Nagpur Metro Rail Corporation Limited

Name of Work: Design, Manufacture, Supply, Installation, Testing and Commissioning of Signalling and Train Control System.

Corrigendum-III

Date: 04.10.2016

Tender No. : **N1S-01/2016**

NMRCL E-Tender Portal:**https://nagpurmetrorail.etenders.in**

Tender No. (As uploaded in the E-Tender Portal of NMRCL): **No.56**

Reply of Bidders Queries

- **Part A :**Reply of Bidders Queries
- **Part B:** Addendum
- **Part C:** Drawings
- **Part I:** Annexure
- **Part II:** Annexure
- **Part III:** Annexure

GM/Procurement

Name of work :DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OFSIGNALLING AND TRAIN CONTROL SYSTEM FOR NAGPUR METRO RAIL PROJECT.

Tender No.: N1S-01/2016. (ICB), Dtd.16.07.2016

CORRIGENDUM –III, PART-A (Reply to Bidder's Queries)

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
1	I, Cover Page	E-Tender Notice Key Details	Online submission up to 16.00 Hrs on 03.09.2016 at NMRCL's e-tender portal	It will be very difficult to complete the large bid of this nature in a given time period for preparation. Therefore, we request employer to at least grant 8 weeks of extension post receipt of all clarifications from NMRCL.	Date & Time of submission of Tender:- Online submission up to 16.00 Hrs on **25/10/2016** at NMRCL's e-tender portal. Date & Time of Opening of Tender:- On **25/10/2016** at 16.30 Hours or as decided by the authority at Metro House, 28/2, Anand Nagar, Civil Lines, Nagpur440001.
2			Date & Time of submission of Tender	Considering the complexity of the tender requirements, request you to extend the Date & time of Submission of Tender online by 6 weeks.	
3	I, Section I	Instructions to Bidders, 4.1, Pg 6	.....The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during Contract execution.	While maintaining and ensuring the requirement of joint and several liabilities amongst the parties, we request NMRCL to confirm that each party of the consortium shall be able to invoice directly D12 accordingly be paid directly for their respective account. This would be the most efficient method of payment based on scope of work as brought out in the price schedule and MoU for each legal entity. This has been followed in ongoing various contracts for Signalling & Train Control on Metro.	The lead partner in charge shall be authorized to incur liabilities, receive payments and receive instructions for and on behalf of any or all partners of the joint venture. The method of making payment to each member for their respective responsibility can also be agreed if it is incorporated in Joint Bidding Agreement and each member should submit invoice through consortium leader.
4	I, Section II (BDS)	ITB 4.11 (New Para), Pg 29	(d) The Lead member shall be authorized to incur liabilities, receive payment (if provided for in MoU / Consortium Agreement) and receive instructions for and on behalf of any or all Members of the Consortium / Joint Venture.	While maintaining and ensuring the requirement of joint and several liabilities amongst the parties, we request NMRCL to confirm that each party of the consortium shall be able to invoice NMRCL through consortium leader for their respective scopes of work and shall accordingly be paid directly for their respective account. This would be the most efficient method of payment based on scope	The lead partner in charge shall be authorized to incur liabilities, receive payments and receive instructions for and on behalf of any or all partners of the joint venture. The method of making payment to each member for their respective responsibility can also be agreed if it is incorporated in Joint Bidding Agreement and each member should submit invoice through consortium leader.

				of work as brought out in the price schedule and MoU for each legal entity.	
5	I, Section-II (BDS)	ITB 1.11 (new Para), Pg 28	The successful Bidder has to establish its office at Nagpur if it does not have at present. The cost and expenses for setting up the said office(s) will be deemed to have been included in the Price Document and no separate / extra / additional payment will be made on this account. The employer has applied for financing the funds with AFD, France. Signing an agreement likely to happen very soon.	1. We understand that the office referred here are the temporary site offices to be constructed at each depot location as referred in TS 3.6.3.1 of works requirement. Please confirm if our understanding is correct. 2. Please provide the detailed requirement of Contractor's site office. 3. Please clarify the minimum footprint size of the required site office.	1. The understanding is correct. 2&3. Please refer Clause No.3.6.3.1 and 3.6.5 of Part-II, Technical Specification.
6	I, Section –II BDS	Clause ITB 1.3 (New Para) , Pg 27	The work comprises design, manufacture, supply, installation, testing and commissioning of Signalling and Train Control System, comprehensive maintenance of electronic components and the training of operation & maintenance personnel. It also includes the supply of spares, training, operation & maintenance manuals.	Please elaborate the scope under comprehensive maintenance of Electronic components.	Please refer Clause 22.17 and 22.18 of Technical Specification in Part II w.r.t Maintenance
7	I ,Section II BDS	Clause ITB 1.8 (New Para), Pg 27	The Contractor shall also carry out effective interface and coordination with the relevant Authorities and Designated Contractors and others appointed by the Employer from time to time, during the Contract Period.	Kindly confirm that, Employer will facilitate or support the contractor to carry out effective interface and coordination with the relevant Authorities and Designated Contractors and others appointed by the Employer from time to time, during the Contract Period.	Yes, Employer will facilitate for the coordination with different bodies and the contractor.
8	I ,Section II BDS	Clause ITB 1.10 (New Para) , Pg 28	The detailed scope of work is further described in Part II: Works Requirements. The Bidders are particularly advised to pay attention to the IT Requirements of Employer (Clause 2.6 of General Specifications).	Clause 2.6 of General Specifications does not have information about IT requirements of Employer. Please clarify.	Please refer Clause 7.10 of Technical Specification.
9	I ,Section II BDS	Clause ITB 11.3.1.8, Pg 35	Bidder's Technical Proposal: The Bidder shall submit with its Bid its Technical Proposals as described in Section IV: Bidding Form (Form 4.4; Part IC).	We understand the for Bidder's Technical Proposal we have to refer Section IV: Bidding Form **(Form 4.4: Annexure IVC)**. Please confirm	Clause ITB 11.3.1.8 amended. Refer to Addendum
10	I, Section II BDS	Clause ITB 11.3.1.25	Supporting Technical Documents: The Bidder shall submit with the Technical Package the documents that are identified in paragraphs below. ----------	We understand the for Bidder's Technical Proposal we have to refer Section IV: Bidding Form (Form 4.4: Annexure IVC). Please confirm	Clause ITB 11.3.1.25 amended. Refer to Addendum

			(c) Documents amplifying the Bidder's Technical proposal as described in Section IV: Bidding Forms (Form 4.4; Part 1C)		
11	I, Section II BDS	Clause ITB 11.4.2	Bidders shall quote its price as elaborated in Pricing Document (Section IV: Bidding Forms (Form 3; Part 1B)	We understand that Bidders shall quote its price as elaborated in Pricing Document (Section IV: Bidding Forms (Form 3; Annexure IVB) Please confirm	Clause ITB 11.4.2 amended. Refer to Addendum
12	I, Section II BDS	ITB 14.13, Pg 44	The Employer may get, from the Government, partial or complete waiver of taxes, royalties, duties, Labour cess, octroi, and other levies payable to various authorities. The successful Bidder (the Contractor) shall maintain meticulous records of all the taxes and duties paid and provide the same with each running bill. In case the waiver becomes effective, the Contractor will be advised on the process to be followed to obtain the refund from the concerned authority. The Contractor shall arrange for the remit of the refund to the Employer. In case of failure by the Contractor to remit such amounts, the same shall be recovered from amounts due for payment to the Contractor. The performa of undertaking is provided in Section IV: Bidding Form (Form 21).	Could you please clarify at what stage, bidder will get to know the waiver of taxes, royalities, duties, labour cess, octroi and other levies payable to various authorities.	At present there is no waival of the taxes however, The Bidder should quote the rates as basic rates as well as tax component. Evaluation of the bid to be done on the basis of these two (Basic Rate + Taxes). However, individual tax component to be given by the bidder as per attached Sheet alongwith Tender Document. in future during work if any waival / concession is given then that benefit to be passed to the NMRCL.
13	I, Section II BDS	ITB 14.15, Pg 44	As per Notification No. 25/2012 – Service Tax Act (dated 20.6.2012) under section 93 (1) read with section 66 (B) of the Finance Act, by way of erection, construction, commissioning or installation of original works pertaining to railways including monorail or metro are exempted from the whole of service tax leviable thereon. The said notification is applicable for main contractors and even for subcontractors. The Bidders shall examine his own assessment in regard to service tax liability in the contract. No separate tax reimbursement will be made by NMRCL.	As per the recent budget 2016, this exemption on service tax is no more applicable for Metro projects. Further with the passage of recent GST bill the taxes may changes. Since this will be statutory change the same will be reimbursed at actual. Kindly confirm.	For information of Bidders, the Department of Revenue vide notification no. F.No. 334/8/2016-TRU dated 29.02.2016 has withdrawn exemption of Service Tax related to construction, erection, commissioning / installation of original works of Metro projects in respect of contracts entered into on or after 01.03.2016. The Bidders shall examine his own assessment in regard to service tax liability in the contract. **No separate tax reimbursement will be made by NMRCL, except for those which are already a part of the pricing document as Appendix to Bid Total - DETAILS OF TAXES / DUTIES /**
14				The recent Finance Bill has removed metros from the said exemption notification. So accordingly please amend the tender condition accordingly to either include service tax in Bid price or to allow for separate reimbursement.	

					LEVIES ETC. INCLUDED IN THE FIXED LUMPSUM PRICE (COST CENTRE WISE) in the submitted offer by the contractor.
15	I, III Particular Conditions 53	ITB 14.16 (New Para, Pg 44	ITB 14.16 : (c) NMRCL project is covered under Project Import chapter 98.01 of Custom Tariff Act according to which only concessional custom duty is payable. The Bidder should avail this benefit and pass on the benefit of the same to NMRCL. PC 53 (sub clause 14.1) (c): The Contractor shall be solely responsible to find out and ascertain whether their supplies for Nagpur Metro Rail Project will qualify and be eligible for the concession duty benefits under Chapter 98.01 of custom Tariff Act for project Imports& shall manage the Custom Duty and Excise duty applicability and inclusion in their quoted price accordingly.	PC 53 and ITB 14.16 contradicting each other. As per PC 53 contractor is responsible to find out about applicability of Chapter 98.01 whereas, in ITB states that the NMRCL is covered under chapter 98.01. Kindly confirm. Kindly also confirm that this project is covered under chapter 98.01 and N1S01 contractor can avail concessional custom duty benefit.	At present there is no waival of the taxes.In future during work if any waival / concession is given then that benefit to be passed to the NMRCL.
16	I	ITB 14.16 (New Para, Pg 44	NMRCL project is covered under Project Import chapter 98.01 of Custom Tariff Act according to which only concessional custom duty is payable. The Bidder should avail this benefit and pass on the benefit of the same to NMRCL.	We request you to share the relevant excerpts of the notification, confirming their coverage under Project Import chapter 98.01	Bidders are required to arrange themselves as it is available in public domain.
17	I	ITB 14.16 (New Para, Pg 44	NMRCL project is covered under Project Import chapter 98.01 of Custom Tariff Act according to which only concessional custom duty is payable. The Bidder should avail this benefit and pass on the benefit of the same to NMRCL. As regards registration under Project Import, after the award of the contract, NMRCL at the written request of Contractor shall facilitate the Contractor for obtaining sponsoring / recommendation letter from the Ministry of Urban Development / Government of Maharashtra for getting themselves registered for availing Project Import benefits. The responsibility to avail the concessional benefits under Project Import shall solely rest with the Contractor.	Please confirm that Project Import sponsoring/recommendation letter will be made available for sub-contractors to Contractor.	Clause is self-explanatory however NMRCL may facilitate for letter whenever applicable.

18	I	ITB 14.16 (New Para, Pg 44	NMRCL project is covered under Project Import chapter 98.01 of Custom Tariff Act according to which only concessional custom duty is payable. The Bidder should avail this benefit and pass on the benefit of the same to NMRCL. As regards registration under Project Import, after the award of the contract, NMRCL at the written request of Contractor shall facilitate the Contractor for obtaining sponsoring / recommendation letter from the Ministry of Urban Development / Government of Maharashtra for getting themselves registered for availing Project Import benefits. The responsibility to avail the concessional benefits under Project Import shall solely rest with the Contractor.	In order to avail the project import benefit, we understand that materials will be imported in the IEC code of NMRCL and NMRCL will facilitate us with it IEC code and also support to avail project import benefits. Please confirm our understanding. Will Goods imported under the IEC code of contractor also be eligible for project import benefits?	Clause is self explanatory however NMRCL may facilitate for letter whenever applicable.
19	I, Section II BDS	ITB 14.18, Pg 45	In view of above, the Bidders are advised to quote the price inclusive of al| central/state/local taxes, duties, levies, cess and all other incidental charges required to fulfill the bidding conditions including statutory deduction viz., TDS towards Income Tax / Works Contract Tax etc. after considering ITB 14.7 to 14.18 above.	Will tax to be deducted at source includes BOCW cess be deducted from payment to contractor? If yes then at what rate and will the deduction be made on entire Price or only on service portion. Please clarify whether the WCT TDS deduction be made on entire Price or only onshore(INR) portion.	BOCW cess shall also be deducted from the payment due to the contractor and so also WCT TDS deduction shall be made on entire price as per BOCW, GO Issued by Dept of Govt. Of Maharashtra.
20	I, Section II BDS	ITB 15.1,Pg 45	The currency(ies) of the bid and the payment currency(ies) shall be in accordance with Alternative *B* as described below: Alternative B (Bidders allowed to quote in local and foreign currencies): (a) The unit rates and prices shall be quoted by the Bidder in the Schedules separately in the following currencies: (i) for those inputs to the Works that the Bidder expects to supply from within the Employer's country, in Indian Rupees (the name of the currency of the Employer's country), and further referred to as "the local currency"; and (ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros (€) or US Dollars (US$).	Payment in foreign currencies will only be for inputs to the works bidder expects to supply from outside India. Please clarify that such foreign currency payments will not be subject to deduction of TDS?	Foreign Currency payment shall also be subject to deduction of TDS from amount payable to the contractor.

21	I, Section II BDS	ITB 15.1,Pg 45	(ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros (€) or US Dollars (US$).	Request you to amend the clause as follows: (ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros (€) and US Dollars (US$).	Clause ITB 15.1 (ii) amended. Refer to Addendum
22	I, Section II BDS	ITB 15.1 (ii)	[...] For those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros or US Dollars	Please clarify that the Bidder could quote in a mix of these three mentioned currencies or whether the Bidder has to quote in one of these three currencies?	Bidder can quote any one of these three currencies, not mixed.
23	I, Section II BDS	ITB 20.2	The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.	We understand that all the Bid documents will be signed and initialed by authorized signatory of Lead Member of Consortium only unless & until there is a special requirement for any document to be signed by to be signed by all consortium members.	The various forms provided along the bid documents indicate clearly the signatory of the said document however the authorized POA should also sign the same and submit.
24	I, Section II BDS	Clause ITB 29.2.1. (New Para), Pg 50	Evaluation of qualifying conditions: Bids that include qualifications which: 1. seek to shift to the Employer, another government agency or another contractor all or part of the risk and/or liability allocated to the Contractor in the Bidding Documents; or 2. which includes a deviation from the Bidding Documents which would render the Works, or any part thereof, unfit for their intended purpose; or 3. fails to fulfill the eligibility criteria as mentioned in SN 12, 12.1 and 13 of "(A) FILTER OF APPLICANTS – CHECKLIST of INITITAL FILTER EVALUATION CRITERIA"; or 4. which fails to commit to the date specified for the completion of the Works as specified under	Regarding this clause we would like to highlight following points : 1. In point 3 you have mentioned SN 12,12.1,13 of "(A) FILTER OF APPLICANTS – CHECKLIST of INITITAL FILTER EVALUATION CRITERIA"; . The above mentioned checklist contains only SN 1 to SN 9E. Please clarify. 2. In point 4 you mentioned Key Date 9 which is not available in Section IX. Particular Conditions (PC) Part A – Contract Data 'Table: Summary of Sections'	Clause 29.2.1. (New Para) amended. Refer to Addendum

			Key Dates 6 and 9 under Section IX. Particular Conditions (PC) Part A –Contract Data 'Table: Summary of Sections' will be deemed non-conforming and shall be rejected.	Please clarify.	
25	I, Section II BDS	ITB 32.1, Pg 52	Evaluation of Price Bids	According to Annexure IV- A (Instruction for Price Bid), the fixed lump sum price should include all the taxes and duties. We request you to clarify and confirm if evaluation of price would be inclusive of all taxes and duties.	Evaluation of Price will be inclusive of all taxes and duties.
26	I, Section II BDS	Clause ITB 43.3 (New Para)	If the Bidder comprises a Consortium, a parent company of each Member of such Consortium will be required to execute the Undertakings and Guarantees referred to in sub-paragraphs (b) and (c) of ITB 43.1above.	As per this clause successful bidder has to submit Parent Company Undertaking and Parent Company Guarantee from each Member of its Consortium, In the required format given in Part 3 : Section X : Contract Forms We propose to submit a Comfort letter from our Parent Company instead of PCG and PCU. Same process has been followed earlier in other projects of India.	Agreed to.
27	I, Section II BDS	Clause ITB 44 (New Para)	Insurance The Bidders' attention is drawn to the provisions contained in Clause 18 of the General Conditions of Contract and Clause 68, 69 & 70 of Particular Conditions of Contract.	We wish to draw your attention that in mentioned clauses of GC and PC nothing is mentioned about following two points : 1. Marine Transit cover for the plant and equipment including spares and 2. Comprehensive General Insurance for the project. Could you please clarify on the above points?	Marine and transit insurance can be obtained by the bidder from any reputed insurance company in India or abroad as well.
28	I, Section IV (Bidding Forms)	Summary of Payment Currencies, Pg 69	*Name of currency* Local currency: _____ Foreign currency: € or US$_____ Provisional sums expressed in local currency _____	Second line: Considering that YEN is part of the accepted foreign currencies, as per Bid Data Sheet ITB 15.1 (ii), could you confirm that second line should be read as "Foreign Currency: EUR or USD or YEN"? - In case the Bidder can submit a bid in a mix of EUR, USD and YEN; shall the Summary of Payment Currencies be tuned to reflect such mix?	Quoting in Mix Currencies is not allowed. Bidder has option to choose any one of these three given foreign currency.
29	I, Section IV (Bidding Forms)	1A. Pro-Forma Letter of	*(Member(s) who are not the lead partner of the JV should add the following paragraph)**	We wish to bring your kind attention towards Pro-Forma letter of participation :	1A. Pro-Forma Letter of Participation from Each Partner of Joint Venture (JV) amended.

		Participation from Each Partner of Joint Venture (JV), Pg 66	'This JV is led by ..... whom we hereby authorize to act on our behalf for the purpose of submission of Bid for ..... and authorize to incur liabilities and receive instructions for an on behalf of any and all the partners or constituents of the Joint Venture.' OR *(Member being the lead member of the group should add the following paragraph)** 'In this group we act as leader and, for the purposes of applying for qualification,' represent the Joint Venture	In first block consortium members are authorizing the Lead partner for the purpose of submission of Bid while In Second block Lead member is acting for the purposes of applying for qualification. Our understanding is that in Pro-Forma letter of participation Submission of Bid should be mentioned at both places. Please suggest for appropriate change if applicable.	Refer to Addendum
30	I, Section IV (Bidding Forms)	4.5 Form EQU, Page 80	The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment	Please clarify what constitutes "key equipment"	Adequate information to be provided for capability of handling of such kind of project includes man power, T&P, M&P, Design capability and proven track record of Successful implementation of CBTC project world wide as per Similar work requirement
31	I, Section IV (Bidding Forms)	Form 8 Form of Joint Bidding Agreement	It is agreed by all the Members that there shall be separate Consortium Bank Account (distinct from the bank accounts of the individual Members) to which the individual Members shall contribute their share capital and/or working capital and the financial obligations of the Consortium shall be discharged through the said Consortium Bank Account only and also all the payments received by the Consortium from the Employer shall be through that account alone	Please note that Consortium works on the divisible scope of work having a lead partner with joint and severally liability and having separate bank accounts for individual consortium members, therefore a separate bank account for consortium is not required.	The lead partner in charge shall be authorized to incur liabilities, receive payments and receive instructions for and on behalf of any or all partners of the joint venture. Each member for their respective responsibility can receive payments in the requested separate accounts. However, each member should submit invoice through consortium leader.
32	I, Section IV (Bidding Forms)	Form 9 Form of Legal Capacity, Pg 103	(B) Format for the Board resolution to be passed by Lead Member of Consortium (applicable in case the Bidder is a consortium) (C) Format for the Board resolution to be passed by a Member other than the Lead Member of Consortium (applicable in case the Bidder is a	In mentioned section B and C of Form 9 Bidding forms there is a requirement to provide specific board resolutions for 'Design, Manufacture, Supply, Installation, Testing and Commissioning of Signalling and Train Control System' for Nagpur Metro Rail Project.	A general Board resolution/ Power of Attorney empowering the Managing Directors to appoint the authorized signatories for S&TC tender will be sufficient for the board resolution requirement.

			consortium	We understand that Power of Attorney given to the authorized signatories by the Managing Director who is empowered to sub delegate the power under boarder solution, will be valid and hold good for the signing and execution of the Bid documents and contract agreement. Please clarify whether the assumption drawn above is sufficient to satisfy the conditions laid under Point B and C. of Form 9.	
33	I, Section II	Annexure II-A Tool Kit for- E-Tender Portal, Section : D (iv), Pg 141)	Online Tender Submission of Bid: At the stage of EMD payment, which bidder has to pay online....	We understand that there is no online payment towards EMD to be made except tender cost i.e. Rs.1 lakh. The bid security in the form of Bank Guarantee shall be applicable in line with ITB 19.1 (BDS) & Form 6. Kindly confirm.	The understanding is correct.
34	I, Section III	Annexure-III-A (PQ-Initial Filter) Filter of Applicants, Check List, Item 9A (Page 150)	Has the applicant not successfully completed at least one single work of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI, ATP & ATS sub-system,on a MRTS line during last 10 years?	We noted that eligibility requirements are defined at two places in Annexure III-A. One at 'A. Checklist' and that at B.Assesment Topics; T6 Qualification Criteria'. And the requirements are not matching in exact sense. Further the Item 9A and 9B are not coherence; e.g. Item 9A require completion of at lease one project, while Item 9B requires two. We request and suggest the following. May we request you to please consolidate all the eligibility requirements at one place only? The Item 9A be amended as under : ***Has the applicant not successfully completed at least 5 different contracts of Supply and Commissioning of Signalling & Train Control System using radio base CBTC with moving block including CBI, ATP & ATS Sub-System aggregating to minimum 150 route Km, on MRTS lines during last 10 years?***	No change.

35	I, Section III	Annexure-III-A (PQ-Initial Filter) Filter of Applicants, Check List, Item 9B (Page 150)	Is at least two CATC works (at least one CBTC) not working satisfactorily in a country outside the country of origin?	TCT has one oversea Project under execution in Vietnam (Project for Hanoi Urban Railway, Cat Linh-Ha Dong Route), the estimated time for completion and operation is at the end of 2017. We believe this is restrictive criteria (Particularly outside the country of origin) and suits only the incumbent players. We request you to please consider amending the criteria as under : ***Is at least one CBTC project not in operation for minimum 5 years?*** ***OR*** ***Does the applicant not have experience of at least one signalling (CBTC) project outside the country of origin (including project under construction)?***	No change.
36	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) Filter of Applicants, Check List, Item 9C (Page 150)	Are CBI & ATP subsystems not from OEMs under same parent company for item 9A work above?	Keeping in view the inter-operability requirements as well as demonstrating the integration capability of applicant, it is desirable that CBI of other suppliers be integrated with core system of CBTC i.e. ATO & ATP of other suppliers. Does a JV made up by TCT and the suppliers who has experience of supplying CBI for TCT satisfy Item 9C? Otherwise, we request consider amending the criteria as under: **Are ATP & ATP subsystem not from OEM under same parent company for item 9A work above?**	No change.
37	I, Section III Evaluation and Qualification Criteria	Annexure III-A: Pre-Qualification (Initial Filter) Documents , B.	Liquidity: It is necessary that the firm can withstand the Cash Flow that the contract will require until payment received from Employer. Liquidity therefore becomes an important consideration. This can be seen from the balance sheets and/or from the banking reference. Net current assets {(Current assets + loans & advances) – (current	We understand that this condition is applicable for the last financial year (2015) and thus, we suggest the changes as below. **<u>Liquidity</u>** It is necessary that the firm can withstand the Cash Flow that the contract will require until payment received from Employer. Liquidity therefore becomes an important	No change.

		Assessment Topic, Sub Clause: T1 Liquidity, Pg 151	liabilities + provision)} or documents including banking reference, should show that	consideration. This can be seen from the balance sheets and/or from the banking reference. Net current assets {(Current assets + loans & advances) – (current liabilities + provision)} **for the last financial year (2015)** or documents including banking reference, should show that	
38	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) B. ASSESSMENT TOPICS, T2	T2 Profitability The minimum requirements to 'Pass' this criteria is that the Balance sheets should indicate that the Profitability (Earnings or Profit before tax but after interest) shall be positive in at least 2 financial years out of last five financial years. The financial year as applicable in the country of origin of the bidders would be considered. The 'last financial year' will be the latest financial year that ended on or before 31.03.2016. In case of a Joint Venture/Consortium, the evaluation against the above eligibility criteriawill be done in totality i.e. algebraic aggregate of evaluation of each member) and not as individual member.	Does it mean that if one member has negative profitability and one has positive profitability but total of two is again positive in 2 of 5 financial years then the profitability criteria is met?	Yes, overall should be on positive side and Lead Partner should compulsorily profitable.
39	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) B. ASSESSMENT TOPICS, T2	T2: Profitability T4: Average Annual TurnOver T5: Net Worth	In addition to existing clause, we request to add the following para under these clauses. "Any Applicants who are affiliated with public listed companies (whether as subsidiary company or associate company) may apply with their parent company's information, provided their parent company meet the relevant criteria and they furnish a Parental Guarantee to guarantee their full performance and obligations."	No change.
40	I, Section III Evaluation and Qualification Criteria	Annexure III-A: Pre-Qualification (Initial	Net Worth Net worth of tenderer during last audited financial year should be > 117.66 crore.	Please clarify if M is M% or M is number. For eg. If percentage participation of a member 1 with Net worth A is 30% and member 2 with Net worth B is 70%, the net worth of the JV will	If M=30 % share of first bidder A= Net worth of 1st bidder N=70% share of second bidder B=net worth of Second bidder Net worth of JV= (30XA+70XB)/100.

		Filter) Documents , B. Assessment Topic, Sub Clauses:T2, T4 and T5, Pg 151-152	ii) In case of joint venture / Consortium, Net worth will be based on the percentage participation of each Member. Example: Let Member-1 has percentage participation = M and Member-2 has =N. Let the Net worth of Member-1 is A and that of Member-2 is B, then the Net worth of JV will be = AM+BN / 100	be calculated as (30xA)+(70xB) / 100 Please clarify if our understanding is correct.	Understanding is correct.
41	I, Section III Evaluation and Qualification Criteria	Annexure III A - (PQ-Initial Filter) T6 A (iv) (Page 153)	International contractors who are considering forming joint ventures, partnerships or consortia for the purpose of applying for the bid, are encouraged to involve suitable local partners.	We request you to amend this condition as follows:- "International contractors who are considering forming joint ventures,partnerships or consortia for the purpose of applying for the bid, are required to involve suitable local partners" keeping in mind Make in India initiative of PMO India.	No change.
42	I, Section III Evaluation and Qualification Criteria	Annexure III-A Pre-Qualification Document T6- IX-d) (Page 154)	In case of JV / Consortium, change in constitution or percentage participation shall not be permitted at any stage after their submission of application otherwise the applicant shall be treated as nonresponsive. Lead partner shall be one of the substantial partners based on whose strength work experience is accounted for in meeting the criteria of Clause T6 (b)	We understand that if a consortium is qualified for clause T6 (b), and all consortium members are substantial partners with joint and several liability. There should be freedom to choose any substantial partner as a Lead Partner. Therefore we request you to change this clause as following : In case of JV / Consortium, change in constitution or percentage participation shall not be permitted at any stage after their submission of application otherwise the applicant shall be treated as nonresponsive.	In case of JV / Consortium, change in constitution or percentage participation shall not be permitted at any stage after their submission of application otherwise the applicant shall be treated as nonresponsive. Lead partner shall be one of the substantial partners based on whose strength work experience is accounted for in meeting the criteria of Clause T6 (b) and will have minimum 26 % share in work. However, In case of consortium members from the same parent company or under common control, Lead partner can be any member who will have minimum 26% share in work.
43	I, Section III Evaluation and Qualification Criteria	Annexure III-A: Pre-Qualification (Initial Filter)	b. Minimum Eligibility Criteria: i. Work Experience Requirements for Signalling & Train Control Systems: The applicant (or the concerned member of JV/Consortium) should have successfully carried	We suggest the changes in these criteria as below since the length of the line(s) in operation is more relevant requirement to represent similar work experience. i. At least one work of supply and	Annexure-III-A (PQ-Initial Filter) b. i & ii Minimum Eligibility Criteria amended. Refer to Addendum.

		Documents , B. Assessment Topic, Sub Clauses: T6 (b). Min. Eligibility Criteria, Pg 155	out the following work(s) in the last 10 (TEN) years ending 31.03.2016, as given below: i. At least one work of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 282 crore.** OR At least two works, each of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 176 crore.** OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 141 crore.** **ii. At least two CATC works (out of which at least one CBTC) shall be outside the country of origin.**	commissioning of Signalling & Train Control system using radio based CBTC with **true** moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 282 crore **for a line of more than 30km. The line(s) used as a reference(s) should be in revenues operation for at least 2 years.** OR At least two works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with **true** moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 176 crore , **for 2 lines of more than 20km. The line(s) used as a reference(s) should be in revenues operation for at least 2 years.** OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with **true** moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 141 crore **for 3 lines of more than 15km. The line(s) used as a reference(s) should be in revenues operation for at least 2 years.** **ii. At least two CATC works (out of which at least one CBTC) shall be in a country other than country of manufacture, or in India.**	
44	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) b.Minimum Eligibility Criteria (Pg 155)	i. Work Experience Requirements for Signalling & Train Control Systems: The applicant (or the concerned member of V/Consortium) should have successfully carried out the following work(s) in the last 10 (TEN) years ending 31.03.2016, as given below: i. At least one work of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 282 crore. OR	Request you to amend the clause as follows: i. Work Experience Requirements for Signalling & Train Control Systems: The applicant (or the concerned member of V/Consortium) should have successfully carried out the following work(s) in the last 10 (TEN) years ending 31.03.2016, as given below: i. At least one work of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 282 crore.	Annexure-III-A (PQ-Initial Filter) b. i & ii Minimum Eligibility Criteria amended. Refer to Addendum.

			At least two works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 176 crore. OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 141 crore.	OR At least two works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 176 crore. OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 120 crore.	
45				At least one work of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 282 crore or not less than 40 Route Km. OR At least two works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 176 crore or not less than 25 Route Km. OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem in Metro Rail of value not less than INR 141 crore or not less than 20 Route Km.	Annexure-III-A (PQ-Initial Filter) b. i & ii Minimum Eligibility Criteria amended. Refer to Addendum.
46	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) T6 b. iii.(Page 155)	Applicant must have experience of integration of all subsystems (PIDS, PAS, TVS, PSD, Rolling stock, Telecommunication, Track, Traction) in at least one CBTC work out of the work(s) submitted in support of work experience under Clause T6 above.	We request you to change the clause as follows:- Applicant must have experience of integration with all subsystems (PIDS, PAS, VTS, PSD, Rolling stock, Telecommunication, Track, Traction) in at least one CBTC work out of the work(s) submitted in support of work experience under Clause T6 above.	Annexure-III-A (PQ-Initial Filter) T6 b.ii amended. Refer to Addendum

				We understand, it is required to integrate with Video Transmission Systems (VTS) and not Tunnel Ventilation Systems (TVS)	
47	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) T6, b. iii (Page 155)	T6 b.iii. In the above CBTC work(s) under Clause T6 (b) (i) CBI, ATP & ATS subsystem shall be from OEMs under same parent company. Applicant must have experience of integration of all major subsystems (Interlocking, ATP, ATS, PSD and Radio) in a CBTC project.	Does a JV made up by TCT and the supplier who has experience of supplying CBI for TCT satisfy Item 9C? Otherwise, for the same reasoning as in Item 9C above, we request consider amending the criteria as under: ***In the above CBTC work(s) under Clause T6 i(A) ATO, ATP & ATS subsystem shall be from OEM s under same parent company. Applicant must have experience of integration of all major subsystems(Interlocking, ATP, ATS, PSD, CBI and Radio) in a CBTC Project.***	No change.
48	I, Section III Evaluation and Qualification Criteria	Annexure-III-A (PQ-Initial Filter) B. Assessment Topic, Sub Clauses: T6 (b). Min. Eligibility Criteria, Pg 156	Notes under Cl. T6(b): Min. Eligibility Criteria. Note no. (i) i. In case the experience of successfully completing the work(s) is not met fully by substantial member of JV/Consortium, then the JV/ Consortium should include a member having percentage participation not less than 5% who should meet that part of experience criteria (which is not met by substantial partner).	1) From this Note, we understand that a consortium can include an experienced member having percentage participation of only 5% and thus, the consortium can comply the min. eligibility criteria based on project experience references of this consortium member irrespective of requirement of min. 26% participation under clause ref. T6 (ix) (b). Please clarify if our understanding is correct. 2) We request that this requirement of minimum 26% participation from each member should not be mandatory for the group companies participating in consortium.	1) The understanding is correct. 2) It should be mandatory.
49	I, Section III Evaluation and Qualification Criteria	Annexure III-A: Pre-Qualification (Initial Filter) Documents B. Assessmen	Notes under Cl. T6(b): Min. Eligibility Criteria. Note no. (iv) iv. Value of successfully completed portion of any on-going work up to 31.03.2016 will also be considered for qualification of work experience criteria.	We request not to consider completed portion of on-going work as it neither represents satisfactory experience nor does it reflect the punch list items and other outstanding issues under the ongoing work. Thus, please delete this note no (iv).	No change.

		t Topic, Sub Clauses: T6 (b). Min. Eligibility Criteria, Pg 156			
50	I, Section III Evaluation and Qualification Criteria	Annexure III-A: Pre-Qualification (Initial Filter) T6, Item b.Note vi (a), (Page 156)	**Length of Time in Business** This will be evaluated based on information provided in **Annexure-1 of Initial Filter Questionnaire and at S. No. 15 of Proforma Section 3 given in Initial Filter Questionnaire.** In case of JV/Consortium formation, at least one of the substantial members should be in business for minimum 10 years in Signalling and Train Control System. **Requirement: 10 years (minimum).**	Bejing TCT company was established on December 2009. Does a JV made up by TCT and a company who has been in business for more than 10 years satisfy Item 9C? ***Otherwise, we request consider amending the clause to replace '10 yeas' with '6 years'***	No change.
51	I, Section III Evaluation and Qualification Criteria	Annexure III A - (PQ-Initial Filter) T6 C (Page 157)	BID CAPACITY EVALUATION Methodology for Working Out the Available Bid Capacity The Tenderers will be qualified only if their available bid capacity is more that the estimated cost of work. Available bid capacity will be calculated as under: Available bid capacity = 2AN - B	Please clarify what do you infer by "estimated cost of work". Which work is being referred here?	This is a design built contract. The bidder has to quote the cost themselves. For calculating of bid capacity of the bidder shall be more than the quoted cost. Available bid capacity will be calculated as under: Available bid capacity = 2AN - B Where A= Maximum turn over in last five financial years. N = No. of years in which supply is to be made B = Value of existing Contracts
52	I, Annexure-III A	Annexure III A- Initial Filter Questionnaire Performa Section 5, Pg 161	If an Applicant (or member of a Joint Venture/Consortium) is wholly or significantly owned by a holding or parent companies, the information relating to audited accounts and financial statement (as describe above) shall be provided for such intermediate or ultimate holding or parent companies. This information shall be provided in respect of all applicants,	We understand that financial credential of holding and parent companies of consortium member are not used in Evaluation and Qualification criteria. Hence audited accounts and financial statement of consortium members only will be required for submission purpose.	The understanding is correct.

			whether applying individually or as Joint Venture/Consortium together with Auditor's certification		
53	I, Annexure-III A	Annexure III A- Initial Filter Questionnaire Performa Section 3 – 17 C &Annexure 2, Pg 168	We have to submit audited copy certified by an Independent Chartered Accountant / CPA for Annual Financial Turnover and Work In Hand.	We request that certification by Company CFO / Financial Authority should be allowed in case of Annual Signaling Turnover form & Work In Hand form. It would help us to expedite the Bid preparation in effective manner.	No change.
54	I, Annexure-III A	Annexure 2 - Work In Hand (Page 174)	In form Annexure 2 –Last three columns has value of work to be done in three timelines as following : Value of Work to be done from 01.06.16 to 31.03.2017 Value of Work to be done from 01.04.16 to 31.03.2017 Value of Work to be done from 01.04.17 to 31.12.2017	Initial two timelines (highlighted in yellow) in this form are overlapping with each other. Could you please check and confirm about timelines??	Annexure 2-Work in Hand amended. Refer to Addendum.
55	**I,** Annexure-IV-A (Instruction for Price Bid)	Instructions for completing the Pricing Document A. General Section A.1 & various (Page 190)	Section IX. Particular Conditions, Part A – Contract Data 'Table – Summary of Sections')	Contract Data 'Table- summary of Sections' is under Part B of Particular Condition, Section IX and not under Part A. Kindly confirm if our understanding is correct here.	A.1 amended. Refer to Addendum.
56	**I,** Annexure-IV-A (Instruction for Price Bid)	Instructions for completing the Pricing Document A. General Section A.1 & various (Page 190)	Bidder shall quote its fixed lump sum price inclusive of all taxes, levies, duties and other charges, including taxes to be deducted at source, leviable and payable to the authorities.	As prices are inclusive of all taxes and duties, please clarify on the reimbursement procedure of Customs duty and Excise duty. Reimbursement of Customs duty and Excise duty will be done on the basis of submission of proof or will be reimbursed along with contract price build in respective milestones. Please clarify.	Please refer Tender document, Part 1, ITB 14.13 and ITB14.16

57	**I,** Annexure-IV-A (Instruction for Price Bid)	Quantity Variation A.3.2 (Page 191)	Variation of any item in Appendix J due to change in scope of work during execution, provided the change in Contract value is within ±25%, shall be applied at the unit rate quoted by the Tenderer in Appendix J of Schedules (Pricing Document) and no additional amount whatsoever shall be payable to the Contractor (pricing mechanism as per Annexure 5 of Pricing Document), The Employer may exercise any increase in quantity on any date up to scheduled opening of the last section	The given reference i.e. **Appendix J** is not part of Pricing Schedule **OR** is it to be read as **Appendix 1** of pricing schedule. Kindly confirm.	Quantity Variation, A.3.2 amended. Please refer addendum.
58	I, Annexure-IV-A (Instruction for Price Bid)	B.1-Apportionment of Fixed Lump Sum Price to Cost Centres & Milestones under Each Cost Centre (Page 191)	The whole of the Works including design, are divided into Sections, primarily on a geographical basis. Each Section is divided into the various Cost Centers named according to their general scope of work.	Section wise break-up is silent in Pricing Document. In the said scenario, Kindly confirm if N1S01 contractor can segregate the given Pricing Document format corridor wise (E/W and N/S) or can segregate Reach wise (Reach 1, Reach 2, Reach 3, Reach 4).	Pricing document will be provided for North - South corridor and East -West Corridor separately.
59	I, Annexure-IV-A (Instruction for Price Bid)	BID TOTAL Summary (Page 194) Cost Center break-up and milestone break-up against each Cost Center (Cost Center A & B)	Refer to Cost Center summary description (page 194): Cost center A description is “General Requirement for Signalling and Train Control” whereas Cost Center Milestone break-up header states (page 197 & 198) “Preliminaries and General Requirement and Design of Signalling and Train control System” Similarly Cost Center B description is “Application Engineering” whereas on page 199 & 200 Cost center B header is “Detailed Design”.	We understand that the Cost Center A to be read as “ General Requirement for Signalling and Train Control” (to be covered under BOQ for N1S01/2016 (page 218) schedule 1 as Project Management and Interface Management) and Cost Center B to be read as “Application Engineering and Design” (to be covered under BOQ for N1S01/2016 (page 218) schedule 2 as Application Design). Kindly confirm our understanding.	The understanding is correct.
60	I, Annexure-IV-A (Instruction	Section B.5,	The maximum/minimum amount that can be apportioned to different Cost Center is indicated	Cost center amount apportion Minimum/Maximum rate to be apportioned to	Section B.5 amended.

	for Price Bid)	Apportionment of Fixed Lump Sum Price to Cost Centres & Milestones under Each Cost Centre (Page 192)	in the enclosed Pricing Document.	Cost Center are silent in Pricing Document. Kindly confirm.	Refer to Addendum.
61	I, Annexure-IV-B (Pricing Document)	COST CENTRE No. C: Indigenous Manufacture (Page 202)	Header of said Schedule is "Indigenous Manufacture and Delivery"	This schedule is for Supply of Material for "Placing of order of all major equipment including Onboard ATP/ ATO, Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables, PDC, ATS, and Large Video Wall for Mainline and Depot, UPS system, Trains, OCC and Large Display Monitor for Backup OCC and Depot and Telecommunication systems". If some of the mentioned material items are imported, kindly confirm where to provide the price for such imported material.	No separate price for the imported material will be entertained.
62	I, Annexure-IV-B (Pricing Document)	COST CENTRE No. C: Indigenous Manufacture (Page 202)	Receipt of onboard ATP/ATO equipment, driver's MMI equipment and associated accessories for 46 cabs by the Rolling Stock Contractor.	As per the mentioned statement, it is confirmed that total number of trains in this project is 23. Kindly confirm the number of trains corridor wise.	Confirmed NS Corridor : 11 Trains EW Corridor : 12 Trains
63	I, Annexure-IV-B (Pricing Document)	COST CENTRE No. C: Indigenous Manufacture (Page 202)	Header of said Schedule is "Indigenous Manufacture and Delivery"	We understand that Bidder shall quote all the material (i.e. Indigenous and Imported) to be delivered against the said project as describe in BID TOTAL summary Cost Center C (page 194) "Manufacture and Delivery" against the said cost center; and not limited to "Indigenous Manufacture and Delivery " as describe in milestone heading (page 202).	Confirmed.

				Kindly confirm our understanding.	
64	I, Annexure-IV-B (Pricing Document)	SECTION MS - (MISCELLANEOUS), COST CENTRE No. C: Supervision of Maintenance, Page 214	Notes: 1. The deployment of the experts under this Cost Centre may not be continuous and they may be required to supervise the maintenance in short periods at a time. The number of days of experts shall, however, not exceed 200 days. Payment for this Cost Centre will be made on man-month basis.	a) Please confirm that provision shall be made for 200 days. b) Please define man-month .	a) Confirmed that provision shall be made for 200 Days. b) Man-Month -One person's working time for a month, or the equivalent, used as a measure of how much work or labor is required or consumed to perform some task.
65	I, Annexure-IV-B (Pricing Document)	Instructions for completing the Pricing Document A. General Section A.1 (Page 190)	This is a fixed lump sum price Contract for Design, Manufacture, Supply, Installation, Testing and Commissioning of Signalling and Train Control System (details of Works including configuration to be supplied are indicated in the Section IX. Particular Conditions, Part A – Contract Data 'Table – Summary of Sections') for Nagpur Metro Rail Project. Bidder shall quote its fixed lump sum price inclusive of all taxes, levies, duties and other charges, including taxes to be deducted at source, leviable and payable to the authorities.	Please confirm that Custom Duties payable on supplies made to off-shore factory of Rolling Stock Contractor, shall be separately reimbursed to Contractor at Actual. This cannot be ascertained since the RS Contractor and the off-shore Country for supply is not known yet.	Since RS contractor is not finalized yet so custom duty payable on supply made to offshore factory of RS contractor shall be separately reimbursed to contractor as per actual on submission of necessary proof as acceptable to NMRCL.
66	I, Annexure-IV-B (Pricing Document)	Instructions for completing the Pricing Document A. General Section A.1.1 (Page 190)	Should the Employer obtain a waiver or exemption for any taxes and duties etc. in full or part thereof, the Contractor will be advised on the process to be followed to obtain exemption / refund of such taxes, duties etc., from the concerned Authorities. The Contractor shall arrange for the remittance of the refund so obtained to the Employer. **In case of exemption, the Contractor shall pay the amount calculated by the Engineer on account of exemption to the Employer either separately or the Employer at its discretion shall deduct the calculated amount from any payments due to the Contractor under the Contract.**	Please confirm that amount calculated by the Engineer on account of exemption to the Employer shall be capped by the amount declared by Contractor as included in its bid.	Cannot be Acceded to.

