Corrigendum-V

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
1	Part-1	Section II: Bid Data Sheet	ITB 19.3 (a), (g)	(a) Bid security shall be preferably in form of Unconditional guarantee issued by any Nationalized or Scheduled Commercial Bank (Except Co-Operative Bank) of Indian origin or Scheduled commercial foreign bank having business office in India. The Bid Security Bank Guarantee shall be as per Format provided in the Bidding Documents. (Section-IV: Bidding Forms) (g) The cash component of Bid Security (if any) shall be paid through the provision made on E-Tender portal itself via RTGS/ NEFT/ Credit Card (Not preferred in this tender).	(a) The bid security shall be, at the Bidder's option, in any of the following forms: i. Unconditional guarantee issued by any Nationalized or Scheduled Commercial Bank (Except Co-Operative Bank) of Indian origin or Scheduled commercial foreign bank having business office in India. The Bid Security Bank Guarantee shall be as per Format provided in the Bidding Documents. (Section-4: Bidding Forms), or ii. Cash through the provision made on E-Tender portal itself via RTGS/ NEFT/ Credit Card g) deleted.
2	Part-1	Section II: Bid Data Sheet	ITB 38.4 (b)	If bidder's quoted price is lower than the 90% of the Bid Capacity of the proposed work, Additional Bank Guarantee (APG) at the rate of 10% of the difference of the lowest allowable limit of quoting and quoted price by the bidders is to be furnished along with the normal performance bank guarantee (PBG). Additional Performance Guarantee (APG) shall be calculated as under:- A=Bid Capacity of the work;	If bidder's quoted price is lower than the 90% of the **Required** Bid Capacity of the proposed work **(as per section-III, EQC 2.3.1(a))**, Additional Bank Guarantee (APG) at the rate of 10% of the difference of the lowest allowable limit of quoting and quoted price by the bidders is to be furnished along with the normal performance bank guarantee (PBG). Additional Performance Guarantee (APG) shall be calculated as under:- A=**Required Bid Capacity of the proposed work (as per section-III, EQC 2.3.1(a))**;
3	Part-1	Section-III: Evaluation and Qualification Criteria	2.4.1	Contracts of Similar Size and Nature	The clause of 2.4.1 Contracts of Similar Size and Nature is replaced with 'Appendix-8 to Corrigendum-V'.
4	Part-1	Section-IV: Bidding Forms	New Forms: TP.10, MahaMetro-19, 20 & 21	New forms added	TP.10: Bidder's Technical Submissions MahaMetro-19: Schedule of Subcontractors MahaMetro-20: Proposals for Equipment / Systems MahaMetro-21: Subcontractor Undertaking The above forms are attached as 'Appendix-1 to Corrigendum-V'
5	Part-1	Section IV Bidding Forms	MahaMetro-4: Form of Joint Bidding Agreement	MahaMetro-4: Form of Joint Bidding Agreement	Revised 'Form of Joint Bidding Agreement' is attached as 'Appendix-2 to Corrigendum-V' replacing the existing form in tender document.
6	Part-1	Section IV Bidding Forms	Form EXP - 1	The exchange rate to be used to calculate the value of the contract for conversion to a specific currency shall be the selling rate of the Borrower's Central bank on the date of the contract.	The exchange rate to be used to calculate the value of the contract for conversion to a specific currency shall be the selling rate of the **Reserve Bank of India (RBI)** on the date of the contract.
7	Part-2	Section VI-A General Specification	Appendix 9, Clause 9.1(b)	An area in Range Hill / Vanaz Depot or some other suitable site shall be provided free of charge for setting up of Contractor's Site Office.	deleted.
8	Part-2	Section VI-B Particular Specification	New clause 3.1.13	New Clause added	3.1.13 All issues regarding ROW, liasioning works & clearances from Govt. authorities is in the scope of contractor. The acquisition related expenses will be borne by employer. Fees/charges deposited by the Contractor for ROW shall be reimbursed by MAHA-METRO on submission of documentary evidence of payment. However ulility shifting, restoration works, site works etc is under the scope of Contractor, the price for which shall be included in the Price Schedule.
9	Part-2	Section VI-B Particular Specification	Clause 3.2.1.6.2	For accomdation of PLCC & C&R panel, Control room extension is required with shifting of 11kV panel.	For accomdation of PLCC & C&R panel, Control room extension to be required with dismantling of existing wall.
10	Part-2	Section VI-B Particular Specification	Cl 3.2.1.7.1	Supply: installation and putting into operation of Digital Protection Equipment! Bay Controllers for 132kV, Work stations and'PC's and linking with the HV equipments in the yard.	Supply, installation and putting into operation of Digital Protection Equipment, Bay Controllers for 132kV Equipment, Line differential protection for 132kV cable between GSS & RSS with necessary FO cables, LIU, ethernet switches.
11	Part-2	Section VI-B Particular Specification	New Clause 5.2.2.1	One Energy meter (ABT) is required to be provided, which shall be able to indicate/record/store the total energy of the incoming feeder, through suitable arrangement and connections.	Energy meters (ABT/Summation) are required to be provided as per MSETCL & MSEDCL requirement, which shall be able to indicate/record/store the total energy of the incoming feeder, through suitable arrangement and connections.
12	Part-2	Section VI-B Particular Specification	New Clause 5.3.2.2.6	Each Bus VT Module for protection consisting of (a) Voltage Transformer – 4 nos, (b) Bus Earthing Switch	Each Bus VT Module for protection & **Metering** consisting of (a) Voltage Transformer – 4 nos, (b) Bus Earthing Switch

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
13	Part-2	Section VI-B Particular Specification	New Clauses	New Clauses added	5.3.2.2.9.1 SF6 gas service carts: The service cart shall be for liquid storage equipped with the well-proven components for the recovery, filling and purification of SF6 gas as well as the evacuation of air and venting of gas compartments. 15 m3/h delivery rate of compressor for recovery of SF6 to atmospheric pressure. 15 m3/h delivery rate of vacuum compressor/ suction pump for recovery of SF6 from atmospheric pressure to less than 1 mbar with zero emissions. 63 m3/h delivery rate of vacuum pump for evacuation of air to achieve final vacuum < 1mbar. The performance of the service cart for SF6 gas handling must be certified by internationally reputed third party agency for a Gas Compartment of pressure: 6bar (abs) & storage tank containing 17.5 kgs of SF6 gas and having a Final recovery Vacuum: 1mbar (using DN20 hoses) should be as follows: - Recovery time: 60 mins Evacuation time: 15 mins Filling time: 10 mins
14	Part-2	Section VI-B Particular Specification	New Clauses	New Clauses added	5.3.2.2.9.2 SF6 gas multi-analyzer: The SF6 gas analyzer should be of portable type and Sensitivity of the equipment shall not be affected by any atmospheric conditions like dust, humidity, heat, wind etc. Equipment shall work on zero gas loss principle i.e. gas should be pumped back to the compartment after measurement without any exposure to the atmosphere. Either manufacture or its partner have the calibration facility in India & lead time of calibration shall not exceed more than 2 weeks. Following acidic/impurities products should be detected as per IEC 60480 and IEC 60376: a. SF6/CF4 purity – Range: 0-100 vol.% & Accuracy: +/- 0.5 vol.% b. Dew point - Range: -60 to +20 deg C & Accuracy: ±2 °C (to > -40 °C) ±3 °C (to < -40 °C) c. SO2 - Range: 0-500 ppm & Accuracy: +/- 2 % of measuring range d. HF – Range: 0 – 10 ppm & accuracy : < +/- 10 % of measuring range e. Instrument should work on AC source as well as on rechargeable battery (Lithium-ion) f. It should be housed in a robust IP65(Closed) & IP20 (open) case with wheels. 5.3.2.2.9.3 SF6 gas leak detector: The portable detector shall be based on Non-dispersive Infrared technology (NDIR), battery-operated, hand-held type (only hand-gun and no additional console) and having a minimum SF6 gas leakage sensitivity of 3 gm/year. The weight of the detector shall not exceed more than 2 kgs for better ergonomic working. The test kit shall be compatible for EMI/EMC environment as per IEC 1000. 5.3.2.2.9.4 Portable SF6 gas refilling device : Portable in a transport case with rubber hose, couplings DN8 and DN20, pressure range 0 up to 10 bar. 5.3.2.2.9.5 SF6 gas adapter kit in a portable plastic case adapters connections for SF6 switchgear used all over the world such us DN6, DN7, DN8, DN12 and DN20.
15	Part-2	Section VI-B Particular Specification	Clause 5.3.3.2.2 & 7.3.6.2.2	New Para added to the end	The Materials used in Transformer shall be fire retardant & shall comply all related tests of UL 94V0, UL94HB, IEC 60695-2-10, IEC 60695-11-5, ASTM E1354, ASTM D635, ASTM D3151 etc.
16	Part-2	Section VI-B Particular Specification	New Clause 5.3.3.2.6.8	New Clause added	Dry Type Transformer to be designed with immunity against switching surges. Also, the requirement of RC snubber circuit/ surge arresters mentioned in above clauses to be adopted only upto proven necessity by detailed designing.
17	Part-2	Section VI-B Particular Specification	Clause 5.3.4.3.5 (vii) & Clause 7.3.2.3 (vii)	GIS should be of modular design, and it should be possible to add feeder panels if required without any gas work at site.	GIS should be of modular design, and it should be possible to add feeder panels if required, preferably without gas handling at site.
18	Part-2	Section VI-B Particular Specification	New Clause 5.3.4.3.17.7	New Clause added	In every panel, each Circuit breaker & busbar to be compartmentalized individually & gas pressure monitoring device to be provided for each compartment installed at the front of the panel in order to supervise the SF6 Gas Pressure.
19	Part-2	Section VI-B Particular Specification	Clause 5.3.4.3.19 & Clause 7.3.2.5.3	The bus bar system shall be compartmentalized for each panel. Each SF6 gas chamber shall have individual gas pressure monitoring system. The gas compartment shall be prefilled with SF6 gas at factory end.	The bus bar system shall be compartmentalized. Each SF6 gas chamber shall have individual gas pressure monitoring system. The gas compartment shall be preferably prefilled with SF6 gas at factory end.
20	Part-2	Section VI-B Particular Specification	Clause 5.3.4.3.23 & Clause 7.3.2.12	Cable connection shall be bottom/top entry as per the site arrangement. Cable termination shall be inner cone/outer cone plug in type. Suitable cover should be provided at the cable entery location of the GIS panel to avoid unintentional contact of the live parts by rodents etc. Contractor shall obtain approval from the employer for the above scheme.	Cable connection shall be bottom/top entry as per the site arrangement. Cable termination shall be preferably inner cone type. Suitable cover should be provided at the cable entry location of the GIS panel to avoid unintentional contact of the live parts by rodents etc. Contractor shall obtain approval from the employer for the above scheme.
21	Part-2	Section VI-B Particular Specification	Clause 5.3.4.3.24.1 & Clause 7.3.2.13.1	All fixed and moving portions of the switchgear shall be provided with facilities to enable high voltage tests to be carried out. The PT shall be provided with isolation links/switches for enabling the high voltage / IR tests to be carried out. These facilities shall be such that wires and connections need not be disconnected for the tests to be made.	All fixed and moving portions of the switchgear shall be provided with facilities to enable high voltage tests to be carried out. The PT shall be provided with isolation links/switches for enabling the high voltage / IR tests to be carried out.

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
22	Part-2	Section VI-B Particular Specification	Clause 5.4.1.6.2.7	Major characteristics are described in the annexed technical sheet. The chargers shall be thyristors regulated type, wired as Graetz Bridge, full wave full controlled of 12 pulse with DSP controller may be prefered.	Major characteristics of charger are described as below: a) The chargers shall be IGBT regulated type with DSP controller & efficiency between 93% to 95% from half-load to full load. b) Topology - Active Front-End Converter with IGBT based Full Bridge Rectifier to feed DC-DC Converter with High Frequency Galvanic Isolation between Input and Output controlled by Digital Signal Processor unit. c) Dual FCBC + Standby FCBC – double battery for RSS. d) Power factor: >0.98 at full load. e) Efficiency: ≥93% at full load at rated voltage and current f) Input current THD: ≤8% as per IEEE-519 standard g) Input Current Waveform: Sinusoidal h) Regenerative Discharging: Battery can be discharged through the charger to the AC Input Grid.
23	Part-2	Section VI-B Particular Specification	Clause 5.4.1.6.2.8	The residual ripple ratio shall be as low as possible (less than 3%) so as not to disturb the various operating circuits.	The residual ripple ratio shall be as low as possible (less than 2%) so as not to disturb the various operating circuits.
24	Part-2	Section VI-B Particular Specification	Clause 6.2.4.1 (g)	All interconnecting power cables, including 25kV cables from RSS exit point upto the Interrupter/isolator located on the guideway, for feeding the OHE	deleted
25	Part-2	Section VI-B Particular Specification	Clause 7.3.2.2	Busbar set rated current: 400 A Rated current of feeders: 400 A Rated current of transformer feeders: 400 A	Busbar set rated current: 1250 A Rated current of feeders: 1250 A Rated current of transformer feeders: 1250 A
26	Part-2	Section VI-B Particular Specification	New Clause 7.3.2.6.7	New Clause added	In every panel, each Circuit breaker & busbar to be compartmentalized Individually & gas pressure monitoring device to be provided for each compartment installed at the front of the panel in order to supervise the SF6 Gas Pressure.
27	Part-2	Section VI-B Particular Specification	Clause 7.3.6.1	additional para added as 5th para	The requirement of RC snubber circuit/ surge arresters mentioned in above clauses to be adopted only upto proven necessity by detailed designing.
28	Part-2	Section VI-B Particular Specification	Clause 7.3.13.2.15	The chargers shall be thyristors regulated type, wired as Graetz Bridge, full wave full controlled of 12 pulse with DSP controller may be prefered.	Major characteristics of charger are described as below: a) The chargers shall be IGBT regulated type with DSP controller & efficiency between 93% to 95% from half-load to full load. b) Topology - Active Front-End Converter with IGBT based Full Bridge Rectifier to feed DC-DC Converter with High Frequency Galvanic Isolation between Input and Output controlled by Digital Signal Processor unit. c) Dual FCBC (Main & Standby) single battery for ASS. d) Power factor: >0.98 at full load. e) Efficiency: ≥93% at full load at rated voltage and current f) Input current THD: ≤8% as per IEEE-519 standard g) Input Current Waveform: Sinusoidal h) Regenerative Discharging: Battery can be discharged through the charger to the AC Input Grid.
29	Part-2	Section VI-B Particular Specification	New Clause 7.4.4	New Clause added	**Juntion box for Viaduct Lighting & Power Socket:** Juntion boxes shall be installed along the viaduct & shall be fixed on parapet wall with GI mounting brackets. The junction boxes should be manufactured with IEC 60-670-22, UL 746A certified polycorbonate. The junction box shall fulfill the following standards: Weatherproof : UV resistant due to solar radiation, Rainwater proof, temperature resistant. IEC 60670-22 : Particular requirements for connecting boxes and enclosures. IEC 60695-2-11 : Flame – retardant & Self-extinguishing. Glow Wire tested at minimum 960 deg C. Flammability rating according to UL94-V0. Degree Of Protection – IP 66 (EN60529) Pin type termination to be avoided & suitable JB's to be designed with considering the vibrations in the viaduct.

MAHARASHTRA METRO RAIL CORPORATION LIMITED * NAGPUR METRO

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
30	Part-2	Section VI-B Particular Specification	Clause 7.6.7	All Compensator Panel connected in ASS should operate taking command from the master panel which will be connected at the Depot/RSS/TSS (as the case may be). For each Compensator Panels installed in the ASS the local CT feedback should be taken from the LT side of both ASS Transformers at 415V. Additionally, 33 kV breaker status for 2 incoming breakers and 2 outgoing breakers for Circuit-1 (33 kV CKT-1) and Circuit -2 (33 kV CKT-2) in each ASS shall be taken from potential free contacts available in 33 kV switchboard of Station ASS to the slave compensator panels through suitable cables so that Compensator Panel should work smoothly in case of feeder extension or regular RSS is stopped etc. If any required modification is required same shall be in scope of this contractor.	All Compensator Panel connected in ASS should operate taking command from the master panel which will be connected at the Depot/RSS/TSS (as the case may be). For each Compensator Panels installed in the ASS the local CT feedback should be taken from the LT side of both ASS Transformers at 415V. Breaker status of all 33kV breakers will be provided from OCC. Compensator panel should take this status feedback and ensure smooth working of panels in case of feeder extension or regular RSS is stopped.
31	Part-2	Section VI-B Particular Specification	Clause 7.6.18.2 (11th point)	It should be able to work at its rated capacity under ambient temperature of 50 deg C.	It should be able to work at its rated capacity under ambient temperature of 48 deg C.
32	Part-2	Section VI-B Particular Specification	Clause 7.6.19	New Clause added	The Active compensator panel shall have L-C-L input filter configuration for ripple free operation and shall use DC film type capacitors in DC link for long life of panel. The compesator shall have the following features: 1. No ripple with L-C-L Input filter 2. Film type Capacitors 3. 3-Level configuration
33	Part-2	Section VI-B Particular Specification	Clause 8.7 (Last Para)	Two such Container type compact substation to be provided (Part-4, APPENDIX O: ADJ SN.31).	Two such Container type compact substation to be provided (Part-4, APPENDIX O: ADJ SN.**48**).
34	Part-2	Section VI-B Particular Specification	New Cl.ause 11.5.7	New Clause added	This should have the facility to monitor the parameters of metro rail permanent infrastructure.
35	Part-2	Section VI-B Particular Specification	Clause 16.1.2.2, 16.1.2.3 & 16.1.2.4	16.1.2.2 Maha Metro has 622 square meters of commercial area at Jaiprakash Nagar Metro Station available for use as the Site Office. The Contractor shall suitably develop the 250 sqmm of office space from allotted open space at Concourse Level-02 (E) to make it usable as the site office as specified under this Chapter including but not limited to Civil, Plumbing, electrical works etc. 16.1.2.3 A monthly rent and maintenance charges of Rs. 520/Sqm. and Rs. 60/Sqm. respectively per month (exclu. GST), and electrical facilitation charges according to MahaMetro Policy will be charged to the Contractor. 16.1.2.4 If, for any reason, Maha Metro cannot provide the designated space to the contractor or if contractor arranges similar facility as per tender requirement near their work front for ease of site work monitoring and material storage, the contractor shall have the option to find an alternative suitable space for the Site office, subject to specific approval from Maha Metro. In that case, Maha Metro shall recover the difference between the actual rent paid by the Contractor and the rate proposed by Maha Metro, (i.e., Rs. 520/Sqm + Rs. 60/Sqm) per month (+GST), from any payment due to the contractor if the rate of alternative space is lesser than the rate of Maha Metro's proposed space.	Deleted.
36	Part-2	Section-VI-B, Appendix VI-B3 Data Sheet	Index	3.1) 315kVA Auxiliary Transformer for RSS Auxiliary Power Supply 11.1) Station Auxiliary Transformer 250kVA	3.1) 315 kVA Auxiliary Transformer for **ASS** Auxiliary Power Supply 11.1) Station Auxiliary Transformer **315kVA**
37	Part-2	Section-VI-B, Appendix VI-B3 Data Sheet	Clause 8.8	Cubicle rated current: 400 A Busbar set rated current: 400 A	Cubicle rated current: 1250 A Busbar set rated current: 1250 A
38	Part-2	Section VI-B, Appendix VI-B3 Data Sheet:	Table 12.2	110V DC Battery Charger	The Clause 12.2 is replaced with 'Appendix-9 to Corrigendum-V'.
39	Part-2	Section-VI-B, Appendix VI-B3 Data Sheet	New GTP's Clause 13.1, 13.2 & 13.3	Additional GTP added	The following GTP are attached as 'Appendix-3 to Corrigendum-V' 13.1 1600kVA, 33/0.415kV Dry Type Transformer GTP 13.2 1000kVA, 33/0.415kV Dry Type Transformer GTP 13.3 250kVA, 33/0.415kV Dry Type Transformer GTP
40	Part-2	Section-VI-B, Appendix VI-B4: Test Sheets	Table 1.11 New Table 1.17	1.11 Battery Charger & New Table 1.17 Dynamic Compensator	The revised table 1.11. New Table 1.17 Dynamic Compensator are added as 'Appendix-10 to Corrigendum-V'.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
41	Part-2	Section VI-B, Appendix VI-B13	Item No.12 Power & Distribution Transformer Testing Kit/Automatic Winding analyzer kit	Make/Model: 1. HAEFELY WA2293 2. Megger TTRU3 Or Equivalent	Make/Model: 1. HAEFELY WA2293 2. Megger **TAU3** Or Equivalent
42	Part-2	Section VI-B, New Appendix VI-B14	New Appendix VI-B14	New Appendix added	Details of Operator Training Simulator (OTS) is attched as 'Appendix-4 to Corrigendum-V'
43	Part-2	Section VI-C Tender Drawings	Tender drawing - 132 kV GIS for Maha Metro	Tender drawing - 132 kV GIS for Maha Metro	Tender drawing '132 kV GIS for Maha Metro' is replaced with revised Tender drawing '132 kV GIS for Maha Metro_Revised' attached as 'Appendix-6 to Corrigendum-V'.
44	Part-2	Section VI-C Tender Drawings	New Tender drawing Attachments	Additional Tender drawing added	The following Tender Drawing are attached as 'Appendix-5 to Corrigendum-V' including: i) Existing 33kV ASS panels details ii) RSS SLD, 33kV cable GTP. iii) Sketch showing the interconnectivity between MSETCL GSS, LILO GIS, Metro RSS & OH/UG Cable. iv) Typical Ph-2 station drawings (Atgrade ECO park & Elevated Kheiri Fata stations) v) Existing Mihan & Hingna depot LOP vi) Kanhan existing GSS SLD. vii) Ph-2 Tentative GAD
45		Section VIII Particular Conditions of Contract (PC)	New Clause 1.1.20	New Clause added	Cost plus Profit where the Contract allows for Cost Plus Profit, percentage profit to be added to the Cost 0%.
46	Part-3	Section VIII Particular Conditions of Contract (PC) Part A – Contract Data	Clause 1.1.27	24 Months from the date of Commissioning of assets for public uses. (CMRS sanctioned)	24 Months from the date of Commissioning of assets for public uses. (CMRS sanctioned **date**). **DLP start and completion will be considered section wise.**
47	Part-3	Section VIII Particular Conditions of Contract (PC) Part A – Contract Data	Clause 8.10	'The Contractor shall not be entitled to extra cost (if any), a. provided for in the Contract, or b. necessary for proper execution of Works or by reasons of weather condition (as described in sub clause 8.5.1 para 2 c) or by some default on the part of the Contractor, or c. necessary for the safety of Works or any part thereof or d. necessary for the safety of adjoining public or other property or safety of the public or workmen or those who have to be at the site or e. to ensure safety and to avoid disruption of traffic and utilities, as also to permit fast repairs and restoration of any damaged utilities.'	Deleted

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

<table>
<tr><th>SN</th><th>Part No.</th><th>Section</th><th>Clasue ref.</th><th>Existing Clause</th><th>Replaced with</th></tr>
<tr><td>48</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Clause 13.4</td><td>Replace the Sub-Clause 13.4 of GCC with the following:

