at every 25m intervals to get the better accuracy.
5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR

CONSULTANT

CLIENT

TITLE

NAGPUR METRO RAIL CORP. LTD.

ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

DRG. NO.	संशोधन/REV	पैमाना/SCALE	DATE
RITES/JT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2015

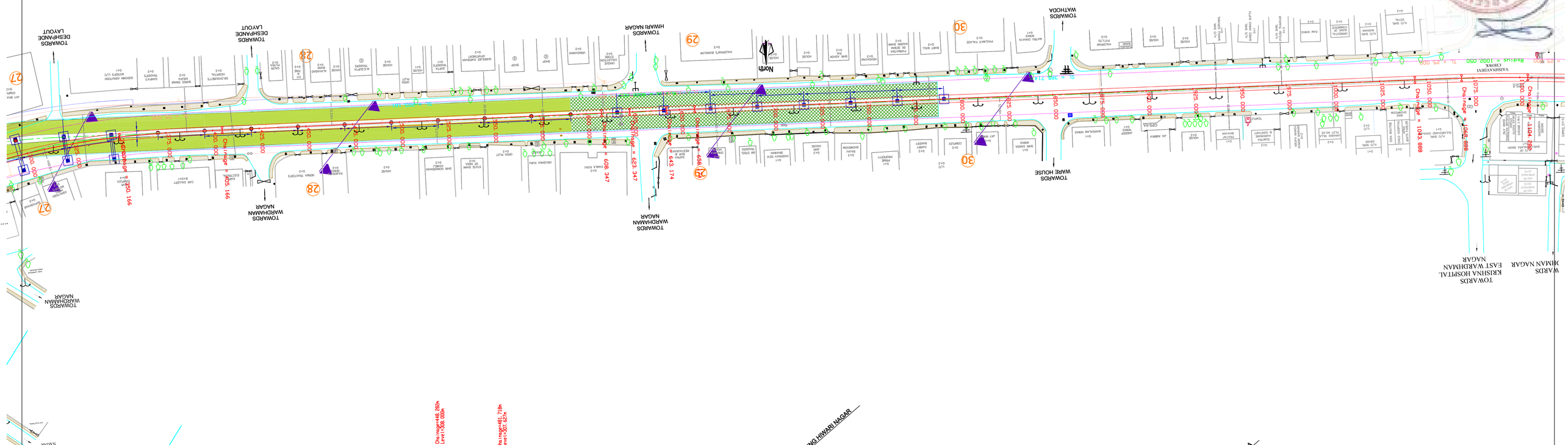
Attachment-10
Corrigendum-2

SHEET NO. 02

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR

LOKMANYA NAGAR



CURVE NO.	10
CHAINAGE	547+224.130m
RADIUS	1200m
HAND OF CURVE	LEFT
START OF CURVE	547+192.928m
END OF CURVE	547+255.318m
CURVE LENGTH	62.390m
TRANSITION LENGTH	NR
DESIGN SPEED	80KMPH

CURVE NO.	11
CHAINAGE	547+314.157m
RADIUS	1200m
HAND OF CURVE	RIGHT
START OF CURVE	547+296.081m
END OF CURVE	547+332.231m
CURVE LENGTH	36.150m
TRANSITION LENGTH	NR
DESIGN SPEED	80KMPH

CURVE NO.	12
CHAINAGE	547+919.867m
RADIUS	800m
HAND OF CURVE	RIGHT
START OF CURVE	547+853.672m
END OF CURVE	547+885.761m
CURVE LENGTH	132.089m
TRANSITION LENGTH	35m
DESIGN SPEED	80KMPH

Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
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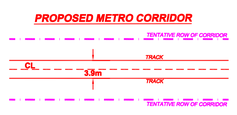
5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR



CONSULTANT	CLIENT	NAGPUR METRO RAIL CORP. LTD.		
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION		
	DRG. NO. RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	संशोधन/REV. R-0	पैमाना/SCALE 1:1000	DATE 16.08.2016

SHEET NO. 03

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR
02

LOKMANYA NAGAR

TOWARDS MAHAL

TOWARDS VAISHNAVI NAGAR

VAISHNO DEVI CHOWK
CH: 1231.21m

TOWARDS HIWARI NAGAR

TOWARDS BABULBAN

TOWARDS SATVANI NAGAR

TOWARDS V.M.V. COLLEGE

TOWARDS SMALL FACTORY AREA

TOWARDS OLD BHANDARA ROAD WARDHAMAN NAGAR

TOWARDS WARDHMAN NAGAR

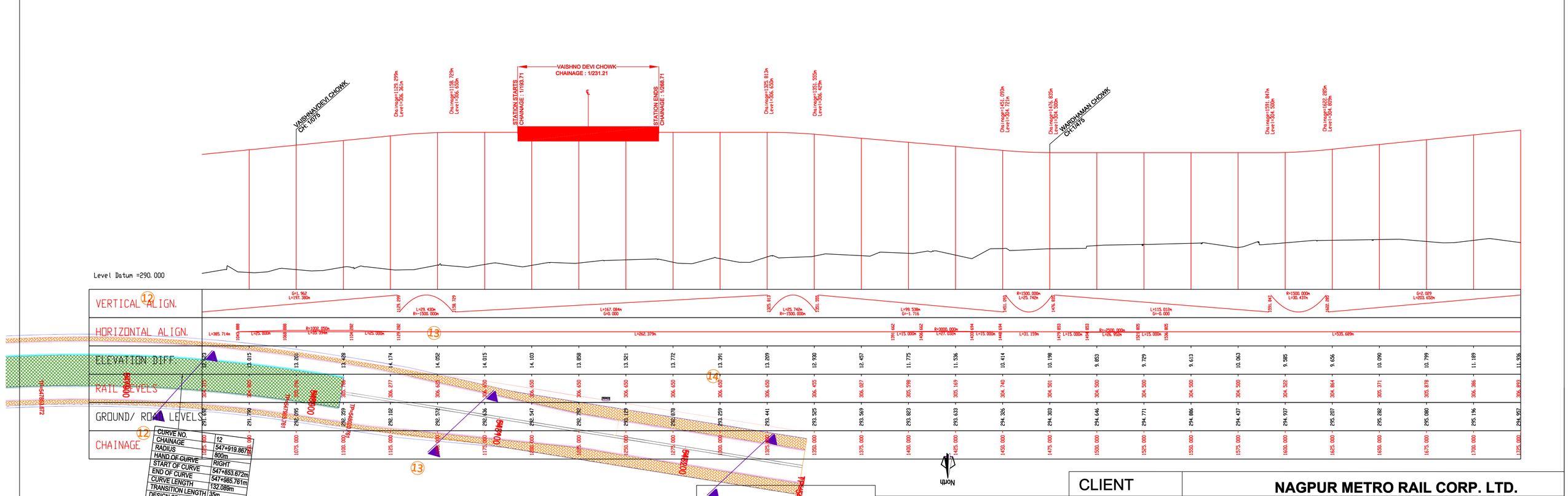
TOWARDS WARDHMAN NAGAR

TOWARDS WARDHMAN NAGAR

TOWARDS KRISHNA HOSPITAL EAST WARDHMAN NAGAR

PLAY GROUND OF SHREYAS VIDHYALAYA

PROPOSED CONST OF SHRI RAMNA AGRAWAL



Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
3) The plans of proposed NHAI flyover mentioned in the drawings are based on the drawings as received from NMRCL.
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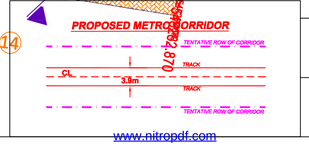
5) *The GAD is based on the survey data supplied by NMRCL.*



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CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	**NAGPUR METRO RAIL CORP. LTD.**
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

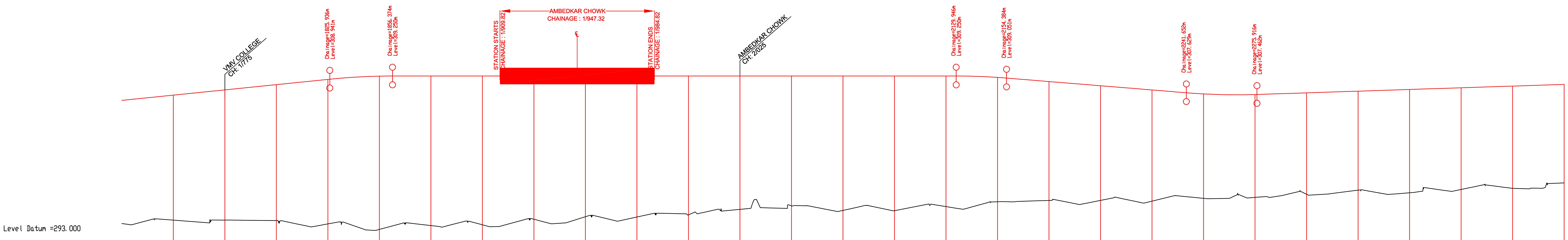
DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

Attachment-10
Corrigendum-2

03

EAST- WEST METRO CORRIDOR

SHEET NO. 04



VERTICAL ALIGN.: G=2.029 L=203.652m; 1825.936; L=30.437m R=-1500.000m; 1856.374; G=0.000 L=273.572m; 2129.946; L=24.439m R=-1500.000m; 2154.384; L=87.268m G=-1.629; 2241.652; R=1500.000m L=34.264m; 2275.916; G=0.655 L=308.728m

HORIZONTAL ALIGN.: L=535.689m; 2072.494; L; 2082.494; R=-9202.050m L=26.428m; 2108.922; L; 2118.922; L=53.111m; 2172.032; L=15.000m; 2187.032; R=7200.050m L=34.302m; 2221.335; L=15.000m; 2236.335; L=1020.832m

CHAINAGE	1725.000	1750.000	1775.000	1800.000	1825.000	1850.000	1875.000	1900.000	1925.000	1950.000	1975.000	2000.000	2025.000	2050.000	2075.000
ELEVATION DIFF.	11.936	12.112	12.621	13.169	14.000	14.848	14.487	14.412	13.874	13.632	13.657	13.455	12.920	12.579	13.017
RAIL LEVELS	306.893	307.400	307.908	308.415	308.922	309.236	309.250	309.250	309.250	309.250	309.250	309.250	309.250	309.250	309.250
GROUND/ ROAD LEVELS	294.957	295.289	295.286	295.246	294.922	294.388	294.763	294.839	295.377	295.618	295.593	295.795	296.330	296.671	296.233

CHAINAGE	2100.000	2125.000	2150.000	2175.000	2200.000	2225.000	2250.000	2275.000	2300.000	2325.000	2350.000	2375.000	2400.000	2425.000
ELEVATION DIFF.	13.046	12.648	12.043	11.519	11.107	10.771	10.115	9.964	9.826	9.590	10.008	9.851	9.900	9.542
RAIL LEVELS	309.250	309.250	309.116	308.715	308.308	307.900	307.516	307.457	307.620	307.784	307.947	308.111	308.275	308.439
GROUND/ ROAD LEVELS	296.204	296.603	297.072	297.196	297.201	297.129	297.401	297.492	297.794	298.193	297.940	298.261	298.375	298.897

Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
3) The plans of proposed NHAI flyover mentioned in the drawings are based on the drawings as received from NMRCL.
4) The Rail levels have been decided based on the DTM generated from the survey data supplied by NMRCL. However, it is suggested to validate the ground levels by conducting the Final Location survey at every 25m intervals to get the better accuracy.
5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR

TENTATIVE ROW OF CORRIDOR
TRACK
CL
3.3m
TRACK
TENTATIVE ROW OF CORRIDOR

CLIENT	**NAGPUR METRO RAIL CORP. LTD.**
CONSULTANT	
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

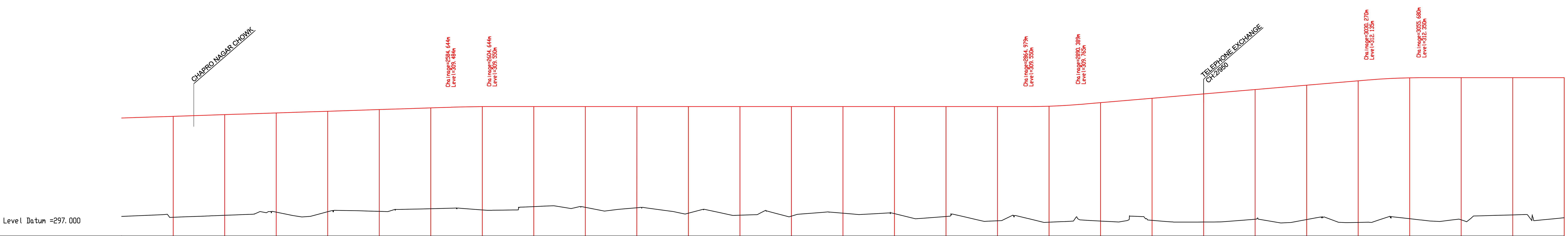
Attachment-10
Corrigendum-2

04

SHEET NO. 05

EAST- WEST METRO CORRIDOR

← PRAJAPATI NAGAR — LOKMANYA NAGAR



VERTICAL ALIGN.: G=0.655, L=308.728m; 2584.644 – 2604.644: L=20.000m, R=-3053.273m; G=0.000, L=260.335m; 2864.979 – 2890.389: R=1500.000m, L=25.410m; G=1.694, L=139.881m; 3030.270 – 3055.680: L=25.410m, R=-1500.000m; G=0.000, L=179.435m

HORIZONTAL ALIGN.: L=1020.832m

CHAINAGE	ELEVATION DIFF.	RAIL LEVELS	GROUND/ ROAD LEVELS
2425.000	9.542	308.439	298.897
2450.000	9.789	308.603	298.813
2475.000	9.761	308.766	299.005
2500.000	9.619	308.930	299.312
2525.000	9.741	309.094	299.353
2550.000	9.873	309.258	299.385
2575.000	9.776	309.421	299.645
2600.000	10.022	309.546	299.524
2625.000	9.701	309.550	299.850
2650.000	9.771	309.550	299.779
2675.000	9.812	309.550	299.738
2700.000	10.341	309.550	299.209
2725.000	10.537	309.550	299.013
2750.000	10.629	309.550	298.922
2775.000	10.341	309.550	299.210
2800.000	10.383	309.550	299.167
2825.000	10.661	309.550	298.890
2850.000	11.079	309.550	298.471
2875.000	11.247	309.583	298.336
2900.000	11.482	309.928	298.447
2925.000	11.831	310.352	298.521
2950.000	12.420	310.775	298.355
2975.000	12.571	311.199	298.627
3000.000	13.030	311.622	298.592
3025.000	13.727	312.046	298.319
3050.000	13.663	312.339	298.676
3075.000	13.785	312.350	298.566
3100.000	13.304	312.350	299.046
3125.000	13.580	312.350	298.771

Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
3) The plans of proposed NHAI flyover mentioned in the drawings are based on the drawings as received from NMRCL.
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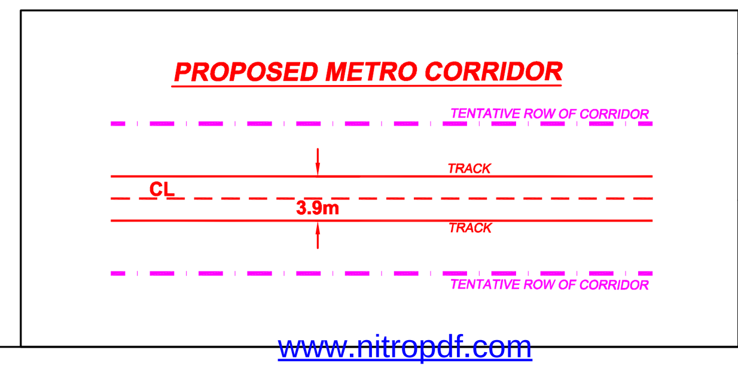
5) *The GAD is based on the survey data supplied by NMRCL.*



CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	TITLE: ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

SHEET NO.-08

EAST- WEST METRO CORRIDOR

Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
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5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR
TENTATIVE ROW OF CORRIDOR
TRACK
CL
3.9m
TRACK
TENTATIVE ROW OF CORRIDOR

CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT / TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

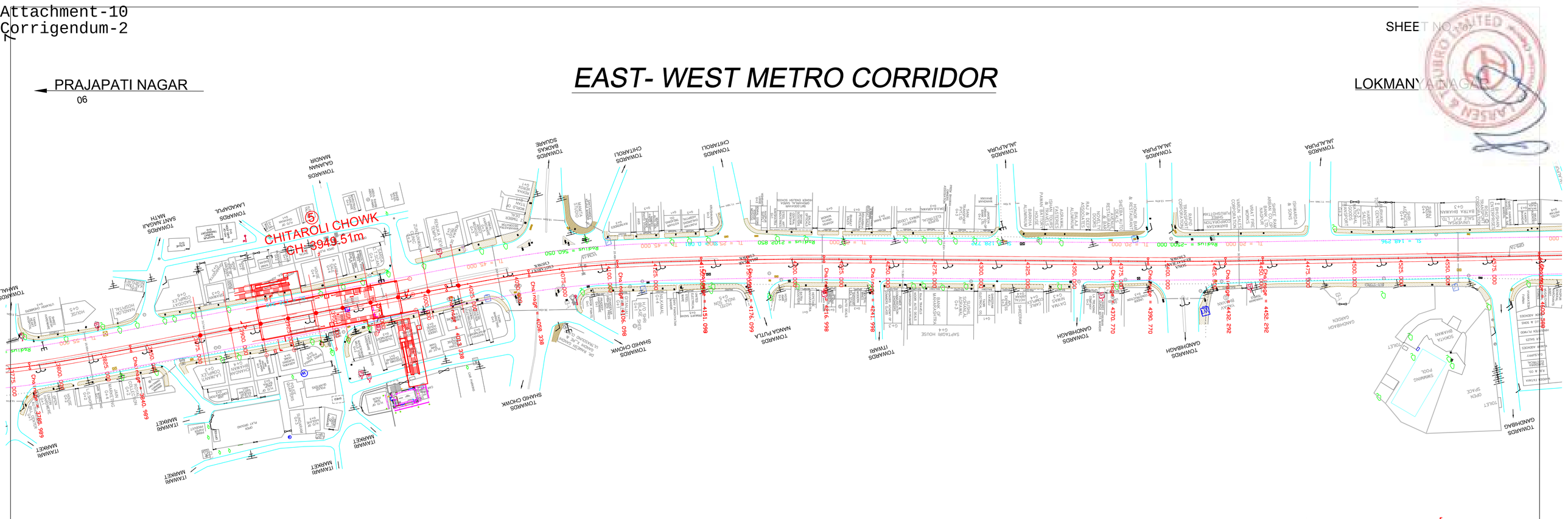
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