67	I, Annexure-IV-B (Pricing Document)	Instructions for completing the Pricing Document A. General Section A.1.1 (Page 190)	Presently there is 'NO' waiver and exemption from the Government in respect of Customs Duty, Excise Duty, Taxes, other royalties, duties, Cess, Octroi / Entry Tax, and levies payable to various authorities. DETAILS OF TAXES / DUTIES / LEVIES ETC. INCLUDED IN THE FIXED LUMPSUM PRICE (COST CENTRE WISE) Notes- j The amount mentioned other than INR for the purpose of comparison of the applicable taxes and levies, the exchange rate prevailing on the date 28 days before the latest date of submission of the Bid would be considered.	This is contradictory to ITB 14.16 where in concessional customs duty benefit can be availed. Kindly clarify Can we mention customs duty in Foreign currency and other taxes in INR ?	Please refer Tender document, Part 1, ITB 14.13 and ITB14.16
68	I, Annexure-IV-B (Pricing Document)	COST CENTRE No. C: Indigenous Manufacture and Delivery	Placing of order of all major equipment including Onboard ATP/ ATO,Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables,PDC, ATS, and Large Video Wall for Mainline and Depot, UPS system, Trains, OCC and Large Display Monitor for Backup OCC and Depot and Telecommunication systems	Please confirm whether customs duty is applicable on this cost center.	No separate price for the imported material will be entertained.
69	I, Initial Filter Documents - Initial Filter Questionnaire	Annexure-III A PRO-FORMA SECTION 4,. Sl.No.21	Provide in Section 4 the following: Details of your current management organization as the applicant or, if a Joint Venture / Consortium, of each constituent member. A proposed management organisation for the contract. specifying the location of the personnel. Clearly specify the location where the personnel shall be based. Specify a minimum ten (10) number of personnel, including their experience details, from the applicant or from the Lead Group member in case of joint venture /partnership/consortium who will be based in NAGPUR (India) Project Office throughout the Contract period.		PRO-FORMA SECTION 4, Sl.No.21 amended. Refer Addendum.

Name of work :DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OFSIGNALLING AND TRAIN CONTROL SYSTEM FOR NAGPUR METRO RAIL PROJECT.

Tender No.: N1S-01/2016. (ICB), Dtd.16.07.2016

CORRIGENDUM –III, PART-A (Reply to Bidder's Queries)

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
1	II, Sect VII A GS	Clause 7.4.1.1	A sample of each type of rack to be submitted for Employer's inspection.	Submission shall be reconsidered as FAT at Factory/First Article Inspection is mandatory.	No change. Sample can be submitted at Contractor's factory or wherever its feasible as per convenience to both contractor and Engineer.
2	II, Sect VII A GS	10.2.6	During the Defects Liability Period, when the Contractor is responsible for fault finding and repair, he shall provide practical hands on training to the Employer's maintenance staff to facilitate the successful handover of this function.	DLP obligation shall be limited to Defective supply. The fault finding and repairs shall be excluded from the scope.	No change. Explanation: Clause 11.2.1.1 of Technical Specs, "**During the DLP the Contractor shall support the Employer with sufficient trained and competent personnel.** This implies that during DLP maintenance is a combined responsibility with major role for contractor and undestudy role for the employer's engineers to learn the maintenance and fault finding procedures. Hence preventive maintenance responsibility from the contractor cannot be taked out of the clause.
3	II, Sect VII A GS	10.5.3	If the Employer's Representative considers that the course has not achieved the required objectives, he will advise the Contractor who shall then organise and implement appropriate re-training	Request capping on no. of re-training	No change. Training has to be provided till issue of Competency Certificate to employee.
4	II, Sect VII A GS	11.1.8, 11.3.2(7)	1. The Contractor may use manufacturer's data and handbooks for	Request to delete the requirement of PCB details as these are covered under	No change.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			individual items of E&M equipment that are a sub-component of the overall system, including printed circuit boards, providing they meet the intent of the Specification, and are integrated by the Contractor into the description of his equipment, and are indexed accordingly in his own general index. All such documentation shall be contained in similar binders. 2. Wiring diagrams to BS EN 60617, BS 3939 and BS 376 including internal wiring of sealed unit items;	IPR.	No PCB details need to provided. However, manufacturer's data and handbook to be provided alongwith wiring diagram for reference purpose.
5	II, Sect VII A GS	11.3.2 (7)	Wiring diagrams to BS EN 60617, BS 3939 and BS 376 including internal wiring of sealed unit items;	Please consider any equivalent international standards but not only BS.	11.3.2 (7) amended. Refer to addendum.
6	II, Sect VII A GS	11.3.3	Drawings shall be supplied with Hindi language notation in addition to English	Request to restrict this to English language.	11.3.3 amended. Refer to addendum.
7	II, Sect VII A GS	12.1.2	The responsibility for the provision of supervision of maintenance shall be based on the number of man-months identified during the Tender period and incorporated into the Contract. The actual utilization of these man-months shall be at the Employer's discretion and may be at any time up to six months after the Employer's Taking Over of the whole of the Works or the last part of the Works or the date of issuing of the Performance Certificate whichever shall be the later.	1.The requirement of the Man -Month shall be conveyed at earliest. 2. Please reconsider to delete clause 'the date of issuing of the Performance Certificate whichever shall be the later'.	1. No change. 2. 12.1.2 amended. Refer to addendum.
8	II, Sect VII A GS	12.1.2	The responsibility for the provision of supervision of maintenance shall be	Please confirm that the period of supervision of maintenance is fixed as	Yes this is confirmed.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			based on the number of man-months identified during the Tender period and incorporated into the Contract. The actual utilisation of these man-months shall be at the Employer's discretion and may be at any time up to six months after the Employer's Taking Over of the whole of the Works or the last part of the Works or the date of issuing of the Performance Certificate whichever shall be the later.	200 days as specified in notes to COST CENTRE No. C: Supervision of Maintenance.	
9	II, Sect VII A GS	12.2.1 (vi)	Setting in position a computerized defects and failure analysis and documentation system, based on FMEA principles for all systems, subsystems and components including individual PCBs.	Please confirm if the specified computerized defects and failure analysis and documentation system need to be handed over to Employer?	Yes this has to be handed over the Employer.
10	II, Sect VII A GS	15.8.5.3	The Contractor shall allow the use of his Site services including ventilation, temporary water supply, temporary electricity supply, background lighting, pumping, watchmen, etc. by the Other Contractors. The Contractor shall ensure that his Site services referred to above shall be available for use by the Other Contractors until the commissioning of the relevant permanent installations or until the issue of the Taking Over Certificate for the Works, whichever is the later.	Request to delete this clause.	15.8.5.3 amended. Refer to addendum.
11	II, Sect VII A GS	18.6.3.5, Pg 137	The Employer's auditors shall be used for the follow up audit(s) and the Contractor shall be liable for the full	Please clarify what are the criteria of cost charging to contractor for additional follow up audit	Contractor to estimate and quote for the cost incurred on additional audits due to Contractors non conformance on first audit

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			costs incurred of all additional follow up audits.		
12	II, Sect VII A GS	18.6.4.2, Pg 137	The Contractor's attention is drawn to the reporting requirements set out in the Factories and Industrial Undertakings Regulations, Occupational Safety and Health Ordinance and the Mines (Safety) Regulations.	Please clarify which part of Factories and Industrial Undertakings Regulations, Occupational Safety and Health Ordinance and the Mines (Safety) Regulations. Need to be comply? Is it only reporting accident and incident part?	All the rules and acts pertains to factories and Industrial Undertakings Regulations, Occupational Safety and Health Ordinance and the Mines (Safety) Regulations to be complied during accident and incident part.
13	II, Sect VII A GS	18.7.11	Tunnel & Underground work	Shall be deleted.	18.7.11 amended. Refer to addendum.
14	II, Sect VII A GS	18.7.11.3, Pg 144	The Contractor shall ensure that there is sufficient clean airflow, to the requirements of BS6164, at all times.	Please clarify the HVAC Contractor shall provide air flow in the tunnel or individual contractor to only monitor the sufficient airflow?	18.7.11 amended. Refer to addendum.
15	II, Sect VII A GS	20.1.9, Pg 156	Milestone payments will be achieved for successful quarterly audits for which the Employer's Representative has issued a "Notice of No Objection" or a "Notice of No Objection subject to…."	Are only the payment milestone at the installation phase are subjected to this clause ? Since Signalling has no significant impact for other phase. And please clarify what are the audit criteria	This applies for all phases. Signalling normally does not have specific requirements for environment protection
16	II, Sect VII B TS	1.2.5.,Pg 10	Priority of documents	Which clause to be considered for the priority of documents ie TS clause 1.2.5 or GC CLAUSE 1.5.(PG 17). Further there is reference to PS which is not specifically available in the tender.	No change. Both requirements are correct.
17	II, Sect VII B TS	2.2 and 2.4.2 (Salient features)	2.2 - Nagpur Metro Rail Project has a total length of 38.215 Kms (Approx.) between two corridors 2.4.2 - Route Length between dead ends: Elevated 33.139 KM	(a) Kindly clarify on the definition of dead ends. (b) Kindly also confirm that how at grade section will be managed in future route setting with Elevated line?	a) Dead end is one where buffer or such other devices are placed indicating the end of track b) This is a part of detailed design and contractor to make engineering judegements for making the suitable assumption.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
					Route length will be corrected 38.215 Km. Route Length between dead ends : Elevated 33.139 KM and At Grade 5.076 KM
18	II, Sect VII B TS	TD 2.3 ATO Mode	Transfer from ATP to ATO mode shall only be possible at standstill at a station stopping point; however transfer from ATO to ATP mode shall be possible at any time. 2. 2.3 ATO Auto Mode 2.3.2:The trains under ATO operation shall always remain under ATP protection. It shall be possible for the train operator to transfer from ATO to ATP mode at any time at standstill. Transfer from ATP to ATO shall only be possible at standstill at a station stopping point.	Please clarify if you want ATO to ATP transfer at any point or at standstill.	TD 2.3 ATO Mode amended. Refer to addendum.
19	II, Sect VII B TS	2.4 Sr. No. 8 in table, Pg 11	Operations Control Centre at Sitaburdi station. Backup OCC at Metro Bhavan.	In contrast to Sr. no. 8 under Cl. 2.4, Cl. 3.2.1.2 (1) does not indicate the scope of Backup OCC. Please confirm the scope of Back up OCC along with the requirement of LVS.	BOCC has exactly same equipments as OCC including all interfacing requirements
20				Please confirm for the place of OCC and Backup OCC. OCC, in appendix C it says at Depot. Is BOCC planned at Metro Bhawan?	Operations Control Centre at Sitaburdi station. Backup OCC at Metro Bhavan. Yes, BOCC has been planned at Metro Bhavan.
21	II, Sect VII B TS	2.4, Sr. No. 9 in table, (Salient features)	There are 2 Depots: One at Hingna and Second at Khapri Depot	Kindly confirm if one depot is at KHAPRI or at MIHAN	There are 2 Depots: One at Hingna and Second at Mihan Depot near by Khapri station of North South Corridor.
22	II, Sect VII B TS	2.4, Sr.No.10 in table	10 Completion Strategy to be worked out the priority section of 4.6 km at level in North South Corridor will be commissioning first which is part commissioning of Reach 1 section. The	Please confirm for the prority section, what will be the ATP train protection adopted against overrun/over speed, it is a risk that CRMS will not allow metro running without ATP.	The Priority Section will be commissioned with interlocking of Signal, point and Axle counters to be provided in Priority Section . There will not be Automatic train protection /Cab Signalling initially however during

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			same may be seen in Para 2.5 of Sl. (5) also.		commissioning of Reach-1 full functionalities of Signalling and train Control system (As per scope of Signalling contract) to be commissioned. Depot not included in priority section.
23	II, Sect VII B TS	2.4, Sr.No.2 in table	Route Length between dead ends : Elevated 33.139 KM	In section 2.2 it has been mentioned as 38.215 km. Kindly confirm correct Route Length.	Route Length between dead ends : Elevated 33.139 KM and At Grade 5.076 KM
24	II, Sect VII B TS	2.4 Sr. No. 8 in table, Pg 11	Operations Control Centre at Sitaburdi station. Backup OCC at Metro Bhavan	Kindly confirm the distance from Lokmanya Nagar to BOCC at Metro bhavan which is missing from schematic plan.	In Schematic Plan, there is no requirement to show Metro Bhavan. The nearest station to BOCC at Metro Bhavan in North-South Corridor is RAHATE COLONY (1.2 Km approx,) and in East-West Corridor the nearest station is INSTITUTIONS OF ENGINEERS (1 Km approx). BOCC will have identical setup of OCC.
25	II, Sect VII B TS	2.5 Key Challenges Point 5	The Priority section of approx. 4.6 km between KHAPRI and Airport which is at level grade will have to be commissioned first with limited signaling functionalities with computer based panel interlocking at one location and associated signaling, the details of which have to be designed and got approved by NMRCL. These have to be integrated with CBTC as and when Complete CATC is introduced.	Kindly provide the more details to understand the clear objective or purpose of this priority section of 4.6 km - (a) Please specify the scope of limited signalling functionalities (b) Please confirm that how long the trains will run on this priority section with limited signalling functionalities? (c) Please also provide the details of commissioning time expected of this priority section from the access dates given (d) Please also confirm if this priority section will go under Revenue operation or not?	a) The Priority Section will be commissioned with interlocking of Signal, point and Axle counters to be provided as per the same standards in GS and as per conventional signalling principles . There will not be train protection /Cab Signalling initially however during commissioning of Reach-1 full functionalities of Signalling and train Control system (As per scope of Signalling contract) to be commissioned. b) Till the complete commissioning of Reach-1 . c) T & c to be completed to ensure the Sept 2017 with revenue operation d) Confirmed, this priority section will go under Revenue Operation.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				(e) Please also confirm the interface required with other suppliers (f) Please also confirm if safety certificates are also required for the priority section? (g) Please also confirm on the positioning of SER & SCR for the priority section (h) Please also confirm if there is any level crossing gate on at grade stations?	e) Yes, the interface required with other suppliers. Bidder to work out interfacing requirements as per the GS f) No, safety certificates(ISA) will not be required for the priority sections however CRS sanction to be taken for Signaling system. g) The Positioning of SER and SCR will be at each station. h) No, there is no level crossing gate on at grade section.
26	II, Sect VII B TS	2.5(5)	The Priority section of approx. 4.6 kms between Khapri and Airport which is at level grade will have to be commissioned first with limited signalling functionalities with computer based panel interlocking at one location and associated signalling, the details of which have to be designed and got approved by NMRCL. These have to be integrated with CBTC as and when Complete CATC is introduced.	Please clarify if Public Operation is expected on this section with only IXL.	Yes revenue operation will be carried out.
27	II, Sect VII B TS	2.5 Key Challenges (5), Pg 12	The Priority section of approx. 4.6 kms between Khapri and Airport which is at level grade will have to be commissioned first with limited signalling functionalities with computer based panel interlocking at one location and associated signalling, the details of which have to be designed and got approved by NMRCL. These have to be integrated with CBTC as and when Complete CATC is introduced.	Does the scope under priority section also includes the depot area connected to Khapri station or the scope is limited to mainline only. Could you please clarify.	Depot not included in priority section.
28	II, Sect VII	2.6 Supporting	Opening of Metro Railway for Public	We understand that this document is	Already available is public domain.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
	B TS	Documents, Pg 12	Carriage of Passengers Rules 2013 or latest version and latest version of Signal Engineering Manual of Indian Railways available for purchase and also on the public domain.	available for purchase. Could you please reconfirm and advise how we can purchase this document.	
29	II, Sect VII B TS	A T S, 3.1	Headway: The design shall be based on a theoretical headway of 90 secs in order to permit trains to operate on a sustained headway of 100 secs under normal operations as described in the Particular Specification.	The operational headway is also dependant on Final Track Alignment of the corridor, however design headway requirement can be met.	Bidder to ensure compliance to design headway requirement.
30	II, Sect VII B TS	3.1.1 Scope of Works:Performance, Pg 13	Unless otherwise specified herein, the requirements of the Indian Railways Signal Engineering Manual shall apply to this Contract.	We request employer to provide Indian Railways Signal Engineering Manual. Alternatively suggest the official source to arrange by the bidder.	Already available in public domain. http://www.indianrailways.gov.in/railwayboard/uploads/codesmanual/SEM-I/SignalEngineeringManualch_index.htm
31	II, Sect VII B TS	3.2.1.2 (5), Pg 24	All cables including optical fibre cables, cable terminations and cabling support/ protection pipes/ accessories necessary for the Works except those specifically excluded from scope of supply;	We understand that all cables pertaining to Signalling and Train Control scope are only referred here. Could you please clarify.	The understanding is correct. The S&T Contractor shall supply all cables including optical fiber cables, cable terminations and cabling support/ protection pipes/ accessories necessary for the Works except those specifically excluded from scope of supply.
32	II, Sect VII B TS	A T S, 3.2.1.2.(17), Pg 25	Testing platform	Pl provide details of testing platform.	Testing platform is detecting the faulty cards of various signaling sub-system
33	II, Sect VII B TS	3.2.2.1, Pg 25	Scope of Services: Providing necessary support and documents (viz SIL4 certification documents, Safety case, Type test result etc) required including compliance for getting safety worthiness of the S&TC Systems certified from Indian authorities viz. Railway Board, RDSO and	We understand that there will be a separate ISA appointment directly by Employer for this project in accordance with RDSO, Railway Board and Commissioner of Metro Railway Safety requirements. Therefore, we understand that our only obligation will be to perform our own internal ISA and provide the required	The understanding is correct. NMRCL will appoint the ISA. (Independent Safety Assessor) and N1S01 Contractor should provide all relevant documents to ISA.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			Commissioner of Metro Railway Safety;	input to the externally appointed ISA by Nagpur Metro. Please confirm if our understanding is correct. In case, there is no separate ISA appointment to be made directly by Employer, Kindly provide the list of accredited external ISA who are certified from Indian authorities viz. RDSO, Railway Board and Commissioner of Metro Railway Safety.	
34	II, Sect VII B TS	3.2.2.1	(1) Design, manufacture, supply, system assurance, installation, testing and commissioning of the Train Control and Signalling System including the UPS system required for the same. (The UPS shall cater for the loads of Telecommunication and AFC systems also);	Please provide the power consumption (in KVA) expected for AFC and Telecom location wise?	This will be part of Design interface between Signalling and Telecom and also between Signalling and AFC. Its not required to be provided in TS.
35	II, Sect VII B TS	A T S, 3.3	Interface of Signalling System with Radio System: On board ATP system shall interface with the Train radio to enable the Train radio automatically transmit alarm message to OCC whenever the mainline revenue Train has switched to Restricted Mode (RM) operation.	We understand this is done through TETRA radio which is not in the scope of SIG contractor. Kindly confirm.	Confirmed. However we understand that all mode transitions are reported by default by signalling to OCC through CBTC channels as well as Signalling to BOCC throught CBTC Channel.
36	II, Sect VII B TS	A T S, 3.5.1	Operational Control Centre will be located in Metro Bhavan.	1. The BOCC is far from OCC and also far from the Metro corridor. NMRCL is requested to provide dedicated corridor for cables from OCC/Viaduct to BOCC. 2. Also confirm the specs for the cable on this section are similar to specs for Viaduct. 3.For Cable installation and other related	1. Nearest station of BOCC is Rahate Colony. The distance of rahate colony to BOCC is approx. 1.2 Km. Dedicated cable trench /duct will be provided by the other Contractor. Interface will be done by the N1S01 Contractor. 2. Yes, the specs for the cable on this section are similar to specs for Viaduct.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				works, the required mandatory permissions shall be obtained by NMRCL. 4. Dedicated Trench details shall be provided. 5.Any third party damages to cables on this section and any consequences as disturbance in services during installation, testing, commissioning, commercial operations, warranty phase etc. shall not be the obligation of SIG contractor. No penalty/LD shall be imposed for the same.	3. Yes, for Cable installation and other related works, required mandatory permissions shall be obtained by NMRCL. 4. N1S01 Contractor will provide the detail design to the other contractor, on basis of this the other contractor will provide the Dedicated Trench. 5. N1S01 Contractor will be responsible till PTOC (Provisional Taking Over of Certificate for Employee) issued.
37	II, Sect VII B TS	3.6.3.1 & 3.6.5	3.6.3.1 The contractor will be provided a rent free space of about 1500* sqm at suitable places for constructing temporary site offices and storage facilities for contractor. The contractor will construct the site office and storage facility within 4 months of possession of land given by Nagpur Metro Rail Corporation. The space will be available to the Contractor till end of Defect Liability Period 3.6.5 Contractor shall provide and maintain the following requirements for employer as well (a) 1 chamber for employer's engineer of 20 sqm area (b) 1 room of 30 sqm area for seating 5 Asst Engineers (c) 1 hall of area 50 sqm for seating of supervisors and storage of documents apart from toilet and pantry. This area shall be furnished and air-conditioned.	Kindly confirm whether 1500 sqm area covers only Contractor office or it covers both Contractor office as well as Employer office?	The contractor will be provided a rent free space of about 1500* sqm at both the Corridors, it covers both Contractor office as well as Employer office.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
38	II, Sect VII B TS	3.6.5, Pg 28	Contractor shall provide and maintain the following requirements for employer as well (a) 1 chamber for employer's engineer of 20 sqm area (b) 1 room of 30 sqm area for seating 5 Asst Engineers (c) 1 hall of area 50 sqm for seating of supervisors and storage of documents apart from toilet and pantry. This area shall be furnished and air-conditioned.	We understand that this requirement is under the scope of S&TC contractor only and not under any other contractors. Could you please reconfirm.	Confirmed.
39	II, Sect VII B TS	A T S, 4.1.1 Item # 20	Train Simulator	Scope of interface between SIG and RST is not clear. Kindly elaborate what is required from SIG contractor and who provides the hardware for Train Simulator.	Train simulator hardware will be provided by RS contractor however Signalling contractor will provide all the data for train running including alarms on TODs to RS contractor for TO training.
40	II, Sect VII B TS	Section 4.1.1 >> Point 11 (Page 196)	ZVR & redundant EBR relays to be supplied by the N1S01 contractor	The Onboard ATC can guarantee Safety outputs only till its terminal. Beyond its terminals, if there is any need to have any additional relay to drive the outputs at RS end, these relays have to be procured from RS contractor and not by N1S01 contractor. Kindly confirm if our understanding is correct.	No change. This will be part of design interface between Signalling and RS.
41	II, Sect VII B TS	4.1.2	All the sub systems, equipment to be used for Train control & Signalling system (including but not limited to ATP, ATO, Radio for CBTC, DCS, ATS, Interlocking, mainline point machine) shall be of proven design and in use in transit systems in **at least one country outside the country of origin of the sub system / equipment.** These	Keeping in line with the requested changes in eligibility conditions, we request consider amending the clause as under : The core technology equipment such as ATP/ATO/ATS/CBI to be used for CBTC Signalling system shall be of proven design and in use in transit systems in **at least one line, which is in service for**	No change.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			reference transit systems must have design headway of 90 Sec. or better. The Bidder shall provide certificate from the user of the transit systems that the proposed subsystem/equipment are working satisfactorily and no unsafe failure has been reported.	**over 5 years.** These reference transit systems must have design headway of 2 min or better, The Bidder shall provide certificate from the user of the transit systems that the proposed sub-system/equipment are working satisfactorily and no unsafe failure has been reported.	
42	II, Sect VII B TS	4.2.1.3	The following software (versions quoted or higher) compatible for use with Intel-Windows based computers shall be used, unless otherwise stated, for the various electronic submissions required: Document Type Electronic Document Format Text Documents MS Word, Ver. 7.0 Spread Sheets MS Excel, Ver. 7.0 Data Base Files MS Access, Ver. 7.0 Presentation Files MS PowerPoint, Ver. 7.0 Programmes Primavera for Windows, Ver. 2.0b AutoCAD Graphics CorelDraw, Ver. 7.0/ AutoCAD ver.14 Photographic Adobe Photoshop, Ver.4.0 Desktop Publishing QuarkXPress, Ver.3.32 CADD Drawings MicroStation SE/95	Please confirm whether CAD drawings can be submitted in Autocad format (windows compatible version).	CAD Drawing to be submitted in CAD Format.
43	II, Sect VII B TS	4.3.6	The detrainment will be done under following scenario: Failure of on board ATC system or any sub-system/module thereof such that train cannot move in ATP/ATO mode in any direction of travel	We feel that train can be operated in bypass mode in case of ATP/ATO failure. Detrainment may not be necessary	No change.
44	II, Sect VII B TS	4.4.2.7	The UPS System shall be designed such that the MTTR figures for restoring the	Is this a requirement for deciding the UPS Backup battery capacity?	Yes this is also a requirement for deciding the UPS Backup battery capacity.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			operation of the System from fault condition shall not be more than four hours (all inclusive).		Explanation: Please refer to TS, UPS Specification. The specification is clear regarding battery capacity etc.
45	II, Sect VII B TS	4.4.2.3	The following MTTR shall be achieved: (3) 30 minutes for other trackside equipment; and	The Track side equipment which also includes point machine and also the maintenance actions. Kindly revisit and confirm on the MTTR for point machine as per the RDSO target.	No change.
46	II, Sect VII B TS	4.6.3.1	The Train Control and Signaling System shall provide for the safe operation of the all train types including, (1) EMU consist (2) Empty rakes (3) Engineer's trains and Tower Wagons	Kindly confirm whether all the types of trains mentioned to be equipped with on-board ATC equipment?	
47	II, Sect VII B TS	4.6.3.1, Pg 24	The Train Control and Signalling System shall provide for the safe operation of the all train types including, (1) EMU consist (2) Empty rakes (3) Engineer's trains and Tower Wagons	Could you please confirm that 1. EMU consist will be 3-car only and 2. "Empty rakes, Engineer's trains and Tower Wagons" will not be equipped with VATC.	4.6.3.1 & 4.6.3.2 amended. Refer to addendum.
48	II, Sect VII B TS	4.6.3.1	The Train Control and Signalling System shall provide for the safe operation of the all train types including, (1) EMU consist, (2) Empty rakes, (3) Engineer's trains and Tower Wagons	1) Please explain what is meant by empty rakes? 2) Engineer's Trains and Tower Wagons will be equipped with Onboard ATP system? During normal operations, unequipped trains (empty rakes, engineering trains) are not mixed with CBTC traffic. In the event that mixed operation is required, the fallback signalling will be used to maintain the safety of the traffic. Please confirm our	

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				understanding.	
49	II, Sect VII B TS	A T S, 4.7.1	Notwithstanding the service capacity requirement above, the Train Control and Signalling System shall provide a minimum theoretical signalled headway of 90sec and an operational headway 120 sec on signalled routes between Nagpur corridors and Depot Station terminals, including turn back operation at the two terminal stations.	Please confirm what is the desired operational headway.	The desired operational headway is 120 Sec.
50	II, Sect VII B TS	4.7.4	The design headway shall be based on an average travel speed of 30kmph or higher with a station dwell time of 30sec.	Depending on civil constraints on speed limits a 30kph average speed (not known at this stage) may not be possible. We will propose a compliant design and operation headway based on the best average speed possible within the alignment and rolling stock constraints. Please confirm	Average speed of 30kmph is a project requirement and has to be met within the constraints of Civil and RS design. The requirement would stay in PS as it is.
51	II, Sect VII B TS	4.8.5	The time necessary to the initialization of a sub-system (trackside ATC, train borne ATC, interlocking, track to train transmission, train detection) shall be as short as possible and no greater than 40 seconds.	For train borne ATC system due to various self checks/operational requirements the time interval can be longer than 40 seconds hence we request you to change the requirement to 60 seconds for train borne ATC system without affecting the performance/headway.	4.8.5 amended. Refer addendum.
52	II, Sect VII B TS	4.9.2.3	These stopping accuracy requirements shall be achieved with a 1% soap solution sprayed on the surface of the rails throughout the braking distance.	It is understood that Trains are equipped with Wheel Slide Protection. Hence this test is not applicable for Signalling Contractor. Please confirm our understanding.	No change.
53	II, Sect VII B TS	4.13.1	The contractor is required to conduct full EMC tests and the tests to be	A number of the components such as the COTS equipment and others are	Agreed to.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			conducted Shall include but not limited to satisfying standards as follows:	procured already with a compliance statement against these standards. Is it required to re-test such equipment in full? We propose to provide a detailed EMC plan in which a combination of testing where necessary and pre-existing certification shall be used to demonstrate compliance rather than full testing alone.	
54	II, Sect VII B TS	4.15.1	The contractor shall ensure that all the Train control & Signalling equipment are designed and constructed in accordance with the latest issues or versions of internationally recognised EMC standards, including but not limited to EN50081,EN50082, EN50121, EN50123, IEC571, EN50155, IEC 61000 to ensure proper functioning.	Some of our products are already certified to existing versions of standards. We propose to comply with latest issues of standards as at the date of submission of our tender proposal. In the even that any standards are updated and issues in between the time of our tender submission and the time of issue of LOA, or subsequently, we undertake to inform the employer of such an event and identify to him if there are any risks or impacts in not following the updated standard, and a mitigation plan if necessary. Also to identify the implications (cost and time) of requiring compliance with an updated standard.	No change.
55	II, Sect VII B TS	5.1.2.1	In case door to be closed by the train operator, the train operation only needs to press two buttons to close the doors and if the path is clear, then the train should automatically proceed to the next station.	As per GoA2 functionality, driver needs to press start push button after doors are closed, to proceed in ATO mode. Train will not proceed unless driver presses the start push button irrespective of the status of the path. Kindly confirm if our understanding is correct here.	5.1.2.1 amended. Refer addendum.
56	II, Sect VII B TS	5.1.2.7	Train starting or re-starting from a signal stop shall be either automatic or	We request the employer to change the requirement to "Train starting from a	Train starting from a signal stop which is not a operational stop will be automatic

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			by train operator depending upon the operational requirements.	signalled stop in ATO mode should be initiated by Train Operator".	
57	II, Sect VII B TS	A T S, 5.1.3.1	In ATP Mode the train will be driven by the train operator, obeying cab signals	We interpret 'Cab signals' as information displayed about permitted speed & distance to stop. (Not color aspects like physical signals)	Agreed to.
58	II, Sect VII B TS	5.1.6.3	The ATP By-pass Mode shall be initiated by the train operator operating a Safety Cut-out Switch (SCS). The operation shall be recorded by the On-board digital counter and TIMS (TCMS). The SCS shall be provided by Rolling Stock Contractor. The On-board digital counter shall be provided by the signalling contractor. In this mode the train doors shall only be enabled and controlled manually.	We assume that cut-out mode and bypass mode are the same thing and with the same requirements? Please confirm our understanding.	Understanding is correct
59	II, Sect VII B TS	5.18 & 5.19	All the ATS functions of central control shall be available for first level of Degradation to automatic operation from Local ATS. The local control from the station will in the first level of degradation work with schedule regulation, in the second level of degradation in the constant headway mode, in third level of degradation in manual mode from the ATS workstation AND other requirements of these subsections	For CBTC based signaling systems, centralized ATS with all automatic functions available in CATS is preferred. Only manual control operations are provided from local ATS. This is because the ATS is also communicating with trains for monitoring and controlling its' arrivals/departures as per schedule. Doing this with multiple LATS involves lot of handovers and wouldn't be very effective. Kindly revisit these clauses and confirm if N1S01 contractor can offer an alternative solution against the CATS and LATS control transfers and degraded operations.	No change required. However, the achievement of the funcationality and its design structure is part of detail design.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
60	II, Sect VII B TS	5.1.9.1	At the terminal stations the train is operated automatically by the ATC to the turnback track and back to the terminal station without driver. Additionally there should be facility for automatic turn back at platform of the terminal station & Intermediateturn back station when train is directly received on the dispatch platform by using thecrossover in front of the station. It shall be possible to enter the automatic turn backmode from ATO mode.	ATB mode is standard in our system for automatic turnback at a crossover behind the terminal or intermediate platform. This means that the train can automatically turn back while the driver is changing cab ends. But we would like more clarity on the requirement for automatic turnback using the front crossover? In this case the driver should already have changed ends before the train departs the platform?	5.1.9.1 amended. Refer addendum.
61	II, Sect VII B TS	5.2.1	There is a soft switch / switch to select ROS mode. When signals resume the system goes back automatically to ATP mode (no manual selection needed again to go back).	Kindly change the requirement to hard button for ROS to ensure vitality.	5.2.1 amended. Refer addendum.
62	II, Sect VII B TS	5.2.1	The Train Control and Signalling System shall allow the train operator to transfer from ATO to ATP modes and vice versa.The Train Control and Signalling system shall allow the train to transfer from RM to ATP manually without stopping the train while it should be possible to select the RM mode only at standstill. Selection is made manually from ATP to RM Mode. When signals resume transition from RM to ATP is by manual method.	ROS to ATP transfer is already possible while running with mode selector in ATP position to recover faster. Kindly revisit and confirm the need to have a manual possibility of transfer from RM to ATP while train is running. (b) Kindly revisit and confirm the need to have the possibility by train operator to transfer from ATO to ATP modes and vice versa while train is running.	Confirmed and understanding is correct.
63	II, Sect VII B TS	A T S, 5.2.4.1	Minimising the effects of failure so that the train service may continue during times of equipment failure is of paramount importance. Consequently,	We request you to remove the requirement of 400m as it is contradictory to : "shall not be greater than the area between two adjacent	5.2.4.1 amended. Refer addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			the area of railway affected by the failure of an item of Wayside ATC equipment, which causes the use of RM/ ROS mode of operation, shall not be greater than the area between two adjacent stations or between the halfway points on either side of the station. In any case this RM/ ROS operation area shall not be longer than 400 m in the normal direction of travel.	stations or between the halfway points on either side of the station"	
64	II, Sect VII B TS	5.3.4a.2, Pg 39	The Train Control and Signalling System shall ensure that the train does not apply traction through neutral zones (Air gap) when in ATO/UTO Mode.	Please confirm that GoA2, STO is the mode for commercial operation for this bid, no UTO or DTO mode is required.	The understanding is correct.
65	II, Sect VII B TS	5.3.4a.2, Pg 39	The Train Control and Signalling System shall ensure that the train does not apply traction through neutral zones (Air gap) when in ATO/UTO Mode	Kindly confirm UTO mode is applicable or not.	No, UTO mode is not applicable.
66	II, Sect VII B TS	5.3.5.5	Platform Screen Door / Gates 5.3.5.5.1 The signaling & train control system shall include the platform screen door functionality; though no platform screen door needs to be provided under this tender. 5.3.5.5.2 The PSD functionality should be available at all platform and depot test track. 5.3.5.5.4 In case the PSD contractor is not available for interface, the details of the interfacing signals between the signaling & train control system and	As there are no Platform screen doors need to be provided under this tender, kindly confirm that N1S01 contractor needs to provide entire hardware interface related to PSD (i.e. Input & Output module, RIO cubicle, relays, relay frame etc.)? OR only N1S01 contractor will provide PSD functionality?	N1S01 contractor will provide all software required for interface related to PSG/PSD , any potential free contacts related to hardware interface to be provided & also provide interface document.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			platform screen door system shall be provided in a manner so that future installation of platform screen door is possible without any requirement of interface with N1S01 contractor.		
67	II, Sect VII B TS	5.3.6 >> Points and Crossings		With respect to priority section, kindly confirm the availability of Point turnout drawings which is required in order to specify and install the point machine with external accessories on mainline.	Drawing to be provided during progress of the work. However, it is not feasible to share the turnout drawing but it is confirmed that 1:9 turnout in 190m/ 300m radius to be provided.
68	II, Sect VII B TS	5.3.7.2.1	The train detection shall establish the position of both the front and the rear of the train. The ATC system shall verify the train length.	Please amend the clause as follows The train detection shall establish the position of both the front and the rear of the train through train integrity information..	No change.
69	II, Sect VII B TS	5.3.7.2.1	The primary train detection system shall be provided on Main Line, sidings, and reception lines and in the depots (except on Workshop Maintenance Tracks).	We understand that Depot excepting the Workshop Maintenance Tracks will be equipped for all modes of working including ATO with a maximum speed limit of 25 km/hr. The train movement in Workshop and Maintenance area will be in RM mode. Kindly confirm our understanding.	5.3.7.2.1 amended. Refer to addendum.
70	II, Sect VII B TS	5.3.7.2.1	The primary train detection system shall be provided on Main Line, sidings, and reception lines and in the depots (except on Workshop Maintenance Tracks).	Kindly confirm that there is no primary train detection available in depots as depots are not equipped with CBTC.	Yes there is no primary train detection available in depot as depot are not equipped with CBTC.
71	II, Sect VII B TS	5.3.7.4	Impedance bonds shall be provided wherever required. The Signalling & Train Control Contractor shall provide the impedance bonds. The Signal &	We do not believe the system design employing Axle Counters for secondary detection will call for the need of any impedance bonds therefore we propose	5.3.7.4 amended. Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			Train Control Contractor shall work with the traction power contractor to assure that the impedance bonds provided meet the requirements for traction power return without compromising train detection or cab signal reception.	to allow the traction power contractor to take care of all traction return bonding without special signalling bonds. Kindly confirm our understanding.	
72	II, Sect VII B TS	5.3.8.4	The contractor can configure centralized equipment according to the system feature. However, for the main line, at least Three sets of mainline interlocking logic master unit must be provided for the proposed corridor.	In CBTC, each corridor can be managed with TWO interlocking for mainline. Kindly reconsider this requirement and confirm if the N1S01 contractor can optimize the solution and propose one interlocking per Reach and one interlocking for each depot?	5.3.8.4 amended. Refer to addendum.
73	II, Sect VII B TS	A T S, 5.3.8.4	However, for the main line, at least Three sets of mainline interlocking logic master unit must be provided for the proposed corridor.	Please confirm this requirement is for two corridors combined or for each individual corridor.	
74	II, Sect VII B TS	A T S, 5.3.8.5	Each CBI shall be provided with VDU workstations which will be provided at the SCRs of stations with points and crossing	Do we need VDU at each station with points ? It may be sufficient to provide VDU workstations at location where logic master unit is provided.	VDU is required only at station where Computer based Interlocking is provided
75	II, Sect VII B TS	5.3.12.7, Pg 50	The UPS and the battery backup system for S&TC and Telecommunication & AFC system shall include 2 numbers 3-phase Output, N, PE (TN-S) UPS in online redundant configuration (conventional 1+1) powered by Two separate Battery Banks (one for each UPS at each station and Depot, a stand by spare cell charger (for 1 to 6 UPS cells) and a spare cell bank with 6 numbers cells.	We request you to clarify this requirement especially with some block diagram to understand exactly how many battery sets are required.	5.3.12.7 amended. Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
76	II, Sect VII B TS	5.3.12.16, Pg 58	Alarms, health status & displays generated by each UPS shall be shown locally, as well as at remote location in both OCCs at one separate terminal each in respective OCC.	Based on this requirement we understand that we need to supply 1 monitor in OCC and BOCC each to display for UPS alarm. Please clarify if our understanding is correct.	No separate terminal is required. It can be provided at ATS terminal or other terminal already catered for providing the alarms.
77	II, Sect VII B TS	5.3.12.18	N1S01 contractor will provide LAN port between each station and the OCC for communication purpose, the point of interface being TER (Telecom Equipment Room) at stations and CER (Central Equipment Room) at OCC. N1S01 Contractor shall make all other necessary arrangements such as communication card/ port, cabling from UPS to TER, networking, furniture, workstation etc.	Since this tender calls for the signaling scope where all the major equipments will be housed in SER we request to change the point of Interface to SER at stations.	5.3.12.18 amended. Refer to addendum.
78	II, Sect VII B TS	5.3.12 (General), Pg 45	The UPS system provided by the S&TC contractor shall be separate 60 KVA for depot, 60 KVA for interlocking stations, 30 KVA for secondary stations and 30 KVA for OCC as well as BOCC.	1. We understand that details given about Battery ratings and UPS ratings is sufficient to cater the load of Signalling, Telecom and AFC? Please clarify. Any requirement of more load rating shall be handled through Variation. Please clarify. 2. We also understand that the equirement mentioned about 48V DC Battery chargers (referring to the Pricing Schedule: BoQ item nos. 10.7 and 10.8 of Part 1, Pricing Docs Annexure IV-B, Pg. 228) is pertaining to the Signalling scope and not Telecom scope of work. Please confirm if our understanding is correct. 3. The ratings mentioned against clause 5.3.12.6 mentions the requirement of	1. No additional load rating shall be handled through variation. 2. Understanding is correct. 3. The relevant for 60KVA and 30 KVA will be taken from this clause.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				120KVA which is not inline. Please confirm the correct ratings.	
79	II, Sect VII B TS	A T S, 5.3.12.12 item # 1	60 KVA for depot 60 KVA for 10 interlocking stations. (5 in East west corridor & 5 in North South Corridor)	Please confirm that the no. of interlocking station here is just indicative as this is a design built contract.	Meaning of interlocking station here means the station with points and crossings.
80	II, Sect VII B TS	A T S, 5.3.12.23.3	UPS at Depot 120KVA??	Please confirm the capacity of UPS at Depot.	5.3.12.23.3 amended. Refer to addendum.
81	II, Sect VII B TS	5.3.12.32.2, Pg 69	The Contractor shall provide all Earth Bus bars, Earthing Cables and connections etc. to meet the Specifications mentioned herein. The Contractor may, however, make use of the common Main Earth Bus provided in the UPS Room by E&M Contractor.	Could you please clarify if we need to provide earthing cable from our earth busbar to connect to main earth terminal (that E&M to provide at UPS room).	The E&M contractor will provide the Main earth terminal in UPS room. The signalling contractor will extend these to wherever its is required for him.
82	II, Sect VII B TS	5.3.12.32.5.1	The resistance to earth of the system "earth terminal" must remain within the stipulated limits at all locations and under all climatic conditions.	This shall be the responsibility of E & M Contractor as the Earth Terminal will be provided by E & M contractor.	Understanding is correct. This clause will remain.
83	II, Sect VII B TS	5.7.2.4	Provision shall be made for the train operator to prevent door opening in ATO Mode.	The implementation of this function will require interfacing with RS Contractor for provision of manual/automatic door closing mode selector by Rolling Stock.	True. No change.
84	II, Sect VII B TS	5.8.3.2	All cars with cabs shall be provided with redundant independent ATO/ATP equipment. The redundancy requirement shall be as per clause 7 of Appendix O of this TS. Failure of one set of redundant equipment shall be indicated to the train operator.	Our proposed design allows for full redundancy of train carborne controller in one CC rack which will be located probably in the central car of a 3 car train. Other items such as balise antenna, train operator display, tachometers, radio antennas are fitted to both cabs in a redundant configuration.	Each cab to have separate ATC.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
85	II, Sect VII B TS	5.8.3.2 & 7.4 (b)	5.8.3.2: All cars with cabs shall be provided with redundant independent ATO/ATP equipment. The redundancy requirement shall be as per clause 7 of Appendix O of this TS. Failure of one set of redundant equipment shall be indicated to the train operator. 7.4 (b) :Redundancy shall be provided so that failure of one on board ATP/ ATO equipment does not prevent the train from being operated in ATP/ ATO mode. The changeover in the event of failure of one unit shall be automatic, without train operator's intervention, with an indication in the cab	There is a conflict on these two statements. Kindly confirm.	There is no conflict and incase of failure of one ATP/ATO, change over to be done seamless automatic transfer without any operational impact and failure of such ATP/ATO Module should come on cab equipment as indication.
86	II, Sect VII B TS	5.9.1	All Train Control and Signaling System equipment shall be provided with a reset function to allow the equipment to restart remotely as well as locally following any failure. This facility shall be available on CBI, Wayside ATC, Onboard ATC, LATS, CATS, Radio communication network including access points etc.	Kindly reconsider this requirement of remote restart and confirm. Due to GOA2 mode, driver presence is inevitable in all the possible driving modes of the train; there is no use of remote reset of On-board ATC equipment. Moreover, wayside equipment can be reset by the station staff available in Signalling equipment room.	If the conditions for restart are fulfilled and there are no hardware failures/software failures in the system it should be possible to restart the system by remote login. The bidders can specify if any safety concerns with respect to vital systems.
87	II, Sect VII B TS	A T S, 5.9.1	All Train Control and Signalling System equipment shall be provided with a reset function to allow the equipment to restart remotely as well as locally following any failure. This facility shall be available on CBI, Wayside ATC, On-board ATC, LATS, CATS, Radio communication network including	Request to clarify the requirement.	If the conditions for restart are fulfilled and there are no hardware failures/software failures in the system it should be possible to restart the system by remote login. The bidders can specify if any safety concerns with respect to vital systems.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			access points etc.		
88	II, Sect VII B TS	5.9.1	All Train Control and Signalling System equipment shall be provided with a reset function to allow the equipment to restart remotely as well as locally following any failure. This facility shall be available on CBI, Wayside ATC, On-board ATC, LATS, CATS, Radio communication network including access points etc.	Remote Reset functions for CBTC wayside and Onboard equipments are not useful in GoA2 projects. Inclusion of same raises safety concern as unintended resetting will lead to operational hazards. Hence it is requested to remove Remote reset feature requirement for Wayside ATC and On-Board ATC both of which can be reset locally under strict operational procedure.	No change.
89	II, Sect VII B TS	5.10.1	The train description shall consist of 6 numeric characters. The train Id consists of first two digits to identify the current destination and last two digits toidentify the service. The Service identification remains constant during the service, the Destination identification changes at each trip or turn back. The Undetermined trains should be numbered outside the above normal range. When the train is situated in the depot or on the mainline (Not in revenue service), the follow-up carries out from the "Rake Id" of this train (Range 0000 to 0999).	Kindly confirm - (a) What to identify from the two middle digits? (b) If the Train Description (TD) is in six digits, do need to configure the RakeID also with six digits?	1) Origin and destination as well as no. Of trips should be incorporated in Train ID. However, positioning of the digits (first, two, middle two and last two) to be part of design and it is left to the N1S01 Contractor. 2) No, however it is part of detail design and N1S01 Contractor will have to provide the Rake ID.
90	II, Sect VII B TS	Part II Sec VII A T S, 5.11.2.1	Signals and axle counters shall be planned in such a way that one axle counter free of points is provided, to be used as overlap in all cases.	In some cases, it may not be possible to provide axle counter free of points to be used as overlap (like ahead of platform starter signals). Please exempt these cases.	This is a part of Detail design.
91	II, Sect VII B TS	A T S, 5.11.2.6 -ii	Route set and locked, or if the route includes track sections, all of them are	Some exceptions may apply. Some shunt signals may be required to clear on	That is part of Detail design however , Shunt signal on main line to be avoided and to be