Provisional Sums:
Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts for the work, supplies or services to which the Provisional Sum relates, as the Engineer shall have instructed.
For each Provisional Sum, the Engineer may instruct:
(a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor, and for which adjustments to the Contract Price and the Schedule of Payments (if any) shall be agreed or determined under Sub-Clause 13.3.1 [Variation by Instruction]; and/or (b) Plant, Materials, works or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Sub-Clause 4.5 [Nominated Subcontractors]) or otherwise, and for which there shall be included in the Contract Price:
(i) the actual amounts paid (or due to be paid) by the Contractor; and
(ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the applicable Schedule. If there is no such rate, the percentage rate stated in the Contract Data shall be applied.
If the Engineer instructs the Contractor under sub-paragraph (a) and/or (b) above, this instruction may include a requirement for the Contractor to submit quotations from the Contractor's suppliers and/or subcontractors for all (or some) of the items of the work to be executed or Plant, Materials, works or services to be purchased. Thereafter, the Engineer may respond by giving a Notice either instructing the Contractor to accept one of these quotations (but such an instruction shall not be taken as an instruction under Sub-Clause 4.5 [Nominated Subcontractors]) or revoking the instruction. If the Engineer does not so respond within 7 days of receiving the quotations, the Contractor shall be entitled to accept any of these quotations at the Contractor's discretion.</td><td>Deleted</td></tr>
<tr><td>49</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Table - 14.: Minimum List of Spares & tools & Testing Equipments</td><td>New Point added at the end</td><td><table><tr><th>SN</th><th>Description</th><th>Unit</th><th>Quantity</th></tr><tr><td>G</td><td>Dynamic power factor & harmonic compensators</td><td>Lot</td><td>As per OEM recommendation & jointly approved by Employer's</td></tr></table></td></tr>
<tr><td>50</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Clause 19.2.1</td><td>New para added</td><td>additional para added to existing clause:
(d) CAR Policy sum insured will be proportionately reduced for the sections completing the period of 3 months after expiring defect liability period.</td></tr>
<tr><td>51</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Clause 22.10</td><td>a) Inadequate deployment of SHE personnel will attract penalty as described under Note 3 of Milestone A1 under Cost Center A .....
b) Inadequate deployment of resources for BIM/ERP will attract penalty as described under Note 3 of Milestone A2 under Cost Center A .....</td><td>a) Inadequate deployment of SHE personnel will attract penalty as described under Note 2 of Milestone A1 under Cost Center A .....
b) Inadequate deployment of resources for BIM/ERP will attract penalty as described under Note 1 of Milestone A2 under Cost Center A .....</td></tr>
<tr><td>52</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Clause 22.11
(After clause 22.8)

(Clause Number Correction)</td><td>Clause 22.11:
Limit of Aggregate Damages on Employer</td><td>Clause 22.9:
Limit of Aggregate Damages on Employer</td></tr>
<tr><td>53</td><td>Part-3</td><td>Section VIII
Particular Conditions of Contract (PC)
Part B – Special Provisions</td><td>Annexure VIII-C Key Dates / Mile Stone</td><td><table><tr><th>Key Dates</th><th>Description</th><th>R4A</th></tr><tr><td>KD-9</td><td>Commissioning of ASSs</td><td>119</td></tr><tr><td>KD-10</td><td>Commissioning of SCADA system</td><td>123</td></tr><tr><td>KD-11</td><td>Completion of Acceptance Test after integrated testing with SCADA system</td><td>125</td></tr><tr><td>KD-12</td><td>Taking Over of the System</td><td>129</td></tr></table></td><td><table><tr><th>Key Dates</th><th>Description</th><th>R4A</th></tr><tr><td>KD-9</td><td>Commissioning of ASSs</td><td>130</td></tr><tr><td>KD-10</td><td>Commissioning of SCADA system</td><td>133</td></tr><tr><td>KD-11</td><td>Completion of Acceptance Test after integrated testing with SCADA system</td><td>135</td></tr><tr><td>KD-12</td><td>Taking Over of the System</td><td>139</td></tr></table></td></tr>
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MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Part No.	Section	Clasue ref.	Existing Clause	Replaced with
54	Part-3	Section VIII Particular Conditions of Contract (PC) Part B – Special Provisions	Annecure VIII-E Clause 1.2	Price Variation in 132kV & 33kV cables It shall be governed by the Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). It shall be applicable on "Supply of Cables".	Price Variation in HT cables (132kV, 33kV **& 25kV**), **33kV GIS Switchgear, 25kV GIS Switchgear & Steel for Monopoles:** It shall be governed by the Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). It shall be applicable on **"Supply of above items"**.
55	Part-3	Section VIII Particular Conditions of Contract (PC) Part B – Special Provisions	Annexure VIII-E, Clause 1.5	Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid.	Total admissible price variation amount shall be subject to a ceiling of ± 20% (Plus/Minus Twenty percentage only) of the Contract Price (Lump Sum Equivalent contract price converted to INR with rate of exchange 7 days prior to the deadline for submission of bids).
56	Part-3	Section VIII Particular Conditions of Contract (PC) Part B – Special Provisions	Attachment-VIII-E(A): IEEMA Formulas New Formula	Additonal attachment added	The following IEEMA FORMULA are added as 'Appendix-7 to Corrigendum-V': 25kV & 33kV GIS: IEEMA(PVC)/ MV GIS- Above 12 KV up to 36 KV Effective from: 1st June 2022. Steel Monopole: IEEMA/PVC/ST Poles/2023 Effective from 1st April 2023 & IEEMA/PVC/Poles/2022 Effective from: 1st Apr 2022.
57	Part-3	SECTION IX: Contract Form	Contract Form-7: Parent Company Undertaking	Contract Form-7: Parent Company Undertaking	Form deleted.
58	Part-3	SECTION IX: Contract Form	Contract Form-9: Contractor's Warranty SN.1.(e)	e.the Contractor shall maintain the manufacture & supply of spares (including those of its Sub-Contractors / vendors) for the equipment supplied in the Contract-work for at least 5 years from the date of Completion of the Contract; and	e.the Contractor shall maintain the manufacture & supply of spares (including those of its Sub-Contractors / vendors) for the equipment supplied in the Contract-work for at least **10 years** from the date of Completion of the Contract; and
59	Part-4	Section-XI Pricing Document	Clause 5.3	SN | Cost Center / Milestone | Price Apportionment 5 | Milestone A2 (IT Requirements) of Cost Center A of Section MS | Not less than 2.5% of Bid Total 10 | Cost Center C (Training) of Section MS | Not less than 1% of Bid Total	SN | Cost Center / Milestone | Price Apportionment 5 | Milestone A2 (IT Requirements) of Cost Center A of Section MS | Not less than 1% of Bid Total 10 | deleted | deleted
60	Part-4	Section-XI Pricing Document	APPENDIX C: BRIEF DESCRIPTION OF SECTIONS	Section R2A² Cantonment to Kanhan - Length: 5.09 km	Section R2A² Cantonment to Kanhan - Length: **5.90** km
61	Part-4	Section-XI Pricing Document	Appendix M: Section MS, Milestone No.A3	Payment for this Milestone shall be made quarterly starting after 3 months from the Commencement Date. 80% of the apportioned amount shall be paid in this manner till Completion Date, while remaining 20% shall be paid (in similar manner) during DLP against deployement of DLP staff as per PS Table 11.1.	Payment for this Milestone shall be made quarterly starting after 3 months from the Commencement Date. 80% of the apportioned amount shall be paid in this manner till Completion Date, while remaining 20% shall be paid (in similar manner) during DLP against deployement of DLP staff as per PS **Chapter 15 Table 16.1**.
62	Part-4	Section-XI Pricing Document	APPENDIX O: ADJ SN.43	6deg. Lens compatible for thermal imagining camera FLIR make T640 & T680	6deg. Lens compatible for thermal imagining camera FLIR make T640 & **T860**

NAGPUR METRO

Annexure-1 (Reply to Bidders' Queries) to Corrigendum-V

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
1	Section - VIII: Particular Conditions of Contract (PC) Annexure VIII-A to Annexure VIII-J	Annexure VIII-A to Annexure VIII-J Price variation Clause for Electrical items	133/352	Price Variation in Transformers The variation in Transformers (Auxiliary Transformers, AMS Transformers and Traction transformers in the RSS/ASS) prices will be governed by Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). Price Variation in 132kV & 33kV cables It shall be governed by the Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). It shall be applicable on "Supply of Cables".	According to Appendix VIII-A: Price Adjustment Clause, Price Variation will be given only for Transformer (Auxiliary Transformers, AMS Transformers and Traction transformers in the RSS/ASS) & EHV & MV Cable (i.e 132kV & 33kV Cables) However, it's important to note that the proposed Annexure lacks consideration for price variations of additional significant accessories such as 1. Switchgears, 2. Electrical Equipment Erection portion (Labour), 3. Civil work (Supply & Installation) 4. Battery 5. Battery Chargers 6. ACSR Panther Conductor 7. Steel Structure/Tower Structures The absence of these elements may significantly influence the overall price variation throughout the contract duration. bidder's request to Kindly incorporate all the above mentioned items under Price variation formula.	Refer Corrigendum-V: SN.54.
2	Section - VIII: Particular Conditions of Contract (PC) Annexure VIII-A to Annexure VIII-J	Annexure VIII-A to Annexure VIII-J Price variation Clause for Electrical items	133/352	1.5 Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid. Further, the above price variation shall only be applicable for items quoted in Indian Rupees.	The price variation ceiling limit of +/- 5% of the contract value could significantly burden the contractor in cases of project delays resulting from factors such as front unavailability or unforeseen circumstances. Moreover, previous metro contracts have not included any ceiling limit on price variation. We kindly request the removal of this clause on the ceiling limit for price variation."	Refer Corrigendum-V: SN.55.
3	Part 2 Works Requirement - Particular Specification	Clause No.- 7.3.2.3 : General Requirement & **APPENDIX VI-B11:** VENDOR APPROVAL AND SELECTION PROCEDURE, Sub Clause: 1.7_Systems & Sub-System	Page No-326/837 & Page No-816/837	i. GIS supplier should have minimum experience of 10 years for manufacturing of similar GIS.. Contractor should submit performance certificate from tile employer. 1.7.1 Manufacturer shall have at least 5 years experience of design and manufacturing of similar system.	Both the specified clause are contradictory. Bidder's request to Please Clarify. Also, Kindly elaborate the meaning of Similar GIS.	Tender condition prevails. Shall have to meet both the condition.
4	Part 2 Works Requirement - Particular Specification	09 APPENDIX H: Annexure A	General	220 kV/132 KV EHV XLPE CABLE SPECIFICATION	As per bidder's understanding 220kV , 1000 Sq mm Copper cable is not within the scope of contract. Also, same type of cable is not refelecting in Excel sheet provided in the contract i.e, PriceBid_BOQ_N2_031_TR_03. Kindly Confirm.	Your understanding is correct.
5	Part-1BiddingDocuments & Part-3GCCPCCIEEMAContractFormsSHEManual	ITB 14.1 & Section 9: Contract Form	Page No-35/138 & page no-188/352	"Employer will issue essentiality certificate (EC) under GOI notification (GENERAL EXEMPTION NO. 128) Notfn. No. 84/97-Cus. dt. 11.11.97 as amended by Notfn. Nos. 85/99, 119/99, 75/01, 107/01 and 24/08, 22/14, 44/17 and which will assist the Contractor to obtain any lawful exemptions from payment of Excise Duty or Import Duty on Plant and Materials, which are to be incorporated as a part of the Permanent Works. The Certificate will be issued in the format indicated in Section 9, which certifies the estimated quantities of materials that are to be incorporated into the permanent works. The responsibility for obtaining any such exemptions	As per Specified clause, Essentiality certificate will be issued in the format indicated in section 9. However, Section-9 of Contract does not contain any contract Form related to Essentiality Certificates. Kindly Confirm.	Contractor to obtain the required Certificate format from relevant Government agencies on custom duty during execution stage.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
6	Part 2 Works Requirement - Particular Specification	Chapter-3: Scope of work Subclause: 3.2.4.4	Page No-203/837	(o) Construction of TRD Depot / Store inside RSS premises or elsewhere in Nagpur as per appropriate dimension along with suitable arrangement required for storage of power and auxiliary equipments subject to the notice of no objection from the employer representative. Required space will be provided by the Employer.	We understand that bidders are required to construct TRD Depot/Store within the premises of the RSS or elsewhere in Nagpur. To facilitate this, we kindly request all relevant details, including indicative dimensions of the building and information regarding the arrangements to be provided inside the store (such as the number and types of equipment). Additionally, we kindly request an indicative drawing of the TRD Depot/Store Room.	Within the premises of RSS. It will include all facilities required for railway TRD store such as Warehousing materials, Inventory management, repair workshop etc.
7	PriceBid_BOQ_N2_031_TR_03	Under Code EHV	Excel Sheet	132kV HT Transmission line conductor **(0.5 RKM of double circuit)** & accessories including compression joints etc for Kanhan River Crossing & 132kV EHV Cable – 500 sqmm **(3 RKM of double circuit)** & accessories including cable joints, cross bonding, terminations etc	We understand that 0.5 RKM of double circuit means **total distance from Transmission tower structure to PSA GSS is 0.5kM** with two different circuit (with 3 different phases) & Total distance from **PSA GSS to MAHA-METRO RSS is 3kM** with two different circuit (with 3 different phases).	The clause is self explanatory.
8	PriceBid_BOQ_N2_031_TR_03 & Part-3GCCPCCIEEMAContractFormsSHEManual	Under Code EHV & 13 Variation & Adjustment	Excel Sheet & Page No-49/352	132kV HT Transmission line conductor **(0.5 RKM of double circuit)** & accessories including compression joints etc for Kanhan River Crossing & 132kV EHV Cable – 500 sqmm **(3 RKM of double circuit)** & accessories including cable joints, cross bonding, terminations etc	We understand that if qunatities varies as specified in Price bid documents (Excel Sheet) than as per clause 13.3 Variation & Adjustment of PCC documents, Bill of variation will be applied. Kindly Confirm.	Your understanding is correct.
9	General	General	General	MAHA-METRO Civil Building	Please furnish the necessary details and indicative drawings of the building to be constructed as part of the permanent work, including details such as the number of storeys and building dimensions. Additionally, kindly provide information on the soil bearing capacity of the land where the RSS is to be constructed."	This is a Design and Build tender and Designs are in the scope of Contractor.
10	General	General	General	132kV Cable Laying	The bidder kindly requests the provision of a tentative diagram showing the routes for laying the 132 kV cables from the PSA GSS premises to the MAHA-METRO RSS Premise. This is necessary as during the tendering stage, it would be challenging and time-consuming to determine the exact route for cable laying	Bidder may survey & may make their own assesment.
11	Part 2 Works Requirement - Particular Specification	Chapter-2: Overview of Project Subclause: 2.2.3	Page No-194/837	Power supply for the above corridors is received at 132 kV level at following locations: (a) Receiving Substation (RSS) near Kanhan River Or Receiving Substation (RSS) near Khairi Fata/All India Radio Metro Station.	The bidder understands that, among the specified three locations (Kanhan River, Khairi Fata, and All India Radio Metro Station), the RSS needs to be constructed at only one location. Additionally, we kindly request confirmation of the exact RSS location. This will enable the bidders to accurately estimate the quantity of 132kV cable required to be laid from the PSA GSS to the RSS premises, as well as the 33kV cable from the RSS to the ASS	Tender condition prevails. For LILO arrangement: i. Supply to be tapped from both Kanhan-Upalwadi & Upalwadi-Pardi line of Existing transmission line. ii. Contractor to install two monopole structures (one for Loop in & one for Loop out) within RSS premises & the existing transmission line conductors to be stringed (overhead) to these monopoles. From Monopole, 132 kV supply is to be tapped to GIS through 132kV 1000 sqmm cable (total 1.5km of single core cable). iii. The GIS at RSS to be consists of 9 bays i.e LILO bays (2 Loop in, 2 loop out, 1 Bus Coupler) & Transformer bays (4 nos.) seperated by Bus Sectionalizer. Refer Tender drawing '132 kV GIS for Maha Metro_Revised'. For Bay Augmentation works: i. The 132 kV Supply to be extended from MSETCL GSS to Metro RSS through Underground 132kV 500 sqmm cables (3 RKM) + Kanhan river crossing (0.5 RKM) through Tranmission tower arrangement with conductors.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
12	General	General	General	Access Date & Key Dates	The contract specifies the ROD for R1A1, R1A2, R2A1, R2A2, R3A & R4A as April 2025, November 2027, November 2026, April 2027, February 2027 & November 2026 respectively. However, the NIT for the Viaduct Package for R2A2, R3A & R4A was recently published (21st Feb 2024) with an estimated completion period of 36 months from the LOA (which would be approximately October 2027 or later considering 6 month duration between NIT Published & LOA Date), contradicting the ROD mentioned in this contract for R2A2 scheduled for April 2027. This incongruence significantly impacts the access and key dates provided in the contract for that specific reach. We kindly request a revision of the key dates and access date stipulated in the contract to facilitate accurate planning, which will be submitted as part of the Bidding documents.	Refer Corrigendum-V: SN.53.
13	Part 2 Works Requirement - Particular Specification: Survey of the Site	15.2		The Contractor shall advise the Engineer of the date of the joint survey	Please confirm the date for Joint survey as indicated in Tender Document. Please also confirm the location of the RSS Plot, 132kV Bay augmentation work plot and its co-ordinates	The tendering stage site visit was arranged on the pre-bid meeting day. Bidder may further visit the site for their survey.
14	Part 2 Works Requirement - Particular Specification: 132 kV Bay Augmentation work at MSETCL Grid Substations	3.2.1.1	6 of 286	The scope of work comprises of design, manufacture, shop testing, supply, delivery at site, installation, inspection, testing and commissioning of 3-phase, 132 kV (Rated voltage 145 kV) Air Insulated Switchgear (AIS) outdoor type along bus bar extension & other associated work including 132 kV Transmission line/cabling work. It is proposed to tap 132kV double circuit line for EHV connections between grid substation & RSS.	Please provide the electrical LUP and details to understand the civil scope of work.	Refer tender document. Bidder may also visit the site for better understanding.
15	Part 2 Works Requirement - Particular Specification	1.1.6		One no. 132/33 kV & 132/25 kV AC Receiving Substations (Gas Insulated Substations), related Auxiliary Main Substations, Traction Substations, and civil works;	Kindly elaborate the detailed scope to undertand civil works involved under this item.	Refer tender document
16	Part 2 Works Requirement - Particular Specification: Control room Augmentation	3.2.1.6		All Civil works in the Control room, including, but not limited to Design and Construction of the room building complete with lighting (indoor! Outdoor), fans, false ceiling, falseflooring and air-conditioning (wherever required), power sockets, fire-alarm and detection system, Fire fighting system, water supply, sanitary and sewage disposal and all other facilities needed to make the building functionally and operationally satisfactory.	Kindly provide the details such as Size and height of the control room as per electrical system requirements, along with details of the finishing schedule. Please also indicate if any provision for future expansion is to be considered	Bidder may survey & may make their own assesment.
17	Part 2 Works Requirement - Particular Specification	3.2.1.6.3		The existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accomdation of 2 nos. of 132kV AIS line bays so that space can be made available at one side by extending 132kV Bus(2+1 type)	Kindly provide the details of the Existing Staff quarter to be dismantled. Please also confirm the details of any existing buried/semi-buried structures to be dismantled from the land allocated	Bidder may visit the site & may make their own assesment.
18	Part 2 Works Requirement - Particular Specification HT Cabling/Conductor works	3.2.1.7.5		Supply, Laying, Testing and Commissioning of EHV (132kV) cables /conductors from Grid Substation (GSS) of Power supply Authorities to RSS of Maha-Metro. (b) Termination of the EHV (132 kV) cables in the Cable end boxes, cable end termination structure at GSS end of Power supply Authorities & RSS. (c) Supply, Laying, Testing and Commissioning of Control, protection & communication equipment/FO cable. (related to above work) (d) All HV (132kV) cables inside the PSA's premises if required(e) All LV cables and control cables.	Kindly provide the cable route and the cross-sectional details including the joint bay details required if any. Please indicate the details of various authorities to be dealt with for the cable laying works, the length of the stretch of the existing road where road-restoration is required and the balance length which does not require restoration after cable laying	Bidder may survey & may make their own assesment.
19	Part 2 Works Requirement - Particular Specification: LILO ARRANEGMENT FROM 132 KV TRANSMISSION TOWER AND INCOMING 132 KV CABLE FOR RSS.	3.2.2		The scope of work includes LILO arrangement on 132 kV double circuit Kanhan-Upalwadi & Upalwadi-Pardi MSETCL transmission lines & laying of 132 kV cable to Metro RSS (proposed between All India Radio & Khairi Fata)	Please clarify the bidder's scope of work for LILO arrangement on 132kV. Please also provide details route survey and length of cable laying works to calculate the cable trench section, road restoration works, joint bay, ROW liasioning works. etc.	Refer tender document. Bidder may survey & may make their own assesment.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
20	Part 2 Works Requirement - Particular Specification: Receiving Substation (RSS)	3.2.4.1		Gas insulated (indoor type) receiving sub-stations at Khairi Fata RSS / Kanhan River RSS at Reach-2A and 3-phase including complete works required for EHV cabling / conductor works.	Please provide us with a detailed layout per the electrical requirement, building size, and height.	This is a Design and Build tender and Designs are in the scope of Contractor.
21	Part 2 Works Requirement - Particular Specification: The term Receiving Substation (RSS) includes the various facilities inside the RSS premises, bound by boundary wall. The works include,	3.2.4.4	Page 30 of 286	High Voltage bays including 132kV GIS, 25kV GIS & 33kV GIS switchgear. (b) Civil Works including the Switchgear room, Control Room Building, Cable Cellar room & Metering Room. (c) Equipment inside the Switchgear room (d) Equipment inside the Control Room (e) Cabling (Power & Control cable) (f) EHV (132 kV) cable laying works from Power Supply Authority's (PSA) Sub station/tower to RSS (g) 132/33 kV, 3-phase Auxiliary Power Transformers, Neutral Grounding Resistors and 132/27.5 kV single phase Traction Transformers with rail cum road arrangements (h) Sub-station Automation system for RSS (i) 33 kV / 415 V Dry type Transformer for station Auxiliaries and control supply (j) Building E&M works and earthing, bonding & lightning protection works (k) 25kV & 33kV Cable inside RSS. (l) HVAC Systems (m) Fire Dectection & Fighting system with monitoring from OCC. (n) Gas Flooding (o) Construction of TRD Depot / Store inside RSS premises or elsewhere in Nagpur as per appropriate dimension along with suitable arrangement required for storage of power and auxiliary equipments subject to the notice of no objection from the employer representative. Required space will be provided by the Employer	Need all structural details of the size and height of the building as per electrical system requirements, along with details of the architectural finishing schedule. Please confirm whether there is any requirement of external façade work for the Control Room/GIS building. Please confirm the Grade of Concrete of Building structure. Please also confirm whether the structral Concrete produced through the mobile self-loading concrete mixer can be used	Refer reply at SN.20 above
22	Part 2 Works Requirement - Particular Specification	3.2.9.2.1		The Contractor shall inspect the sites for various RSS & grid substation locations and gather for good completion of the civil works various details such as topography and land levels, soil condition including the safe bearing capacity, soil resistivity etc, MFL(maximum flood level) at the Substation site, drainage requirements etc.	Please provide detailed Geotechnical investigation report to determine the safe bearing capacity of the soil and other design parameters, including Soil conductivity,	Bidder may survey & may make their own assesment.
23	Part 2 Works Requirement - Particular Specification	3.2.9.2.3		The finished ground level of the Substation site shall be minimum 500 mm above the adjacent peripheral land & Maximum Flood Level (MFL) in the Region to be ascertained by the Contractor and confirmed by the Local Authorities	Please provide MFL data for last 5 years in this region. Please confirm the NGL of the adjacent land	Bidder may survey & may make their own assesment.
24	Part 2 Works Requirement - Particular Specification: Access roads	3.2.9.3		The Contractor will be required to provide suitable access road to the Substation site, from the nearest main road, which shall have necessary width and strength to carry the Power Supply equipment. The access road to be made of bitumen/cement from main road to substation.	Please provide the Road length, width, cross-sectional details and technical specification of the access road from substation to the nearest main road	Bidder may survey & may make their own assesment.
25	Part 2 Works Requirement - Particular Specification:Boundary Walls			Along the periphery of the Substation site, Contractor will provide a RCC boundary wall matching with the finish of the RSS building and furnish with appropriate suitable GI gates of approved design.	Please provide the details of the RCC drawing of the boundary wall. Please confirm it will be an expected standard height of 2mtr maximum. Please confirm whether this is pre-cast boundary wall or cast-in-situ boundary wall. Please confirm whether the RCC retaining wall is required to be provided in low laying area below the RCC Boundary wall	This is a Design and Build tender and Designs are in the scope of Contractor. Cast-in Situ is prefarable.
26	Part 2 Works Requirement - Particular Specification			Initial site leveling and grading will be done by the Owner. However ground preparation including minor grading, if required shall be done by the Bidder.	Area Grading is excluded from Bidder's scope of work. Minor grading equivalent to Micro grading (upto +/- 100 mm) shall be included in Bidder's scope. Please confirm.	The tender document does not contain such description. Ref tender document.
27	Part 2 Works Requirement - Particular Specification: Guard rooms			RSSs shall be provided with a Guard Room, near the main gate.	Please provide the size of the guard room and if there is any wash room cum toilet to be provided with the Security guard room	This is a Design and Build tender and Designs are in the scope of Contractor.
28	Part 2 Works Requirement - Particular Specification:Stoarge Space	3.2.9.13		Construction of Store Room inside RSS building/premises/ elsewhere in Nagpur as per of appropriate dimension along with suitable arrangement required for storage of power and auxiliary equipments subject to the notice of no objection from the employer representative. Required space will be provided by the Employer	Please confirm the size of the storage space and the location and distance from the RSS Plot earmarked for this Tender. Is this Storage meant for temporary construction phase or a permanent structure?	This is a Design and Build tender and Designs are in the scope of Contractor. Only for permanent store, Land will be provided at RSS location.