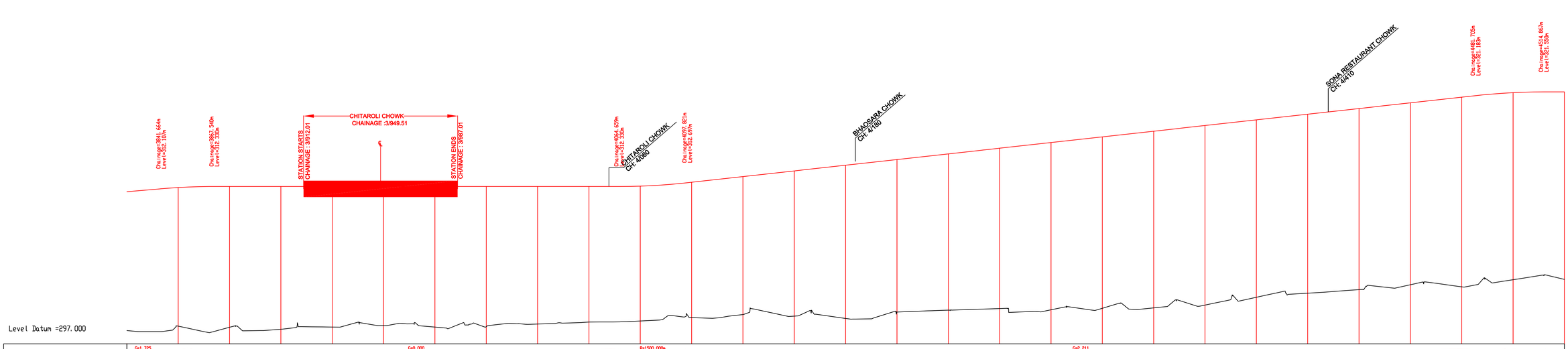
DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR
06

LOKMANYA NAGAR

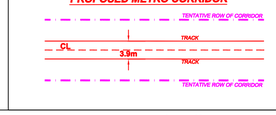




VERTICAL ALIGN.	G=1.725 L=57.125m; 3841.664; L=25.875m R=-1500.000m; 3867.540; G=0.000 L=197.120m; 4064.659; R=1500.000m L=33.162m; 4097.821; G=2.211 L=383.884m; 4480.705; L=33.162m R=-1500.000m; 4514.867
HORIZONTAL ALIGN.	3841.664; L=55.000m; L=172.349m; 4013.338; L=45.000m; 4058.338; R=560.000m L=117.782m; 4176.099; L=45.000m; 4221.099; L=25.000m; 4246.099; R=2100.850m L=42.899m; 4288.998; L=25.000m; 4241.998; L=128.772m; 4370.770; L=25.000m; 4394.770; R=-2500.000m L=41.521m; 4436.292; L=25.000m; 4462.292; L=148.296m
ELEVATION DIFF.	13.305, 13.506, 13.721, 13.913, 13.696, 13.554, 13.700, 13.634, 13.402, 13.265, 13.143, 13.190, 13.446, 14.153, 14.929, 14.857, 15.227, 15.623, 16.299, 16.704, 17.215, 17.494, 17.290, 17.445, 17.650, 17.723, 18.479, 18.229, 18.268
RAIL LEVELS	311.819, 312.227, 312.330, 312.330, 312.330, 312.330, 312.330, 312.330, 312.330, 312.330, 312.366, 312.745, 313.297, 313.850, 314.403, 314.956, 315.508, 316.061, 316.614, 317.166, 317.719, 318.272, 318.824, 319.377, 319.930, 320.482, 321.035, 321.476, 321.550
GROUND/ ROAD LEVELS	298.294, 298.721, 298.610, 298.418, 298.635, 298.776, 298.631, 298.676, 298.928, 299.126, 299.223, 299.505, 299.851, 299.698, 299.473, 300.098, 300.281, 300.407, 300.314, 300.462, 300.505, 300.778, 301.534, 301.933, 302.279, 302.760, 302.566, 303.247, 303.283
CHAINAGE	3825.000, 3850.000, 3875.000, 3900.000, 3925.000, 3950.000, 3975.000, 4000.000, 4025.000, 4050.000, 4075.000, 4100.000, 4125.000, 4150.000, 4175.000, 4200.000, 4225.000, 4250.000, 4275.000, 4300.000, 4325.000, 4350.000, 4375.000, 4400.000, 4425.000, 4450.000, 4475.000, 4500.000, 4525.000

Notes:-
1) Station areas are tentatively marked for information only.
2) The L-Section (except in proposed Flyover section) has been planned with rail level at minimum 9.5m and 13.5m height at viaducts and stations respectively above the existing road level to ensure minimum 5.5m vertical clearance over the existing road level. This rail level above the existing road level may change depending on the thickness of girder to be decided by executing agency/DDC with the approval of NMRCL.
3) The plans of proposed NHAI flyover mentioned in the drawings are based on the drawings as received from NMRCL.
4) The Rail levels have been decided based on the DTM generated from the survey data supplied by NMRCL. However, it is suggested to validate the ground levels by conducting the Final Location survey at every 25m intervals to get the better accuracy.
5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR



CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

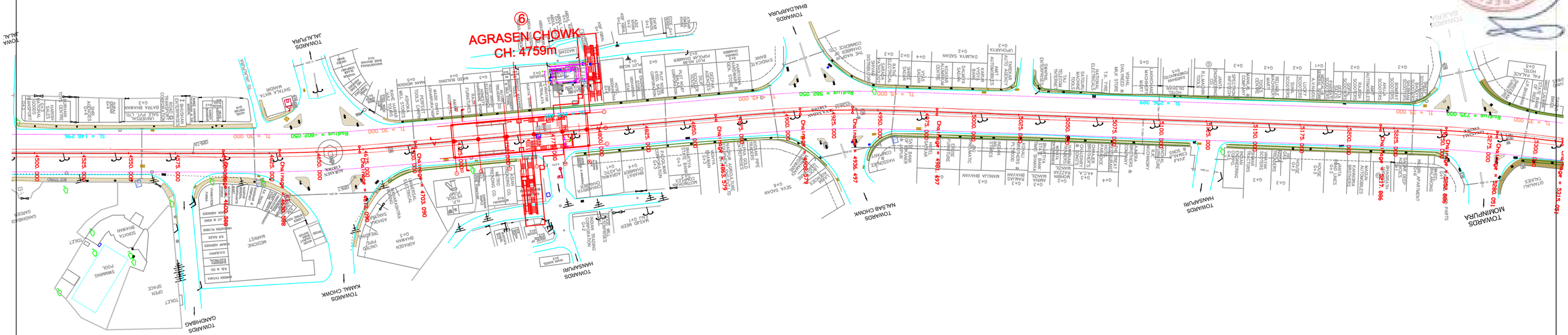
DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

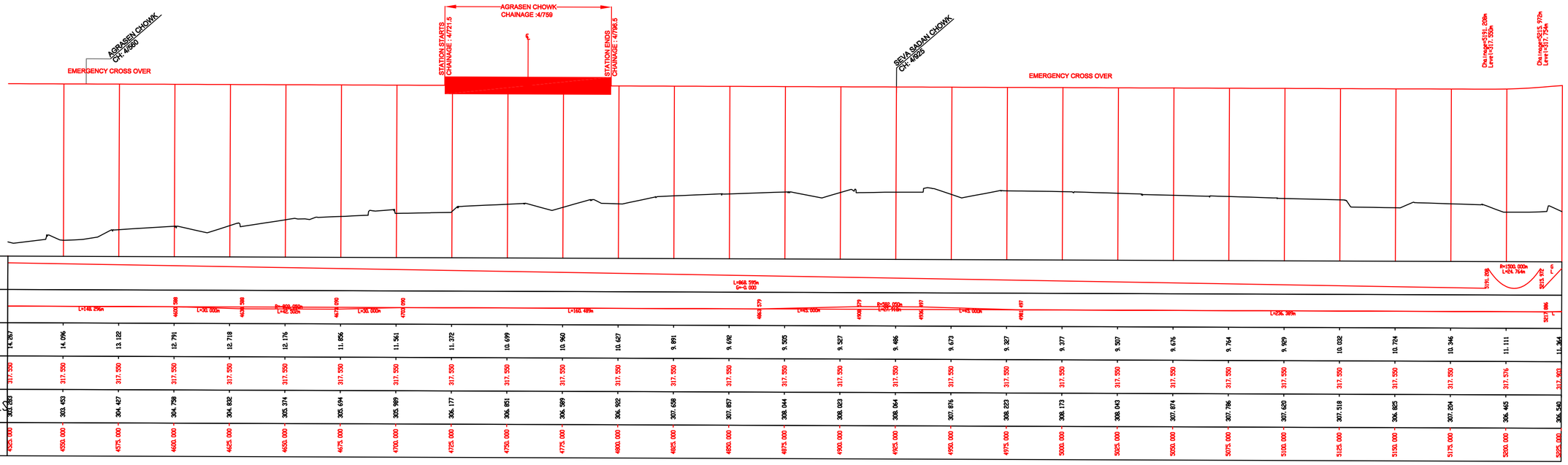
SHEET NO. 08

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR

LOKMANYA NAGAR





CHAINAGE	ELEVATION DIFF.	RAIL LEVELS	GROUND/ ROAD LEVELS
4525.000	14.267	317.550	303.283
4550.000	14.096	317.550	303.453
4575.000	13.122	317.550	304.427
4600.000	12.791	317.550	304.759
4625.000	12.718	317.550	304.832
4650.000	12.176	317.550	305.374
4675.000	11.856	317.550	305.694
4700.000	11.561	317.550	305.989
4725.000	11.372	317.550	306.177
4750.000	10.699	317.550	306.851
4775.000	10.960	317.550	306.589
4800.000	10.627	317.550	306.922
4825.000	9.891	317.550	307.658
4850.000	9.692	317.550	307.857
4875.000	9.505	317.550	308.044
4900.000	9.527	317.550	308.023
4925.000	9.486	317.550	308.064
4950.000	9.673	317.550	307.876
4975.000	9.327	317.550	308.223
5000.000	9.377	317.550	308.173
5025.000	9.507	317.550	308.043
5050.000	9.676	317.550	307.874
5075.000	9.764	317.550	307.786
5100.000	9.929	317.550	307.620
5125.000	10.032	317.550	307.518
5150.000	10.724	317.550	306.825
5175.000	10.346	317.550	307.204
5200.000	11.111	317.576	306.465
5225.000	11.364	317.593	306.540

Notes:-
1) Station areas are tentatively marked for information only.
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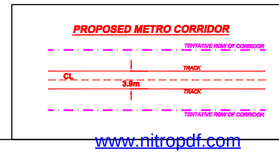


CONSULTANT

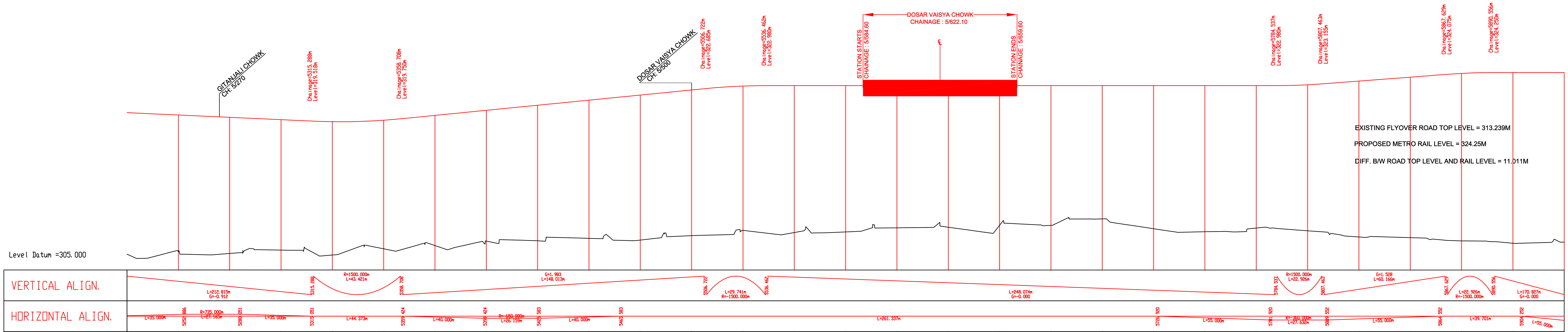
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

SHEET NO. 09

EAST- WEST METRO CORRIDOR



CHAINAGE	ELEVATION DIFF.	RAIL LEVELS	GROUND/ ROAD LEVELS
5225.000	13.802	320.341	306.540
5250.000	13.350	320.113	306.764
5275.000	13.274	319.885	306.612
5300.000	12.716	319.657	306.941
5325.000	13.000	319.461	306.460
5350.000	12.537	319.603	307.067
5375.000	12.689	320.073	307.384
5400.000	12.749	320.569	307.820
5425.000	13.217	321.065	307.847
5450.000	13.473	321.561	308.087
5475.000	14.140	322.056	307.917
5500.000	14.202	322.552	308.349
5525.000	14.075	322.936	308.862
5550.000	14.325	322.980	308.655
5575.000	14.269	322.980	308.711
5600.000	13.866	322.980	309.114
5625.000	13.808	322.980	309.171
5650.000	13.616	322.980	309.363
5675.000	13.624	322.980	309.356
5700.000	12.995	322.980	309.984
5725.000	13.952	322.980	309.027
5750.000	14.247	322.980	308.733
5775.000	13.887	322.980	309.093
5800.000	14.235	323.060	308.824
5825.000	15.204	323.423	308.219
5850.000	15.647	323.805	308.158
5875.000	16.328	324.169	307.842
5900.000	16.642	324.250	307.608
5925.000	16.524	324.250	307.726

Notes:-
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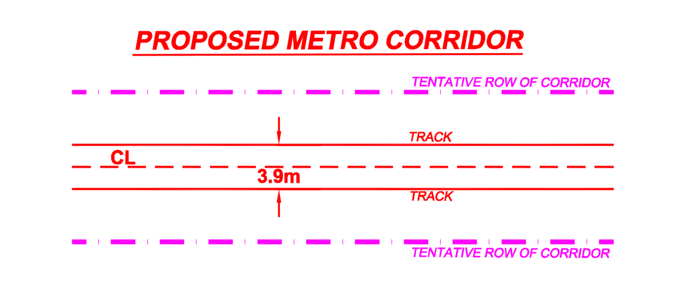

CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

Attachment-10
Corrigendum-2

EAST- WEST METRO CORRIDOR

Notes:-

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PROPOSED METRO CORRIDOR

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

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RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

Attachment-10
Corrigendum-2
11

EAST- WEST METRO CORRIDOR

SHEET NO. 11

VERTICAL ALIGN.: L=1198.302m, G=-0.000

HORIZONTAL ALIGN.: L=25.000m; 6642.749; R=-1593.050m L=52.936m; 6695.685; L=25.000m; 6720.685 / 6720.688; L=25.000m; 6745.688; R=1593.050m L=40.472m; 6786.160; L=25.000m; 6811.160; L=66.359m; 6877.519; L=55.000m; 6932.519; R=152.500m L=52.206m; 6984.725; L=55.000m; 7039.725; L=159.343m; 7199.068; L=55.000m; 7254.068; R=185.000m L=25.035m; 7279.102; L=55.000m

CHAINAGE	6625.000	6650.000	6675.000	6700.000	6725.000	6750.000	6775.000	6800.000	6825.000	6850.000	6875.000	6900.000	6925.000	6950.000	6975.000
ELEVATION DIFF.	14.480	14.996	14.912	15.312	15.877	15.739	16.546	16.583	17.259	17.502	17.277	17.769	17.815	17.968	18.059
RAIL LEVELS	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900
GROUND/ ROAD LEVELS	306.420	305.904	305.989	305.589	305.024	305.162	304.354	304.318	303.642	303.398	303.624	303.131	303.086	302.933	302.842

CHAINAGE	7000.000	7025.000	7050.000	7075.000	7100.000	7125.000	7150.000	7175.000	7200.000	7225.000	7250.000	7275.000	7300.000	7325.000
ELEVATION DIFF.	18.570	18.947	19.555	20.785	18.623	14.110	15.276	11.265	19.786	20.467	20.149	20.323	20.807	20.840
RAIL LEVELS	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.900
GROUND/ ROAD LEVELS	302.331	301.954	301.346	300.116	302.278	306.791	305.624	309.636	301.114	300.434	300.752	300.578	300.093	300.060

Notes:-
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PROPOSED METRO CORRIDOR

TENTATIVE ROW OF CORRIDOR
TRACK
CL
3.9m
TRACK
TENTATIVE ROW OF CORRIDOR

CLIENT	**NAGPUR METRO RAIL CORP. LTD.**
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

CONSULTANT: राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

Attachment-10
Corrigendum-2
12

VERTICAL ALIGN.: 7325.000 — L=1198.302m G=-0.000 — 7493.439 — R=1500.000m L=20.359m — 7513.799 — G=1.357 L=119.627m — 7633.425 — L=20.359m R=-1500.000m — 7653.784 — G=0.000 L=180.870m — 7834.654 — L=34.970m R=-1500.000m — 7869.625 — L=361.794m G=-2.331 — 8000.000

HORIZONTAL ALIGN.: 7325.000 — 7334.102 — L=452.197m — 7786.299 — L=48.000m — 7834.299 — R=272.050m L=36.337m — 7870.636 — L=48.000m — 7918.636 — L=103.155m — 8000.000

ELEVATION DIFF.	20.840	20.939	21.028	21.099	21.151	21.161	20.727	21.141	21.403	22.197	22.639	22.978	23.843	23.817	24.674	24.864	24.936	24.902	24.654	24.414	24.751	24.627	24.432	23.806	23.085	22.462	21.138	20.703
RAIL LEVELS	320.900	320.900	320.900	320.900	320.900	320.900	320.900	320.914	321.190	321.530	321.869	322.208	322.547	322.795	322.800	322.800	322.800	322.800	322.800	322.800	322.800	322.722	322.267	321.684	321.101	320.519	319.936	319.353
GROUND/ ROAD LEVELS	300.060	299.962	299.872	299.801	299.750	299.740	300.173	299.773	299.787	299.333	299.230	299.230	298.704	298.979	298.127	297.937	297.864	297.898	298.146	298.386	298.050	298.094	297.835	297.879	298.016	298.056	298.797	298.650
CHAINAGE	7325.000	7350.000	7375.000	7400.000	7425.000	7450.000	7475.000	7500.000	7525.000	7550.000	7575.000	7600.000	7625.000	7650.000	7675.000	7700.000	7725.000	7750.000	7775.000	7800.000	7825.000	7850.000	7875.000	7900.000	7925.000	7950.000	7975.000	8000.000