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			clear	occupied destination tracks.	considered in depot only
92	II, Sect VII B TS	5.12.2.1, Pg 289	For WAN, optical fibre cable backbone network to be laid as part of N1S01 contract, will be utilised.	Is our scope included the communications part? This part is usually done by communications contractor	Yes, complete OFC Backbone for signalling (as per scope of contract) to be provided by N1S01 Contractor.
93	II, Sect VII B TS	5.14.1	Workstations for control shall be provided in the following locations: (1) Operations Control Centre (OCC); (2) Depot Control Centre (DCC); (3) Station Control Room (SCR);	Kindly confirm the requirement for BCC?	5.14.1 amended. Refer to addendum.
94	II, Sect VII B TS	A T S, 5.15.1	There shall be two levels of control: (1) Central Control from the OCC and (2) Local Control from the SCR.	No transfer of control is required to BOCC?	5.15.1 amended. Refer to addendum.
95	II, Sect VII B TS	5.15.1	There shall be two levels of control: (1) Central Control from the OCC and (2) Local Control from the SCR.	Kindly confirm the requirement for BCC?	
96	II, Sect VII B TS	A T S, 5.16.3	.In addition to ATS workstation in each SCR, the SCR's of the stations defined in Annexure shall be provided with an interlocking VDU display as a backup. The SCR controller shall be able to operate the interlocking area under his jurisdiction from the interlocking VDU.	IXL VDU is generally required at IXL stations only.	No change.
97	II, Sect VII B TS	5.17.1	SMR of each station provided with Interlocking Logic Master unit shall be provided with ATS workstation and Laptop mimic screen with diagnostic software. Each secondary station SER shall have facility to plug the maintenance laptop.	Is this same as Maintenance PC (mentioned in Appendix C) and also confirm that this is only required at CBI or Interlocking Master Unit stations only?	Yes its maintenance PC. This is to be provided only at stations where logic unit is provided.
98	II, Sect VII B TS	Clause 5.25, 5.25.1	The Contractor shall provide mimic overview system at OCC, BOCC, and Depot Control Room. The technology for the mimic projection/ Rear Projection system shall be a Lesser	Pl clarify the total requirement of RPS	Minimum requirement for RPS (Rear Projection system) is 80 Cubicals.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			based large video screen system. The resolution will be HD or higher and the matrix shall be made of 70 inch cubes. 5.25. 2 shall cater to NS Corridor , EW Corridor and CCTV. shall have the required 8X2 (NS Corridor), 8x2 (EW Corridor) and 8x2 (CCTV) matrixes of 70" full HD modular cubes		
99	II, Sect VII B TS	5.25.1	The Contractor shall provide mimic overview system at OCC, BOCC, and Depot Control Room. The technology for the mimic projection/ Rear Projection system shall be a Lesser based large video screen system. The resolution will be HD or higher and the matrix shall be made of 70 inch cubes.	We understand that LASER based rear projection large video screen is requested. LASER based rear projection systems offer very high brightness compared to other type, say, LED based system but comes with more heat dissipation per cube. Considering the fact that it's being used inside control room with well-designed/controlled lighting systems, Kindly confirm that if N1S01 contractor can propose Videowall with alternate technology like LED etc.?	5.25.1, 5.25.2, 5.25.5 amended. Refer to addendum.
100	II, Sect VII B TS	5.25.5	The height of the display portion of the panels shall be of approximately 2.5m and width approximately 15m so as to accommodate 2X7 modules	This clause is conflicting with the 5.25.2 in terms of matrix/size. Kindly confirm.	
101	II, Sect VII B TS	5.25.8	The OCC control theatre at OCC will be used for other systems as well. It shall be the responsibility of all the contractors to ensure that the large video screens in the control theatre are sourced, installed and commissioned in a manner to support a cohesive and uniform look.	This clause is conflicting with 5.25.2 in terms of information to be displayed. We understand that there will be no other videowall as traction, auxiliary and CCTV is covered in Clause 5.25.2. Kindly confirm.	Confirmed. There will be no other video wall as traction, auxillary and CCTV is covered.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
102	II, Sect VII B TS	5.29.4.2	The train shall be dispatched automatically or by manual intervention upon receipt of the train ready signal.	This signal is not relevant in a CBTC system wherein train and wayside communication is continuous bi-directional. Each train is reporting its status to ATS cyclically without operator's intervention and hence there is no need of a separate signal to indicate readiness of the train. Kindly revisit the clauses regarding Train ready signal and confirm if our understanding is correct here.	5.29.4.2 amended. Refer to addendum.
103	II, Sect VII B TS	5.29.11.5	When ATR timetable mode is selected, a train is considered early/late if it is operating UPS side of a time window which shall be user configurable	Early/late is to be considered if value of deviation is outside a configurable time window. Kindly confirm if our understanding is correct here?	Understanding is correct.
104	II, Sect VII B TS	5.30.3	Department wise booking of delays of trains.	Kindly confirm what does Department refers to here?	Departments generally refer to Rolling Stock, Traction, Track, Power Supply and Operations, Signalling & Train Control, Telecommunication. Details will be worked during design stage
105	II, Sect VII B TS	5.31.2.1	The Rolling Stock Project Contractor will provide a data log to record all train borne Train Control and Signalling System faults. All train borne System faults shall be transmitted to the train for recording in this log. In addition the train borne log shall be transmitted in real time to OCC / SCC / DCC through TWC.	What is SCC? Is it same as SCR? Please confirm our understanding.	The understanding is correct. Further kindly refer to addendum.
106	II, Sect VII B TS	A T S, 5.33.3.4	The system shall comprise a Depot controller's workstation with 3 monitors in the Depot Control centre, a	Please confirm if this is of the same size as indicated in Part II Technical Specifications 5.25?	5.33.3.4 amended. Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			crew controller's workstation with one monitor in the Crew Controller's room, a dual server data processing system and communication link with the OCC ATS system for control, indication and train information transfer. In addition there shall be a LED display panel showing the entire view of the depot; the size and layout of the display panel will be ergonomically designed with the depot control room's layout.		
107	II, Sect VII B TS	5.34	Display of CCTV images from Train to OCC	Kindly provide additional information on camera and video streams as it's required for efficient design 1) Resolution 2) Video compression standard 3) Encoding/Encryption required and standards for the same 4) Total max. live streams required	5.34.3 and 5.34.5 amended. Please refer addendum.
108	II, Sect VII B TS	5.34.3	The N1S01 Contractor shall provide the radio infrastructure for transmission of CCTV images from the train to OCC /SCC/DCC. The data transmission network over-the-air for CCTV and CBTC shall be separate. Redundant radio units shall be provided on train and wayside for CCTV transmission which shall be different from the radio units used for CBTC transmission.	As CCTV data is Non-Vital, providing redundant radios units on wayside for CCTV transmission will almost doubles the cost. Kindly confirm if N1S01 contractor can propose the alternate proposal to achieve CCTV data redundancy with single CCTV Radio on Trackside?	5.34.3 amended. Please refer addendum.
109	II, Sect VII B TS	A T S, 5.34.4	The N1S01 Contractor will provide HMIs as stipulated in Appendix C at OCC /SCC/DCC for display of CCTV images from train. It shall be possible to display the CCTV images on the LVS	Kindly confirm if requirement is for HMI or MMI.	Yes requirement is for HMI/MMI. No change.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			at OCC		
110	II, Sect VII B TS	5.34.4	The display system at OCC should be capable of displaying as many live streams from different trains on the line as the operator wants to see by selecting multiple windows on one or more HMI.	Please specify the maximum number of streams which may be viewed by the OCC operator at a given time? What is the bit rate? As per Payment Milestone C8 Video wall is required to be supplied by signaling contractor for Signalling, Telecom and Traction system? Kindly specify the number of cubes and dimensions required for Telecom and Traction system.	Provision shall be made for displaying live CCTV images for minimum four trains at OCC & BOCC.
111	II, Sect VII B TS	5.35	Fibre Optic transmission System(FOTS)	Please confirm that the FOTS subsystem is only for the use of various signaling sub systems and not for any Telecom subsystems which are not covered under this specification. The optical fibres for signaling will be laid by Signalling contractor.	Confirmed
112	II, Sect VII B TS	6.2.4	NMRC reserves the right to further assess the documentation of Verification & Validation to the relevant standards. In this case, the Assessor role will be played by NMRC or any other agency nominated by NMRC. The safety assessor may require specific tests to be carried out. The cost of such specific by the safety assessor shall be borne by the contractor.	We request to cap the cost of engaging safety assessor to a specified amount..	Contractor is not engaging the ISA. Employer is engaging the ISA. Costs of ISA assessment will be borne by NMRCL. Costs for tests to be borne by Contractor whether done at contractors facility or at site at NMRCL. Logistics cost for ISA visit and stay are excluded. On this clarification no cap is required on the cost.
113	II, Sect VII B TS	6.3.1.1	All software shall be designed, developed, tested, verified and be validated in accordance with the CENELEC standards EN50126, EN50128, EN 50129, and EN 50159. If any equivalent recognised International	Some bespoke software for systems such as ATS, Crew management etc. may be considered as Proprietary, Off the Shelf (POTS) and may have been developed prior to the adoption of standards such as EN50128 especially if they are non	No change. CENELEC Standards to be followed as per the SIL allocation to software functions.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			standard other than CENELEC has been used, the requirements specified in paragraph 6.3.3.2 (8) below shall be fulfilled.	safety critical software. In these cases, any modifications or adaptations as well as specific application data will be tested and validated as per these standards.	
114	II, Sect VII B TS	6.4.3.4	Development process of ATS and ATO systems shall be designed, manufactured and validated to Safety Integrity Level 2 as defined in the CENELEC standard EN50126, EN50128 and EN50129. All potentially unsafe effects of safety-related functions performed by ATS and ATO shall be mitigated by mandatory interaction with SIL4 subsystems (ATP and CBI).	Development process of ATS and ATO covers only modifications (if any) to these proprietary items, and application data preparation. These activities shall follow a SIL2 process.	No change.
115	II, Sect VII B TS	6.5. Fail-Safety >>6.5.3 & 4.5 Safety Requirement >> 4.5.5	Clause 6.5.3 >> Mean Time Between Wrong Side Failures shall be minimum 109 hours. Clause 4.5.5 >> The probability of Wrong Side Failure shall be less than 10^-9 per train operating hour for the complete train control & signaling system supplied, installed and Commissioned.	These said clauses describe different rating of Wrong side Failures. Kindly confirm which value to be considered?	6.5.3 amended. Refer to addendum.
116	II, Sect VII B TS	A T S, 6.7.3 item # 3	External train borne equipment:IP code 67.	Request you to replace the requirement of external train borne equipment to IP code 66. As, IP code 67 means that the equipment must be tested with 1 m of submersion for 30 minutes. Since the train borne equipment is mounted several mm above top of rail it will be sufficient to provide the same with IP code 66. This is proven in many CBTC projects world	6.7.3 amended. Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				wide. Please confirm that IP 66 is sufficient for external train borne equipment.	
117	II, Sect VII B TS	6.7.4	Temperature and Humidity	Control Room, CER and SER are air conditioned rooms where such extreme weather conditions are never experienced. Worldwide most electronic hardware which are manufactured for Indoor working are not designed to withstand such extreme requirements. Hence we request to amend the requirement as 95% RH non condensing at 40^0C.	No change.
118	II, Sect VII B TS	A T S, 7.1	5D BIM Interface Requirements, Digital Platform will be set up by NMRCL	Pl provide in details the overall requirements from SIG contractor.	5D BIM will provide the software, in that software they will upload the detail design and submit 2D Drg & 3D Drg. They will monitored the progress on day to day basis.
119	II, Sect VII B TS	A T S, 7.1.6	Also for the work related activities, Nagpur Metro at its sole discretion may depute its representative(s) to off-sites for discussion, inspection, testing etc. The expenditure for the above activities shall be borne by the Contractor but overall expenditure for these activities shall not exceed equivalent expenditure for deployment of experts for cumulative period of twenty (20) man-months only. Total expenditure (total equivalent to 20 man-months) for deployment of experts at site as well as for other above said work related activities shall be borne by the Contractor. The payments / reimbursements by the Contractor for	Please confirm if such expenditure for the appointed consultant will be reimbursed to contractor at actual. We request to delete this requirement.	No change required. Expenditure will not be reimbursed.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			this shall be affected in accordance with the instructions issued by the Engineer from time to time during the Contract execution.		
120	II, Sect VII B TS	7.1.6	In addition, the appointed consulting agency or any other agency appointed by Nagpur Metro may be directed by Nagpur Metro to undertake specific work related activities (both at off-site as well as at site). Also, for the work related activities, Nagpur Metro at its sole discretion may depute its representative(s) to off-sites for discussion, inspection, testing etc. The expenditure for the above activities shall be borne by the Contractor but overall expenditure for these activities shall not exceed equivalent expenditure for deployment of experts for cumulative period of twenty (20) man-months only. Total expenditure (total equivalent to 20 man-months) for deployment of experts at site as well as for other above said work related activities shall be borne by the Contractor. The payments/reimbursements by the Contractor for this shall be affected in accordance with the instructions issued by the Engineer from time to time during the Contract execution	Please clarify a) What is meant by off-site? b) Please confirm that the requirement is for 20 man-months for off-site deputation and additional 20 man-months for deployment at site. In total provision of 40 man-months shall be included in the Contract? c) Please declare the maximum cost for each man-month.	a) Off-sites will be any locations where contractor's Factory acceptance tests are carried out, or where system design is developed or contractor's manufacturing facilities. It is believed that all these are not located at NMRCL work site and hence termed as off-site b) Yes c) No clarification required
121	II, Sect VII B TS	7.6, Pg 318	The train to wayside radio communication network architecture	We understand that the "200m" is just an indicative requirement and can be	The understanding is correct. This is the design built contract. N1S01 Contractor will

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			should use radio based communication system. Failure of single network element viz Radio access point, switch, media converter etc. shall not cause any deterioration in CBTC working. The Radio access points shall be provided at a distance generally about 200m in a redundant manner. The main Radio access points and the redundant radio access points shall be generally provided on opposite side of the viaduct/.....	altered as long as radio redundancy can be achieved.	design the detailed design and take approval from Employers' Engineer.
122	II, Sect VII B TS	A T S, 7.10.1.1	Creation of 3D engineered intelligent Models using discipline specific modelling/engineering applications.	Which 3D models are expected from Signalling contractor ?	N1S01 contractor has to provide the IXL Cabinet, Wayside Signal Post, Axle Counter mounting etc Diagram in 3D Model not in Circuit Diagram for 5D-BIM interface
123	II, Sect VII B TS	9 POWER SUPPLY REQUIREMENTS> >9.3	Two different voltages shall be used, one to drive CBI equipment and the other for receiving the inputs from the field gears.	Kindly confirm our understanding that the different Power Supply shall be used for different equipment. So, same voltage level (such as 24 V) can be used for CBI equipment as well as inputs from the field gears.	Confirmed. However it differs design to design and bidder have to propose their requirement in their bid.
124	II, Sect VII B TS	8.3	The selected CBI Software shall have been independently verified and validated. As specified in the software Engineering Standards, full documentation on Quality Assurance Program specially the Verification and Validation (V&V) procedures carried out in-house or by any independent agency, shall be made available to the Employer's Engineer to check their conformity to the standards. I**f the procedure and documentation for**	We request to cap the cost of engaging an independent agency to a specified amount.	Contractor is not engaging the ISA. Employer is engaging the ISA. Costs of ISA assessment will be borne by NMRCL. Costs for tests to be borne by Contractor whether done at contractors facility or at site at NMRCL. Logistics cost for ISA visit and stay are excluded. On this clarification no cap is required on the cost.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			V&V is considered inadequate, the Employer reserves the right to get the verification and validation of software and hardware done by an independent agency at the cost of the Contractor.		
125	II, Sect VII B TS	A T S, 10.1.6	While firming up the design and installation specifications, particular attention should be paid to ensure the presence of the energized traction third rail does not affect the safety and reliability of any signalling equipment installed in the vicinity.	We understand there is no third rail. Please delete this requirement.	10.1.6 amended. Refer to addendum. .
126	II, Sect VII B TS	A T S, 10.2.6	During the Defects Liability Period, when the Contractor is responsible for fault finding and repair, he shall provide practical hands on training to the Employer's maintenance staff to facilitate the successful handover of this function.	DLP obligation shall be limited to Defective supply. The fault finding and repairs shall be excluded from the scope.	No change. There is a qualification with stating "when" and PS is not contractor's staff to attend for all types of failures. There will be some failures which Employre's maintenance staff would not be able to repair and diagnose (say failure in mother board, failures which do not corrected even after replacement of LRU etc). For such failures contractor's staff would have come at site do necessary fault finding and repair.
127	II, Sect VII B TS	A T S, 11.6.1	CBTC system is required to include local and remote maintenance and real time diagnostic capabilities to detect and react to various CBTC equipment failure types. The remote diagnostic capabilities shall be available at OCC, SCR, SMR and DCC to permit authorized personnel to interrogate the status of train borne and trackside equipment, and provide active fault diagnosis and isolation. It shall be possible to	Please clarify this requirement.	This clause clearly states that it is required to include local and remote maintenance and real time diagnostic capabilities to detect and react to various Critical CBTC equipments failure types. The remote diagnostic capabilities shall be available at OCC, SCR, SMR and DCC to permit authorized personnel to interrogate the status of train borne and trackside equipment, and provide active fault diagnosis and isolation. It shall be possible

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			remotely download the maintenance and diagnostic-related data.		to remotely download the maintenance and diagnostic-related data. (preferably this facilities to be provided at MSS at OCC/BOCC) The requirement is clearly stating the remote maintenance and diagnostic features to be provided in the system. It should be possible to log in remotely for maintenance personnel to view logs and diagonstics.
128	II, Sect VII B TS	A T S, 12.8.3.3	E-learning/ CBT: The simulator shall be designed to enhance the knowledge of maintenance staff by e-learning/CBT, normal operation of the system, fault simulation and their troubleshooting, physical operation of field functions, 3D remedial action to simulate assembly and disassembly of different modules/subsystems and circuit simulation to conduct "what-if" analysis.	Please confirm the no. of training hours.	No confirmation of training hours is required. Contractor should propose the duration of CBT to be comprehensive enough to fulfil training objectives.
129	II, Sect VII B TS	Clause 12.8.3.3	E-Learning / CBT	Kindly confirm on the number of training hours required.	No change.
130	II, Sect VII B TS	A T S, 13.4.1	ToT: Bidder shall submit the detailed plan of transfer of technology along with MOU with suitable Indian companies or company having proven track record and are working in related areas for all major systems/ subsystems. The N1S01 contractor will not impose any technical or	As per our understanding, we are required to submit this MOU within six months period after commencement date of work. Please confirm.	Confirmed

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			commercial condition on the Indian company receiving transfer of technology and this stipulation should be reflected in the MOU as well.		
131	II, Sect VII B TS	13.4.1, TOT, Pg 174	Bidder shall submit the detailed plan of transfer of technology along with MOU with suitable Indian companies or company having proven track record and are working in related areas for all major systems/ subsystems.	We understand that in case the company has the presence in India then this MoU is not applicable.	MoU is applicable to all.
132	II, Sect VII B TS	TD 3.1.15, Pg 185	The Rolling Stock Contractor and N1S01 Contractor will jointly finalize a list of actionable command and responses for ATO mode of operation which shall be available at Central Automatic Train Supervision (CATS) system at OCC as well as Local Automatic Train Supervision (LATS) system at SCC. The two contractors shall also finalize the list of alarms and events for Rolling Stock monitoring and troubleshooting which shall be displayed on the Rolling Stock controller monitor of CATS system at OCC as well as on other suitable terminals in depot and on the line.	What will be the scope of the Signalling contractor for the RS related alrams and messages with regard to the RS controller monitor of CATS system in OCC? Details are required.	Successful Rolling Stock Contractor and N1S01 Contractor will final the detail design jointly. Rolling stock controller position in OCC will be provided with ATS monitor.
133	II, Sect VII B TS	TD 3.1 General (INTERFACE REQUIREMENTS BETWEEN SIGNALLING, TELECOMMUNICATION AND RS CONTRACTORS),	The Signalling Contractor as a lead contractor shall prepare a comprehensive Operating Modes and Principle Document (OMPD). The Rolling Stock Contractor, PSD Contractor and Telecommunication Contractor will assist the Signalling Contractor in preparation of the	We request to remove this responsibility from scope of SIG contractor.	No change.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
		3.1.20	document. The Traction Contractor will also assist the Signalling Contractor in preparation of the documents. Employer will provide necessary inputs such as standard operating procedure. The document shall establish the principles related to system and interface design under normal, degraded and emergency modes of operation. For each operating principle the document shall describe the scenario, action to be taken by operator and system in a structured process flow chart.		
134	II, Sect VII B TS	(Appendix A1) 1.2.6	Rolling Stock and the signalling Contractor will be the participating contractor. The Participating Contractor shall collaborate fully with the Lead Contractor in the development and finalization of the interface design, joint production of the interface documents and interface progress reports.	Please clarify who will be the Lead Contractor for the RS-SIG interface?	Signalling will be lead contractor
135	II, Sect VII B TS	(Appendix A1) 2.4.2	(iv) Provision of an audible and visual warning to the train operator, when the system identifies that the train is operating at a speed in excess of the maximum safe speed; recognition of a delay of 2s for the train operator to react, and a service brake application should the train operator fail to reduce the speed below the maximum safe speed in a specified time. In the event of the service braking rate being	The audio warning will disturb the Driver, visual indication is available in TOD, which is considered sufficient to warn the	No change.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			inadequate, an irrevocable Emergency Brake application shall be made, automatically.		
136	II, Sect VII B TS	Appendix A1, 2.8.1, Pg 182	The Signalling and Train Control Contractor shall provide a four digit Train Identification Number (Train ID) to the Rolling Stock Contractor. The first two digits shall identify a destination while the second two digits shall be a service identifier	This is conflicting with Clause 5.10.1, where 6 digits are mentioned. Kindly confirm.	2.8.1 amended. Refer to addendum.
137	II, Sect VII B TS	(Appendix A1) 2.8.6	In By-pass or Cut-out Mode or any other mode, external indication light shall flash or occult which will be finalized during design stage.	Who will provide this external indication light? We presume this to be in RST scope	RST Scope.
138	II, Sect VII B TS	(Appendix A1) 2.8.8	For ATO operation, the necessary train command inputs including that for PWM signal shall be provided by the N1S01 Contractor. The ATP/ ATO initiated PWM signal demands shall be redundant. The redundancy shall also be provided on TIMS (TCMS) side by RS contractor. The level and form of these inputs shall be coordinated between the two contractors.	PWM signal for traction and braking may be alternatively sent by RS 485 link hence PWM interface may be made optional.	No change in PS. PS says level and protocol will be jointly decided by contractors.
139	II, Sect VII B TS	(Appendix A1) 3.1.6	The N1S01 Signalling Contractor shall provide the Rolling Stock Contractor with the number of wires/ Ethernet connections required between cars of a married pair and between married pairs to transmit signals from one end of the rake to the other end through an automatic electrical coupler. Provision of redundancy and spares shall be catered for by RS contractor for Train	We understand that the Train Lines and Ethernet cables will be supplied by RS Contractor as per the signalling requirement. We understand that the cables connecting the SIG equipment with RS equipment (for example CC-TMS etc) is also in scope of RS contractor. Kindly confirm our understanding.	Confirmed

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			lines/ Ethernet connections.		
140	II, Sect VII B TS	3.1.16, Pg 393	(a) Radio system (Tetra) supplied by N1S01contractor for train operation	Please confirm whether TETRA is under Signalling Contractor Scope.	3.1.16 amended. Refer to addendum.
141	II, Sect VII B TS		There shall be 3 separate radio system for communication between Train and wayside(a) Radio system (Tetra) supplied by N1S01contractor for train operation (b) Radio system (including onboard equipment) supplied by N1S01contractor for CBTC traffic.(c) Radio system (including on-board equipment) supplied by N1S01 contractor for CCTV traffic and other data pertaining to control, alarm, events, special messages/ advertisements (including video) etc. The details of sharing of the 3 radio systems for sending control and data information, levels and protocols thereof, will be jointly agreed by N1S01 and RS contractors.	Is our scope included the communications part? Our S&TC is normally included Radio for CBTC and CCTV.	
142	II, Sect VII B TS	Appendix A1-3.4.1	The Rolling Stock Contractor shall supply the ATC and Train Radio equipment cubicle enclosure(s). All supports, braces, mounting holes, cabling apertures, etc. required for mounting the cubicle and its equipment shall be properly co-ordinated between N1S01 Signalling and Telecommunication contractor and Rolling Stock Contractors to ensure secure mounting, and access. The cubicle(s) shall be resiliently mounted and suitably protected to the requisite	Please confirm that the RS provide the cubicle enclosure for on board ATP/ATO cabinet that conforms to IP 52. The same suffices to meet the requirements of this specification. The RS contractor shall provide sufficient space as per Signalling Contractor's onboard equipment for IP 52 compliance.	IP for signalling enclosure shall be decided jointly between SIG and RS contractor during design stage.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			IP level.		
143	II, Sect VII B TS	(Appendix A1) 3.6.1	For each ATC equipment set (per driving cab), the N1S01 Contractor shall supply to the Rolling stock Contractor for installation, axle mounting speed measurement devices and couplings, to be configured, and the data from them processed in such a way as to achieve the objectives of 3.6.2 below in fail safe manner. The speed measurement devices shall be mounted on axles which shall be nonpowered.	Please confirm the availability of non powered axles on the two Driving Motor cars.	RS and SIG contractor to interface and decide upon the requirement for axle requirement for fixing speed sensors
144	II, Sect VII B TS	Appendix A1-Interface Matrix	The speed measuring sensor and odometer for on-ATC mode will be provided by Rolling stock contractor.	Please confirm that the speed measuring sensor and odometer is for **Non ATC** mode will be provided by RS contractor.	Confirmed.
145	II, Sect VII B TS	Appendix A1-TD Interface Matrix Point 11	SIG. RS.11 : RS Contractor to implement the function to prevent a train door to open in case its corresponding platform screen door is under failure Sig Contractor : open in case its corresponding train door is under failure	How will RS contractor know that corresponding PSD door is failed, is it going to have a direct interface with PSD system. What is the signaling responsibility for this interface point?	A1-TD Interface Matrix Point 11 amended. Refer to addendum. The Signalling contractor will provide all the software related interfaces to PSG/PSD contract.
146	II, Sect VII B TS	Appendix A1-3.6.5	The N1S01 Contractor shall furnish the zero velocity detection apparatus (ZVR relay).	It is understood that RS and Signalling have independent mechanism of determining zero speed, why this information should be provided to RS through a relay may please be clarified.	Requirement does not say this ZVR information is to be provided to RS. It just says Signalling contractor to provide ZVR No change.
147	II, Sect VII B TS	Appendix A1-3.9.1	Independent 110V d.c. power supply circuits, including positive and negative poles, at least three for ATC and one for Train Radio Equipment shall be provided by RS Contractor and there	We understand the power supply cables and MCBs for all onboard Signalling equipments and peripherals will be supplied by RS Contractor. Kindly confirm our understanding.	Confirmed.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			shall be no physical or electrical links between these power supply circuits.		
148	II, Sect VII B TS	Appendix A2- Interface Matrix Point	All Points involve TER	Since the scope of this tender is primarily for signaling and no telecom functions hence all references to TER should be removed.	Refer to addendum.
149	II, Sect VII B TS	A T S, APPENDIX A2 #3 (1)	Construct false flooring in signal equipment room and telecom equipment room on the mainline.	Construction of False Floor shall not be in scope of SIG contractor.	Refer to addendum.
150	II, Sect VII B TS	A T S, APPENDIX A2 #3 (1)	TER room	Shall be in scope of TEL contractor.	Refer to addendum.
151	II, Sect VII B TS	A T S, APPENDIX A2 #3 (2)	Install cables for all Signalling and Telecommunication.	Installation of cables for telecommunication shall be in scope of TEL contractor.	Refer to addendum.
152	II, Sect VII B TS	A T S, APPENDIX A2 #3 (2)	providing cable trays channels in main cable ducts as required.	Shall not be in the scope of SIG contractor	Refer to addendum.
153	II, Sect VII B TS	A T S, APPENDIX A2 #3 (2)	Line side equipments including equipment foundations.	Foundation for Point m/c shall be provided by Civil contractor. The requirement will be provided by SIG contractor.	No change required .foundation related to signalling work will be done by N1S01 at Depot ,At- grade Section and in via-duct portion Civil contractor will provide, interface with Signaling contractor
154	II, Sect VII B TS	A T S, APPENDIX A2 #3 (3)	Install TEL cables and Trays for TEL cables	Shall not be in the scope of SIG contractor	Refer to addendum.
155	II, Sect VII B TS	A T S, APPENDIX A2 #3 (4)	Install TEL equipment in SER	Shall not be in the scope of SIG contractor	Refer to addendum.
156	II, Sect VII B TS	A T S, APPENDIX A2 #3 (5)	Provision of Earth at TER	Shall not be in the scope of SIG contractor	Refer to addendum.
157	II, Sect VII B TS	A T S, APPENDIX A4 2.1.2 (4&5)	Insulated glued joints & Insulated Nylon Joints	Shall not be in the scope of SIG contractor	Refer to addendum.
158	II, Sect VII B TS	A T S, Appendix A4, 2.1.2(4 & 5)	Glued joints/ insulated joints	Shall not be in the scope of SIG contractor	Refer to addendum.
159	II, Sect VII B TS	Part 2, A5 – Interface Matrix Point	SNo 1. Signal for insulated overlaps.	What is signaling contractor's responsibility for this point ?	Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
160	II, Sect VII B TS	APPENDIX A 6 item 2.1	Construct false flooring in signal equipment room and telecom equipment room on the mainline.	Shall not be in the scope of SIG contractor	Refer to addendum.
161	II, Sect VII B TS	APPENDIX A 6 item 2.1	TER room	Shall not be in the scope of SIG contractor	Refer to addendum.
162	II, Sect VII B TS	A T S, APPENDIX A 6 item 2.1	Install cables for all Signalling and Telecommunication.	Shall not be in the scope of SIG contractor	Refer to addendum.
163	II, Sect VII B TS	A T S, APPENDIX A 6 item 2.1	Equipment foundation	Foundation for Point m/c shall be provided by Civil contractor. The requirement will be provided by SIG contractor.	No change required .foundation related to signalling work will be done by N1S01 at Depot ,At- grade Section and in via-duct portion Civil contractor will provide, interface with Signaling contractor
164	II, Sect VII B TS	A T S, Appendix A6, 2.2 item #5	Construction: Design earthing topology, set-up earths, lay earth cables to meet earthing requirement. (Rails will not be used for earthing).	Request to consider that the Earthing shall be provided by E&M/ PST contractor for SIG equipment earthing.	Refer to addendum.
165	II, Sect VII B TS	Appendix A8, 2.1.6	Facilities for controlling the emergency opening of platform screen doors (from OCC, from track side or from platform side) shall exist, the minimum conditions being: · Local command from station Master control room · Predefined track sections(covering, for both directions, approaching trains and trains which have started but not yet cleared the platform) around the platform screen door have been blocked. · Trains in predefined sections are at zero speed, service breaks applied	We do not recommend this requirement from hazard perspective. We request to remove this requirement.	No change in PS required. Hazards would be mitigated through operating procedures
166	II, Sect VII	Appendix A8, TS	Facilities for controlling the emergency	As per our hazard analysis, ,this feature is	No change in PS required. Hazards would be

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
	B TS	2.1.6.,Pg 239	opening of platform screen doors (from OCC, from track side or from platform side) shall exist, the minimum conditions being:· Local command from station Master control room· Predefined track sections(covering, for both directions, approaching trains and trains which have started but not yet cleared the platform) around the platform screen door have been blocked.· Trains in predefined sections are at zero speed, service breaks applied	not recommended. From experience in other projects this is not advisable as per operation rules as this could pose risk to the lives of people.	mitigated through operating procedures
167	II, Sect VII B TS	APPENDIX C	LIST OF ATS WORK STATIONS	In OCC CCTV number of positions missing.	Appendix C : LIST OF ATS WORK STATIONS : amended. Refer to addendum.
168	II, Sect VII B TS	APPENDIX C	LIST OF ATS WORK STATIONS	BCC workstations missing.	Backup OCC at Metro Bhavan. Operations Control Centre at Sitaburdi station.
169	II, Sect VII B TS	Appendix C, Pg 242	LIST OF ATS WORK STATIONS	Kindly confirm the workstations requirements at BCC.	Same as OCC.
170	II, Sect VII B TS	A T S, Appendix D item 3.2. 1	Speed Limits, Normal Operation: Allowed running speed of trains will be obtained from RS contractor. ATP/ ATO shall enforce civil speed restrictions and diverging speed restrictions over turnouts and crossovers. The permissible speed over 1:9 turnouts for Standard Gauge will be 40 km/hr. and 1:7 turnouts for Standard Gauge will be 25 km/hr. Speed restrictions shall be in effect for the entire train. If ATO fails but ATP is still operating, the train shall operate at the same speed as it would	Kindly specify radius of 1:9 turnout and corresponding speed potential.	Radius is 1:9 turnout in 190m/ 300m radius and corresponding speed potential is 40 Kmph.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			under normal operation with enforcement of all normal and temporary speed restrictions.		
171	II, Sect VII B TS	Appendix D 6.1	The CBTC system shall extend into the Depots	Kindly confirm that both the depots will be ATC equipped or not.	Two Depots are not ATC equipped. Transfer Track and main line entry will be ATC equipped. However , Test Track will be CBTC and it should be ATC equipped
172	II, Sect VII B TS	Appendix – N 3.13	CBI shall have the provision of inbuilt block working.	Kindly provide definition of inbuilt Block working.	Inbuilt Block working in present tender means continuous track boundaries (Axle counter) to be considered for clearance of signal in interlocking function which is relevant in Priority Section.
173	II, Sect VII B TS	Appendix N 3.18	CBI shall log of all safety related commands viz. Emergency Route cancellation, Emergency Point operation, Overlap release operation, Emergency Take Control, Unblocking operations etc. so that in case, operation commands are given through VDU in place of Control-cum-indication panel, proper working of counters shall be possible and readings of all counters can be read as and when required.	Kindly confirm our understanding that Is emergency point operation same as Manual Point operation by crank handle.	No change. All safety data to be logged for at least 30 days.
174	II, Sect VII B TS	Appendix O 4.1	The system shall confirm to IEEE 1474.1 (2004), IEEE 1474.2 (2003), A200 FRS, Functional Requirements Specification for ETCS (European Train Control System) in general.	The given standards are specifically meant for mainline sections in Europe. CBTC system is a customized system designed for Urban sections & doesn't confirm to ETCS standards. Kindly confirm if our understanding is correct.	4.1 The system shall confirm to IEEE 1474.1 (2004), IEEE 1474.2 (2003), IEEE 1474.3(2008), A200 FRS in general.
175	II, Sect VII B TS	Appendix O 4.8.1	The train operator's Man machine interface should be based on the ERTMS Drivers Machine interface (DMI) and should be in accordance with Draft	Kindly confirm on 50XX6 standard in this clause.	This is the standard reference. It is referred as "ERTMS driver machine interface part I ergonomic arrangement of ERTMS/ETCS information PrEN 50XX6-1"

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			EN 50XX6-1 Part 1 Ergonomic arrangements of ERTMS/ETCS information, Draft EN 50XX6-4 Part 4 Symbols, Draft EN 50XX6-5 Part 5 Audible information.		
176	II, Sect VII B TS	(Appendix O) 7 System Architecture	b. On board ATP/ ATO equipment (1) Two out of three hardware architecture with identical hardware and identical or diverse software	We are proposing a fully redundant ""mono cc"" architecture for on board ATO/ATP in which the full reliability and availability requirements are met .•Each train has two operational cabs. Each cab provides independent ATP/ATO equipment necessary for the operation (Train Operator Display) •Full redundancy is provided and inherent within the Carborne Controller ATP safety computer unit, since it comprises a "2 out of 3" architecture. •Any 2 of the three sub architectures must be working and agreeing – this provides the SIL4 safety architecture of the unit. The Third of the three provides redundancy – so that any one of the systems can fail, the remaining 2 systems continue to operate with full functionality. •If any of the three fails, the remaining systems carry on without any interruption to operation of function This is fully automatic and without any required intervention. Other items (ATO, BTM, Antenna, Power supply, I/O boards,, speed sensors, accelerometers, fully duplicated any single failure has no functional impact. We believe this	Each cab to have separate units. Fixing of single Car borne controller would be an issue. Fixing in underframe in center car is not desirable. Fixing in one cab makes the train non symmetrical. Please refer to Technical Specification TD 3.1.1 "*cab equipment shall not be placed in the underframe on account of maintainability issues".*

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				arrangement is superior to a system of 2 redundant 2 out of two systems for two reasons: a) If any of the processor units fail in 2oo2, the train must stop while handover takes place. b)reduction of actual hardware results in a better MTBF for a single 2oo3 system as compared to 2 times 2oo2 systems. Please confirm this architecture is acceptable or not	
177	II, Sect VII B TS	Appendix O-7.7	The Wayside ATP equipment including radio zone controller should be distributed along the line and must be provided at each station having interlocking logic master unit as a minimum.	Interlocking Master Units or CBIs are placed at the stations, however the Zone Controllers required to manage the lines may be less than the number of CBIs. This requirement may lead to provisioning of additional zone controllers to match the number of CBIs. Additionally the Zone Controllers may be placed at the Central location to facilitate maintenance and testing. Since this is a design and build contract the contractor should be allowed to propose wayside ATP as per their design.	Each Reach to have one ZC and one interlocking.
178	II, Sect VII B TS	Appendix A4(15) & Appendix P (customer spares) Section D (Signals)	Buffer Stop Signals Shall be supplied and installed by Track contractor at terminal stations and other locations in coordination with N1S01Contractor	(a) Kindly confirm who will provide the Buffer stops signal N1S01 contractor OR Track contractor. (b) If track contractor will supply Buffer stop Signal with project specific accessories, spare of BS should also to be supplied by Track contractor not by N1S01 contractor. Kindly confirm.	N1S01 Contractor will provide the Buffer Stop signal and Track contractor will provide the Buffer stop.
179	II, Sect VII B TS	Appendix P >>F3	All type of cards used in On board ATP Cubicle including power supply boards,	(a) CBTC solution comes with provision of a DMI in which a digital speedometer is	The understanding is correct.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
			radio antenna, speedometer and modem	in-built. Therefore, no separate speedometer will be required as a spare. Kindly confirm if our understanding is correct. (b) As per Appendix A1, clause 4.1.1 S.no.4, Any other speedometer along with spares to be provided by RS contractor for non-ATC mode. Kindly confirm.	
180	II, Sect VII B TS	A T S, Appendix R	Sections	Request to provide Corridor wise + Section wise(reach 1,2,3 & 4, Priority sect) route details (Station names, route length etc.) All Key Dates also shall be as per sections. The sequence of ITC of sections to be indicated.	1) Reach-1(Khapri to Sita Buldi (6790 - 18500)) N-S corridor :Khapri, New Airport, Airport South, Airport, jaiipraskashnagar, ujwal nagar, chatrapati square, ajni square, rahte colony and congress nagar 2) Reach-3 (Lokmanya Nagar to Jhansi rani (7825- 18212)) E-W corridor: Lokmanya nagar, bansi nagar, vasudev nagar,rachna ring road, subhash nagar, Ambazari lake, LAD College , Shankar nagar, IOE, jhansi rani 3) Reach-4 (Sitabuldi to Prajapati Nagar(00- 7825)) E-W corridor: Nagpur railway station,dosar vaishya , Agrasen chowk, chitaroli chowk , telephone exchange,vaishnodevi chowk, Prajapati nagar. 4) Reach-2 (Sita buldi to Automotive Square(00 to 6790)) N-S corridor : Zero mile, kasturchand park, GAddi godam, Kadvi chowk, indora chowk, nari road,automotive square 5) Sita buldi interchange station building , OCC building and zero mile station building are in different scope b.Mihan Depot in Reach-1 and Hingna Depot in Reach-3 c. BCC cover in Reach-1 at Metro bhavan

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
					(Initially function as OCC) and OCC Cover in Reach-2. d.1) Reach-1 : 12.2 kms (PS=4.6 km and remaining later on) approx. 2) Reach-3: 10.6 km approx. 3) Reach-4 :7.8 kms approx. 4) Reach-2 : 6.8 kms appprox. e.Will me mentioned in Key Dates f. N-S corridor : 11 Trains ,E-W corridor: 12 trains .
181	II, Sect VII B TS	Appendix V / 2.4.1, Pg 336	Key Date KD4: Onboard Equipment to Rolling Stock Contractor	Referring to Key Date KD4, we request you to provide the Rolling Stock Schedule covering the delivery of all train sets to Depot for planning purpose.	Refer to addendum.
182	II, Sect VII B TS	Appendix V / 4.1, Pg 337		We understand that the Priority section is 4.6 kms are 4 stations from station Khapri (KPR) - New Airport - Airport South - Airport (AP) of N-S corridor. Please confirm.	The Airport station is not part of Priority Section. The understanding is correct.
183	II, Sect VII B TS	Appendix V / 4.2 / 4.3 / 4.4 / 4.5, Pg 337/338		Besides the priority section, we understand that the project shall be commissionned in four different sections identified as Reach 1 to Reach 4. Could you please specify names of various stations against the access dates provided under the schedules 4.1 to 4.5.	1) Reach-1 (Khapri to Sita Buldi (6790 - 18500)) N-S corridor :Khapri, New Airport, Airport South, Airport, jaiipraskashnagar, ujwal nagar, chatrapati square, ajni square, rahte colony and congress nagar 2) Reach-3 (Lokmanya Nagar to Jhansi rani (7825- 18212)) E-W corridor: Lokmanya nagar, bansi nagar, vasudev nagar,rachna ring road, subhash nagar, Ambazari lake, LAD College , Shankar nagar, IOE, jhansi rani 3) Reach-4 (Sitabuldi to Prajapati Nagar(00-7825)) E-W corridor: Nagpur railway station,dosar vaishya , Agrasen chowk, chitaroli chowk , telephone