MAHARASHTRA METRO RAIL CORPORATION LIMITED * NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
29	General	General	General		Please indicate the lead for disposal of excess / unserviceable earth	Refer tender document & as per state environmental norms.
30	General	General	General		It is understood that encumbrance free and accessible land will be handed over to the successful bidder when placing order, and project Zero date will be calculated from date clear site hand over. Please confirm our understanding.	Refer tender document part-3 for access & Key dates.
31	General	General	General		Please clarify the thicknees of PCC and Gravel spreading work at Switchyard portion	This is a Design and Build tender and Designs are in the scope of Contractor.
32	General	General	General		Please provide FQAP for civil works	This is a Design and Build tender and Designs are in the scope of Contractor.
33	General	General	General	Extention of Time	In addition to the general RSS and ASS contracts in the Metro segment, this contract encompasses various additional works such as the supply and installation of Monopole Towers, stringing of ACSR Panther Conductor, and interface with T&D authorities. Furthermore, the RSS location is not precisely defined in the tender documents. Considering these factors into accounts, a thorough study and site visit are necessary to ascertain exact quantities and this process will require much more time compared to previous RSS and ASS contracts. Therefore, we kindly request an extension of the bid submission timeline by at least 7 weeks (approximately 1.5 months) from the current bid submission date (i.e, 28th March 2024)	Refer E-tender portal for latest bid submission date.
34	Part 2 - Works Requirements, Part 2- Particular Conditions of Contract- part A - Contract Data	2.1, Works Requirement - Clause 17.1	Particular Conditions - 7 of 352, Works Requirement Page - 109 of 837	PC 2.1- After award of the work, The Engineer shall grant the Contractor right of access to, and /or possession of, the Site **progressively** for the completion of Works. Works Requirement 17.1 - The Contractor will be given access to the Site in accordance with following conditions.	As per the table of Key Dates & Access Dates, the first Access Date is for 33 KV cabling ranging from 13-30 weeks from Commencement Date. Since this has a wide range, we request you to provide clear handing over schedule pertaining to the Key Dates.	Tender condition prevails.
35	Part 2 - Annexure VIII-C		128, 129 of 352	Annexure VIII-C - Key Dates and Access Dates		
36	Particular Conditions of Contract- Part B Special Provisions	4.13	22 of 352	4.13 Rights of Way and Facilities	Add the following to sub clause 4.13 : The Employer reserves the right to make use of these service roads/rights of way for itself or for other contractors working in the area, as and when necessary without any payment to the Contractor. For any such additional facilities that the Contractor may need to obtain, the Contractor shall comply with: (a) the measures and requirements relevant to the Contractor which are set forth in the Resettlement Plan ("RP") attached hereto as Appendix [_] / available with Maha Metro, to the extent it concerns impacts on affected people during construction; and (b) any corrective or preventive actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the resettlement plan. The Accepted Contract Amount is deemed to include all expenses to ensure compliance with these measures, requirements and actions.	Bidder query is not clear. Tender condition prevails.
37	Particular Conditions of Contract (PCC)	4.26	28 of 352	It shall be the responsibility of the Contractor to provide at his own cost the required sheds, store houses, and yards for both Permanent and Temporary Works and provide free access to the Employer/Engineer who will have right of inspection including that of instructing the Contractor to remove a particular material from the stores and not to use the same on the Works.	Please clarify if the space for providing the sheds, store houses and yards as required will be provided by Employer or not.	Only for permanent store, land will be provided at RSS location. Space for temporary works, storage facility/godowns is contractors responsibility.
38	Particular Conditions of Contract (PCC)	14.2	57 of 352	Recovery of the Advance Payment shall be done in respective currencies and shall commence when 20% of the original contract value of the work has been paid in respective currencies (in addition to the mobilisation advance) and shall be recovered **by deduction of 35% of the amount of each interim payment** until the total of mobilisation advance is recovered before payment of 80% of Contract price or before the expiry of original contract period (or any extension as approved by the Employer for recovery of advance) whichever is earlier.	Deduction of 35% of Mobilisation Advance from each bill appears to be on a higher side as the very basis of providing mobilisation advance to the contractor shall be defeated. So, it is suggested for a percentage recovery of 10 % amount from each interim payment to help maintain cashflow of contractor.	Tender condition prevails.

MAHARASHTRA METRO RAIL CORPORATION LIMITED * NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
39	Particular Conditions of Contract (PCC)	22.1	74 of 352	**Interface Requirements:** The Contractor shall be responsible to interface with the other contractors as per the interface table provided in the contract. Employer will supervise/facilitate the coordination between the Contractor and other designated contractors. **However, the Contractor will allow for liaison with,** **and modifications to his design to cater for the work of such other contractors**. The list of interface items is indicative only and the ultimate responsibility of commissioning lies with the Contractor.	Modifications to design which arise out of Interface Requirements should be treated as a Variation .	Tender condition prevails.
40	Part 2- Particular Conditions of Contract-part A - Contract Data	8.8	8 of 352	(a) 0.05% of the original Contract Price (Equivalent INR) per calendar day to delay for the Key Dates relating to the Completion of Integrated Testing for each Section. (Key Dates: KD 11) (b) 0.005% of the original Contract Price (Equivalent INR) per calendar day to delay for the Key Dates other than the ones covered (a) above. (c) There is no maximum limit in levy of LD for delays in individual Key Dates. However, maximum limit for cumulative LD for complete Contract shall not exceed 10% of the Contract Price (Equivalent INR). (d) Any imposition of LD on account of delay in accomplishment of Key Dates KD-1 to KD-6 will be waived and LD amount if deducted will be returned (without interest) provided Contractor is able to achieve key date KD-7 to KD-10. Maximum Amount of Delay damages - 10% of the Contract Price.	1) It is requested to include provisions to levy Delay damages on unexecuted value of works.	Tender condition prevails.
41	Particular Conditions of Contract (PCC)	4.34	30 of 352	4.34 (iv) - the total amount of delay damages for all Milestones shall not exceed the maximum amount stated in the Contract Data (this shall not limit the Contractor's liability for delay damages in any case of fraud, gross negligence, deliberate default or reckless misconduct by the Contractor)."		
42	Particular Conditions of Contract (PCC)	22.1	75 of 352	These penalty provisions are additional to Liquidated Damages and do not fall within the 10% of Bid Total limits. a) Inadequate deployment of SHE personnel will attract penalty as described under Note 3 of Milestone A1 under Cost Center A (SHE, IT and Other Requirements) of Section MS (Miscellaneous) of Pricing Document. b) Inadequate deployment of resources for BIM/ERP will attract penalty as described under Note 3 of Milestone A2 under Cost Center A (SHE, IT and Other Requirements) of Section MS (Miscellaneous) of Pricing Document c) Inadequate and delayed mobilization of Key Personnel for project will attract penalty as described in Milestone A3 under Cost Center A (SHE, IT and Other Requirements) of Section MS (Miscellaneous) of Pricing Document.	1) We request you to delete the penalty provisions for (b) & (c) . 2) With reference to SHE penalty, the Contractor should be given suitable notice to remedy his action before levy of such penalties. Also such penalties should be capped to limit the financial exposure of Contractor.	Tender condition Prevails.
43	Particular Conditions of Contract (PCC)	4.6	19 of 352	If any act or omission of the Contractor whether directly or indirectly results in the delay in the execution of the works of a Designated/Interfacing Contractor, the Contractor, in addition to his liability in respect of liquidated damages if they become due, shall pay to the Employer, or the Engineer may deduct from Interim Payment Certificates such amount as the Employer/Engineer shall have certified in respect of additional payments or costs to the Designated/Interfacing Contractor in respect of such delay.	We request you to consider additional payments or costs under this clause in inclusion to Delay Damages.	Tender condition Prevails.
44	Environment Management Plan		82 of 352	Maha Metro and the Contractor need to conduct a final tree inventory survey (number, type, height) with the final designs of alignment and station. Trees with conservation value should be transplanted, if possible. Plan to avoid cutting trees, including adjustments in project design to minimize effect on such trees. Prior to demolition of any building or structure contractor has to assess if Asbestos Containing Material (ACM) is potentially present in the building or structure to be demolished.	Since this work needs to be under the scope of civil contractor, we request you to remove this condition from our scope.	Tender condition prevails.
45	Environment Management Plan		85 of 352	Utility shifting plan will be developed by Maha Metro and Contractor in coordination with concerned authorities and shifting of utilities will be done as per agreed utility shifting plan prior to construction commenced.		
46		14.8	9 of 352	No financing charges shall be payable due to delayed payment under Cl. 14.8	It is requested to include provisions related to financing charges in case of delayed payment to Contractor.	Tender condition Prevails.

MAHARASHTRA METRO RAIL CORPORATION LIMITED * NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
47		1.3,1.4	133 of 352	No increase in prices on account of price variation shall be admissible for periods of delays not attributable to Employer. In case of decrease, the benefit shall be passed on to the Employer even for the delayed period. 1.5 **Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price** in INR considering currency conversion factor at the time of bid. Further, the above price variation shall only be applicable for items quoted in Indian Rupees.	We request you to amend the first part as follows : *In case of decrease, the benefit shall be passed on to the Employer ~~even for the delayed period~~ in case of delay solely attributable to the Contractor.* 2) For the second part we request to remove the 5% limitation on price variation since same is subject to market price fluctuations.	Refer reply at SN.2 above
48	ITB	14.1	35 of 138	"Employer will issue essentiality certificate (EC) under GOI notification (GENERAL EXEMPTION NO. 128) Notfn. No. 84/97-Cus. dt. 11.11.97 as amended by Notfn. Nos. 85/99, 119/99, 75/01, 107/01 and 24/08, 22/14, 44/17 and which will assist the Contractor **to obtain any lawful exemptions from payment of Excise Duty or Import Duty on Plant and Materials,** which are to be incorporated as a part of the Permanent Works. The Certificate will be issued in the format indicated in Section 9, which certifies the estimated quantities of materials that are to be incorporated into the permanent works. The responsibility for obtaining any such exemptions from Competent Authority will remain with the supplier/Contractor and the Employer shall not in any way be responsible for admissibility of the claims or eligibility of the supplier/Contractor. **The contracting agency will ensure that the total quantity of material for which the essentiality certificate has been issued is procured within the validity period of the EC as no new EC in lieu of the any expired EC will be issued.**	In case of any extension of Contract, such certificates should be renewed on expiry and suitable exemption to be granted to the Contractor.	Tender condition Prevails.
49		Sub Clause 8.1 , New Clause 1.1.93	GC - 49 of 231, PC - 11 of 352	As per Definition in GC- 1.1.6 - "Commencement Date" means the date as stated in the Engineer's Notice issued under Sub-Clause 8.1 [Commencement of Works]. GC 8.1 - The Engineer shall give a Notice to the Contractor stating the Commencement Date, not less than 14 days before the Commencement Date. Unless otherwise stated in the Particular Conditions, the Commencement Date shall be within 42 days after the Contractor receives the Letter of Acceptance. New Clause 1.1.93: "Notice to Proceed" means the notice issued by the Employer /Engineer to the Contractor communicating the date from which the Works can be started.	As per the mentioned clauses, the Commencement is to be considered from the date of issue of Notice to Proceed by Engineer. However, the Contractor should be given clear access to site/workfront on this date so as to commence works, since time for completion/Key Dates is/are reckoned from Commencement Date. Please clarify and confirm.	Access dates are already mentioned in Part-3.
50	SECTION XI: PRICING DOCUMENT	5	4 of 156	Milestone Payment Schedule	The payments under this contract shall be made on **pro rata basis** against the monthly invoices raised by the Contractor for works completed. It is requested to incorporate this provision.	Tender condition prevails.
51	General	General	General	General	we understand that scope related to SCADA cable laying for OCS/SP/SSP are not within this contract & same should be carried out by OCS contractor. Kindly confirm.	Your understanding is correct.
52	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-14.2 Advance Payment	Page 58 of 139	Mobilization Advance: Interest bearing Mobilization advance shall be 20% of original contract value payable in two equal instalments of 10% (Ten Percent) each in the currencies and proportions of the Accepted Contract Amount. Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	"In accordance with the Contract, the mobilization advance specified (20% of Contract Value) will incur an interest rate equivalent to the 'RBI Bank Rate+2%' (two percent)." "Typically, contracts of a similar nature published previously and involving funding agencies such as ADB, JICA, NDB, etc., have featured interest-free mobilization advances. Therefore, we kindly request you to consider changing the current condition from an interest-bearing advance to an interest-free advance."	Tender condition prevails
53	General	General	General	Safe Custody Bank Guarantee	Bidder understand that safe custody bank guarantee is not applicable in this tender. Kindly confirm the same.	confirmed. Refer Part-3, PCC, Clause 22.7
54	General	General	General	Retention	Bidder understand that, No Retention amount will be deducted form the monthly bills. Kindly confirm.	Your understanding is correct.
55	General	General	General	Site Office and Store	We understand that the Land for Site Office and Store shall be prvided by Employer at free of cost. Kindly Confirm.	Refer tender document.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
56	Part-2: General Particular SpecificationAnnexures ,	3.1-315 kVA Auxiliary Transformer for ASS Auxiliary Power Supply & 11.1 Station Auxiliary Transformer 315kVA	APPENDIX VI-B3 : DATA (TECHNICAL) SHEETS	GTP of 315 KVA Aux.Transformer	There is a mismatch in the techinical specification of the 315 KVA Auxiliary Transformer,Kindly clarify the same	Refer Corrigendum-V: SN.36.
57	Part2 SectionVIBParticularSpecifications	PS-16.1.2.3,	Page 276 of 289	A monthly rent and maintenance charges of Rs. 520/Sqm. and Rs. 60/Sqm. respectively per month (exclu. GST), and electrical facilitation charges according to MahaMetro Policy will be charged to the Contractor.	Bidder request you to kindly provide the land for the engineers site office at free of cost.	Refer Corrigendum-V: SN.35.
58	Section - VIII: Particular Conditions of Contract (PC) Annexure VIII-A to Annexure VIII-J	Annexure VIII-A to Annexure VIII-J Price variation Clause for Electrical items	133/352	Price Variation in Transformers The variation in Transformers (Auxiliary Transformers, AMS Transformers and Traction transformers in the RSS/ASS) prices will be governed by Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). Price Variation in 132kV & 33kV cables It shall be governed by the Price Variation Clause of relevant latest IEEMA formula published by IEEMA on their official website. (Ref: https://ieema.org/). It shall be applicable on "Supply of Cables".	According to Appendix VIII-A: Price Adjustment Clause, Price Variation will be given only for Transformer (Auxiliary Transformers, AMS Transformers and Traction transformers in the RSS/ASS) & EHV & MV Cable (i.e 132kV & 33kV Cables) However, it's important to note that the proposed Annexure lacks consideration for price variations of additional significant accessories such as 1. Switchgears, 2. Electrical Equipment Erection portion (Labour), 3. Civil work (Supply & Installation) 4. Battery 5. Battery Chargers 6. ACSR Panther Conductor 7. Steel Structure/Tower Structures The absence of these elements may significantly influence the overall price variation throughout the contract duration. Bidder's request to Kindly incorporate all the above mentioned items under Price variation formula. Supporting Documents from different clients of different Metros Tenders are attached for your reference **(Annexure-1)**.	Refer reply at SN.1 above
59	Section - VIII: Particular Conditions of Contract (PC) Annexure VIII-A to Annexure VIII-J	Annexure VIII-A to Annexure VIII-J Price variation Clause for Electrical items	133/352	1.5 Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid. Further, the above price variation shall only be applicable for items quoted in Indian Rupees.	The price variation ceiling limit of +/- 5% of the contract value could significantly burden the contractor in cases of project delays resulting from factors such as front unavailability or unforeseen circumstances. Moreover, previous metro contracts have not included any ceiling limit on price variation. We kindly request the removal of this clause on the ceiling limit for price variation. Supporting Documents from different clients of different Metros Tenders are attached for your reference **(Annexure-1).**	Refer reply at SN.2 above
60	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-14.2 Advance Payment	Page 58 of 139	Mobilization Advance: Interest bearing Mobilization advance shall be 20% of original contract value payable in two equal instalments of 10% (Ten Percent) each in the currencies and proportions of the Accepted Contract Amount. Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	"In accordance with the Contract, the mobilization advance specified (20% of Contract Value) will incur an interest rate equivalent to the 'RBI Bank Rate+2%' (two percent)." "Typically, contracts of a similar nature published previously and involving funding agencies such as ADB, JICA, NDB, etc., have featured interest-free mobilization advances. Therefore, we kindly request you to consider changing the current condition from an interest-bearing advance to an interest-free advance. Supporting Documents from different clients of different Metros Tenders are attached for your reference **(Annexure-2).**	Refer reply at SN.52 above
61	General	General	General	RSS Location Finalisation	Bidders request an expedited finalization of the RSS location. Without the exact RSS location, we cannot proceed with the following critical tasks: Conducting surveys related to the laying of 33kV and EHV cables. Obtaining soil reports of the RSS land to determine the types of structures required. Failure to finalize the location before the tendering stage will likely result in unnecessary price adjustments in the bid which is neither benefical for client & nor for Contractor.	Refer reply at SN.11 above

MAHARASHTRA METRO RAIL CORPORATION LIMITED * NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
62	Price Bid BOQ	General	General	Milestone based payment	As per the BOQ, each Appendix specifies cost centers A, B, C, and D. Cost center C currently includes both Installation and Site Testing. We propose segregating Cost center C to solely cover Installation. This adjustment aims to improve our cash flow by addressing potential payment delays between installation and site testing phases. We kindly request amending Cost Center C to cover Installation only and revising Cost Center D to encompass Site Testing, System Acceptance Test, and Integrated Testing & Commissioning.	Tender condition Prevails
63	Part-1BiddingDocuments	ITB 38.4 (b)	43/138	If bidder's quoted price is lower than the 90% of the Bid Capacity of the proposed work, Additional Bank Guarantee (APG) at the rate of 10% of the difference of the lowest allowable limit of quoting and quoted price by the bidders is to be furnished along with the normal performance bank guarantee (PBG). Additional Performance Guarantee (APG) shall be calculated as under:- A=Bid Capacity of the work; B=Quoted price by the bidder; Difference of cost, C=A-B, if C > (10%A), then APG = (C-10%A) x 10/100 However, such bid may be accepted by employer solely at their discretion, after going through the cost analysis submitted by the bidder and finding it workable.	As per specified clause, Kindly clarify the meaning of BID CAPACITY of the proposed work. We understand that BID Capacity means Client Estimated value of Contract. If our understanding is correct than kindly provide Estimated value of contract.	Refer Corrigendum-V: SN.2
64	Part 1 - Bidding Procedures	Section I : Instructions to bidders	Clause No. 19 Bid Security/Bid-Securing Declaration Page No. 22 of 138	19.8 If the bid security is required as per ITB 19.1, the bid security of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security shall be in the name of any or all of the Joint Venture partners. If the Bid-Securing Declaration is required as per ITB 19.1, the Bid-Securing Declaration of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the Bid-Securing Declaration shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.	In case of Consortium model of bidding, request you to please allow each consortium member to issue the bid security separately corresponding to their proportionate value in the Consortium.	Tender condition prevails
65	Part 1 - Bidding Procedures	Section I : Instructions to bidders	Clause No. 38 Abnormally Low bids Page No. 29 & 30 of 138	38.1 An abnormally low bid is one where the bid price, in combination with other elements of the bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered bid price. 38.4 After examining the explanation given and the detailed price analyses presented by the bidder, the Employer may: (a) accept the bid, if the evidence provided satisfactorily accounts for the low bid price and costs, in which case the bid is not considered abnormally low; (b) accept the bid, but require that the amount of the performance security be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss. The amount of the performance security shall generally be not more than 20% of the contract price; or (c) reject the bid if the evidence provided does not satisfactorily account for the low bid price, and make a similar determination for the next ranked bid, if required.	The internal inconsistencies of prices/ abnormally low price as per the mentioned clause can be avoided in case of a BOQ based contract. However, since the given contract is a "Design and Build" contract, same rationale cannot be applied. Hence kindly remove the provision to increase the amount of performance security in case of abnormally low prices.	Tender condition prevails
66	Part 1 - Bidding Procedures	Section I : Instructions to bidders	Clause No. 39 Unbalanced/Front loaded bids Page No. 30 of 138	39.1 If the Bid, which results in the lowest evaluated Bid Price, is seriously unbalanced or front-loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed, as well as the pricing and sources of materials, equipment and labor. 39.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Employer may as appropriate: (a) accept the Bid; or (b) accept the Bid, but require that the total amount of the Performance Security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract subject to ITB 45.2; or (c) reject the Bid and make a similar determination for the next ranked bid.	As per the tender conditions the price schedule is milestone based and controlled payment provisions stipulated by customer. Hence the option for front loading/ unbalance of the price are not available with the bidder. In view of the above the clause is not relevant for this contract and request to remove the same.	Tender condition prevails.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
67	Part 1 - Bidding Procedures	Section IV : Bidding Forms	MahaMetro-4: Form of Joint Bidding Agreement Page No. 86 of 138	15. 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.	Finance guidelines permits direct payment to the individual consortium members in the event of consortium participation. Inspite of payment being made to individual members all the members of the consortium remains jointly and severaly liable to contractual obligations. Restricting the payment only through consortium account defeats the shear purpose of participation in consortium and adds on additional accounting mechanism, which will eventually increase the price. It is therefore requested to modify the clause suitably to permit direct payment to consortium members.	Ref Corrigendum-V: SN.5
68	Part 3 - Conditions of Contract and Contract Forms	Section IX : Contract Forms	Page No. 201 to 206 of 352	**Contract Form-7** Parent company Undertaking **Contract Form-8 - DELETED** Parent company Guarantee	We understand that the Parent Company Undertaking and Parent Company Guarantee shall not be necessary in case the Bidder is not using experience / credentials of its Parent Company (Associate / Affiliate) for the purpose of qualifying requirements (as per Section III. Eligibility and Qualification Criteria of Part 1) Kindly confirm.	The clauses are self-explanatory.
69	Part 3 - Conditions of Contract and Contract Forms	Section VIII : Particular Conditions of Contract (PCC)	Annexure VIII-E Clause 1.1, 1.2 & 1.5 Page No. 133 of 352	1.1 Price Variation in Transformers 1.2 Price Variation in 132kV & 33kV cables	Due to recent geopolitical uncertainities and associated logistic challanges, commodity corrections in imported contents are extremely volatile and beyond the control of the bidder. It is requested to allow Price Variation for following items on IEEMA basis: • Labour, • Installation and Commissioning. • 132 kV GIS, 33 kV GIS, • Battery & battery chargers, • LV cable	Refer reply at SN-1 above
70	Part 3 - Conditions of Contract and Contract Forms	Section VIII : Particular Conditions of Contract (PCC)	Annexure VIII-E Clause 1.5 Page No. 133 of 352	1.5 Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid. Further, the above price variation shall only be applicable for items quoted in Indian Rupees.	Market fluctuations are not in control of the Bidders and considering current situation of high volatality in the market, we request you to modify clause as under: "Total admissible price variation amount shall be in INR considering currency conversion factor at the time of bid at actuals. "	Refer reply at SN-2 above
71	Part 3 - Conditions of Contract and Contract Forms	Section II: Bid Data Sheet Section VIII : Particular Conditions of Contract (PCC)	Clause 14.1 Page No. 55 Clause 14.1 The Contract Price Page No. 55	**14.1 of BDS** "Employer will issue essentiality certificate (EC) under GOI notification (GENERAL EXEMPTION NO. 128) Notfn. No. 84/97-Cus. dt. 11.11.97 as amended by Notfn. Nos. 85/99, 119/99, 75/01, 107/01 and 24/08, 22/14, 44/17 and which will assist the Contractor to obtain any lawful exemptions from payment of Excise Duty or Import Duty on Plant and Materials, which are to be incorporated as a part of the Permanent Works. The Certificate will be issued in the format indicated in Section 9, which certifies the estimated quantities of materials that are to be incorporated into the permanent works. The responsibility for obtaining any such exemptions from Competent Authority will remain with the supplier/Contractor and the Employer shall not in any way be responsible for admissibility of the claims or eligibility of the supplier/Contractor. The contracting agency will ensure that the total quantity of material for which the essentiality certificate has been issued is procured within the validity period of the EC as no new EC in lieu of the any expired EC will be issued. **14.1 (f)of PCC** The Contractor shall be solely responsible to find out and ascertain whether their supplies for Maha-Metro 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 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.	The project is funded by ADB, hence kindly confirm if : 1) Exemption of custom duty as per notification no. 84/97-Cus., dated 11.11.1997 is applicable OR 2) Concessional custom duty under Chapter 98.01 of Customs tariff Act for Project Imports is applicable.	Refer Part-4, Commercial Package, Section XI - Pricing Document, Clause 1.6.
72	Part 3 - Conditions of Contract and Contract Forms	Section VIII : Particular Conditions of Contract (PCC)	Clause 14.2 Advance Payment Page no. 58 of 352	(a) Mobilization Advance: interest bearing Mobilization advance shall be 20% of original contract value payable in two equal instalments of 10% (Ten Percent) each in the currencies and proportions of the Accepted Contract Amount Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	We request interest free mobilization advance which is a general practice in most of the metro projects under execution.	Refer reply at SN-52 above