Notes:-
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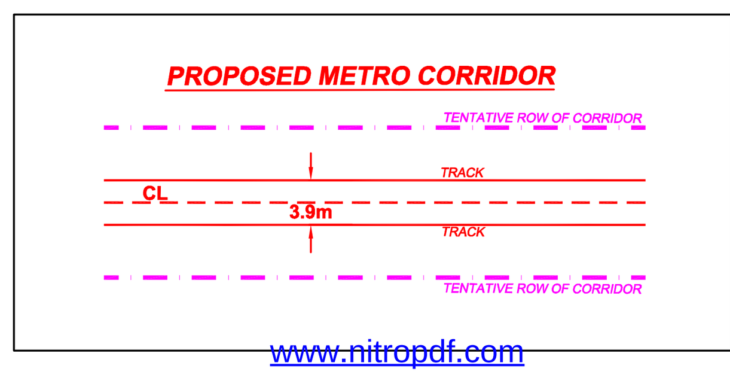


CONSULTANT: राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

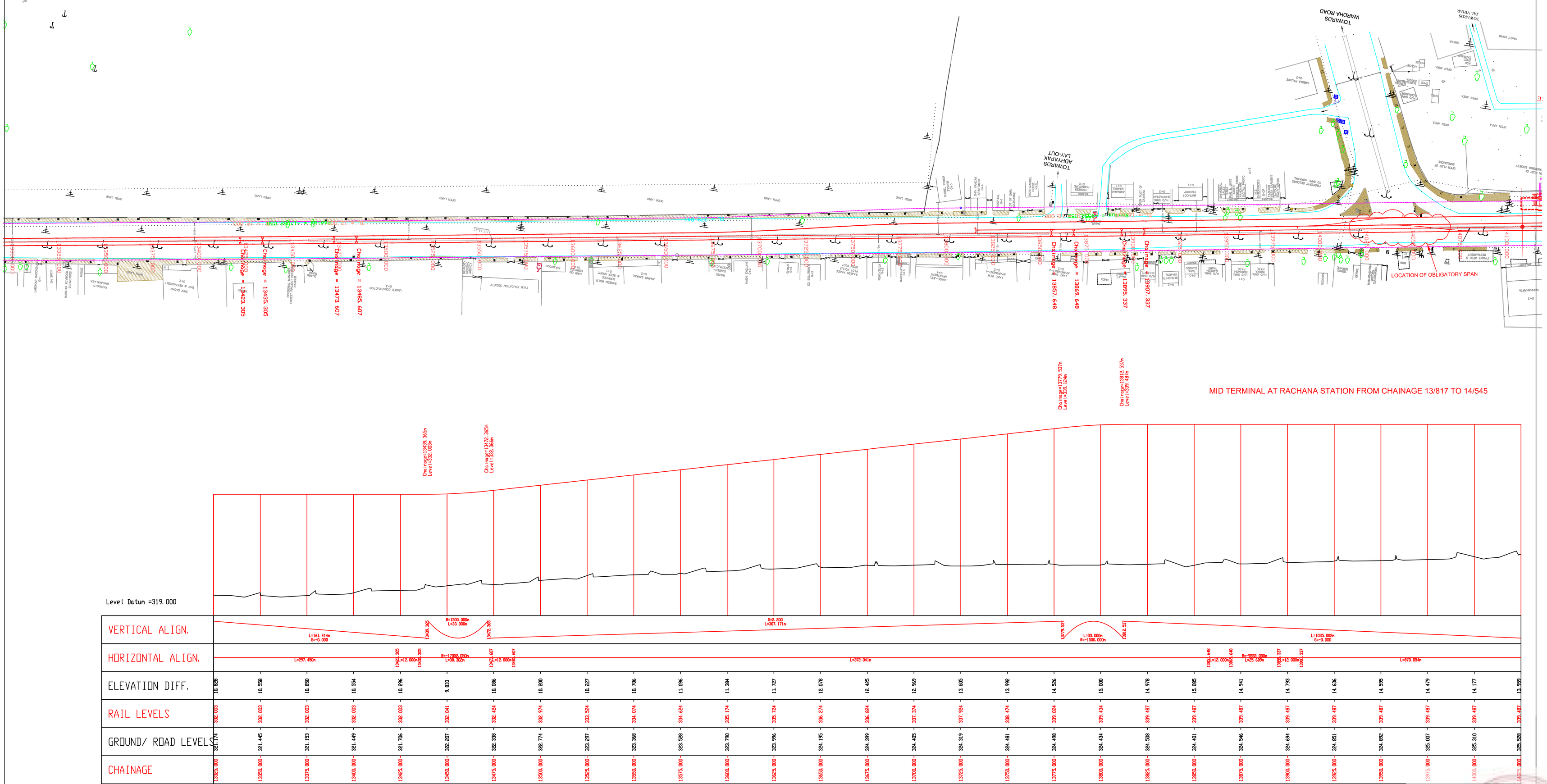
CLIENT: **NAGPUR METRO RAIL CORP. LTD.**

TITLE: ALIGNMENT PLAN AND VERTICAL PROFILE FOR PRAJAPATI NAGAR - SITABULDI SECTION

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/PNGR-SB/2015	R-0	1:1000	16.03.2016

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR ◄ — ► LOKMANYA NAGAR

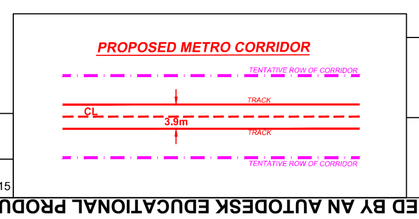


Notes:-

1) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
2) Station areas are tentatively marked for information.
3) The L-Section (except in proposed Flyover section) has been planned with rail level at ~8.75m height above the existing road level by assuming rail level to Bottom of girder as 3.25m depth ensuring 5.5m vertical clearance over the existing road level. This rail level of ~8.75 m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
4) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
5) *The GAD is based on the survey data supplied by NMRCL.*

APPROVED BY:-	RECOMMENDED BY:-	CHECKED BY:-	DESIGNED BY:-
Ratnesh Barrar GM(PL)	Rajiv Yelikawar AGM(PL)	Thota Nagaraju JE	RITES

DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/9 | DATE 05.12.2015



CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	21.10.2015

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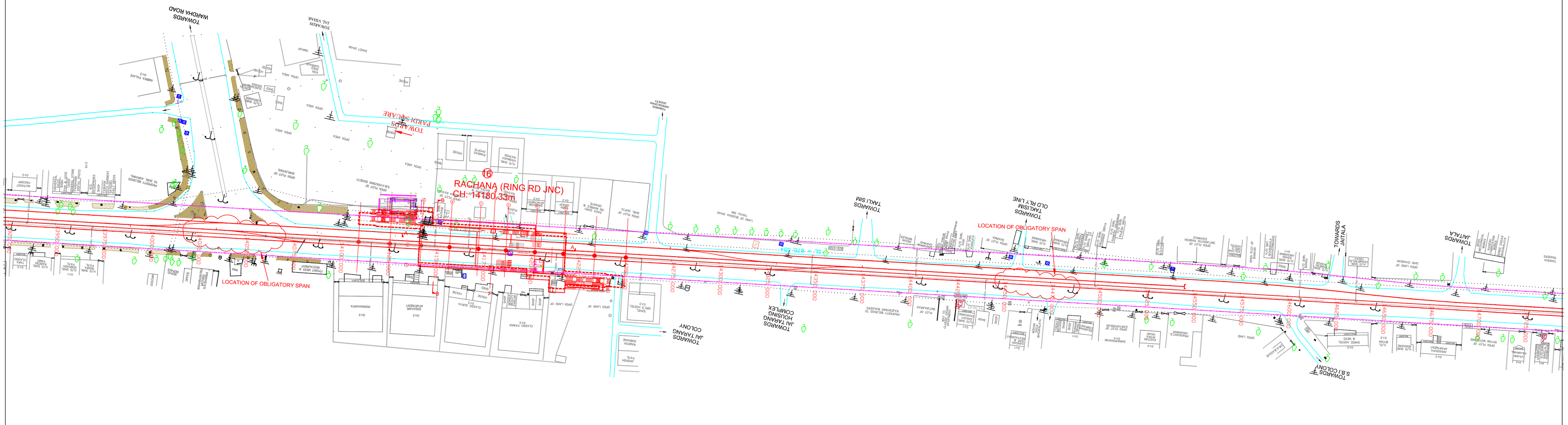
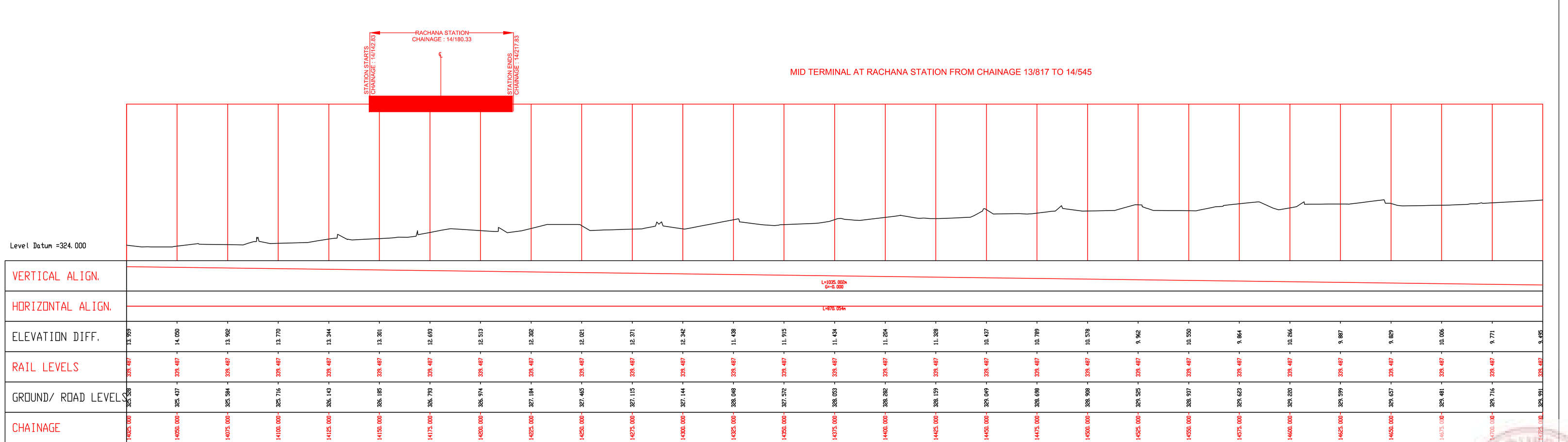
EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR ◄

► LOKMANYA NAGAR





Notes:-

1) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
2) Station areas are tentatively marked for information.
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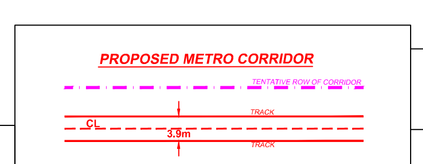
4) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
5) *The GAD is based on the survey data supplied by NMRCL.*

APPROVED BY-	RECHECKED BY-	CHCKED BY-	DESIGNED BY-
Ratnesh Baniar GM(PL)	Rajiv Yelkawar AGM(PL	Thota Nagesh JE	RITES

DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/10 DATE 05.12.2014



CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	TITLE: ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	DRG. NO. RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015
	संशोधन/REV. R-0
	पैमाना/SCALE 1:1000
	DATE 21.10.2015

Attachment-10
Corrigendum-2
15

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	ELEVATION DIFF.
14725.000	329.991	339.487	9.495
14750.000	329.894	339.487	9.593
14775.000	330.139	339.487	9.347
14800.000	330.293	339.487	9.193
14825.000	330.352	339.487	9.135
14850.000	330.825	339.489	8.663
14875.000	330.954	339.738	8.784
14900.000	331.241	340.236	8.994
14925.000	332.102	340.736	8.633
14950.000	331.962	341.236	9.273
14975.000	331.882	341.736	9.854
15000.000	331.952	342.236	10.283
15025.000	331.947	342.736	10.789
15050.000	332.234	343.236	11.002
15075.000	332.196	343.736	11.540
15100.000	332.583	344.236	11.652
15125.000	332.751	344.676	11.925
15150.000	332.694	344.768	12.075
15175.000	332.621	344.768	12.147
15200.000	332.653	344.768	12.115
15225.000	332.129	344.768	12.640
15250.000	332.280	344.768	12.489
15275.000	332.282	344.768	12.486
15300.000	332.516	344.768	12.252
15325.000	332.502	344.761	12.259
15350.000	332.874	344.476	11.601
15375.000	332.429	344.030	11.601
15400.000	332.748	343.585	10.836
15425.000	332.436	343.139	10.704

Notes:-
1) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
2) Station areas are tentatively marked for information.
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4) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
5) *The GAD is based on the survey data supplied by NMRCL.*

Attachment-10
Corrigendum-2
16

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	ELEVATION DIFF.
16125.000	323.313	337.400	14.086
16100.000	324.070	337.400	13.330
16075.000	324.329	337.400	13.071
16050.000	325.034	337.400	12.365
16025.000	325.630	337.400	11.770
16000.000	326.351	337.400	11.048
15975.000	326.270	337.400	11.130
15950.000	326.664	337.400	10.735
15925.000	326.752	337.400	10.647
15900.000	326.701	337.400	10.698
15875.000	327.120	337.400	10.279
15850.000	327.426	337.400	9.973
15825.000	328.142	337.400	9.258
15800.000	327.947	337.400	9.453
15775.000	328.654	337.400	8.746
15750.000	329.127	337.436	8.309
15725.000	329.117	337.794	8.676
15700.000	329.318	338.239	8.922
15675.000	329.761	338.685	8.924
15650.000	330.275	339.130	8.855
15625.000	330.087	339.576	9.488
15600.000	329.985	340.021	10.035
15575.000	330.061	340.466	10.406
15550.000	330.489	340.912	10.423
15525.000	331.108	341.357	10.250
15500.000	331.379	341.803	10.424
15475.000	331.665	342.248	10.584
15450.000	332.158	342.694	10.536
15425.000	332.436	343.139	10.704

Notes:-
1) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
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4) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
5) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR
TENTATIVE ROW OF CORRIDOR
TRACK
CL
3.9m

APPROVED BY:- Ratnesh Bariar GM/PL
RECHECKED BY:- Rajiv Yelkawar AGM/PL
CHEKED BY:- Thota Nagesh JE
DESIGNED BY:- RITES
DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/12
DATE 05.12.2015

CONSULTANT
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान)
RITES THE INFRASTRUCTURE PEOPLE

CLIENT
NAGPUR METRO RAIL CORP. LTD.

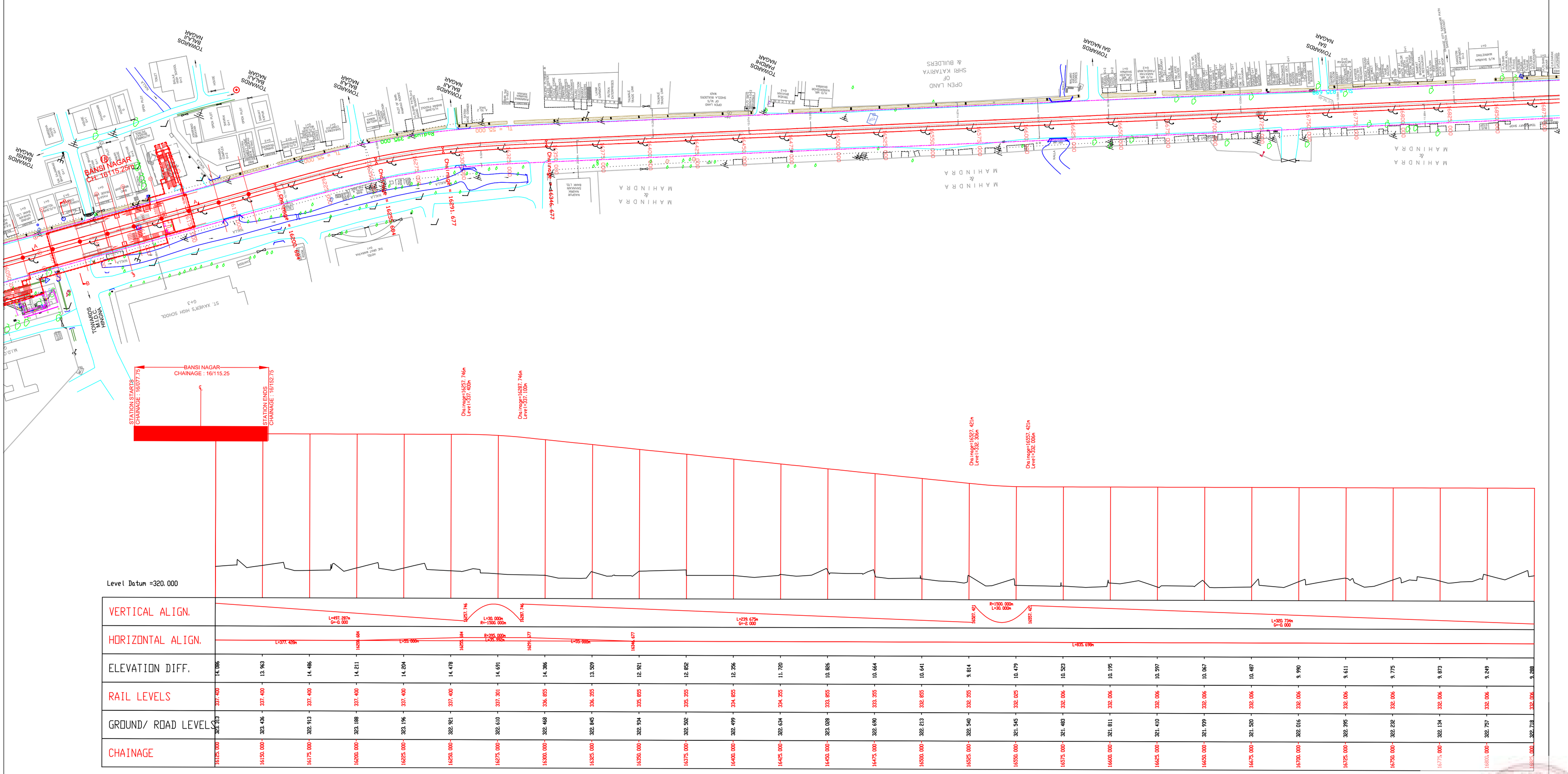
TITLE
ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION

DRG. NO. RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015
संशोधन/REV. R-0
पैमाना/SCALE 1:1000
DATE 21.10.2015

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR

LOKMANYA NAGAR



Notes:-

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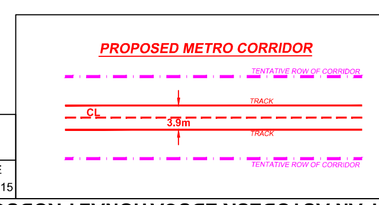
5) *The GAD is based on the survey data supplied by NMRCL.*

APPROVED BY:-	RECHECKED BY:-	CHECKED BY:-	DESIGNED BY:-
Ratnesh Bariar GM(PL)	Rajiv Yerkawar AGM(PL)	Trivia Nagesh JE	RITES

DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/13 | DATE 05.12.2015



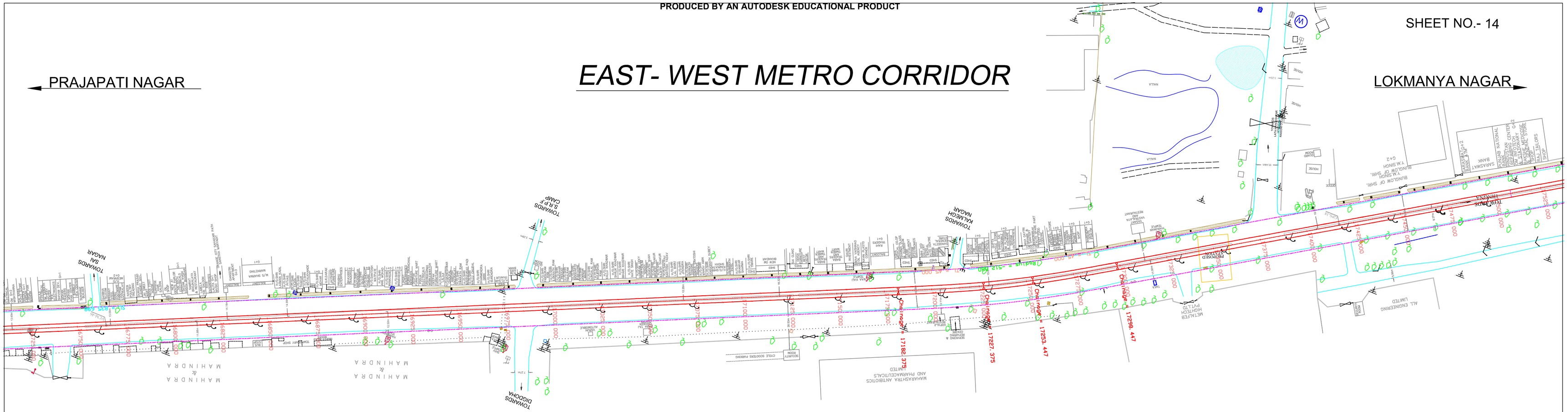
CLIENT	**NAGPUR METRO RAIL CORP. LTD.**
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	21.10.2015

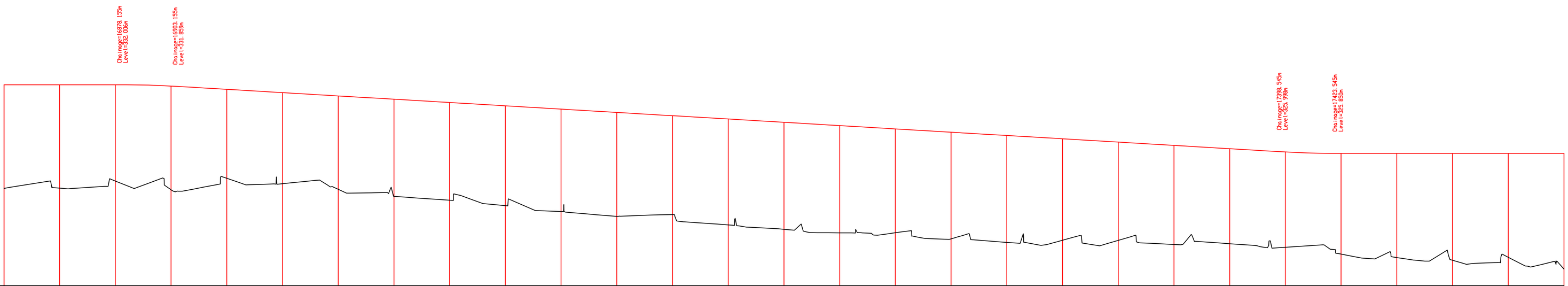
SHEET NO.- 14

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR

LOKMANYA NAGAR





Notes:-

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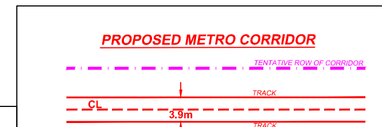
4) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
5) *The GAD is based on the survey data supplied by NMRCL.*

APPROVED BY-	RECHECKED BY-	CHEKED BY-	DESIGNED BY-
Ratnesh Barar GM/PL	Rajiv Yelkawar AGM/PL	Thota Nagesh JE	RITES

DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/14 | DATE 05.10.2015

PROPOSED METRO CORRIDOR



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

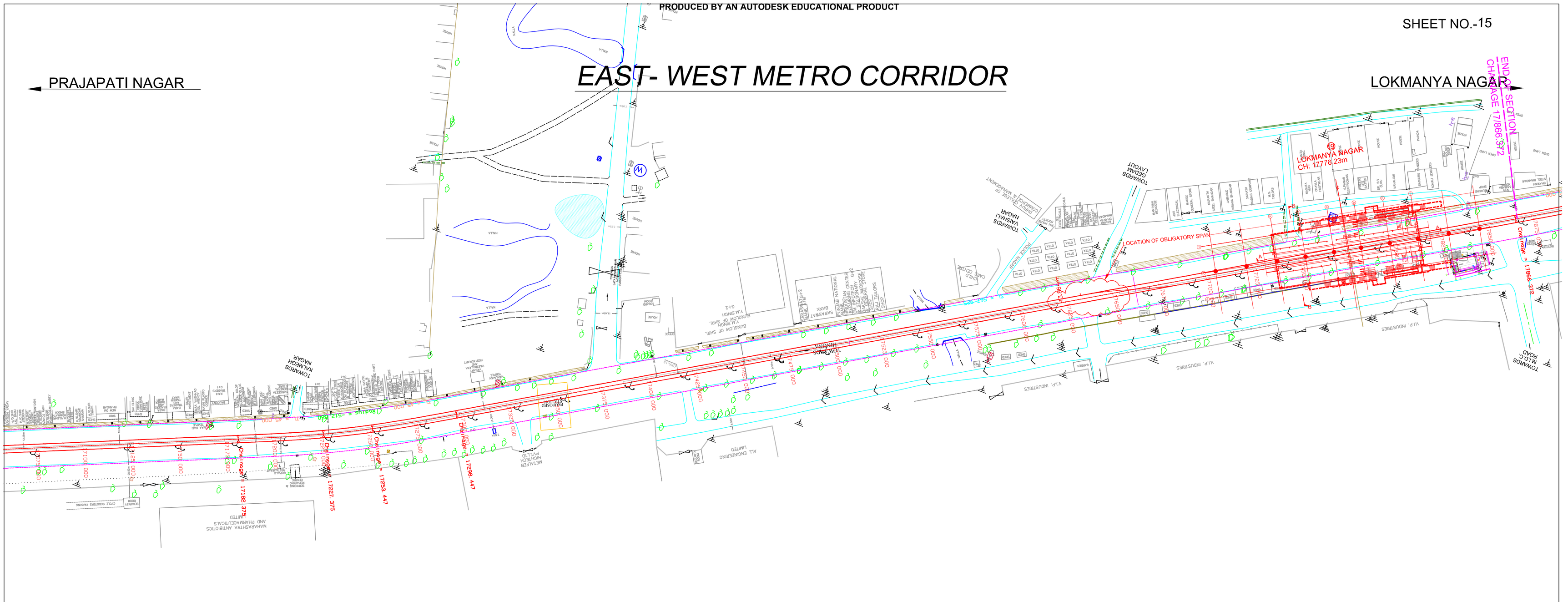
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	21.10.2015

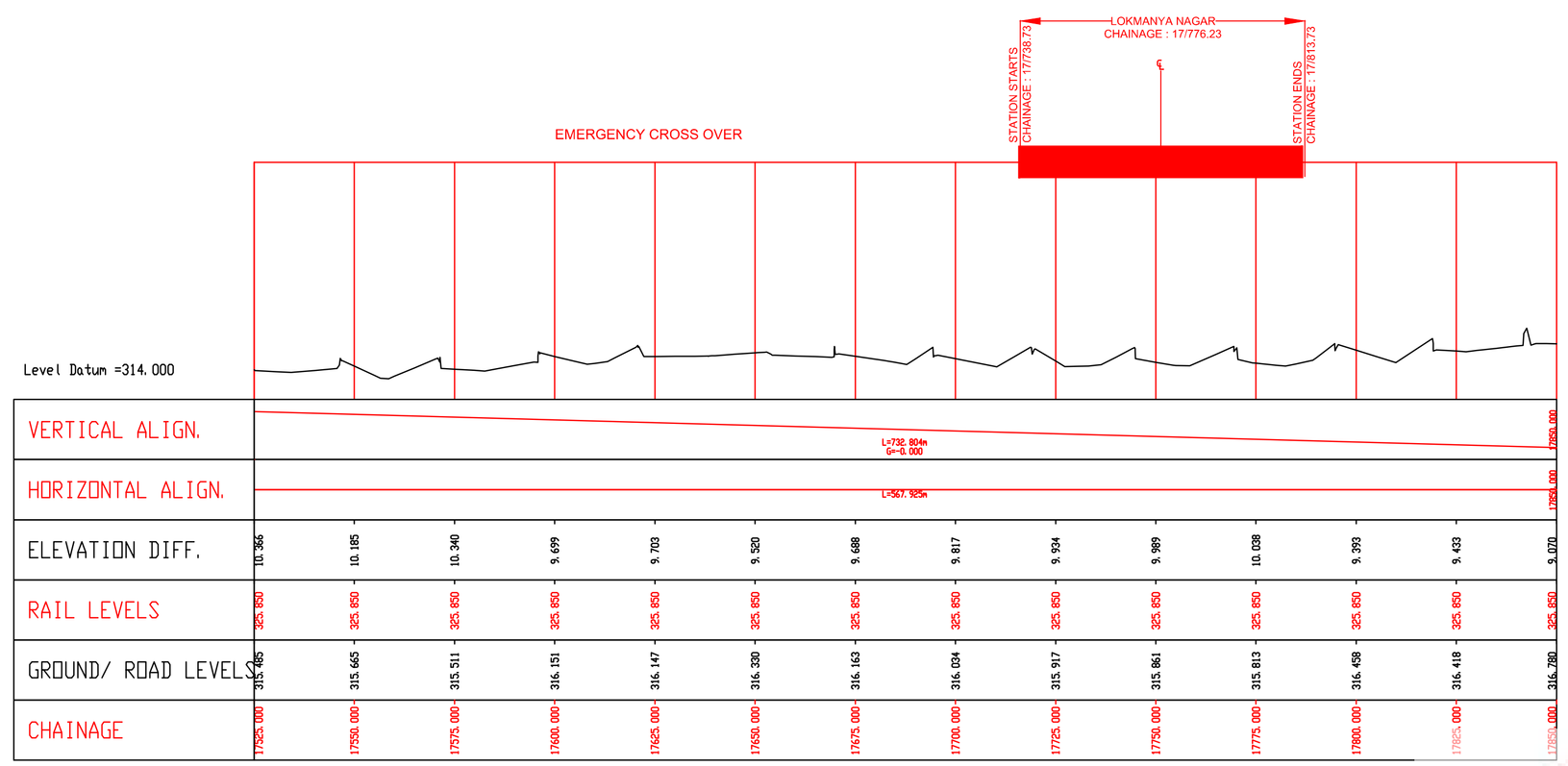
SHEET NO.-15

EAST- WEST METRO CORRIDOR

PRAJAPATI NAGAR

LOKMANYA NAGAR





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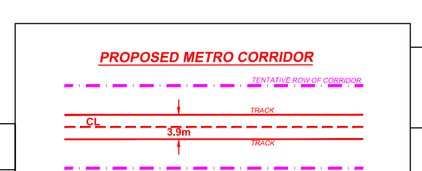
5) *The GAD is based on the survey data supplied by NMRCL.*

APPROVED BY:-	RECHECKED BY:-	CHECKED BY:-	DESIGNED BY:-
Ratnesh Barlar GM/PL	Rajiv Yelkawar AGM/PL	Thota Nagesh JE	RITES

DRG. NO. NMRCL/PLG/REACH-3/GAD/SB-LN/11 | DATE 05.12.2015



CONSULTANT

राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	NAGPUR METRO RAIL CORP. LTD.		
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR SITABULDI - LOKMANYA NAGAR SECTION		
DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/EW/SB-LN/2015	R-0	1:1000	21.10.2015

SHEET NO.- 1

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE

KHAPARI

START OF FIRST ELEVATED SECTION (REACH-1)
CHAINAGE 6/786

START OF FIRST ELEVATED SECTION (REACH-1)
CHAINAGE 6/786

LOCATION OF OBLIGATORY SPAN

LOCATION OF OBLIGATORY SPAN

SITABURDI STATION
(INTER CHANGE)
CHAINAGE : 6/707.50

STATION STARTS CHAINAGE : 6/670

STATION ENDS CHAINAGE : 6/745

Level Datum =293.000

VERTICAL ALIGN.	
HORIZONTAL ALIGN.	
ELEVATION DIFF.	14.727 14.414 14.759 15.105 15.256 15.295 15.007 14.761 14.440 14.394 14.143 13.907 13.634 13.471 13.279 13.159 12.974 12.534 12.433 12.245 11.943 11.403 11.806 11.814 12.140 12.647 8.920 9.981 9.462
RAIL LEVELS	313.600 313.600 313.600 313.600 313.600 313.600 313.600 313.482 313.092 312.693 312.294 311.895 311.496 311.097 310.698 310.300 309.901 309.502 309.103 308.704 308.305 307.906 307.507 307.208 307.334 307.755 308.192 308.628 309.065
GROUND/ ROAD LEVEL	298.872 299.185 298.840 298.495 298.294 298.305 298.593 298.721 298.651 298.298 298.150 297.988 297.863 297.626 297.420 297.141 296.927 296.568 296.669 296.459 296.363 296.504 295.702 295.406 295.193 295.108 299.271 299.548 299.462
CHAINAGE	6600.000 6675.000 6700.000 6725.000 6750.000 6775.000 6800.000 6825.000 6850.000 6875.000 6900.000 6925.000 6950.000 6975.000 7000.000 7025.000 7050.000 7075.000 7100.000 7125.000 7150.000 7175.000 7200.000 7225.000 7250.000 7275.000 7300.000 7325.000 7350.000

Notes:-

1) The First elevated Section (Reach 1) will start from Chainage 6/786 and end at chainage 14/400. The abutment at the end at chainage 14/400 is not the part of scope of work of Design & Build Contract.
2) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
3) Station areas are tentatively marked for information.
4) The section at Rahate Colony Station including mid terminal arrangement from Chainage 8/574 to Chainage 9/692 and section from chainage 7/850 to 8/033 (Congress Nagar area) as shown in the GAD is not the part of scope of work of Design & Build Contract for elevated reach-1.
5) Piers at both ends of Viaduct in Rahate colony stretch and Congress Nagar stretch are included in the scope of D & B contract. These piers will also cater to the for viaducts on both sides and load of the stations/ concourse if any.
6) One Flyover with elevated rotaries on junctions is planned by NHAI from Chainage 10/255 to Chainage 13/665. This flyover is scheduled to be constructed after construction of Metro Viaduct. The D & B contractor has to plan the piers accordingly in this section. At the locations of rotaries, suitable span has to be planned in such a way that piers will not disturb the road of the rotary to ensure smooth traffic movement. If required D&B contractor may have to alter the span arrangement at the location of rotary
7) The L-Section (except in proposed Flyover section) has been planned with rail level at ~8.75m height above the existing road level by assuming rail level to Bottom of girder as 3.25m depth ensuring 5.5m vertical clearance over the existing road level. This rail level of ~8.75 m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
8) In proposed Flyover section, the L-Section has been planned with rail level at ~19m height above the proposed road level of flyover considering proposed road level of flyover as 10.2m above the existing road level. This rail level of ~19m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
9) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
10) *The GAD is based on the survey data supplied by NMRCL.*

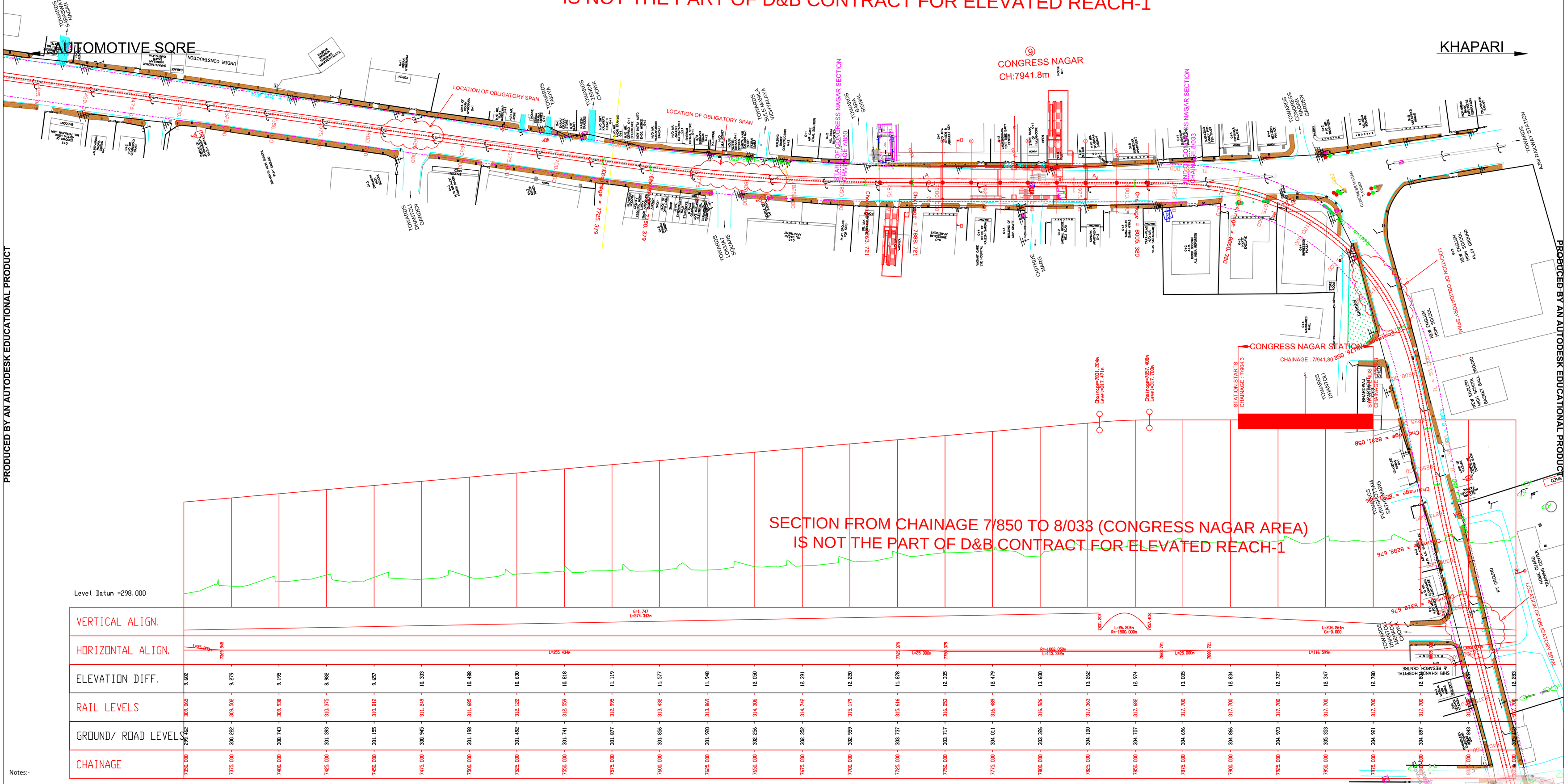
PROPOSED METRO CORRIDOR

CLIENT	NAGPUR METRO RAIL CORP. LTD.		
CONSULTANT	TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)	
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	DRG. NO. RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015	संशोधन/REV. R-0	पैमाना/SCALE 1:1000
			DATE 07.08.2015

SHEET NO.- 2

NORTH - SOUTH METRO CORRIDOR

SECTION FROM CHAINAGE 7/850 TO 8/033 (CONGRESS NAGAR AREA)
IS NOT THE PART OF D&B CONTRACT FOR ELEVATED REACH-1



Notes:-

1) The First elevated Section (Reach 1) will start from Chainage 6/786 and end at chainage 14/400. The abutment at the end at chainage 14/400 is not the part of scope of work of Design & Build Contract.
2) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
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5) Piers at both ends of Viaduct in Rahate colony stretch and Congress Nagar stretch are included in the scope of D & B contract. These piers will also cater to the for viaducts on both sides and load of the stations/ concourse if any.
6) One Flyover with elevated rotaries on junctions is planned by NHAI from Chainage 10/255 to Chainage 13/665. This flyover is scheduled to be constructed after construction of Metro Viaduct. The D & B contractor has to plan the piers accordingly in this section. At the locations of rotaries, suitable span has to be planned in such a way that piers will not disturb the road of the rotary to ensure smooth traffic movement. If required D&B contractor may have to alter the span arrangement at the location of rotary
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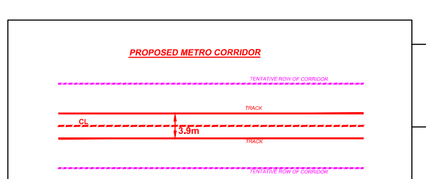
8) In proposed Flyover section, the L-Section has been planned with rail level at ~19m height above the proposed road level of flyover considering proposed road level of flyover as 10.2m above the existing road level. This rail level of ~19m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
9) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
10) The GAD is based on the survey data supplied by NMRCL.



CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमान/SCALE	1:1000
DATE	06.09.2015

SHEET NO.- 3

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ← → KHAPARI

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	ELEVATION DIFF.
8050.000	305.418	317.700	12.283
8075.000	304.902	317.641	12.739
8100.000	306.027	317.215	11.189
8125.000	304.888	316.640	11.751
8150.000	305.566	316.099	10.533
8175.000	306.096	315.900	9.804
8200.000	306.438	315.900	9.463
8225.000	306.632	315.900	9.268
8250.000	306.871	315.900	9.030
8275.000	307.203	315.900	8.697
8300.000	307.200	315.900	8.701
8325.000	307.269	315.908	8.638
8350.000	307.105	316.198	9.093
8375.000	307.305	316.732	9.426
8400.000	307.359	317.268	9.909
8425.000	307.297	317.804	10.506
8450.000	307.384	318.339	10.956
8475.000	307.361	318.875	11.515
8500.000	307.074	319.411	12.336
8525.000	306.798	319.947	13.149
8550.000	306.631	320.483	13.852
8575.000	306.276	321.018	14.743
8600.000	306.358	321.554	15.196
8625.000	306.370	322.090	15.721
8650.000	306.614	322.626	16.011
8675.000	306.238	323.162	16.924
8700.000	306.195	323.697	17.502
8725.000	306.688	324.233	17.545
8750.000	306.921	324.539	17.617

Notes:

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PROPOSED METRO CORRIDOR

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	07.08.2015

SHEET NO.- 4

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE

KHAPARI

SECTION FROM CHAINAGE 8/574 TO 9/692
(RAHATE COLONY STATION WITH MID TERMINAL ARRANGEMENT)
IS NOT THE PART OF D&B CONTRACT FOR ELEVATED REACH-1

RAHATE COLONY
CH:9181.1m

RAHATE COLONY STATION
CHAINAGE : 9/181.10
STATION STARTS CHAINAGE : 9/143.6
STATION ENDS CHAINAGE : 9/218.6

SECTION FROM CHAINAGE 8/574 TO 9/692 (RAHATE COLONY STATION WITH MID TERMINAL ARRANGEMENT)
IS NOT THE PART OF D&B CONTRACT FOR ELEVATED REACH-1

Level Datum =305.000

VERTICAL ALIGN.	
HORIZONTAL ALIGN.	
ELEVATION DIFF.	17.617 17.522 17.295 16.708 16.581 16.205 15.884 15.441 15.191 14.814 14.637 13.838 13.479 13.213 12.985 12.404 11.661 12.088 12.375 12.453 13.251 12.470 13.527 13.842 14.369 14.501 14.220 14.701 15.311
RAIL LEVELS	324.539 324.550
GROUND/ ROAD LEVELS	306.921 307.029 307.256 307.842 307.969 308.346 308.667 309.109 309.359 309.726 309.914 310.713 311.072 311.337 311.566 312.146 312.890 312.462 312.175 312.097 311.299 312.080 311.024 310.708 310.182 310.049 310.331 309.850 309.240
CHAINAGE	8750.000 8775.000 8800.000 8825.000 8850.000 8875.000 8900.000 8925.000 8950.000 8975.000 9000.000 9025.000 9050.000 9075.000 9100.000 9125.000 9150.000 9175.000 9200.000 9225.000 9250.000 9275.000 9300.000 9325.000 9350.000 9375.000 9400.000 9425.000 9450.000

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10) *The GAD is based on the survey data supplied by NMRCL.*

PROPOSED METRO CORRIDOR

CONSULTANT	CLIENT	NAGPUR METRO RAIL CORP. LTD.	
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)	
	DRG. NO. RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015	संशोधन/REV. R-0	पैमाना/SCALE 1:1000
			DATE 07.08.2015

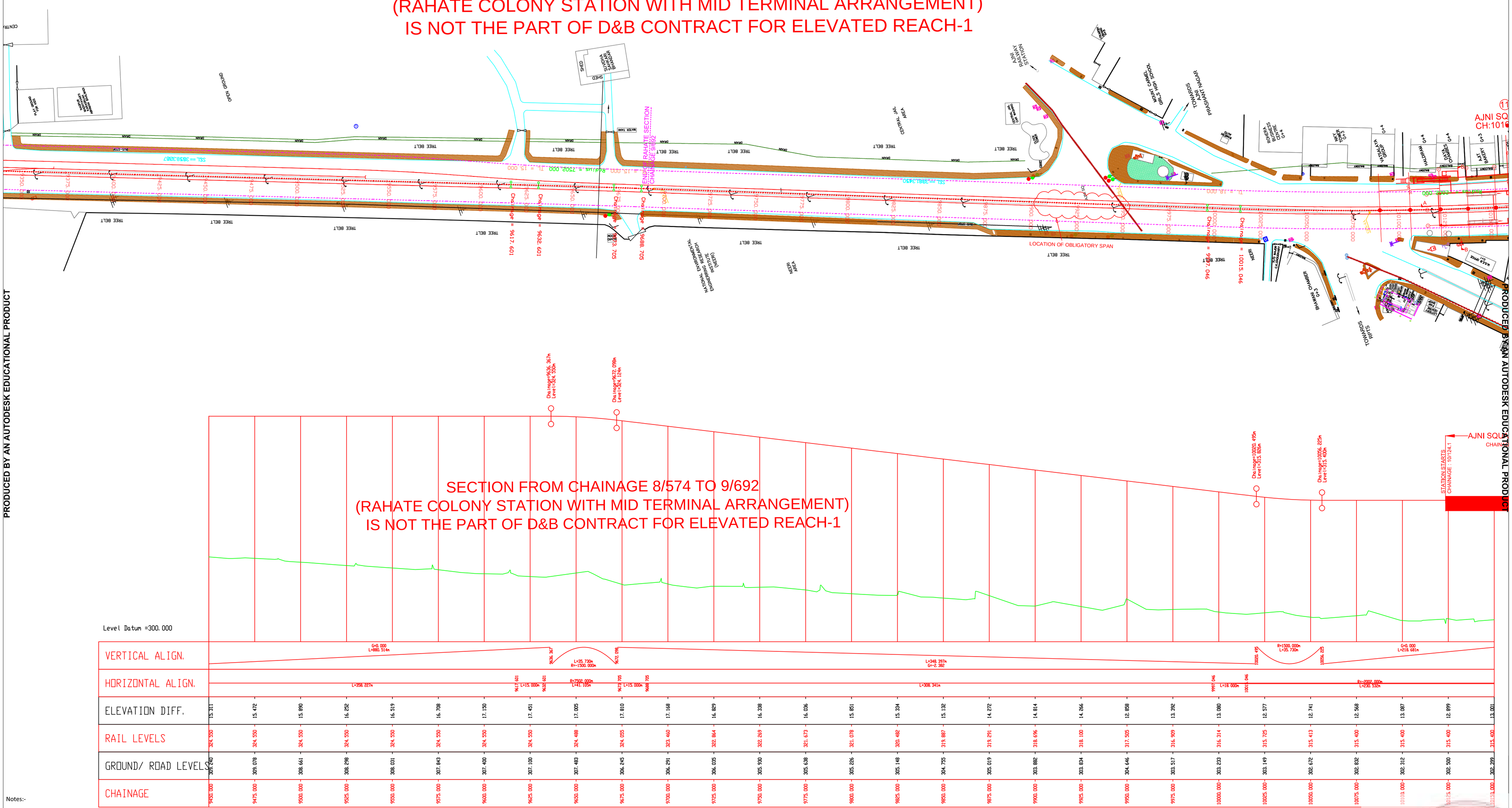
SHEET NO.- 5

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE

KHAPARI

SECTION FROM CHAINAGE 8/574 TO 9/692
(RAHATE COLONY STATION WITH MID TERMINAL ARRANGEMENT)
IS NOT THE PART OF D&B CONTRACT FOR ELEVATED REACH-1



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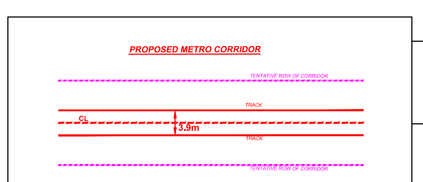
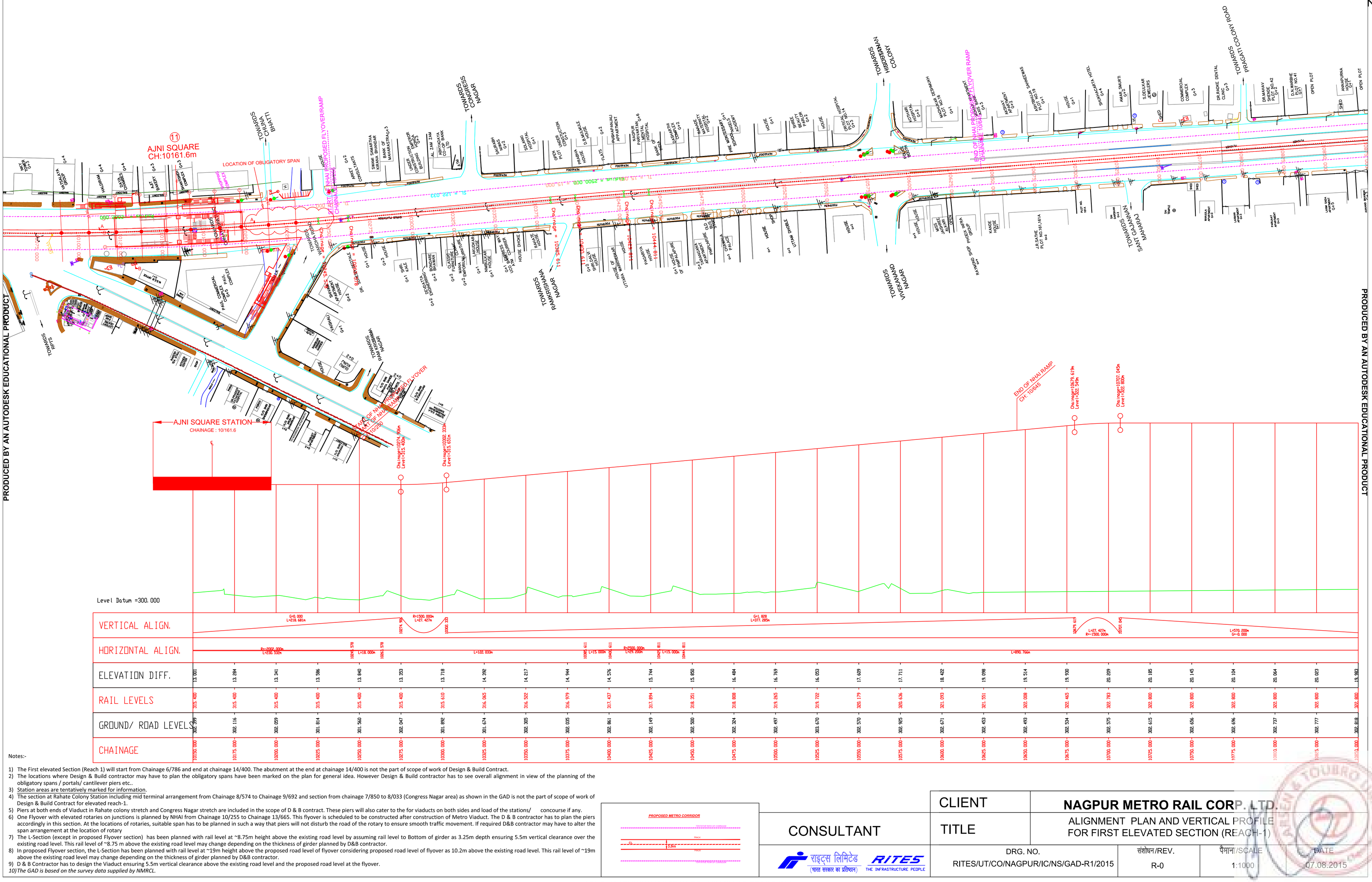


CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	TITLE: ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	DRG. NO.: RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.: R-0	पैमान/SCALE: 1:1000
DATE: 07.08.2015	

SHEET NO.-6

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ◄ — ► KHAPARI



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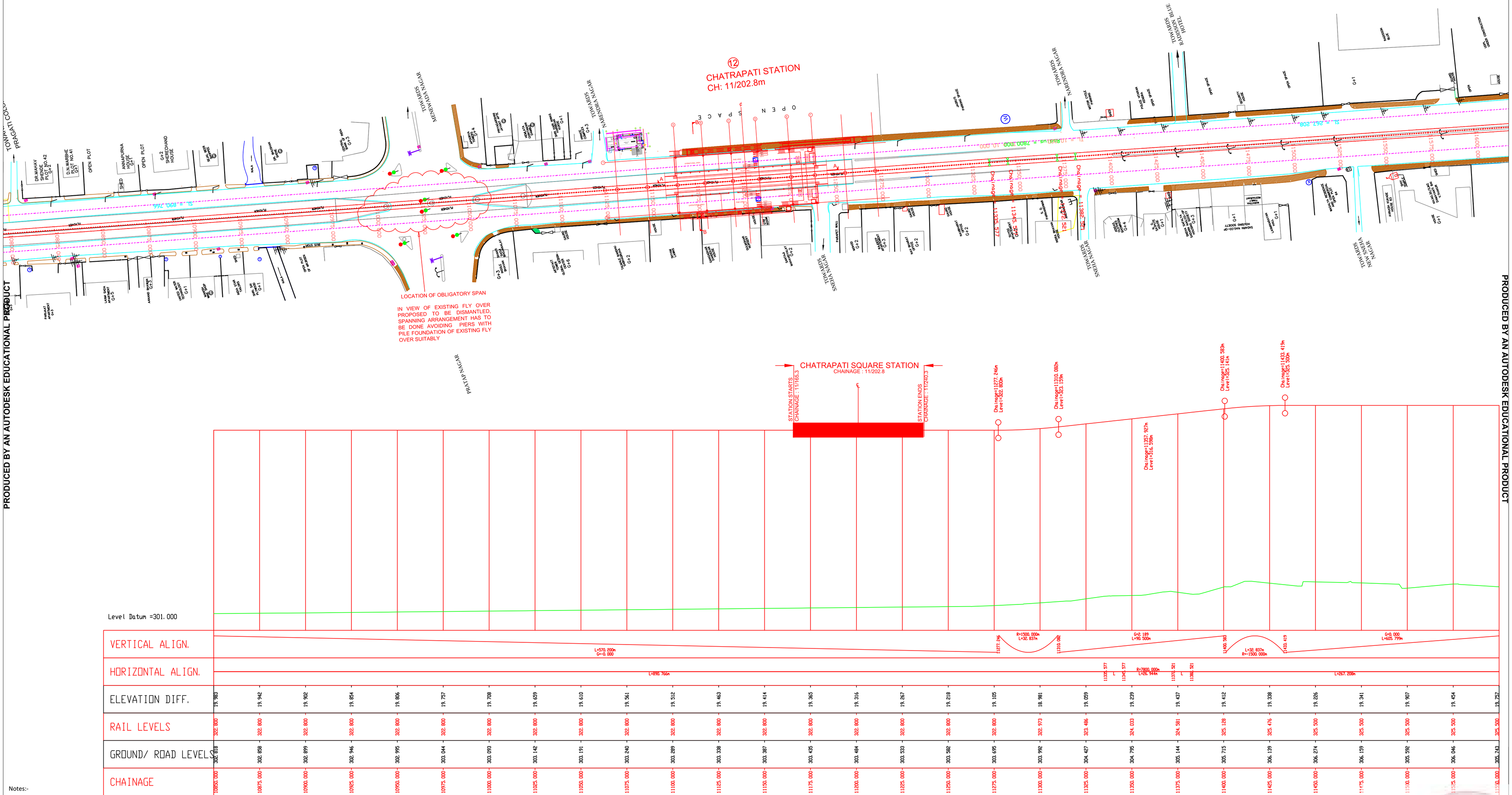
CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	07.08.2015

SHEET NO.-7

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ← → KHAPARI



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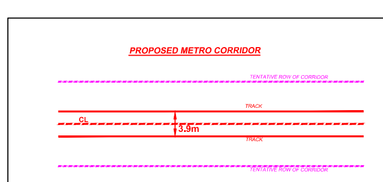


