

Nagpur Metro Rail Corporation Limited

Name of Work: Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi- Khapari) and East West Corridor of Line-2 (Sitaburdi- Lokmanya Nagar) Sections of Ballastless Track of Nagpur Metro Rail Project.

Tender no: ICB-N1-T05/2016

Date: 17/12/2016

Tender no (As per portal):70

CORRIGENDUM- III

Part A- Reply to Pre-Bid Queries

1. Reply/revision/amendment to tenderer's queries
2. Annexure A as defined in reply to tenderer's queries
3. Annexure B as defined in reply to tenderer's queries
4. CAD drawings and BOQ excel files as defined in reply to tenderer's queries

Part B- Addendum

Sr. No	Clause no/page no.	Description	Revised
1.	Part II- Work/ Employers requirements- Particular Specifications-Clause no. 3, page no. 9-14.	Interfaces	Existing Interfaces clauses/sub clauses replaced as per Annexure-1.
2.	Part II- Work/ Employers requirements- Particular Specifications-Clause no. 8.8.1.4-h	Performance report as stated in para '2n' above	To be read as "Performance report as stated in para '8.8.1.2n' above.
3.	-	Project Management Information System (PMIS)	Please add chapter-10 project management information system after chapter-9 of Part II- Work/ Employers Requirements-Particular Specifications. As per Annexure-2

GM (Procurement)



Nagpur Metro Rail Corporation Limited (NMRCL)

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Khapart) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
1	Part - 2, Works requirement Section VIII-B Particular Specification - Clause 6.1 and 6.2 (Pg.28) & Employers requirements - Particular specifications, clause 2.1 - 2	Materials supplied at NAGPUR by the other contractor and also for the materials supplied by the Employer at NAGPUR, Please mention how much area to be provided to contractor the track work at Mihan and Hingna Depot, to store the P-way materials supplied by the Employer and to establish his stores and site office	Contractor will not be provided any site /space for storing of materials supplied to track contractor by NMRCL. However rails and turnouts will be handover in a stacked lot on NMRCL's land.
2	Part - 2, Works requirement Section VIII-B Particular Specification - Clause 6.1 and 6.2 (Pg.28)	Supply of materials (to be supplied by the Employer) - Rails and turnouts. ----- It is not clear from this clause that actual location from where the track work contractor will get the materials from the Employer. Please confirm.	HH rails, Turnout and fastening systems to be supplied by NMRCL are from MIHAN and Hingana Depot
3	Part 2, Annexure-Q to PS, Technical specification for laying of concrete and reinforcement, Clause-4.4-SI no-4	Providing cement and inhibitor solution in HVSD bar Please confirm whether it is required or not?	<p>i. (i)&(ii) of 4.4(4) are changed which should be read as follows:- In order to offer adequate resistance against corrosion, reinforcement bars shall be provided with a coating of "Truncated inhibited cement slurry (patent No.109784/67 of CERI, Karaikudi) for non aggressive environments (Mild and Moderate)</p> <p>ii. The rod should then be brushed with the phosphating jelly of approved quality by means of fiber brush. The jelly should be left on the surface for a period of 45- 60minutes and then removed by means of wet waste cloth. This should be followed by brushing the inhibitor solution of approved quality and the first coat of cement slurry, prepared by mixing 500 cc of inhibitor for each 1000 gm of Portland cement. All the above steps should be applied in the same day and after 12-24 hours of air -drying the sealing solution of approved quality should be brushed followed by the second coat of cement slurry, then be dried for 12-24 hours followed by a brush coat of the sealing solution which should be applied again after 4 hours of air-drying.</p> <p>Briefly following steps are involved in this process (a) Derusting by dipping the rebars in pickling solution (patent no.465/CAL/75) for 30 minutes (pH of the solution is 1.04) (b) Removal from acid tank and dipping in alkaline tank to neutralize and cleaning with potable water for 2 minutes. (c) Application of phosphate jelly coat (Patent no. 109897) and drying for 45-60 minutes (pH of the jelly is 2.5).</p>

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Shaburdi - Khapari) and East-West Corridor of Line-2 (Shaburdi to Lokmany Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
			<p>(d) Application of inhibitor solution A (patent no. 109784/67) for 2 minutes. (e) Application of first coat of cement slurry coating with inhibitor solution A (f) Air drying for 24 hours.</p> <p>(g) Application of first coat of sealing solution B (Patent no. 112440/67) for 2 minutes. (h) Application of 2nd coat of cement slurry solution A for 2 minutes. (i) Air drying for 24 hours</p> <p>(j) Another coat of sealing solution B and drying for 4 hours. (k) Application of 3rd coat of sealing solution B for 2 minutes (l) Air drying for 4 hours.</p> <p>Detailed specification regarding quality control aspect and chemicals/solution used in the process may be obtained from Central Electrochemical Research Institute (CECRI) Karaikudi-623 006 (Tamilnadu).</p>
4	Part 2, Section VIII- A, GS Clause 11.6	Details of office accommodation, office facilities, equipment, transport etc not found in PS, Please provide the details.	Site facilities is attached now as Annexure A of Section XII of Part III
5	Part 2, Section VIII- Tender Drawings	Request you to give all drawings and BOQ in soft copy to facilitate our working	All drawings- GENERAL ARRANGEMENT DRAWING OF VIADUCT (11 NOS.) REACH-1 and (15 NOS.) REACH-3) and BOQ soft copy are attached herewith.
6	Part 3, Section X- Particular Conditions, Schedule of tentative access dates, Page 129	Bidder would like to know in how many stages the hand over will be made. Can the hand over be made of atleast 5 km stretches at a time. Please Clarify the minimum access length that will be provided for the trackwork contractor (Minimum 5 km will be ideal otherwise it should be accounted as variation for which extra rate for Machinery/material shifting to be claimed)	The access for line -1 and Line -2 shall be given in a progressive manner. The first access will be for 1 km and there after access will be in 2 km stretches. Please note that contractor will not be compensated due to delay in providing access for line -1 & line -2 or "handover access" less than specified above. no compensation is also applicable to any delay which might arise due to non -adherence of "Access Date" mentioned in Table: summary of section [Keydates /Access date]

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Khapari) and East-West Corridor of Line-2 (Sitahurdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
7	Part 3, Section X- Particular Conditions, Schedule of tentative access dates, Page 130	In case the Access date is not achieved, Bidder would like to have the right for the claim for the expenses incurred towards extension of BG, employers facilities, overheads, taxes etc. Also bidder would like to know what would be the maximum delay allowable	please refer reply to query 6 above.
8	Part 3, Section X- Particular Conditions, Schedule of tentative access dates, Page 131	Any delay in access dates as specified will be delay in key dates may be considered and should be financially compensated - Please Clarify.	The key date for the RFP is 6 month from the date of hand over the access to track contract on this account ,no compensation admissible .
9	Part 2, Section VIII-B, Particular Specifications, Clause 8.8 - MSS & BOQ item no - 2.2 Bill no. BLT 1- item 1d	The objective of this document is to establish the requirements for the supply & installation of a full surface Mass spring system for optimal vibration isolation. Please explain in detail scope for supply and installation of MSS.	Clause 8.8 - MSS & BOQ item no - 2.2 Bill no. BLT 1 - item 1d are self explanatory.However, full details of MSS has been provided in para 8.8 of "Employers requirement" of RFP
10	Part 2, Section VIII-B, Particular Specifications, Clause 1.2.3 - Responsibility of contractor	The Contractor shall be responsible for all track work for Nagpur Metro rail project of about 19.4 km route length in Line-1 & about 23.32 km route length in Line-2 Total route length is not matching with BOQ item no - 2.2 Bill no. BLT 1 - item 1. Kindly clarify	Clause may be read as follows: The Contractor shall be responsible for all track work for Nagpur Metro rail project of about 19.40 track km in Line-1 & about 23.32 track km in Line-2.
11	Part 2, Section VIII-B, Particular Specifications, Clause 6.6	On main lines friction buffer with mechanical impact absorption (non-hydraulic type) shall be provided. The design and specification of friction buffers shall be submitted by the contractor for Engineer's approval As supply of buffers is not in the scope of contractor, This clause may be deleted from the scope.	Particular Specifications Clause 6.6 Buffer stop is deleted.
12	Part 2, Section VIII-B, Particular Specifications, Clause 2.1 -3	As other private agencies in India are having RDSO approved flash butt welding machines, we request that the MOU from these agencies for providing flash butt welding machine may please be allowed.	Particular specifications -Clause 2.1 -3 is replaced as below: The Bidder should either own a flash butt welding plant approved by RDSO for deploying the same for this contract or should furnish a concrete proposal to hire / subcontract the same along with the names /details of source /agencies for the same.