MAHARASHTRA NAGPUR

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
73	Part 3 - Conditions of Contract and Contract Forms	Section VIII : Particular Conditions of Contract (PCC)	Clause 20.2 Claim for Payment and/or EOT Page no. 73 of 352	If contractor is entitled for cost compensation on account of delay in the project under any sub-clause of contract, same will be reimbursed on the basis of actual proof of supporting documents. The reimbursement will be restricted to actual project site expenses only like rental charges for site office/store etc., hired equipment/vehicle charges, site staff cost, electricity charges, hired Labour/Sub-contractor Labour charges. Apart from these expenses towards extension of insurances & performance guarantee will be also be admissible. Overall management, Supervision charges, overheads per year at the rate of 2% of value of balance work of the contract to be completed in extended period will be considered to cater for overhead charges in extended period. However, for the entire extension period till completion of the contract, the cumulative management / Supervision charges will not exceed 5 % of the original contract value (Eq. INR)	Delays which are not attributable to contractor in the project are beyond the control of bidder We request you to remove the ceiling limit of 5% by removing additional clause of PCC and retain Clause 20.2 of FIDIC.	Tender condition prevails.
74	Part 3 - Conditions of Contract and Contract Forms	Section VIII	PCC 22.11	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, 1.13, 2.1, 4.6, 4.7, 4.12, 4.15, 4.23 7.4, 7.6, 8.5, 8.10, 8.12, 10.2, 10.3, 11.7, 11.8, 12.2, 12.4, 13.6, 16.1, 16.2.2, 17.2, 18.4 shall not exceed 10% (ten per cent) of the Contract Price (Eq. INR)	Payment of any Cost plus profit ("Damages") indicates the total cost compensation payable by the Employer to the Contractor under the referred 24 clauses shall not exceed 10% of Contract Price. Please confirm our understanding.	The clause is self explanatory
75	Part 3 - Conditions of Contract and Contract Forms	Section VIII PCC Part A	1.1.27	24 Months from the date of Commissioning of assets for public uses. (CMRS sanctioned) During the Defects Liability Period the Contractor shall rectify/ replace the defective works without claiming any cost for the defective works fulfill his obligations during the Defects Liability Period as laid down in GC and Works Requirements24 Months from the date of Commissioning of assets for public uses.	DNP/DLP shall start upon taking over/deemed to be taken over of works by Employer. Please confirm our understanding.	Tender condition prevails.
76	Part 2 Works Requirement - Particular Specification	Chapter 3	Clause no. 3.2.9.7 & Page no. 212 of 837	Along the periphery of the Substation site, Contractor will provide a RCC boundary wall matching with the finish of the RSS building and furnish with appropriate suitable GI gates of approved design.	Please clarify whether the boundary wall shall be brick masonary infill wall with framed RCC columns & RCC beam structure or complete RCC wall or cast in situ RCC wall monolithic with column and beams or Precast RCC wall panels.Please provide typical boundary wall drawing if any.	Refer reply at SN-25 above
77	Part-2 General Particular Specification	Chapter 5	Clause no. 5.5.2.2 & Page no. 286 of 837	The access road shall be black topped and transformer area shall be either cement concrete or RCC. For this purpose, the Contractor shall prepare the necessary design & calculations and submit them to the Employer/Employer's Representative, for notice of no objection. On notice of no objection of designs and calculations, the Contractor shall construct the approach roads as per approved designs. The approach roads should, at the minimum, be 7.0 m wide and shall be able to support 100 – tonne trailers. The internal roads within substations shall be concrete or RCC and rail cum road as per reqirement.	Please provide the plot size and specify the Length & width of internal road inside RSS and access roads.	Refer tender document.
78	Part-2 General Particular Specification	Chapter 2	Clause no. 2.2.3 & Page no. 194 of 837	Power supply for the above corridors is received at 132 kV level at following locations: (a) Receiving Substation (RSS) near Kanhan River Or Receiving Substation (RSS) near Khairi Fata/All India Radio Metro Station.	RSS location is not fixed as per tender whether it will be at Khairi or at Kanhan. Please provide final location location of RSS along with the RSS plot dimension and layout and plot area considering either of the locations whether at Khairi or at Kanhan.	Refer reply at SN-11 above
79	General	General	General	The topographical & Hydrological survey of site are not provided in the bid document.	Please provide the following site parameters for Khairi and Kanhan 1.High Flood Level (HFL) of site. 2.Reduced level of Existing ground level of site. 3.Site survey report (soil filling depth,levels etc) 4. Soil resistivity	Refer reply at SN-22 above
80	General	General	General	The Geotechnical investigation of sites is not provided in the Bid document.	Please provide the following site parameters for sub-structure design for Khairi and Kanhan RSS location: 1.Allowable bearing pressure of site. 2.Depth of foundation for sub-structure design 3.Water table at the site. 4.Borehole locations 5.Seismic Zone of the site. 6. Nature of land and type of soil. 7. Type of foundation (pile or open).	Refer reply at SN-22 above
81	Part-2 General Particular Specification	2.3 KEY CHALLENGES	2.3.1(n) Page no 197 of 837	The SCADA integration should be completely compatible & integrated with Existing SCADA	It is requested to provide the communication protocol, Make & Model of existing OEM SCADA system.	Existing SCADA details already provided in Tender Drawings. Bidder may visit site & acsertain further details.
82	Part-2 General Particular Specification	3.2 DETAILED DESCRIPTION 132 kV Bay Augmentation work at MSETCL Grid Substations	3.2.1.7.1 Page no 200 of 837	Supply: installation and putting into operation of Digital Protection Equipment! Bay Controllers for 132kV, Work stations and'PC's and linking with the HV equipment's in the yard	It is requested to provide the number of workstation and PC to be considered in the scope. Please share the system architecture.	Refer Corrigendum-V: SN.10

MAHARASHTRA METRO RAIL CORPORATION LTD.
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
83	Part-2 General Particular Specification	3.2 DETAILED DESCRIPTION 132 kV Bay Augmentation work at MSETCL Grid Substations	3.2.1.7.2 Page no 200 of 837	Providing 'a 'Gate'ay' to support control and monitoring of all 132 kV system from the MSETCL Control Room. The gateway shall be Ethernet compliant	As per bidder understanding the gateway shall be provided to communicate with MSETCL local substation control room. Kindly confirm.	Your understanding is correct.
84	Part-2 General Particular Specification	3.2 DETAILED DESCRIPTION 132 kV Bay Augmentation work at MSETCL Grid Substations	3.2.1.8 Page no 201 of 837	At present, the MSETCL Substations are not having SCADA/SAS system. However, the proposed system shall be compliant with SAS/SCADA system to be installed in future	As per our understanding Control and relay panel of augmented bays should be compatible with SAS/SCADA system which will be installed by MSETCL in future. SAS/SCADA will be provided by MSETCL at later stage and no scope is included in this tender for the same.	Your understanding is correct.
85	Part-2 General Particular Specification	3.2.2 LILO ARRANEGMENT FROM 132 KV TRANSMISSION TOWER AND INCOMING 132KV CABLE FOR RSS	3.2.2.5 Page no 201 of 837	Providing a 'Gateway' to support control and monitoring of all 132 kV system from the MSETCL Control Room. The gateway shall be Ethernet compliant. Necessary configuration & additional SCADA Setup in MSETCL existing Grid substation for Monitoring & controlling of 132kV LILO Bay Switchgear & other equipment	As per our understanding the communication channel shall be provide by MSETCL from LILO to grid substation. Kindly confirm.	Refer tender document.
86	Part-2 General Particular Specification	3.2.4 Receiving Substation (RSS)	3.2.4.8.3 Page no 205 of 837	Providing a 'Gateway' to support control and monitoring of all 132 kV, 33 kV and 25 kV system from the Operations Control Center (OCC) located at, Backup Control Centre (BCC) and from SAS within the RSS. The gateway shall be similar as provided for Sitabuldi RSS and Jhansi Rani RSS. Complete SAS/SCADA system for Maha-Metro phase -2 shall be compliant with already existing SAS/SCADA system of Maha-Metro phase-1.	Bidder understand that contractor is allowed to use SAS and gateway solution other than existing make and model for the new substation ensuring the compatibility of gateway with existing control centre on IEC 60870-5-104 protocol. Kindly confirm.	Your understanding is correct.
87	Part-2 General Particular Specification	3.2.4 Receiving Substation (RSS)	3.2.4.9.5 Page no 207 of 837	The RSS shall be designed for unmanned operation. All necessary signals & remote controlling shall be implemented. All MTR & Protection trips shall be resettable from SCADA. Status & remote control of all Auxiliary system of RSS like Sump pumps (Level sensors to be supplied by contractor) of cellar room & cable trench, lighting panel, HVAC panel, Air Conditioning system, CCTV etc. to be implemented	As per our understanding CCTV installation at RSS and integration of CCTV at OCC shall be done by telecom contractor therefore CCTV is excluded from our scope of supply. Kindly confirm.	Your understanding is correct.
88	Part-2 General Particular Specification	3.2.7 SCADA / SAS	3.2.7.4 Page no 209 of 837	Operation Control Centre Equipment shall be provided at the OCC/BCC to permit the remote monitoring of high level status and fault alarm messages from other Railway Systems at Universal Workstations located in the Operation Control Centre	It is requested to provide the detail features of universal workstation and specify the equipment to be covered under other railway system.	Refer Part-2 PS Clause 3.2.7.9
89	Part-2 General Particular Specification	3.2.7 SCADA / SAS	3.2.7.5 Page no 209 of 837	The Contractor shall provide necessary SCADA workstation in the SCADA equipment room at the OCC/BCC	As Per bidder understanding there are no requirement of any hardware/software for OCC/BCC since tender specify to integrate Phase-2 RTU with exiting SCADA Servers at OCC/BCC. It is requested to confirm if any additional workstation is required at OCC/BCC for Phase-2.	Refer Part-2 PS Clause 3.2.7.9
90	Part-2 General Particular Specification	3.2.7 SCADA / SAS	3.2.7.7 Page no 209 of 837	The Contractor shall provide peripherals with all SCADA workstations including line printers and color printers to enable printed copies of information presented on the screens to be obtained	As Per bidder understanding there are no requirements of any hardware/software for OCC/BCC since tender specify to integrate Phase-2 RTU with exiting SCADA Servers at OCC/BCC. It is requested to confirm if any additional workstation and printer are required at OCC/BCC for Phase-2.	Refer Part-2 PS Clause 3.2.7.9
91	Part-2 General Particular Specification	3.2.7 SCADA / SAS	3.2.7.11 Page no 209 of 837	The Depot Control Centre with SCADA for Depot OHE to be set-up at both Mihan & Hingna Depot. Work stations with necessary equipment shall be provided at the Mihan & Hingna depot DCC to permit the remote monitoring of Mihan & Hingna Depot OHE network	Bidder understands that depots at Mihan and Hingna has exisiting gateway for controlling the depot equipment of Phase -1. Therefore, it is requested to clarify the scope as under: 1. Bidder should only consider the integration of phase-II equipment with existing Depot Control center through existing RTU augmentation. Please provide the detail of existing OEM for the gateway/RTU at Depot.	Contractor has to establish Local SCADA Depot Control Centre at both depots for monitoring of depot equipment. The scope includes local SCADA work stations, servers, gateway etc.
92	Part-2 General Particular Specification	9.2 FUNCTIONAL REQUIREMENTS Web Enabled Operator Consoles	9.22 Page no 378 of 837	All operator consoles shall be web-enabled. It shall work through the web browser and be able to host a full graphic user interface. The web clients can connect to the SCADA services at the OCC/BCC through LAN, WAN or through the internet. Firewall shall be provided with web servers. Number of remote client to be connected to web server shall be 20 and maximum number of concurrent users shall be 10. No hardware is envisaged in the scope of Contractor for remote client	Since phase-2 equipment needs to be integrated in phase-1 SCADA as per Clause no 9.3.5. Hence, any new hardware/software for OCC/BCC does not fall under the scope of this contract. Kindly confirm.	Bidder may make their own assesment.
93	Part-2 General Particular Specification	8.2 SYSTEM DESIGN	8.2.11 Page no 365 of 837	All recorded data from the IEDs with integrated disturbance recorder as well as dedicated disturbance recording systems shall be automatically uploaded (event triggered or once per day) to a dedicated computer and be stored on the hard disc. The same shall also be automatically uploaded to OCC DR computer or made accessible at OCC	Bidder understand that the DR recorder at OCC is already available with the Phase-1 system, and the New SAS system will only be integrated with the existing DR recorder. Please clarify	Bidder understanding is correct in general. However, Bidder to ascertain the requirement.

MAHARASHTRA METRO RAIL CORPORATION LTD. NAGPUR METRO

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94	Part-2 General Particular Specification	9.3 TECHNICAL REQUIREMENTS	9.3 Page no 383 of 837	All materials and equipment to be supplied shall be of a proven design and the major core components of the SCADA system shall have a Service Life of at least fifteen years	The service life of IT equipment's such as workstations, servers and operating system etc. is usually up to 10 years and new version of hardware may not support the erstwhile softwares. Hence it is requested to accept the SCADA system with service life of 10 years.	Tender condition prevails.
95	Part-2 General Particular Specification	9.3.3 Remote Terminal Units (RTUs)	9.3.3.2 Page no 385 of 837	RTU shall be able to work in standalone mode for minimum 8h, and store locally the data it produces.	Bidder understand RTU will be working in standalone mode for minimum 8 hours and data produced locally will be stored till the maximum capacity of the RTU is achieved. Kindly confirm.	The clause is self-explanatory
96	Part-2 General Particular Specification	3.2 Detailed Description	3.2.2.1 Page no 201 of 837	PLCC arrangement as per the requirement & Standards of MSETCL	It is understood that the PLCC arrangement is supplied by MSETCL at GSS end for existing system. Requesting to provide to provide make, model, Line -length of exisitng PLCC system.	At LILO arrangement, PLCC if required for MSETCL, shall be provided by the contractor. Contractor to design the same as per Standards of MSETCL.
97	Part-2 General Particular Specification	3.7.1 IACS interfaces & integration with existing AMS (Is in the Scope of Work)	3.7.1 Page no 215 of 837	IACS (Industrial automation and control system) - SCADAs, BMS,TCMS & related NMS (of all communication systems) shall provide relevant data/information required to integrate with Asset Management System (AMS) of Maha-Metro, which would enable maintenance staff to assess the need for unscheduled preventive/failure/breakdown maintenance based on degradation of normal operating parameters	As per understanding the AMS system is provided by Maha metro and bidder's scope is limited to integrate AMS system with SCADAs, BMS,TCMS & related NMS (of all communication systems). Please also specify the protocol for AMS system.	Yes AMS shall be provided by Maha-Metro. Bidder has to define asset tags for all the equipments as per Maha-Metro's defined standards. AMS to SCADA integration shall be done using APIs.
98	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	1.1.6 Page no 179 of 837	132 kV double feeder cables with all accessories between PSA's Grid Substations and Nagpur Metro's RSS	It is requested to provide MSETCL GSS location with cable route details to calculate the cable length.	Refer reply at SN-11 above
99	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	1.1.6 Page no 179 of 837	132 kV Switching Bay augmentation work at Grid Substation (GSS) including civil works at PSA's premises (this asset will be owned and maintained by PSA	It is requested to provide MSETCL GSS end 132 kV switchgear sectioning diagram including OEM details of existing switchgear. Also provide the equipment layout and Single line diagram along with Control & protection drawings to assess the civil and protection requirements.	Existing MSETCL GSS SLD is attached at Corrigendum-V: SN.44
100	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	1.1.6 Page no 179 of 837	LILO arrangement on 132 kV double circuit Kanhan Upalwadi & Pardi Upalwadi MSETCL transmission lines & laying of 132 kV cable to Metro RSS.	Bidder understand that 132kV cable to be laid from LILO arrangement on 132 kV double circuit Kanhan Upalwadi & Pardi Upalwadi MSETCL transmission line to Nagpur Metro RSS. Kindly confirm. It is also requested provide the location of cable termination at transmission line to assess the cable length.	Refer reply at SN-11 above
101	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	3.1.10 Page no 198 of 837	The pilot wire protection for phase-1 all ASS to be implemented with necessary modification in existing ASS panel with pilot wire, additional CT, Line differential relays etc.	It is requested to provide the details of 33kV ASS relay with CT core details those are required for integration.	Existing 33kV ASS Swicthgear details are attached at Corrigendum-V: SN.44. Bidder to further design to meet the requirement.
102	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	5.1.4.1 Page no 233 of 837	(b) HV & LV Restricted earth fault Protection (64R HV & 64R LV) (e) Tank Protection (64) shall be replaced with REF protection.	Bidder understand that only HV and LV REF protection (64R HV & 64R LV) to be provided for transformer unit and no separate tank protection (64) is required. Kindly confirm.	The mentioned protections are only inclusive not exhaustive. All necessary protections meeting the standard practices, CEA regulations, RDSO standards, IEC standards shall be provided.
103	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	5.1.4.2 Page no 233 of 837	Traction Transformer for different voltage levels will be provided with the following Protections: a. Biased Differential Protection (87T) b. Backup IDMT and two stage DMT O/C protection c. Tank Protection (64) shall be replaced REF protection (64R). d. Transformer trouble signals (Buchholz, fire protection, OTT, WTT, PRD etc.) shall be implemented through bay protection unit & triping shall be extended through Master Trip Relay (MTR) e. Harmonic Inrush Protection	From the tender clause, we understood that HV & LV restricted earth fault protection not required. Kindly confirm.	Refer reply at SN-103 above
104	Part-2 General Particular Specification	SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION SECTION VI-C: TENDER DRAWINGS	6.1.3.11.3, 6.1.3.11.4 Page no. 300 of 837 Page no - 19 of 21 (Part 2 Tender Drawing1)	F87: Differential Current Protection for TSS feeder CB's which are directly connected to switching posts. All other necessary provisions, space, CT cores, wiring etc. to be provided by the RSS contractor. Relay shall be provided by Traction contractor. Differential protection Differential protection is designed to detect faults in the area set to be protected. This protection shall be provided where the supply is extended to the main line having separate feeder breakers at the feeding post. This will work as replacement to impedance protection relay.	Bidder understand that differential current protection between the 25 kV RSS feeder and Feeding post circuit breaker to be provided and respective control and relay panel for feeding post circuit breaker will be in scope of traction contractor. However, as per Part2 tender drawing (Pg no. 19) interrupters has been defined and no requirement of differential protection (87) at FP are defined. In view of above, it is requested to confirm that at feeding post any differential protection (87) to be considered or not.	The requirement of this differential protection for TSS feeder CB is not required.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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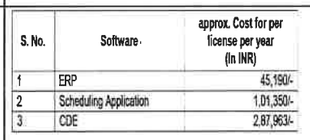
105	Part 1 - Bidding Procedures	Section-III: Evaluation and Qualification Criteria	2.4.1 (d) 55 of 138	Experience of 110 kV and above cable laying One work for a route length of 2km OR Two works for total route length of 3km	The high voltage network in India starts from 66 kV, 110 kV, 132 kV, 220 kV and so on. This depends on the voltage level adopted by different utilities/ Grid Substations. In view of the above, we request you to modify the requirement as below: "Experience of 66 kV and above cable laying One work for a route length of 2km OR Two works for total route length of 3km"	Refer Corrigendum-V: SN.3.
106	Part 1 - Bidding Procedures	Section-III: Evaluation and Qualification Criteria	2.4.1 (e) 55 of 138	Experience of 110kV & above Transmission Line installation on fabricated towers or monopoles: One work for a route length of 2km OR Two works for total route length of 3km	This is unusual scope for a metro contractor and never been part of the Evaluation and Qualification Criteria for any metro project. However we understand the transmission line work is to be done as a part of the scope of this tender hence we request you to keep this requirement under the vendor approval process for the subcontractor and remove this requirement from EQC.	Refer Corrigendum-V: SN.3.
107	Part-2 General Particular Specification	Appendix 9	Cl 9.1(b), page-171	(b) An area in Range Hill / Vanaz Depot or some other suitable site shall be provided free of charge for setting up of Contractor's Site Office.	Bidder understand that land for contractor's store set up along with office shall also be provided free of charge. Please confirm. Kindly also provide the area of land to be provided for site office and store.	Refer reply at SN-37 above & Corrigendum-V: SN.7.
108	Part-2 General Particular Specification & Part 3 - Conditions of Contract and Contract Forms	Section VI-A: General Specification Section - VIII: Particular Conditions of Contract (PC)	Chapter 2: Cl - 2.3.4 20 of 837 Annexure VIII-D IT / 5D-BIM Requirements of the Employer 132 of 352	 S. No. | Software | approx. Cost for per license per year (In INR) 1 | ERP | 45,190/- 2 | Scheduling Application | 1,01,350/- 3 | CDE | 2,87,963/- SN | Contract value in Crores | User licenses (below or equivalent software packages) P6 | SAP ERP | Bentley ProjectWise & AssetWise | RIB iTWO 5D BIM | IT staff 1 | Rs 25 to Rs. 50 | 1 | 1 | 5 | 5 | 3 (three) 2 | Rs 50 to Rs 100 | 1 | 3 | 5 | 5 | 3 (three) 3 | Rs 100 to Rs 250 | 3 | 5 | 8 | 8 | 6 (six) 4 | Rs 250 to Rs 400 | 3 | 8 | 8 | 10 | 6 (six) 5 | Rs 400 and above | 3 | 10 | 10 | 10 | 6 (six)	Bidder understand that license cost per year mentioned in GS Clause 2.3.4 (Pg 20 of 837) for scheduling application refers to P6 and CDE refers to Bentely ProjectWise & AssetWise and RIB iTWO 5D BIM software. Kindly confirm. Also, please revisit the requirment of number of license to be allocated and charged by Maha Metro and the IT personnel required for this project since the requirement in the table is based on financial value rather than actual requirements.	Your Understanding is correct. Tender condition prevails.
109	Part-4 Commercial Package	Appendix N Section MS	Cost Centre A SHE, IT Requirements and Other Requirements	A3. Deployment of on-site Key Personnel as per 'Appendix VI-B-10 - Key Personnel & Construction Machinery, SHE manpower' of Part-II Works Requirement, viz. Payment for this Milestone shall be made quarterly starting after 3 months from the Commencement Date. 80% of the apportioned amount shall be paid in this manner till Completion Date, while remaining 20% shall be paid (in similar manner) during DLP against deployement of DLP staff as per PS Table 11.1.	Please provide PS table 11.1	Refer Corrigendum-V: SN.61
110	Part-4 Commercial Package	Appendix N Section MS	Section MS COST CENTRE E: Supervision of Maintenance	COST CENTRE E: Supervision of Maintenance	Bidder understand that payment of deploying staff for supervision of maintenance as per table 16.1 (Part 2 PS chapter 15 pg no. 436 of 837) will be paid under cost centre E. Please confirm.	confirmed.