CONSULTANT

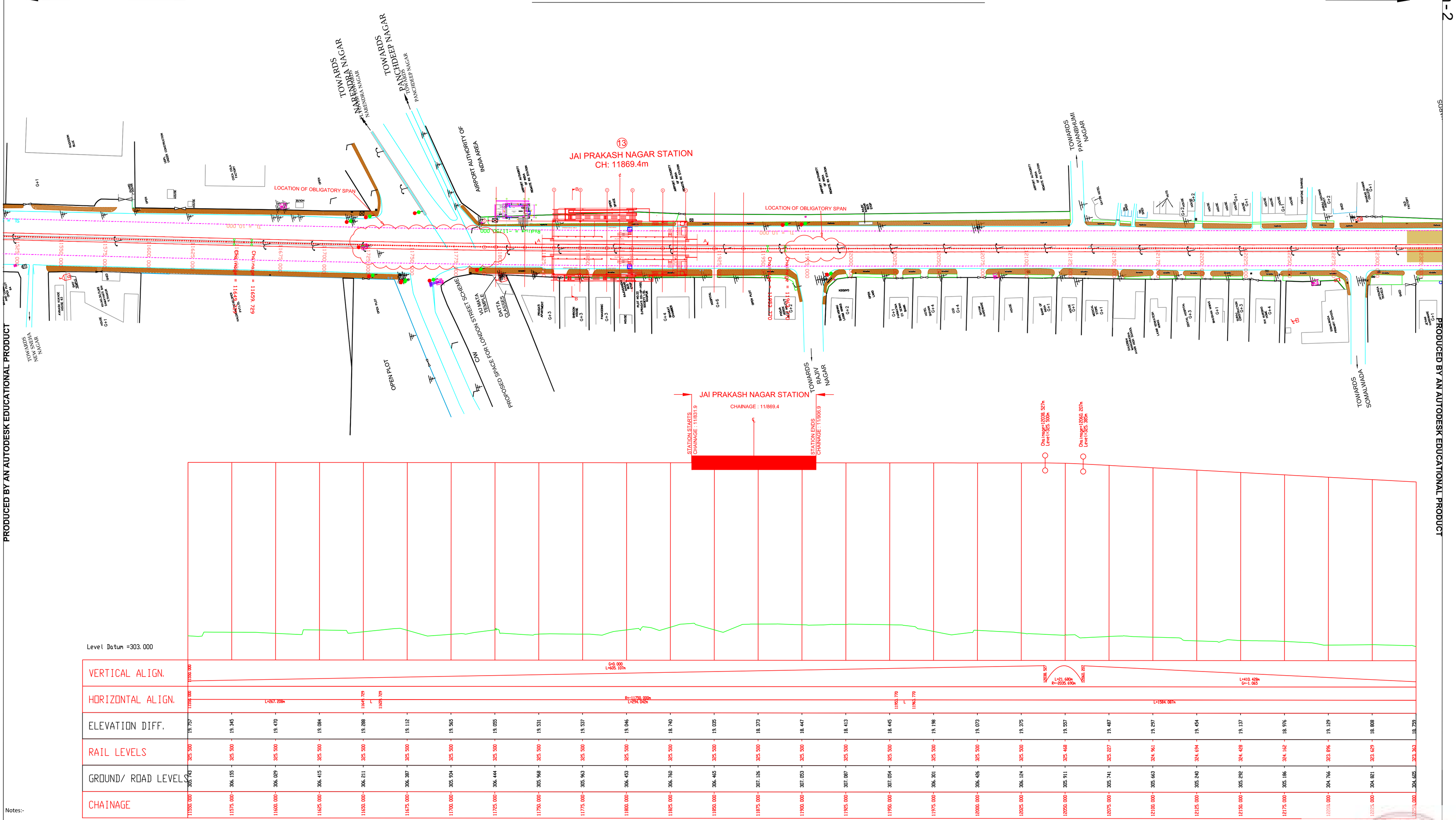
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	07.08.2015

SHEET NO.-8

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ← → KHAPARI



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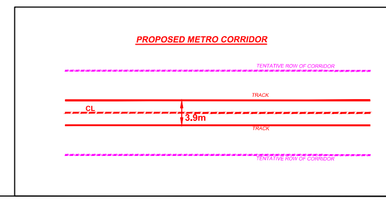
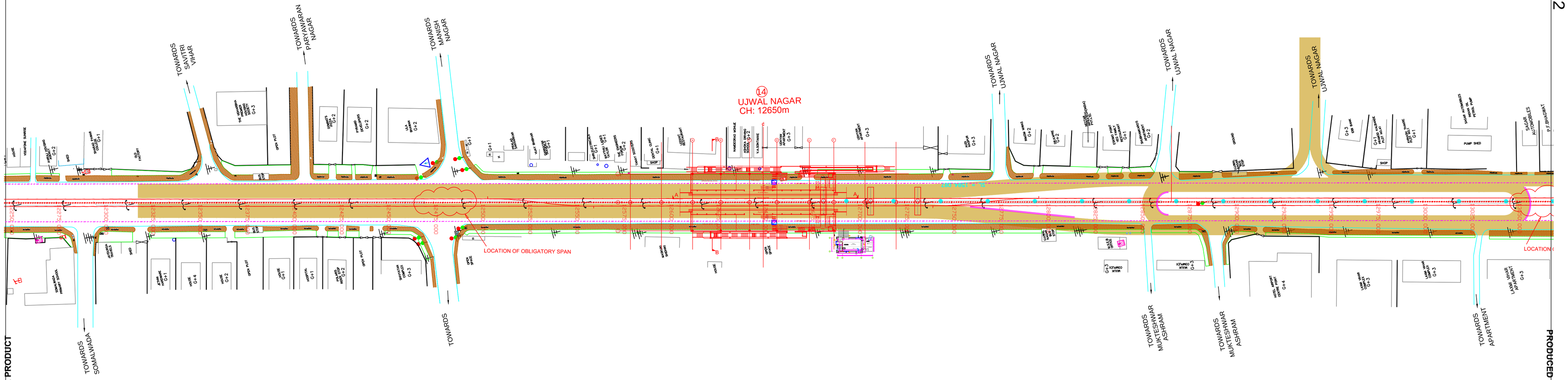


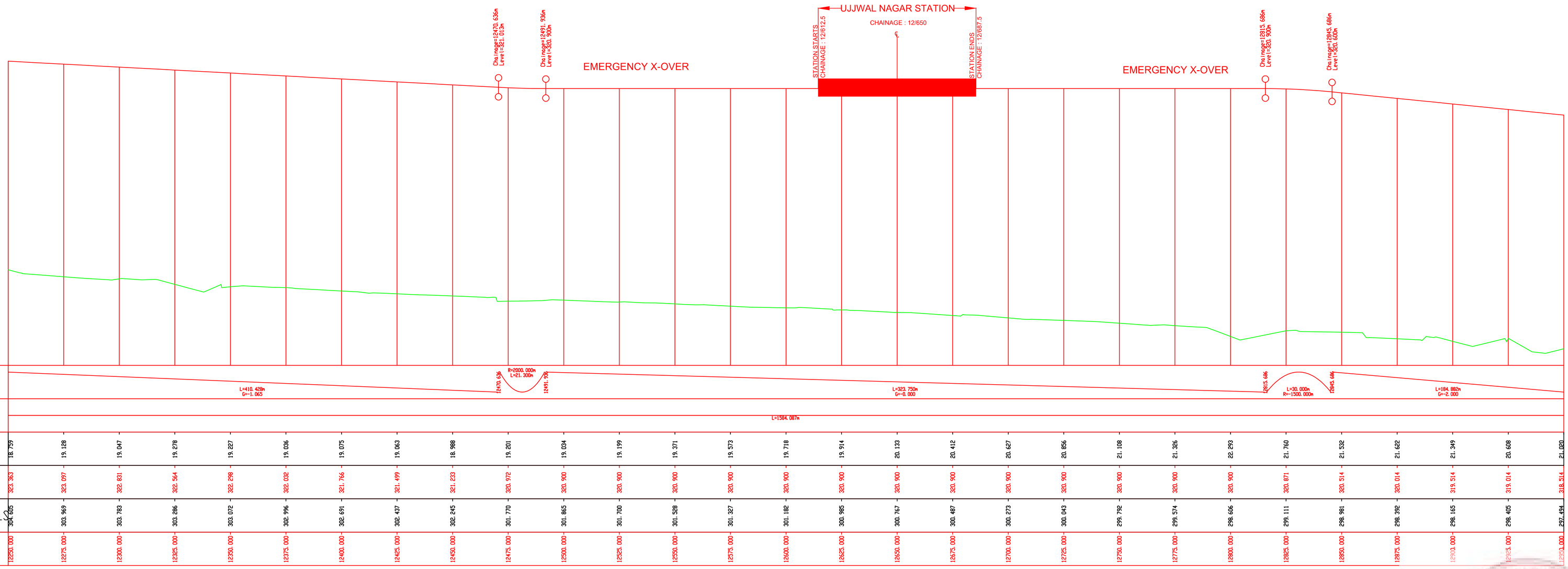
CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	TITLE: ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE	DRG. NO.: RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.: R-0	पैमाना/SCALE: 1:1000
DATE: 25.08.2015	

SHEET NO.-9

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ← → KHAPARI





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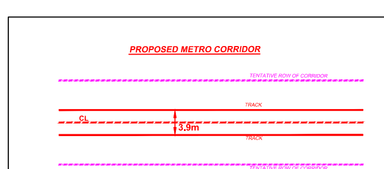

CLIENT	NAGPUR METRO RAIL CORP. LTD.
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
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पैमाना/SCALE	1:1000
DATE	25.08.2015

SHEET NO.- 10

NORTH - SOUTH METRO CORRIDOR

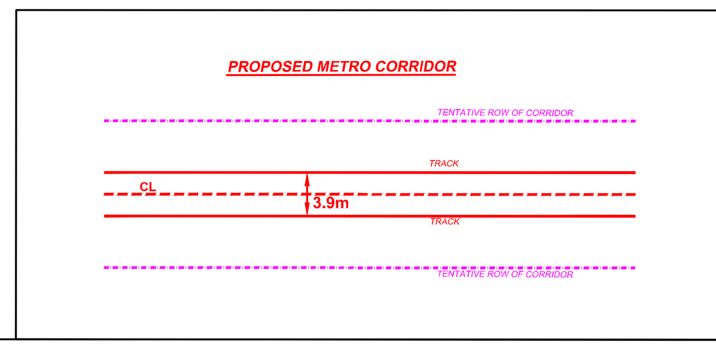
AUTOMOTIVE SQRE ← → KHAPARI

	12950.000	12975.000	13000.000	13025.000	13050.000	13075.000	13100.000	13125.000	13150.000	13175.000	13200.000	13225.000	13250.000	13275.000	13300.000	13325.000	13350.000	13375.000	13400.000	13425.000	13450.000	13475.000	13500.000	13525.000	13550.000	13575.000	13600.000	13625.000	13650.000
ELEVATION DIFF.	21.020	20.310	19.950	19.680	19.030	19.595	20.074	19.297	19.226	19.346	20.049	20.388	19.579	19.685	19.705	19.393	19.509	18.752	18.718	19.001	19.080	19.041	19.238	19.007	18.653	18.455	17.815	17.742	16.328
RAIL LEVELS	318.514	318.014	317.514	317.014	316.640	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.602	316.436	316.069	315.702	315.335	314.968	314.602
GROUND/ ROAD LEVELS	297.494	297.704	297.563	297.333	297.609	297.008	296.528	297.306	297.376	297.256	296.553	296.215	297.023	296.917	296.898	297.210	297.094	297.850	297.885	297.602	297.522	297.562	297.365	297.429	297.416	297.246	297.521	297.227	298.273

CHAINAGE

Notes:-

1) The First elevated Section (Reach 1) will start from Chainage 6/786 and end at chainage 14/400. The abutment at the end at chainage 14/400 is not the part of scope of work of Design & Build Contract.
2) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
3) Station areas are tentatively marked for information.
4) The section at Rahate Colony Station including mid terminal arrangement from Chainage 8/574 to Chainage 9/692 and section from chainage 7/850 to 8/033 (Congress Nagar area) as shown in the GAD is not the part of scope of work of Design & Build Contract for elevated reach-1.
5) Piers at both ends of Viaduct in Rahate colony stretch and Congress Nagar stretch are included in the scope of D & B contract. These piers will also cater to the for viaducts on both sides and load of the stations/ concourse if any.
6) One Flyover with elevated rotaries on junctions is planned by NHAI from Chainage 10/255 to Chainage 13/665. This flyover is scheduled to be constructed after construction of Metro Viaduct. The D & B contractor has to plan the piers accordingly in this section. At the locations of rotaries, suitable span has to be planned in such a way that piers will not disturb the road of the rotary to ensure smooth traffic movement. If required D&B contractor may have to alter the span arrangement at the location of rotary
7) The L-Section (except in proposed Flyover section) has been planned with rail level at ~8.75m height above the existing road level by assuming rail level to Bottom of girder as 3.25m depth ensuring 5.5m vertical clearance over the existing road level. This rail level of ~8.75 m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
8) In proposed Flyover section, the L-Section has been planned with rail level at ~19m height above the proposed road level of flyover considering proposed road level of flyover as 10.2m above the existing road level. This rail level of ~19m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
9) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
10) *The GAD is based on the survey data supplied by NMRCL.*

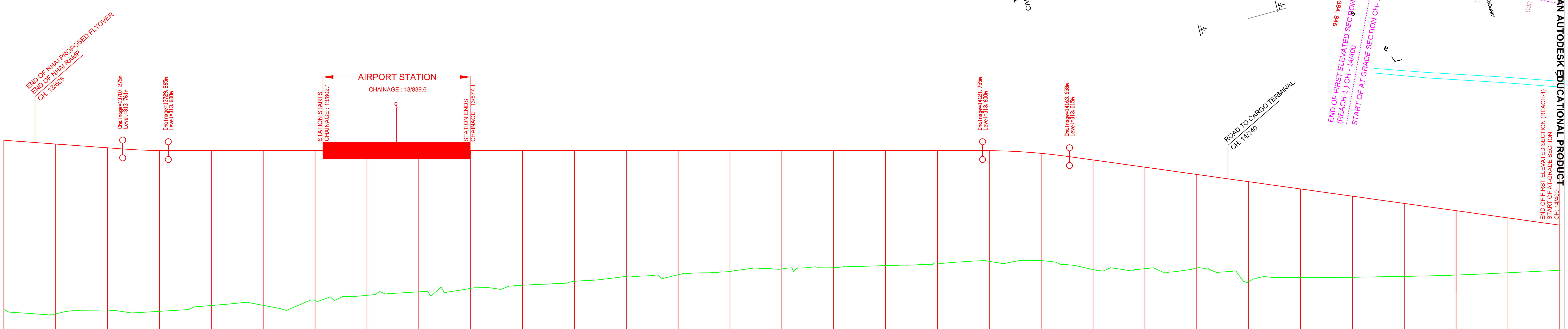


CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	25.08.2015

SHEET NO.-11

NORTH - SOUTH METRO CORRIDOR

← AUTOMOTIVE SQRE — KHAPARI →



CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	ELEVATION DIFF.
13650.000	298.273	314.601	16.327
13675.000	297.853	314.234	16.382
13700.000	298.142	313.868	15.726
13725.000	298.105	313.606	15.502
13750.000	298.666	313.600	14.934
13775.000	298.683	313.600	14.918
13800.000	299.154	313.600	14.447
13825.000	299.644	313.600	13.956
13850.000	299.981	313.600	13.620
13875.000	300.316	313.600	13.285
13900.000	300.617	313.600	12.984
13925.000	300.986	313.600	12.614
13950.000	301.478	313.600	12.122
13975.000	301.632	313.600	11.968
14000.000	301.950	313.600	11.651
14025.000	302.190	313.600	11.410
14050.000	302.352	313.600	11.248
14075.000	302.522	313.600	11.079
14100.000	302.750	313.600	10.851
14125.000	302.926	313.596	10.670
14150.000	302.992	313.334	10.343
14175.000	302.129	312.698	10.568
14200.000	302.216	311.999	9.783
14225.000	302.292	311.301	9.009
14250.000	300.947	310.603	9.656
14275.000	301.352	309.904	8.553
14300.000	301.391	309.206	7.815
14325.000	301.474	308.508	7.033
14350.000	301.600	307.809	6.210
14375.000	301.821	307.111	5.290
14400.000	302.059	306.412	4.354

VERTICAL ALIGN.: L=182.651m G=-1.466; R=1500.000m L=21.990m; G=0.000 L=392.490m; L=41.904m R=-1500.000m; L=249.838m G=-2.794; L=249.838m G=-2.794

HORIZONTAL ALIGN.: 13656.595; 13666.595; L=395.563m; 14062.158; L=55.000m; 14117.158; R=244.920m L=70.288m; 14187.445; L=55.000m; 14242.448; L=55.000m; 14297.448; R=-265.800m L=32.398m; 14329.846; L=55.000m; 14384.846; L=436.433m

Notes:-
1) The First elevated Section (Reach 1) will start from Chainage 6/786 and end at chainage 14/400. The abutment at the end at chainage 14/400 is not the part of scope of work of Design & Build Contract.
2) The locations where Design & Build contractor may have to plan the obligatory spans have been marked on the plan for general idea. However Design & Build contractor has to see overall alignment in view of the planning of the obligatory spans / portals/ cantilever piers etc..
3) Station areas are tentatively marked for information.
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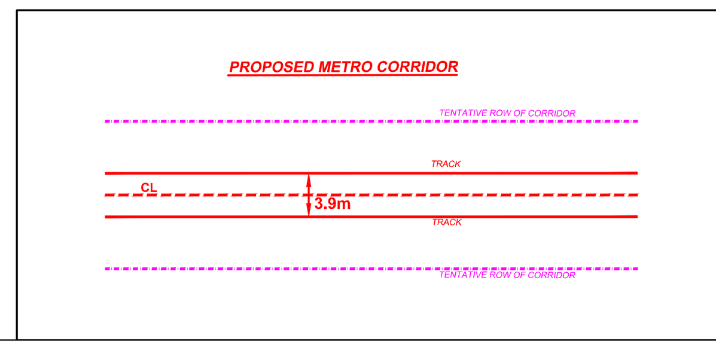
7) The L-Section (except in proposed Flyover section) has been planned with rail level at ~8.75m height above the existing road level by assuming rail level to Bottom of girder as 3.25m depth ensuring 5.5m vertical clearance over the existing road level. This rail level of ~8.75 m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
8) In proposed Flyover section, the L-Section has been planned with rail level at ~19m height above the proposed road level of flyover considering proposed road level of flyover as 10.2m above the existing road level. This rail level of ~19m above the existing road level may change depending on the thickness of girder planned by D&B contractor.
9) D & B Contractor has to design the Viaduct ensuring 5.5m vertical clearance above the existing road level and the proposed road level at the flyover.
10) *The GAD is based on the survey data supplied by NMRCL.*