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Staburdi - Khapart) and East-West Corridor of Line-2 (Staburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-NL-T05/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
13	PART 2, Work Requirements - Section - VII-B, Particular Specifications Clause 8.4.2	Invisible wastage of 0.5% over the actual consumption of rails may be considered in account of rails issued by the employer. Similarly flash butt welds on allowance of 40 mm per weld may also be considered towards wastage of welding.	Agreed. However, Contractor may have to give an account of wastage.
14	PART 2: Work Requirements - Section - VII-A, General Specifications Clause no .6.1.3	Bank Guarantees furnished by the Contractor for safe custody of the materials supplied by the Employer (ref: SCC Clause 50) or any other payment due to the contractor. We could no find clause no - SCC - clause 50 - Please clarify	This clause SCC 50 to be read as clause as Particular Conditions clause 69.
15	PART 2: Work Requirements - Section - VII-A, General Specifications Site facilities to the Engineer - Clause no. - 11.6.2	If required under the Contract, the accommodation to be provided on the Site for the Engineer shall be in accordance with the Contract -----Please explain in detail.	Please refer reply to Para 12 above.
16	General	Please confirm that the subcontractor shall be allotted land free of cost for his establishments (including labour camp, site office etc) and for storage of track materials supplied by the EPC contractor at different suitable locations	Please reply to para -1 above.
17	Part 1, Annexure IV-A, Bill of quantities, Bill No. G1- Clause 8.8 - MSS & BOQ Item no - 2.2 Bill no. BLT 1- item 7	Supply and Installation of Lubricant applicator on Sharp Curve less than 583 m Radius. Please explain in detail about make / type / capacity of lubricant applicator.	Make: Whitmore; Lincoln or equivalent fully automatic rail gauge face lubrication type (details are enclosed herewith as Annexure B)
18	Part 1, Annexure IV-A, Bill of quantities, Bill No. G1, Item No. 1.5	Design of Rail plinth/track structure on Viaduct including Proof checking As supply of track fastenings by employer. Please clarify which fastening system will be supply by employer. This is required for designing purpose	Pandrol system is proposed to be supplied by NMRCL.

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II I
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
19	Part 1, Annexure IV-A, Bill of quantities, Bill No. G1, Item No. 1.6	1) Please clarify whether DDC will be an individual or an organization.2) In case of Organization, Please furnish us an approved list of DDC organizations for Trackwork.4) In India, it is very difficult to get a DDC who has experience in ballastless track. Since most of the tracks are ballasted tracks, we request to consider DDC as and individual.	DDC shall be an organization. Who has proven/ sufficient experience in ballastless track designing either in India or abroad.
20	Part 1, Section III- Evaluation and Qualification criteria. :Pg-70	Bidder seeks clarification to as to whether the similar work where the portion of track work is completed and under operation shall be considered as completed work or not. kindly confirm.	Clause 4.1 and 4.2 (a) of Section III- Part I, Evaluation and Qualification criteria are self explanatory. Hence, we confirm track laid and not commissioned shall be considered towards eligibility.
21	Part 1, Section III, Evaluation and Qualification criteria. Clause 4.1 and 4.2 (a)	"Cl. 4.2(a) Specific Construction & Contract Management Experience" of Section —III EVALUATION AND QUALIFICATION CRITERIA. The clause says that the bidder will only qualify if they had completed work(s) during last 5 years ending 31.03.2016 as given below. I. Construction of Ballastless Track: (a) Should have received at least INR. 590 Million in one Single Contract which should include installation and commissioning of minimum 24 Km Ballastless Track in one contract of MRTS or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph. 1. Construction of Ballastless Track: (a) Should have received at least INR. 590 Million in one Single Contract which should include installation and commissioning of minimum 24 Km Ballastless Track in one contract of MRTS or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph.	Evaluation and Qualification criteria is amended as below: Clause 4.1: Experience under construction contracts in the role of prime contractor, JV member, subcontractor, or management contractor for at least the last 10 years, ending October 31, 2016.

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Khapari) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-M-105/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
		<p>We hereby request you to please amend the qualification time period from 5 years to 10 years as few number of works of ballastless track work have been completed so far in last 5 years in India; making tough for Indian companies to participate. We would require once again request you to kindly modify the qualification period from 5 to 10 years, making the bid more competitive.</p> <p>Amendment desired: The bidder will only qualify if they had completed work(s) during last 10 years ending 31.03.2016 as given below.</p> <p>1. Construction of Ballastless Track: (a) Should have received at least INR. 590 Million in one Single Contract which should include installation and commissioning of minimum 24 Km Ballastless Track in one contract of MRTS or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph.</p>	<p>Clause 4.2 (a): The Bidder will be qualified only if they have completed work(s) during last 10 years ending 31.10.2016 as given below:</p> <p>i) Construction of Ballastless Track :</p> <p>(a) Should have received at least INR. 590 Million in one Single Contract which should include installation of minimum 24 track Km Ballastless Track in one contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph.</p> <p>OR</p> <p>(b) Should have received at least INR. 370 Million each in two contract which should include installation of 12 Track Km Ballastless Track in each contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph</p> <p>OR</p>

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Kharpari) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
			<p>(c) Should have received at least INR. 297 Million each in three contract which should include installation of 8 Track Km Ballastless Track in each contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80Kmph. The experience on ballastless tracks on a system having design axle load less than 12 Tons, speed less than 80 kmph or Tramways shall not be considered. Components of ballastless track works in sidings, spurs and other non-passengers portions shall also not be considered.</p> <p>1) Bidder shall furnish year wise and contract wise details of work for last ten years i.e. 31.10.2016</p> <p>2) The bidder shall also furnish the details of contract work for Installation and commissioning of Ballastless Track .Details should include a performance certificate duly certified from Railways or Metro rail project mentioning name of contract including length of installation of ballastless track and contract value and completion date.</p> <p>3) Quantity of successfully completed portion of works executed up to 31.10.2016 will also be considered for qualification of experience criteria.</p> <p>4) The completed value of work done shall be updated upto 31.10.2016 price level assuming 5% inflation for Indian Rupees every year and 2% for foreign currency portions per year.</p> <p>5) Full (100%) experience for previous works of the JV shall be considered, if the claiming member of the JV has at least 65% share in previous consortium/ JV for the relevant referred Work Experience, else proportionate quantum of experience of previous works up to the percentage share of participation in the previous JV shall be considered. However if any member has less than 20% share in previous JV/consortium, his experience shall not be considered for evaluation</p>
22	Part I,Section III- Evaluation and Qualification criteria, Clause 3.6	For welding of Rails, the bidder shall have RDSO approved mobile Flash Butt Welding Plant with standardization of welding parameters for HH Rails along with final QAP approved by RDSO as per Addendum & Corrigendum slip No. 2 of Manual for Flash Butt Welding of Rails (Revision Jan. 2012) clause 5.6.2 as per Annexure — X & XI	Clause 3.6, no. 1, Equipment type and characteristics is amended as under: The Bidder should either own a flash butt welding plant approved by RDSO for deploying the same for this contract or should furnish a concrete proposal to hire / subcontract the same along with the names /details of source /agencies for the same.

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Khapart) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
23	Part I- Section II, ITB Clause-1.3 of Bid Data Sheet	In scope of work - The Contractor shall be responsible for all track work for Nagpur Metro rail project of about 19.40 km route length in Line-1 & about 23.32 km route length in Line-2. Requested to clarify.	Please refer reply to query no.10 above.
24	Part I, Section III, evaluation and qualification criteria 4.2 (a)	Major works of Delhi Metro phase II has been commissioned before the Common Wealth games of 2010. Other Metros are being implemented in small phases and sections being opened are less than 24 TKM. It is therefore suggested to consider this experience requirement from works completed during last 10 years in single or multiple contracts. An amount of Rs.50 million for the work of installation of 24 Km Ballastless track is on much higher side for execution of Ballastless track work without supply of Rails, turn outs, fastenings etc. NMRCL contract does not have the supply of BLT fastenings and hence the value of work asked in execution experience is on higher side. Please re evaluate.	Please refer reply to query no.21 above.