MAHARASHTRA METRO RAIL CORPORATION LIMITED ★ NAGPUR METRO

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111	Part-2 General Particular Specification	Particular Specification	Chapter 8: Substation Automation System	**8.7 33kV/415V Container type compact substation** Design, Supply Installation, Testing and Commissioning of all equipment at all Container type Compact Auxiliary Substation (CSS) for station ASS, including, but not limited to: - • 33 kV / 415 V transformers – 2nos • 33 kV GIS Panel & Switchgear (double circuit) • 33 kV power cable and all type of Control Cables • 33 kV Cables inside the ASS • All measuring and protective devices. • Batteries and battery chargers • ACDB & DCDB • Earthing from MET to ASS equipment. Earth mat risers including MET will be provided by E&M contractor. The earth strip from equipment to MET shall be provided by this pcontractor. • Cable paths & cable tray arrangements. • Safety equipment as per CEA regulation 2010. and Communication cable from RTU to TER room shall be laid by this contractor. • All other items required for successful and satisfactory working of the ASS. Two such Container type compact substation to be provided (Part-4, APPENDIX O: ADJ SN.31).	We request you to provide more details and specification of Container Type substation which includes: a. Drawing/ SLD of compact substation b. Ratings of Transformers, 33kV switchgear and other auxiliary equipments etc. c. Dimensions of container	The SLD & ratings are same as conventional ASS specifications mentioned in Tender. Bidder to design the compact Container substation
112	Part-4 Commercial Package	Appendix O ADJ	Sr no. 18, 19, 20 (151 of 156)	18. 1600kVA, 33/0.415kV Dry Type 19. 1000kVA, 33/0.415kV Dry Type 20. 250kVA, 33/0.415kV Dry Type	Adjustment rates need to be quoted in Appendix O ADJ for Dry Type Transformer (250 kVA, 1000 kVA, 1600 kVA) and GTP of the same including losses is not available in tender document. We request you to kindly provide the same.	Refer Corrigendum-V: SN.39
113	Part 1 – Bidding Procedures	Section IV Bidding Forms	Form EXP - 1 Page 130 of 138	Form EXP – 1: Contracts of Similar Size and Nature The exchange rate to be used to calculate the value of the contract for conversion to a specific currency shall be the selling rate of the Borrower's Central bank on the date of the contract.	Please note that it is difficult to ascertain the exchange rate of Borrower's Central Bank for individual Project. We request you to allow to use the Foreign Exchnage Rate from RBI/ SBI or for example RBI/ SBI fbil.org.in.	Refer Corrigendum-V: SN.6.
114	Part-2 General Particular Specification	Section VI-B Works requirement - Particular Specification	3.2.2.1 201 of 837	3.2.2.1 The scope of work includes LILO arrangement on 132 kV double circuit Kanhan-Upalwadi & Upalwadi-Pardi MSETCL transmission lines & laying of 132 kV cable to Metro RSS (proposed between All India Radio & Khairi Fata) but is not limited to below work: a. 132 KV Double Bus GIS Switchgear (2 nos Loop In, 2 nos Loop Out, 1 Bus Coupler) & necessary accessories. b. Civil work, supply and erection of 132 kV Monopole Cable Termination Tower (CTT) (2 nos) arrangement for LILO arrangement. c. Dismantling/modification of Existing Transmission Tower. d. All conductors, insulators and any other material required for LILO arrangement. e. 132 kV Cable & end terminations from the tower to Metro RSS. f. Coordination with power supply authority & other agencies. g. Protection System & coordination with MSETCL. h. PLCC arrangement as per the requirement & Standards of MSETCL. i. ROW liasioning works.	Bidder understand that getting ROW and clearance from authorities for the defined scope including Fees / payment is the responsibility of Maha Metro. However, contractor may assist for documentation and liasoning with the authorities to support Maha Metro. Kindly confirm	Refer Corrigendum-V: SN 8.
115		Section VI-B Works requirement - Particular Specification	3.2.3.1 202 of 837	3.2.3 Shifting / Height Raising of 132 kV Double Circuit Transmission Line Tower 3.2.3.1 Supply of material and Erection of 132 KV Monopole arrangement, Conductor, Insulator Hardware, accessories of tower and earthwire, erection, stringing, excavation, foundation & de stringing work for "Shifting of 132KV Double circuit tower Loc.No. 35 & 36 of 132KV Uppalwadi-Pardi Transmission line for raising of height due to Metro Rail corridor Alignment in Reach-2A". In addition to above necessary modification work for preceding succeeding tower of Loc. No. 35 & 36 if required. i. Any Other Miscellaneous Material/Works/costs required during/for actual execution of the work. ii. All issues regarding ROW & clearances from Govt. authorities, if required.		

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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116		Section VII-B Appendix VI-B1 Interfaces	1.2 Interface with Civic/ Government Authorities Cl 1.2.6 463 of 837	1.2 INTERFACE WITH CIVIC / GOVERNMENT AUTHORITIES 1.2.6 Interface related to ROW for height raising / LILO / Bay auagmentation.		
117	Part-2 General Particular Specification	Section VI-B Works requirement - Particular Specification	16.1.2 Site offices Page no. 449 of 837	16.1.2.2 Maha Metro has 622 square meters of commercial area at Jaiprakash Nagar Metro Station available for use as the Site Office. The Contractor shall suitably develop the 250 sqmm of office space from allotted open space at Concourse Level-02 (E) to make it usable as the site office as specified under this Chapter including but not limited to Civil, Plumbing, electrical works etc. 16.1.2.3 A monthly rent and maintenance charges of Rs. 520/Sqm. and Rs. 60/Sqm. respectively per month (exclu. GST), and electrical facilitation charges according to MahaMetro Policy will be charged to the Contractor. 16.1.2.4 If, for any reason, Maha Metro cannot provide the designated space to the contractor or if contractor arranges similar facility as per tender requirement near their work front for ease of site work monitoring and material storage, the contractor shall have the option to find an alternative suitable space for the Site office, subject to specific approval from Maha Metro. In that case, Maha Metro shall recover the difference between the actual rent paid by the Contractor and the rate proposed by Maha Metro, (i.e., Rs. 520/Sqm + Rs. 60/Sqm) per month (+GST), from any payment due to the contractor if the rate of alternative space is lesser than the rate of Maha Metro's proposed space.	The intent of the requiremtents of employer office is to meet the basic office requirement of the employer. The rental value indicated per sqm is significantly high. Hence it is requested to delete the requirement and provide space free of cost.	Refer reply at SN-57 above
118	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	3.2 (199/837)	132 kV (Rated voltage 145 kV) Air Insulated Switchgear (AIS) outdoor type along bus bar extension & other associated work including 132 kV Transmission line/cabling work. It is proposed to tap 132 kV double circuit line for EHV connections between grid substation & RSS.	Request you kindly provide SLD of 132 kV Bay Augmentation work at MSETCL Grid Substations to understand the scope of 132kV cable & Transmission line, protection requirement.	Refer reply at SN-99 above. Bidder to design.
119	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	3.2.2.1 (201/837)	The scope of work includes LILO arrangement on 132 kV double circuit Kanhan-Upalwadi & Upalwadi-Pardi MSETCL transmission lines & laying of 132 kV cable to Metro RSS (proposed between All India Radio & Khairi Fata).	Kindly provide 132kV Cable route path with location of termination at transmission tower/ take off gantary.	Refer reply at SN-11 above
120	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	3.2.4.9.1 (205/837)	Cabling/Conductor- 3.2.4.9.1 The Contractor shall be responsible for obtaining approvals, Supply, Laying, Testing and Commissioning (including integrated testing and Commissioning) of EHV Cables/conductor for Receiving Substations at above mentioned locations. This includes all works such as excavation of ground, provision of HDPE pipes, provision of transmission towers, restoration of ground, river crossing, railway crossing, nallah crossing, and all other works required to make it fully functional Cable in all respects.	Kindly provide site route plan and location of Nallah, river crossing, Transmission line location.	Bidder may survey & may make their own assesment.
121	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	3.2.10, (213/837)	The contractor shall design & implement the dynamic power factor compensation for Phase-2 netwrok so as to maintain the power factor > 0.98 at all points of metering i.e Kanhan RSS, Sitabuldi RSS & Jhansi Rani RSS for every feeding scenario.	To calculate the rating of dynamic & static reactive power compensators, it is requested to provide Rolling stock data including power factor details during peak load, normal condition & moderate condition.	Refer tender document
122	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.3.2.5.1, (247/837)	The modules individually as well as the assembly shall be subject to various test, including type test, as required in terms of provisions of Chapter – 9 of "Employer's Requirements – General Specifications" prior to shipment.	Bidder understand that all the relevant valid Type test reports need to be submitted prior to shipment inline to test requirement defined in Particular Specification/ relavant IEC of respective equipment. Kindly confirm.	The clause is self Explanatory.
123	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.3.3.1.12 (251/837)	Current density for each winding should be not more than 2.5 A/mm2.	Bidder understand that defined Current Density is guaranteed at ONAN rating of Transformer. Kindly confirm.	The clause is self explanatory. At all ratings, Current density for each winding should be not more than 2.5 A/mm2.
124	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.3.3.2.2, (258/837)	Secondary voltage at full load and pf of 0.8 is 400V	Since secondary voltage at full load depends upon the impedance % of transformers, hence secondary voltage at full load will be calculated inline with defined impedance value in tender. It is requested to accept the same.	Tender condition Prevails.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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125	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.3.3.2.5, (260/837)	(d) Indicative Efficiency at different load conditions (the losses value indicated in Appendix VI-B3 Data Sheet shall be overriding considerations over the indicative efficiency values mentioned herein): a. 1/4 – load i. power factor = 1 (Minimum: 98.25%) ii. Power factor = 0.8 (Minimum: 97.85%) b. 1/2 – load i. power factor = 1 (Minimum: 98.1%) ii. power factor = 0.8 (Minimum: 97.65%) c. 3/4 - load i. power factor = 1 (Minimum: 97.8%) ii. power factor = 0,8 (Minimum: 97.25%) d. full load i. power factor = 1 (Minimum: 97.35%) ii. power factor = 0.8 (Minimum: 96.7%)	Bidder understand that the transformer needs to be designed based on the losses provided in the tender specification (GTP Section VI-B Technical Requirement). Hence it is requested to accept the efficiency values based on the losses provided in the tender specifications.	Tender condition prevails.
126	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.3.4.3.5 (262/837)	vii. GIS should be of modular design, and it should be possible to add feeder panels if required without any gas work at site	It is requested modify the clause as follows: "GIS should be of modular design, and it should be possible to add feeder panels if required. Any addition of panels at a later date or exchange of panels, irrespective of it's location in the switchboard, should be possible with/ without any gas handling at site and if required same shall be in scope of OEM."	Ref Corrigendum-V: SN.17
127	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	5.4.3.1.5 (281/837)	In India, the short term rating of most of the equipment is based 3 second duration of fault. Therefore, 3 second may be adopted on the duration of fault in the calculations to determine the size of conductor for the earth mat.	The size of conductor for the earth mat fault duration is adopt 1 second instead of 3 second due to fault clearing time 0.3 to 0.4 second approx. Kindly accept.	To be design as per IS 3043: 1 second fault duration.
128	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	6.3.2.3 (316/837)	Impulse withstand (1.2/50 microsecond) in kV (peak): • 200 kV OR 250 kV for 25 kV,	Bidder understand that Impulse withstand (1.2/50 microsecond) of 25 kV is 200kVp. Kindly confirm.	Both 200 kV or 250 kV are acceptable.
129	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	7.3.11.1.1, (340/837)	All LV cables shall be as per IS 7098 and IEC 60502-1 in force and shall satisfy the tests given in the above standards	Since LV cable can be manufactured either as per IS 7098 or IEC 60502-1. Bidder understand that LV cable to be manufactured using either one of the above defined standerd. Kindly confirm.	If contradiction occurs, IS 7098 will prevails.
130	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	10.2 (387/837)	132 KV CABLES The above MSETCL specifications are for general reference only and the conductor size (1000/500 mm2 (as per requirement) Copper cables & short circuit current for conductor: 143kA for 1 sec and of sheath 40 kA for 3 sec need not be given cognizance as such.	1. Kindly confirm 132kV cable size whether it consider 1000 sq.mm or 500sq.mm size. So Fault current accordingly will considered. 2. It is requsted to kindly provide MAHA-METRO 132kV cable Technical specifications incase it is different from the defined MSETCL specifications.	Refer reply at SN-11 above
131	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	11.1.1 11.1.7 , (397/837)	11.1 BAY AUGMENTATION WORKS- 11.1.1 The scope of work comprises of design, manufacture, shop testing, supply, delivery at site, installation, inspection, testing and commissioning of 3-phase, 132 kV (Rated voltage 145 kV) Air Insulated Switchgear (AIS) outdoor type along bus bar extension & other associated work including 132 kV Transmission line/cabling work. It is proposed to tap 132kV double circuit line for EHV connections between grid substation & RSS. 11.1.7 Control room Augmentation	It is requested to kindly provide 132kV SLD, control room layout & equipment layout plan of existing Grid Substation.	Refer reply at SN-99 above. Bidder may further survey & may make their own assesment.
132	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	11.2 (397/837)	LILO ARRANGEMENT FOR RSS.	It is requested to kindly provide 132kV LILO SLD, control room layout & equipment layout plan. Section as input requirement.	Refer Tender drawing. Refer reply at SN-11 above
133	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	10.6 (669/837)	Data Sheet- 25kV Gas Insulated Switchgear 11 | Short time current rating | kA | 25/63(for 3 sec)	Bidder understand that the short time current rating is considered as 25kA for 3 second. Kindly confirm.	RATED SHORT CIRCUIT CURRENT: 25kA, MAKE CURRENT: 63kA.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
134	PART 4: Commercial Package	Section XI: Pricing Document	5.0 Milestone Payment Schedule (MPS) (5/156)	5.3 The prices shall not be unbalanced, therefore, the following price apportionments shall apply:	Since price apportionment against Cost Centre C and D (Installation & Site Testing, Integrated Testing & Commissioning) is away from the actual price. Hence, it is requested to ammend the following price cost centre/ milestone's apportionment as below: 2. Cost Centre C (Installation & Site Testing) - not less than 6% apportioned to that section 3. Cost Centre D (System Acceptance Tests, Integrated Testing & Commissioning) - not less than 2% apportioned to that section	Tender condition prevails.
135	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	6.3.2.1.6 & 6.3.2.1.7 (316/837)	6.3.2.1.6 All parts shall withstand at least 10000 operations without any signs of detriment. 6.3.2.1.7 25 kV switchgears of TSS shall be indoor GIS type with Vacuum circuit breaker All parts shall withstand at least 10000 operations without any signs of detriment. These equipments shall follow the electrical and mechanical characteristics and must be in accordance with IEC standards IEC 62271.	Bidder understand during fault condition circuit breaker trips to isolate the faulty section. Therefore requirement of 10000 operation without any sign of detriment is applicable for all parts of 25kV circuit breaker only as per IEC 62271. Kindly confirm.	The clause is self explanatory.
136	Part 2 Works Requirement	Section VI-B: Works Requirement – Particular Specification	4.1.9 (219/837)	4.1.9 For all transformers, the transformers losses (iron/copper/load) shall not exceed the expected values specified in Appendix VI-B3 Technical Sheets. All the losses values shall be indicated at 75°C.	Bidder understand transformer losses defined under Appendix VI-B3 Technical Sheets are subjected to IEC defined tolerance as 75°C. Kindly confirm.	The clause is self explanatory.
137	General	General	General	General	It is requested to share the deviation format incase of deviations are accepteble.	Deviations not acceptable.
138	CHAPTER 3 3.0 SCOPE OF WORK	3.1.2		The equipments proposed for Nagpur Metro Phase 2 works shall be compatible with equipments installed in Nagpur Metro Phase 1.	Please provide the equipments make and model number installed in Nagpur Metro Phase 1.	Bidder may survey & may make their own assesment.
139	CHAPTER 3 3.0 SCOPE OF WORK	3.1.10		The pilot wire protection for phase-1 all ASS to be implemented with necessary modification in existing ASS panel with pilot wire, additional CT, Line differential relays etc.	With reference to the clause 3.1.10, please furnish the following details: a) Number of ASS switchgear panels along with locations where in the referred modification works need to be carried out b) Make & Model of Existing 33kV switchgear at each ASS c) Drawings of existing ASS panels for considering modifications as per referred clause	Ph-1 consists of 39 nos ASS & 2 nos RSS. Refer Corrigendum-V: SN.44 for existing 33kV ASS panels details.
140	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.2		The scope will include substation buildings, 26btaining approvals from PSA (MSETCL), supply and erection of all Switchgear current & voltage transformers, lightning arresters, bus bars, jumpers, auxiliary equipments, EHV Cable/conductors including accessories from Grid substation bays to RSS	As per referred clause, it is mentioned as new substation building at existing MSETCL grid substation is in bidder scope. However, as per cl.no-3.2.1.6.2, for accomdation of PLCC & C&R panel, Control room extension is required with shifting of 11kV panel. As both above statements are contradicting to each other, we understand that bidder need to extend existing control room building instead of constructing a new substation building. Please confirm whether bidder's understanding is correct.	Your understanding is correct.
141	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.2			In continuation to above query, please provide the existing control room buidings drawings floor wise. Also please provide how many 11kV panels need to be shifted and location to which these 11kV panels need to be placed after shifting.	Refer Corrigendum-V: SN.9
142	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.3 (a)		Geotechnical investigations to determine the safe bearing capacity of the soil and other design parameters, including Soil conductivity	As per cl.no-3.2.1 , it is mentioned 132 kV Bay Augmentation work at MSETCL Grid Substations is in bidder scope. In this regards, we presume that bidder need to extend existing earth mat only , no need to do earth resisitivity test again for bay extension purpose. Please confirm whether bidder's understanding is correct	This is a Design and Build tender and Designs are in the scope of Contractor.
143	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.3 (a)		Geotechnical investigations to determine the safe bearing capacity of the soil and other design parameters, including Soil conductivity	In contnuation to above query, please provide the existing Earth mat spacing & conductor size at MSETCL GSS.	Bidder may ascertain from MSETCL & design to meet the requirement.
144	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.3 (b)		cable paths and cable trenches inside control room as well as switchyard area.	We understand that bidder scope is limited to extension of 2 nos. of 132kV AIS line bays only. No need to consider cable paths and cable trenches inside existing control room buildings. Please confirm whether bidder understanding is correct.	Extension of existing cable trench is required for both yard & control room.
145	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.3 (b)			In continuation to above query, we undestand that bidder's scope is limited to earthmat extension, earthing risers for outdoor equipments, lighting, lightning protection , cable trenches for only proposed 2 Nos 132kV AIS bays only. Please confirm.	Refer to tender document
146	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.3 (c)		Earthing arrangements as required including buried rail for traction system	We understand that referred clause is related to Metro RSS substations & not for MSETCL grid substation. Please check and confirm.	Your understanding is correct.