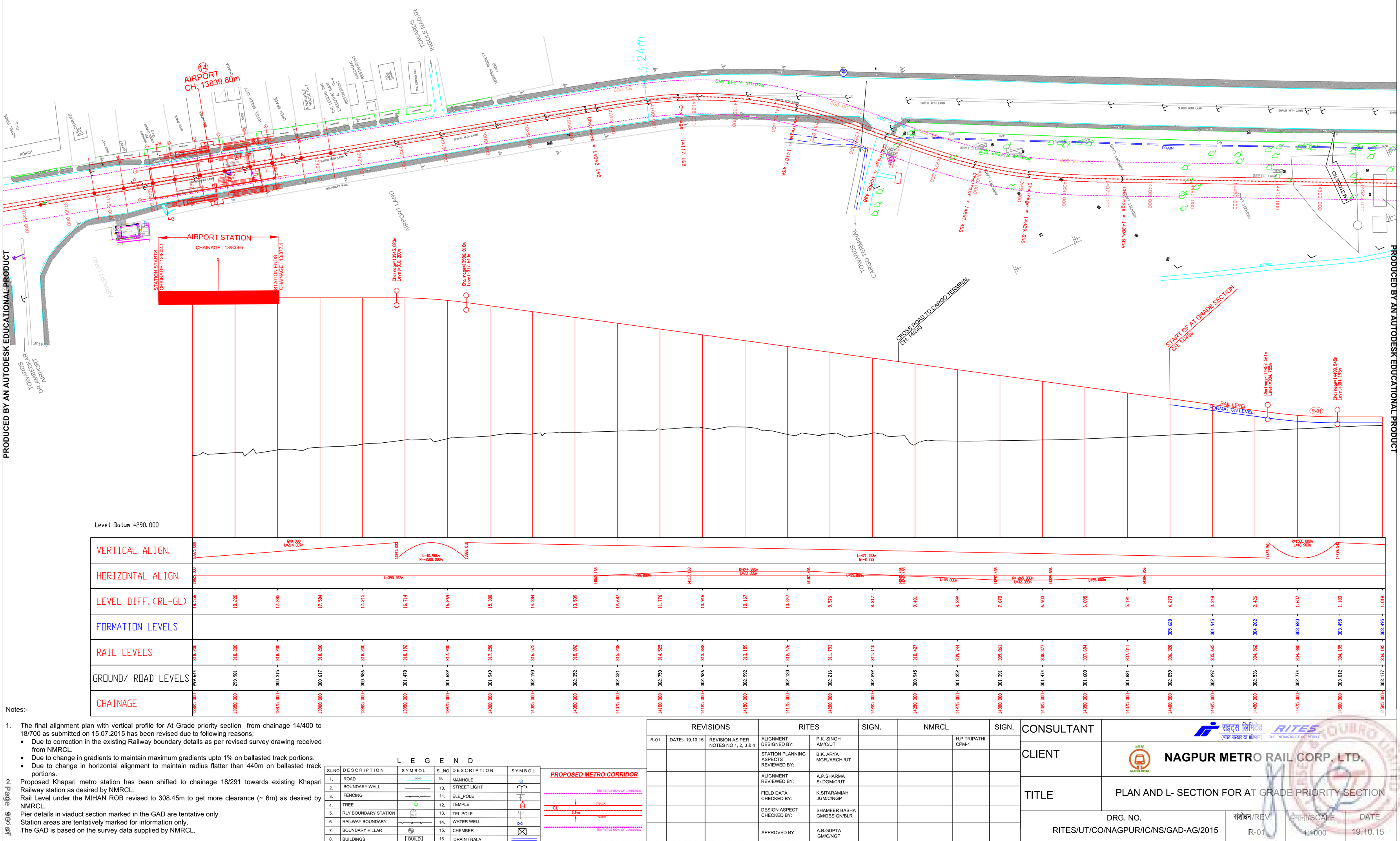


CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	ALIGNMENT PLAN AND VERTICAL PROFILE FOR FIRST ELEVATED SECTION (REACH-1)
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-R1/2015
संशोधन/REV.	R-0
पैमाना/SCALE	1:1000
DATE	07.08.2015

AUTOMOTIVE SQRE

NORTH - SOUTH METRO CORRIDOR

KHAPARI



Notes:-

1. The final alignment plan with vertical profile for At Grade priority section from chainage 14/400 to 18/700 as submitted on 15.07.2015 has been revised due to following reasons;
   - Due to correction in the existing Railway boundary details as per revised survey drawing received from NMRCL.
   - Due to change in gradients to maintain maximum gradients upto 1% on ballasted track portions.
   - Due to change in horizontal alignment to maintain radius flatter than 440m on ballasted track portions.
2. Proposed Khapari metro station has been shifted to chainage 18/291 towards existing Khapari Railway station as desired by NMRCL.
   Rail Level under the MIHAN ROB revised to 308.45m to get more clearance (~ 6m) as desired by NMRCL.
   Pier details in viaduct section marked in the GAD are tentative only.
   Station areas are tentatively marked for information only.
   The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO.	DESCRIPTION	SYMBOL	SL.NO.	DESCRIPTION	SYMBOL
1.	ROAD		9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION		13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR

REVISIONS			RITES		SIGN.	NMRCL		SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT			H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT				
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT				
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP				
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR				
			APPROVED BY:	A.B.GUPTA GM/C/NGP				

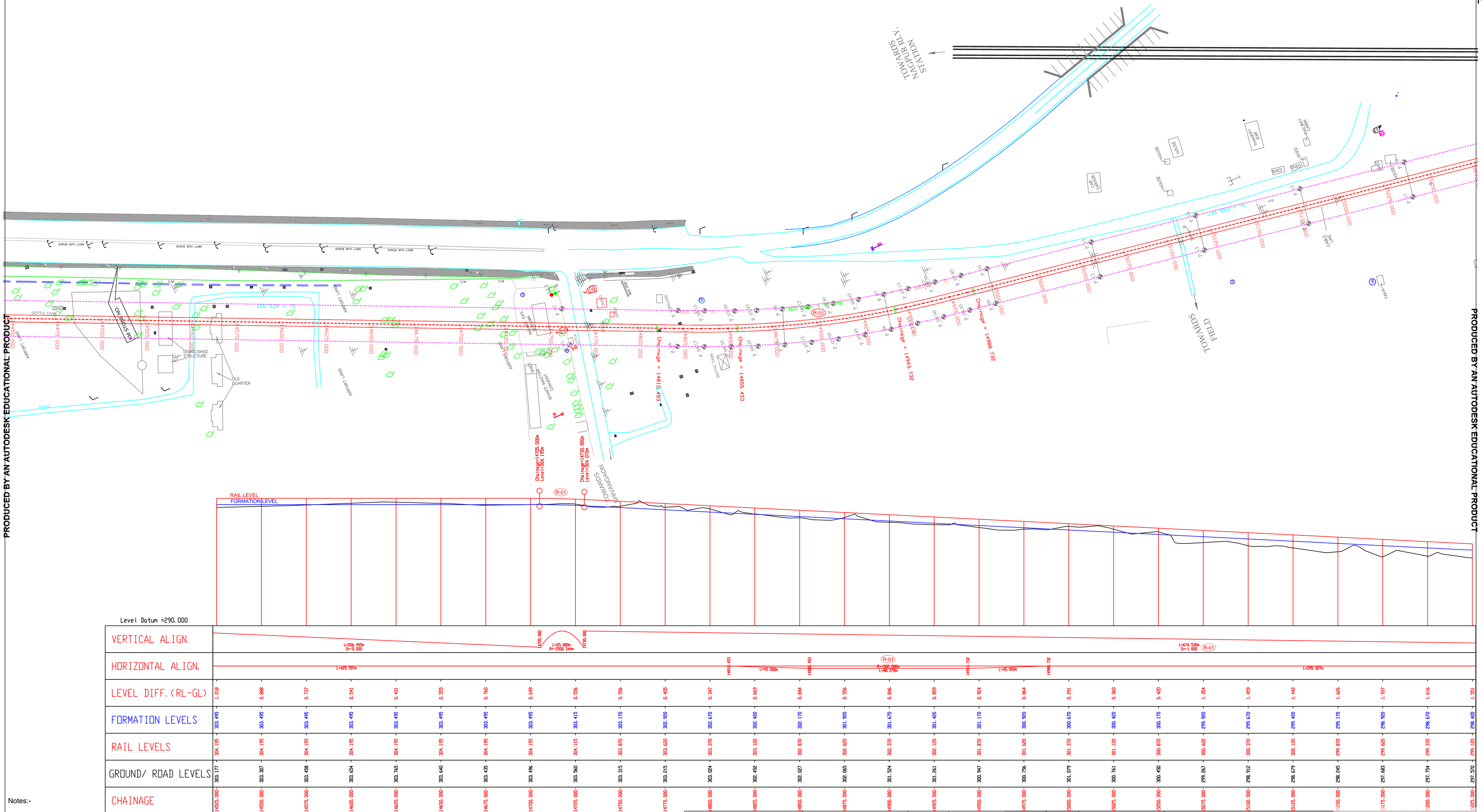
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का उद्यम) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015
संशोधन/REV.	R-01
प्रमाण/SCALE	1:1000
DATE	19.10.15

SHEET NO.- 02

AUTOMOTIVE SQRE

NORTH - SOUTH METRO CORRIDOR

KHAPARI



CHAINAGE	LEVEL DIFF. (RL-GL)	FORMATION LEVELS	RAIL LEVELS	GROUND/ ROAD LEVELS
14525.000	1.018	303.495	304.195	303.177
14530.000	0.888	303.495	304.195	303.307
14575.000	0.737	303.495	304.195	303.458
14600.000	0.541	303.495	304.195	303.654
14625.000	0.431	303.495	304.195	303.765
14650.000	0.555	303.495	304.195	303.640
14675.000	0.760	303.495	304.195	303.435
14700.000	0.699	303.495	304.195	303.496
14725.000	0.556	303.415	304.115	303.560
14750.000	0.556	303.170	303.870	303.315
14775.000	0.405	302.920	303.620	303.215
14800.000	0.347	302.670	303.370	303.024
14825.000	0.669	302.420	303.120	302.452
14850.000	0.844	302.170	302.870	302.027
14875.000	0.556	301.920	302.620	302.065
14900.000	0.846	301.670	302.370	301.524
14925.000	0.859	301.420	302.120	301.261
14950.000	0.924	301.170	301.870	300.947
14975.000	0.864	300.920	301.620	300.756
15000.000	0.291	300.670	301.370	301.079
15025.000	0.360	300.420	301.120	300.761
15050.000	0.450	300.170	300.870	300.420
15075.000	1.354	299.920	300.620	299.267
15100.000	1.459	299.670	300.370	298.912
15125.000	1.442	299.420	300.120	298.679
15150.000	1.626	299.170	299.870	298.245
15175.000	1.537	298.920	299.620	297.683
15200.000	1.616	298.670	299.370	297.754
15225.000	1.551	298.420	299.120	297.570

Notes:-

1. The final alignment plan with vertical profile for At Grade priority section from chainage 14/400 to 18/700 as submitted on 15.07.2015 has been revised due to following reasons;
   - Due to correction in the existing Railway boundary details as per revised survey drawing received from NMRCL.
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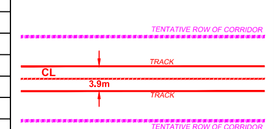
5. Station areas are tentatively marked for information only.
6. The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO	DESCRIPTION	SYMBOL	SL.NO	DESCRIPTION	SYMBOL
1.	ROAD	ROAD	9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION		13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD.	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR



REVISIONS			RITES		SIGN.	NMRCL		SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT			H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT				
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT				
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP				
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR				
			APPROVED BY:	A.B.GUPTA GM/C/NGP				

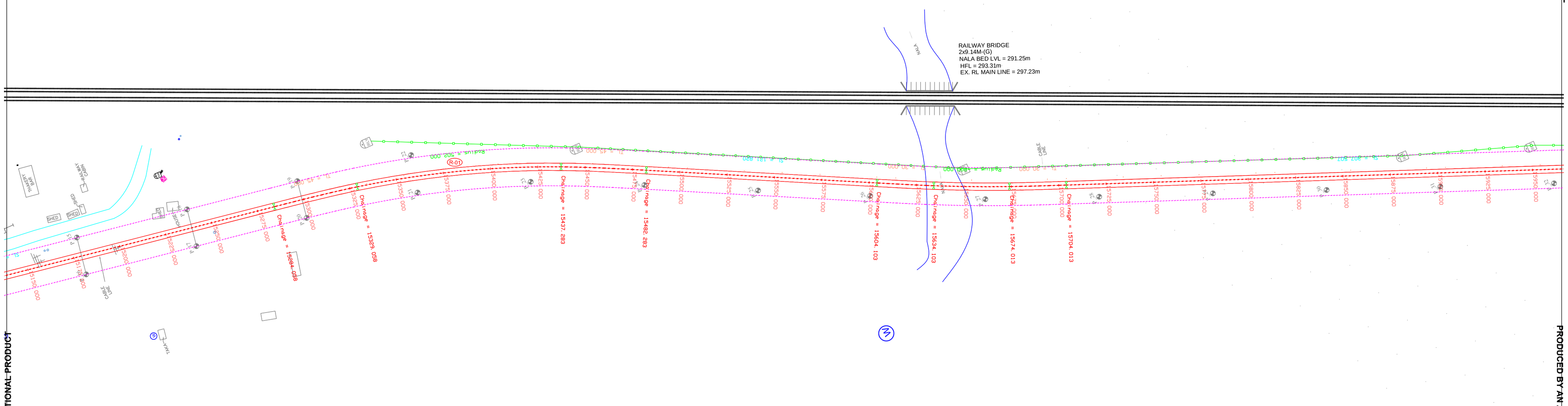
CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015
संशोधन/REV.	R-01
शीट/SHEET	
SCALE	1:1000
DATE	19.10.15

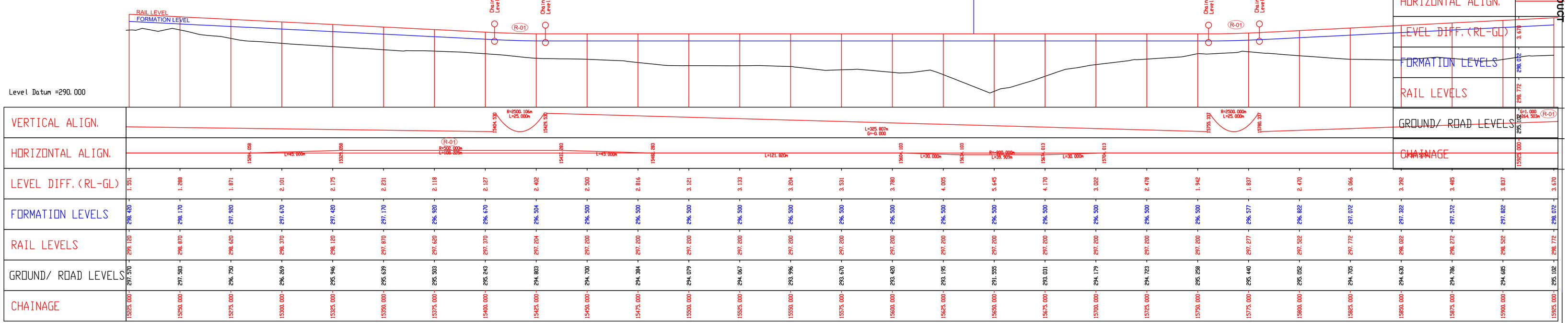
SHEET NO.- 03

AUTOMOTIVE SQRE

NORTH - SOUTH METRO CORRIDOR

KHAPARI





CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	FORMATION LEVELS	LEVEL DIFF.(RL-GL)
15225.000	297.370	299.120	295.620	1.551
15250.000	297.583	298.870	298.170	1.288
15275.000	296.750	298.620	297.920	1.871
15300.000	296.269	298.370	297.670	2.101
15325.000	295.946	298.120	297.420	2.175
15350.000	295.639	297.870	297.170	2.231
15375.000	295.503	297.620	296.920	2.118
15400.000	295.243	297.370	296.670	2.127
15425.000	294.803	297.204	296.504	2.402
15450.000	294.700	297.200	296.500	2.500
15475.000	294.384	297.200	296.500	2.816
15500.000	294.079	297.200	296.500	3.121
15525.000	294.067	297.200	296.500	3.133
15550.000	293.996	297.200	296.500	3.204
15575.000	293.670	297.200	296.500	3.531
15600.000	293.420	297.200	296.500	3.780
15625.000	293.195	297.200	296.500	4.005
15650.000	291.555	297.200	296.500	5.645
15675.000	293.031	297.200	296.500	4.170
15700.000	294.179	297.200	296.500	3.022
15725.000	294.723	297.200	296.500	2.478
15750.000	295.258	297.200	296.500	1.942
15775.000	295.440	297.277	296.577	1.837
15800.000	295.052	297.522	296.822	2.470
15825.000	294.705	297.772	297.072	3.066
15850.000	294.630	298.022	297.322	3.392
15875.000	294.786	298.272	297.572	3.485
15900.000	294.685	298.522	297.822	3.837
15925.000	295.102	298.772	298.072	3.670

Notes:-

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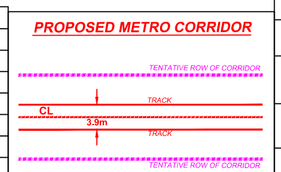
4. Pier details in viaduct section marked in the GAD are tentative only.
5. Station areas are tentatively marked for information only.
6. The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO	DESCRIPTION	SYMBOL	SL.NO	DESCRIPTION	SYMBOL
1.	ROAD	ROAD	9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION		13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD.	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR



REVISIONS			RITES		SIGN.	NMRCL		SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT			H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT				
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT				
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP				
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR				
			APPROVED BY:	A.B.GUPTA GM/C/NGP				

CONSULTANT	राइट्स लिमिटेड (भारत सरकार का उद्यम) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION
DRG. NO.	RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015
संशोधन/REV.	R-01
पैमाना/SCALE	1:1000
DATE	19.10.15

SHEET NO.- 04

AUTOMOTIVE SQRE ← NORTH - SOUTH METRO CORRIDOR → KHAPARI

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	FORMATION LEVELS	LEVEL DIFF.(RL-GL)
15925.000	295.102	298.772	298.072	3.670
15950.000	295.305	299.022	298.322	3.716
15975.000	295.726	299.272	298.572	3.546
16000.000	295.854	299.522	298.822	3.667
16025.000	296.921	299.772	299.072	2.851
16050.000	296.333	300.016	299.316	3.683
16075.000	296.427	300.095	299.395	3.668
16100.000	296.594	300.095	299.395	3.502
16125.000	296.902	300.095	299.395	3.194
16150.000	296.992	300.095	299.395	3.103
16175.000	297.047	300.095	299.395	3.048
16200.000	296.875	300.095	299.395	3.220
16225.000	296.821	300.095	299.395	3.275
16250.000	296.399	300.095	299.395	3.697
16275.000	296.129	300.095	299.395	3.967
16300.000	295.687	300.095	299.395	4.408
16325.000	296.479	300.095	299.395	3.616
16350.000	297.210	300.095	299.395	2.886
16375.000	297.424	300.095	299.395	2.672
16400.000	297.788	300.095	299.395	2.307
16425.000	297.948	300.095	299.395	2.147
16450.000	298.356	300.095	299.395	1.739
16475.000	298.405	300.152	299.452	1.747
16500.000	298.579	300.354	299.654	1.775
16525.000	298.772	300.564	299.864	1.793
16550.000	298.932	300.774	300.074	1.841
16575.000	299.149	300.983	300.283	1.834
16600.000	299.548	301.193	300.493	1.645
16625.000	299.702	301.403	300.703	1.701

Notes:-

1. The final alignment plan with vertical profile for At Grade priority section from chainage 14/400 to 18/700 as submitted on 15.07.2015 has been revised due to following reasons;
   - Due to correction in the existing Railway boundary details as per revised survey drawing received from NMRCL.
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3. Rail Level under the MIHAN ROB revised to 308.45m to get more clearance (~ 6m) as desired by NMRCL.
4. Pier details in viaduct section marked in the GAD are tentative only.
5. Station areas are tentatively marked for information only.
6. The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO	DESCRIPTION	SL.NO	DESCRIPTION
1.	ROAD	9.	MANHOLE
2.	BOUNDARY WALL	10.	STREET LIGHT
3.	FENCING	11.	ELE_POLE
4.	TREE	12.	TEMPLE
5.	RLY BOUNDARY STATION	13.	TEL POLE
6.	RAILWAY BOUNDARY	14.	WATER WELL
7.	BOUNDARY PILLAR	15.	CHEMBER
8.	BUILDINGS	16.	DRAIN / NALA

PROPOSED METRO CORRIDOR (TENTATIVE ROW OF CORRIDOR, TRACK, CL, 3.9m)

REVISIONS			RITES		SIGN.	NMRCL	SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT		H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT			
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT			
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP			
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR			
			APPROVED BY:	A.B.GUPTA GM/C/NGP			

CONSULTANT: राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT: NAGPUR METRO RAIL CORP. LTD.