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
					exchange,vaishnodevi chowk, Prajapati nagar. 4) Reach-2 (Sita buldi to Automotive Square(00 to 6790)) N-S corridor : Zero mile, kasturchand park, GAddi godam, Kadvi chowk, indora chowk, nari road,automotive square 5) Sita buldi interchange station building , OCC building and zero mile station building are in different scope. b.Mihan Depot in Reach-1 and Hingna Depot in Reach-3 c. BCC cover in Reach-1 at Metro bhavan (Initially function as OCC) and OCC Cover in Reach-2. d.1) Reach-1 : 12.2 kms (PS=4.6 km and remaining later on) approx. 2) Reach-3: 10.6 km approx. 3) Reach-4 :7.8 kms approx. 4) Reach-2 : 6.8 kms appprox. e. Will me mentioned in Key Dates f. N-S corridor : 11 Trains ,E-W corridor: 12 trains .
184	II, Sect VII B TS	Appendix V, Pg 334	Key Date 4 (KD4): Deliver ATC Equipment at Nagpur Achievement: Delivery of On board ATC and Radio Equipment of the specified quantity to Rolling Stock contractor in accordance with the approved Rolling Stock schedule by the Employer for on-board installation and obtaining Certificate of No Objection from the Employer's Engineer Interfacing Contract: Rolling Stock.	Kindly clarify on the heading. Whether the material is to be delivered to Nagpur or the manufacturing facility of the rolling stock contractor? If at manufacturer location, then can we get the details of the location of delivery.	The manufacturing facility of the rolling stock contractor.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
185	II, Sect VII B TS	Appendix V, Pg 336	KD4 & KD5	1. Dates for KD4 and KD5 are not realistic. Further the end dates for on-board and wayside deliveries are before the design completion dates (KD3). 2. Also provide some rough indication of NTP date to be considered for generating the project schedule.	Refer to addendum.
186	II, Sect VII B TS	Appendix V, Pg 336	The Revenue Operation Date Key date, KD6 : 30.06.2018.	1. The tender notice on Page 2 of Part1 Bidding document states that the completeion period for the project is 142 weeks, which does not match with the ROD timeline mentioned here. 2. We understand that the ROD for both the lines is the same. Kindly Clarify.	Refer to addendum.
187	II, Sect VII B TS	Appendix V – Key and Access dates		Except Priority Section, the complete project (both the corridors) will be commissioned as a whole in one go and there will be no intermediate commissioning stage. Kindly confirm if our understanding is correct.	No, Phase commissioning to be done in following order : 1) Reach-1 2) Reach-3 3) Reach-4 4) Reach-2
188	II, Sect VII B TS	Appendix V – Key and Access dates		Kindly provide the complete details to understand the scope of work Reach1, Reach2, Reach3 and Reach4 such as – (a) covered stations in each Reach (b) covered depot (c) covered OCC & BCC (d) length of each Reach (e) commissioning dates of each Reach (if applicable) (f) No of trains to be considered on each Reach etc.	a. 1) Reach-1(Khapri to Sita Buldi (6790 - 18500)) N-S corridor :Khapri, New Airport, Airport South, Airport, jaiipraskashnagar, ujwal nagar, chatrapati square, ajni square, rahte colony and congress nagar 2) Reach-3 (Lokmanya Nagar to Jhansi rani (7825- 18212)) E-W corridor: Lokmanya nagar, bansi nagar, vasudev nagar,rachna ring road, subhash nagar, Ambazari lake, LAD College , Shankar nagar, IOE, jhansi rani 3) Reach-4 (Sitabuldi to Prajapati Nagar(00- 7825)) E-W corridor: Nagpur

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
					railway station,dosar vaishya , Agrasen chowk, chitaroli chowk , telephone exchange,vaishnodevi chowk, Prajapati nagar. 4) Reach-2 (Sita buldi to Automotive Square(00 to 6790)) N-S corridor : Zero mile, kasturchand park, GAddi godam, Kadvi chowk, indora chowk, nari road, automotive square 5) Sita buldi interchange station building , OCC building and zero mile station building are in different scope b.Mihan Depot in Reach-1 and Hingna Depot in Reach-3 c. BCC cover in Reach-1 at Metro bhavan (Initially function as OCC) and OCC Cover in Reach-2. d.1) Reach-1 : 12.2 kms (PS=4.6 km and remaining later on) approx. 2) Reach-3: 10.6 km approx. 3) Reach-4 :7.8 kms approx. 4) Reach-2 : 6.8 kms appprox. e. Will me mentioned in Key Dates f. N-S corridor : 11 Trains ,E-W corridor: 12 trains .
189	II, Sect VII B TS	Appendix V – Key and Access dates		There is a mismatch in Key Dates and Access Dates given. Kindly reconsider these dates and confirm accordingly. (1) KD1 and KD4 – Kindly confirm on the time duration expected from contract award to achieve these KDs respectively. (2) KD5 – Delivery of all the equipment is expected by Mar 2017. Consent on the final design (KD3) will be obtained by July 2017 and Contractor will	Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
				start getting access after June 2017. Kindly revisit this date and confirm accordingly. (3) KD6 – Revenue Operation in ATO Mode 30-Jun-2018 <18 months>. (it is not inline with the project completion duration of 142 weeks <approx 33 months> as well as the ADs given for Reach 2, Reach3 and Reach4)	
190	II, Sect VII B TS	Appendix V – Key and Access dates	For Reach1, Reach2, Reach 3 and Reach4 - AD2 - 50% Access in XXX , 50% Access in XXX AD3 - 50% Access in XXX , 50% Access in XXX AD4 - 50% Access in XXX , 50% Access in XXX	Kindly confirm on this 50% access? What all is covered under this 50% access?	Reach 1: AD2 - (Airport South to Chatrapati Square) Access in Dec 2017,(Chatrapati Square to Sita buldi) Access in June 2018 AD3 - (Airport South to Chatrapati Square)Access in Jan 2018,(Chatrapati Square to Sita buldi) Access in July 2018 AD4 - (Airport South to Chatrapati Square)Access in Jan 2018, (Chatrapati Square to Sita buldi) Access in July 2018 Reach 2: AD2 - (Automotive Square to kadvi Chowk) Access in Sep 2018, (kadvi chowk to Sita buldi) Access in Dec 2018 AD3 -(Automotive Square to kadvi Chowk)Access in Oct 2018,(kadvi chowk to Sita buldi). Access in Jan 2019 AD4 - (Automotive Square to kadvi Chowk)Access in Oct 2018, (kadvi chowk to Sita buldi) Access in Jan 2019 Reach 3: AD2 - (Lokmanya nagar to Rachna ring road) Access inAug 2018, (Rachna ring road to jhansi rani chowk) Access in Dec 2018 AD3 - (Lokmanya nagar to Rachna ring road)

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
					Access in Sep 2018, (Rachna ring road to jhansi rani chowk) Access in jan 2019 AD4 - (Lokmanya nagar to Rachna ring road)Access in Sep 2018, (Rachna ring road to jhansi rani chowk) Access in Jan 2019 . Reach 4: AD2 -(Prajapati Nagar to agrasen Chowk) Access in July 2018, (Agrasen chowk to Sita buldi). Access in Mar 2019 AD3 - (Prajapati Nagar to agrasen Chowk) Access in Aug 2018, (Agrasen chowk to Sita buldi) Access in Apr 2019 AD4 - (Prajapati Nagar to agrasen Chowk) Access in Aug 2018, (Agrasen chowk to Sita buldi) Access in Apr 2019
191	II, Sect VII B TS	Appendix V – Key and Access dates >> point 4.6	Schedule of access Dates for Sitabuldi Interchange	Kindly confirm that is there any common interlocking between Corridor 1 and Corridor2 or is it only passenger interchange?	There is no common interlocking between Corridor 1 and Corridor2. It is only public interchanging.
192	II, Sect VII B TS	ATS, Appendix V	KEY DATES	Indicated KEY dates are for overall projects and are not matching with Access Dates of the sections.	Refer to addendum.
193	II, Sect VII B TS	ATS, Appendix V	KEY DATES	e.g. KD3 , Obtain Consent od Employer's engineer on Final Design Submission is on 31/07/2017 and KD5 Delivery of system equipments is indicated on 31/03/2017 Also KD4 Delivery of On Board equipments to RS contractor is 31/07/2017	Refer to addendum.
194	II, Sect VII B TS	ATS, Appendix V	KEY DATES	KD6: ROD is on 30/06/2018 and Access date for Reach 2(item 4.3) SER, Viaduct, shared track & power is on 31/03/2019. Same with item 4.5, 4.6 & 4.7	Refer to addendum.

Sl. No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
195	II, Sect VII B TS	ATS, Appendix V	KEY DATES	Request to prepare section wise key dates for Submission, approval of design documents, delivery of SIG equipments, Access dates, ITC dates, COD dates etc.	Refer to addendum.
196	II, Sect VII(Ref. Document SOD, GAD)	Clause 1.13.2	The speed of trains shall be restricted to 40kmph on platform when wind speed is more than 70kmph but less than 90kmph. When wind speed exceeds 90kmph, the train movement shall be halted, preferably at platforms. Stationary trains shall not be started till wind speed is below 90kmph.	We request you to kindly remove this clause as this is a non-standard requirement.	Noted. This is operational desirable features and to be covered in operational manual the reference is given for understanding to bidder.

Name of work :DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OFSIGNALLING AND TRAIN CONTROL SYSTEM FOR NAGPUR METRO RAIL PROJECT.

Tender No.: N1S-01/2016. (ICB), Dtd.16.07.2016

CORRIGENDUM –II, PART-III (Reply to Bidder's Queries)

Sl.No.	Part No.	Clause No.	Bid Condition	Bidder Queries	NMRCL's Response
1.	Part III	Sec VIII General Condition of Contract, 4.1 (d)	prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer the "as-built" documents.....Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.	Request to consider submission of "As Built Drawings" min three months after Commercial operation of the section and shall not be linked with Taking Over Certificate..	As built are required for maintenance. Must be provided before Taking over. No change.
2.	Part III	Sec VIII General Condition of Contract, 5. 1, Pg 43	Nominated Sub contractor In the Contract, "nominated Subcontractor" means a Subcontractor: (a) who is stated in the Contract as being a nominated Subcontractor, or (b) whom the Engineer, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].	Request you to change sub clause (b) so as to include nomination of sub-contractor jointly by Employer and Contractor.	No change as contractor can raise objection under clause 5.2
3.	Part III	Section IX Particular Conditions Sub-Clause 7.7 Ownership of Plant and	Replace the GC Sub-Clause 7.7 with provisions as under: The plant, goods and material not finally taken over as per GC Clause 10 but payment against which have been made in part or full against Indemnity Bond /	Title of the Plant and Materials manufactured or sourced outside of India shall pass to the Employer once the equipment passes over the ships; rail/entered the airplane in the country of origin (FOB). Other	No change.

		Materials, Pg 54	Safety Custody Bank Guarantee will remain under the Contractor's custody. The Contractor shall be responsible for its safety and will bear all the risks till taken over by the Employer.	conditions of the tender/contract will remain unchanged. Once the goods have been imported into India, the bill of entry shall be filed in the name of the Employer by the Contractor. The Contractor will undertake all the formalities at this stage such as but not limited to presentation of the bill of entry before the custom authorities. Liaising with customs authorities and payment of customs duty. The Employer will be the owner of the equipment once it passes overseas but the Contractor will bear all the risk including but not limited to transportation, handling, insurance etc. according to the terms conditions of the tender document will provide all relevant documents to the employer.	
4.	Part III	Section-VIII General Conditions of Contract, 8.7 and 15.2 (c) (i), Pg 58 & 59	Clause 8.7: If the Contractor fails to comply with Time for Completion, the Contractor shall subject to notice under Sub-Clause 2.5 [Employer's Claims] pay delay damages to the Employer for this default. Clause 15.2: The Employer shall be entitled to terminate the Contract if the Contractor without reasonable excuse fails to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension].	Would there be any extent which the employer apply to clause 15.2 without giving opportunity for the Contractor to remedy delay subject to delay damages? Could you please explain what could be the example of the event "without reasonable excuse'?	As per Key Dates suppose the Bidder failed to full fill the work. No change in GC is required. This will be invoked under extreme cases of Contractor fails to comply its obligation under clause 15.1

5.	Part III	Section-VIII, General Conditions Of Contract, 18.1, Pg. 100	General Requirements for Insurances	We request that once a taking over certificate is issued for any part of work, the value of insurance coverage of this insurance should be reasonably reduced and amended to reflect the actual value of work for which taking over is pending.	No change in GC This is covered under General condition clause 18.2 e (iii)
6.	Part III	Section-VIII, General Conditions Of Contract, 18.1	Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage.	This will be subject to the governing law..	No change in GC. Law of land will always prevail
7.	Part III	Section-VIII, General Conditions Of Contract, 18.1	General Requirements for Insurance	Please confirm that Insurance Policies could be executed with foreign Insurance Companies.	Yes, Insurance Policies can be executed with foreign Insurance Companies.
8.	Part III	Section-VIII, General Conditions Of Contract, 18.1	General Requirements for Insurance	Please confirm that at the time of policy renewal (as applicable), reduction of Insured amount under rInsurance policies will be allowed corresponding to the value of Work of part of Work taken over by Employer.	See 18.2 e (iii). No change in GC
9.	Part III	Section-VIII, General Conditions Of Contract, 18.1	Gneral Reuqirements for Insurance	Please confirm that at the time of policy renewal (as applicable), the insured amount under Marine policies can be reduced corresponding to the value of supplies delivered at site.	See 18.2 e (iv). No change in GC
10.	Part III	Section VIII General Conditions of Contract Clause 13.7, Adjustment for Changes in Legislation Part III Section IX Particular Conditions Sub-	The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance	We understand that The Changes in Legislation clause mentioned in Particular Conditions (Clause 13.7) will be read in addition to The Changes in Legislation clause mentioned in General Conditions (Clause 13.7). Which means that Change in legislation will be applicable for all the Laws of the Country (including the	Yes, as per your queries it is confirmed.

		Clause 13.7, Adjustment for Changes in Legislation	of obligations under the Contract. The following is added to the existing clause: The Contract Price shall be adjusted to take into account any new taxes or any statutory variation in Custom Duty, Excise Duty and Sales Tax (VAT or CST as applicable) on finished product/item during the contractual completion period to the Employer's account for which the Contractor shall furnish documentary evidence in support of their claims	introduction of new Laws and the repeal or modification of existing Laws). It will not be limited to Custom Duty, Excise Duty and Sales Tax (VAT or CST as applicable). Please confirm our understanding.	
11.	Part III	GENERAL CONDITIONS >> Particular Conditions 51 (Page 169) >> Sub clause 13.7 - Adjustment for change in Legislation	The Contract Price shall be adjusted to take into account any new taxes or any statutory variation in Custom Duty, Excise Duty and Sales Tax (VAT or CST as applicable) on finished product/item during the contractual completion period to the Employer's account for which the Contractor shall furnish documentary evidence in support of their claims.	Kindly confirm on the definition of "Finished Product" with reference to this clause. Whether all the material supplied in the project will be considered as finished product irrespective of their usage? If not, then the said benefit to be applicable for all the items supplied under this project and not only Finished Products.	No change. Finished product: Any product which has been supplied out of Bidder manufacturing unit, or from the factories of Bidder vendor to NMRCL work site and it is installed ,Commissioned and finally meeting the purpose as specified for the scope of work and which will not undergo any further value added / processing is Finished product
12.	Part III	Section-IX PCC, 6 Sub-clause 4.2A (new sub- clause)	Guarantees, Warranties and Undertakings Within 30 days of the date of Letter of Acceptance of the Bid, the Contractor shall submit to the Employer: (a) An Undertaking in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Bid and against which the Employer shall have raised no-objection.	We request you to consider that the two companies participating in our consortium for this project are fully qualifying and bring necessary experience as required by the pre-qualification. In lieu of this, we request you to kindly remove the requirement of parent company undertaking and parent company guarantee.	No change. (NMRCL-We accept consortium and JV with authorized lead partner.)

			(b) A written Guarantee in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Bid and against which the Employer shall have raised no objection. ..... Works, and the Contractor shall not be compensation whatsoever as a consequence of such suspension or termination. The forms of Contractor warranty shall be in the format given in the Section X: Contract Forms.		
13.	Part III	Section IX Particular Conditions Sub-Clause 14.1,The Contract Price Service Tax	Service Tax The Bidders are also to note that as per Notification No. 25/2012 -Service Tax dated 20.06.2012, under section 93(1) read with section 66(B) of the Finance Act, services by the way of construction, erection, commissioning or installation of original works pertaining to railways including monorail or metro are exempted from the whole of the service tax leviable thereon. The said notification is applicable for main contractors and even for subcontractors. The Contractor shall examine to make his own assessment in regard to service tax liability in the Contract. No separate service tax reimbursement will be made by NMRCL	We believe that Indian Govt. has released a new notice regarding service tax in which Metro and Monorail projects coming into force after 01/03/2016 have been excluded from the service Tax exemption. Please confirm that Service Tax exemption will be applicable on this project (N1S-01/2016) as per Notification No.25/2012 -Service Tax dated 20.06.2012.	For information of Bidders, the Department of Revenue vide notification no. F.No. 334/8/2016-TRU dated 29.02.2016 withdrew exemption of Service Tax related to construction, erection, commissioning / installation of original works of Metro projects in respect of contracts entered into on or after 01.03.2016. The Bidders shall examine his own assessment in regard to service tax liability in the contract. No separate tax reimbursement will be made by NMRCL.
14.	Part III	Section-IX (Particular Conditions Of Contract) Sub-	Should there be delay in the progress and completion of work, as a result of which it is not possible to recover the advance and interest thereon, before the date of	Please clarify that interest will be charged from the N1S-01/2016 Contractor on the remaining portion of the advance beyond the original	Cannot be exceeded to. This provision already covered under various section of GCC,PCC sub clause 14.2.1, if the delay is from NMRCL side, Contractor should not

		Clause 14.2.1 (PCC)	completion stipulated in the Contract, then the interest to be charged from the Contractor on the remaining portion of the advance beyond the original completion date specified in the Contract, shall be the State Bank of India Base Rate plus 3% per annum or 12% per annum, whichever is higher up to the date of actual recovery affected by the NMRCL.	completion date specified in the Contract if and only if delay in the progress and completion of work is attributed to N1S-01/2016 contractor. If delay in the progress and completion of work is due to non-availability of site access or any other reason not attributable to N1S-01/2016 contractor then N1S-01/2016 contractor will not be penalized under this clause.	be penalized. The understanding is correct.
15.	Part III	Section IX (Particular Conditions of Contract) Sub-Clause 14.7, Payment	All payments to the contractor for the foreign currency portion shall be through a Letter of Credit. All bank charges of Employer's Banker shall be borne by the Employer and that of Contractor's Banker shall be borne by the Contractor. The charges towards confirmation (if required by the Contractor) shall be borne by the contractor. Extension of validity of L/C need is not envisaged. However, should be validity of L/C need to be extended, for reasons solely attributable to Employer, the charges for such extension will be borne by the Employer. In all other cases, L/C charges for extension or otherwise shall be borne by the Contractor	Could you please confirm that the Letter of Credit shall be issued for 100% of the foreign Currency portion which shall also include the Advance Payment denominated in foreign currency? - Could you please confirm that the Letter of Credit shall be issued with a validity covering all payment milestones?	No change. The Letter of Credit shall be issued in case the material received in good condition by the Employer, letter will be issued on the basis of quantity of material supplied. The payment of foreign currency and INR as per options opted by the contractor while bidding the contract
16.	Part III	Sec IX Particular conditions of Contract, 20.1 Contractor's claim	Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer and approved by the Contractor, the Engineer shall respond with approval, or with disapproval and detailed comments. If the Engineer does not	We request you to change the clause as:- "In case if Engineer does not respond, either Party may consider that the claim is Deemed Approved but not as Rejected"	No change.

			respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Engineer and any of the Parties may refer to the Dispute Board in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision].		
17.	Part III	Section-IX PCC, 36	The Contractor warrants that the Contractor's Proposals meet the Work's Requirements and is fit for the purpose thereof. Where there is any inadequacy, insufficiency, impracticality or unsuitability in or of the Work's Requirements or any part thereof, the Contractor's Proposal shall take into account, address or rectify such inadequacy, insufficiency, impracticality or unsuitability at Contractor's own cost.	Request to delete the term "fit for the purpose" as it is vague and has broad implications and retain the requirement as "The Contractor warrants that the Contractor's Proposals meet the Work's Requirements. Where there is any inadequacy, insufficiency, impracticality or unsuitability in or of the Work's Requirements or any part thereof, the Contractor's Proposal shall take into account, address or rectify such inadequacy, insufficiency, impracticality or unsuitability at Contractor's own cost.	Cannot be exceeded to
18.	Part III	Section IX, Particular Condition, item #29 sub clause 5A 7,	As built drawings: Prior to the issue of any Taking Over Certificate, the Contractor shall submit to the Engineer one microfiche copy, one full-size original copy and six printed copies of the relevant "as-built drawings", and any further Construction and/or Manufacture Documents specified in the Works Requirements.	Request to consider "As Built Drawings" shall not be pre condition for Taking Over Certificate.	No change. As-built are required for Taking over
19.	Part III	Section-IX (Particular Conditions Of Contract), PC 51, Pg 169	"In the event of GST is implemented, it will be presumed that it is replacement to the existing taxation and not an additional tax component, ……."	Could you please clarify that applicable GST rate during contract phase will be fully reimbursed by the Employer.	Clause is self explanatory. It is presumed that cost quoted by the bidder are inclusive of all prevailing taxes on base date (28 days prior to submission of tender). And Tender will be evaluated

					accordingly. however, payment to be made to contractor for base rate and taxes of that time. Any change in taxation policy by legislation shall be compensated /recovered as the case maybe
20.	Part III	PC 51	For change in tax regime: In the event of GST is implemented, it will be presumed that it is replacement to the existing taxation and not an additional tax component, however, in case any statutory, constitutional or administrative authority, having jurisdiction, issues the decision / GFR / Govt Order in writing, taking into account the taxes applicable prior to GST, additional amount will be paid or difference will be recovered as a result of GST.	Even though GST is presumed to be replacement of existing taxation, we request for a mechanism for reimbursement of any additional tax liability in comparison to existing tax structure due to GST implementation. GST may not be new tax but can be considered as a variation in tax and hence any changes on account of GST should be covered under Adjustment for changes in legislation.	Clause is self explanatory. It is presumed that cost quoted by the bidder are inclusive of all prevailing taxes on base date (28 days prior to submission of tender). And Tender will be evaluated accordingly. however, payment to be made to contractor for base rate and taxes of that time. Any change in taxation policy by legislation shall be compensated/recovered as the case maybe
21.	Part III	Section-IX PCC, 53 (b) Service Tax	The Bidders are also to note that as per Notification No.25/2012 -Service Tax dated 20.06.2012, under section 93(1) read with section 66(B) of the Finance Act, services by the way of construction, erection, commissioning or installation of original works pertaining to railways including monorail or metro are exempted from the whole of the service tax leviable thereon. The said notification is applicable for main contractors and even for subcontractors. The Contractor shall examine to make his own assessment in regard to service tax liability in the Contract. No separate service tax reimbursement will be made by NMRCL.	The Service Tax notification for - The services by way of construction, erection, commissioning or installation of original works pertaining to monorail or metro, where contracts were entered into before 1st March, 2016, on which appropriate stamp duty, was paid, shall remain exempt; is withdrawn and hence service tax reimbursement / WCT must be reimbursed by the customer	The service tax shall be applicable as per Notification No.9/2016-Service Tax Dtd.1st March, 2016. Bidder should take applicability of service tax in account and quote the bid accordingly .No separate reimbursement on this account shall be made by NMRCL.

22.	Part III	Part 3, 53	(b) Service Tax The Bidders are also to note that as per Notification No. 25/2012 -Service Tax dated 20.06.2012, under section 93(1) read with section 66(B) of the Finance Act, services by the way of construction, erection, commissioning or installation of original works pertaining to railways including monorail or metro are exempted from the whole of the service tax leviable thereon. The said notification is applicable for main contractors and even for subcontractors. The Contractor shall examine to make his own assessment in regard to service tax liability in the Contract. No separateservice tax reimbursement will be made by NMRCL.	The recent Finance Bill has removed metros from the said exemption notification. So accordingly please amend the tender condition accordingly to either include service tax in Bid price or to allow for separate reimbursement.	
23.	Part III	Section-IX (Particular Conditions Of Contract), 53, Pg 169	Contract Price	Please confirm, whether or not the materials/supplies under this Contract could be imported to India in name of Employer as consignee.	Agreed to.
24.	Part III	Part 3, 53	((c) The Contractor shall be solely responsible to find out and ascertain whether their supplies for Nagpur Metro Rail Project will qualify and be eligible for the concession duty benefits under Chapter 98.01 of custom Tariff Act for project Imports& shall manage the Custom Duty and Excise duty applicability and inclusion in their quoted price accordingly. After award of the Contract, Employer at the written request of a contractor shall facilitate the contractor for obtaining sponsoring / recommendation letter from the Ministry	In order to avail the project import benefit, we understand that materials will be imported in the IEC code of NMRCL and NMRCL will facilitate us with it IEC code and also support to avail project import benefits. Please confirm our understanding. Will Goods imported under the IEC code of contractor also be eligible for project import benefits?	Cannot be exceeded to. It will be dealt with the existing customer and excise act of GOI. At present NMRCL don't have IEC Code. Thus project import benefit cannot be extended to bidder. Bidder have to quote accordingly and in future if this is available then exempted benefit to be passed on to NMRCL.

			of Urban Development (MoUD) / GOM for getting themselves registered for availing Project Import benefits. However, the responsibility to avail the concessional benefits under Project Import or otherwise as extended in accordance with the law of the land shall solely rest with the Contractor.		
25.	Part III	Section-IX (Particular Conditions Of Contract), 54 (Para 2), Pg 173	The Engineer shall deliver to the Employer and to the Contractor an Interim Payment Certificate for the advance payment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment.	This condition is in contrast with Section X.Contract Data, where Advance Payment Bank Guarantee to be provided is 110% of required advance. Could you please clarify the correct percentage for Advance Payment Bank Guarantee (if 110% or equal to the advance payment).	Can not be exceeded to. With BG towards advance payment shall be 110% of the requested amount as a advance
26.	Part III	Section-IX PCC, 56	All payments to the Contractor for the Rupee portion shall be made by crossed cheque, but no cheque will be issued for an amount of less than Rs. 1000/-. This shall not apply to the final payment. All payments to the contractor for the foreign currency portion shall be through a Letter of Credit. All bank charges of Employer's Banker shall be borne by the Employer and that of Contractor's Banker shall be borne by the Contractor. The charges towards confirmation (if required by the Contractor) shall be borne by the contractor. Extension of validity of L/C need is not envisaged. However, should be validity of L/C need to be extended,	Request you to make payments in INR through a irrevocable confirmed Letter of Credit. All other terms and conditions shall be kept same as that of payments for foreign currency.	Cannot be exceeded to.

			for reasons solely attributable to Employer, the charges for such extension will be borne by the Employer. In all other cases, L/C charges for extension or otherwise shall be borne by the Contractor		
27.	Part III	Section-IX PCC, 52	Deleted	We request you to kindly include adjustment in changes for cost as stated in Part III Section VIII General Conditions of Contract	Agreed to. Revised clause reads as GC Clause No. 13.8 (Adjustment for change in cost) of Part - III.
28.	Part III	Section-IX PCC, 57	Deleted	Request you to include interest for delayed payments by the Employer as per clause no. 14.8 Delayed Payment of the General Conditions as per standard industry practice and amend the existing clause as follows:- "The financing charges shall be calculated at the annual rate of three percentage points above the discount rate of the central bank in the country of the currency of payment, or if not available, the interbank offered rate, and shall be paid in such currency. The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy."	Agreed to. Revised clause reads as GC Clause No. 14.8 (Delayed Payment) of Part - III. It was deleted in original tender document presently it will prevail.
29.	Part III	Section-IX (Particular Conditions Of Contract), 58, Pg 176	Unless otherwise stated in the Particular Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the	Is the release of the 2nd half of retention money is subject to sole discretion of the Employer or it will be granted once the contractor comply with the provision?	No change in GC. There is provision of performance security @ 10% of the awarded cost of the work in form of BG which will be released after successful completion of contract and DLP. (there

			Engineer, the Contractor shall be entitled to substitute a guarantee,in the form annexed to the Particular Conditions or in another form approved by the Employer and issued by a scheduled Indian/ Foreign bank in India acceptable to the Employer, for the second half of the Retention Money.		is no provision of retention money from the bill)
30.	Part III	Section-IX PCC, 60	Withholding and Lien for Sums Claimed The Employer shall have lien over all or any moneys that may become due and payable to the Contractor under the Contract, and / or over the deposit of Performance Security or other amount or amounts made under the Contract and which may become payable to the Contractor. Unless the Contractor pays and clears immediately on demand any claim of the Employer, the Employer shall at all times be entitled to deduct the amount of the said claim from the moneys, securities and / or deposits which may have become or will become payable to the Contractor under these presents, or under any other Contract or transaction whatsoever between the Employer and the Contractor even if the matter stands referred to Arbitration. The Contractor shall have no claim for any interest or damage whatsoever in respect of any amounts withheld or treated as withheld under the lien referred to above and duly notified as such to the Contractor.	The methodology of Employer's Claims is already covered in 2.5 Employer's Claims under Part III Section VIII General Conditions of contract. In lieu of this, we request you to delete this clause.	No change.

31.	Part III	Section-IX PCC, 68	The Contractor shall obtain all insurances required in the Contract from Insurance companies operating in India. Insurances to cover risks within India as well as Marine and Transit Insurances shall invariably be effected with an Indian Insurance Company.	Since this is an International Competitive Bidding (ICB), we request you not to restrict Marine and Transit Insurances for imports by Indian Insurances companies.	Clauses pertaining to insurance in GC and PC are self explanatory. Marine and transit insurance can be obtained by the bidder from any reputed insurance company in India or abroad as well..
32.	Part III	Section-IX PCC, 80	Notwithstanding anything to the contrary contained in the General Conditions of Contract, the Parties expressly agree that the aggregate "payment of any Cost plus profit" ("Damages") payable under Clauses 1.9, 2.1, 4.7, 7.4, 10.2, 10.3 and 16.1 shall not exceed 10% (ten per cent) of the Contract Price. For the avoidance of doubt, the Damages payable by the Employer under the aforesaid Clauses shall not be additive if they arise concurrently from more than one cause but relate to the same part of the Project.	We request you to remove the cap of 10% (ten per cent) for payment of any cost plus project damages.	No change.
33.	Part III	Sec IX Particular conditions of Contract, Part B Summery of Section Key Dates item # 3	Major Key Dates	Please refer to our queries on key dates.	Key Dates Amended Refer to Addendum
34.	Part III	PART-B Table: Summary of Sections (KEY DATES)	Key Dates KD3, KD4, KD5, KD6, KD7 & KD8	We presume the key dates, i.e. KD3 to KD8 are for the priority section/ Reach 1. Request you to please confirm the Key dates for other reaches i.e. Reach 2, 3 & 4. We will also details of the individual reaches; details like line Kms and stations in each reach.	Key Dates Amended Refer to Addendum
35.	Part III	Contract Data, 45	As provided for in PC Part B – Clause No.57	The clause stands deleted. Request the employer to clarify the : ublishing	Self explanatory.

				source of commercial interest rates for financial charges in case of delayed payment	
36.	Part III	Section X. Contract Forms, Contract Data, Sl.50, Pg 133	Minimum amount of third party insurance	We request to limit the number of incidents to certain maximum limit. Please specify maximum limit for number of events	No change.
37.	Part III	Section-VII General Conditions Of Contract, Contract Data, 6. Defects Notification Period / Defects Liability Period	24 months from the date of issue of Taking Over Certificate for the respective section.	Please confirm that the Defects Liability Period shall be '24 months from the date of Taking Over for the respective section.'	Yes confirmed that the Defects Liability Period shall be '24 months from the date of Taking Over for the respective section.'
38.	Part III	GENERAL CONDITIONS >> Section XI>>3.4	International Standards, Guidelines & ISO Certifications • OHSAS 18001-1999: Occupational Health and Safety Management System. • ISO 14001-2004: Environmental Management Systems.	Kindly confirm if N1S01 contractor can provide latest certification of OHSAS 18001:2007 and ISO 14001:2004 instead of older version OHSAS 18001: 1999? Kindly also confirm if these mentioned certificates should be this project specific or contractor can provide the global level certificate?	Self explanatory. The bidding company should be in a possession of such valid certificate on the day of submission of bid.
39.	Part III	GENERAL CONDITIONS >> SHE Manual 4.1, Pg 213	The Contractor as per Section 39 of the BOCW Act shall formulate a SHE policy and get it approved by DG/CIIBC and display it at conspicuous places at work sites in Hindi and local languages understood by the majority of construction workers.	We understand that Signalling & Train Control Contract does not include the civil construction work, hence BOCW is not applicable for this contract. In case if it is applicable, could you please clarify on what part of the contract it is to be referred.	No change. This will be applicable on site testing, installation and commissioning part.
40.	Part III	GENERAL CONDITIONS >> Section XI>> 21.8.1	As stipulated in relevant Rule of GBOCWR 2003, no lifting appliances gear or any other material handling appliance is used,	Kindly confirm on the worker rules to be considered: GBCOW (Gujrat Building and Other Construction Workers) or MBOCWR (Maharashtra Building and Other	Agreed to Clause to be read as The worker Rules to be MBOCWR (Maharashtra Building and Other Construction Workers Rules-2003).
41.	Part III	GENERAL CONDITIONS >>	GBOCWR 2003 welfare Board Rules		

		Section XI>> APPENDIX NO.: 2		Construction Workers Rules-2003).	
42.	Part III	GENERAL CONDITIONS >> Section XI>> 31.5	As per the GBOCW Rules 2003, all lifting appliances' driver cabin should be provided with a suitable portable fire extinguisher.		

Corrigendum-III, Part –B (Addendum)

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replaced With
1	I	II, BDS	ITB 10.1	The language of the bid is: English All correspondence exchange shall be in the English language. Language for translation of supporting documents and printed literature is English.	The language of the bid is: **English** All correspondence/ exchange shall be in the **English** language. Language for translation of supporting documents and printed literature is **English**. Supporting documents related to Work Experience, Financial & Technical eligibility criteria enclosed with the bid, other than English language should accompany a translated copy by a certified translator in English and will have to be endorsed/attested by Indian embassy or any authorized / recognized agency of **India Embassy**, where the supporting documents is being issued. The contact address & identification of certified translator must be mentioned at the end of the translated copy of the document. However, such documents provide by bidders from a country which has signed Hague legislation convention 1961 is not required to be endorse by **Indian embassy**. If it carries confirming **Appostile certificate**. The bidder should provide the relevant contact number and E-mail ID, Contact No. along with the postal address in English, of issue authority/agency of such documents for verification purpose.
2	I	II, BDS	ITB 11.3.1.8	**Bidder's Technical Proposal:** The Bidder shall submit with its Bid its Technical Proposals as described in Section IV: Bidding Form (Form 4.4; Part IC)	**Bidder's Technical Proposal:** The Bidder shall submit with its Bid its Technical Proposals as described in Section IV: Bidding Form (Form 4.4; **Annexure IVC**).
3	I	II, BDS	ITB 11.3.1.25	(c) Documents amplifying the Bidder's Technical proposal as described in Section IV: Bidding Forms (Form 4.4; Part 1C)	(c) Documents amplifying the Bidder's Technical proposal as described in Section IV: Bidding Forms (Form 4.4; **Annexure IVC)**
4	I	II, BDS	ITB 11.4.2	Bidders shall quote its price as elaborated in Pricing Document (Section IV: Bidding Forms (Form 3; Part 1B)	Bidders shall quote its price as elaborated in Pricing Document (Section IV: Bidding Forms (Form 3; **Annexure IVB**)

5	I	II, BDS	ITB 15.1	(ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros (€) orUS Dollars (US$).	(ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements"), in Japanese Yen, Euros (€)**and** US Dollars (US$).
6	I	II, BDS	ITB 29.2.1 (new Para)	3. fails to fulfill the eligibility criteria as mentioned in SN 12, 12.1 and 13 of "(A)FILTER OF APPLICANTS – CHECKLIST of INITITAL FILTER EVALUATION CRITERIA"; or 4. which fails to commit to the date specified for the completion of the Works as specified under Key Dates 6 and 9underSection IX. Particular Conditions (PC) Part A – Contract Data 'Table: Summary of Sections' will be deemed non-conforming and shall be rejected.	3. fails to fulfill the eligibility criteria as mentioned in **SN 1 to SN 9E** of "(A)FILTER OF APPLICANTS – CHECKLIST of INITITAL FILTER EVALUATION CRITERIA"; or 4. which fails to commit to the date specified for the completion of the Works as specified under Key Dates **1 to 7** under Section IX. Particular Conditions (PC) Part A – Contract Data 'Table: Summary of Sections' will be deemed non-conforming and shall be rejected.
7	I	Section-IV (Bidding Forms)	1A. Pro-Forma Letter of Participation from Each Partner of Joint Venture (JV)	*(Member(s) who are not the lead partner of the JV should add the following paragraph)** 'This JV is led by ……. whom we hereby authorize to act on our behalf for the purpose of submission of Bid for …….. and authorize to incur liabilities and receive instructions for an on behalf of any and all the partners or constituents of the Joint Venture.' OR *(Member being the lead member of the group should add the following paragraph)** 'In this group we act as leader and, for the purposes of applying for qualification,' represent the Joint Venture	*(Member(s) who are not the lead partner of the JV should add the following paragraph)** 'This JV is led by ……. whom we hereby authorize to act on our behalf for the purpose of submission of Bid for …….. and **the purposes of applying for qualification,** authorize to incur liabilities and receive instructions for an on behalf of any and all the partners or constituents of the Joint Venture.' OR *(Member being the lead member of the group should add the following paragraph)** 'In this group we act as leader and, for the purposes of applying for qualification, **authorized to incur liabilities and receive instructions for an on behalf of any and all the partners or constituents of the Joint Venture**'
8	I	Annexure-III-A (PQ-Initial Filter)	T5: Net Worth	Net worth of tenderer during last audited financial year should be > 117.66 crore. ii) In case of joint venture /Consortium, Net worth will be based on the percentage participation of each Member. Example: Let Member-1 has percentage participation = M and Member-2 has =N.	Net worth of tenderer **shall be positive in at least three financial years out of the last five financial years** ii) In case of joint venture /Consortium, Net worth will be based on the percentage participation of each Member. Example: Let Member-1 has percentage participation = M and Member-2 has =N.

				Let the Net worth of Member-1 is A and that of Member-2 is B, then the Net worth of JV will be = AM+BN 100	Let the Net worth of Member-1 is A and that of Member-2 is B, then the Net worth of JV will be = AM+BN 100
9	I	Annexure-III-A (PQ-Initial Filter)	B. Assessment Topic, Sub Clauses: T6 (b).i. Min. Eligibility Criteria	b. Minimum Eligibility Criteria: i. Work Experience Requirements for Signalling & Train Control Systems: The applicant (or the concerned member of JV/Consortium) should have successfully carried out the following work(s) in the last 10 (TEN) years ending 31.03.2016, as given below: i. At least one work of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 282 crore.** OR At least two works, each of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 176 crore.** OR At least three works, each of supply and commissioning of Signalling & Train Control system using radio based **CBTC with moving block** including CBI & ATP subsystem in Metro Rail of value not less than **INR 141 crore.**	b. Minimum Eligibility Criteria: i. Work Experience Requirements for Signalling & Train Control Systems: The applicant (or the concerned member of JV/Consortium) should have successfully carried out the following work(s) in the last 10 (TEN) years ending 31.03.2016, as given below: At least one work of **Design, Manufacture, Supply, Installation, Testing And Commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem** in Metro Rail of value not less than **INR 282 Crore**. **OR** At least two works, each of At least one work of **Design, Manufacture, Supply, Installation, Testing And Commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem** in Metro Rail of value not less than **INR 176 Crore.** **OR** At least three works, each of At least one work of **Design, Manufacture, Supply, Installation, Testing And Commissioning of Signalling & Train Control system using radio based CBTC with moving block including CBI & ATP subsystem** in Metro Rail of value not less than **INR 120 Crore**.
10	I	Annexure-III-A (PQ-Initial Filter)	B. Assessment Topic, Sub	ii. At least two CATC works (out of which at least one CBTC) shall be outside the country of origin.	**ii.** At least two CATC works (out of which at least one CBTC) shall be outside the country of origin/ **manufacture or in India.**

			Clauses: T6 (b.)ii. Min. Eligibility Criteria		
11	I	Annexure-III-A (PQ-Initial Filter)	T6.b. Minimum Eligibility Criteria:	(iii) In the above CBTC work(s) under ClauseT6 (b) (i) CBI, ATP& ATS subsystem shall be from OEMs under same parent company. Applicant must have experience of integration of all major subsystems (Interlocking, ATP, ATS, PSD and Radio) in a CBTC project. Applicant must have experience of integration of all subsystems (PIDS, PAS, TVS, PSD, Rolling stock, Telecommunication, Track, Traction) in at least one CBTC work out of the work(s) submitted in support of work experience under Clause T6 above.	iii. In the above CBTC work(s) under Clause T6 (b) (i) CBI, ATP & ATS subsystem shall be from OEMs under same parent company. Applicant must have experience of integration of all major subsystems (Interlocking, ATP, ATS, and Radio) in a CBTC project. Applicant must have experience of integration **with** all subsystems (PIDS, PAS, Rolling stock, Telecommunication, Track, Traction) in at least one CBTC work out of the work(s) submitted in support of work experience under Clause T6 above.
12	I	Annexure-III-A (PQ-Initial Filter)	T6.b. Minimum Eligibility Criteria: NOTES	vi. In case of joint venture / Consortium, full value of the work, if done by the same joint venture shall be considered. However, if the qualifying work(s) w0065re done by them in JV/Consortium having different constituents, then the value of work as per their percentage participation in such JV/Consortium shall be considered.	vi. In case of joint venture / Consortium, full value of the work, if done by the same joint venture shall be considered. However, if the qualifying work(s) **a**re done by them in JV/Consortium having different constituents, then the value of work as per their percentage participation in such JV/Consortium shall be considered. **New clause added:** **vii. The Bidder shall submit Client Certificate for Completion for each work along with the Proforma Section 3, Annexure -1 of Initial Filter Document – Initial Filter Questionnaire.**
13	I	Annexure-III-A (PQ-Initial Filter)	T6.b. Minimum Eligibility Criteria	a) Length of Time in Business	**c.** Length of Time in Business

14	I	Initial Filter Documents - Initial Filter Questionnaire	Annexure-IIIA,	PRO-FORMA SECTION 3, Annexure-1 Annexure-I	Refer Part - I, Annexure- 1. PRO-FORMA SECTION 3, Annexure-1
15	I	Initial Filter Documents - Initial Filter Questionnaire	Annexure-IIIA, ANNEXURE 1A:	ANNEXURE 1A: SUMMARY OF INFORMATION PROVIDED IN ANNEXURE-1. **NOTE** 1. Only the value of contract as executed by the applicant/member in his own name should be indicated. Where a work is undertaken by a group, only that portion of the contract which is undertaken by the concerned applicant/member should be indicated and the remaining done by the other members of the group be excluded. This is to be substantiated with documentary evidence which clearly mentioned the length of tunnel and no. of stations along with its plan area completed. 2. Separate sheet for each work along with Clients Certificate to be submitted. 3. Separate Performa shall be used for each member in case of JV/Consortium. 4. In case the work is executed for private client, copy of work order, bill of quantities, bill-wise details of payment received certified by C.A., T.D.S certificates for all payments received and copy of final/last bill paid by client shall be submitted.	ANNEXURE 1A: SUMMARY OF INFORMATION PROVIDED IN ANNEXURE-1. **NOTE** 1. Only the value of contract as executed by the applicant/member in his own name should be indicated. Where a work is undertaken by a group, only that portion of the contract which is undertaken by the concerned applicant/member should be indicated and the remaining done by the other members of the group be excluded. This is to be substantiated with documentary evidence which clearly mentioned the length of tunnel**/elevated/at grade** and no. of stations along with its plan area completed. 2. Separate sheet for each work along with Clients Certificate to be submitted. 3. Separate Performa shall be used for each member in case of JV/Consortium. 4. In case the work is executed for private client, copy of work order, bill of quantities, bill-wise details of payment received certified by C.A., T.D.S certificates for all payments received and copy of final/last bill paid by client shall be submitted.
16	I	Annexure III A	Annexure 2 - Work In Hand	Value of Work to be done from 01.06.16 to 31.03.2017 Value of Work to be done from 01.04.16 to 31.03.2017 Value of Work to be done from 01.04.17 to 31.12.2017	Value of work to be done in three timelines as following : Value of Work to be done from 01.06.16 to 31.03.2017 Value of Work to be done from 01.04.**17** to 31.03.**2018** Value of Work to be done from 01.04.**18** to 31.03.**2019**
17	I	Annexure-IV-A (Instruction for Price Bid)	General Requirements A.1	Section IX. Particular Conditions, Part A – Contract Data 'Table – Summary of Sections')	Section IX. Particular Conditions, **Part B** – Contract Data 'Table – Summary of Sections')

18	I	Section IV: BIDDING FORMS	Annexure-IV-B (Pricing Document)	Annexure-IV-B (Pricing Document)	New pricing document amended. Refer Part - I, Annexure- 2.
19	I	Annexure-IV-A (Instruction for Price Bid)	Quantity VariationA.3 .2	Variation of any item in Appendix J due to change in scope of work during execution, provided the change in Contract value is within ±25%, shall be applied at the unit rate quoted by the Tenderer in Appendix J of Schedules (Pricing Document) …….	Variation of any item in Appendix **1** due to change in scope of work during execution, provided the change in Contract value is within ±25%, shall be applied at the unit rate quoted by the Tenderer in Appendix **1** of Schedules (Pricing Document) …….
20	I	Annexure-IV-A (Instruction for Price Bid)	Section B.5, Apportionment of Fixed Lump Sum Price to Cost Centres & Milestones under Each Cost Centre (Page 192)	The maximum/minimum amount that can be apportioned to different Cost Center is indicated in the enclosed Pricing Document.	Refer Part - I, Annexure- 2.
21	I	Initial Filter Documents - Initial Filter Questionnaire	Annexure-III A PRO-FORMA SECTION 4,. Sl.No.21	Provide in Section 4 the following: Details of your current management organization as the applicant or, if a Joint Venture / Consortium, of each constituent member. A proposed management organization for the contract. specifying the location of the personnel. Clearly specify the location where the personnel shall be based. Specify a minimum ten (10) number of personnel, including their experience details, from the applicant or from the Lead Group member in case of joint venture /partnership/consortium who will be based in NAGPUR (India) Project Office throughout the Contract period.	Provide in Section 4 the following: Details of your current management organization as the applicant or, if a Joint Venture / Consortium, of each constituent member. A proposed management organization for the contract.