MAHARASHTRA ... CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
147	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.6.1		All Civil works in the Control room, including, but not limited to Design and Construction of the room building complete with lighting (indoor! Outdoor), fans, false ceiling, false flooring and air-conditioning (wherever required), power sockets,	We are not considering any lof the following works in the existing control room/GIS buildings at MSETCL GSS: a) Indoor lighting b) Lighning protection for buildings c) earthmat extensions inside control room /GIS hall Please confirm.	a) Indoor lighting is required for the extended part of control room. b) Building Lightning protection is not required. c) Earthmat extensions inside control room /GIS hall is required.
148	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.6.3		The existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accomdation of 2 nos. of 132kV AIS line bays so that space can be made available at one side by extending 132kV Bus(2+1 type).	As per referred clause, it is mentioned that existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accomdation of 2 nos. of 132kV AIS line bays. In this regards, please provide the number of staff quarters and fence length along with the existing drawings with proper demarcation of dismantling scope to be considered.	Bidder may survey & may make their own assesment.
149	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.6.5		All other equipments, such as Low Voltage distribution board complete with Incoming and outgoing breakers and feeders, DC-UPS including Batteries, Battery chargers and DC Distribution Boards	We understand that feeders of sufficient rating are already available in eixsting MSETCL grid substation. Bidder scope is limited to supply of power cables from existing AC/DC boards to panels supplied under present scope.We are not considering supply of any new AC and DC distribution boards in present scope. Please confirm	Bidder may survey & may make their own assesment.
150	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.7		Equipments inside the Control Room:	At existing MSETCL GSS, we are not considering any equipments like Work stations, gateways, printers, servers and PC etc... in station level. We presume that same shall be installed in future as per cl.no-3.2.1.8. Our scope is limited to supply of SAS compatiable control & protection IEDs for the proposed bays. Please confirm.	Your understanding is correct. Refer Corrigendum-V: SN.10
151	CHAPTER 3 3.0 SCOPE OF WORK	3.2.1.8		At present, the MSETCL Substations are not having SCADA/SAS system. However, the proposed system shall be compliant with SAS/SCADA system to be installed in future.	We are not considering any SAS related works in present scope. We presume that same shall be installed in other package. Our scope o wprk is limited to supply of SAS compatiable control & protection IEDs for the proposed bays. Please confirm.	Your understanding is correct.
152	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (a)		132 KV Double Bus GIS Switchgear (2 nos Loop In, 2 nos Loop Out, 1 Bus Coupler) & necessary accessories	Please provide the following inputs pertaining to LILO GIS: a) Location b) Layout plan with dimensions c) Whether the Line-in & Line-out feeders are through 132kV Cable or Overhead line? d) If Cable is proposed for LILO, please provide the cable size along with specifications	a) LILO arrangment is planned between All India Radio & Khairi Fata. b) Bidder to design the Layout c,d) Line-in & Line-out are through 132kV 1000 sq mm Cu Cable.
153	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (a)		132 KV Double Bus GIS Switchgear (2 nos Loop In, 2 nos Loop Out, 1 Bus Coupler) & necessary accessories	As per clause 3.2.2.1, LILO arrangement of the double circuit 132kV transmission line between Kanhan-Upalwadi & Upalwadi-Pardi need to be done. In this regard, please confirm this proposed LILO GIS is for the LILO of which transmission line?	Refer reply at SN-11 above
154	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (a)		132 KV Double Bus GIS Switchgear (2 nos Loop In, 2 nos Loop Out, 1 Bus Coupler) & necessary accessories	We understand from the referred clause that a LILO GIS need to be provided for making LILO arrangment of existing transmission line. However two numbers outgoing bays to provide incoming supply to proposed Metro RSS (between All India Radio & Khairi Fata) is not considered in above referred clause. We presume that from LILO GIS outging bays 132kV cable shall be laid to Metro RSS. Please check & confirm.	The LILO GIS bays & RSS GIS bays are in same building with common busbar but sectionalized (Refer tender drawing '132 kV GIS for Maha Metro'). Refer reply at SN-11 above
155	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (e)		132 kV Cable & end terminations from the tower to Metro RSS	The proposed 132kV power distribution philosophy from MSETCL GSS to Metro RSS is not clear. In this regard, we request MMRCL to provide a sketch clearly showing the OH/UG Cable & its interconnectivity between MSETCL GSS, LILO GIS & Metro RSS.	Refer Corrigendum-V: SN.44.
156	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (e)		132 kV Cable & end terminations from the tower to Metro RSS	As per referred clause, it is mentioend as 132kV cable to be laid from **tower to metro RSS**. In this regard, please confirm whether the tapping of 132kV power supply to Metro RSS is from the OH transmission tower (or) from the proposed LILO GIS?	Refer reply at SN-11 above
157	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.3		All Civil works in the Control room, including, but not limited to Design and Construction of the room building complete with lighting (indoor & outdoor), fans, false ceiling, false flooring and air-conditioning (wherever required), power sockets	Please provide the minimum dimensions of the LILO GIS building along with the other facilities to be considered.	Refer reply at SN-20 &154 above.
158	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.5		a) Supply: Installation and putting into operation of Digital Protection Equipment, Bay Controllers for 132kV, Work stations and PC's and linking with the HV equipments in the yard. b) Providing a 'Gateway' to support control and monitoring of all 132 kV system from the MSETCL Control Room. The gateway shall be Ethernet compliant	We understand that bidder need to consider sepearte Gateway, Work stations and PC's at control room apart from equipments to be considered for metro RSS (proposed between All India Radio & Khairi Fata). Please confirm.	Your understanding is correct.
159	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.5		Necessary configuration & additional SCADA Setup in MSETCL existing Grid substation for Monitoring & controlling of 132kV LILO Bay Switchgear & other equipment.	Please provide the existing SCADA details at existing MSETCL substations (Upalwadi, pardi) 1. Make & model number of SCADA system 2. Architectural drawing for existing SCADA system	At present, the MSETCL Substations are not having SCADA/SAS system. Bidder to provide separate SCADA for LILO arragement for MSETCL purpose at MSETCL GSS as well as Metro RSS.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
160	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.1		supply, delivery at site, installation, inspection, testing and commissioning of 3-phase, 132 kV (Rated voltage 145 kV), 3150A, 40 kA for 3 seconds Gas insulated (indoor type) receiving sub-stations at Khairi Fata RSS / Kanhan River RSS at Reach-2A	As per referred clause, we understand that only one RSS need to be constructed under this package. Other RSS locations mentioned in the drawing such as Situbuldi RSS & Jhansi Rani RSS are existing. Please confirm.	Your understanding is correct.
161	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.1		supply, delivery at site, installation, inspection, testing and commissioning of 3-phase, 132 kV (Rated voltage 145 kV), 3150A, 40 kA for 3 seconds Gas insulated (indoor type) receiving sub-stations at Khairi Fata RSS / Kanhan River RSS at Reach-2A	As per referred clause, we understand that one RSS is proposed at reach 2A, location of RSS shall be Kanhan river (or) Khari Fata. However , as per 3.2.2.1 (a),Metro RSS is proposed between All India Radio & Khairi Fata. Based on above clauses, we understand that RSS at reach 2A shall be either at following locations a) Kanhan river (or) b) Khairi Fata (or) c) All india radio station.	At either of two locations: a) at Kanhan River or b) at Khari Fata (which falls between All India Radio Metro station & Khairi Fata Metro station)
162	CHAPTER 3 3.0 SCOPE OF WORK	3.2.2.1 (a)		supply, delivery at site, installation, inspection, testing and commissioning of 3-phase, 132 kV (Rated voltage 145 kV), 3150A, 40 kA for 3 seconds Gas insulated (indoor type) receiving sub-stations at Khairi Fata RSS / Kanhan River RSS at Reach-2A	Please provide the following inputs pertaining to Metro RSS: a) Location b) Layout plan with dimensions	Refer reply at SN-161 above. Refer Tender drawing 'Typical Layout For 132kV RSS Substation For NMRCL Ph-2' for reference purpose only. Bidder to design the final drawing.
163	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.4 (f)		EHV (132 kV) cable laying works from Power Supply Authority's (PSA) Sub station/tower to RSS	As per referred clause, it is mentioned as EHV (132 kV) cable laying works from Power Supply Authority's (PSA) Sub station/tower to RSS. However, as per cl.no-11.2 LILO ARRANGEMENT FOR RSS, The scope of work includes LILO arrangement on 132 kV double circuit Kanhan- Upalwadi & Upalwadi-Pardi MSETCL transmission lines & laying of 132 kV cable to Metro RSS (proposed between All India Radio & Khairi Fata). Based on above clauses, we understand that if RSS is proposed at Kanhan river , bidder need to consider BAY AUGMENTATION WORKS at MSETCL grid subsation along with EHV cable laying from grid substation to RSS as per cl.no-11 for incoming power supply to RSS If RSS is proposed between All India Radio & Khairi Fata , bidder need to consider LILO ARRANGEMENT FOR RSS along with EHV cable laying from LILO GIS bays to RSS bays as per cl.no-11.2 for incoming power supply to RSS. Please confirm whether bidder understanding is correct	Refer reply at SN-11 above
164	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.4 (o)		Construction of TRD Depot / Store inside RSS premises or elsewhere in Nagpur	Please confirm the exact location to be considered for construction of TRD Depot / Store.	Refer reply at SN-06 above.
165	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.7.3		(a) 33 kV Indoor Switchgear panels and associated cabling from the Power Transformer to 33 kV Switchgear panels alongwith space for future provisions (b) 25 kV Indoor Switchgear panels and associated cabling from the Traction Transformer to 25 kV Switchgear panels alongwith space for future provisions	Please indicate the number of future 33kV panels and future 25kV panels for which space need to be considered.	Space for 2 future panels for each 132kV, 33kV & 25kV systems to be considered.
166	CHAPTER 3 3.0 SCOPE OF WORK	3.2.4.8.3		Complete SAS/SCADA system for Maha-Metro phase -2 shall be compliant with already existing SAS/SCADA system of Maha-Metro phase-1. Necessary interface required for design, execution & testing works is in scope of power supply contractor.	Please provide the following details of OCC ,BCC & SCR SCADA w.r.t existing corridors NS and EW 1. Make & model number of SCADA system 2. Architectural drawing for existing OCC & BCC SCADA system	Refer reply at SN-81 above
167	CHAPTER 3 3.0 SCOPE OF WORK	3.2.8.3		33 kV Cable conductive material to be of copper or aluminium in the whole 33kV network and from 33 kV bus to Auxiliary Transformer	Please provide the cable conductor and size to be considered or each circuit as mentioned below a) 33kV Cable from ASS to RSS b)33kV cable from 33kV GIS to auxiliary transformer inside depot,RSS and ASS c) 33kV Cable from ASS to Depot	This is a Design and Build tender and Designs are in the scope of Contractor. Refer PS Table 4.6 for minimum rating requirement.
168	General			Cable Route	Please provide the cable route length from the MSETCL GSS/LILO arrangement/LILO GIS to Metro RSS. As per BPS, Schedule-EHV, Cost centre-B, Sl. No. B1.1, B1.2 & B1.3, the Transmission line/ EHV cable length is mentioned as 0.5RKM, 3RKM & 1.5RKM. We presume Bidder shall quote unit prices only for the above mentioned RKM & the same shall be considered for bid evaluation. Please confirm.	Refer reply at SN-11 above. These cost-centre items are self-explanatory, to be quoted for prescribed length, not the unit prices.
169	General	Part-2TenderDrawing1, Route map of phase-ii		Chainage	Please provide the chainage for each station & depot for the proposed Metro corridor. This is required for our estimations.	Refer Corrigendum-V: SN.44.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
170	CHAPTER 3 3.0 SCOPE OF WORK	3.2.7.9		Augmentation work in Existing OCC/BOCC SCADA The Phase-2 network to be intergrated with the existing Phase-1 SCADA system with necessary modifications in existing SCADA to make the system fully functional.	a) Please clarify & elaborate the scope of works required for integration of Phase-2 SCADA with existing Phase-1 SCADA. b) Please clarify whether the existing Phase-1 SCADA servers has the capacity to handle the Ios related to Phase-2 SCADA system in case integration is required?	Refer tender document. Bidder may survey & may make their own assesment.
171				Distance between GSS to RSS, RSS to ASS & RSS to Depot	Please furnish the distance between the following links as the same is not mentioned in the specification: a) MSETCL GSS to Kanhan RSS/Kheri Fata RSS/All india radio RSS b) Kanhan RSS to Kanhan ASS station. c) Kheri Fata RSS/All india radio RSS to All india radio ASS d) Khapri ASS to Mihan Depot ASS e) Khapri ASS to ECO park ASS f) ECO park ASS to Mihan Depot ASS g) Automotive square ASS to pili nadi ASS h) Lokmanya nagar ASS to Hingna Depot ASS i) Hingna Depot ASS to Mount view ASS j) Lokmanya nagar ASS to Mount view ASS k) Prajapati nagar ASS to Pardi ASS	Refer reply at SN-11 above & tender drawings at Corrigendum-V: SN.44
172	General			Order of Precedence	In case of discrepancies between Particular specification, Technical sheets & employer drawings, please clarify the order of precedence to be followed	Refer tender document PS Clause.1.5.6
173	General	-		-	For cabling from GSS to RSS and RSS boundary to ASS/TSS, the necessary ROW and clearances shall be arranged by MMRCL. Please confirm whether Bidder's understanding is correct.	Refer reply at SN-114 above.
174	Part-2TenderDrawing1	Page no-5 of 21		33kV Power Supply for Reach-2 & Reach-2A Stations ASS	As per referred drawing , it is mentioned as the H04 panels shall be at one ASS (either at Kanhan ASS or All India Radio ASS) for Incoming from RSS. Please confirm the exact location of ASS in which H04 panels to be considered	To be quote at any one station. This Payment shall be made after completion of this H04 panel works either at Kanhan ASS or All India Radio ASS.
175	Part-2TenderDrawing1	Page no-8 of 21		Single Line Diagram	As per referred drawing , it is shown as rated duration of short circuit shall be 1 sec. However, as per Part 2 Works Requirement - Particular Specification, cl.no- 3.2.4.1, it is mentioned as 132 kV (Rated voltage 145 kV), 3150A, 40 kA for 3 seconds Gas insulated (indoor type) As both above statements are contradicting each other, please conifm the rated duration of short circuit shall be 1 sec or 3 sec.	Refer Corrigendum-V: SN.43
176	Part-2TenderDrawing1	Page no-8 of 21		Single Line Diagram	As per referred drawing , it is shown " Rated normal current of 132kV Feeder shall be 1600 A". However, as per Particular Specification Appendix VI-B3: Technical Sheets, cl.no- 5.1.1 1, sl.no- 15, rated current mentioned as 3150 A. As both above statements are contradicting each other, please conifm the feeder current rating shall be 1600A or 3150A.	Refer Corrigendum-V: SN.43
177	Part-2TenderDrawing1	Page no-8 of 21		Single Line Diagram	As per referred drawing, we understand that bidder need to supply 132kV GIS with bus bars for double bus arrangement & bus sectionalizing of each bus. However as per particular Specification Appendix VI-B3: Technical Sheets, data sheet for bus sectionalizer bay equipments is not provided. Please check and provide the same .	Designs are in the scope of Contractor.
178	Part-2TenderDrawing1	Page no-8 of 21		Single Line Diagram	Bay descriptions mentioned in Part 2 Works Requirement - Particular Specification, cl.no- 5.3.2, 132 kV Gas Insulated Switchgear (GIS) are not matching with the equipments shown in the referred SLD. Please confirm whether SLD or descriptions mentioned in the specification need to be followed.	Refer Corrigendum-V: SN.43 Tender drawing is only indicative. Bidder to design fulfilling the all requirements of Part 2 Works Requirement.
179	Part-2TenderDrawing1	Page no-8 of 21		Single Line Diagram	As per referred SLD, T51 and T52 equipmeents description is not shown . Please check and provide the same Similarly Q1 is shown in legend, but equipment is not considered in SLD. Please check and provide the correct SLD.	Refer reply at SN-178 above

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
180	Part 2 Works Requirement - Particular Specification	5.3.2.2.3		132 kV Gas Insulated Switchgear (GIS)	As per referred clause "Each Bus Coupler Bay (1 No.) consisting of: (a) Circuit Breaker – 1 No. (b) Current Transformer – 2 Nos. (c) Bus Disconnectors & Earth Switch – 2 Nos. (d) Dedicated Current & Voltage Transformers fixed type of rated insulation for MSETCL/MSEDCL metering (e) Other items as required for connection to bus bars, cables etc. and for completing the intent of work" As per above description of bay equipments in bus coupler bay, Dedicated Current & Voltage Transformers fixed type of rated insulation for MSETCL/MSEDCL metering and cables mentioned . 1) We understand that bidder need to consider Dedicated Current & Voltage Transformers fixed type of rated insulation for MSETCL/MSEDCL metering in incoming line bays only not on bus coupler bays. 2) Similarly EHV cable termination chamber need not be considered in the bus coupler bay. Please confirm whether bidder understanding is correct.	**Metering arrangement for PSA authority:** i. Main & Check meters for MSEDCL ii. Main & Check meters for MSETCL iii. Standy Meters at all incoming bays for MSETCL. Bidder to design as per the MSETCL & MSEDCL requirement. This is a Design and Build tender and Designs are in the scope of Contractor.
181	Particular Specification Appendix VI-B3: Technical Sheets	10.1		25KV SWITCHGEAR	As per the referred clause, the BIL for 25kV GIS is mentioned as 200kVp (or) 250kVp. As the Traction contract is not part of this package, we request MMRCL to specify the BIL for 25kV GIS.	Both 200kVp (or) 250kVp are acceptable.
182	Part 2 Works Requirement - Particular Specification	5.3.2.2.5		Bus sectionalizer bay	As per referred clause" Bus Sectionalizer consisting of: (a) Disconnectors – minimum 2 nos or as per design requirement" Please confirm whether bidder need to consider only disconnectors in the bus sectionalizer bay. No need to consider breaker and current transformer. Please confirm whether bidder understanding is correct.	The clause is self explanatory.
183	Part 2 Works Requirement - Particular Specification	5.3.2.2.6 & 5.3.2.2.7		Bus VT module and CT module	As per referred specification, 132 kV Gas Insulated Switchgear (GIS) , cl.no- 5.3.2.2.6 " Each Bus VT Module for protection consisting of: (a) Voltage Transformer – 4 nos (b) Bus Earthing Switch" Cl.No- 5.3.2.2.7 Bus CT & VT Module for Metering consisting of: (a) Current Transformer – 2 No for Main Meter & 2 No for Check Meter for MSEDCL/MSETCL metering arrangement. (b) Voltage Transformer – 2 No for Main Meter & 2 No for Check Meter for MSEDCL/MSETCL metering arrangement 1) The descriptions mentioned in the above clauses are not clear, we understand that bidder need to provide bus VT module on both sides of Bus-section. Total quantity shall be 4 Nos for complete GIS. 2)Similarly, current transformer and voltage transformer for MSEDCL/MSETCL metering arrangement shall be considered in incoming line bays only. Please confirm whether bidder understanding is correct.	Refer Tender drawing '132 kV GIS for Maha Metro_Revised'.
184	Part 2 Works Requirement - Particular Specification	10.2.7.3		The maximum temperature for the metallic screen, in case of short-circuit, is 210°C.	As per particular Specification Appendix VI-B3: Technical Sheets,cl.no- 6.1,132kV Cables,sl.no-21, Short circuit capacity of metallic screen assuming screen temp of 75 °C before short circuit and 200 °C during short circuit is mentioned. As both descriptions are contradicting each other, please confirm whether maximum temperature of metallic screen shall be limited to 210°C or 200°C?	210°C is confirmed.
185	Part 2 Works Requirement - Particular Specification	10.2 132 KV CABLES		The above MSETCL specifications are for general reference only and the conductor size (1000/500 mm2 (as per requirement) Copper cables	As per referred clause, both 1000 sq.mm and 500 sq.mm metioned. Please confirm where 1000 sq.mm and 500 sq.mm cable need to be used?	Refer reply at SN-11 above
186	Part 2 Works Requirement - Particular Specification	10.3.1 Governing Specifications		The cables shall be of dry-insulated, armoured radial-field cable, unearthed type based on proven technology	As per referred clause, 33kV cables shall be armoured. However as per CHAPTER 14.0 SPARE PARTS, SPECIAL TOOLS AND TEST EQUIPMENT, Sl.no-C Cables, straight through joints and end termination kits mentioned for unarmoured cables. Please check and confirm the exact requirment.	Refer PS table 4.6 & Clause 10.1.5 - 33kV cable of within RSS & from RSS to ASS to be armoured. 33kV Ring network cable to be unarmoured.
187	Part 2 Works Requirement - Particular Specification	10.1.5 132 KV CABLES		All HV power cables (to be laid underground), LV Power & cable cables shall be armored.	As per specification, Chapter-10, clause-10.2.7.3, the Metallic screen shall be Corrugated Aluminum & shall provide mechanical protection. Hence we understand that the Metallic screen will serve as the Armour. Please confirm our understanding.	Tender condition prevails