TITLE: PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION

DRG. NO. RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015

संशोधन/REV. R-01 | पैमाना/SCALE 1:1000 | DATE 19.10.15

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SHEET NO.- 05

NORTH - SOUTH METRO CORRIDOR

AUTOMOTIVE SQRE ← → KHAPARI

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	FORMATION LEVELS	LEVEL DIFF. (RL-GL)
16625.000	299.702	301.378	300.678	1.676
16650.000	299.963	301.597	300.897	1.634
16675.000	300.132	301.820	301.120	1.689
16700.000	300.170	302.308	301.608	2.138
16725.000	300.680	303.129	302.429	2.449
16750.000	301.010	303.978	303.278	2.969
16775.000	301.132	304.828	304.128	3.695
16800.000	301.578	305.677	304.977	4.100
16825.000	301.877	306.526		4.649
16850.000	302.203	307.376		5.173
16875.000	302.416	308.225		5.809
16900.000	302.641	309.075		6.434
16925.000	303.238	309.924		6.686
16950.000	303.680	310.773		7.093
16975.000	303.894	311.623		7.729
17000.000	304.095	312.472		8.376
17025.000	304.586	313.321		8.735
17050.000	304.529	314.171		9.641
17075.000	305.089	315.020		9.930
17100.000	305.435	315.869		10.435
17125.000	305.653	316.719		11.065
17150.000	305.797	317.566		11.768
17175.000	306.279	318.166		11.887
17200.000	306.571	318.350		11.779
17225.000	307.272	318.350		11.079
17250.000	307.318	318.350		11.032
17275.000	307.539	318.350		10.811
17300.000	307.729	318.350		10.621
17325.000	307.580	318.350		10.771

Notes:-

1. The final alignment plan with vertical profile for At Grade priority section from chainage 14/400 to 18/700 as submitted on 15.07.2015 has been revised due to following reasons;
   - Due to correction in the existing Railway boundary details as per revised survey drawing received from NMRCL.
   - Due to change in gradients to maintain maximum gradients upto 1% on ballasted track portions.
   - Due to change in horizontal alignment to maintain radius flatter than 440m on ballasted track portions.
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3. Rail Level under the MIHAN ROB revised to 308.45m to get more clearance (~ 6m) as desired by NMRCL.
4. Pier details in viaduct section marked in the GAD are tentative only.
5. Station areas are tentatively marked for information only.
6. The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO	DESCRIPTION	SYMBOL	SL.NO	DESCRIPTION	SYMBOL
1.	ROAD	ROAD	9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION	RLY	13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD.	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR
TENTATIVE ROW OF CORRIDOR
TRACK
CL
3.9m
TRACK
TENTATIVE ROW OF CORRIDOR

REVISIONS			RITES		SIGN.	NMRCL	SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT		H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT			
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT			
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP			
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR			
			APPROVED BY:	A.B.GUPTA GM/C/NGP			

CONSULTANT: राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE

CLIENT: NAGPUR METRO RAIL CORP. LTD.

TITLE: PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION

DRG. NO.	संशोधन/REV.	पैमाना/SCALE	DATE
RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015	R-01	1:1000	19.10.15

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SHEET NO.- 06

NORTH - SOUTH METRO CORRIDOR

Notes:-

1. The final alignment plan with vertical profile for At Grade priority section from chainage 14/400 to 18/700 as submitted on 15.07.2015 has been revised due to following reasons;
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   - Due to change in gradients to maintain maximum gradients upto 1% on ballasted track portions.
   - Due to change in horizontal alignment to maintain radius flatter than 440m on ballasted track portions.
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3. Rail Level under the MIHAN ROB revised to 308.45m to get more clearance (~ 6m) as desired by NMRCL.
4. Pier details in viaduct section marked in the GAD are tentative only.
5. Station areas are tentatively marked for information only.
6. The GAD is based on the survey data supplied by NMRCL.

L E G E N D

SL.NO	DESCRIPTION	SYMBOL	SL.NO	DESCRIPTION	SYMBOL
1.	ROAD		9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION		13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR

REVISIONS			RITES		SIGN.	NMRCL	SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT		H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT			
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT			
			FIELD DATA CHECKED BY:	K.SITARAMAIAH JGM/C/NGP			
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR			
			APPROVED BY:	A.B.GUPTA GM/C/NGP			

CONSULTANT	राइट्स लिमिटेड (भारत सरकार का उद्यम) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
TITLE	PLAN AND L- SECTION FOR AT GRADE PRIORITY SECTION
DRG. NO. RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015	संशोधन/REV. R-01 · पैमाना/SCALE 1:1000 · DATE 19.10.15

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SHEET NO.- 07

AUTOMOTIVE SQRE ← **NORTH - SOUTH METRO CORRIDOR** → KHAPARI

CHAINAGE	GROUND/ ROAD LEVELS	RAIL LEVELS	FORMATION LEVELS	LEVEL DIFF. (RL-GL)
18025.000	308.411	310.004	309.304	1.594
18050.000	308.431	310.143	309.443	1.712
18075.000	308.310	310.150	309.450	1.841
18100.000	308.060	310.150	309.450	2.091
18125.000	308.182	310.150	309.450	1.969
18150.000	308.538	310.150	309.450	1.612
18175.000	308.739	310.150	309.450	1.412
18200.000	308.089	310.150	309.450	2.062
18225.000	307.311	310.150	309.450	2.839
18250.000	307.607	310.150	309.450	2.544
18275.000	307.342	310.150	309.450	2.809
18300.000	307.055	310.150	309.450	3.095
18325.000	307.601	310.150	309.450	2.550
18350.000	307.529	310.150	309.450	2.622
18375.000	307.394	310.150	309.450	2.756
18400.000	306.913	310.056	309.356	3.142
18425.000	306.664	309.856	309.156	3.191
18450.000	306.902	309.656	308.956	2.754
18475.000	306.572	309.456	308.756	2.884
18500.000	306.146	309.256	308.556	3.109
18525.000	306.268	309.056	308.356	2.787
18550.000	307.107	308.856	308.156	1.748
18575.000	306.879	308.656	307.956	1.776
18600.000	307.061	308.456	307.756	1.395
18625.000	307.000	308.363	307.663	1.363
18650.000	306.718	308.363	307.663	1.645
18675.000	306.732	308.363	307.663	1.630
18700.000	306.455	308.299	307.599	1.844

VERTICAL ALIGN. — HORIZONTAL ALIGN. (shown graphically)

Notes:-

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LEGEND

SL.NO	DESCRIPTION	SYMBOL	SL.NO	DESCRIPTION	SYMBOL
1.	ROAD	ROAD	9.	MANHOLE	
2.	BOUNDARY WALL		10.	STREET LIGHT	
3.	FENCING		11.	ELE_POLE	
4.	TREE		12.	TEMPLE	
5.	RLY BOUNDARY STATION	RLY	13.	TEL POLE	
6.	RAILWAY BOUNDARY		14.	WATER WELL	
7.	BOUNDARY PILLAR		15.	CHEMBER	
8.	BUILDINGS	BUILD.	16.	DRAIN / NALA	

PROPOSED METRO CORRIDOR (TENTATIVE ROW OF CORRIDOR; TRACK; CL; 3.9m; TRACK; TENTATIVE ROW OF CORRIDOR)

REVISIONS			RITES		SIGN.	NMRCL	SIGN.
R-01	DATE:- 19.10.15	REVISION AS PER NOTES NO 1, 2, 3 & 4	ALIGNMENT DESIGNED BY:	P.K. SINGH AM/C/UT		H.P.TRIPATHI CPM-1	
			STATION PLANNING ASPECTS REVIEWED BY:	B.K. ARYA MGR./ARCH./UT			
			ALIGNMENT REVIEWED BY:	A.P.SHARMA Sr.DGM/C/UT			
			FIELD DATA CHECKED BY:	K.SITARAMIAH JGM/C/NGP			
			DESIGN ASPECT CHECKED BY:	SHAMEER BASHA GM/DESIGN/BLR			
			APPROVED BY:	A.B.GUPTA GM/C/NGP			

CONSULTANT	राइट्स लिमिटेड (भारत सरकार का प्रतिष्ठान) RITES THE INFRASTRUCTURE PEOPLE
CLIENT	NAGPUR METRO RAIL CORP. LTD.
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DRG. NO. RITES/UT/CO/NAGPUR/IC/NS/GAD-AG/2015	संशोधन/REV. R-01 — पैमाना/SCALE 1:1000 — DATE 19.10.15

APPENDIX D

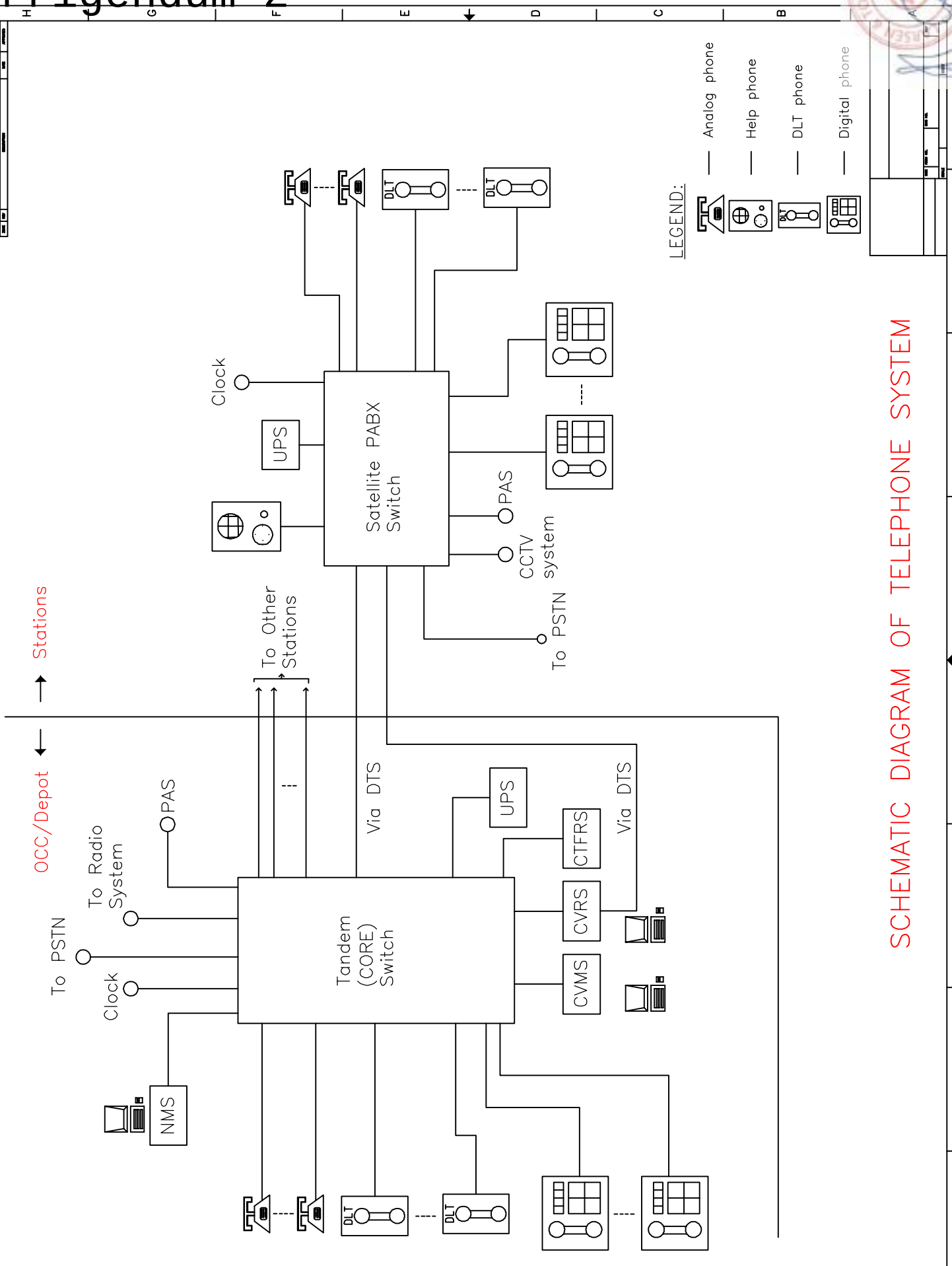
Communication Sub Systems
System Network Drawings (Context Diagrams)

Note:

i) The Network Drawings for all Communication Sub Systems are indicative and may require to be amended as per definitive / detailed design.

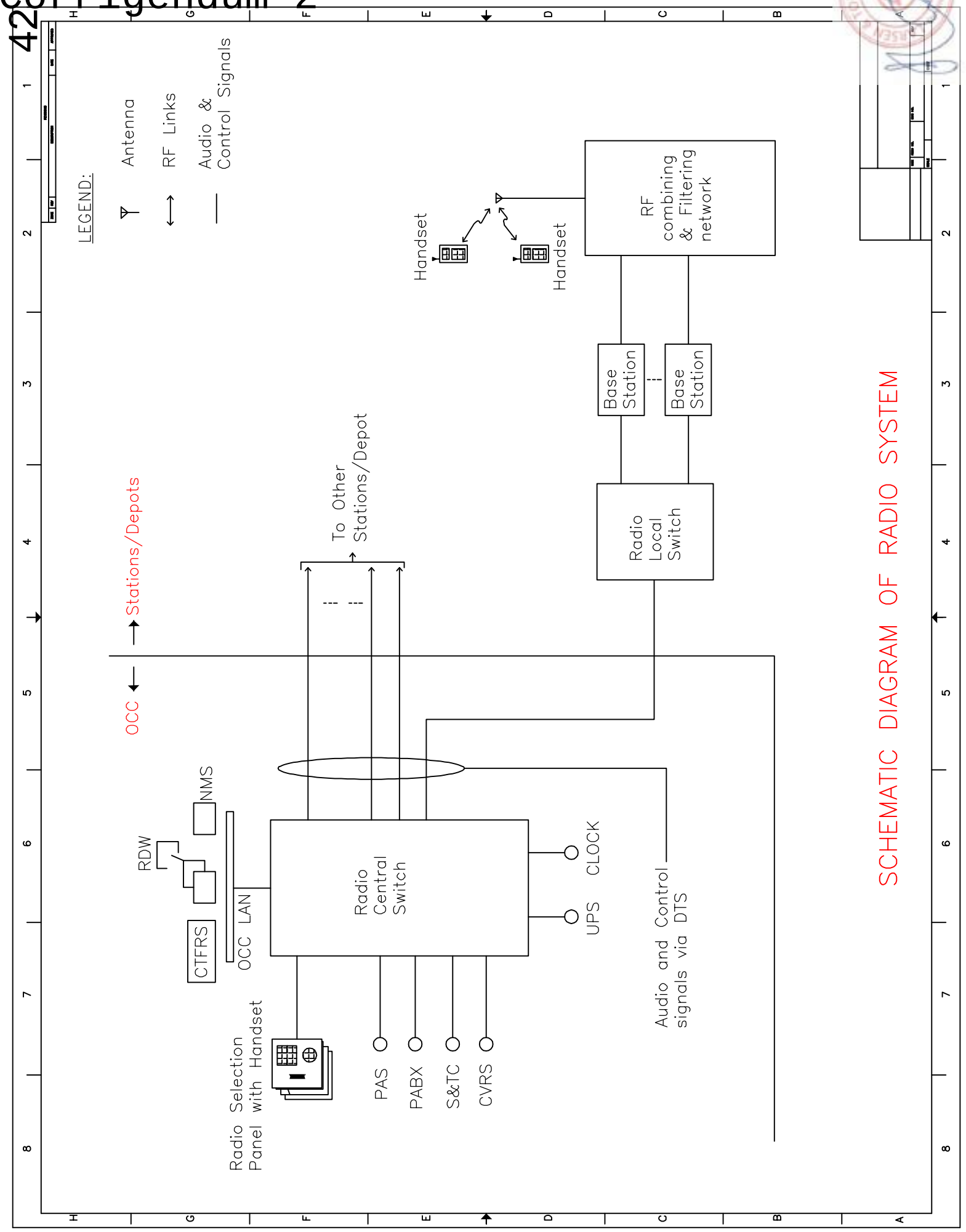
APPENDIX D1

Telephone System - System Network Drawings



APPENDIX D2

Radio System - System Network Drawings



APPENDIX D3

CCTV System - System Network Drawings