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II 1
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
25	Part I, Section III, evaluation and qualification criteria 4.2 (a) - Part I	In some cases the foreign partner who has experience does not intend to join in as a leadpartner due to the internal restriction and business policies of their organisation. They prefer working as specialist sub contractor/ substantial partner/ technology partner giving lead to local partner. In this case qualification requirement fulfillment through engagement of specialist of subcontractor as per clause no. 34 of section I shall be considered. In this case the qualification requirement as required in clause 4.2 (a) shall be met by the bidder, entity who engages such specialist sub contractor.	Tender condition prevails.
26	Part 1, Section IV Bidding forms for technical proposal	In case of FBW plant, any computerised FBW plant working in India is having the capability to weld the 880 grade rails with minor adjustment to the weld program and weld parameters along with the MOU with the FBW plant working on Indian Railways from welding of 880 grade 90 UTS Rails, the bidders shall give an undertaking that it will get the plant standardised and approved for welding of 1080 grade 110 UTS Rails.	Please refer reply to query no 22 above.
27	Part 1, Section III, evaluation and qualification criteria 4.2 (a)-Part I	Quantity substantially completed portions of work upto 30.11.2016 (One month prior to latest date of submission of bid) may be considered for qualification of experience criteria. The integrated testing and commissioning of track depends upon the completions of other systems works such as traction, signalling and rolling stock. The experience criteria in clause 4.2 (a) requires experience in construction of ballastless track we request that the portion of work where installations has been completed shall be considered.	Please refer reply to query no 21 above.

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Shaburdi – Khapart) and East-West Corridor of Line-2 (Shaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

**PRE-BID Meeting 05/12/2016
Part A-Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
28	Part II- Bill of Quantities, 2.3-Bill no. CR-1, item 1.	Payment Terms: 20% payment on receipt of UIC 33 Rails at site and balance 0% payment on installation and fixing. Supply of material having an input of more than 90% and rest belongs to installations of the sum kindly revise the payment terms.	The payment term is amended as below. 1. 80% on receipt of UIC 33 Rails at site 2. 10% after installation 3. 10% after commissioning.
29	Part II- Bill of Quantities, Appendix C - Bill no. BLT-1, item no. 1-d	a) Supply of MSS at site in Nagpur in undamaged conditions along other documents- 60% b) Installation of MSS with track slab -25% c) Further testing and commissioning of the sections- 15%. Supply of material having an input of more than 90% and rest belongs to installations of the sum kindly revise the payment terms.	The payment will be made as below: 1. 80% on receipt of UIC 33 Rails at site 2. 10% after installation 3. 10% after commissioning.
30	Part I- Section III, page no. 76	Track is to be laid using track Master - Track master is no longer being used in this industry. Kindly delete the same as it may have unnecessary cost implication on the project.	Track Master is required to be used as per tender conditions.
31	Part II- Work Required -Section VII-B-Interface-3.1.3-Item-3	Responsibility of track contractor-In case of viaduct civil contractor provides the scope in the base of precast elements either towards centre of the elements of toward ends. Expansions Joints works shall be taken up after completions of track work. So this is entirely the responsibility of the civil contractor to provide and assure the proper drainage system. Kindly amend the same accordingly.	Tender condition prevails.
32	Part II- Work Required -Section VII-B-Interface-3.1.4-Item 4.	Supply of insulated glued joints neither added in BOQ nor mentioned in material to be supplied by the employer. Kindly clarify it.	There is no insulated glued joint in the track linking of line -1 and line -2.

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II I
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
33	Part II- Work Required -Section VII-B -Interface-3.1.5 Item no. 3	Responsibility of Track Contractor: Shall consider details for supply and installation of buffer stops. As buffer stops are being submitted by NMRCL, interface with RS regarding supply of Buffer stops shall be done by NMRCL itself. Please clarify the same.	The responsibility of Contractor is confined to erection and commissioning the NMRCL's supply Buffer stops.
34	Part II- Work Required -Section VII-B -Interface-3.1.6, point no. 2	Design of fastening systems for the turnout will be done by turnout contractor. Track linking contractor shall arrange complete set of fittings for the turnouts to be validated for suitability and compatibility by turnout contractor. However, fastening system is being supplied by NMRCL. Please clarify the same.	Fastening system for Turn outs will be supplied by Turn out contractor and for lead portion fastenings will be supplied by NMRCL.
35	Part 1, Section III, Evaluation and Qualification criteria. Clause 4.1 and 4.2 (a)	Since the Ballastless Track construction is a specialised work, request you to consider the following Since the Ballastless Track construction is a specialised work, request you to consider the following Should have received at least INR. 590 Million from multiple Contracts which should include installation and commissioning of minimum 24 Km Ballastless Track in one contract of MRTS or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph. The length of turnouts executed shall also be considered towards the length of ballastless track	Please refer reply to query no.21 above.
36	Section III : Evaluation and Qualification Criteria :	(a) Should have received at least INR. 590 Million in one Single Contract which should include installation of minimum 24 track Km Ballastless Track in one contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph. (b) Should have received at least INR. 370 Million each in two contract which should include installation of 12 Track Km Ballastless Track in each contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80 Kmph	Please refer reply to query no 21 above.

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi – Khapart) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-M1-T05/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCT's Reply/Addendum/Revision
		(c) Should have received at least INR. 297 Million each in three contract which should include installation of 8 Track Km Ballastless Track in each contract of MRTS or Metro or Main Line Passenger Railway System which is designed for the speed not less than 80Kmph.	
		The Experience on ballastless tracks on a system having design axle load less than 12 tons, speed less than 80 Kmph or tramways shall not be considered. Components of ballastless track works in sidings, spurs and other non passengers portions shall also not be considered.	
		From the above we understand that to be eligible as per this criterion, only those works that have been completed during last 5 years ending 31.03.2016 shall be considered. Thus the bidder shall not get credit for any work executed by the bidder after 31.03.2016. You can appreciate that since the tender submission dated is 05.01.2017, the bidder(s) shall not be able to avail credit for the work executed in last 9 month before the dated of submission of subject bids. In this connection we request you to review and revise this cutoff date to 31.10.2016 or 30.11.16, considering that the bid of submission date is 05.01.2017.	

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-II
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
37	Part 2-Section VII-B- Clause 8.8.1 for Mass Spring systems on viaduct	<p>2) Further we would request your attestation to clause 4.2 (a) wherein the eligibility criteria requires 7km of installation and commissioning of ballastless Track through 3 contract each, which adds up to 21km. It is seen that the requirement that is to be met through a single contract is more than that is required for three contract. you can appreciate that this is not as per industry practice. Normally the total work experience required through a single contract is always less than that required through multiple contract. Hence we request you to please amend this clause by reducing the requirement for the single contract appropriately.</p>	The bidder may offer the Mass Spring Systems similar to specifications in tender.
	8.8.1.2 - (i)	<p>the elasticity of the pad must be based on the compressibility of the material and not on the shape of the product structure.</p>	The bidder may offer the Mass Spring Systems similar to specifications in tender.
	j	<p>any geometrical forms like dimples or notches or groves on the material surface must be avoided as it might influence the elasticity of the material in a negative manner due to sediments or dust - should be removed or should be modified as such" in the case the material the proposed material contains geometrical forms, a proper installation recommendations should be presented in order to avoid possible negative influence of sediments or dust on the performance.</p>	

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-I, North-South Corridor of Line-1 (Sitaburdi – Khapart) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-MT-105/2016

**PRE-BID Meeting 05/12/2016
Part A- Corrigendum-III
Reply to Tenderer's Queries**

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
k		Use of binders/softening agents/plasticizers may be avoided in pad material as diffusion of same may stiffen the system - should be removed	
	88.1.5 g	thickness of MSS mat (to be provided in one single layer only) should not exceed 25mm - should be removed	
		General comment on the table - main column of the table should remain, but second column with acceptance values should be left to the discretion of the supplier	
N		Test (DIN 45673-7) - Value	
1		Vertical static bedding modulus - C stat value to be indicated by supplier in order to reach the performance requirement. C stat measurement should be done further to DIN-45673-7 recommendations.	
2		Horizontal static bedding modulus - influence of horizontal bedding modulus of mats used for the isolation of the vertical part of the slab should be considered in the performance calculation. Test is optional - influence of horizontal bedding	
3		modulus of mats used for the isolation of the vertical part of the slab should be considered in the performance calculation. Test is optional.	
4		Vertical dynamic bedding modulus - Cdyn value to be indicated by supplier in order to reach the performance requirement. Cdyn measurement should be done further to DIN-45673-7 recommendations.	
		Loss factor - value to be indicated by material supplier	
5		Dimensional Check - as per supplier QA/QC plan	
6		Material identification test - As per DIN 45673-7	
7		Water absorption capacity - value to be indicated by material	

Supply, Installation, Testing and Commissioning of Ballastless Track of Standard Gauge Phase-1, North-South Corridor of Line-1 (Sitaburdi - Khapari) and East-West Corridor of Line-2 (Sitaburdi to Lokmanya Nagar) Sections of Nagpur Metro Rail Project. Tender no: ICB-N1-T05/2016

PRE-BID Meeting 05/12/2016
Part A- Corrigendum-III
Reply to Tenderer's Queries

Sr. No.	Clause No.	Tenderer's Queries	NMRCL's Reply/Addendum/Revision
8		supplier - optional test - previous test reports may be used Water resistance - value to be indicated by material supplier - optional test - previous test reports may be used	
9		Ageing resistance - As per DIN 45673-7 optional test - previous test reports may be used	
10		Mechanical fatigue strength - Change in Cstat below 20% for 3M Cycles as per DIN 45673 -7	
11		Tensile strength - value to be indicated by material supplier cycles as per DIN 45673-7 cycles as per DIN 45673-7	
12		Elongation at break - value to be indicated by material supplier	
13		compression set - value to be indicated by material supplier	
14		Test after installation - tolerance of 10% in natural frequency of slab is acceptable.	
	General Note	frequency of tests may be reviewed - The total length is only 800 lms, requiring all these tests to be performed in presence of third party inspectors etc. will be quite costly and this will be reflected in selling price.	
		We would recommend that most crucial tests (1, 3, 5 and 10) are performed once for the entire quantity.	
		Test 14. should ideally be organized by 3rd party acoustic consultant	
	8.8.1.7	theoretical model 2 masses 2 springs - theoretical model at least 2 masses 2 springs	
		Theoretical model should allow for	
		"multiple mass multiple spring" approach rather than 2 mass 2 spring.	