NAGPUR METRO

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188	Part 2 Works Requirement - Particular Specification	Table 4.6:		Minimum rating for major equipment	As per referred clause, sl.no-B, ASS, 33 kV GIS shall be 33 kV, 3 ph, 1250A, 26.3 kA for 3 sec. However, as per Particular Specification Appendix VI-B3: Technical Sheets , sl.no-8.8 33kV Circuit Breaker GIS (ASSs), Busbar set rated current mentioned as 400A. As there is a contradiction, please check and confirm the exact requirement .	Ref corrigendum-V: SN.25, 37.
189	Part 2 Works Requirement - Particular Specification	Table 4.6:			In continuation to above requirement , please provide detailed SLD of 33kV GIS switchgear in both RSS and ASS with current ratings to be considered for bus bar and feeders	Refer Tender drawings.
190	Particular Specification Appendix VI-B3: Technical Sheets	5.3.8, 132kV Current Transformer for Tariff metering		Note: the Incomer Tariff Metering CT specifications shall be as per MSEDCL requirement & their approval	Please provide the MSEDCL tariff metering specifications	Bidder may ascertain from MSETCL.
191	Part 2 Works Requirement - Particular Specification	5.1.1.4		Contractor shall be required to design and develop protection scheme for the RSS/TSS/AMS/ASS. Scheme and relay setting proposed should be developed keeping into view of the 132kV, 25 kV and 33 kV system of Maha-Metro, Nagpur Ph-II network in line and stations. Also, existing phase-I network setting to be developed / revised as required.	Please provide the existing protection scheme drawings for RSS/TSS/AMS and ASS of pahse-1 network	Will be shared to successful bidder during execution stage.
192	Part 2 Works Requirement - Particular Specification	5.1.3.4		Each Bus Bar protection scheme shall shall include trip relays, CT switching relays (if applicable), auxiliary CT's (if applicable) as well as additional power supply modules, input modules etc. as may be required to provide a Bus-bar protection scheme for the complete bus arrangement i.e. for all the bay or breakers under this specification as well as for the future bays as per the Single line diagram for new substations	However as per Part-2TenderDrawing1, Page no-8 of 21, SLD, future bays are not shown. Please confirm the number of future bays to be considered for Busbar protection.	2 nos.of future bays to be considered.
193	Part 2 Works Requirement - Particular Specification	5.2.2.1 (c)		One Energy meter (ABT) is required to be provided, which shall be able to indicate/record/store the total energy of the incoming feeder, through suitable arrangement and connections).	We are considering only one ABT Main energy meter of 0.2s accuracy for incoming 132kV feeder at RSS. No check meters shall be considered. Please confirm whether bidder understanding is correct	Refer reply at SN-180 above
194	Part 2 Works Requirement - Particular Specification	5.2.2.1(d)		Any other requirement e.g separate room for monitoring purpose, electricity connections , supply & installation of Air Conditioner etc required by Power Supply Authority shall be provided by Power Supply contractor.	We are not considering any separate room at existing GSS for placing of energy meters. We presume that space is already available inside GSS for installation of one ABT energy meter. Please confirm.	The refered clause is the requirment at RSS for monitoring purpose for Power Supply Authority. For GSS premises, Bidder may survey & may make their own assesment.
195	Part 2 Works Requirement - Particular Specification	5.3.1.11		Creepage distance for all equipments shall be 25mm/kV, except LA (31mm/kV)	We understand that bidder need to consider creepage disatnce for all outdoor equipments in present scope are 25mm/kV except LA. Please confirm.	Tender condition prevails.
196	Part 2 Works Requirement - Particular Specification	5.3.2.3.8		GIS should be of modular design, and it should be possible to add feeder bays for two additional transformers, if required. The layout of GIS equipments and transformers should show space earmarked for the future provision	We presume that space for two number future transformer bays need to be considered inside GIS hall aong with space for two transformer to be in shown in outdoor switchyard. However, as per Part-2TenderDrawing1, Page no-16 of 21, typical layout of 132kV RSS substation, space for additional two transformers is not shown in the drawing. Please check and confirm the exact space requirement for future provisions.	Bidder to design the actual layout plan meeting the requirement.
197	Part 2 Works Requirement - Particular Specification	5.3.2.3.9		The incoming 3-phase 132kV single core cable feeders shall be of minimum size of 1000/500 mm2 (Copper	We understand that cable size considered from GSS to RSS shall be 1000 sq.mm and cable from 132kV GIS to AMT/TT shall be 500 sq.mm. Please confirm.	Refer reply at SN-11 above
198	Part 2 Works Requirement - Particular Specification	5.3.4.3.23		Cable connection shall be bottom/top entry as per the site arrangement	Please provide cable entry shall be from top or bottom for 33kV GIS panles to be considered in present scope	Bidder to design as per site feasibility.
199	Part 2 Works Requirement - Particular Specification	5.5.2.4.3.3 (h)		All facilities & requirement of LILO arrangement shall be considered in the RSS building or separately as per guidelines & requirments of MSETCL & MSEDCL	Please confirm whether LILO arrangement i.e. the GIS bays will be considered inside RSS itself (or) at a separate location identified by MMRCL/MSETCL?	Refer reply at SN-11 above
200	Part 2 Works Requirement - Particular Specification	7.0 AUXILIARY NETWORK		Earthing from MET to ASS equipment. Earth mat risers including MET will be provided by E&M contractor. The earth strip from equipment to MET shall be provided by this contractor	We understand that Earth mat risers including MET will be provided by E&M contractor inside ASS. Bidder scope is limited to provide earthing for bidder supplied equipmemts in ASS up to MET .Please confirm.	Your Understanding is correct.
201	Part 2 Works Requirement - Particular Specification	7.6.3		The new system of Dynamic compensation shall be compatible & communicate with existing PF improvement system of Ph-1 to improve power factor on real time basis at RSS/TSS metering point billed by power supply authority. Required modification shall be done by this contractor for integration with existing dynamic compensation system	Please provide the existing dynamic compensation system of Ph-1 drawings along with following details at RSS and TSS a) What is the rating? b) Make and Model Number	Bidder may survey & may make their own assesment.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
202	Part 2 Works Requirement - Particular Specification	7.6.1		To design the scheme using STATCOM or similar Dynamic compensation in RSS/Station ASS of MAHA-METRO for reactive power compensation and power quality improvement.	We presume that the Dynamic reactive compensation equipment can either be provided at RSS (or) at ASS as per Bidder's design. Please confirm.	To be designed to meet the requirement.
203	Part 2 Works Requirement - Particular Specification	8.7		33kV/415V Container type compact substation	As per referred clause, Two such Container type compact substation to be provided (Part-4, APPENDIX O: ADJ SN.31). Please conform the exact requirment of 33kV/415V Container type compact substation and location where this need to be installed.	Refer reply at SN-111 above.
204	Part 2 Works Requirement - Particular Specification	8.7			In continuation to above query, please provide the Part-4, APPENDIX O: ADJ SN.31 as same is missing in tender document.	Refer Corrigendum-V: SN.33.
205	Particular Specification Appendix VI-B1: Interfaces			Table 1: Interfacing with PSA	As per referred table, item no-1, PST contrcator Shall supply and install RTU / Bay Controller at Substation and integrate them with PSA's SAS. We are providing only SAS complaint equipments for 2 Nos line bays at MSETCL GSS. Our scope is limited to supply of SAS compatiable control & protection IEDs for the proposed bays. Please confirm.	Shall Supply, Installation and putting into operation of Digital Protection Equipment, Bay Controllers for 132kV LILO arrangement, Work stations and PC's. Providing a 'Gateway' to support control and monitoring of all 132 kV system from the MSETCL Control Room. The gateway shall be Ethernet compliant. Necessary configuration & additional SCADA Setup in MSETCL existing Grid substation for Monitoring & controlling of 132kV LILO Bay Switchgear & other equipment. OPGW cable for SCADA, if required shall be supplied and installed by the PST Contractor as per design.
206	Particular Specification Appendix VI-B1: Interfaces			Table 1: Interfacing with PSA	PSA Shall allow to connect with feeder CBs for status of equipment and meters.We presume that PST contractor scope is limited to interfacing of present scope of equipments and meters only. Please confirm	Refer reply at SN-205 above
207	Particular Specification Appendix VI-B1: Interfaces			Table 1: Interfacing with PSA	As per referred table, item no-10, Shall construct cable trench as per approved design including covers for laying cables in the PSA premises. We presume that bidder need to consider cable trench for present scope of bays upto existing tench only.	Your understanding is correct in general. Further, cable trench in the building for extension portion to be provided.
208	PriceBid_BOQ_N2_031_TR_03	EHV		cost centre B, sl.no-B 1.3	As per referred line item , 1.5 km of single core 132kV 1000 sq.mm cable is mentioned. We understand the same as the total quantity of cable & not Route km. Please check & confirm.	Confirmed.
209	Part 2 Works Requirement - Particular Specification	3.7.1		IACS (Industrial automation and control system) - SCADAs, BMS, TCMS & related NMS (of all communication systems) shall provide relevant data/information required to integrate with Asset Management System (AMS) of Maha-Metro, which would enable maintenance staff to assess the need for unscheduled preventive/failure/breakdown maintenance based on degradation of normal operating parameters	We understand only the SCADA of this package is in the scope of this contract. Other systems shall be supplied by others. Please confirm.	Your Understanding is correct. Bidder has to define asset tags for all the equipments as per Maha-Metro's defined standards.
210	Part 2 Works Requirement - Particular Specification	3.7.1		IACS (Industrial automation and control system) - SCADAs, BMS, TCMS & related NMS (of all communication systems) shall provide relevant data/information required to integrate with Asset Management System (AMS) of Maha-Metro, which would enable maintenance staff to assess the need for unscheduled preventive/failure/breakdown maintenance based on degradation of normal operating parameters	As per referred clause, it is mentioned as IACS interfaces & integration with existing AMS (Is in the Scope of Work). In this regard, please provide the existing AMS details (make and model number) along with architecture drawing	1) SAP ERP - Plant Maintenace, Material Management 2) In-house developed AMS on .NET platform
211	Part 2 Works Requirement - Particular Specification	3.2.7.11		The Depot Control Centre with SCADA for Depot OHE to be set-up at both Mihan & Hingna Depot. Work stations with necessary equipment shall be provided at the Mihan & Hingna depot DCC to permit the remote monitoring of Mihan & Hingna Depot OHE network.	As per referred clause, we understand that the referred scope of work need to be executed both at Mihan & Hingna Depot for present scope of works only. Please confirm.	Your understanding is correct.
212	SECTION-I-220/132 kV XLPE CABLE			DESIRED TECHNICAL PARTICULARS OF XLPE CABLE for 132 KV Cable	As per referred clause,GTP for 132kV cable is mentioned. Similarly, as per Particular Specification Appendix VI-B3: Technical Sheets, cl.no-6.1 ,132kV Cables GTP is mentioned. Please confirm which need to be considered for supplying of 132kV cables	132kV data sheet at Appendix VI-B3 is specific & prevails over Appendix VI-B9.
213	General				Please provide the existing 132/33/25kV Single line diagram of Sitabuldi and Jhansi Rani RSS	Refer Corrigendum-V: SN.44.
214	Part 2 Works Requirement - Particular Specification	5.1.4.5		Standby Earth Protection (only for station transformers)	a) Please confirm the which transformers will come under station transformers as per referred clause b) Whether auxiliary main transformers and traction transformers also shall be considered with Standby Earth Protection. Please confirm	a) For Auxiliary Main Transformers b) Refer tender document.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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215	Particular Specification Appendix VI-B4: Test Sheets	1.1, Sl.No-5 & 3.1, Sl.No-5		132/33kV Auxiliary Main Transformer & 132kV/25kV Traction Transformer	a) We request MMRCL to accept the Dynamic short circuit withstand test reports which has already been conducted on similar or higher ratings (both voltage & kVA rating) in line with IEC 60076-5. b) Also we request MMRCL to accept dynamic effects of short circuit by detailed calculations by check against the manufacturer's design rules for short circuit strength as per IEC 60076 part-5 in case of non availability of short circuit test report. Please confirm.	a) Refer Tender document, Appendix VI-B11-VENDOR APPROVAL AND SELECTION PROCEDURE. b) Tender condition prevails.
216	General				Please provide the below existing Mihan & Hingna Depot drawings a) OCC & BCC building drawings b) Depot general layout c) workshop and inspection bay drawing d) ASS +DG set room drawings	Refer Corrigendum-V: SN.44.
217	Part 2 Works Requirement - Particular Specification	2.2.7 (b)			Please provide the below existing at Metro Bhavan, Nagpur a) BCC building drawings	It is not certain why Metro Bhawan building drawing is required.
218	Part 2 Works Requirement - Particular Specification	3.2.6		Modifcation works at Depot	Please provide the detailed existing drawings with proper scope demarcation for modifcation works to be considered under present scope	Refer tender drawings.
219	Particular Specification Appendix VI-B3: Technical Sheets	2.3 & 4.3		Synthetic Organic Ester Oil for 132/33kV Auxiliary Main Transformer & Synthetic Organic Ester Oil for 132/25kV Traction Transformer	As auxiliary main transformer and traction trnasformer shall be supplied with synthetic Organic Ester Oil, Cooling mode shall be KNAN/KNAF instead of ONAN/ONAF . Please check and confirm.	Your understanding is correct.
220	PriceBid_BOQ_N2_031_TR_03	cost centre B 3.2			a) If LILO GIS is integral part of Metro RSS 132kV GIS, the SAS shall be common. b) If LILO GIS is provided at a different location (other than Metro RSS), separate SAS Shall be provided. Please confirm.	LILO GIS is integral to Metro RSS GIS, but the controlling of LILO bays will be only with MSETCL. Separate SAS system for LILO arrangement to be provided with all necessary equipment & as required by MSETCL.
221	General				The Control & Monitoring cables from FP, SSP, SS etc to the RTU shall be in the scope of Traction contractor. Please confirm.	Your understanding is correct.
222	General				We understand Bidder's scope of work is limited to supply of 25kV GIS at RSS. The outgoing 25kV cables from the 25kV GIS till the Feeding post & other traction equipment are not included in the scope of this package. Please confirm.	Your understanding is correct. Refer tender document PS Cl.6.2.6.3.
223	Part 2 Works Requirements - General Specification	3.5.3.5		Type Tests as detailed in Clause 9.2.6 below shall be performed on all items of equipment to be installed as part of the Permanent Works under the Contract	We understand that type test is not mandatory if bidder can provide valid type test reports for all equipment as per CEA guidelines "Guidelines for the Validity Period of Type Test(s) conducted on Major Electrical Equipment in Power Transmission." Please confirm whether bidder understanding is correct.	Refer Tender Document PS Appendix VI-B11 - Vendor Approval & Selection Procedure.
224	CHAPTER 5 Civil Works & Ancillary installations	5.5.3.10		Fire fighting Equipment	We would like to inform that no water based fire protection system (Hydrant system) is being considered for RSS stations.Please confirm.	Your understanding is correct.
225	CHAPTER 5 33kv Switch gear	5.3.4.3.1-pg 88/286		Panel flooding system	Please provide the list of panels to be considered for panel flooding system	Refer tender document
226	CHAPTER 5 132kv gas insulated switchgear	5.3.2.3.25-pg 74/286		Air conditioning	As per pase experience as per OEM recommendation we are considering presurization ventilation system for GIS hall with 4 ACH. We are considering the same.Please confirm	To be designed as per the requirment .
227	CHAPTER 5 Switch gear & Control room buildings requirement	5.5.2.5.4-Pg 116/286		Air conditioning	We are considering VRV type AC units for control room building with 3x 50% stand by.Please confirm.	To be designed as per the requirment.
228	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 38/2863.2.9.2		Land preparation : The Contractor shall inspect the sites for various RSS & grid substation locations and gather for good completion of the civil works various details such as topography and land levels, soil condition including the safe bearing capacity, soil resistivity etc, MFL (maximum flood level) at the Substation site, drainage requirements etc.	Please provide the following details for the proposed Substations: (Khairi Fata RSS / Kanhan River RSS) 1.Soil investigation report for proposed station(if available) 2. FGL,HFL and nearest main road level for the proposed locations. 3.contour map (If available) 4. Global co ordinates for all corners	Refer reply at SN-22 above
229	PART_II_1_3	Section 6B: Part-II Annexure15.2.1.3		The drainage system shall be connected to the existing municipal storm water drain.	As per referred clause it is mentioned that, the proposed drainage system shall be connected to the existing municipal storm water drain is bidder scope. Since the drainage is paid in LOT basis. Request to provide the distance from proposed SS to Municipal storm water drain or outfall length. inorder to estimate the exact quantum of work.	Bidder may survey & may make their own assesment.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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230	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 38/2863.2.9.2		Land preparation : The Contractor shall inspect the sites for various RSS & grid substation locations and gather for good completion of the civil works various details such as topography and land levels, soil condition including the safe bearing capacity, soil resistivity etc, MFL (maximum flood level) at the Substation site, drainage requirements etc.	We trust that, the land for proposed RSS locations is already acquired by M/s MMRDA. Kindly confirm and also furnish the boundary co ordinates (all corners).	Bidder may survey & may make their own assesment.
231	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 113/2865.5.2.2 Access Roads		The access road shall be black topped and transformer area shall be either cement concrete or RCC. The approach roads should, at the minimum, be 7.0 m wide and shall be able to support 100 – tonne trailers. The internal roads within substations shall be concrete or RCC and rail cum road as per reqirement.	Based on referred clause, we understand that the approach road from main road to substation main gate shall be black topped road (7.0m wide) and Substation internal road shall be cement concrete type (4m wide). Kindly confirm.	The clause is self explanatory.
232	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 118/2865.5.2.6 Boundary Walls		The boundary wall shall be at least 3.0 m high from finished level of RSS and provided with barbed wired etc on the top over a height of approximately 0.5m, above 3.0m.	Based on referred clause, we understand that the boundary wall shall be RCC type and height of 3m from FGL & above 0.5m for barbed wire. Kindly clarify/provide the following details, 1. Type of wall shall be pre cast or Cast in situ 2. Thickness of wall & Finishes 3. Standard/ typical drawing of Boundary wall inorder to estimate the quantum of work.	Refer reply at SN-25 above
233	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 38/2863.2.9.2.3		The finished ground level of the Substation site shall be minimum 500 mm above the adjacent peripheral land & Maximum Flood Level (MFL) in the Region to be ascertained by the Contractor and confirmed by the Local Authorities.	As per referred clause, it is mentioned that, The finished ground level of the Substation site shall be minimum 500 mm above the adjacent peripheral land & Maximum Flood Level (MFL) in the Region. However in clause no: 5.5.2.1 Land preparation, it is mentioned that, In any case, the finished ground level shall be at least 50 cm above the main rail/ road level, near to the site. We trust that, the proposed FGL shall be main rail/ road level, near to the site. Please confirm.	Whichever is the higher level, it is to be considered.
234	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 114/2865.5 CIVIL WORKS AND ANCILLARY INSTALLATIONS 5.5.2.4.3.2		The internal finishes and facade finish of the RSS building shall be similar to Depot building and station buildings. All structure and finishing work shall confirm to Indian Standards, wherever Indian standards are not available the work shall comply to relevant international standard or as per manufacturer's instructions.	It is mentioned in the referred clause that, The internal finishes and facade finish of the RSS building shall be similar to Depot building and station buildings. However in the tech spec, finishing details for the proposed RSS building is given from clause no: 5.5.2.4.3.3. Please clarify, whether the finishing details for RSS building is as per tech spec or it is to be matched with depot and station building. If, the same to be matched with depot and station building. Please furnish the architectural drawing of depot and station building, in order to estimate the finishing quantity.	Internal finishes as per technical specifications. External finish shall be similar to station buildings.
235	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 30/2863.2.4.2		The scope will include substation buildings, River Protection wall, Soil filling, supporting structures, auxiliary equipments, mechanical linkages, auxiliary circuits wiring, interlocking devices, current and voltage transformers, EHV cables including accessories from Grid Substation to RSS, cable end boxes. Necessary sub-assemblies might be assembled in the supplier's plan, accounting for the transportation condition.	We propose to provide lattice type structure for all equipment support at all voltage levels with galvanization thk. of 610g/sq.m, as the same is not mentioned in the tech spec. Please confirm.	Refer Tender document
236	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 114/2865.5.2.4.2 Civil and Structural Design		The Contractor shall perform the civil and structural design, including the preparation of calculations, drawings, specificationsand other documents, for but not limited to: (a) General arrangement (layout and elevation); (b) Structures and sub-structures; (c) Foundations; (d) Drainage (Covered type); (e) Networks (Water, sewage, etc.) (f) Baffle walls (g) RCC Boundary walls.	We wish to inform that, the grade of Concrete & Reinforcement is not specified in the tender document. Hence, we propose to provide the grade of RCC as M25, PCC as M7.5 and Reinforcement as FE 500 for the proposed RSS and all related civil works. Kindly confirm. If not kindly specify the grade to be used for all civil works.	To be designed as per the requirement.

NAGPUR METRO

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237	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 114/2865.5.2.4.2 Civil and Structural Design		The Contractor shall perform the civil and structural design, including the preparation of calculations, drawings, specificationsand other documents, for but not limited to: (a) General arrangement (layout and elevation); (b) Structures and sub-structures; (c) Foundations; (d) Drainage (Covered type); (e) Networks (Water, sewage, etc.) (f) Baffle walls (g) RCC Boundary walls.	We wish to inform that, the specification for fencing and gate is not specified in the tender document. Kindly provide the type of fence, height of fence and specification for the same. In order to estimate the quantum of work.	This is a Design and Build tender and Designs are in the scope of Contractor.
238	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 117/2865.5.2.5.7 Exterior finish		External finish of the Control Room Building shall be attractive and pleasing to the eye preferably of stable and durable cladding of granite or equivalent of approved shade and design. Considering that the RSS locations and SWR and Control Room Buildings are prestigious installations and should blend smoothly and aesthetically with the surroundings, the SWR and Control Room Building shall have a good exterior finish.	As per referred clause, it is mentioned that "External finish of the Control Room Building shall be attractive and pleasing to the eye preferably of stable and durable cladding of granite or equivalent of approved shade". Kindly indicate the height from FGL up to which the cladding is to be done and the thickness of granite.	Bidder to design & submit for approval from employer during execution stage.
239	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 30/2863.2.4.4		The term Receiving Substation (RSS) includes the various facilities inside the RSS premises, bound by boundary wall. The works include, but not limited to: (a) High Voltage bays including 132kV GIS, 25kV GIS & 33kV GIS switchgear. (b) Civil Works including the Switchgear room, Control Room Building, Cable Cellar room & Metering Room.	We trust that cable cellar maybe required for the GIS building. Incase cable cellar is required, we wish to propose the same above ground. Kindly confirm.	Bidder has to design, prove the technical feasibility & submit for approval from employer during execution stage.
240	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 1 Pgno: 276/28616.1.2 Site Offices		16.1.2 Site Offices 16.1.2.1 Accommodation for the Employer's Representative in the Contractor's Works area at the Depot (or other appropriate location) where assembly, testing and commissioning will take place shall be air conditioned, and shall comprise:	As per referred clause, we trust that the following works shall be in the scope of the Depot contractor: i) Site office ii) Car parking shed for 10 cars Kindly confirm.	Tender condition prevails.
241	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 113/2865.5.2.3.4 5.5.2.4.2 Civil and Structural Design		Drain shall be RCC type. (d) Drainage (Covered type);	Based on referred clause, we understand that drains shall be RCC type. We wish to propose the following: i) Drains shall be Closed type (precast cover slab) ii) Drains shall be provided on both sides of the road Kindly confirm.	Tender condition prevails.
242	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		3.2.1.3 In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to : (a) Geotechnical investigations to determine the safe bearing capacity of the soil and other design parameters, including Soil conductivity, (b) All Civil Works, including but not limited to land preparation, drainage, access roads, design and construction of the Switchgear foundations,cable paths and cable trenches inside control room as well as switchyard area. Contractor shall also execute all utility works like fire detection, fire alarm, fire fighting, water supply, sanitary & sewage,storm water drainage works, etc (c) Earthing arrangements as required including buried rail for traction system. (d) Building Lighting.	Kindly furnish the detailed civil works specification and the finishing schedule(if applicable) for the following: i) All Buildings envisaged (Switchgear room, Control Room Building, Guard room, GIS Building, AMS Building, Site office, car parking shed etc.) ii) Boundary wall iii) Storm water Drain iv) Switchyard roads and Approach roads v) Cable trench vi) Switchyard Foundation works vii) Landscaping and plantation viii) Fence and Gate ix) Geo technical investigation x) Transformer foundation and Firewall xi) Security room	This is a Design and Build tender and Designs are in the scope of Contractor.
243	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 2 2.0 OVERVIEW OF THE PROJECT Pgno: 21/2862.2.3		Power supply for the above corridors is received at 132 kV level at following locations: (a) Receiving Substation (RSS) near Kanhan River Or Receiving Substation (RSS) near Khairi Fata/All India Radio Metro Station.	As per referred clasue, the RSS location is mentioned as (Receiving Substation (RSS) near Kanhan River Or Receiving Substation (RSS) near Khairi Fata/All India Radio Metro Station), Since land for the referred RSS substations are not identified, it is understood that any major changes that may occur during the detailed engineering, such as soil bearing capacity and land development work, will be payable extra. Otherwise it is requested to provide the depth of filling and confirm the soil bearing capacity for the referred RSS.	Tender condition prevails.
244	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to :	Please provide the following details for the existing MSETCL Grid Substations: 1.Soil investigation report 2. Existing FGL and proposed FGL 3. Contour survey for the proposed SS area indicating spot levels In order to estimate the quantum of work.	Refer reply at SN-22 above

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
245	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to :	Please provide the following details for the existing MSETCL Grid Substations: 1. General arrangement layout indicating proposed bay area 2. Exisiting cable trench layout 3. Existing drain & road layout 4. Existing site grading & gravel spreading layout 5. Existing building layout. In order to estimate the quantum of work.	Bidder may survey & may make their own assesment.
246	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to :	We propose to provide lattice type structure for all equipment support at all voltage levels with galvanization thk. of 610g/sq.m, as the same is not mentioned in the tech spec. Please confirm.	Tender Condition Prevails & need to comply MSETCL specification.
247	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 114/2865.5.2.4.2 Civil and Structural Design		The Contractor shall perform the civil and structural design, including the preparation of calculations, drawings, specificationsand other documents, for but not limited to: (a) General arrangement (layout and elevation); (b) Structures and sub-structures; (c) Foundations; (d) Drainage (Covered type); (e) Networks (Water, sewage, etc.) (f) Baffle walls (g) RCC Boundary walls.	We wish to inform that, the grade of Concrete & Reinforcement is not specified in the tender document. Hence, we propose to provide the grade of RCC as M25, PCC as M7.5 and Reinforcement as FE 500 for the proposed RSS and all related civil works. Kindly confirm. If not kindly specify the grade to be used for all civil works.	Refer reply at SN-236 above
248	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 5 Pgno: 114/2863.2.1.6 Control room Augmentation: 3.2.1.6.1		3.2.1.6 Control room Augmentation: 3.2.1.6.1 All Civil works in the Control room, including, but not limited to Design and Construction of the room building complete with lighting (indoor! Outdoor), fans, false ceiling, false flooring and air-conditioning (wherever required), power sockets, fire-alarm and detection system, Fire fighting system, water supply, sanitary and sewage disposal and all other facilities needed to make the building functionally and operationally satisfactory	We trust that, the extension/ modification of existing control room building is not envisaged. Kindly confirm.	Refer reply at SN-141 above
249	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to :	As per scope of work, the Bay Augmentation work to be done in existing MSETCL Grid Substation. The technical specification (building, cable trench, road, drain, other ciivl works) for Bay Augmentation work civil works is not attached with tender document. since all civil works are paid in lot basis, kindly provide the detailed civil technical specification for MSETCL Grid SS. inorder to estimate the quantum of work.	Bidder may survey & may make their own assesment.
250	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.1.3		In general the Contractor is responsible for all works within the MSETCL premises required for Maha-Metro bay extension works including EHV Cable/conductor laying and termination works .The civil Works includes but not limited to :	We understand that bay extension in the GSS is in bidder's scope. However, we trust that there is no requirement of dismantling of any existing structure (road, drain, cable trench, towers, equipment structures, foundations, buildings etc.). Kindly confirm our understanding.	Refer tender document.
251	PriceBid_BOQ_N2_031 _TR_03	APPENDIX J: SECTION SSSCOST CENTRE C: Installation and Site Testing		Land preparation, construction of boundary wall, drainage, access road, earthing, cable trenches, foundations, facilities works, landscapping, plantation etc.	As per referred clause, , construction of boundary wall, drainage, access road, earthing, cable trenches, foundations, facilities works, landscaping, plantation is in bidders scope. Kindly provide the following details, 1. Existing Boundary wall details & Drawings 2. Access road type / Width & length 3. Exisiting Foundation details & type 4. Landscaping and plantation area & Specification in order to estimate the quantum of work.	Bidder may survey & may make their own assesment.
252	PriceBid_BOQ_N2_031 _TR_03	CHAPTER 11 11.0 OTHER WORKS11.1.7.3		11.1.7.3 The existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accommodation of 2 nos. of 132kV AIS line bays so that space can be made available at one side by extending 132kV Bus(2+1 type).	In referred clause, it is mentioned that The existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accommodation of 2 nos. of 132kV AIS line bays. However in tender document the switchyard plan indicating existing fence & existing staff quarters is not attached. kindly provide the existing staff quartes details (type, size of building, height of building) & fencing details. in order to estimate the quantum of work.	Bidder may survey & may make their own assesment.