Corrigendum-III, Part –B (Addendum)

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
1	Part II	Section VII-A 01 GS	3.7.9 (New clause)		**3.7.9 Provisional Taking Over Certificate** 3.7.9.1 The Employer shall issue the provisional taking over certificate ("Provisional Taking Over Certificate") to the Contractor when the Works have been completed in accordance with the Contract and the Contractor shall have successfully carried out all the Tests on Completion, the Integrated Testing and Commissioning and Trial Running shall have been successfully completed, even though certain minor works, which do not effect the use and safety of the Works or Stage or any part of the Works for their intended purposes are outstanding and are to be completed by the Contractor ("Punch List Items"). The Employer may issue Provisional Taking Over Certificate for a Stage, Works or any part of the Works. The Parties acknowledge that the Employer's Representative shall have the sole discretion to decide whether the Contractor has completed the Works in accordance with the Contract so as to issue the Provisional Taking Over Certificate. 3.7.9.2 The Contractor may apply by notice to the Employer's Representative for a Provisional Taking Over Certificate not earlier than fourteen (14) days before the Stage, Works or part of the Works (as the case may be) shall, in the Contractor's opinion, be complete (except Punch List Items) and ready for taking over. The Employer's Representative may, within thirty (30) days of the receipt of the Contractor's application:

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
					a) Issue the Provisional Taking Over Certificate to the Contractor, stating the date on which the Stage, Works or any part of the Works were completed, including the Tests on Completion and Trial Running, in accordance with the Contract (except for Punch List Items); or b) Reject the application, giving his reasons and specifying the Works required to be done by the Contractor to enable the Provisional Taking Over Certificate to be issued. The Contractor shall then complete such work before making a further application for the issuance of the Provisional Taking Over Certificate under this Clause 3.7.9. 3.7.9.3 The decision of the Employer's Representative shall be final and binding upon the Contractor. 1. The acceptance and use by the Employer of any or all of the Works for Trial Running and/ or Revenue Service shall not absolve the Contractor from the fulfillment of other obligations under the Contract including without limitation, any liability for payment of liquidated damages. **Note :** The Employer may issue the Provision Taking Over of Certificate (PTOC) only when the CBTC Revenue services commence. The DLP will starts, only after the issuance of PTOC. **3.7.10 Final Taking Over Certificate** Once Punch List Items for the entire Works are completed by the Contractor, the Contractor shall apply for final

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
					taking over certificate for the entire Works ("**Final Taking Over Certificate**") to the Employer's Representative who may issue such certificate by following the provisions of Clause 3.7.9.2 (except the provisions relating to Punch List Items contained in Clause 3.7.9.2). **Note :** The Employer may issue the Final Taking Over of Certificate (FTOC) only after complying all punch list items or DLP completion date whichever is later.
2	Part II	Section VII-A 01 GS	11.3.2 (7)	Wiring diagrams to BS EN 60617, BS 3939 and BS 376including internal wiring of sealed unit items;	Wiring diagrams to BS EN 60617, BS 3939 and BS 376 **or any equivalent international standard,** including internal wiring of sealed unit items;
3	Part II	Section VII-A 01 GS	11.3.3	Where instructed by the Employer's Representative, drawings shall be supplied with Hindi language notation in addition to The Employer's Representative will supply such Hindi notation to the Contractor.	Where instructed by the Employer's Representative, drawings shall be supplied **in English**.
4	Part II	Section VII-A 01 GS	12.1.2	The responsibility for the provision of supervision of maintenance shall be based on the number of man-months identified during the Tender period and incorporated into the Contract. The actual utilization of these man-months shall be at the Employer's discretion and may be at any time up to six months after the Employer's Taking Over of the whole of the Works or the last part of the Works or the date of issuing of the Performance Certificate whichever shall be the later	The responsibility for the provision of supervision of maintenance shall be based on the number of man-months identified during the Tender period and incorporated into the Contract. The actual utilization of these man-months shall be at the Employer's discretion and may be at any time up to six months after the **date of completion of Defect Liability Period.**
5	Part II	Section VII-A 01 GS	15.8.5.3	The Contractor shall allow the use of his Site services including ventilation, temporary water supply, temporary electricity supply, background lighting, pumping, watchmen, etc. by the Other Contractors. The Contractor shall ensure that his Site services referred to above shall be available for	Deleted

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				use by the Other Contractors until the commissioning of the relevant permanent installations or until the issue of the Taking Over Certificate for the Works, whichever is the later.	
6	Part II	Section VII-A 01 GS	18.7.11	Tunnel and Underground Work	Deleted
7	Part II	Section VII-B 02 TS	2.3 ATO Mode TD2.3.1(viii) APPENDIX TD Interfaces between Rolling Stock, Signalling, and Telecommunications contractors	The trains under ATO operation shall always remain under ATP protection. Transfer from ATP to ATO mode shall only be possible at standstill at a station stopping point; however transfer from ATO to ATP mode shall be possible at any time.	The trains under ATO operation shall always remain under ATP protection. **Transfer from ATO to ATP and also ATP to ATO will at fly anywhere on the revenue line.**
8	Part II	Section VII-B 02 TS	2.4 Silent Features Sr No. 2	Route Length between dead ends : Elevated 33.139 KM	Route Length between dead ends : Elevated 33.139 KM and At Grade 5.076 KM
9	Part II	Section VII-B 02 TS	2.4 Silent Features Sr No. 9	There are 2 Depots: One at Hingna and Second at Khapri Depot	There are 2 Depots: One at Hingna and Second at Mihan Depot
10	Part II	Section VII-B 02 TS	2.5 Key Challenges Sl.No.5	The Priority section of approx. 4.6 kms between Khapri and Airport which is at level grade will have to be commissioned first with limited signaling functionalities with computer based panel interlocking at one location and associated signalling, the details of which have to be designed and got approved by NMRCL. These have to be integrated with CBTC as and when Complete CATC is introduced.	The Priority section of approx. **5.076 kms** between Khapri and Airport which is at level grade will have to be commissioned first with limited signaling functionalities with computer based panel interlocking at one location and associated signalling, the details of which have to be designed and got approved by NMRCL. These have to be integrated with CBTC as and when Complete CATC is introduced.
11	Part II	Section VII-B 02 TS	3. Scope of Work, 3.2 Scope of		**New Clause Added:** **3.2.4 Furniture**

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
			Supply, 3.2.4, Furniture (New Clause)		3.2.4.1 The Contractor shall provide, as a minimum, the following furniture at each Signalling Equipment Room, Station Control Room, Central Equipment Room (Signalling) and UPS Rooms , Depot Control Room, Signalling Maintenance Room, Computer Based Training Room, OCC and BOCC: - a) computer desks for the Workstations and Local Control terminals; b) office chairs for the operators and the maintainers; and c) storage cabinets for drawings, manuals and Site spare parts 3.2.4.2 Furniture for OCC & BOCC theatre shall be supplied by the contractor for all workstations of different sub-systems as defined in Appendix C. This will include all items such as computer desks, chairs, tables, storage cabinets pertaining to OCC and BOCC theatre. 3.2.4.2 The Contractor shall submit the details of the furniture to the Engineer for his review and approval. The details of the furniture submitted shall include but not be limited to the quantity, material and size of the furniture.
12	Part II	Section VII-B 02 TS	3. Scope of Work, 3.2 Scope of Supply, 3.2.5, Import License for CBTC, VTS Antenna (New Clause)		**New Clause Added:** **3.2.5 Import License for CBTC, VTS Antenna** The contractor shall liaise with all concerned including DoT, WPC, SACFA, Civil Aviation authorities and other local authorities to obtain import license, necessary clearances / sanctions for installation and commissioning of the CBTC, VTS Antenna. All costs therein have to be borne by the Contractor.

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
					The CBTC shall work in either 2.4 or 5.8 GHz ISM band but preferably use 5.8 GHz band. The contractor shall liaise with Government of India, Ministry of Communications and Information Technology, Wireless Planning and Coordination Wing for obtaining all necessary approval of wireless equipment in the proposed frequency band.
13	Part II	Section VII-B 02 TS	3.4 Work Excluded from this contract 3.4.2.8	The Contractor shall provide sufficient facilities for maintenance works including necessary technical manuals and drawings with storage cabinets and other furniture in the Station Control Room, Depot Control Room, Signalling Maintenance Room, Signalling Equipment Room, OCC Theatre, BOCC Theatre and any other location required by Employer.	**Deleted.**
14	Part II	Section VII-B 02 TS	4.6.3.1	The Train Control and Signalling System shall provide for the safe operation (1) EMU consist (2) Empty rakes (3) Engineer's trains and Tower Wagons	4.6.3.1 The Train Control and Signalling System shall provide for the safe operation **of the following train types which is equipped with ATC** (1) EMU consist (2) Empty rakes **4.6.3.2The Train Control and Signalling System shall provide for the safe operation of the following train types which is not equipped with ATC** (1) Engineer's trains and Tower Wagons
15	Part II	Section VII-B 02 TS	4.8.5	The time necessary to the initialization of a sub-system (trackside ATC, train borneATC, interlocking, track to train transmission, train detection) shall be as short as possible and no greater than 40seconds.	The time necessary to the initialization of a sub-system (trackside ATC, train borne ATC, interlocking, track to train transmission, train detection) shall be as short as possible and no greater than **60** seconds.
16	Part II	Section VII-B 02 TS	5.1.1	**Operating Modes** The Train Control and Signalling System shall provide the following modes of train operation.	**Operating Modes** The Train Control and Signalling System shall provide the following modes of train operation.

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				(1) ATO Mode (2) ATP Mode (3) Restricted Manual Mode (4) Running on Sight Mode (5) Cut-Out Mode (6) Not used (7) Automatic Turn back Mode (ATB)	(1) ATO Mode (2) ATP Mode (3) Restricted Manual Mode (4) Running on Sight Mode (5) Cut-Out Mode **(6) Call-On and Push-Out** **(7) Not used** **(8)** Automatic Turn back Mode (ATB)
17	Part II	Section VII-B 02 TS	5.1.2.1	The door closing operation is either fulfilled by the train operator or automatically by the ATO in accordance with different operational requirements. In case door to be closed by the train operator, the train operation only needs to press two buttons to close the doors and if the path is clear, then the train should automatically proceed to the next station. The train starting operations is fulfilled by the train operator in accordance with different operation requirements.	The door closing operation is either fulfilled by the train operator or automatically by the ATO in accordance with different operational requirements. In case door to be closed by the train operator, the train operation only needs to press two buttons to close the doors and if the path is clear, then **Departure push button is to be pressed,** the train should automatically proceed to the next station. The train starting operations is fulfilled by the train operator in accordance with different operation requirements.
18	Part II	Section VII-B 02 TS	5.1.9.1	At the terminal stations the train is operated automatically by the ATC to the turn back track and back to the terminal station without driver. Additionally there should be facility for automatic turn back at platform of the terminal station & Intermediate turn back station when train is directly received on the dispatch platform by using the crossover in front of the station. It shall be possible to enter the automatic turn back mode from ATO mode.	At the terminal stations the train is operated automatically by the ATC to the turn back track and back to the terminal station without driver. It shall be possible to enter the automatic turn back mode from ATO mode.
19	Part II	Section VII-B 02 TS	5.2.1	There is a soft switch / switch to select ROS mode. When signals resume the system goes back automatically to ATP mode (no manual selection needed again to go back)	There is a **Hard Button (Push Button)** to select ROS mode. When signals resume the system goes back automatically to ATP mode (no manual selection needed again to go back)

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
20	Part II	Section VII-B 02 TS	5.2.4.1	Minimizing the effects of failure so that the train service may continue during times of equipment failure is of paramount importance. Consequently, the area of railway affected by the failure of an item of Wayside ATC equipment, which causes the use of RM/ ROS mode of operation, shall not be greater than the area between two adjacent stations or between the halfway points on either side of the station. In any case this RM/ ROS operation area shall not be longer than 400 min the normal direction of travel.	Minimizing the effects of failure so that the train service may continue during times of equipment failure is of paramount importance. Consequently, the area of railway affected by the failure of an item of Wayside ATC equipment, which causes the use of RM/ ROS mode of operation, shall not be greater than the area between two adjacent stations or between the halfway points on either side of the station. In any case this RM/ ROS operation area **shall not be greater than the area between two adjacent stations or between the halfway points on either side of the station** in the normal direction of travel.
21	Part II	Section VII-B 02 TS	5.3.7.2.1	The primary train detection system shall be provided on Main Line, sidings, and reception lines and in the depots (except on Workshop Maintenance Tracks).	The primary train detection system shall be provided on Main Line, sidings, **Test Track and Transfer Track (Entry & Exist of Depot).**
22	Part II	Section VII-B 02 TS	5.3.7.2.2	**Secondary Train Detection** The secondary train detection system will use Axle Counters. The axle counter shall be a proven model with reliable performance in metro field. The axle counter shall operate safely and reliably with proper interface with interlocking equipment. Train detection shall as a minimum determine train positions with the accuracy corresponding to the subdivision of the track system, in sections where the train has to be located according to operation requirements. The secondary train detection system shall cater to route setting as stipulated in TS 5.11.2. This minimum train detection shall be effective irrespective of whether a vehicle carries working on board equipment or not.	**Secondary Train Detection** The secondary train detection system will use Axle Counters. The axle counter shall be a proven model with **processor level redundancy and** reliable performance in metro field. The axle counter shall operate safely and reliably with proper interface with interlocking equipment. Train detection shall as a minimum determine train positions with the accuracy corresponding to the subdivision of the track system, in sections where the train has to be located according to operation requirements. The secondary train detection system shall cater to route setting as stipulated in TS 5.11.2. This minimum train detection shall be effective irrespective of whether a vehicle carries working on board equipment or not. **All vehicles like trolleys, maintenance vehicle and any other rail vehicle should be positively detected.**

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
23	Part II	Section VII-B 02 TS	5.3.7.4	Impedance bonds shall be provided wherever required. The Signalling & Train Control Contractor shall provide the impedance bonds. The Signal & Train Control Contractor shall work with the traction power contractor to assure that the impedance bonds provided meet the requirements for traction power return without compromising train detection or cab signal reception.	Deleted.
24	Part II	Section VII-B 02 TS	5.3.8.4	The contractor can configure centralized equipment according to the system feature. However, for the main line, at least Three sets of mainline interlocking logic master unit must be provided for the proposed corridor. The plan for the same shall be submitted for approval of the Engineer. The contractor shall ensure that the effect of induced voltage is taken into account while designing the location and number of CBI/ Object controller units on the line. Wherever the induced voltage is likely to be more than as defined in clause	The contractor can configure centralized equipment according to the system feature. However, for the main line, **One interlocking and one zone controller per Reach and separate interlocking for each depot.** The plan for the same shall be submitted for approval of the Engineer. The contractor shall ensure that the effect of induced voltage is taken into account while designing the location and number of CBI/ Object controller units on the line. Wherever the induced voltage is likely to be more than as defined in clause
25	Part II	Section VII-B 02 TS	5.3.12.2	**Relevant Codes and Standards** Quality : ISO9001	**Relevant Codes and Standards** Quality : ISO: 9001 **& ISO: 140001**
26	Part II	Section VII-B 02 TS	5.3.12.6	**Noise Level** Noise emanating from the UPS during operation shall not exceed 70 dBA for 120KVA UPS and 65 dBA for 60 KVA & 30 KVA UPS at a distance of 1.5m from the enclosure, over a load range of 10% to 100% of the rated full load, as per the standards BS 4196: Part 6/ ISO 3746.	**Noise Level** Noise emanating from the UPS during operation shall not exceed 65 dBA for 60 KVA & 30 KVA UPS at a distance of 1.5m from the enclosure, over a load range of 10% to 100% of the rated full load, as per the standards BS 4196: Part 6/ ISO 3746.
27	Part II	Section VII-B 02 TS	5.3.12.7	The UPS and the battery backup system for S&TC and Telecommunication & AFC system shall include 2 numbers 3-phase Output, N, PE (TN-S) UPS in online redundant configuration (conventional 1+1) powered by Two separate Battery Banks (one for	The UPS and the battery backup system for S&TC and Telecommunication & AFC system shall include 2 numbers 3-phase Output, N, PE (TN-S) UPS in online redundant configuration (conventional 1+1) powered by Two separate Battery Banks (one for each UPS at each

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				each UPS at each station and Depot, a stand by spare cell charger (for 1 to 6 UPS cells) and a spare cell bank with 6 numbers cells	station and Depot, a stand by spare cell charger (for 1 to 6 UPS cells) and a spare cell bank with 6 numbers cells. **For UPS Block Diagram please refer Part –II, Annexure 1.**
28	Part II	Section VII-B 02 TS	5.3.12.11.1	The UPS shall be provided with a static By-pass switch. In the case of inverter failure, sub-circuit failure, load start-up inrush or battery capacity being exhausted upon rectifier / charger supply down, the static bypass switch shall transfer the load to the mains automatically within 4 milli-seconds. Full protection discrimination shall be achieved on the bypass circuit. In case of a single sub-circuit fault, the capacity of the static by-pass switch shall withstand the fault energy until the protective device of the sub-circuit clear the fault.	The UPS shall be provided with a static By-pass switch. In the case of inverter failure, sub-circuit failure, load start-up inrush or battery capacity being exhausted upon rectifier / charger supply down, the static bypass switch shall transfer the load to the mains automatically within 1 milli-seconds. Full protection discrimination shall be achieved on the bypass circuit. In case of a single sub-circuit fault, the capacity of the static by-pass switch shall withstand the fault energy until the protective device of the sub-circuit clear the fault.
29	Part II	Section VII-B 02 TS	5.3.12.11.3	The static switch should also conform to the following minimum requirements Continuous Capacity : Equal to the 100% continuous rating of the inverter	Continuous Capacity : >125% of desired Capacity.
30	Part II	Section VII-B 02 TS	5.3.12.12 (2)	The following data shall apply to UPS (of complete system unless specified otherwise): (2) Input voltage (Three phase) of input feeder 415V AC +10%, - 20% #	(2) Input voltage (Three phase) of input feeder : 300 -477 at full load & 242-477 at 70% load
31	Part II	Section VII-B 02 TS	5.3.12.12 (4)	Input Power factor : > 0.95	Input Power factor : >0.99 at 100%load
32	Part II	Section VII-B 02 TS	5.3.12.12 (5)	Output voltage : 415V AC Three phase	Output voltage : 380/400/415V
33	Part II	Section VII-B 02 TS	5.3.12.12 (8)	Overload capacity of each UPS better than > 150 % for 60 seconds > 125 % for 10 minutes > 110 % for 60 minutes	Overload capacity of each UPS better than > 150 % for 10 Minutes > 125 % Continuous
34	Part II	Section VII-B 02 TS	5.3.12.12 (14)	Efficiency (AC-AC) of complete system (including transformers)	Efficiency (AC-AC) of complete system (including transformers)

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				Better than 80% (From 25% load to full load)	Better than 94% at full load excluding transformer. 90% at 25% Loading excluding transformer
35	Part II	Section VII-B 02 TS	5.3.12.18	N1S01 contractor will provide LAN port between each station and the OCC for communication purpose, the point of interface being TER (Telecom Equipment Room) at stations and CER (Central Equipment Room) at OCC. N1S01 Contractor shall make all other necessary arrangements such as communication card/ port, cabling from UPS to TER, networking, furniture, workstation etc. The workstation shall be a standard PC with latest configuration and 24" LED monitor.	N1S01 contractor will provide LAN port between each station and the OCC for communication purpose, the point of interface being **SER** (**Signalling** Equipment Room) at stations and CER (Central Equipment Room) at OCC. N1S01 Contractor shall make all other necessary arrangements such as communication card/ port, cabling from UPS to SER, networking, furniture, workstation etc. The workstation shall be a standard PC with latest configuration and 24" LED monitor.
36	Part II	Section VII-B 02 TS	5.3.12.23.3	S no. / Stations / UPS Rating (KVA) / Transformer Rating (KVA) / ATS Switch Rating (A) 3 / Depot / 120 / 166 / 400	S no. / Stations / UPS Rating (KVA) / Transformer Rating (KVA) / ATS Switch Rating (A) 3 / 2 Depots / 60 / 96 / 230
37	Part II	Section VII-B 02 TS	5.10.1	The Train Control and Signalling System shall uniquely and positively identify every train. The train description shall consist of 6 numeric characters. The train Id consists of first two digits to identify the current destination and last two digits to identify the service. The Service identification remains constant during the service, the Destination identification changes at each trip or turn back. The Undetermined trains should be numbered outside the above normal range. When the train is situated in the depot or on the mainline (Not in revenue service), the follow-up carries out from the "Rake Id" of this train (Range 0000 to 0999). Such a train identity is attributed manually from the Depot ATS or Central ATS in according to location of this train	The Train Control and Signalling System shall uniquely and positively identify every train. The train description shall consist of 6 numeric characters. The train Id consists of **The first two digits shall identify a destination, while the second two digits shall be a service identifier and last two digits shall be serial number.** The Service identification remains constant during the service, the Destination identification changes at each trip or turn back. The Undetermined trains should be numbered outside the above normal range. When the train is situated in the depot or on the mainline (Not in revenue service), the follow-up carries out from the "Rake Id" of this train (Range 000000 to 099999). Such a train identity is attributed manually from the Depot ATS or Central ATS in according to location of this train respectively depot or

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				respectively depot or main line. The attribution is automatic when the train terminates the current service.	main line. The attribution is automatic when the train terminates the current service.
38	Part II	Section VII-B 02 TS	5.14.1	Workstations for control shall be provided in the following locations: (1) Operations Control Centre (OCC); (2) Depot Control Centre (DCC); (3) Station Control Room (SCR);	Workstations for control shall be provided in the following locations: (1) Operations Control Centre (OCC); and Backup Operation control Centre(BOCC) (2) Depot Control Centre (DCC); (3) Station Control Room (SCR);
39	Part II	Section VII-B 02 TS	5.15.1	There shall be two levels of control: (1) Central Control from the OCC (2) Local Control from the SCR.	There shall be two levels of control: (1) Central Control from the OCC and BOCC (2) Local Control from the SCR.
40	Part II	Section VII-B 02 TS	5.18.1	Transfer of Control The Train Control and Signalling System shall provide a mechanism to transfer train control from the OCC to a specified station and vice versa. This mechanism shall be co-operative; the OCC and SCR must both agree to the change in control. Stations under station control shall be clearly displayed as such upon the line overview display and the DLP.	**Transfer of Control** The Train Control and Signalling System shall provide a mechanism to transfer train control from the OCC **and BOCC** to a specified station and vice versa. This mechanism shall be co-operative; the OCC, **BOCC** and SCR must both agree to the change in control. Stations under station control shall be clearly displayed as such upon the line overview display and the DLP.
41	Part II	Section VII-B 02 TS	5.19 Degraded Mode 5.19.5 (New Clause)		**New clause added** **5.19.5** **Provision should be there to carry out Centralized Control functions from BOCC in case of major failure/ unavailability of OCC.**
42	Part II	Section VII-B 02 TS	5.25.1	5.25.1 The Contractor shall provide mimic overview system at OCC, BOCC, and Depot Control Room. The technology for the mimic projection/ Rear Projection system shall be a Lesser based large video screen system. The resolution will be HD or higher and the matrix shall be made of 70 inch cubes. 5.25.2 The (LVS) system supplied shall cater to NS Corridor, EW Corridor and CCTV. The unit shall have	5.25 amended Refer Part II, Annexure 2 5.25 Mimic Overview System/ Visual Display Unit / Rear Projection

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				the required8X2 (NS Corridor), ~~8X2~~ 2X8 (EW Corridor) and 8x2 (CCTV) matrixes of 70" full HD modular cubes. The Large Vedio Screen (LVS) matrixes will be used for display of traction over view diagram, the auxiliary supply over view diagram and CCTV. Display control ware/controller shall be included in the scope of supply. The workstations, Visual display unit and the controllers would be networked along with the SCADA servers & workstations on a dual LAN. 5.25.5. The height of the display portion of the panels shall be of approximately 2.5m and width approximately 15m so as to accommodate 2X7modules. There shall be provision for future expansion. The display panel shall be positioned and sized such that it presents an unobstructed view to all control room staff when seated at their consoles. The contractor shall review the sizes and submit his proposed layout to the Employer for review.	
43	Part II	Section VII-B 02 TS	5.29.4.2	The Train Control and Signalling System shall provide a train-ready signal , initiated by the train operator which shall place a train into service from any track section on the running lines, including, but not limited to:	The Train Control and Signalling System shall provide a train-ready signal **if required**, initiated by the train operator which shall place a train into service from any track section on the running lines, including, but not limited to:
44	Part II	Section VII-B 02 TS	5.31.2.1	The Rolling Stock Project Contractor will provide a data log to record all train borne Train Control and Signalling System faults. All train borne System faults shall be transmitted to the train for recording in this log. In addition the train borne log shall be transmitted in real time to OCC / SCC / DCC through TWC.	The Rolling Stock Project Contractor will provide a data log to record all train borne Train Control and Signalling System faults. All train borne System faults shall be transmitted to the train for recording in this log. In addition the train borne log shall be transmitted in real time to OCC / **BOCC**/ DCC through TWC.

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
45	Part II	Section VII-B 02 TS	5.33.3.4	The system shall comprise a Depot controller's workstation with 3 monitors in the Depot Control centre, a crew controller's workstation with one monitor in the Crew Controller's room, a dual server data processing system and communication link with the OCC ATS system for control, indication and train information transfer. In addition there shall be a LED display panel showing the entire view of the depot; the size and layout of the display panel will be ergonomically designed with the depot control room's layout.	The system shall comprise a Depot controller's workstation with 3 monitors in the Depot Control centre, a crew controller's workstation with one monitor in the Crew Controller's room, a dual server data processing system and communication link with the OCC ATS system for control, indication and train information transfer. In addition there shall be a LED display panel showing the entire view of the depot; the size and layout of the display panel will be ergonomically designed with the depot control room's layout. The display system within the Depot ATS shall not be a video wall.
46	Part II	Section VII-B 02 TS	5.34.3	The N1S01 Contractor shall provide the radio infrastructure for transmission of CCTV images from the train to OCC /SCC/DCC. The data transmission network over-the-air for CCTV and CBTC shall be separate. Redundant radio units shall be provided on train and wayside for CCTV transmission which shall be different from the radio units used for CBTC transmission. The CCTV will use 2.4 GHz ISM band while CBTC will use 5.8 GHz ISM band preferably. The data transmission from wayside to OCC may use same switching network. The network shall be configured such that CBTC traffic will always have priority over CCTV traffic. The technology used to stream CCTV images shall be based on IEEE 802.11 radio standards. The compression algorithms and frame transfer rate shall be put up to Employer's Engineer for review.	The N1S01 Contractor shall provide the radio infrastructure for transmission of CCTV images from the train to OCC /SCC/DCC. The data transmission network over-the-air for CCTV and CBTC shall be separate. Redundant radio units shall be provided on train and wayside for CCTV transmission which shall be different from the radio units used for CBTC transmission. The CCTV will use 2.4 GHz ISM band while CBTC will use 5.8 GHz ISM band preferably. The data transmission from wayside to OCC may use same switching network. The network shall be configured such that CBTC traffic will always have priority over CCTV traffic. The technology used to stream CCTV images shall be based on **IEEE 802.11n/802.11a/g** radio standards. The compression algorithms and frame transfer rate shall be put up to Employer's Engineer for review.
47	Part II	Section VII-B 02 TS	5.34.5	The N1S01 Contractor will provide HMIs as stipulated in Appendix C at OCC /SCC/DCC for display of CCTV images from train. It shall be possible to display the CCTV images on the LVS at OCC. Typically the display should be of sufficiently good quality for operator to view simultaneous	The N1S01 Contractor will provide HMIs as stipulated in Appendix C at OCC /SCC/DCC for display of CCTV images from train. It shall be possible to display the CCTV images on the LVS **(Large Video Screen)** at OCC. Typically the display should be of sufficiently good quality for operator to view simultaneous streams, both at the HMI and LVS

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
				streams, both at the HMI and LVS. It shall be possible to extend the display system and view multiple live streams simultaneously by adding more HMIs. The Contractor shall propose a system which shall fully meet the Works Requirements.	**(Large Video Screen).** It shall be possible to extend the display system and view **24** live streams simultaneously by adding more HMIs. The Contractor shall propose a system which shall fully meet the Works Requirements.
48	Part II	Section VII-B 02 TS	6.5.3	Mean Time Between Wrong Side Failures shall be minimum 109 hours	Mean Time Between Wrong Side Failures shall be minimum hours 10^{-9}.
49	Part II	Section VII-B 02 TS	6.7.3 item # 3	The Train Control and Signalling System shall conform to IEC 60529 Ed. 2.0 b to the following levels: (1) Trackside equipment: IP code 54; (2) Internal train borne equipment: IP code 52; and (3) External train borne equipment: IP code 67	The Train Control and Signalling System shall conform to IEC 60529 Ed. 2.0 b to the following levels: (1) Trackside equipment: IP code 54; (2) Internal train borne equipment: IP code 52; and (3) External train borne equipment: IP code **66**.
50	Part II	Section VII-B 02 TS	10.1.6	While firming up the design and installation specifications, particular attention should be paid to ensure the presence of the energized traction third rail does not affect the safety and reliability of any signalling equipment installed in the vicinity.	While firming up the design and installation specifications, particular attention should be paid to ensure the presence of the energized traction **25 KV AC** does not affect the safety and reliability of any signalling equipment installed in the vicinity.
51	Part II	Section VII-B 02 TS	11.2.11 (New clause)		**Maintenance During Defect Liability Period** During the Defects Liability Period, the Contractor shall be solely responsible for carrying out and completing the Corrective Maintenance and all Rectification Work in presence of Employer's Representative. The Employer's Representative shall also have the right but not the obligation to instruct the Contractor to complete certain Rectification Works set out in such instructions. The Contractor shall in addition to Rectification Works listed out by it, shall also carry out the Rectification Works instructed by the Employer's Representative and for carrying on such work the Contractor shall at its own cost provide competent and skilled personnel and maintain adequate stock of spares so as to promptly fulfill its

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
					obligations during the Defects Liability Period. The Contractor shall if required by the Employer's Representative carry out such searches, tests or trials as may be necessary to determine the cause of any defect, imperfection or fault. The Rectification Works must be carried out at all times and in all respects to meet the Employer's Requirements throughout the Defects Liability Period. If, during the Defects Liability Period, any defect or failure is discovered to be a Pattern Failure then the Contractor shall carry out the necessary Rectification Work or replacement (as the case may be) in respect of the entire Signalling and Tran Control System (including Contract Spares) and the Employer shall not be liable to pay any additional costs for the Rectification Work/ replacement carried in respect of such Pattern Failure. ***(Pattern Failure : Correction shall be made to components or subsystems that either fail to attain predicted reliability levels or show Pattern Failure, at no additional cost to the Employer).***
52	Part II	Section VII-B 02 TS	Appendix A1, 2.8.1	The Signalling and Train Control Contractor shall provide a four digit Train Identification Number (Train ID) to the Rolling Stock Contractor. The first two digits shall identify a destination, while the second two digits shall be a service identifier Rolling Stock Contractor shall accordingly use the relevant information such as names of intermediate stations, stopping pattern, station stop, door opening side information, skipping station information, keep door closed information, train going to depot information etc. for operation of on-train systems.	The Signalling and Train Control Contractor shall provide a **Six** digit Train Identification Number (Train ID) to the Rolling Stock Contractor. The first two digits shall identify a destination, while the second two digits shall be a service identifier **and last two digits shall be serial number**. Rolling Stock Contractor shall accordingly use the relevant information such as names of intermediate stations, stopping pattern, station stop, door opening side information, skipping station information, keep door closed information, train going to depot information etc. for operation of on-train systems.

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
53	Part II	Section VII-B 02 TS	3.1.16 INTERFACE REQUIREMENTS BETWEEN N1S01 AND RS CONTRACTORS	There shall be 3 separate radio system for communication between Train and wayside(a) Radio system (Tetra) supplied by N1S01 contractor for train operation (b) Radio system (including onboard equipment) supplied by N1S01 contractor for CBTC traffic.(c) Radio system (including on-board equipment) supplied by N1S01 contractor for CCTV traffic and other data pertaining to control, alarm, events, special messages / advertisements (including video) etc. The details of sharing of the 3 radio systems for sending control and data information, levels and protocols thereof, will be jointly agreed by N1S01 and RS contractors.	There shall be 3 separate radio system for communication between Train and wayside (a) Radio system (Tetra) supplied by **N1TL-01** contractor for train operation (b) Radio system (including onboard equipment) supplied by N1S01 contractor for CBTC traffic.(c) Radio system (including on-board equipment) supplied by N1S01 contractor for CCTV traffic and other data pertaining to control, alarm, events, special messages / advertisements (including video) etc. The details of sharing of the 3 radio systems for sending control and data information, levels and protocols thereof, will be jointly agreed by N1S01 and RS contractors.
54	Part II	Section VII	APPENDIX A2 3. Scope of Work	APPENDIX A2: N1S01/Civil , E&M, Detail Design consultants and construction contractors interfaces 3. Scope of work	Refer Part II, Annexure 3 : Appendix A2: N1S01/Civil , E&M, Detail Design consultants and construction contractors interfaces
55	Part II	Section VII	APPENDIX A4 – 2.1.2	APPENDIX A4 – N1S01/Track Contractors Interfaces 2.1.2. The interface between N1S01 and Track Contractors will be for both ballasted and ballast less track S.N 1, 4, 5 and 7	APPENDIX A4 – N1S01/Track Contractors Interfaces 2.1.2. The interface between N1S01 and Track Contractors will be for both ballasted and ballast less track Deleted.
56	Part II	Section VII	APPENDIX A5 3. Scope of work	APPENDIX A5 – N1S01 AND POWER DISTRIBUTION AND TRACTION SUPPLY (POWER DISTRIBUTION CONTRACTOR) INTERFACES 3. Scope Of Work	Refer Part II, Annexure 4 :: APPENDIX A5– N1S01 AND POWER DISTRIBUTION AND TRACTION SUPPLY (POWER DISTRIBUTION CONTRACTOR) INTERFACES 3. Scope Of Work
57	Part II	Section VII	APPENDIX A6 – 2. SCOPE OF WORK	APPENDIX A6 – N1S01/ DEPOT CIVIL, E&M, DETAIL DESIGN CONSULTANT AND CONSTRUCTION CONTRACTORS INTERFACES 2. SCOPE OF WORK	Refer Part II, Annexure 5 :: APPENDIX A6- N1S01/ DEPOT CIVIL, E&M, DETAIL DESIGN CONSULTANT AND CONSTRUCTION CONTRACTORS INTERFACES
58	Part II	Section VII	APPENDIX C – LIST OF ATS WORK STATIONS	APPENDIX C – LIST OF ATS WORK STATIONS	Refer Part II, Annexure 6 :: APPENDIX C

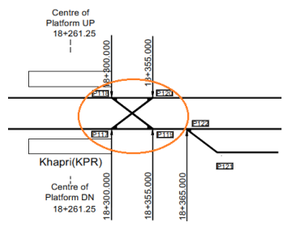
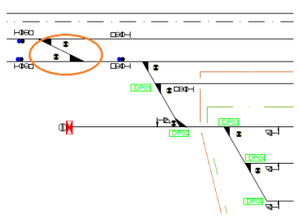
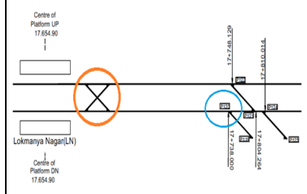
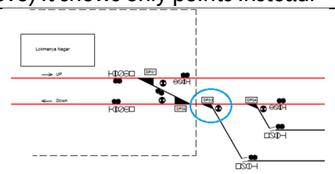
Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replace With
59	Part II	Section VII	APPENDIX V – KEY & ACCESS DATES	APPENDIX V – KEY & ACCESS DATES 3.Schedule of KEY DATES	Refer Part II, Annexure 7 :: APPENDIX V 3.Schedule of KEY DATES
60	Part II	Section VII	APPENDIX V – KEY & ACCESS DATES	APPENDIX V – KEY & ACCESS DATES 4. Schedule of Access Dates 4.4 Schedule of access Dates for Reach-3	Refer Part II, Annexure 7 : APPENDIX V 4. Schedule of Access Dates
61	Part II	Section VII-B 02 TS	APPENDIX A1 – N1S01/ ROLLING STOCK INTERFACES	4. Scope of Interface Annex- 1 to Appendix A1 Rolling Stock Characteristics (Data for 3 Car)	Refer Part II, Annexure 8 : Annex- 1 to Appendix A1
62	Part II	Section VII-B 02 TS	APPENDIX A1 – N1S01/ ROLLING STOCK INTERFACES	TD4.SCOPE OF INTERFACE TD4.1 Division of Responsibility	Refer Part II, Annexure 9 : APPENDIX A1 – N1S01/ ROLLING STOCK INTERFACES

Corrigendum-III, Part –B (Addendum)

Sl. No.	Part No.	Section	Clause Ref.	Existing Description	Replaced With
1.	III	Section -IX	PCC,12	Deleted	Refer GC clause No. 4.12 (Unforceeble Physical Condition) of Part-III
2.	III	Section -IX	PCC,47	Deleted	Refer GC clause No. 10.2(taking Over Part of Work) of Part-III
3.	III	Section -IX	PCC,52	Deleted	Refer GC clause No. 13.8(adjustment for change in cost) of Part-III
4.	III	Section -IX	PCC,57	Deleted	Refer GC clause No. 14.8(Delay payment) of Part-III
5.	III	Section -IX	PCC,65	Deleted	Refer GC clause No. 17.1(Indemnity) of Part-III
6.	III	Section -IX	PCC,67	Deleted	Refer GC clause No. 17.4(Consequences of Employees Risk) of Part-III
7.	III	Section -IX	PCC Part B Table: Summary of Sections (KEY DATES) Clause 3.	NOTES 3. Major Key Dates	Refer APPENDIX V (KEY & ACCESS DATES) 3.Schedule of KEY DATES
8.	III	Section XI	21.8.1	As stipulated in relevant Rule of GBOCWR 2003, no lifting appliances gear or any other material handling appliance is used,	As stipulated in relevant Rule of MBOCWR (Maharashtra Building and Other Construction Workers Rules-2003)., no lifting appliances gear or any other material handling appliance is used,
9.	III	Section XI	APPENDIX NO.: 2	GBOCWR 2003 welfare Board Rules	MBOCWR (Maharashtra Building and Other Construction Workers Rules-2003) welfare Board Rules
10.	III	Section XI	31.5	As per the GBOCW Rules 2003, all lifting appliances' driver cabin should be provided with a suitable portable fire extinguisher.	As per the MBOCWR (Maharashtra Building and Other Construction Workers Rules-2003), all lifting appliances' driver cabin should be provided with a suitable portable fire extinguisher.
11.	III	Section XI	General Instruction: NMRCL/SHE /GI/001	Minimum Manpower Requirements Of She Organization Based On Contract Value	Minimum Manpower Requirements amended. Refer Part - III, Annexure- 1

Corrigendum-III, Part –C (Drawings)

Sl. No.	Reference Clause	Description as per issued Document	Bidder's Queries	NMRCL's Response
1	General	Viaduct Shape	Kindly confirm on the shape of Viaduct (i.e. U shape or W shape)	The shape of the Viaduct is 'U' shape.
2	GAD CAD drawings (Reach 3 & 4) and Conceptual scheme plan E-W Corridor.		Kindly confirm and provide the below details: 1. Depots GAD – Track details are not available for both HINGNA & MIHAN Depots 2. Reach 4 -Turnout is exist near Prajapati station & near Agrasen Chowk in Schematic Plan provided and but not exist in GAD provided. 3. Reach 3 - As per the revised GAD scissor crossover & Depot points after Lokmanya nagar are not available in Latest GAD. 4. Reach 3 "Sheet No. 15 -18.03.2016.dwg" - Sheet no.15 in which Lokmanya nagar station is shown with Depot points, But there are two Lines in this file: a. Red Line is indicating that it's going towards Hingna Depot b. Blue Line Contains depot points, Wash plant & Scissor Crossover. However, RFP document dose not say anything on Wash Plant interface. Kindly confirm. Kindly also provide the difference of this two lines and Confirm which Line is going to Depot. 5. PSR is not available for both mainline and depot in GAD.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
3	20160526 Revised GAD Reach-2.dwg		Platform length of AUTOMOTIVE SQUARE is 74.5. Compared to other stations it is 0.5m smaller. Kindly confirm.	It will 74.5, Platform length of AUTOMOTIVE SQUARE.
4	GAD CAD drawings (20160526 Revised GAD Reach-2.dwg) and Conceptual scheme plan N-S Corridor (NMRCL Signalling Plan North - South Corridor (1).dwg).		Crossover next to AUTOMOTIVE SQUARE does not exist in GAD however it exists in tentative conceptual scheme plan of N-S Corridor. Kindly confirm.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
5	20160526 Revised GAD Reach-2.dwg & At Grade-20151116_GAD_At_Grade_as_sent_R02-Latest.dwg		Kindly provide PSR details for Reach 2 and at grade section.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
6	Reach-1 - 877GA01 (SHEET 1 TO 14) 16.07.16.dwg		Kindly provide Stations names details for Reach 1 which is not exist in the latest GAD.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
7	GAD CAD drawings (At Grade - 20151116_GAD_At_Grade_as_sent_R02-Latest.dwg) and Conceptual scheme plan N-S Corridor (NMRCL Signalling Plan North - South Corridor (1).dwg).		Kindly confirm on (a) Scissor Crossover between stations AIRPORT & AIRPORT SOUTH does not exist in GAD however it exists in tentative conceptual scheme plan of N-S Corridor (b) Crossover next to Khapri station does not exist in GAD however it exists in tentative conceptual scheme plan of N-S Corridor	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
8	Tender Drawings	TSR values are not specified.	Kindly provide.	Track Speed Restriction will be provided in later stage.