CRM (Present)



Annexure- A
SITE FACILITIES FOR THE EMPLOYER AND THEENGINEER

1 GENERAL

The Contractor shall provide for the use of the Employer / Engineer office accommodation, equipment, communication & drawing facilities throughout the course of the work and up to a period of 90 days after physical completion of work as certified by Engineer. The details of the accommodation & the other facilities are detailed below: The rate is deemed to be included in the itemized cost of work no separate payment for site facilities will be given to contract, Thereafter the Contractor shall dismantle the building and take away all the materials, office furniture, etc. which will be the property of the Contractor. The equipment and software provided during the currency of contract will be the property of the contractor on completion of 90 days after physical completion of work.

2 SITE OFFICES

- 2.1 Accommodation for the Employer / Engineer shall consist of TWO nos. of site offices one in East west and other in North South corridor to be constructed by the Contractor at a place decided by the Employer, within One (01) month from the date of commencement of the works. In case of delay beyond Two months in provision of the accommodation either through construction or hire, penalty @ Rs. 20000/- per week or part thereof will be imposed.
- 2.2 The second site office to operate in 12 months of issue of LOA
- 2.3 The site office should remain open for 24 hours a day and 7 days a week i.e. round the clock up to a period of 90 days after physical completion of work as certified by Engineer.
- 2.4 Each Site Office will provide for the following rooms/ spaces: SITE OFFICE for Engineer/Employer to be constructed by Contractor.

Sr.No.	Description	Carpet Area (Sqm)
(i)	Project –In-Charge of NMRCL with Airconditioning	12
(ii)	Other Officers of NMRCL	30
(iii)	Project Manager of GC with Air conditioning	12
(iv)	Other officer of GC	30
(v)	Office staff of NMRCL & GC	15
(vi)	Conference/Visitor Room with Air conditioning	25
(vii)	Computer/Drawing Office with Airconditioning	12
(viii)	Pantry & Kitchen area	6
(ix)	File and Documents & Instruments Storage	10
(x)	Toilets	15
(xi)	TOTAL 'A'	167
(xiii)	Common Area/Verandah @10% of "A" above	17
(xiv)	GRAND TOTAL	184

- 2.5 Materials used for the construction of the offices shall be new and of approved quality. Materials shall be chosen such that the buildings when erected shall give good ventilation, heat and sound insulation. Proper and due care must be insured for drainage and water proofing of/from the office structure. All windows and doors should be of good/approved quality to insure safety, security etc. of the office.
- 2.6 All buildings shall be supplied with continuous (24 hour) running potable water to the kitchens and wash rooms. The toilets may use raw water for flushing. The Contractor shall also arrange for the constant and hygienic disposal of all effluent, sewage and rubbish from the office buildings.
- 2.7 All buildings shall be supplied with electricity, AC 240 Voltage 50 Hz that shall be distributed to each room in accordance with the Regulations. Lighting and electrical power points shall be provided in each room. The disposition and location of light and power points will be as directed by the Engineer. 24-hour power supply is to be arranged by contractor to meet full power load. Fans and coolers etc will be provided as decided by the Engineer.
- 2.8 Firefighting equipment shall be provided in accordance with the local fire services office recommendations.

3 FURNITURE AND OTHER OFFICE EQUIPMENT AT EACH SITE OFFICE

3.1 The Contractor shall supply and maintain the following good/approved quality new furniture and equipment to the Employer/Engineer's offices within one month of the date of commencement of the works upto a period of 90 days after physical completion of work as certified by Engineer.

3.2

Description of Item	Nos.
Conference table (4000mm x 1500mm)	1
Conference chairs	16
Glass-fronted lockable bookcase	4
1500mm x 900mm double pedestal desk	2
1200mm x 900mm single pedestal desks	8
Swivel office chair with armrests	12
Swivel office chair without armrests	4
Typist chair	2
Visitors chair	16
4-drawer filing cabinet	4
Plan chest (A 0 size)	1
Steel lockable cupboard 6ft high with internal shelves	4

Heavy Duty Paper Shredders	1
Tele-facsimile transmission/reception facility connected to a dedicated line with STD facility	1 sets
Telephone switchboard connected to 2 external Lines at each office with STD facility and with independent Internal communication Facilities with conference facilities.	10 phones lines
First aid kits for up to 36 persons	2
Safety helmets	20
Safety harness	20
Safety Shoes	20
Day-glow waistcoat	20
Industrial safety goggles	6 pairs
5 L kettles	2
2 L kettles	2
Potable water dispenser with hot/cold Taps	1
Cups and plates	30
Fire extinguishers - (As required confirming to the stipulations of Local authorities).	As per norms
Silent DG set of minimum power of 10KVA	1

After successful completion of work with defect liability period, the furniture and equipment will be the property of the contractor.

Note: In case of failure to provide the above mentioned equipments within 6 Weeks, penalty @ Rs 10000/- per week or part thereof will be imposed.

4 TRANSPORT

4.1 General

The Contractor shall provide 4 (Four) numbers of Innova / scorpio model SUV (for the use of the Employer and the Engineer within one month from the date of commencement of the works) at his own cost.

4.2 Road Transport

- a) The vehicles shall not more than one year old, should have taxi permit and delivered and maintained by the Contractor in good roadworthy condition including daily cleaning.
- (b) The Contractor shall employ and make available competent drivers fully licensed to operate the vehicles as and when required by the Engineer/Employer. The Contractor shall replace drivers at the request of the Engineer/Employer. Alternate arrangement of drivers should be ensured by the contractor in case of emergency or excessive

working hours due to demands of work.

- (c) The vehicles shall be licensed and insured for use on the public highway and shall have comprehensive insurance cover for any qualified driver authorised by the Engineer/ Employer together with any authorised passengers and the carriage of goods or samples. All the relevant and valid documents of the vehicle should any time be available with the driver and can be asked to show by the Employer anytime.
- (d) The Contractor shall provide fuel, oil for running of each vehicle for 4000 kms monthly and ensure maintenance in conformity with the vehicle manufacturer's recommendations and all relevant toll and parking charges incurred in connection with the Works. The vehicle shall be provided day and night as required by the Engineer/Employer.
- (e) A suitable replacement shall be provided by the contractor for any vehicle out of service for more than 24 hours. If the contractor at any time fails to provide vehicle(s) or substitute vehicle(s) as specified, an amount of Rs.3000 per day for each vehicle (that the Contractor failed to provide) shall be recovered from the Contractor.

4.3 Number of Vehicles

4.3.1 The Contractor shall provide the following type of vehicles of as per requirement indicated by the Project Director within one month of date of commencement.

Type	Numbers
TAVERA, INNOVA or similar	2
TATA SUMO, BOLERO/SCORPIO or similar	2

4.3.2 DELETED

4.3.3 Duration of Transport Requirements

Transport for the Engineer / Employer shall be provided up to a period of 90 days after physical completion of work as certified by Engineer.

The transport so provided shall continue to be the property of the Contractor.

5 OFFICE MAINTENANCE AND SECURITY

5.1 The contractor is required to maintain the offices upto a period of 90 days after physical completion of work as certified by Engineer throughout the contract period and provide the following, but not limited to:

- i. Pay all electricity charges.
- ii. Reimburse telephone bills for the use of telephone, up to Rs 3000/- per month for each external landline connection
- iii. Pay all water charges.
- iv. Carry out necessary repairs to office and equipment as and when required.
- v. Day- to-day cleaning and maintenance and watch & ward etc

5.2 The contractor shall provide within one month from the Date of Commencement following personnel in EACH OF the office as required for watch and ward and running of the site office.

Watchmen / Security : (3 shifts of 2 men in a shift)

Office maintenance Personnel : (2 shifts of 2 men in a shift and 1 shifts of 1 men in a shift)

Note: In case of delay beyond Two month, penalty @ Rs 10000/- Per week or part thereof will be imposed.

6 EQUIPMENT FOR THE USE IN SITE OFFICE

The Contractor shall provide new equipment and software as listed below and maintain them for the exclusive use of the Employer and the Engineer. The Contractor shall provide and maintain the following equipment for the use of the Engineer and the Employer within one month from the date of commencement of the works up to a period of 90 days after physical completion of work as certified by Engineer. The equipment shall be the property of the Contractor.

a. Computers –Three (03) Nos.

Windows 10 or latest edition with OEM with minimum specification of Quad Processor, 2.8 GHZ 3MB L2 cache and 64 bit computing, Minimum 4 GB DDR 3 RAM, 500 GB Hard Drive Disk, 2 GB Nvidia Graphic Card, In-built or external Wifi device, DVD Writer, 19" colour TFT monitor, 10/100 LAN Card, Modem Card, multi media speakers, stand alone UPS of minimum 800VA capacity

b. Printers – 3 nos. (A4 size – 2 No. and A3 size – 1 No.)

The A4 size printer shall be all in one office jet, having features of Fax, Scanner and Printer, A3 size printer shall be Colour Office jet with a print speed of up to 8 pages at 800 dpi or more and with wifi enabled in them.

c. LARGE FORMAT PLOTTER - 01 No. (Model No. C6084A (3800CP 54 colour Plotter) or equivalent model.

d. (d) Application Software (Licensed) with each computer

- i. Windows 10 or latest version with OEM
- ii. Microsoft Office 2010 or latest release with OEM
- iii. AUTOCAD 3D Latest Version with OEM
- iv. M S Project / Sure Track / Primavera – Latest Version on OEM.
- v. PDF Converter/Professional
- vi. Anti Virus Latest Version

e. Colour scanners: A3 size - 1 no, AO size- 1 No.

The A3 size scanner should be able to scan several pages per minute so that large documents can be scanned in short time.

f. Xerox Machine- 1 No.

For paper prints capable of reduction and copying A3 & A4 size paper with automatic

Tender no. N1-T05/2016

- document feeder capability and sorter. (Canon IR 2020) or equivalent with LAN and Fax capability
- g. Surge Protection Devices (one for each computer and printer as given above or as suitable to protect all equipment from voltage fluctuation)
- h. UPS system with sufficient power backup (with minimum backup time of 30 minute) to meet the sufficient power load in case of power disruption.
- i. Power supply for the systems is to be AC 240 volts, 50 Hz from normal building wiring circuit mains, power regulator, stabilizer or transformer should be supplied by the Contractor for the computer systems such that the systems can function efficiently.
- j. One Projector (BENQ model 9H.J6V77.13E or Equivalent model of Sony or other reputed brand) along with a white Screen for making presentation in the conference room.

Note: In case of failure to provide the equipment within one month, penalty @ Rs 5000/- per equipment per week or part thereof will be imposed

7 Documentation

- 7.1.1 A complete set of documentation will be supplied with each System. The documentation should be self-tutorial in nature and be readily understood by non-computer personnel.
- 7.1.2 The following manuals will be supplied with the system:
 - a. Manual on how to operate the equipment; and
 - b. Manual on how to use the facilities and software provided by the supplier. (Including languages and utilities)

8. Auto CAD Operator:-

The contractor shall provide one experienced Auto CAD operator exclusively for the Office of the Engineer till six months beyond the date of completion of contract.

Rail Gauge face lubricator

Rail Gauge face lubricator requirements:

1. Rail Gauge face lubricators shall be of mechanical lubricator to operate properly and efficiently with lubricant which its properties prescribed in Table-1.
2. High pressure, low volume pump effectively covers the rail with just enough lubrication, no waste, no clogging of lubrication ports.
3. Rail Gauge face lubricator reservoir shall be of 10 -15 kg .
4. Pumping lubricant quantity per stroke shall be 0.1 -0.15 gram.
5. Grease application: Positive displacement a constant, metered volume of grease is delivered equally to each lubrication port regardless of back pressure and/or cold weather conditions.
6. Lubriactor shall be installed to the track without rail drilling.
7. Lubricator shall include a means of checking and adjusting the amount and position of lubricant dispensed.
8. The means of adjusting the height of the lubricant application unit shall be separate from the means of installing to the rail.
9. Lubricator shall be on a safe distance from the on track vehicles, in such a way that it cannot be damaged as a result of rail maintenance work.
10. Lubricators shall be designed and manufactured from materials which the nature and main characteristics and chemical composite shall be stated and their fluffiness to the requirements of the relevant standards.
11. The means shall be provided in the lubricator to indicate the quantity of lubricant remaining in the lubricant reservoir.
12. Lubricant material shall be hot weather resistant materials, UV protected and corrosion free.
13. Lubrication systems shall apply to the rail and holds that lubricant in place allowing the wheels to grab and carry it around the track curve.
14. Lubriant filler equipment shall be a manually device and shall be designed for quick and efficient lubricant filling with minimum hands dirty and soiling the ballast and the ground.

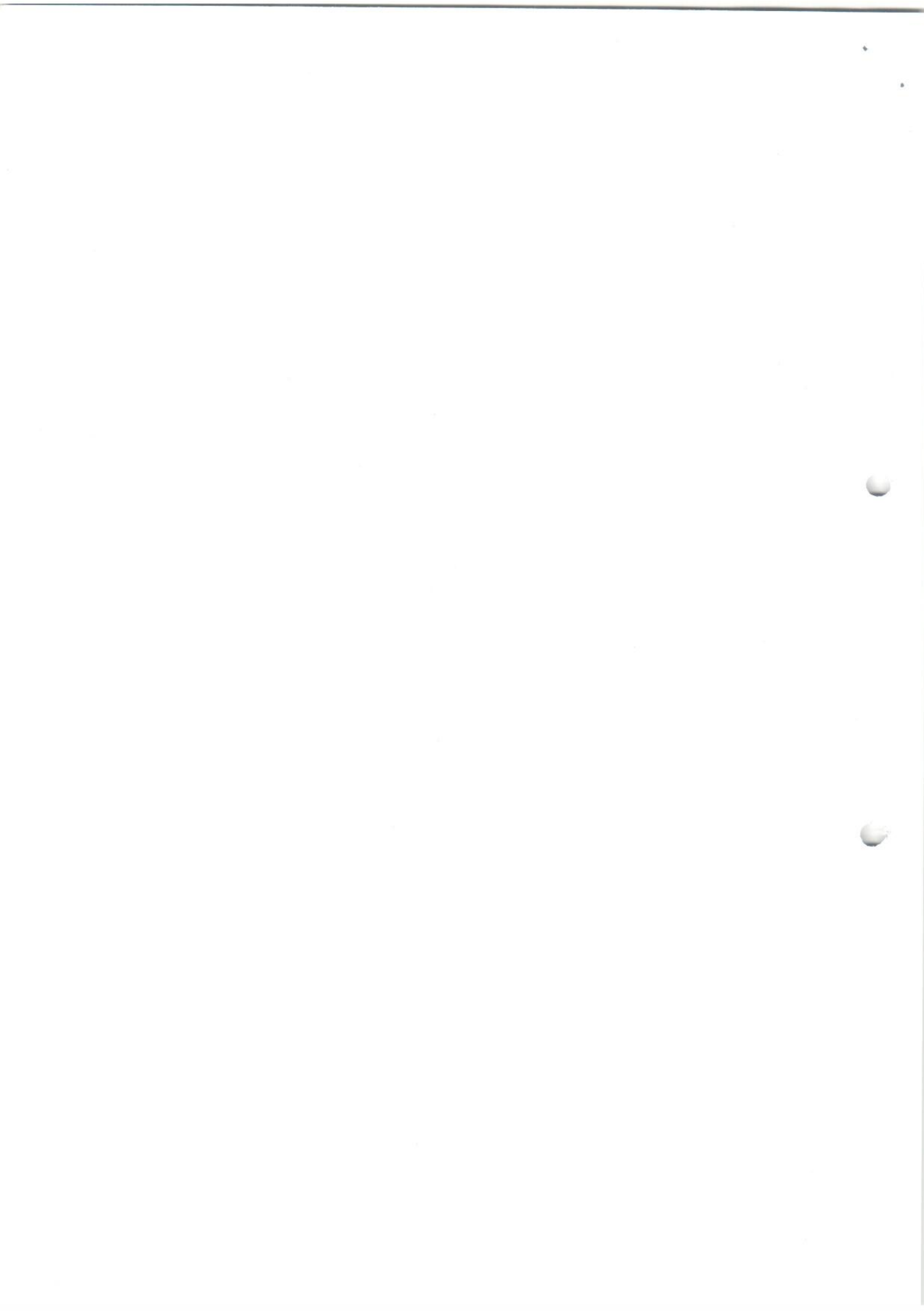


15. The lubricant filler equipment shall enable filling the lubricator reservoir efficiently. It shall include all means to pump lubricant from tanks (pails, Kegs, drums) with different sizes and capacities.