9		1. Major Key Dates: 1st commissioning date for 4.5 km section is 11 months after NTP.	What is the exact scope of this commissioning. Does Employer want to have the CBTC design, software development, lab integration and site commissioning completed within 11 months after contract start?	Please refer Part - II, Annexure -7 of Addendum
10		Depot – When you say full interlocked, does this mean only CBI or also CBTC?		Full interlocked means only CBI no CBTC
11		We understand Nagpur Metro requirement as per bid document is STO(GoA2).	in case there are some requirements related to DTO(GoA3)...Could you pls inform how to address in compliance statement. Can we highlight and mark it as n/a, nevertheless we are compliant with GoA3.	Bidders should comply all clauses of PS.
12	Tender drawings	 	Could you pls clarify this, and / or issue revised drg.?	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
13		This is regarding tender drawing of the area at boundary of mainline Khapri station and depot Mihan on North South Corridor. The mainline Khapri station shows track crossing P117,118,119,120 (left side drg above), whereas at Mihan (right side drg. above) it shows only points instead.		
14	Tender drawings	 	Could you pls clarify this, and / or issue revised drg.?	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
15		Similarly in line with Q1 above, Track crossing, which is shown in MainLine Lokmanya station (Left side drg) is missing in Hingna depot (right side drg) on E-W corridor. Also P120 (DP03) is shown before P 121 (DP02) in main line Lokmanya station , whereas in Hingna Depot drg, P120 (DP03) is shown after P121 (DP02)		
16	GAD Drgs	GAD does not contain the detail of last section of E-W corridor.	Couould you pls provide complete GAD to enable us to work on headway simulation.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip

17	Signalling Layout	Conflicts between Mainline and depot boundary in the signalling of Mainline sheet and Depot sheet both 2 depots.	Which one should be used for estimate?	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
18	GAD CAD drawing (Reach-4 - 20160429 Revised GAD PrajapatiNgr to Sitaburdi as sent.dwg).		In East West Mainline GAD reach4, from Point KP (at -419.18) to EOT (at -496.72) distance is 77.54m which is insufficient length to stable the train. However, in Schematic plan the same length is given 91.19m. Kindly confirm which EOT KP to consider.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
19	GAD CAD drawings (At Grade - 20151116_GAD_At_Grade_as_sent _R02-Latest.dwg)	Grade and curve details are missing in the sheet 6 & 7 of At Grade - 20151116_GAD_At_Grade_as_sent_R02-Latest.dwg	Grade and curve details are not available in latest GAD file provided. Kindly provide these details.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
20	20160526 Revised GAD Reach-2.dwg		Kindly provide the Radius Value of first grade on sheet 10.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
21	20160526 Revised GAD Reach-2.dwg & At Grade - 20151116_GAD_ At_Grade_as_sent_R02-Latest.dwg		Grade value of end of Reach 1 is contradicting with begin of At Grade Section (Priority Section). Kindly confirm.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
22	At Grade - 20151116_GAD_At_Grade_as_sent _R02-Latest.dwg		Kindly provide the GAD with connectivity of Depot to Mainline.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip
23	At Grade -20151116_GAD_At_ Grade_as_sent_R02-Latest.dwg (Sheet 7)	Tentative location of End of At Grade Section Chainage 18700.	On NS mainline where at Grade section end KP is 18700. But still extra Mainline track leading to the Depot part KP till 20412.076; Kindly confirm if this additional track belongs to main line OR depot. The same additional track exists in the EW Depot part also. Kindly confirm for the same as well.	Please refer Part C Annexure 1 & 2 The latest GAD will be available on the following links: http://metrorailnagpur.com/nmrclgad.zip

PRO-FORMA SECTION 3
ANNEXURE 1

Name of the Applicant / Member (in case of JV/consortium)

Note: Separate proforma shall be submitted for each work.

Project Title: ……		Location: ……..
Brief scope of work	…… …… ……	
Client: ……		Client address: ……
Client Representative: ……		Tel no. / email: ……..
Type of contract (ICB / Others): Please √ whichever is applicable		
• Signalling & Train Control;		
• Signalling & Train Control based on CBTC Rolling Stock – ATP / ATO Systems Interfacing		
• Others (please specify)		
Contract amount in respective currencies: ……..		
Whether at least 02 CATC Works (for which details are submitted in Annexure 2) have been executed outside the country of origin/ **manufacture or in India.** **[Y] / [N]**		
Whether out of these two CATC works, at least one work is CBTC based. **[Y] / [N]**		
Whether CBTC works submitted in support of work experience under Clause T6 of Initial Filter (for which details are submitted in Annexure 2) are from OEMs under same parent company **[Y] / [N]**		
Whether CBTC works submitted in support of work experience under Clause T6 of Initial Filter (for which details are submitted in Annexure 2) Have integration of all major subsystems (interlocking, ATP, ATS, and Radio). **[Y] / [N]**		
Whether at least CBTC work out of the work(s) submitted in support of work experience under Clause (for which details are submitted in Annexure 2) include integration **with** all subsystems (Telecommunication, PIDS, Rolling Stock, Track, Traction etc.). **[Y] / [N]**		
Whether the Bidder has submitted Client Certificate for Completion for each work? **(Refer NOTE in the end of Questionnaire, NOTE No. vii)** **[Y] / [N]**		
Was an Indian Government standard form of contract used? If yes Give details **[Y] / [N]**		

Was an international standard form of contract used? If yes Give details **[Y] / [N]**	
Was the work carried alone or as a member of the group? If a group, indicate percentage participation and area/s of participation **[Y] / [N]**	
Date work commenced	Date work was completed
Was the date of completion given in the original contract extended? If so by how much and why? **[Y] / [N]**	
Was any penalties imposed for delay? If Yes give details **[Y] / [N]**	Did the applicant go in for Arbitration? If Yes give details **[Y] / [N]**
Were any penalties imposed for reasons other than delay? If yes give details **[Y] / [N]**	Did the applicant go in for Litigation If Yes give details **[Y] / [N]**
Contract Value as on 'Twenty eight (28) days prior to date for Bid submission (refer Section II: Bid Data Sheet)' prices in Rupee equivalent, assuming per annum inflation of 5% on Indian currency and 2% on foreign currency portion, respectively (Refer NOTE in the end of Questionnaire for Exchange rate): Details of work undertaken:	
Were Quality Assurance obligations required in the contract? If yes, whether they were fulfilled? **[Y] / [N]**	
Were specified performance requirements of the systems achieved? **[Y] / [N]** If yes, please give details of reliability in terms of availability of the systems achieved during warranty period or three years from the date of commissioning whichever is later If No, give reasons.…… Has the applicant (or any member of a group) been blacklisted by a client? **[Y] / [N]** If yes why?	
Was there any complaint received from the client relating to the performance of the System? **[Y] / [N]** If yes give details	
Did the arrangements / facilities exist to rectify defects during warranty period? **[Y] / [N]** If yes give details	
Was technology transferring a part of the contract? **[Y] / [N]** Was the technology transfer achieved as contracted? **[Y] / [N]** If yes what was the time frame?	

Project description including transfer of technology for system assembly, installation, maintenance and software customization / modification details. Briefly indicate plan of action in the direction of progressive technology transfer to India.

Note: Any wrong information given by the Applicant (at any stage of the bidding process) will lead to disqualification of the Applicant.

Part - I, Annexure- 2

NAGPUR METRO RAIL PROJECT

BID DOCUMENTS

FOR

DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SIGNALLING AND TRAIN CONTROL SYSTEM

TENDER NO.
N1S01/2016

PART I: BIDDING PROCEDURE
SECTION IV: BIDDING FORMS

ANNEXURE IV-B: PRICING DOCUMENT

- **Bid Total and Apportionment of Lump Sum Price among Cost Centres**
- **Details of Taxes / Duties / Levies etc. included in the Fixed Lump sum Price (COST CENTRE WISE)**
- **Annexure-1**
- **Annexure-2**
- **Annexure-3**
- **Annexure-4**

July 2016

NAGPUR METRO RAIL CORPORATION LIMITED (NMRCL)
"Metro House", 28/2 CK Naidu Marg, Anand Nagar,
Civil Lines, NAGPUR, MAHARASHTRA-440001
Ph. 0712-2554217
Website: http://www.metrorailnagpur.com

BID TOTAL

[To be Completed and Submitted by the Bidder as part of 'Schedules' under Section IV: Bidding Forms]

The fixed Lump Sum Price of this Contract for Signalling and Train Control System is:

Foreign Currency	Indian Rupees
In figures:	In figures:
In words:	In words:

Apportionment of Lump Sum Price among Cost Centres

SECTION INCLUDING 2 DEPOTS, OCC & BOCC AND ALL REACH.

Sl. No	Section	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
A	General Requirements for Signalling and Train Control System		
B	Application Engineering		
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		

SECTION: MS - MISCELLANEOUS

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
A	Training		
B	Spares, Special Tools, Testing Equipment and Measuring Instruments, DLP support		
C	Supervision of Maintenance		
D	Manuals		
BID TOTAL (A to D)			

*** Bidders to show Cost Centres for columns A and B where appropriate. In case of foreign currency the bidder should quote in any one of the three currencies (Japanese Yen, Euros (€) and US Dollars (US$)).**

Notes:

1. The maximum amount than can be apportioned in cost Centre 'A' & 'B' of a Section **except Section MS** shall not exceed 5% and 10% respectively, of the apportioned amount for that Section.
2. The minimum amount that can be apportioned in cost Centre 'E' of a Section **except Section MS** shall not be less than 10% of the apportioned amount for that Section.
3. 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.
4. Amount quoted in Section MS: Miscellaneous and relevant Cost Centres shall be actual cost and not apportioned cost.

SIGNATURE OF BIDDER

Appendix to Bid Total

DETAILS OF TAXES / DUTIES / LEVIES ETC. INCLUDED IN THE FIXED LUMPSUM PRICE (COST CENTRE WISE)

(Refer Para A.1 of Part IB-1 'Instructions for completing the Pricing Document')

Cost Centre	Taxes, Duties, Levies etc.														Total Amount of all Taxes / Duties / Levies / Cess
	Custom Duty		Excise Duty		Sales tax / VAT		Works Contract Tax (WCT)		Service Tax		Octroi / Entry Tax		Any other Tax / Levy / Cess		
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8) = Sum of (1) to (7)
	Rate (%)	Amount	Rate (%)	Amount	Rate (%)	Amount	Rate (%)	Amount	Rate (%)	Amount	Rate (%)	Amount	Rate (%)	Amount	
A															
B															
C															
D															
E															
Section MS – Miscellaneous															
A															
B															
C															
D															
Total															

Notes:

The Bidderis required to give in itsBidoffer breakdown of fixed lump sum price clearly giving the following:

(a) Customs duty on offshore manufactured items, if any along with rate of Custom duty.
(b) Excise duty (after availing CENVAT) on completely assembled / manufactured equipments, if any along with rate of Excise duty.
(c) Customs duty on imported spares, jigs, fixtures, special tools and diagnostic equipment etc. forming part of Cost Centre-B of Section MS along with rate of Customs duty.
(d) Excise duties on spares, jigs, fixtures, special tools, testing and diagnostic equipment etc. forming part of Cost Centre-B of Section MSalong with rate of Excise duty.
(e) VAT on the completely assembled / manufactured equipments.
(f) VAT on the indigenous finished spares, jigs, fixtures, special tools and testing and diagnostic equipment etc. forming part of Cost Centre-B of Section MSalong with rate of VAT.
(g) Works Contract Tax (WCT) along with applicable rate.
(h) Octroi / Entry Tax (if any) and
(i) Other levies / Cess etc. as applicable
(j) The amount mentioned other than INR for the purpose of comparison of the applicable taxes and levies, the exchange rate prevailing on the date 28 days before the latest date of submission of the Bidwould be considered.

SIGNATURE OF BIDDER

NAGPUR METRO RAIL CORPORATION LIMITED

DESIGN, MANUFACTURE, SUPPLY, TESTING, COMMISSIONING OF SIGNALLING AND TRAIN CONTROL

CONTRACT NO. N1S01/2016

(To be submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

Annexure-1
INDEX OF COST CENTRES

Tender :N1S01/2016(ICB)

SECTION - I : INCLUDING 2 DEPOTS, OCC & BOCC AND ALL REACH.

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
A	General Requirements for Signalling and Train Control System		
B	Application Engineering		
	BID TOTAL (A to B)		

SECTION -II :-PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		
	BID TOTAL (C to E)		

SECTION - III :REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		
	BID TOTAL (C to E)		

SECTION- IV :REACH 2

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		
	BID TOTAL (C to E)		

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		
	BID TOTAL (C to E)		

SECTION - VI: REACH 4 INCLUDING OCC AT SITABULDI

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
C	Manufacture, and Delivery		
D	Installation and Site Testing		
E	System Acceptance Test, Integrated Testing and Commissioning		
	BID TOTAL (C to E)		

SECTION MS - MISCELLANEOUS

Cost Centre	Cost Centre* Description
A	Training
B	Spares, Special Tools, Testing Equipment and Measuring Instruments, Furniture, DLP support
C	Supervision of Maintenance
D	Manuals

PRICING DOCUMENT
Annexure-1

SCHEDULE OF AMOUNTS APPORTIONED TO COST CENTRES

Cost Centre Descriptions

SECTION :-I : INCLUDING 2 DEPOTS , OCC&BOCC AND ALL REACH

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

COST CENTRE No. A: General Requirements for Signalling and Train Control System

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

- Contractor's Project Plan, Document Submission Procedure, Designation System for Documents Submission, Health, Safety & Environment Plans, Interface Management Plan with Designated Contractors.
- Works Programme and Document Submission Programme for complete _____ Contract.
  - EMC Management Plan
  - RAMS Plans
  - Software Quality Assurance Plan
  - Quality Plan
- Preliminary System Design for Train Control & Signalling Systems, consisting of:
  - System and Sub-system Overview,
  - System requirement specification, System traceability specification,
  - System safety plan,
  - System Verification & Validation Plan
  - System Assurance Plans consisting of:
    - EMC Management Plan
    - RAMS Plans
    - Software Quality Assurance Plan
    - Quality Plan
  - ATC interface with Rolling stock, including the design of driver's MMI for ATP etc
  - Train to Wayside bidirectional communication scheme plan.
- Site Safety Plans.
- Site Environmental Plans
- Software and System Verification and Validation Standards. Complete Verification and Validation Documents for each Generic Product – CBI, CBTC (Trackside ATP, Onboard ATP, ATO, Radio based Communication System, ATS) and Axle Counters,.
- Signalling Plan and System Block Diagram
- Earthing and Lightening Protection Plan
- Specifications for Indoor and Line side Equipments including the requirement for power,
- space and preliminary mounting details for main line and depot
- Layout plan for equipment and cables in OCC AND BACKUP OCC
- Layout plan for equipment and cables for UPS system for S&TC.
- Any other item(s) considered necessary to comply with the Scope of Work.

SIGNATURE OF BIDDER

SECTION :-I : INCLUDING 2 DEPOTS , OCC&BOCC AND ALL REACH

COST CENTRE No. A: General Requirements for Signalling and Train Control System

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:			
A1	Contractor's Project Plan, Document Submission Programme, Health, Safety & Environment Plans			
A2	Works Programme for section Provide, erect and equip Project Site office.			
A3	Preliminary System design for Train Control & Signalling System System Block Diagram.			
A4	Software and System Verification and Validation Standards for Train Control & Signalling system Complete Verification and Validation Documents for each Generic Product – CBI, Trackside ATP, Onboard ATP/ ATO Mode, Radio based communication system, ATS) and Axle Counters, and along with associated ISA Report.			
A5	Signalling Plan for Main Line and Depot Train to Wayside bidirectional communication scheme plan for mainline & Depot			
A6	Earthing, Lightening and Surge Protection Plan			
A7	Specifications for Indoor and Lineside Equipments including the requirement for power, space and preliminary mounting details for main line and depots			
A8	Layout plan for equipment and cables in OCC AND BACKUP OCC Layout plan for equipment and cables for UPS system for S&TC for complete contract			
A9	Site safety Plans, Site environmental plans			
A10	Interface Management Plan with Designated Contractors			
A11	Any other item(s) considered necessary to comply with the scope of Works			
	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION :-I : INCLUDING 2 DEPOTS , OCC&BOCC AND ALL REACH

COST CENTRE No. B: Application Engineering

This Cost Centre comprises all those obligations and ongoing activities through out of the Contract not associated directly with any other Cost Centre.
This Cost Centre includes but is not limited to:

Train Control & Signalling

- Detailed Interface Documents with the Designated Contractors
- Final Design of Signalling & Train Control consisting of:
  - Specifications of all Sub-systems: CBI including wayside equipment (Axle Counters, Signals, Point Machines), Radio based communication system, Onboard ATP/ATO, Trackside ATP including wayside equipment ATS, Cables, Communication network, , UPS system for S&T
  - Design of MMIs viz. ATS, Onboard ATP, CBI Control Workstation
  - Verification and Validation Plans of all sub-systems
  - Design Verification Table
  - Train performance curves, run time calculations and simulation of required headway
  - Hazard Analysis
    - Preliminary Hazard analysis,
    - System Hazard analysis,
    - Sub system hazard analysis,
    - Interface hazard analysis
    - Operating & Support Hazard Analysis
  - Final System Assurance Plans
- Application/ Configuration Documents –
  - Train Movement Specification
  - Control/ Route Table
  - CBTC Configuration Document
  - ATO, ATP, ATS, Object Controller Configuration Documents,
  - Radio system configuration document
  - System Configuration drawing/ Document..
  - Track side interface equipment
- Factory Acceptance Test Plans and Type Test Plans including planning, methodology and checklists
- Equipment installation methods for all indoor and outdoor equipment.
- Application drawings including Bonding Plan, Axle Counter Layout Drawing, Radio system / access point layout drawing, Track side interface equipment, Cable Layout Drawing, Cable Termination and Distribution Drawing, Beacon Layout Plan, Room Layout Plans, Depot Layout Plan, Circuit Diagrams including interconnection details of all subsystems, detailed layout plan of OCC AND BACKUP OCC equipment including OCC , BACKUP OCC display panel and Depot display panel , Layout plan of Onboard ATP equipments, Equipment Installation Drawings. Train to Wayside bidirectional communication layout including interconnection details of all network components.

SECTION :-I : INCLUDING 2 DEPOTS , OCC&BOCC AND ALL REACH

COST CENTRE No. B: Application Engineering

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 / running - Marine Insurance - Documents for shipment to Indian Port - Transit insurance from Port in India to Depot Site in Nagpur for:			
B1	List of Materials required and Delivery Schedule thereof			
B2	Detailed Interface Documents with the Designated Contractors for ATP/ATO			
B3	Final Design of Train Control & Signalling System			
B4	Application/ Configuration Documents for Mainline			
B5	Application/ Configuration Documents for Depot			
B6	Factory Acceptance Test Plans and Type Test Plans including planning, methodology and checklists			
B7	Equipment installation methods for all indoor and outdoor equipment			
B8	Application Drawings for Mainline, Trains and OCC AND BACKUP OCC			
B9	Application Drawings for Depot			
B10	Any other item(s)considered necessary to comply with Scope of Work			

	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.

SIGNATURE OF BIDDER

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. C: Indigenous Manufacture

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

This includes but is not limited to:

TRAIN CONTROL & SIGNALLING SYSTEM

- Delivery of CBI equipment for interlocking with all software and associated accessories at Contractor's premises in Nagpur.
- Delivery of Power Distribution Cubicle at Contractor's premises in Nagpur
- Delivery of UPS system for Signalling & telecommunication system at Contractor's premises in Nagpur
- Delivery of signalling and power cable at Contractor's premises in Nagpur
- Delivery of line side signals and associated accessories at Contractor's premises in Nagpur
- Delivery of Axle Counters and associated accessories at Contractor's premises in Nagpur
- Delivery of point machines and associated accessories at Contractor's premises in Nagpur

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. C: Indigenous Manufacture and Delivery

Milestone No.	Work Description Milestone Activity	Apportioned Amount Foreign Currency Column A	 Indian Rupees Column B	Weeks for completion of Milestone from Commencement Date
C1*	Placing of order of all major equipment including CBI, Axle Counters, Point Machine, Signals, Cables, PDC, for Mainline and Depot entry, UPS system			
Obtain the "Notice of No Objection" or "Notice of No Objection subject to…" from the Employer's Engineer for each of the following Milestones after certification of type tests, Certification of factory acceptance test, Proof of insurance				
C2	Delivery of CBI equipment with all associated accessories for Mainline at Contractor's premises in Nagpur..			
C3	Delivery of signalling and power cable for Mainline at Contractor's premises in Nagpur.			
C4	Delivery of signalling and power cable for Depot at Contractor's premises in Nagpur			
C5	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Mainline at Contractor's premises in Nagpur.			
C6	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Depot at Contractor's premises in Nagpur.			
C7	Delivery of UPS (S&T) system at contractor premises in Nagpur.			
COST CENTRE TOTAL CARRIED TO SECTION SUMMARY				

SIGNATURE OF BIDDER

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. D: Installation and Site Testing

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

This shall include but not be limited to:

TRAIN CONTROL & SIGNALLING SYSTEM Indoor & Outdoor Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all indoor equipment such as CBI, axel counters, rack, wiring & terminations etc.; and outdoor equipment such as Line side equipment, Axle Counters, point machines, DLR including erection of junction boxes, wiring and terminations, etc.

- Shifting to site, installation and testing of UPS (S&T) system.
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations.
    - Complete fixing and wiring of equipment in accordance with circuit and installation diagrams.
    - Post installation tests including: Pre-power up checking, power up, customisation and configuration of equipment.

Perform Partial Acceptance Tests in accordance with the accepted Signalling PAT Plan

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. D: Installation and Site Testing

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 Employer's Representative for:			
D1	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, Signals, Axle Counters, UPS (S&T) system, point machines, etc. for Mainline.			
D2	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, Signals, Axle Counters, point machines, UPS (S&T) system.			
D3	Completion of Partial Acceptance Tests for Signalling system.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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

This shall include but not be limited to:

- Testing & Commissioning Documents including Interface Testing Plans
- Integrated testing and commissioning documents
- System Acceptance Tests in accordance with accepted System Acceptance Plan
- Integrated Testing and Commissioning
- Service Trials
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION -II :- PS (PRIORITY SECTION) INCLUDING DEPOT ENTRY

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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 Employer's Representative for			
E1	Testing & Commissioning Documents including Interface Testing Plans, System Acceptance Test Plan, Integrated Testing & Commissioning Plan and Service Trials Plan for Signalling			
E2	Completion of System Acceptance Test of Signalling			
E3	Completion of Integrated Testing & Commissioning .			
E4	Completion of Service Trials .			
E5	Any other item(s) considered necessary to comply with the Scope of Work.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

COST CENTRE No. C: Indigenous Manufacture

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

This includes but is not limited to:

TRAIN CONTROL & SIGNALLING SYSTEM

- Receipt of Onboard ATP/ATO equipment with all software, Driver's MMI equipment, speedometer and associated accessories by the Rolling Stock Contractor.
- Delivery of CBI equipment for interlocking with all software and associated accessories at Contractor's premises in Nagpur.
- Delivery of T-ATC, Bidirectional TWC equipment, radio Zone Controller and associated accessories at Contractor's premises in Nagpur.
- Delivery of Power Distribution Cubicle at Contractor's premises in Nagpur
- Delivery of ATS equipment for station, Depot and other SCR equipment and associated accessories at Contractor's premises in Nagpur
- Delivery of ATS Equipment and associated accessories for OCC and Backup OCC at Contractor's premises in Nagpur
- Delivery of UPS system for Signalling & telecommunication system at Contractor's premises in Nagpur
- Delivery of signalling and power cable at Contractor's premises in Nagpur
- Delivery of line side signals and associated accessories at Contractor's premises in Nagpur
- Delivery of Axle Counters and associated accessories at Contractor's premises in Nagpur
- Delivery of point machines and associated accessories at Contractor's premises in Nagpur
- Delivery of Large Video wall and associated accessories Large Display Monitor for Backup OCC at Contractor's premises in Nagpur.

Note : The material supplied and installed in the Priority Section should be excluded from the supply of Reach 1. The CBTC design should be accordingly designed so that it should cover the Priority Section for Reach 1.

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

COST CENTRE No. C: Indigenous Manufacture and Delivery

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
C1*	Placing of order of all major equipment including Onboard ATP/ ATO, Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables, PDC, ATS, UPS system and Trains, Large Video Wall for Backup OCC (Signalling, Telecommunication and Traction systems)			
Obtain the "Notice of No Objection" or "Notice of No Objection subject to…" from the Employer's Engineer for each of the following Milestones after certification of type tests, Certification of factory acceptance test, Proof of insurance				
C2	Receipt of onboard ATP/ ATO equipment, driver's MMI equipment and associated accessories for 16 cabs by the Rolling Stock Contractor.			
C3	Delivery of T-ATC equipment, Radio Zone controller, TWC along with trackside modules and associated accessories for Mainline at Contractor's premises in Nagpur			
C4	Delivery of T-ATC equipment Radio Zone controller, TWC along with trackside modules and associated accessories for Depot at Contractor's premises in Nagpur			
C5	Delivery of CBI equipment with all associated accessories for Mainline at Contractor's premises in Nagpur..			
C6	Delivery of CBI equipment with all associated accessories for Depot at Contractor's premises in Nagpur			
C7	Delivery of ATS Equipment and associated accessories for stations, Depot and BACKUP OCC at Contractor's premises in Nagpur.			
C8	Delivery of Backup OCC Large Video Wall for Signalling , Telecom and Traction system at Contractor's premises in Nagpur			
C9	Delivery of signalling and power cable for Mainline at Contractor's premises in Nagpur.			
C 10	Delivery of signalling and power cable for Depot at Contractor's premises in Nagpur			

C11	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Mainline at Contractor's premises in Nagpur.			
C12	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Depot at Contractor's premises in Nagpur.			
C13	Delivery of UPS (S&T) system at contractor premises in Nagpur.			
COST CENTRE TOTAL CARRIED TO SECTION SUMMARY				

SIGNATURE OF BIDDER

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

COST CENTRE No. D: Installation and Site Testing

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

This shall include but not be limited to:

TRAIN CONTROL & SIGNALLING SYSTEM Indoor & Outdoor Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all indoor equipment such as CBI, CBTC, ATP/ ATO, axel counters, ATS, Bidirectional TWC network including switch, access points, rack, wiring & terminations etc.; and outdoor equipment such as Line side equipment, Axle Counters, point machines, Beacons, DLR including erection of junction boxes, wiring and terminations, etc.

- Shifting to site, installation and testing of UPS (S&T) system.
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations.
    - Complete fixing and wiring of equipment in accordance with circuit and installation diagrams.
    - Post installation tests including: Pre-power up checking, power up, customisation and configuration of equipment.

Backup OCC – Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all equipment including ATS computers, Large Video Wall and associated accessories
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations
    - Complete fixing and wiring of indoor equipment in accordance with circuit and installation diagrams.
    - Post installation tests including pre-power up checking, power up, customisation and configuration of equipment.

Perform Partial Acceptance Tests in accordance with the accepted Train Control & Signalling PAT Plan

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

COST CENTRE No. D: Installation and Site Testing

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 Employer's Representative for:			
D1	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, UPS (S&T) system, point machines, Beacons, DLR etc. for Mainline.			
D2	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, point machines, UPS (S&T) system, Beacons, DLR etc. for Depot.			
D3	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of BACKUP OCC including ATS and Large Video wall.			
D4	Completion of Installation testing and Commissioning of on-board equipment for ATC and on-board radio equipment, and their associated accessories in 16 cabs, as certified jointly in writing, by the S&TC Contractor and Rolling Stock Contractor for the satisfactory installation and testing of the on-board equipment.			
D5	Completion of Partial Acceptance Tests for Train Control & Signalling system.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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

This shall include but not be limited to:

- Testing & Commissioning Documents including Interface Testing Plans
- Integrated testing and commissioning documents
- System Acceptance Tests in accordance with accepted System Acceptance Plan
- Integrated Testing and Commissioning
- Service Trials
- System Safety Case of the Signalling & Train Control Systems and Assessment Report of Independent Safety Assessor.
- Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC.
- As built Drawings
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION - III : REACH 1 INCLUDING BOCC AT METRO BHAVAN AND MIHAN DEPOT

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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 Employer's Representative for			
E1	Testing & Commissioning Documents including Interface Testing Plans, System Acceptance Test Plan, Integrated Testing & Commissioning Plan and Service Trials Plan for Train Control & Signalling			
E2	Completion of System Acceptance Test of Train Control & Signalling			
E3	Completion of Integrated Testing & Commissioning .			
E4	Completion of Service Trials .			
E5	Completion of integration of ATS with system of other designated contractors including maintenance management system ..			
E6	Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC			
E7	As built drawings . . including - Train borne ATP/ ATO System - Indoor and outdoor equipment of all sub- systems, - Depot, and BACKUP OCC			
E8	Any other item(s) considered necessary to comply with the Scope of Work.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION- IV : REACH 2

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

COST CENTRE No. C: Indigenous Manufacture

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

This includes but is not limited to:

TRAIN CONTROL & SIGNALLING SYSTEM

- Receipt of Onboard ATP/ATO equipment with all software, Driver's MMI equipment, speedometer and associated accessories by the Rolling Stock Contractor.
- Delivery of CBI equipment for interlocking with all software and associated accessories at Contractor's premises in Nagpur.
- Delivery of T-ATC, Bidirectional TWC equipment, radio Zone Controller and associated accessories at Contractor's premises in Nagpur.
- Delivery of Power Distribution Cubicle at Contractor's premises in Nagpur
- Delivery of ATS equipment for station, Depot and other SCR equipment and associated accessories at Contractor's premises in Nagpur
- Delivery of ATS Equipment and associated accessories for Backup OCC at Contractor's premises in Nagpur
- Delivery of UPS system for Signalling & telecommunication system at Contractor's premises in Nagpur
- Delivery of signalling and power cable at Contractor's premises in Nagpur
- Delivery of line side signals and associated accessories at Contractor's premises in Nagpur
- Delivery of Axle Counters and associated accessories at Contractor's premises in Nagpur
- Delivery of point machines and associated accessories at Contractor's premises in Nagpur

SECTION- IV : REACH 2

COST CENTRE No. C: Indigenous Manufacture and Delivery

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
C1*	Placing of order of all major equipment including Onboard ATP/ ATO, Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables, PDC, ATS, and UPS system, Trains and OCC			
Obtain the "Notice of No Objection" or "Notice of No Objection subject to…" from the Employer's Engineer for each of the following Milestones after certification of type tests, Certification of factory acceptance test, Proof of insurance				
C2	Receipt of onboard ATP/ ATO equipment, driver's MMI equipment and associated accessories for 10 cabs by the Rolling Stock Contractor.			
C3	Delivery of T-ATC equipment, Radio Zone controller, TWC along with trackside modules and associated accessories for Mainline at Contractor's premises in Nagpur			
C4	Delivery of T-ATC equipment Radio Zone controller, TWC along with trackside modules and associated accessories for Depot at Contractor's premises in Nagpur			
C5	Delivery of CBI equipment with all associated accessories for Mainline at Contractor's premises in Nagpur..			
C6	Delivery of ATS Equipment and associated accessories for stations, (BACKUP OCC only software) at Contractor's premises in Nagpur.			
C7	Delivery of signalling and power cable for Mainline at Contractor's premises in Nagpur.			
C8	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Mainline at Contractor's premises in Nagpur.			
C9	Delivery of UPS (S&T) system at contractor premises in Nagpur.			
COST CENTRE TOTAL CARRIED TO SECTION SUMMARY				

SIGNATURE OF BIDDER

SECTION- IV : REACH 2

COST CENTRE No. D: Installation and Site Testing

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

This shall include but not be limited to:

TRAIN CONTROL & SIGNALLING SYSTEM Indoor & Outdoor Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all indoor equipment such as CBI, CBTC, ATP/ ATO, axel counters, ATS, Bidirectional TWC network including switch, access points, rack, wiring & terminations etc.; and outdoor equipment such as Line side equipment, Axle Counters, point machines, Beacons, DLR including erection of junction boxes, wiring and terminations, etc.

- Shifting to site, installation and testing of UPS (S&T) system.
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations.
    - Complete fixing and wiring of equipment in accordance with circuit and installation diagrams.
    - Post installation tests including: Pre-power up checking, power up, customisation and configuration of equipment.

Backup OCC – Equipment:

- Testing commissioning including pre-power up checking, power up, customisation and configuration of equipment.

Perform Partial Acceptance Tests in accordance with the accepted Train Control & Signalling PAT Plan

SECTION- IV : REACH 2

COST CENTRE No. D: Installation and Site Testing

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 Employer's Representative for:			
D1	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, UPS (S&T) system, point machines, Beacons, DLR etc. for Mainline.			
D2	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, point machines, UPS (S&T) system, Beacons, DLR etc. for Depot.			
D3	Completion of Installation testing and Commissioning of on-board equipment for ATC and on-board radio equipment, and their associated accessories in 10 cabs, as certified jointly in writing, by the S&TC Contractor and Rolling Stock Contractor for the satisfactory installation and testing of the on-board equipment.			
D4	Completion of Partial Acceptance Tests for Train Control & Signalling system.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION- IV : REACH 2

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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

This shall include but not be limited to:

- Testing & Commissioning Documents including Interface Testing Plans
- Integrated testing and commissioning documents
- System Acceptance Tests in accordance with accepted System Acceptance Plan
- Integrated Testing and Commissioning
- Service Trials
- System Safety Case of the Signalling & Train Control Systems and Assessment Report of Independent Safety Assessor.
- Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC.
- As built Drawings
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION- IV : REACH 2

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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 Employer's Representative for			
E1	Testing & Commissioning Documents including Interface Testing Plans, System Acceptance Test Plan, Integrated Testing & Commissioning Plan and Service Trials Plan for Train Control & Signalling			
E2	Completion of System Acceptance Test of Train Control & Signalling			
E3	Completion of Integrated Testing & Commissioning .			
E4	Completion of Service Trials .			
E5	Completion of integration of ATS with system of other designated contractors including maintenance management system ..			
E6	Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC			
E7	As built drawings . . including - Train borne ATP/ ATO System - Indoor and outdoor equipment of all sub- systems and - BACKUP OCC			
E8	Any other item(s) considered necessary to comply with the Scope of Work.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

COST CENTRE No. C: Indigenous Manufacture

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

This includes but is not limited to:

TRAIN CONTROL & SIGNALLING SYSTEM

- Receipt of Onboard ATP/ATO equipment with all software, Driver's MMI equipment, speedometer and associated accessories by the Rolling Stock Contractor.
- Delivery of CBI equipment for interlocking with all software and associated accessories at Contractor's premises in Nagpur.
- Delivery of T-ATC, Bidirectional TWC equipment, radio Zone Controller and associated accessories at Contractor's premises in Nagpur.
- Delivery of Power Distribution Cubicle at Contractor's premises in Nagpur
- Delivery of ATS equipment for station, Depot and other SCR equipment and associated accessories at Contractor's premises in Nagpur
- Delivery of UPS system for Signalling & telecommunication system at Contractor's premises in Nagpur
- Delivery of signalling and power cable at Contractor's premises in Nagpur
- Delivery of line side signals and associated accessories at Contractor's premises in Nagpur
- Delivery of Axle Counters and associated accessories at Contractor's premises in Nagpur
- Delivery of point machines and associated accessories at Contractor's premises in Nagpur

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

COST CENTRE No. C: Indigenous Manufacture and Delivery

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
C1*	Placing of order of all major equipment including Onboard ATP/ ATO, Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables, PDC, ATS, UPS system and Trains,			
Obtain the "Notice of No Objection" or "Notice of No Objection subject to…" from the Employer's Engineer for each of the following Milestones after certification of type tests, Certification of factory acceptance test, Proof of insurance				
C2	Receipt of onboard ATP/ ATO equipment, driver's MMI equipment and associated accessories for 10 cabs by the Rolling Stock Contractor.			
C3	Delivery of T-ATC equipment, Radio Zone controller, TWC along with trackside modules and associated accessories for Mainline at Contractor's premises in Nagpur			
C4	Delivery of T-ATC equipment Radio Zone controller, TWC along with trackside modules and associated accessories for Depot at Contractor's premises in Nagpur			
C5	Delivery of CBI equipment with all associated accessories for Mainline at Contractor's premises in Nagpur..			
C6	Delivery of CBI equipment with all associated accessories for Depot at Contractor's premises in Nagpur			
C7	Delivery of ATS Equipment and associated accessories for stations, Depot and BACKUP OCC only software at Contractor's premises in Nagpur.			
C8	Delivery of signalling and power cable for Mainline at Contractor's premises in Nagpur.			
C 9	Delivery of signalling and power cable for Depot at Contractor's premises in Nagpur			
C10	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Mainline at Contractor's premises in Nagpur.			

C11	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Depot at Contractor's premises in Nagpur.			
C12	Delivery of UPS (S&T) system at contractor premises in Nagpur.			
COST CENTRE TOTAL CARRIED TO SECTION SUMMARY				

SIGNATURE OF BIDDER

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

COST CENTRE No. D: Installation and Site Testing

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

This shall include but not be limited to:

TRAIN CONTROL & SIGNALLING SYSTEM Indoor & Outdoor Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all indoor equipment such as CBI, CBTC, ATP/ ATO, axel counters, ATS, Bidirectional TWC network including switch, access points, rack, wiring & terminations etc.; and outdoor equipment such as Line side equipment, Axle Counters, point machines, Beacons, DLR including erection of junction boxes, wiring and terminations, etc.

- Shifting to site, installation and testing of UPS (S&T) system.
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations.
    - Complete fixing and wiring of equipment in accordance with circuit and installation diagrams.
    - Post installation tests including: Pre-power up checking, power up, customisation and configuration of equipment.

Backup OCC – Equipment:

- Testing commissioning including pre-power up checking, power up, customisation and configuration of equipment.

Perform Partial Acceptance Tests in accordance with the accepted Train Control & Signalling PAT Plan

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

COST CENTRE No. D: Installation and Site Testing

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 Employer's Representative for:			
D1	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, UPS (S&T) system, point machines, Beacons, DLR etc. for Mainline.			
D2	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, point machines, UPS (S&T) system, Beacons, DLR etc. for Depot.			
D3	Installation testing commissioning (includes pre-installation tests, post installation tests for all sub-system) BACKUP OCC including ATS and Large Video wall.			
D4	Completion of Installation testing and Commissioning of on-board equipment for ATC and on-board radio equipment, and their associated accessories in 10 cabs, as certified jointly in writing, by the S&TC Contractor and Rolling Stock Contractor for the satisfactory installation and testing of the on-board equipment.			
D5	Completion of Partial Acceptance Tests for Train Control & Signalling System			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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

This shall include but not be limited to:

- Testing & Commissioning Documents including Interface Testing Plans
- Integrated testing and commissioning documents
- System Acceptance Tests in accordance with accepted System Acceptance Plan
- Integrated Testing and Commissioning
- Service Trials
- Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC.
- As built Drawings
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION - V :REACH 3 INCLUDING HINGNA DEPOT

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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 Employer's Representative for			
E1	Testing & Commissioning Documents including Interface Testing Plans, System Acceptance Test Plan, Integrated Testing & Commissioning Plan and Service Trials Plan for Train Control & Signalling			
E2	Completion of System Acceptance Test of Train Control & Signalling			
E3	Completion of Integrated Testing & Commissioning .			
E4	Completion of Service Trials .			
E5	Completion of integration of ATS with system of other designated contractors including maintenance management system ..			
E6	Complete configuration software backup data for all subsystems including section, trains, depot and BACKUP OCC			
E7	As built drawings . . including - Train borne ATP/ ATO System - Indoor and outdoor equipment of all sub- systems, - Depot,			
E8	Any other item(s) considered necessary to comply with the Scope of Work.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

(To be completed and submitted as part of 'Form 3. Schedules' under Section IV: Bidding Forms)

COST CENTRE No. C: Indigenous Manufacture

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

This includes but is not limited to:

TRAIN CONTROL & SIGNALLING SYSTEM

- Receipt of Onboard ATP/ATO equipment with all software, Driver's MMI equipment, speedometer and associated accessories by the Rolling Stock Contractor.
- Delivery of CBI equipment for interlocking with all software and associated accessories at Contractor's premises in Nagpur.
- Delivery of T-ATC, Bidirectional TWC equipment, radio Zone Controller and associated accessories at Contractor's premises in Nagpur.
- Delivery of Power Distribution Cubicle at Contractor's premises in Nagpur
- Delivery of ATS equipment for station, other SCR equipment and associated accessories at Contractor's premises in Nagpur
- Delivery of ATS Equipment and associated accessories for OCC and Backup OCC at Contractor's premises in Nagpur
- Delivery of UPS system for Signalling & telecommunication system at Contractor's premises in Nagpur
- Delivery of signalling and power cable at Contractor's premises in Nagpur
- Delivery of line side signals and associated accessories at Contractor's premises in Nagpur
- Delivery of Axle Counters and associated accessories at Contractor's premises in Nagpur
- Delivery of point machines and associated accessories at Contractor's premises in Nagpur
- Delivery of Large Video wall and associated accessories for OCC at Contractor's premises in Nagpur

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

COST CENTRE No. C: Indigenous Manufacture and Delivery

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	Column A	Column B	
C1*	Placing of order of all major equipment including Onboard ATP/ ATO, Trackside ATP, CBI, Axle Counters, Point Machine, Signals, Cables, PDC, ATS, UPS system and Trains, Large Video Wall for OCC (Signalling, Telecommunication and Traction systems)			
Obtain the "Notice of No Objection" or "Notice of No Objection subject to…" from the Employer's Engineer for each of the following Milestones after certification of type tests, Certification of factory acceptance test, Proof of insurance				
C2	Receipt of onboard ATP/ ATO equipment, driver's MMI equipment and associated accessories for 10 cabs by the Rolling Stock Contractor.			
C3	Delivery of T-ATC equipment, Radio Zone controller, TWC along with trackside modules and associated accessories for Mainline at Contractor's premises in Nagpur			
C4	Delivery of T-ATC equipment Radio Zone controller, TWC along with trackside modules and associated accessories for Depot at Contractor's premises in Nagpur			
C5	Delivery of CBI equipment with all associated accessories for Mainline at Contractor's premises in Nagpur..			
C6	Delivery of CBI equipment with all associated accessories for Depot at Contractor's premises in Nagpur			
C7	Delivery of ATS Equipment and associated accessories for stations, Depot and OCC AND BACKUP OCC except Large Video Wall at Contractor's premises in Nagpur.			
C8	Delivery of OCC, Depot Large Video Wall for Signalling , Telecom and Traction system at Contractor's premises in Nagpur			
C9	Delivery of signalling and power cable for Mainline at Contractor's premises in Nagpur.			

C10	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Mainline at Contractor's premises in Nagpur.			
C11	Delivery of Line side signals, Axle Counters, Point Machines, Power Distribution Cubicles, and all associated accessories for Depot at Contractor's premises in Nagpur.			
C12	Delivery of UPS (S&T) system at contractor premises in Nagpur.			
COST CENTRE TOTAL CARRIED TO SECTION SUMMARY				

SIGNATURE OF BIDDER

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

COST CENTRE No. D: Installation and Site Testing

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

This shall include but not be limited to:

TRAIN CONTROL & SIGNALLING SYSTEM Indoor & Outdoor Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all indoor equipment such as CBI, CBTC, ATP/ ATO, axel counters, ATS, Bidirectional TWC network including switch, access points, rack, wiring & terminations etc.; and outdoor equipment such as Line side equipment, Axle Counters, point machines, Beacons, DLR including erection of junction boxes, wiring and terminations, etc.