16. Lubricant requirements are in accordance with EN 1 6028, Annex A, table A.1:

TABLE-1

Property	Unit	Test Method	Values
Appearance	-	Visual	Homogenous
Colour	-	ISO 2049 or equivalent	Homogenous
Consistency	-	ISO 6743 -99	1 or 1.5
Worked grease penetration 60 stroke @ 25 °C.	0.1mm	ISO 2137 or equivalent	290 -340
Drop point	°C	ISO 2176 or IP 396 or equivalent	≥ 150
Flash point	°C	EN ISO 2592 or equivalent	≥200
Water Content	% mass	ISO 760 or DIN 51777 - 2 or ISO 3733 or equivalent	≤1.0
Water resistance @40°C	Level	DIN 51807-1 or equivalent	1
Adhesion to sheet steel (0.05 mm, 24 h @ 60°C)	Stage	EN 16028, Annex D	1
Volatile Components	% mass	EN 16028, Annex E	≤ 10
Oil Separation/" bleeding "(168 h (7 days)@40°C)	% mass	DIN 51817 or its equivalent standards	7% maximum by weight for NLGI NO. 1 grease
Corrosion test -steel	Rating	ISO 11007 using water or its equivalent standard	0;0
Corrosion test – copper	Grade	DIN 51811 or equivalent	1
Compatibility with elastomers (60°C for 168 h) – change in volume for NBR 1	%	ISO 6072 or its equivalent standard	+15/-0
Compatibility with elastomers (60°C for 168 h) – change in hardness for NBR 1	IRHD	ISO06072 or its equivalent standard	± 8



Identity testing: Using Infra-red, or X-ray fluorescence, or Inductively coupled plasma		Standard laboratory method: DIN 51418-1, DIN 51418-2, DIN 51451, DIN 51820-1 or its equivalent standard	
Apparent viscosity (1^0 cone, s-300 s, D= 1000 s^{-1} @ 25^0 C	mPas	DIN 51810-1 or its equivalent standard	≥ 150
Apparent viscosity (1^0 cone, s-300 s, D= 1000 s^{-1} @ 0^0 C	mPas	DIN 51810-1 or its equivalent standard	≥ 400
Apparent viscosity (1^0 Cone, s-300 s, D=1000 s^{-1} @ -25^0 C	mPas	DIN 51810-1 or its equivalent standard	≥ 4000
Cone, s-300 s, D=1000 s^{-1} @ -25^0 C		standard	
Four ball test -wear test rating (300 N, 1 h@ 1500 r/min	Mm	DIN 51350-5; Method D or its equivalent standard \leq	≤ 0.8
Four ball test – Extreme pressure	Kg	DIN 51350-4	Weld load not less than 315 kg
Effect of water (water wash -off test)	Visual	EN 16028, Annex B	No corrosion after 72 h
Biodegradability	%	OECD suite or its equivalent standard	>60 after 28 days



3. INTERFACES

3. INTERFACES

3.1 OBJECT

1. This chapter describes the principal interfaces limit of scope between the Sitaburdi to Khapari North–South Corridor of Line-1 & Sitaburdi to Lokmanya Nagar East-West Corridor of Line-2 Track-Work Contractor NT-1 and designated contractors.
2. This document refers to the following Contractors:

3.1 INTERFACE WITH DESIGNATED CONTRACTORS

3.1.1 Interface specification: Track work installation Contractor Vs Electrical Traction Contractor

Sl. No.	Scope	Electrical (Traction) Contractor Responsibility	Track Contractor Responsibility
1	Bonding Cables, Negative return cable, Traction Bonding cables, Cross bonding cables across insulated rail joints.	Shall supply, install and terminate cables at appropriate intervals/location by doing thermo weld to rails.	Contractor shall co-ordinate for location of thermit weld connecting to rails. However, CAD welding if needed will be carried out by respective system contractor.
2	Cable Crossing.	Contractor shall accommodate cable crossing within the gaps provided by Track Contractor in track, in case of any specific additional requirement, Electrical Contractor shall indicate the requirement and shall provide necessary conduit to Track Contractor for providing the same under the track.	Contractor shall install the conduit for cable crossing provided to them by system contractor.
3	Earthing through track plinths.	Supply and connect the bare copper cable to the BEC at required interval.	Supply and install connecting plate at every plinth end to ensure electrical continuity by providing M.S. flat at each end of the plinth.
4	Information regarding track alignment, curves, levels, etc.	Shall design the OHE including isolation and termination as per Requirement in the depot and stabling yards. Shall specify the length of track required for ensuring full tension Length of OHE.	Shall furnish the track layout including curve and gradient in depot area and stabling yards. Shall ensure provision of the required length of track.
5	Electrical & Physical interface	Shall provide necessary designs and drawings.	Shall ensure the required clearance.

3. INTERFACES

3.1.2 Interface specification: Track work installation Contractor Vs Depot (Civil Works) Installation Contractor

Sl. No.	Item	Responsibility of Depot Contractor	Responsibility of Track Contractor
1	Depot Layout Drawing.	Shall supply depot layout drawing & its mathematisation to Track Contractor. Depot Contractor shall also supply detailed interface drawing of utility & depot construction. Depot Contractor shall modify the depot layout based on any discrepancy noticed by Track Contractor.	Shall install track based on depot layout drawing maintaining the clearance based on interface drawing supplied by Depot Contractor.
2	Installation of track in Workshop, Inspection Bay, Stabling Lines, ETU Workshop, Washing Plant, Blow down plant Pit Wheel lathe, Emergency shed building and other areas of depot.	Ballasted track: Prepare the ground with grading and drainage, take care that all pipes and culvert crossing are laid. Track on Column: Supply & installation of column Track embedded in concrete & track on plinth in washing line - Prepare 1st pour concrete in the bed.	Install the track Install track on column provided by depot contractor Install track including laying of 2nd pour concrete.
3	Access & Storage space	Shall provide suitable access in depot for executing the track work and provide suitable storage space also for storing the required track materials	Shall ensure with Depot Contractor .

3.1.3 Interface specification: Track work installation Contractor Vs Civil Construction Contractors

Sl. No.	Item	Responsibility of Civil Contractor	Responsibility of Track Contractor
A. STATIONS			
1	Installation of track in stations.	Shall supply the track base according to layout drawing, prepare the track base with shear connectors, grading and drainage, take care that all pipes and culvert crossing are laid.	Shall install track based on layout drawings.

3. INTERFACES

1a	Rail Level	Shall ensure the rail level	Shall provide the rail level
1b	Chainage	Shall furnish correct chainage of Station centre line	Shall fix chainages of the Turnouts / Crossover based on the chainage of Station Centre Line furnished by the Station Building contractor.
1c	Drainage	Shall design the General drainage system in the Station area taking into Account Track Drainage whenever the viaduct is part of station.	Shall design Track drainage system and integrate with the General Drainage arrangement.
B VIADUCT			
2.	Construction of precast elements	Construction: Construction of precast elements for elevated structures (viaduct) in final position. Provision of vertical stirrups / connection (shear connector).	Construction of concrete plinth using the provisions of vertical stirrups/connection (shear connector) between precast elements and concrete plinth.
3	Details of track drainage.	Design and construction of drainage system of line corridor except the drains required within track. Furnish details of levels of drainage systems.	Design and construction of Drains required within track based on details of levels of drainage system provided by Civil Contractor.
4.	Clearance of track construction envelope.	Clear and hand over the track construction envelope as per the track construction programme.	Ensure availability of track construction envelope in interface with Civil Contractor.
5.	Storage facilities and utilization of access period for transportation of material to site.	Provide storage space and advise access period to Track to transport the track material at site.	Transportation of track material to site in interface with Civil Contractor in specified space and period so that the construction activities of designated contractor are not hampered after access period.
6.	Details of Cant, girder levels and platform levels	Shall furnish the required details	Shall take into account these values for track installation & determination of rail level / modification keeping in view the as constructed PF levels in accordance with schedule of Dimensions.
7	Design of Buffer stop	Shall ensure that Design of Viaduct caters to the Impact Loads on the Bufferstop if train overshoots and hits the Buffer stop.	Shall give details for locations of the Buffer stops at the ends of Track at Terminal Stations, Depots & Shunting Neck and design impact loads of the buffer stop.