- Shifting to site, installation and testing of UPS (S&T) system.
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations.
    - Complete fixing and wiring of equipment in accordance with circuit and installation diagrams.
    - Post installation tests including: Pre-power up checking, power up, customisation and configuration of equipment.

OCC Equipment:

- Shifting to Site from Contractor's premises in Nagpur, installation and testing of all equipment including ATS computers, Large Video Wall and associated accessories
    - Receipt of equipment at Site, pre-installation tests, inspection of equipment and Site preparations
    - Complete fixing and wiring of indoor equipment in accordance with circuit and installation diagrams.
    - Post installation tests including pre-power up checking, power up, customisation and configuration of equipment with OCC & BOCC.

Perform Partial Acceptance Tests in accordance with the accepted Train Control & Signalling PAT Plan

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

COST CENTRE No. D: Installation and Site Testing

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 Employer's Representative for:			
D1	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, UPS (S&T) system, point machines, Beacons, DLR etc. for Mainline.			
D2	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of all station indoor and outdoor equipment such as CBI, ATP/ ATO, TWC, LATS, Signals, Axle Counters, point machines, UPS (S&T) system, Beacons, DLR etc. for Depot.			
D3	Shifting to Site from Contractor's premises in Nagpur, installation and installation testing (includes pre-installation tests, post installation tests for all sub-system) of OCC including ATS and Large Video wall.			
D4	Completion of Installation testing and Commissioning of on-board equipment for ATC and on-board radio equipment, and their associated accessories in 10 cabs, as certified jointly in writing, by the S&TC Contractor and Rolling Stock Contractor for the satisfactory installation and testing of the on-board equipment.			
D5	Completion of Partial Acceptance Tests for Train Control & Signalling system.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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

This shall include but not be limited to:

- Testing & Commissioning Documents including Interface Testing Plans
- Integrated testing and commissioning documents
- System Acceptance Tests in accordance with accepted System Acceptance Plan
- Integrated Testing and Commissioning
- Service Trials
- Complete configuration software backup data for all subsystems including section, trains, depot and OCC AND BACKUP OCC.
- As built Drawings
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION - VI : REACH 4 INCLUDING OCC AT SITABULDI

COST CENTRE No. E: System Acceptance Test, Integrated Testing and Commissioning

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 Employer's Representative for			
E1	Testing & Commissioning Documents including Interface Testing Plans, System Acceptance Test Plan, Integrated Testing & Commissioning Plan and Service Trials Plan for Train Control & Signalling			
E2	Completion of System Acceptance Test of Train Control & Signalling			
E3	Completion of Integrated Testing & Commissioning .			
E4	Completion of Service Trials .			
E5	Completion of integration of ATS with system of other designated contractors including maintenance management system ..			
E6	Complete configuration software backup data for all subsystems including section, trains, depot and OCC AND BACKUP OCC			
E7	As built drawings . . including - Train borne ATP/ ATO System - Indoor and outdoor equipment of all sub- systems, - OCC AND BACKUP OCC			
E8	Any other item(s) considered necessary to comply with the Scope of Work.			

	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION MS - (MISCELLANEOUS)

COST CENTRE A – TRAINING

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

This shall include but not be limited to:

- Provision of Instructors by the Contractor for training of operating and maintenance personnel of the Employer in India
- Training of operating and maintenance personnel of the Employer offshore at the Contractor's facilities and MRTS.
- Furnishing of training manuals and associated materials.
- Provision of CBT equipment

Any other item(s) considered necessary to comply with the Scope of Work

Notes:

1. The travel boarding and lodging expenses for the Employer's trainees sent overseas shall be borne by the Employer**.**

SECTION MS - (MISCELLANEOUS)

COST CENTRE A – Training

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 Employer's Representative for:			
A1	Training of Employer's personnel (300 days) overseas in Contractor/ Sub-Contractor's Works and MRTS. (Number of Trainees as per employer's discretion)			
A2	Provision of Contractor's Instructors (92 days) for training of Employer's Operating & Maintenance personnel in India. (Number of Trainees as per employer's discretion)			
A3	Submission of Training Manuals (Original plus Six hard copies) and in electronic format.			
A4	Computer Based Training (CBT) Equipments			
A5	Any other item(s) necessary to comply with the Scope of Work.			
	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. B: Spares, Special Tools, Testing Equipment and Measuring Instrument and DLP Support

This Cost Centre comprises all those obligations and ongoing activities throughout the Contract not associated directly with any other Cost Centre. This shall include but not be limited to:

- Supply of Spares for Train Control & Signalling systems.
- Supply of special tools and equipment, testing and measuring instruments, Defect Liability Support (DLP support.)
- Supply of Simulator for Simulations:
- Site office for Employer in Depot
- Provision for Test Lab
- Any other item(s) considered necessary by the Contractor to comply with the Scope of Work.

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. B: Spares, Special Tools, Testing Equipment and Measuring Instrument and DLP Support

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 Employer's Representative for delivery of the following in accordance with the Work's Requirements:			
B1	Delivery to Site of spares			
B2	Delivery to Site of special tools.			
B3*	DLP Support.			
B4	Simulator			
B5	Site office for the Employer			
B6	Supply and delivery to site of Furniture required for stages in OCC, BOCC, DCC, SCR, SER, CER etc as per the PC Clause 3.2.4			
B7	Any other item(s) considered necessary to comply with the Scope of Work.			
	COST CENTRE TOTAL			

* Shall not be less than 1% of total

SIGNATURE OF BIDDER

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. C: Supervision of Maintenance

This Cost Centre comprises supervision of maintenance of Signalling and Train Control systems.

- The Contractor shall provide experts for supervision of maintenance* in accordance with the Work's Requirements.

***** This excludes Contractor's obligations and responsibilities during the Defects Liability Period.

Notes:
1. The deployment of the experts under this Cost Centre may not be continuous and they may be required to supervise the maintenance in short periods at a time. The number of days of experts shall, however, not exceed 200 days. Payment for this Cost Centre will be made on man-month basis.

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. C: Supervision of Maintenance

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 Employer's Representative for completion of the following in accordance with the Work's Requirements:			
C1	Supervision of Maintenance*			
	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. D: Manuals

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

This shall include but not be limited to:

- Provision of Operating Manuals – (hard copies and electronic format)
- Provision of Maintenance Manuals - (hard copies and in electronic format)
- Provision of sub-systems/ systems and spare parts catalogue - hard copies and electronic format)
- Any other item(s) considered necessary to comply with the Scope of Work.

SECTION MS - (MISCELLANEOUS)

COST CENTRE No. D: Manuals

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 Employer's Representative on delivery of the following final Manuals before commencement of Integrated Testing & Commissioning:			
D1	Operating Manual (Original plus two hard copies) and in Electronic Format.			
D2	Maintenance Manual (Original plus two hard copies) and in electronic Format.			
D3	Sub-systems/ Systems spare parts catalogue (original plus two hard copies) and in electronic format.			
D4	Any other item(s) considered necessary to comply with the scope of Works.			
	COST CENTRE TOTAL			

APPENDIX 1 (SIGNALLING & TRAIN CONTROL)

(THIS DOCUMENT IS TO BE PREPARED AND COMPLETED BY THE BIDDER)

(Bill of Quantities to be proposed by Bidder along with the cost therein)

SUMMARY OF BILL OF QUANTITIES FOR N1S01/2016

		Mainline		Depots		Trains		OCC		BOCC		Total	
Schedule	**Description**	Price Foreign Currency	Price INR	Price Foreign Currency	Price INR	Price Foreign Currency	Price INR	Price Foreign Currency	Price INR	Price Foreign Currency	Price INR	Price Foreign Currency	Price INR
Schedule 1	Project Management and interface management												
Schedule 2	Application Design												
Schedule 3	Onboard Equipment												
Schedule 4	Depot Equipment												
Schedule 5	Trackside and Stations Equipment												
Schedule 6	OCC and BOCC equipment												
Schedule 7	Installation												
Schedule 8	Testing and Commissioning												
Schedule 9	Integrated Testing and Commissioning												
Schedule 10	UPS (S&T)												
Schedule 11	Miscellaneous												
Schedule 12	Any other item												
	Total												

***** for Schedule 1, Schedule 2, Schedule 10 and any other lumpsum item, Price should be quoted separately for Mainline, Depots, OCC and Trains

** Sum of schedule 1 & 2 shall not be more than 30% of total price.

*** Sum of schedule 7 to 12 shall not be less than 20% of total price.

Schedule 1 - Project Management and Interface Management

Item No.	Description	Price for Main Line		Price for Depots		Price for Trains		Price for OCC/BOCC	
		Foreign Currency	INR	Foreign Currency	INR	Foreign Currency	INR	Foreign Currency	INR
1.01	Project Management								
1.02	Any other item required to meet the scope of work								
	SCHEDULE TOTAL CARRIED TO SUMMARY								

Schedule 2 – Design

Item No.	Description	Price for Main Line		Price for Depots		Price for Trains		Price for OCC/BOCC	
		Foreign Currency	INR	Foreign Currency	INR	Foreign Currency	INR	Foreign Currency	INR
2.01	Preliminary Design								
2.02	Final Design								
2.03	Application Design								
2.04	Any other item required to meet the scope of work								
	SCHEDULE TOTAL CARRIED TO SUMMARY								

Schedule 3 - Manufacture, Supply, and Delivery of Train-borne ATC system

Item no.	Description	Unit	Qty	Unit rate Foreign Currency	Unit rate INR	Price Foreign Currency	price INR
3.01	Onboard ATP/ ATO equipment with all software, connectors, relays, connecting cables and other associated accessories	Per Cab	46				
3.02	Pickup coil, beacon antenna with associated accessories	Per Cab	46				
3.03	Speed detection devices with associated accessories.	Per Cab	46				
3.04	Bidirectional TWC system including Antenna, modem, power supply and associated accessories	Per Cab	46				
3.05	DMI with associated accessories	Per Cab	46				
3.06	Not used						
3.07	Any other item required to meet the scope of work						
	Schedule total carried to summary						

Schedule 4 - Manufacture, Supply & Delivery of Depot Equipment

Item no.	Description	Unit	Qty	Unit rate Foreign Currency	Unit rate INR	Price Foreign Currency	Price INR
4.1	Deleted						
a	Not used						
b	Not used						
c	Not used						
4.2	Supply of high frequency Axle counter multi section type complete system.						
4.3	Depot point machines with other accessories						
4.4	signal with accessories						
a	3 aspect						
b	Buffer						
c	Shunt						
4.5	Power distribution cubicle with accessories for depot						
4.6	CBI equipment with all software, and associated accessories for depot						
4.7	Cable termination rack, Boxes, EKTs with associated accessories						
4.8	Object controller with all software and associated accessories						
4.9	Control terminal with VDU display and associated accessories						
4.10	Depot ATS server with all software and associated accessories						
4.11	Depot ATS work stations with accessories						
4.12	Wayside ATC sector computer with all software and accessories						

4.13	Bidirectional TWC system including Radio zone controller, access points, switches, junction boxes, wires and other associated accessories.						
4.14	Balises with all associated accessories						
4.15	Delete						
4.16	Sign and markers boards with associated accessories						
4.17	Any other item required to meet the scope of work						
	Schedule total carried to summary						

Schedule 5 - Manufacture, Supply, Delivery of Trackside and Station Equipment

Item no.	Description		Unit rate		Price	
		Qty	Foreign Currency	INR	Foreign Currenc	INR
5.1	Supply of high frequency Axle counter multi-section type complete system.					
5.2	Non trailable point machines with other accessories					
5.3	signal with accessories					
a	3 aspect					
b	buffer					
c	Route indicator					
5.4	Power distribution cubicle with accessories					
a	Station with Interlocking logic master units					
b	Other stations					

5.5	CBI equipment with all software, and associated accessories					
5.6	Object controller with all software and associated accessories					
5.7	Cable termination rack, Boxes, ESPs, EKTs with associated accessories					
5.8	Control terminal with VDU display and associated accessories					
5.9	ATS server with all software and associated accessories					
5.10	ATS work stations with accessories					
5.11	Wayside ATC sector computer with all software and accessories					
5.12	Bidirectional TWC system including Radio zone controller, access points, switches, junction boxes, wires and other associated accessories.					
5.13	Balises with all associated accessories					
5.14	Sign and markers boards with associated accessories					
5.15	Not Used					
5.16	Any other item required to meet the scope of work					
	Schedule total carried to summary					

Schedule 6(a) - Manufacture, Supply, Delivery of OCC & BOCC Equipment

Item no.	Description	Unit	Qty	Manufacture, Supply, and Delivery			
				Unit rate Foreign Currency	Unit rate INR	Price Foreign Currency	Price INR
6.1	ATS server and accessories at OCC & BOCC						
6.2	Data logger server						
6.3	Traffic controller's workstation, printer and accessories at OCC& BOCC (as per list),						
6.4	Bidirectional TWC system including switches, junction boxes, wires and other associated accessories.						
6.5	CER Maintenance Management system including software and accessories						
6.6	OCC & BOCC Large video wall display						
6.7	ATS traffic simulator including software and accessories						
6.8	Any other item required to meet the scope of work						
	Schedule total carried to summary						

Schedule 7 - Installation Trackside, Stations and Depot

Item no.	description	unit	Qty for depot	Qty for main line	Unit installation price		Installation price	
					Foreign Currency	INR	Foreign Currency	INR
7.1	Axle Counter and accessories including all installation material etc							
a	with 3 receivers for depot							
b	with 2 receivers for depot							
c	with 1 receivers for depot							
7.2	Installation of high frequency Axle counter multi-section type complete system.							
7.3	Point machine with associated accessories							
7.4	Main signals							
7.5	Buffer Signal							
7.6	Shunt signals							
7.7	cables and core of all types							
7.8	OFC cable & HDPE Pipe							
7.9	Installation of equipment at OCC including Large video wall display							
7.10	Installation of on board ATC equipment with all accessories							
7.11	Installation of Lineside Eurobalise(s) along with associated accessories							
7.12	Installation of Radio Access Points with associated accessories							
7.13	All outdoor equipments including associated accessories except 7.1 – 7.12 above for							
a	Stations with Interlocking logic master units							
b	Other stations							

7.14	All indoor equipments including associated accessories for							
a	Stations with interlocking logic master units							
b	Other stations							
7.15	Not used							
7.16	Any other item required to meet the scope of work							
	Schedule total carried to summary							

Schedule 8 - Testing and Commissioning

Item no.	Description	Unit	Qty	Unit price Foreign Currency	Unit price INR	price Foreign Currency	price INR
8.1	Testing and commissioning of all indoor equipments at stations						
8.2	Testing and commissioning of all outdoor equipments at stations						
8.3	Testing and commissioning of all equipments at OCC and BOCC						
8.5	Testing and commissioning of all indoor equipments at depot						
8.6	Testing and commissioning of all outdoor equipments at depot						
8.7	Testing and commissioning of all trainborne equipment						
8.8	Not Used						
8.9	Any other item required to meet the scope of work						
	Schedule total carried to summary						

Schedule 9 - Integrated Testing and Commissioning (Including Service Trials)

Item no.	Description	unit	Qty	Unit price Foreign Currency	Unit price INR	price Foreign Currency	price INR
9.1	Integrated Testing and commissioning of all trackside indoor and outdoor train control and signalling system with Rolling stock, track, traction and other designated contractors						
9.2	Integrated Testing and commissioning of onboard ATC system with rolling stock, track, traction and other designated contractors.						
	Schedule total carried to summary						

Schedule 10 -Power Supply (S&T) System

	Schedule 10 A		Manufacture, Supply and Delivery Cost		Installation, Customization and Configuration Cost		Total cost	
Item no.	**Item Description**	**Qty.**	**Unit Rate (FC)**	**Unit Rate (INR)**	**Unit Rate (FC)**	**Unit Rate (INR)**	**Cost (FC)**	**Cost (INR)**
1.	On-Line Redundant UPS of 30 KVA each							
2.	On-Line Redundant UPS of 60 KVA each							
3.	Not used							
4.	Power Distribution Cubicle/Input Distribution Cabinet complete with redundant DC Power supplies for both 24 VDC & 30 VDC, 110 V transformer, Point Machine transformer, ELD's for AC & DC voltages ,etc.							
5.	Power Distribution Cubicle/Input Distribution Cabinet complete with redundant DC Power supplies- 30 VDC, ELD's for AC & DC voltages ,etc.							
6.	Spare Cell Charger for charging upto 6 spare batteries of9							
a)	800 AH							
b)	400 AH							
7.	48 VDC Battery Charger in Redundant Configuration of 2*25*3 A capacity total							

8.	48 VDC Battery Charger in Redundant Configuration of 2*25*12A capacity total							
9.	VRLA Sealed Maintenance free Batteries(2 V Cells) of various ratings as given below							
a)	400 AH For UPS of Stations without Point & Crossings (having 2 sets of 192 cells and one set of 6 cells)							
b)	800 AH For UPS of Stations with Point & Crossings (having 2 sets of 192 cells and one set of 6 cells)							
c)	800 AH for UPS of Depot (having 2 sets of 192 cells and one set of 6 cells)							
d)	1500 AH for 48 V DC Supply of Stations/Depot with EBTS							
e)	300-400 AH for 48 VDC Supply for Stations/Depot without EBTS							

Schedule 10 B- Power Supply System

Item no.	Description	Qty.	Cost (FC)	Cost (INR)
10.	Supply and Delivery of Site Material (Racks, Distribution Boards, DDF, ODF, MDF, IDF, connectors, connecting cables, power cables, data cables ,etc.) for complete Installation / Testing / Commissioning of Power Supply System	LS		
	Total Cost of Power Supply System (10A+10B)			

Schedule 11- Miscellaneous

Item no.	Description	unit	QTY	Unit price Foreign Currency	price Foreign Currency	Unit price	price INR
11.1	Supply of special tools and test equipments as per appendix Q of PS*						
11.2	Supply of contract spares as per appendix P of Part 2: Work's Requirements Section VII B 02 TS ** also given in Schedule 11A						
11.3	As built drawing						
11.4	Supervised maintenance	Days	200				
11.5	Defect liability period support for Train control and signalling	Months	24				
11.6	Training Offshore	mandays	300				
11.7	Training Onshore	days	92				
11.8	TOT						
11.9	False Flooring of Signalling Equipment Room (SER)	SQM					
11.10	Any other item necessary for meeting the contract requirements						
	Schedule total carried to summary						

* Bidder shall enclose unit rate, quantity and amount for each item of Special Tools and Test Set up including those of Appendix Q of Part 2: Work's Requirements Section VII B 02 TS in accordance with clause 12.8, carried to the Lumpsum total for above item 11.1, failing which the Tender will be treated incomplete.

** Bidder shall enclose unit rate, quantity and amount for each item of Spares including those of Appendix P of Part 2: Work's Requirements Section VII B 02 TS in accordance with clause 12.2 of Chapter 12 of TS, carried to the Lumpsum total for above item 11.2, failing which the Tender will be treated incomplete.

Schedule 11A- List of Spares for Train Control & Signalling System

Item no.	Description	Unit	Quantity	Unit price Foreign Currency	Price Foreign Currency	Unit price INR	Price INR
A	**Interlocking**						
1.	All type of cards used in Interlocking cubicle	No.	10% of used items of each type				
2.	Interlocking logic master complete (redundant)	No	1 of each type				
3.	All types of connectors used in Interlocking cabinets including all other sub-system interconnections with cables of sufficient length to enable replacement at any location	No.	2 of each type				
4.	All type of frames (racks) with motherboard and without boards e.g. base frame, power supply frame, Extension frame, Fan assembly frame, and terminals	No.	1 of each type				
5.	All type of Communication connections cords (copper/optical fibre) used for interconnections of used sub-systems	No.	3 of each type				
6.	Fuses of each type used in Interlocking cabinet including boards	No.	100 of each type				
7.	Modems/OLMs used for Interlocking	%	10% of used items of each type				
8.	Over voltage protection Devices used in Interlocking cubicle	No.	1 of each type				

9.	Object controller complete (redundant)	No.	1 of each type				
10.	Fan assembly	%	10% of used items of each type				
11.	Any other Item used	%	10% of used items of each type				
B	**Axle counter**						
1.	All type of PCB cards used for all type of Axle counter used including mother board and power supply units	%	10% of used population of each type				
2.	Axle counter cabinet with all rack with motherboard and without boards	No.	2				
3.	Fuses of each type	No.	100				
4.	Air filter	No.	25				
5.	Fan	No.	10%				
6.	Trackside connection box (TU box)	%	10% of used items of each type				
7.	TU board of each frequency used/Line side electronic card, Tx & Rx for axle counter	No.	10% of used items of each type				
8.	All types of connectors used in Axle counter cabinet with cables of suitable length to enable replacement at any location	Set	4 Sets				
9.	Any other Item used	%	10% of used items of each type				
C	**Point Machine**						
1.	Non trailable Point Machine used on main line	No.	10%				

2.	Point Machine used in depot	No.	10%				
3.	All replaceable parts of each type of point machines used including Motor, friction clutch, detector, point locks, etc.	No.	5 of each type				
4.	Disconnection Switch and Keys used in section for Manual operation	Set	2 of each type				
5.	Mechanical lock assembly for 1:12 (or 1:9 for SG) & 1:8.5 or (1:7 for SG) points with complete fittings for both type of point machines	Set	2 of each type				
6.	Rodding for point fittings complete with drive rod pins, bushes etc. for both 1:12 (or 1:9 for SG) & 1:5 (or 1:7 for SG) points used for both type of point machines.	Set	4				
7.	Crank Handle	No.	2				
8.	Set accessories for changing of point machine	Set	5				
9.	Lock & Key for point machine	Set	2				
D	**Signals**						
1.	Buffer Stop signal LED unit		3				
2.	Fixing bracket/ post and base compete with fixing bolts	No.	2 of each type				
3.	Mainline Signal LED (red/violet/green) unit	No.	5 of each aspect				
4.	Route Indicators (LED) unit	No.	3 of each type				

5.	Shunt Signal LED unit	No.	5 of each aspect				
6.	All replaceable parts of Signal units used including lens, hood, current regulator etc.	No.	3 of each type				
7.	All replaceable parts of shunt signal unit used including lens, hood, current regulator etc.	No.	3 of each type				
E	**Cables**						
1.	All types PVC indoor cables	M	500 m of each type				
2.	All types of outdoor cables (those supplied by the Contractor) (Note: cables of different coreage also means different type of cable	M	10% of each type				
F	**On Board ATC**						
1.	Complete on board ATP equipment (redundant)	No.	2				
2.	All types of connectors and sockets used in on board ATC with cables of suitable length to enable replacement	Set	10%				
3.	All type of cards used in On board ATP Cubicle including power supply boards, radio antenna, speedometer and modems	No.	10% of used items of each type				
4.	All type of fuses used	No.	25 of each type				
5.	Display, HMI	No.	10% of installed quantity				
6.	Odometer with all accessories	No.	10%				

7.	Balise Antenna with all accessories	No.	10%				
G	**Track Side ATC**						
1.	Trackside ATC cubicle and Radio Zone controller complete (redundant) with cards including all communication interfaces; connectors, Maintenance Terminal etc.,	No.	1				
2.	All types of connectors and sockets used in trackside ATC with cables of suitable length to enable replacement	No.	10%				
3.	All type of cards used in trackside ATP Cubicle including power supply boards and modems	No.	10% of used items of each type				
4.	All other trackside equipment with complete fittings e.g. radio network elements, access point antenna, switches, beacon, loops etc.	%	10% of used items of each type				
5.	All type of frames (racks) with motherboard and without boards e.g. base frame, power supply frame, Extension frame, Fan assembly frame, and terminals	No.	1 of each type				
6.	All type of Communication connections cords (copper/optical fibre) used for interconnections of used sub-systems	No.	3 of each type				
7.	Antenna post with fixtures	No.	3 of each type				
8.	Fan assembly	%	10% of used items of each type				
9.	Any other Item used	%	10% of used items of each type				

11.	CATS Server and LATS Server	No.	1 of each type				
12.	FEP, PLC, Modems, router power supply modules, printer	%	10% of used items of each type				
13.	ATS workstations	No.	3				
14.	All types of connectors and sockets used in ATS with cables of suitable length to enable replacement	No.	2 of each type				
15.	Large Video Screen	%	3				
I	**Miscellaneous**						
1.	Fuses of All types including those used on the cards/ modules of each sub-system not figuring in items A to H	No.	100 of each type				
2.	Terminals used of all types not figuring in items A to H	No.	25 of each type				
3.	Lightning protection devices not figuring in items A to H	No.	25 of each type				
4.	Large Video Screen	No.	10 % Spare				

Annexure-2

MILESTONE PAYMENT SCHEDULE
SHOWING MONTHLY CASH FLOWS FOR THE CONTRACT

This document to be prepared and completed as required by the Bidder and submitted as part of Schedules' under Section IV: Bidding Forms.

1. The monthly cash flows shall be worked out as per the methodology indicated in relevant format under Section IV: Bidding Forms.

2. The amount of Cost Centre "A" of Section MS and Cost Centre "C" of Section MS will not be included in the Monthly Cash Flows

3. It is certified that "Annexure-4" annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of said "Annexure-4" in the Financial Package

SIGNATURE OF BIDDER

Annexure-3

LIST OF SPARES

1. We hereby confirm that we shall submit a schedule of spare parts duly indicating, for each item of spares, its description and number of units required for the system during the expected life and during the first ten years, principal source of supply, part number, drawing number, lead time, shelf life and the secondary source of supply within 96 weeks of Commencement date and the submission of these details shall be considered as a pre-requisite for accomplishment of Key Date as described in the relevant clause of the Employer's Requirement-General Specifications

2. It is certified that 'Annexure-4' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of said Annexure-4 in the financial package.

SIGNATURE OF BIDDER

Annexure-4

PRICING OF UNQUALIFIED WITHDRAWAL OF CONDITIONS, QUALIFICATIONS, DEVIATIONS ETC. SUBMITTED IN PRESCRIBED FORMAT UNDER SECTION IV: BIDDING FORMS (FORM 4.12)

Item	Condition, Qualification, Deviation etc.	Key date affected by each condition, qualification, deviation etc.	Increase or decrease for unqualified withdrawal of each conditions, qualification, deviation etc.			
			Foreign Currency	Indian Rupees	Cost Centre	Milestone No.
A	B	C	D	E	F	G

Notes:

1. In this Appendix, the Bidder shall indicate every key date that will be affected by each remark, comment, condition, qualification or deviation, etc. that has been specified in prescribed format under Section IV: Bidding Forms (Form 4.12) and prices for unqualified withdrawal of which has been quoted in this Annexure-4.

2. Prices for unqualified withdrawal of each remark, comment, condition, qualifications or deviation, etc. that has been specified in prescribed format under Section IV: Bidding Forms (Form 4.12) shall be quoted in this Annexure-4, clearly indicating the Cost Centre and Milestone No. to which it will be allocated. In case the Bidder does not indicate the Cost Centre and Milestone No., Employer will allocate the quoted price for withdrawal to the last Milestone under Cost Centre E, which will be considered for amounts payable as per Milestone Payment Schedule. The 'Lump Sum Price' quoted by the Bidder in BID TOTAL' Page shall not include the Price for withdrawal of remark, comment, condition, qualifications or deviation etc quoted in this 'Annexure-4'

3. In case price for unqualified withdrawal of any remark, comment, condition, qualification or deviation etc. indicated in prescribed format under Section IV: Bidding Forms (Form 4.12) is not quoted in Annexure-4, it shall be considered that the remark, comment, condition, qualification or deviation is unconditionally withdrawn without any financial implication. However, Employer at its sole discretion and option may assess the financial implication of the said remark, comment, condition, qualification or deviation etc. based on best engineering principles and concepts, which shall be binding on the Bidder, and the same may be considered by Employer for financial evaluation.

4. It is certified that ‘Annexure-4’ annexed in Technical Package is a “TRUE COPY” (with prices blanked off) of said ‘Annexure-4’ in the Financial Package. In the TRUE COPY to be submitted in the Technical Package, the Bidder should clearly indicate in Columns D and E “Priced” or “Not Priced” while blanking off the prices.

SIGNATURE OF BIDDER

Annexure-5

(PRICING MECHANISM FOR ADDITIONAL SECTIONS/DEPOT/ONBOARD EQUIPMENTS)

(This Document is to be submitted by the Bidder as part of Schedules (pricing Document)). We confirm the Pricing Mechanism as below:

1. Pricing Mechanism for order up to last ROD :

1.1. **For Main Line:**

i) The unit rates and the lump sum rates (for those items where unit rates are not available) of Appendix 1 for Main Line shall remain firm for the additional section(s)

ii) For the items quoted as lump sum in Appendix 1 for main line, pro-rata rates based on route Km shall be applied.

iii) In respect of Spares and Special Tools, the price will be determined on the basis of unit rate given in the offer and the quantity decided by the Employer

iv) There will no additional type of items for additional section(s) than those covered in Appendix 1 of this Contract;

1.2. **For Station/Depot (Extension/ new):**

i) The unit rates and the lump sum rates (for those items where unit rates are not available) of Appendix 1 for station/depot shall remain firm.

ii) For the items quoted as lump sum in Appendix 1 for station/depot, pro-rata rates based on material cost shall be applied.

iii) In respect of Spares and Special Tools, the price will be determined on the basis of unit rate given in the offer and the quantity decided by the Employer.

iv) There will no additional type of items for additional station/depot(s) than those covered in Appendix 1 of this Contract;

1.3. For On Board equipments for the Trains (Where ever applicable):

i) The unit rates and the lump sum rates (for those items where unit rates are not available) of Appendix 1 for Trains shall remain firm.

ii) For the items quoted as lump sum in Appendix 1 for Trains, pro-rata rates on per cab basis shall be applied.

iii) In respect of Spares and Special Tools, the price will be determined on the basis of unit rate given in the offer and the quantity decided by the Employer.

iv) There will no additional type of items for additional On Board equipments than those covered in Appendix 1 of this Contract;

1.4. In the case of 1.1 (additional section) & 1.2 (extension or new station/depot) above, a reduction of 20% shall be applied on Schedule J2 i.e. Project Management & Design for the extended stations / metro corridor.

1.5. **In case of 1.3 (additional on board equipment) above, a reduction of 20% shall be applied on Schedule J2 i.e. Project Management and Design shall be taken as NIL.**

2. Pricing Mechanism for order after the last ROD

In case, the above is exercised after the last ROD , pricing mechanism shall be same as in item 1.1, 1.2, 1.3, 1.4 & 1.5 above and an escalation as per following methodology shall be applied:

i) For schedule 1, 2, 7, 8, 9, 10 & man power content of Schedule 11 (11.4, 11.5, 11.6, 11.7) {Appendix 1 (Signalling & Train Control System)}: Consumer Price Index (CPI) or any other equivalent index of respective country from where the resources are mobilized shall be used for calculating escalation (base date will be date of last ROD).

The consumer price index to be used shall be submitted by Bidder with tender submission for Employer's review and acceptance.

ii) For Schedule 3, 4, 5, 6, 10 & Material content of Schedule 11 (11.1 & 11.2) {Appendix 1 (Signalling & Train Control System)} In case of off shore material - Producer price Index for Industrial product of the respective country shall be used. In case of On shore material – relevant IEEMA formula for Power Electronics shall be used. (base date will be date of last ROD).

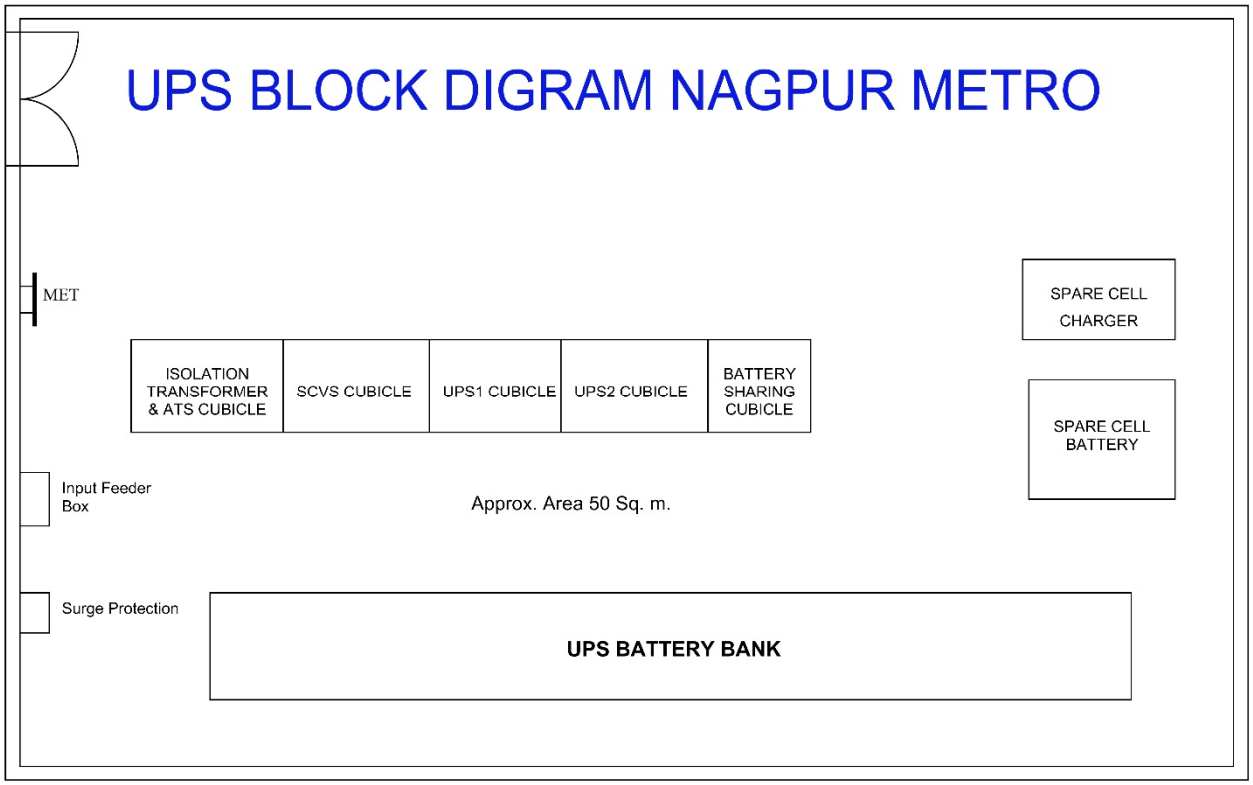
The producer price index to be used shall be submitted by Bidder with tender submission for Employer's review and acceptance.

Signed _____

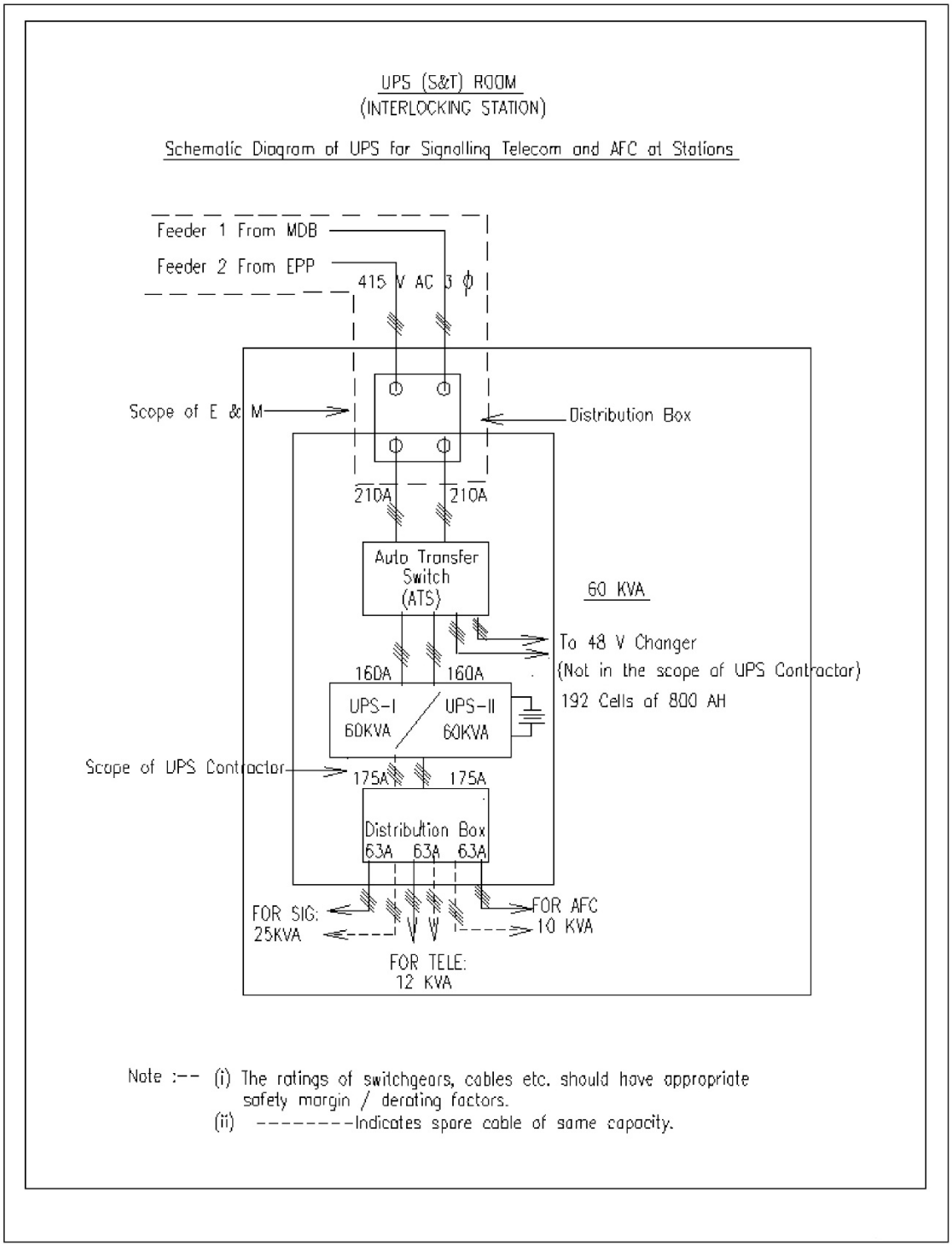
Authorised Representative

Part - II, Annexure- 1

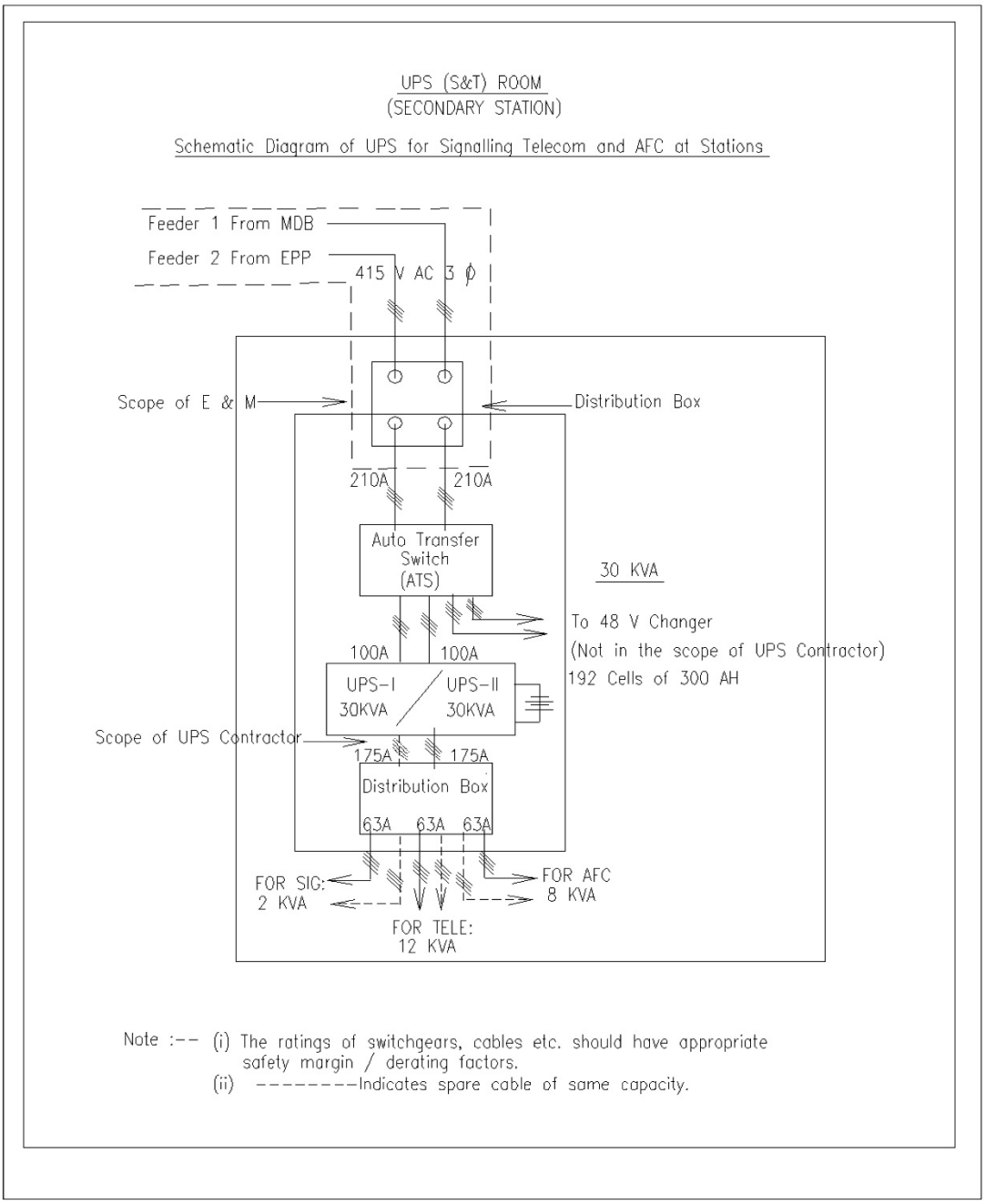
UPS Block Diagram



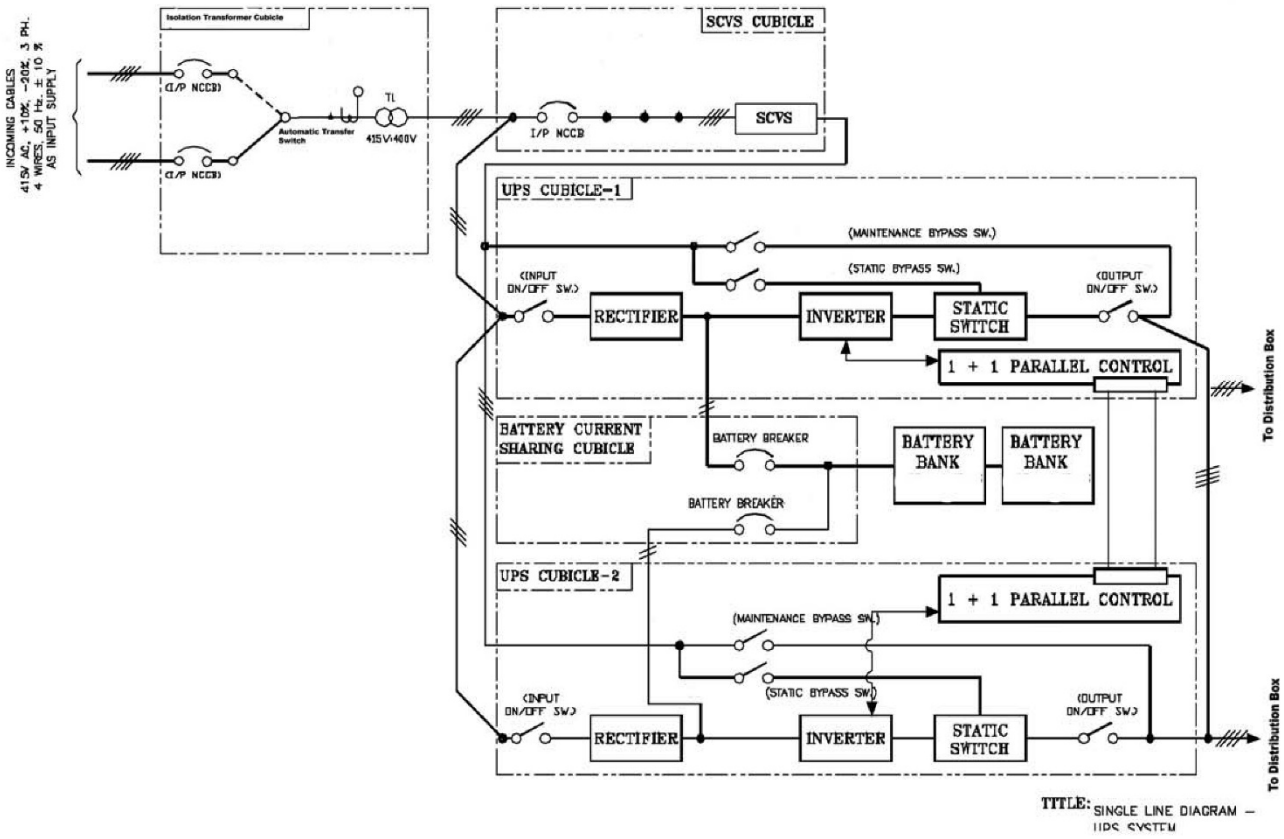
SCHEMATIC DIAGRAM OF UPS FOR INTERLOCKING STATION



SCHEMATIC DIAGRAM OF UPS FOR SECONDARY STATION



SINGLE LINE BLOCK DIAGRAM OF UPS SYSTEM



5.25 Mimic Overview System/ Visual Display Unit / Rear Projection

5.25.1 The Contractor shall provide mimic overview system at OCC, BOCC, and Depot Control Room. The technology for the mimic projection**/ Rear Projection** system shall be a Lesser based large video screen system. The resolution will be HD or higher and the matrix shall be made of 70 inch cubes.