3. INTERFACES

8	Expansion joints	Shall ensure that the Design of Deck and Substructure including bearings and location of expansion joints of the deck caters to the Turnouts / Cross overs	Shall provide locations and details of the Turnouts/Crossovers with respect to the centre line of the Station, criteria for deck such as location of expansion joints.
---	------------------	--	--

Joint survey of viaduct from station to station for the patch offered for the track laying will be carried out by civil & track contractor. Track contractor will ensure that the viaduct for track laying will be taken over only if as built Viaduct level are within tolerance limit of designed level as per GAD.

3.1.4 a Interface specification: Track work installation Contractor Vs Signalling Contractor

Sl. No.	Subject	Signalling Contractor	Track Contractor
1.	Electrical properties of track circuit assemblies.	Shall furnish the electrical requirements for track circuits. All Electrical insulation items need to be supplied by signalling contractor.	Shall install the track with Signalling Contractor requirement with NMRCL fittings and fastenings.
2.	Final track alignment & Profile Plan- details of curves, gradients etc.	Shall incorporate the same in Train Control & Signalling design.	Track Contractor shall provide the same for Line corridor giving the details of curves & gradients and also details of speed restrictions.
3.	Turn out assemblies and their mounting & driving arrangements.	Shall co-ordinate with Track Contractor on mounting of all Turnout assemblies including point machines. Furnish & install all point machines suitable to drive the turnouts.	Shall install all Turnout assemblies, and provide for mounting arrangements for point machines.
4.	Scope of Supplies	Signalling Contractor shall supply & install the point machines, leading (1 st) stretcher bar & co-ordinate with Track Contractor for installation of double pull arrangement, wherever required. Lock on second drive if required as per signalling requirement will be provided by designated signalling contractor.	Track Contractor shall install all track assemblies & Track fasteners, Turnouts, all stretcher bars (except leading stretcher bar) and second pull arrangement (where ever required). The installation of second pull arrangement shall be co-ordinated and interfaced with Signalling Contractor to ensure full compatibility. However, it is the responsibility of switch housing & throw is signalling contractor.
5.	Testing of rail to rail, rail to bearing plates and plinth beam and all	Shall arrange all testing after installation.	Shall arrange for testing of individual components before installation, preferably at the supply stage.

3. INTERFACES

Sl. No.	Subject	Signalling Contractor	Track Contractor
	insulated joints.		The structure (including the rail surface) as installed shall be thoroughly cleaned to an acceptable standard as approved by the Engineer immediately after installation and as required thereafter to maintain the standard until the arrangement of service trials so as to provide adequate levels of electric insulation & rail surface quality for correct performance of train control & signalling equipment under prevailing climate & environment conditions.
7.	Track Crossings of Cables.	Shall furnish all track-crossing requirements to Track Contractor.	Shall supply & provide Cut Outs on ballastless track plinth as per the requirements of Signalling Contractor. The details and specifications of such crossings shall be interfaced with Signalling Contractor. Crossing pipes are to be supplied by signalling contractor.
8.	Installation of trackside equipments and signal posts.	Shall furnish the final sizes of trackside equipments and co-ordinate with Track Contractor & to ensure compliance of Schedule of Dimensions (SG).	Shall share SOD with Signalling Contractor to ensure compliance of Schedule of Dimensions.
9.	Track connections	Shall supply and install in co-ordination with Track Contractor for track circuit bonding cables & point machine connections with track.	Shall co-ordinate with Signalling Contractor for track circuit bonding cables & point machine connections with track.
10.	Installation of points operation mechanism	Shall check the proper gauge, housing of point & operating of switches and all other items necessary from signalling point of view, Signalling Contractor shall make necessary adjustments to points operating mechanism as required by Track Contractor at the time of track parameters correction.	Shall provide proper gauge, clearances of points & opening of switches and carry out all other works as required to make the point suitable for installation of point machine by Signalling Contractor.
11.	Testing of points and crossings	Jointly test with Track Contractor during installation and while commissioning of points	Jointly test the points with Signalling Contractor during installation and commissioning of

3. INTERFACES

Sl. No.	Subject	Signalling Contractor	Track Contractor
		machines & during integrated testing & commissioning.	points machines & during integrated testing & commissioning and rectify all defects pertaining to track, if any, identified during the testing & commissioning of points.
13	Buffer Stop Signals	Shall co-ordinate with Track Contractors for installation of Buffer Stop Signals.	Install the buffer stops at terminal stations and other locations in co-ordination with Signalling Contractor

3.1.4b Interface specification: Track work installation Contractor Vs Telecom Contractor

Sl. No.	Subject	Telecom Contractor	Track Contractor
1.	Track X-ings of Cables.	Shall interface with Track Works Contractor to have provisions of Track crossing for Cables. Shall require to provide the required material and locations to Track Contractor for installation before the track concreting.	Shall provide provisions in the track plinth on ballast less track, by providing pipes, supplied by Telecom contractor.
2.	Installation of Track Side equipments (Radio Masts)	Shall too ensure SOD provisions for Telecom equipments. All mechanical fixtures, fitting arrangement etc. for track side equipment shall be provisioned by Telecom Contractor	Shall share schedule of dimensions for trackside equipment with Telecom Contractor

3.1.5 Interface specification: Track work installation Contractor Vs; Rolling Stock Contractor

Sl. No	Item	Rolling Stock Contractor Responsibility	Track Contractor Responsibility
1	Track parameters related with wheel profile i.e. check rail, wing rail clearances etc.	Shall provide wheel profile details	Shall consider wheel profile details for working out related track parameter details
2.	Structure gauge	Shall provide kinematic envelope	Take into account for checking the infringement at construction stages

3. INTERFACES

3.	Buffer stops	Shall provide details of Rolling Stock	Shall consider these details for supply and installation of buffer stops .
4.	Integrated testing & commissioning	Shall provide results of test runs including those pertaining to track conditions.	Shall associate during integrated testing & commissioning and carryout necessary rectification of track.
5.	Simulation studies	Shall carry out simulation studies & provide results with respect to attainable speed along the alignment.	The values of cant to be provided on every curve shall be fine tuned based on the attainable speeds. The Track Contractor shall provide the cant accordingly during construction stage.
6	Track alignment drawings	Rolling Stock(RS)Contractor shall use the information for his design and train running simulation	Track Contractor shall provide the RS Contractor with the detailed track alignment drawings
7	Gauge widening	RS Contractor shall provide necessary information of gauge widening to track contractor.	The Track works Contractor shall liaise with RS Contractor for the requirement and extent of Gauge widening on sharp curves.
8	Flange way clearances	RS Contractor shall provide necessary information	The Track works Contractor shall liaise with RS Contractor for determining the requirement (including the required flange way clearances) for the provision of check / restraining rails, if considered, on sharp curves .
9	Neutral sections	Shall provide the location and installation arrangement i.e. design & drawing of track side equipments and Shall supply trackside equipment to TRW Contractor for installation.	Shall cooperate with RS contractor to finalize installation arrangement/method of trackside equipment.
10	Design of track vertical and horizontal curves in depot and mainline	Shall provide any specific requirements on radius of curve/tangent portion for smooth negotiation of curve by train without causing damaged to Gangway and Coupler.	Track works Contractor shall liaise with the Rolling Stock Contractor and design accordingly.

3. INTERFACES

3.1.6 Interface with Turnout Contractor:

- This contract include design of turnout plinth/turnout slab as per the fastening decided. The complete responsibility of designing and checking the design lies with the linking contractor. However, the plinth design will also be validated by turnout contractor.
- Designing of fastening system for the turnout will be done by turnout contractor. Turn out supplier will supply turnout fastenings and Crossing fastenings. Fastenings of lead portion in turn outs will be supplied by NMRCL. However, Turn out fastenings will be validated by track contractor..
- If minor corrections are involved after the completion of concreting work of rail plinth, the same shall be carried out by track contractor under the supervision of turnout contractor's representative.

Method statement for assembly and laying turnout on track slab shall be submitted by the turnout contractor to Track linking contractor, NMRCL and executing agency etc. Track linking contractor will verify the method of statement and carry out the work as per interface between linking contractor and turnout contractor.

Note: Above interface requirements are just indicative and not comprehensive. The contractors should follow the best practices of metro for the interface/integration during project execution.

Chapter 10- PROJECT MANAGEMENT INFORMATION SYSTEM (PMIS)

10. PROJECT MANAGEMENT INFORMATION SYSTEM (PMIS)

The Contractor shall devise and utilize a PMIS such that all documents generated by the Contractor can be transmitted to the Engineer by electronic means (and vice versa) and that all documents generated by either party are electronically captured at the point of origin and can be reproduced later, electronically and in hard copy. A similar link shall also be provided between the Engineer office at site and the Employer's Office by the Contractor. 5D BIM Platform shall be invariably used by the Contractor for PMIS.