5.25.2 The LVS system shall cater to NS Corridor , EW Corridor for signalling , Traction and CCTV etc. The unit shall have the required 2X8 for Signalling in NS and EW Corridor for OCC, 2X8 for Traction in NS and EW Corridor for OCC , 2X4 for CCTV in NS and EW Corridor for OCC, there is same requirement for BOCC at Metro Bhawan, the matrixes should be 70" full HD modular cubes. The LVS matrixes will be used for display of traction over view diagram, the auxiliary supply over view diagram and CCTV. Display control ware/controller shall be included in the scope of supply. The workstations, Visual display unit and the controllers would be networked along with the SCADA servers & workstations on a dual LAN.

5.25.3 The Visual Display Unit / Rear Projection Module must be based on Single Chip DLP-based Rear Projection Technology equipped with multiple laser banks.

5.25.4 The mimic panel shall display minimum following:

1. Real time train movement geographically on the track layout using primary train detection
2. Display train ID of moving train
3. Position of points (locking & detection) & status of routes
4. Status of secondary detection (Track circuit/axle counter)
5. In addition following alarms shall be displayed on the mimic panel:
    - Trouble (Station equipment failure – CBI and ATP)
    - Power failure (No power supply to SER equipment's)
    - UPS failure (for UPS1 & UPS2).
    - Train Ready
    - Train door status
    - Blocking/ unblocking of points, route, signals and maintenance blocks.
    - Cycles in the terminal stations and intermediate turn back station.
5. Secondary information indications such as point numbers, signal numbers, track section numbers etc. shall have an option to be switched on or off as needed in order not to overload the traffic view during normal operation.

5.25.5 Redundant processors and redundant controller with auto testing facility shall be used in the design of projector system so that no single failure of any of the modules shall result in the failure/ blanking of a zone on the display board.

5.25.6 The large video screen (mimic panel) shall accept additional video digital streams from other sub-systems viz. CCTV. Each video stream shall be displayed in separate windows. The position and size of this window shall be configurable.

5.25.7 The height of the display portion of the panels shall be of approximately 2.5m and width approximately 15m so as to accommodate modules. There shall be provision for future expansion. The display panel shall be positioned and sized such that it presents an unobstructed view to all control room staff when seated at their consoles. The contractor shall review the sizes and submit his proposed layout to the Employer for review.

5.25.8 The colour scheme and graphics scheme of the Large Video screen shall be ergonomically designed and should take into consideration the size, seating arrangement and lighting of OCC.

5.25.9 The Contractor shall provide and organise mimic display mock up demonstrations at the manufacturers place for review by the Employer's Engineer before implementation.

5.25.10 The large screen graphics wall in the control room is used for the display of important data, graphics from the PC, workstation, and video. It has the functionality to pre configure and save various display layouts to be accessed at any given point of time with a simple mouse click.

5.25.11 The Video Wall arrangement including all equipments, accessories, cables, mounting structure/frame, Controllers, Wall management Software, etc shall be provided and implemented by the main contractor

5.25.12 The Video display system vendor should have manufacturing facilities in India for video wall. The cube and controller should be from the same manufacturer and the display OEM shall have its own service centre in India.

5.25.13 The large graphics wall shall be consisting of multiple rear projection modules in multiple rows and columns behaving as a single logical screen. The display wall should be rugged and industrial nature and should be able to work in 24*7 environments.

5.25.14 VISUAL DISPLAY UNIT

A. Display unit:

The display wall should consist of the Visual Display Unit, Mounting Stand, Display Controller and the Wall Management Software, which should be supplied from a single manufacturer with the following specifications:

i. The Visual Display Unit / Rear Projection Module must be based on Single Chip DLP-based Rear Projection Technology equipped with multiple laser banks.

ii. Should have the scalability and upgradeability to be made up of multiple rear projection modules stacked up in rows and columns to achieve a display wall for better viewing ability in linear or curved configuration.

iii. The Rear Projection Modules must be based on Single Chip DLP, Full HD (1920x1080) Native, and Rear Projection technology.

iv. The DMD chip should have minimum 2.0 Mega pixels and the DMD mirrors should be square in shape.

v. The Minimum Diagonal Size of each Visual Display Unit / Rear Projection Module should be 70" Nominal with a native resolution of 1920x1080 Full HD Full HD and should offer 16.7 million colors.

vi. The life of Laser light source should be minimum 60,000 hrs.

vii. The brightness uniformity should not be less than 98%.

viii. The brightness uniformity should be certified by a third party laboratory

ix. The dynamic contrast should be greater than 1,000,000:1

x. The luminance on each rear projection module shall be 500 cd/m2 or higher.

xi. Each of the Rear Projection Modules should have an arrangement to adjust the brightness of individual projection module automatically, to have a completely uniform graphics wall over time without compromising the contrast & colors. User must be able to control (switch on/off) the automatic brightness adjustment system as per control room requirements.

xii. The screen should be of almost Zero Gap technology (Inter-screen gap < 0.3 mm). Screen should be of minimum 3 layers with a Hard Backing to prevent bulging.

xiii. The input to projection module will be DVI-D to have a flicker free image on the Large Screen Graphics Wall. Other Input ports - HDMI, Analog RGBHV and Display port must be available for multiple inputs connectivity.

xiv. Each Visual Display unit should have dual redundant hot swappable power supply."

xv. Operating temperature should be between 50C to 400C

xvi. Dust protection : projection unit should meet IEC/ EN-60529 requirements (IP6X certification) and should submit a certificate from a third party laboratory

xvii. Base stand shall be covered from all sides. Rear covers shall be open able preferably screw less, Suitable rodent repeller shall provided.

B. Display Controller:

The Complete Display Controller including I/O Modules shall be redundant with auto switchover facility to ensure that no single failure of any controller or I/O module shall result in failure /blanking

of a zone on the display wall(apart from switch over time). The Display controller should have the following specifications:

i. The Controller should be in an industrial 19" rack mounted casing based on Intel Core 3 GHz or better

ii. The minimum memory of 8 GB (standard) expandable up to 32 GB and should be DDR3 or latest type.

iii. The unit should be equipped with a DVD ROM Drive.

iv. The system should be equipped with minimum 500 GB HDD in RAID 1 Configuration.

v. The display controller should have dual redundant hot swappable power supply.

vi. Should have 10/100/1000 Mbps Redundant Ethernet card for dual LAN Input connection,

vii. Supplied with a Keyboard and mouse with 20 m cable extension.

viii. The Display Controller should be based on Windows 7 or higher.

ix. It should give multiple DVI graphics outputs to be connected to the multiple rear projection modules. Loop-in and Loop-out of within display cubes is not acceptable.

x. "There should be possibility of connecting the various types of analog and digital sources using input card in freely scalable and moveable windows on the graphics wall. It should support 2 Nos. of either of the following inputs:

- 2 nos DVI-D/VGA input
- 4 nos Video Input"

xi. Should have full range scaling capability from quarter of a cube to full wall size.

C. Software:

The Software should have the following specifications:

i. The software should be able pre configure various display layouts and access them at any time with a simple mouse click or based on the timer.

ii. The software should enable the users to change the size and position of the various windows being shown on the Display Wall.

iii. The software should enable various operators to access the display wall from the local keyboard and mouse of their WIN 7 workstation connected with the Display Controller on the Ethernet.

iv. The software should copy the screen content of the WIN 7 PC workstation (Showing semi static content) connected on the Ethernet with the Display Controller to be shown on the Display wall in scalable and moveable windows in real time environment.

v. The software should support third party integration

vi. The system should have self-correction system with software based on Python- Django frame work to perform health monitoring that allows timely detection of faults.

a) Internal Temperature

b) Ambient Temperature

c) Humidity

d) Cooling

e) System status

vii. "Software based on Python- Django frame work shall allow commands on wall level or cube level or a selection of cubes :"

a) Switching the entire display wall on or off.

b) Light source status

c) Brightness

viii. The complete solution i.e. the projection modules, display controller, and the wall management software should be from same manufacturer to be compatible and proven.

ix. Manufacturer owned local after sales support office and sales support organization to be there in India. Alternatively the maintenance support for the system to be detailed out for the next 10 yrs after DLP.

x. Display shall be of good quality as viewed from the operator's position. Color and graphics scheme shall be ergonomically designed and shall take into consideration size, seating arrangement and lighting of OCC & BOCC. Contractor shall provide ergonomic design of the display wall at OCC & BOCC to the employer's engineer and take approval.

xi. There shall be provision for future expansion. It shall provide an unobstructed view to control room staff.

APPENDIX A2 – N1S01/ CIVIL, E&M, DETAIL DESIGN CONSULTANTS AND CONSTRUCTION CONTRACTORS INTERFACES

3. Scope of Work

Item No.	Subject	Station Detail Design Contractor and Viaduct Design Contractor	Civil/E&M/ Construction Contractors	N1S01 contractor Responsibilities
1	Layout of rooms at the station – Signalling Equipment room (SER), OCC, BOCC**,** DCC**,** UPS, Signalling maintenance room, and Station control rooms (SCR).	Prepare and furnish station drawings; Incorporate room requirements and routing of Cable ducts/ cable trays. Provision of space for emergency stop plunger.	Rooms complete with structures, false flooring (~~except in signal equipment room~~), false ceiling ~~if necessary~~, finishes, fire protection, doors, lighting fixtures, Air- conditioning & ventilation and power sockets. Provide Cable ducts /Hangers/cable trays up to the rooms. General lighting will be provided by Civil contractor. For testing, power will be provided by E&M.	**Design:** Mark cable trays on the station drawings in close coordination with the detailed design contractor. Review design with the design contractor. Co-ordinate closely with construction contractor to ensure the requirements at site are met. **Construction**: Construct all cable trays within the rooms required for Signalling&Train Control System**.** ~~Construct false flooring in signal equipment room and telecom equipment room on the mainline.~~ Provide equipment foundations/pedestals. Install all Signalling& Train

				Control equipment, cables etc. Seal the gaps after cable installation work with fire resistant material.
2	Track side equipment& Cabling Infrastructure for Signalling~~and Telecom~~	Design cable hangers/cable ducts, cross track cast in cable ducts for main Signalling~~and Telecommunication~~ cables throughout the guide ways. Fibre optic cables throughout the guide ways shall have route diversity. Provision of space for Line side equipments Viz signal, antenna pole, point machine, signal boxes etc. Design details to be worked out in interface with N1S01 design requirements. Provision of drainage in viaduct	Cable ducts for main Signalling	**Design:** Furnish and confirm sizes and bending radius of trays, angers, main cable duct and cross track cable ducts for main cables in close coordination with the civil design and/ or construction contractor. Furnish locations of line side equipment. Furnish and review requirements of EMC separation for cabling. Review the design from detailed design Contractors. **~~Construction:~~** ~~Construct all secondary ducts including track crossings and partitioning/ providing cable trays channels in main cable ducts as required~~. Inside the SER,SCR and UPS Room N1S01 Contractor has to provide Cable Tray/Channels if required as per Design. Install cables for all Signalling ~~and Telecommunication~~ systems including provision of all cable supports. Install all line side equipment including equipment foundations etc.

3	Cabling infrastructure for Signalling~~and Telecom~~ at stations, OCC, BOCC &DCC	Incorporate routing of Cable ducts/ hangers/trays for Signalling~~and~~		**Design:** with the civil design and/ or Civil and E&M construction contractors. Furnish and review requirements of EMC for cabling. Review and confirm design with the design contractor and closely co-ordinate with construction contractor to ensure that the requirements at site are met. **Construction**: Install cables for all Signallig ~~and telecommunication systems.~~ Install cable trays/hangers for routing signalling ~~and Telecommunication~~ cables inside signal equipment room, ~~telecom equipment room~~ and signal maintenance room**.**
4	Station Control Room	Space for work stations/ ESP and other Signalling and ~~Telecommunication~~equipments		**Design**: Furnish layout of Signalling ~~and Telecommunication~~ equipment within Station Control Room for N1S01equipment in close coordination with the civil design and/ or construction contractor. **Construction**: Install Signalling ~~and Telecommunication~~ equipment within Station control Room.

5	Provision of Earthing At stations in equipment rooms.	Design of earth and earth bus bar of< 1Ω		Set up the earth bus inside Signalling~~S&T~~ equipment rooms (SER, ~~TER~~, SMR, SCR OCC, BOCCand DCC) from the earth bus bar provided in PS ~~(S&T)~~ Signallingroom.

APPENDIX A5 – N1S01 AND POWER DISTRIBUTION AND TRACTION SUPPLY (POWER DISTRIBUTION CONTRACTOR) INTERFACES

3 SCOPE OF WORK

(a) Interfacing between N1S01 (Signalling) & Traction Contractor

S.No.	Subject	POWER DISTRIBUTION CONTRACTOR Contractor(s)	N1S01 Contractor
1	Signal for insulated overlaps.	Power distribution contractor will give to N1S01 location (chainage) of insulated overlaps.	Will protect the entry of trains in insulated overlap in ATP/ATO mode.
2	Signals for Neutral section	Power distribution contractor will give to N1S01 location (chainage) plan of Neutral Section	Will protect the entry of train in neutral section in ATP/ATO mode.
3	Removed		
4	Removed		
5	Signalling cable details for Electromagnetic Compatibility (EMC)	The power distribution contractor and N1S01 Contractors shall perform a joint study and develop the EMC Management Plans using such data as the emission characteristics, susceptibility levels, filter characteristics, physical Layout and construction of their equipment, taking into consideration variation in component characteristics with frequencies. The study shall demonstrate compatibility or highlight Areas power distribution contractor and N1S01 contractors Shall co-ordinate for any information concerning EMI/EMC in the OHE & Other structures and jointly develop a Test plan detailing how the EMC of OHE and S&TC system will be verified, taking into the consideration he study conducted.	N1S01 shall coordinate with power distribution contractor and jointly perform this activity.

6	Normal and short circuit currents levels in the OHE	DD13B(T) will advise N1S01	
7	Locations of Axle counter		N1S01 will give details to power distribution contractor
8	Bonding and Earthing Plan	Power distribution contractor will design Bonding and Earthing plan to suit axle counter details furnished by N1S01	
9	Rail Continuity Bonds Power	Power distribution contractor will provide Rail continuity bonds, according to Finalised bonding plan and in co-ordination with N1S01	
10	Removed		
11	Cross Bonds	Power distribution contractor will provide cross bonds, according to finalised bonding plan and in co-ordination with N1S01	
12	Removed		
13	Signal Locations	**Shall consider the details for design.**	N1S01 will provide chainages of signal posts to power distribution contractor.
14	OHE mast locations	Power distribution contractor will provide Layout Plans of OHE showing mast locations, wire staggers etc. to N1S01	N1S01 will ensure that Signals are mounted in locations here they are not hidden by OHE masts or other hardware.
15	Electrical Clearances	Power distribution contractor will provide Layout Plans of OHE to N1S01	N1S01 shall co-ordinate with Power distribution contractor to ensure minimum safe clearances between any signalling field installations and the live OHE part.
16	Power Supply Protection System and trip settings	Power distribution contractor will advise to N1S01 the protection relay settings.	N1S01 will ensure Train Control and Signalling systems are designed suitably.
17	CBTC	Power distribution contractor will interact with the Signalling Contractor and will advise power distribution contractor of special steps, if any, required to be taken by the power distribution contractor	N1S01 will advise power distribution contractor, the details of the CBTC system proposed to be adopted and also list out special steps, if any, required to be taken on the Power side.

18 (New Point)	Cable support on viaduct	Shall provide cable support on viaduct for signaling and telecom cables	Shall provide requirements and coordinate
19 (New Point)	Visual control panel	Shall interface with Train Control Contractor to ensure visual and functional compatibility of the proposed Visual Control Panel (VCP) of OCC SCADA has to be provided by PST Contractor with VCP being installed in the OCC by Train Control Contractor.	Shall provide details of the OCC layout and VCP design to PST contractor.
20 (New Point)	5 Centralized UPS in OCC	All wiring / cabling and E&M works related to extension of power supply from Centralized UPS to the SCADA server room. Design: To advise requirement of power from Centralized UPS for SCADA purpose to Train Control Contractor	Install Centralized UPS duly factoring in the requirements of power for SCADA purpose.

APPENDIX A6 – N1S01/ DEPOT CIVIL, E&M, DETAIL DESIGN CONSULTANT AND CONSTRUCTION CONTRACTORS INTERFACES

2. SCOPE OF WORK

Item No.	Subject	**Depot Detail** Design Contractor **and Viaduct Design Contractor**	**Civil/ E&M/ Construction Contractors**	**N1S01 responsibilities**
1	Layout of rooms at the depot – SER, ~~TER~~, **UPS**, Signal Maintenance Room and Depot control rooms.	Prepare and furnish depot drawings; Incorporate room requirements and routing of Cable ducts/ cable trays.	Rooms complete with structures, false ceiling ~~if necessary~~, finishes, fire protection, doors, lighting fixtures, Air- conditioning & ventilation and power sockets. Provide Cable ducts /Hangers/cable trays up to the rooms. General lighting will be provided by Civil. For testing power will be provided by E&M.	**Design:** Furnish layout of Signalling equipment within Depot Control Centre in close coordination with the civil design and/ or construction contractor. Mark cable trays on the drawings in close coordination with the detailed design contractor. Review design with the design contractor. Co-ordinate closely with construction contractor to ensure the requirements at site are met. **Construction**: Construct all cable trays, risers etc within the rooms required for Signalling& Train Control ~~and Telecommunication~~ Systems. ~~Construct false floor in theSER& TER~~. Provide equipment foundations/ pedestals. Install all Signalling& Train control ~~and Telecommunication~~ equipment,

				cables etc. Seal the gaps after cable
5	Provision of earthingfor signalling~~&~~ ~~Telecom~~ equipment in outdoor depot area	Provide space as requested by N1S01 contractor	**Construction:** Design earthing topology, set-up earths, lay earth cables to meet earthing requirement. (Rails will not be used for earthing).	Review design with the design contractor. Co-ordinate closely with PST/E&M contractor to ensure the requirements at site are met.

APPENDIX C – LIST OF ATS WORK STATIONS

		Nagpur	
OCC **and BOCC** Theatre	Traffic Controller	2	3 per position
	Chief Controller	1	1 per position
	Assistant Chief Controller	1	1 per position
	Auxiliary system Controller	1	1 per position
	Traction Power Controller	2	1 per position
	Fault Management Controller	1	1 per position
	Rolling Stock Controller	1	1 per position
	Time Table Management Offline	1	1 per position
	Time Table Management Online	1	1 per position
	Offline Playback Management	1	1 per position
	CCTV	**2**	3 per position
Operation Planning Centre at OCC**& BOCC**	Operation Planning Centre	1	1 per position
CER at OCC **& BOCC**	Maintenance MMI	1	1 per position
	CATC system development	1	1 per position
Training Centre	Simulator	1	1 per position
SCR of all stations	Train Control Work Station	1 each	1 per position
	CCTV	1 each	2 per position
DCC (At Depot)	Depot Controller	1	3 per position
Crew Controller's Room (At Depot)	Crew Controller	1 each	1 per position
Crew Controller's Room (At all terminal stations)	Crew Controller	1 each	1 per position
SMR of stations with points and crossing	Maintenance MMI	1 each	1 per position

APPENDIX V – KEY & ACCESS DATES

3. SCHEDULE OF KEY DATES

Key	Description	Priority Section x(PS)	Reach-1 & Mihan depot	Reach-2	Reach-3 & Hingna Depot	Reach-4
KD1	Submission of Preliminary Design	D+4	D+16	D+16	D+16	D+16
KD2	Submission of Final Design	D+08	D+24	D+34	D+30	D+40
KD3	Obtain Consent of Employer's Engineer on Final Design Submission	D+10	D+35	D+45	D+40	D+50
KD4	Deliver On board Equipment to Rolling Stock Contractor		8 train Sets D+48	5 train sets - D+80	5 train sets - D+75	5 train sets - D+90
KD5	Delivery of CBI, T-ATP,Axel counters, Point Machine, Signals and CBTC system at Contractor's premises in Nagpur.	D+18*	D+48	D+80	D+75	D+90
KD6	Revenue Operation in ATO mode	June 2017#	Sep-2018	Apr-19	Apr-19	Jul-19
KD7	Completion of Contract	On Completion of DLP of complete works				

For priority section please see clause no.2.5
*Delivery of CBI, Axel counters, Point Machine and Signals at Contractor's premises in Nagpur for priority section.
Revenue operation without ATO .
Duration as mentioned in Tabular Form as above in weeks and 'D' is the Commencement Date of the Works

APPENDIX V – KEY & ACCESS DATES

4 SCHEDULE OF ACCESS DATES

4.1 Schedule of access Dates for Priority section

AD No.	Access Date	Priority Section
AD1	Access to Equipment Rooms	30.06.2017
AD2	Access to cable ducts/Hungers/ Trays along the Viaduct	30.06.2017
AD3	Shared Access to Track	30.06.2017
AD4	Access to Permanent Power & OHE	30.06.2017

4.2 Schedule of access Dates for Reach-1

AD No.	Access Date	Reach-1
AD1	Access to Equipment Rooms	Airport South & Ujwal Nagar Station Access in Oct 2017 & Jai Prakash Nagar, Chatrapati Square, Ajni Square, Rahate Colony, Congress Nagar, Sitabuldi Station Access in June 2018

AD2	Access to cable ducts/Hungers/ Trays along the Viaduct	Airport South to Chatrapati Square Station Access in Dec 2017 & Chatrapati Square to Sitabuldi Station Access in June 2018
AD3	Shared Access to Track	Airport South to Chatrapati Square Station Access in Jan 2018 & Chatrapati Square to Sitabuldi station Access in July 2018
AD4	Access to Permanent Power & OHE	Airport South to Chatrapati Square Station Access in Jan 2018 & Chatrapati Square to Sitabuldi station Access in July 2018

4.3 Schedule of access Dates for Reach-2

AD No.	Access Date	Reach-2
AD1	Access to Equipment Rooms	Automotive Square & Nari Road Station Access in June 2018, Indora Chowk, Kadvi Chowk, Gaddi Godam Square, Kasture Chand Park & Zero Mile Station Access in Sept 2018.
AD2	Access to cable ducts/Hungers/ Trays along the Viaduct.	Automotive Square to Kadvi Chowk Station Access in Sep 2018, Kadvi Chowk to Sitabuldi Station Access in Dec 2018.
AD3	Shared Access to Track	Automotive Square to Kadvi Chowk Station Access in Oct 2018.Kadvi Chowk to Sitabuldi Station Access in Jan 2019.
AD4	Access to Permanent Power & OHE	Automotive Square to Kadvi Chowk Station Access in Oct 2018. Kadvi Chowk to Sitabuldi Station Access in Jan 2019.

4.4 Schedule of access Dates for Reach-3

AD No.	Access Date	Reach-3
AD1	Access to Equipment Rooms	Lokmanya Nagar & Bansi Nagar Station Access in May 2018, Vasudev Nagar, Rachna (Ring Road JNC), Subhash Nagar, Dharampeth College, LAD Chowk, Shankar Nagar Square(Bank of India), Institute of Engineers & Jhansi Rani Square Station Oct 2018.
AD2	Access to cable ducts/Hungers/ Trays along the Viaduct	Lokmanya Nagar to Rachna (Ring Road JNC) Access in Aug 2018. Rachna (Ring Road JNC) to Jhansi Rani Chowk Access in Dec 2018.
AD3	Shared Access to Track	Lokmanya Nagar to Rachna (Ring Road JNC) Access in Sept 2018. Rachna (Ring Road JNC) to Jhansi Rani Chowk Access in Jan 2019.
AD4	Access to Permanent Power & OHE	Lokmanya Nagar to Rachna (Ring Road JNC) Access in Sept 2018. Rachna (Ring Road JNC) to Jhansi Rani Chowk Access in Jan 2019.

4.5 Schedule of access Dates for Reach-4

AD No.	Access Date	Reach-4
AD1	Access to Equipment Rooms	Prajapati Nagar & Vaishno Devi Chowk Station Access in Aug 2018, Ambedakar Chowk,

		Telephone Exchange, Chitroli Chowk(Gandhi Putala), Agrasen Chowk, Dosar Vaisya Chowk (Mayo Hospital) & Nagpur Railway Station Dec 2018.
AD2	Access to cable ducts/Hungers/ Trays along the Viaduct.	Prajapati Nagar to Agrasen Chowk Access in July 2018. Agrasen Chowk to Sita Buldi Access in Mar 2019.
AD3	Shared Access to Track	Prajapati Nagar to Agrasen Chowk Access in Aug 2018. Agrasen Chowk to Sita Buldi Access in Apr 2019.
AD4	Access to Permanent Power & OHE	Prajapati Nagar to Agrasen Chowk Access in Aug 2018. Agrasen Chowk to Sita Buldi Access in Apr 2019.

4.6 Schedule of access Dates for Sitabuldi Interchange

AD No.	Access Date	OCC Sitabuldi
AD1	Access to Equipment Rooms	30.03.2019
AD2		
AD3		
AD4		

4.6 Schedule of access Dates for Metro House BOCC

AD No.	Access Date	Metro House BOCC
AD1	Access to Equipment Rooms	30.09.2017
AD2		
AD3		
AD4		

4.7 Schedule of access Dates for Depots

AD No.	Access Date	Depot at Mihan	Depot at Hingna
AD1	Access to Equipment Rooms	31.03.2017	31.08.2018
AD2	Access to cable ducts/Hungers/ Trays along the Viaduct	31.03.2017	31.08.2018
AD3	Shared Access to Track	31.05.2017	28.08.2018
AD4	Access to Permanent Power & OHE	31.05.2017	28.09.2018

Part - II, Annexure- 8

(Annex- 1 to Appendix A1)

Rolling Stock Characteristics (Data for 3 Car)

Item	Details
Train composition	DM-T-DM
Average Minimum design acceleration rate for dense crush loaded (AW3) train on level tanget track	1.0m/sec2 for 0 to 30 kmph range
Service braking rate from 80kmph to 0 kmph for crush loaded train on level tangent track	1.0 m/s^2
Emergency braking rate from 80 kmph to 0 kmph for fully loaded train on level tangent track	1.3 m/s^2
The Emergency braking distance of 3- car train set with all bogie working under fully loaded condition	245m
Jerk Limiting Range	0.70 m/s^3
*Service Brake Response Time	2.0s
*Emergency Brake Response Time	1.5s max
*Service and Emergency Brake Release Time	2.5s
Resistance to motion (formula, curve, starting resistance)	TR = 14.01 + 0.264V + 0.00191V^2 N/t for Elevated/At grade Section.(V in kmph)
Maximum Vehicle Overhang (in each end)	3625mm ± 125mm
Maximum wheel diameter	860mm
Minimum wheel diameter	780mm
Safe train speed	90kmph
Maximum Train Service Speed	80 kmph
Door opening and closing times	Open 2.5 s (Max.) Close 3.5 s (Max.)
Tare weight Cars (Maximum)	128 T for 3-car unit
No of axles per Car	4
Maximum Axle Load	16 tonne
Train length – 3 Car Train	70 m approximately (3-Car)

APPENDIX A1 – N1S01/ ROLLING STOCK INTERFACES

TD4. SCOPE OF INTERFACE

TD4.1 Division of Responsibility

Sl.No.	Item	Rolling Stock Contractor	SIG(or Train Control) N1S01 Contractors
SIG. RS.1	On board ATP/ATO equipment Antennae for ATP, ATS and TWC Speed measuring sensors and Speedometer. ATC Cab Displays (Train Operators HMI) including special cables	To provide space in the vehicle design for fixing and installation and interfaces at the manufacturers' facility by the RS Contractor under,the supervision of SIG (Train Control) Contractors to achieve overall system functionalities.	To supply the equipment to the RS Contractor's Works. The speedometer to be supplied by the Signaling Contractor
SIG. RS.2	On board radio equipment Antennae for CBTC,CCTV & train radio inclusive of all special cables Train lines / Ethernet connection	To provide, in an agreed format as per the requirements of signalling, space in the vehicle design for fixing and installation at the manufacturer's facility, by the Rolling Stock Contractor, under the supervision of the Signalling and Train Control and Telecommunication Contractors	Signaling and Telecom Contractors to supply their respective equipment to the Rolling Stock Contractor's Work.
SIG.RS.3	Power supply and earthing for onboard ATP/ATO and Train Radio equipments	To provide the required voltages and earthing.	Furnish required voltage values and earthing requirements to Rolling Stock Contractor for respective scope
SIG.RS.4	Logging of on-board Information from ATP/ATO & Train Radio	Provide the on board data logger TCMS. All to and for signals shall be logged in TCMS.	Signalling& Train Control Contractor to co-ordinate with Rolling Stock Contractor for signal levels and protocols
SIG.RS.5	Interface between ATP/ATO with train braking and propulsion systems for automatic braking, acceleration and deacceleration.	Rolling Stock Contractor shall coordinate with the Signalling and Train Control Contractor to agree on levels and protocols for interface signals. There shall be no delay in braking from RS during	ZVR & redundant EBR relays to be supplied by the Signalling and Train Control contractor.

		the transition from ED to friction brake at slow speed.	
SIG.RS.6	**System master clock**	Rolling Stock Contractor to synchronize TCMS clock with the system master clock. All sub-systems clock in Rolling Stock shall be synchronized with the TCMS clock.	**Signalling& Train Control Contractor to Provide necessary inputs**
SIG.RS.7	**On board next station information to the passengers**	Rolling Stock Contractor Shall provide for necessary hardware interface, display for on-board P.A. system inside the cars.	**Signalling& Train Control Contractor Shall provide necessary signals onboard to Rolling Stock Contractor.**
SIG.RS.8	**On board equipment for CCTV image transmission to cab/OCC**	RS Contractor shall provide for necessary on board cameras, display equipment and inter connections as well as space and appropriate interface/protocols for Signalling and Train Control equipment.	**Signalling& Train Control Contractor shall provide necessary equipment on-board to RS Contractor for image transmission to OCC.**
SIG.RS.9	**Climatic requirements for on board ATP/ATO equipments.**	RS Contractor to provide Cab Air Conditioning air conditioning from the saloon to all relevant signal & telecom installations to maintain a nominal temperature of 25ºC. Suitable ventilation shall be provided by the Contractor for the backside area of the console. Conditioned air ventilation shall be provided by the RS Contractor for the console.	**Signalling& Train Control Contractor to specify at an early date, the Total heat load wattage, and maximum permitted temperature**
SIG. RS.10	**EMI/EMC interface between the Rolling Stock and Signalling, Train Contrl and Telecom contractors.**	Rolling Stock Contractor shall ensure the compliance of the requirements of Signalling& Train Control and Telecom Contractor for on board ATP/ATO and radio equipments.	**Signalling& Train Control Contractor shall advise EMI/EMC plan for ATP/ATO & radio equipment to Rolling Stock Contractor at early date**
SIG.RS.11	**Interface between TCMS, S&TC, Telecom and PSD Contractor.**	RS Contractor to implement the function to prevent a train door to open in case its corresponding platform screen door is under failure	**Signalling& Train Control System and PSD system shall function to prevent a platform screen door to** open in case its corresponding train door is under failure.

Part - III, Annexure- 1

	NAGPUR METRO RAIL CORPORATION LIMITED
General Instruction: NMRCL/SHE/GI/001	

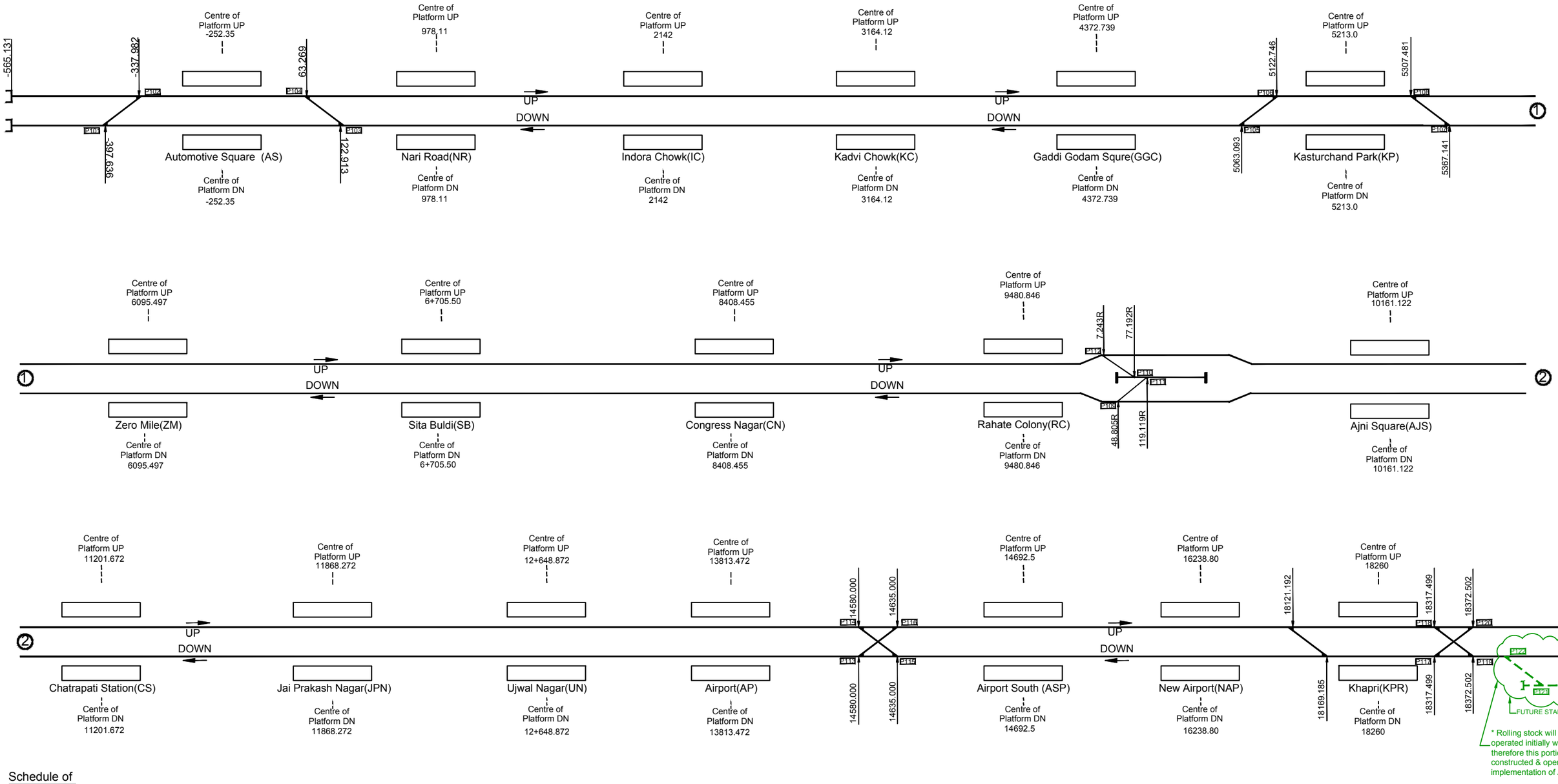
MINIMUM MANPOWER REQUIREMENTS OF SHE ORGANIZATION BASED ON CONTRACT VALUE

	1	2	3	4	5
Awarded Contract Value(in Cr.).	Chief SHE Manager/Engineer/ Accident Prevention officer	Occupational Health Officer	Site Safety Officer	Site Safety Supervisor	Labour Welfare Officer
Upto 2	-	1	1	-	1
Upto 10	-	1	1	-	1
Upto 25	-	1	1	-	1
Upto 100	1	1	1	1	1
Upto 250	1	1	1	1	1
More than 250	1	1	2	2	2

*** SHE Steward should be kept at the time of execution at each site, in addition training provision to supervisors for being safety representative.

Note: Labour Welfare Officer to be deployed as per requirement indicated as per item 5 of SHE Organization description.

Nagpur Metro Rail Corporation Schematic Rout Map of North-South Corridor



Schedule of Main Line Turnouts

Ref	Type
P101	1:9
P102	1:9
P103	1:9
P104	1:9
P105	1:9
P106	1:9
P107	1:9
P108	1:9
P109	1:9
P110	1:9
P111	1:9
P112	1:9
P113	1:7
P114	1:7
P115	1:7
P116	1:7
P117	1:9
P118	1:9

Ref	Type
P116	1:9
P117	1:7
P118	1:7
P119	1:7
P120	1:7
P121	1:9
P122	1:9

NOTE:

1. Chainages mentioned in the drawing are tentative and may change after detailed planning & design.
2. At the end of terminal station, from PF end to cross over there is requirement of minimum length of 30-50m.
3. **Tentative route drawings. The position of cross overs and numbers of machines may vary(Increase or decrease).**

REV. NO.	DESCRIPTION
R1	SCISSOR CROSS-OVER AT AUTOMOTIVE SQUARE CHANGES TO SIMPLE CROSS-OVER BEFORE AND AFTER THE STATION.

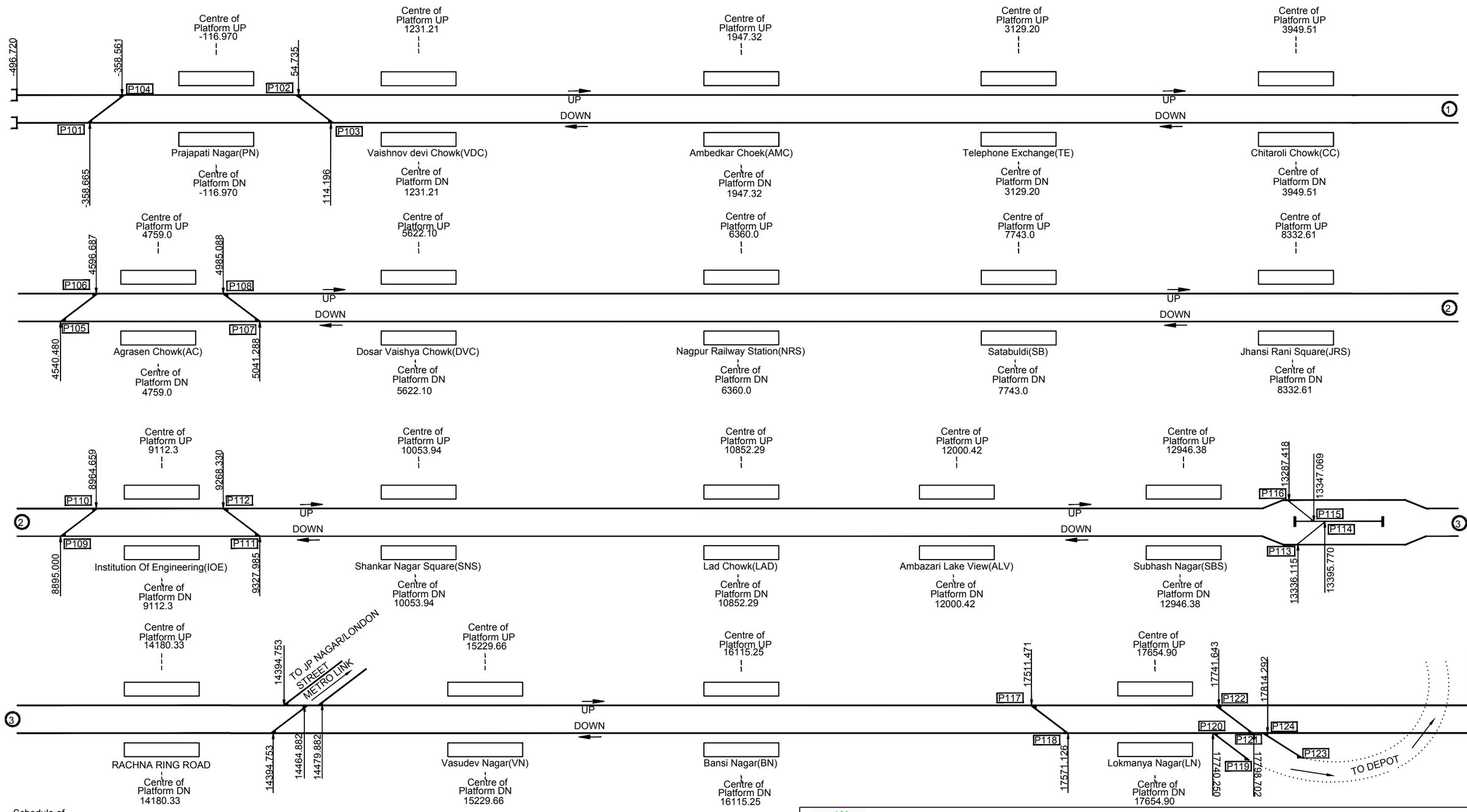
NAGPUR METRO RAIL CORPORATION LTD.

TITLE : PLAN SHOWING LOCATION OF CROSS OVER & HOLDING LINES FOR N-S CORRIDOR

Dwg. No. :- NMRCL/PLG/A/TO&CO/2016/204/N-S/03

REV.	SHEET	SCALE	DATE
R1	1 OF 1	NOT TO SCALE	21.09.2016

Nagpur Metro Rail Corporation Schematic Rout Map of East-West Corridor



Schedule of Main Line Turnouts

Ref	Type
P101	1:9
P102	1:9
P103	1:9
P104	1:9
P105	1:9
P106	1:9
P107	1:9
P108	1:9
P109	1:9
P110	1:9
P111	1:9
P112	1:9

Ref	Type
P113	1:9
P114	1:9
P115	1:9
P116	1:9
P117	1:9
P118	1:9
P119	1:9
P120	1:9
P121	1:9
P122	1:9
P123	1:9
P124	1:9

NOTE:

1. Chainages mentioned in the drawing are tentative and may change after detailed planning & design.
2. At the end of terminal station, from PF end to cross over there is requirement of minimum length of 30-50m.
3. **Tentative route drawings. The position of cross overs and numbers of point machines may vary(Increase or decrease).**

REV. NO.	DESCRIPTION
R1	SCISSOR CROSS-OVER AT PRAJAPATI NAGAR CHANGES TO SIMPLE CROSS-OVER BEFORE AND AFTER THE STATION

NAGPUR METRO RAIL CORPORATION LTD.

TITLE : PLAN SHOWING LOCATION OF CROSS OVER & HOLDING LINES FOR E-W CORRIDOR

Dwg. No. :- NMRCL/PLG/A/TO&CO/2016/204/E-W/03

REV.	SHEET	SCALE	DATE
R1	1 OF 1	NOT TO SCALE	21.09.2016