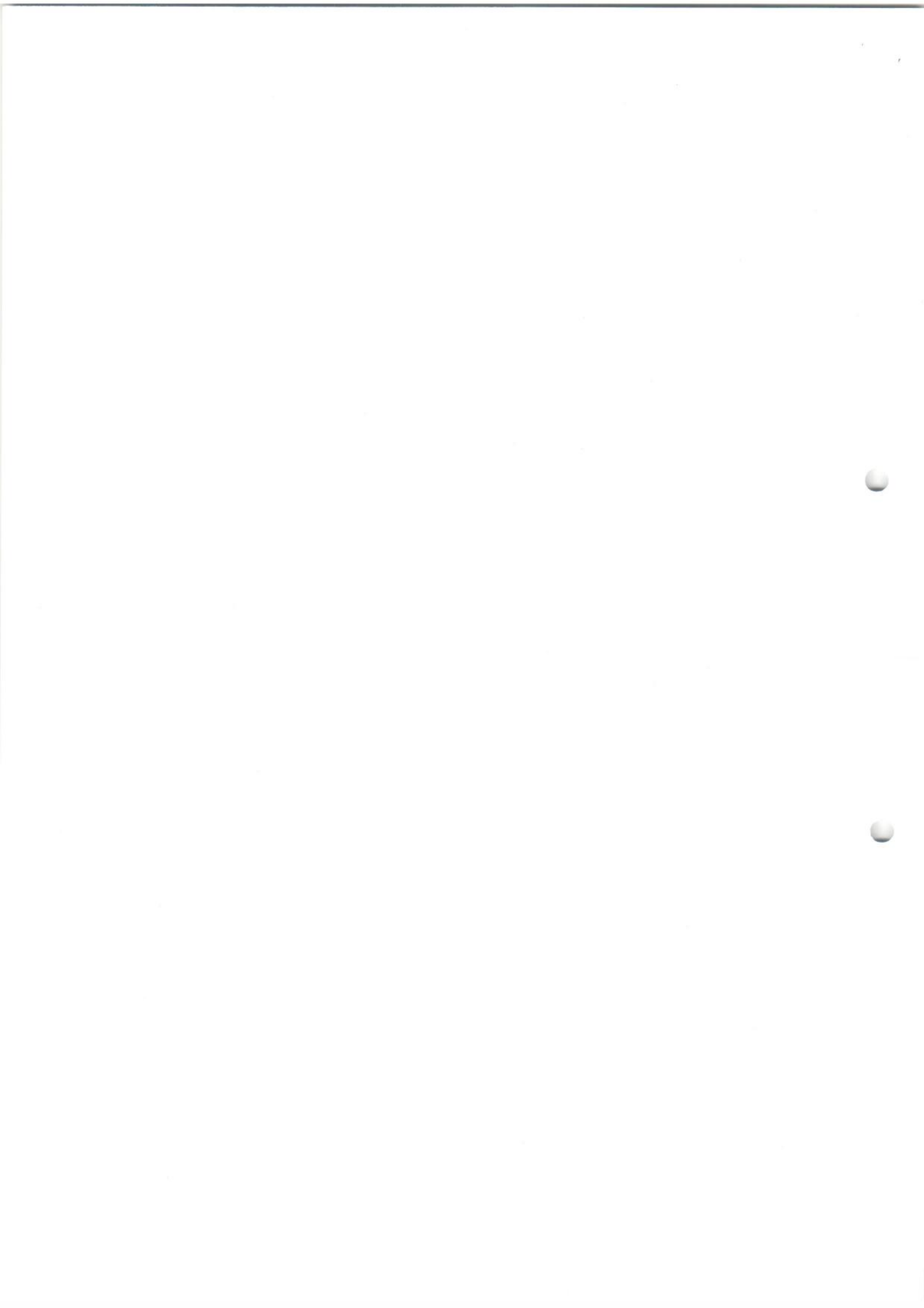
10.1 IT Requirement of Employer

10.1.1 Employer is in the process of implementing an Enterprise wide cloud based IT system project titled "Integrated Project Management Platform". The objective of the IT project is to develop a working environment that enables higher efficiency and effectiveness, not only in internal functions, but also across the entire ecosystem of the Employer including Contractors. The IT project envisaged following application stack:

- (a) Scheduling services (using Oracle Primavera P6 Enterprise Project Portfolio Management (EPPM) or equivalent)
- (b) Collaborative document control and management services (using Bentley Project Wise and AssetWise solution or equivalent)
- (c) Progress and performance reporting (using RIB iTWO 5D BIM solution or equivalent)
- (d) Enterprise wide ERP implementation

10.1.2 The proposed IT system has been conceptualized for facilitating preservation of important artifacts (plans, drawings, notes, documents, reports etc.) in a secure and manageable environment in digitized format. Appropriate triggers shall generate dashboards and management reports every time an event causes a substantial shift in the project risk or a deviation in processes is developed. The envisaged system would expedite decision-making, ensure better planning and coordination between different functions, better data management, effective reporting, knowledge management etc. Program management shall provide senior management with critical information related to various contracts, activities and funds in the form of management dashboards with inbuilt triggers to ensure timely decision-making.

10.1.3 The effective use of such IT platform requires availability of front end of web-based system at all requisite locations i.e. with Employers' various offices, Engineer's offices, Contractors' end, major sub-contractors' end, design consultant ends etc. with certain definite users' rights. Data uploading by various authorized and trained users is key to effective implementation of the IT system. Employer has recognized this aspect, and the Contractors are required to consider in their proposal the cost of software licenses (payable to NMRCL) and IT staff for data uploading as under:



Contract value		User licenses (below or equivalent software packages)				IT staff
		P6	SAP ERP	Bentley ProjectWise & AssetWise	RIB iTWO 5D BIM	
1	Rs 25 to Rs 50 crore	1	1	5	5	3 (three)
2	Rs 50 crore to Rs 100 crore	1	3	5	5	3 (three)
3	Rs 100 crore to Rs 250 crore	3	5	8	8	6 (six)
4	Rs 250 crore to Rs 400 crore	3	8	8	10	6 (six)
5	Rs 400 crore and above	3	10	10	10	6 (six)

10.1.4 In view of the above, the Contractor shall be required to:

- (a) Follow and comply the system guidelines to be issued by Employer
- (b) Comply all the software system competency requirement by taking training from Employer's Training Academy.
- (c) Upload / definition of Project Plans as per the template and using software defined by the Employer;
- (d) Maintenance and updating of uploaded Project Plans in software used by the Employer;
- (e) Upload of drawings / designs created by the Contractor as per the classification and on the software platform defined by the Employer;
- (f) Key contract related communication and progress related data as per processes defined on the software platform deployed by the Employer
- (g) Asset details need to be updated in the system in the format prescribed by the Employer;

10.1.5 Employer, his IT Project Team and IT Implementation Agency shall render necessary assistance (including providing trained IT staff with requisite skills at Contractor's cost) and handhold the Contractor for usage of the IT system.

10.2 CONTRACTOR'S PROJECT ORGANISATION

- (1) The Contractor shall have a competent team of Managers, Engineers, Technical staff etc so as to complete the work satisfactory as per various requirements of the contract.
- (2) A control room with round the clock radio communication or telephone switch board links with all safety offices, works sites, site offices, batching plants, casting yards, workshops, fabrication yard, off site offices, Engineers site office, Resident Engineer's office, testing labs etc shall be maintained and manned round the clock. Residences of all senior project team members shall also be linked with the control room. Vehicles for emergency use should be on stand-by at the control room around the clock.
- (3) The designations of the various project organizations team members shall be got approved by the Engineer before adoption so as to avoid any duplication of the designations with those of the Employer or the Engineer.

10.3 TECHNOLOGY TRANSFER

(1) The Contractor shall ensure that all local contractors and sub-contractors engaged in the works are given training, guidance and the necessary opportunity for transfer of technology in various areas

of construction such as instrumentation, safety, quality assurance, viaduct etc.

10.4 MAINTENANCE REPORT

(1) The Maintenance Report shall be submitted as part of the Definitive Design and shall include full details of the long term inspection and maintenance operations for each major component of viaduct.

(2) Deleted

(3) For each area an inspection checklist shall be supplied giving inspection frequency, items to be inspected, criteria for acceptance, criteria for remedial works and details of the remedial works, including proposed materials and method statements. The recommended regular maintenance regime of each area shall also be given including cleaning methods and frequency for different

Surfaces; removal of leakage borne salts from concrete surfaces; cleaning of drainage channels, sumps and pipes; repainting of metallic items;

(4) A long term monitoring regime shall also be included covering items such as

- Viaduct
- Differential movement at viaduct / station junctions or other areas identified in the design.
- Loss of prestress in the girders with passage of time.

(5) All instruments necessary to carry out the inspections and monitoring that are identified in the report shall be provided by the Contractor within the lump sum tender price.


G.M. (Account)

-End of the chapter-