MAHARASHTRA STATE POWER GENERATION CO. LIMITED * MAHAGENCO
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
253	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.3.1		3.2.3.1 Height raising/ shifting of 132KV Double circuit tower Loc. No. 35 & 36 of 132KV Uppalwadi-Pardi Transmission line for rising of height due to Metro Rail corridor Alignment in Reach-2A. The scope of work comprises as below but not limited to: a. Supply & Erection of New Tower :- Loc. No. 35 (S+20) Monoploe, Loc. No. 35A (S+20) Monopole, Loc. No. 36 (Q+0) Monopole, Total- 3 Nos. b. Dismantling of existing tower :- Loc. No 35 (P+0) & Loc No. 36 (P+0), Total – 2 Nos. c. Destringing:- Ext. Loc. No 32 to Ext. Loc No. 37 d. Re-stringing :- Loc. No. 32 to Loc. No. 37 e. Route length – 1387 Mtr	As per referred clause, Height raising/ shifting of 132KV Double circuit tower is in bidders scope. Kindly provide the following details of existing tower, 1. Existing tower height and connection details 2. GA drawing of existing tower & BOM 3. Foundation type of existing tower. 4. Conductors, hardware and connection details. In order to estimate the quantity.	Refer Tender drawings. Further bidder may survey & may make their own assesment.
254	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.4.5		In general the Contractor is responsible for all works within the RSS premises and related to EHV cable / conductor laying from Grid Substations (in PSA premises) to MAHAMETRO RSS; Civil Works includes the following:	Please provide the cable routing layout & survey details for the proposed EHV cable route. In order to estimate the quantum of work.	Refer reply at SN-11, 19 above
255	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.4.9.2		(d) Final location survey and confirmation of utilities, preparation of final construction / cable layout drawings indicating cable pull boxes, joint locations, river crossing, Transmission towers, any uncharted utilities, utility/route diversions if any and cocoordinating with the various State and Central Government Departments & utilities whenever and wherever necessary on the behalf of MAHA-METRO. The coordination with city agencies shall also be done for the purpose of crossing over/under or minor shifting of utilities for cable laying etc. in case of major problems, MAHA-METRO may also assist. This includes taking permission, depositing fees, if any & taking clearance after restoring back the works & handing over. This will also include depositing cost of restoration works, penalties on any account levied, security deposits or compensation for any damage or loss during the course of work. Fees deposited by the Contractor to Government Agencies for obtaining permission for laying of EHV cables, supervision charges etc. shall be reimbursed by MAHA-METRO on submission of documentary evidence of payment. Road restoration work is under the scope of Contractor, the price for which shall be included in the Price Schedule.	As per referred clause, we understand that road restoration is in bidder's scope. However, restoration of Footpath, boundary wall, etc is not mentioned. Kindly clarify if the same is included in bidder's scope.	Road restoration also includes fothpath, boundary wall etc, all which are affected in execution.
256	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	CHAPTER 3 Pgno: 26/2863.2.4.9.2		(d) Final location survey and confirmation of utilities, preparation of final construction / cable layout drawings indicating cable pull boxes, joint locations, river crossing, Transmission towers, any uncharted utilities, utility/route diversions if any and cocoordinating with the various State and Central Government Departments & utilities whenever and wherever necessary on the behalf of MAHA-METRO. The coordination with city agencies shall also be done for the purpose of crossing over/under or minor shifting of utilities for cable laying etc. in case of major problems, MAHA-METRO may also assist. This includes taking permission, depositing fees, if any & taking clearance after restoring back the works & handing over. This will also include depositing cost of restoration works, penalties on any account levied, security deposits or compensation for any damage or loss during the course of work. Fees deposited by the Contractor to Government Agencies for obtaining permission for laying of EHV cables, supervision charges etc. shall be reimbursed by MAHA-METRO on submission of documentary evidence of payment. Road restoration work is under the scope of Contractor, the price for which shall be included in the Price Schedule.	As per referred clause, we understand that EHV Cable laying is in bidders scope. Kindly provide the following details, 1. Typical trench cross section (Normal area/road cross section) 2. Specification for road restoration 3. The interval at which the route markers are to be provided 4. Grade of concrete to be used for Cable cover 5. Detailed installation specification for EHV cable laying. In order to estimate the quantum of work.	As per MSETCL requirement.
257	PART 2: WORKS REQUIREMENTS SECTION VI-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION	Appendix VI-B9 'ANNEXURE A220 kV/132 KV EHV XLPE CABLE SPECIFICATION		4.0 DESIGN & TECHNICAL DETAILS	We wish to inform that, the detailed Installation of EHV cable laying and joint pit specification is not attached with tender document. Kinldy provide the same. In order to estimate the quantum of work.	Being a Design & Build contract, Contractor shall submit the design for approval of engineer & MSETCL during execution stage.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
258	PART 2: WORKS REQUIREMENTS SECTION VI-A: WORKS REQUIREMENT – GENERAL SPECIFICATION, Maha-Metro Page 29 of 286	Cl 3.2.3 Shifting / Height Raising of 132 kV Double Circuit Transmission Line Tower.		-	We understood that the scope of work includes, 1. Replacing existing tower at Loc.No 35 with S+20 Monopole tower (2 off at Loc. No. 35 & 35A) for Metro rail crossing 2. Replacing and relocating of existing tower at Loc. No. 36 with Q+0 Monopole tower. kindly confirm these proposed monopoles (S+20 & Q+0) tower details including all detailed drawings(GA, Shop drawings & BOM) will be provided by client during operating stage. If monopole design is in contractor scope of work please provide/confirm all necessary data required for tower design mentioned below, 1. Wind Zone - 3(as per NBC) 2. Reliability level 3. Terrain Category 4. Mid span clearance - if required 5. Shielding angle - if required 6. Live metal clearance for 132kV 7. In Profile drawing - "132KV D/C KHN - UPD 1 UPD - PRD / Profile & Plan/Part-01" conductor is mentioned as ACSR Panther. can we follow the same. Please confirm 8. For design span and deviation can we follow location specific details given in profile drawing, if not please provide design span and deviation requirements for S+20 & Q+0 monopoles	Refer tender document & drawings. Being a Design & Build contract, Bidder shall submit the design for approval of engineer & MSETCL during execution stage.
259	PART 2: WORKS REQUIREMENTS SECTION VI-A: WORKS REQUIREMENT – GENERAL SPECIFICATION, Maha-Metro Page 28 of 286	Cl 3.2.2 LILO ARRANEGMENT FROM 132 KV TRANSMISSION TOWER AND INCOMING 132 KV CABLE FOR RSS.		-	We understood thet the scope of work includes replacing existing towers with Monopole tower with cable termination arrangement(2 Nos). We presume the this Monopole tower details including all detailed drawings(GA, Shop drawings & BOM) available with client and shall be provided by client. If monopole design is in contractor scope of work please provide/confirm all necessary data required for tower design mentioned below, 1. Wind Zone - 3(as per NBC) 2. Reliability level 3. Terrain Category 4. Mid span clearance - if required 5. Shielding angle - if required 6. Live metal clearance for 132kV 7. Design span and deviation 8. In Profile drawing - "132KV D/C KHN - UPD 1 UPD - PRD / Profile & Plan/Part-01" conductor is mentioned as ACSR Panther. can we follow the same. Please confirm	Refer tender document. Being a Design & Build contract, Bidder shall submit the design for approval of engineer & MSETCL during execution stage.
260	PART 4: COMMERCIAL PACKAGE SECTION XI: PRICING DOCUMENT Maha-Metro Page 103 of 156	APPENDIX K: SECTION EHV		-	Under detailed design it is mentioned 132kv Transmission towers (CTT) for Kanhan River crossing. But in "PriceBid_BOQ_N2_031_TR_03" River crossing tower design is not included in "COST CENTRE A: Detailed Design" but included in "COST CENTRE B: Manufacture and Delivery". Please confirm whether tower design is included in contractor's scope of work. If Tower design is in contractor scope of work please provide/confirm all necessary data required for tower design mentioned below, 1. Tower type (Suspension or tension type) 2. Wind Zone - 3(as per NBC) 3. Reliability level 4. Terrain Category 5. Mid span clearance - if required 6. Shielding angle - if required 7. Live metal clearance for 132kV 8. Design span and deviation 9. In Profile drawing - "132KV D/C KHN - UPD 1 UPD - PRD / Profile & Plan/Part-01" conductor is mentioned as ACSR Panther. can we follow the same. Please confirm	Tower design is in the scope of this contract. Bidder shall submit the design for approval of engineer & MSETCL during execution stage.
261	PriceBid_BOQ_N2_031_TR_03	General		-	Please confirm the foundation types. If pad and chimney foundation is required please provide the soil type details. If Pile foundation is required detailed soil investigation is required. Please confirm the soil investigation is under contractor's scope	Bidder may survey & may make their own assesment.

NAGPUR METRO

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262	PART 2: WORKS REQUIREMENTS SECTION VI-A: WORKS REQUIREMENT – GENERAL SPECIFICATION, Maha-Metro Page 28 of 286	Cl 3.2.2 LILO ARRANEGMENT FROM 132 KV TRANSMISSION TOWER AND INCOMING 132 KV CABLE FOR RSS.		-	We understand that the scope of work includes dismantling of 2 towers at Metro crossing location (Maha-Metro Page 29 of 286) & 2 towers at LILO cable termination tower location(Maha-Metro Page 28 of 286). Please confirm. Kindly explain the extent of modification anticipated in the existing towers to access cost/ quantity.	At Height raising works, 2 nos existing towers to be dismantled. At LILO location, modifications to 2 nos. existing tower is required.
263	Part-1: Bidding Procedure Section II: Bid Data Sheet	ITB 14.1		"Employer will issue essentiality certificate (EC) under GOI notification (GENERAL EXEMPTION NO. 128) Notfn. No. 84/97-Cus. dt. 11.11.97 as amended by Notfn. Nos. 85/99, 119/99, 75/01, 107/01 and 24/08, 22/14, 44/17 and which will assist the Contractor to obtain any lawful exemptions from payment of Excise Duty or Import Duty on Plant and Materials, which are to be incorporated as a part of the Permanent Works.....	Kindly confirm that currently this project is eligible for customs duty exemption. If applicable, kindly confirm the customs duty rate applicable for the project.	Refer reply at SN-71 above
264	Part-3: Conditions of Contract and Contract Particular Conditions Part B – Special Provisions	14.2		Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	We request you provide the advance amount as interest free advance. Which is being followed by other Metro projects and this will enable contractor to load the Financial cost in the bid (Interest and associated other charges). Kindly consider and confirm.	Refer reply at SN-52 above
265	Part-4 Commercial Package Section XI - Pricing Document	1.4		Bidder shall quote fix lump sum price inclusive of all taxes, duties, levies, insurance, freight, cess and all other incidental charges required to fulfil the contract requirements, including statutory deduction viz. TDS towards income tax etc.	We understand that the total bid price should be quoted excluding GST and Customs duty (CD) and this GST & CD are to be mentioned in "DETAILS OF TAXES / DUTIES / LEVIES ETC. INCLUDED IN THE FIXED LUMPSUM PRICE" form along with BOCW Cess. Kindly confirm.	Your understanding is incorrect. The refered clause 1.4 is clear & self-explanatory. Bidder shall quote fix lump sum price inclusive of applicable taxes. Further bidder shall provide details of Taxes / Duties / Levies etc. included in the Fixed Lumpsum Price vide format given as 'Attachment to Bid Total'.
266	Part-3: Conditions of Contract and Contract Forms Particular Conditions Part A – Contract Data	Right of Access to the Site, 2.1		After award of the work, The Engineer shall grant the Contractor right of access to, and /or possession of, the Site progressively for the completion of Works.	We request Employer to consider the Commencement Date from complete handing over of hassle free land / work fonts to the successful Bidder.	Tender condition prevails.
267	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PC)	4.26 Sheds, Stores, Yards		It shall be the responsibility of the Contractor to provide at his own cost the required sheds, store houses, and yards for both Permanent and Temporary Works and provide free access to the Employer/Engineer who will have right of inspection including that of instructing the Contractor to remove a particular material from the stores and not to use the same on the Works.	We understand that Employer will provide the Space for stores, labour colony, offices and yards for both permanent and Temporary Work free of cost to the Contractor. Kindly confirm	Refer reply at SN-37 above
268	Part-3: Conditions of Contract and Contract Particular Conditions Part B – Special Provisions	22.8		Labour Cess shall be applicable on services portion (like Cost Centre's A: Detailed Design, C: Installation and Site Testing, D: System Acceptance Tests, Integrated Testing and Commissioning) and not applicable on material cost (like Cost Centres B : Manufacture and Delivery)	As per the final Verdict of Supreme court the BOCW Applicable only on the Civil portion of the contract. Kindly confirm your acceptance.	Tender condition Prevails.
269	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PC)	-		Access Dates	Access dates for RSS is not mentioned in the referred access dates. We presume that emcumburance free land will be provided by client on the project commencement date. In case of delays contractor will be eligible for time extension and cost compensastions. Kindly confirm.	Tender condition prevails.
270	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PC)	Annexure VIII-C		Schedule of Access Dates	We request you to review the Commencement of works of R4A ASS's is 57-122 weeks but Commissioning of R4A ASS's is mentioned 119 weeks. Kindly clarify.	Refer Corrigendum-V: SN.53.
271	Part-1: Bidding Procedure Section-I: Instructions to Bidders (ITB)	4. Eligible Bidders, 4.3.(e)		. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above, this does not limit the participation of a Bidder as a Subcontractor in another Bid or of a firm as a Subcontractor in more than one Bid; or	We understand that OEM (original equipment Manufacturer) participating as an EPC bidder can support the other EPC contractor's as a Manufacturer/Supplier/Vendor and the same will not be considered as conflict of interest. Kindly confirm.	The clause is self explanatory.

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
272	Part-4 Commercial Package Section XI - Pricing Document	10.0 Fees to Government Agencies		Fees deposited by the Contractor to Government Agencies for obtaining permission for laying of cables, transmission line works, supervision charges etc. shall be reimbursed by MAHA-METRO on submission of documentary evidence of payment. Road restoration work is under the scope of Contractor, the price for which shall be included in the Price Bid.	We request MMRCL to direclty pay the cable laying permission charges to civic agencies which will remove loading on the financial charges in our bid. Kindly consider and confirm.	Tender condition prevails.
273	General				Please indicate the timeline & payment procedures for reimbursable invoices.	Refer Tender document.
274	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PC)	Price variation Clause for Electrical items- Annexure VIII-E CL No. 1.5		Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid. Further, the above price variation shall only be applicable for items quoted in Indian Rupees.	Since the commodities market is volatile, we request you to remove the said celing and the price variation shall be payable by MMRCL at actual based on IEEMA publication.	Refer reply at SN-2 above
275	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PC)	Variation Procedure,13.3			In case of variation of quantities due to change in the works requirements and upon acceptance by Employer & Contractor, the price variation shall be applicable for increased quantities. Kindly confirm.	Refer Tender document.
276	General			Pre-bid queries	Bidders have to approach OEMs for offers and also have to conduct site visits. Additional queries may be encountered during the same. Considering the above we request you to accept the queries till 25/03/2024. We request to arrange for Joint site visit for our better understanding. Kindly consider our request and confirm.	Site visit was arrange on the day of Pre-bid meeting. Further Bidders can visit the site for their survey.
277	PART 3: Condition Of Contract & Contract Form SECTION IX: Contract Form	Contract Form-3 Performance Security		-	In Performance BG Format, the following clauses are not available and which are mandatory as per RBI guidelines. We request to accept the same. 1.Notwithstanding clause, 2.Place of invocation.	Tender condition Prevails.
278	Part-1: Bidding Procedure Section-IV: Bidding Forms	Bid Security		-	In EMD BG Format, the following clauses are not available and which are mandatory as per RBI guidelines. We request to accept the same. 1.Notwithstanding clause, 2.Place of invocation. Also, End/Expiry date not mentioned, hence request to include the BG End date in BG text.	Tender condition Prevails.
279	Part-1: Bidding Procedure Section-IV: Bidding Forms	Bid Security		Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.	End/Expiry date not mentioned, hence request to include the BG End date in BG text. Kindly clarify.	Expiry conditions are already mentioned in the BG text.
280	PART 3: Condition Of Contract & Contract Form SECTION IX: Contract Form	Contract Form-4 Advance Payment Security		Sr No. 2) ....immediately on demand any or all monies payable by the Contractor... Sr No. 3) ....However, not later than expiry date of guarantee.	We request for modification of Advance BG Format considering below mentioned points. Sr No. 2) Instead of Immediate Paymet, request to consider 30 days grace period. Sr No. 3) BG End date not mentioned, hence request to include the BG End date in BG text. New) Request to add BG Effectiveness clause.	Tender condition prevails for Sr.No.2. Ref tender document.
281	Part 2 Works Requirement - Particular Specification 7.0 AUXILIARY NETWORK 5.0 RECEIVING SUBSTATION	7.3.2.3.i, 5.3.4.3.5.i		GIS supplier should have minimum experience of 10 years for manufacturing of similar GIS. Contractor should submit performance certificate from tile employer.	We request you to kindly review this clause, for all the other tenders of Metro projects, the requirement is as given below: GIS supplier should have minimum experience of 05 years for manufacturing of similar GIS substations. The type of GIS offered should have been in satisfactory operation for at least Five years. Contractor should submit performance certificate from the employer. Hence we request you to kindly revise this clause to enable many manufacturer's to participate in the tender.	Tender condition prevails.
282	Part 2 Works Requirement - Particular Specification 7.0 AUXILIARY NETWORK 5.0 RECEIVING SUBSTATION	7.3.2.3.xiii, 5.3.4.3.5.xiii		The Cable bushings shall preferably be of site replaceable time to avoid sending the GIS back to factory for any kind of repair due to bushing damage, in case it happens.	Please note that the assembly of GIS takes places inside the clean and controlled conditions. Hence we donot recommend the opening of tank and replacement of bushing at site.	Tender condition prevails.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
283	Part 2 Works Requirement - Particular Specification 7.0 AUXILIARY NETWORK 5.0 RECEIVING SUBSTATION	7.3.2.3.xv 5.3.4.3.5.xv		The Relays shall contain all the necessary protection functions/ completed protection scheme. The Relay shall have KEMA IEC61850 edition 2 certificates which are within 7 years from the date of issue of the certificate	We would like to inform you that CPRI has been accredited by Utility Communication Architecture International Users Group (UCA IuG) as level A Laboratory. KEMA is taken over by M/s DNV Gl, CPRI has service level agreement with DNV GL for testing of relays and IEDs for conformance to IEC 61850. Further it is to emphasise that CPRI is the only independent testing laboratory with Level A accreditation in India. Hence we request you to kindly include CPRI's name for conformance test to IEC 61850. Hence to promote the MAKE IN INDIA initiative of our Hon. Prime Minister of India, we request you to kindly include, CPRI Lab also.	Tender condition prevails. In regards to this clause, considerstion to CPRI certifcation will be given provided proven design & satisfactory operational experience & meeting other requirement as per tender document.
284	Part 2 Works Requirement - Particular Specification 7.0 AUXILIARY NETWORK 5.0 RECEIVING SUBSTATION	7.3.2.4.8, 5.3.4.3.14		A proven positively-driven mechanically-operated indicating device shall be provided to show whether a circuit breaker is in the open or closed position without opening any additional door	We shall provide MIMIC with semaphore to indicicate the position of the VCB and Disconnector, We shall also provide LED indicating lamps to indicicate the position of the VCB and Disconnector. We request you to kindly allow manufacturers to offer as per their standard design.	Tender condition prevails.
285	PART 2: WORKS REQUIREMENTS SECTION VII-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION APPENDIX VI-B3 : DATA (TECHNICAL) SHEETS	Data sheet- 8.4.9		Actual transformation ratio - 50-25/5	It is not feasible to get 50-25 CT ratio in GIS, hence we request you to kindly allow the manufacturers to offer 200/5A CT ratio.	Will consider positively during detailed engineering provided bidder to prove the design, confirmation from OEM.
286	PART 2: WORKS REQUIREMENTS SECTION VII-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION APPENDIX VI-B3 : DATA (TECHNICAL) SHEETS	Data sheet- 8.9.9.ii		Actual transformation ratio - 50-25/5	It is not feasible to get 50-25 CT ratio in GIS, hence we request you to kindly allow the manufacturers to offer 200/5A CT ratio.	Refer reply at SN-285 above
287	PART 2: WORKS REQUIREMENTS SECTION VII-B: WORKS REQUIREMENT – PARTICULAR SPECIFICATION APPENDIX VI-B3 : DATA (TECHNICAL) SHEETS	Data sheet- 8.10.5		Actual transformation ratio - 25/5	It is not feasible to get 25 CT ratio in GIS, hence we request you to kindly allow the manufacturers to offer 200/5A CT ratio.	Refer reply at SN-285 above
288	Part-3: Conditions of Contract and Contract Forms Section - VIII: Particular Conditions of Contract (PCC)	14.2.1 Mobilisation Advance		Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	Kindly clarify on which RBI Rate is to be taken for interest computation, for eg; RBI mclr rate for 6months or one year or 2 year respectively.	The clause is self explanatory. It is RBI 'Bank Rate'.

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
289	Part- 1 Bidding Procedure - **Section-III: Evaluation and Qualification Criteria**	2.4.1 (b)		Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above indoor Auxiliary Sub stations One contract of 10 Auxiliary Substations or more OR Two contractors for total 14 Auxiliary Substations or more OR Three contracts for total 17 Auxiliary Substations or more Tender date on line submission to be extended by one month as lot of technical issues regarding procurement of 25 KV GIS and SCADA System .	We request you to kindly amend the said QR clause as below:- Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above Indoor /Outdoor Auxiliary/Switching Sub stations One contract of 10 Auxiliary/Switching Substations or more OR Two contractors for total 14 Auxiliary/Switching Substations or more OR Three contracts for total 16 Auxiliary/Switching Substations or more	Refer Corrigendum-V: SN.3.
290	Part-1BiddingDocuments	ITB 38.4 (b),Page 43 Of 138		If bidder's quoted price is lower than the 90% of the estimated cost of the proposed work, Additional Bank Guarantee (APG) at the rate of 10% of the difference of the lowest allowable limit of quoting and quoted price by the bidders is to be furnished along with the normal performance bank guarantee (PBG). Additional Performance Guarantee (APG) shall be calculated as under:- A=Estimated cost of the work; B=Quoted price by the bidder; Difference of cost, C=A-B, if C > (10%A), then APG = (C-10%A) x 10/100	Kindly provide the estimated cost of work as the same is required to calcute the additional performance guarantee (APG).	Refer Corrigendum-V: SN.2.
291	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-14.2 Advance Payment, Page 58 of 139		Mobilization Advance: Interest bearing Mobilization advance shall be 20% of original contract value payable in two equal instalments of 10% (Ten Percent) each in the currencies and proportions of the Accepted Contract Amount. Rate of interest shall be charged at "RBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	"In accordance with the Contract, the mobilization advance specified (20% of Contract Value) will incur an interest rate equivalent to the 'RBI Bank Rate+2%' (two percent)." "Typically, contracts of a similar nature published previously and involving funding agencies such as ADB, JICA, NDB, etc., have featured interest-free mobilization advances. Therefore, we kindly request you to consider changing the current condition from an interest-bearing advance to an interest-free advance."	Refer reply at SN-52 above
292	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-4.2.3 Advance Payment, Page 58 of 139		Add to Clause 4.2.3: The amount of PBG to be released after completion of DLP of the sections as below : Section / % of PBG to be released R1A* 5 R1A# 40 R2A* 15 R2A# 15 R3A 15 R4A 10	Since the PBG will be releaesd in parts as specified in the clause, The bidder request to kindly accept the PBG as sepearte Bank Guarantees for each section as per the percentage given in the PCC clause 4.2.3 (% of PBG to be released)	Tender condition prevails.
293	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-Annexure VIII-E, Price variation Clause for Electrical items,Page 133 of 139		Total admissible price variation amount shall be subject to a ceiling of ± 5% (five only) of the Equivalent Contract Price in INR considering currency conversion factor at the time of bid.	Please note that contracts of a similar nature published previously and involving funding agencies such as ADB, JICA, NDB, etc., do not have a ceiling for Price Variation. Therefore, we kindly request you to remove the ceiling clause and provide Price Variation at actual costs. Otherwise, it will cause significant loss to the contractor	Refer reply at SN-02 above
294	Part-1, Section 3	2.4.1 Contracts of Similar Size and Nature (b) Page 54 of 138		Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above indoor Auxiliary Sub stations One contract of 10 Auxiliary Substations or more OR Two contractors for total 14 Auxiliary Substations or more OR Three contracts for total 17 Auxiliary Substations or more	We request for the below amendment/request in the existing clause: Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above indoor Auxiliary Sub stations One contract of 08 Auxiliary Substations or more. OR Two contractors for total 12 Auxiliary Substations or more. OR Three contracts for total 15 Auxiliary Substations or more. The above amendment will allow us also to participate in the tendering process.	Refer Corrigendum-V: SN.3.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
295	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC	PCC-Annexure VIII-E, Price variation Clause for Electrical items,Page 133 of 139		General	The biddedr request you to provide price variation on GIS Switch gear (132KV,33KV and 25 KV),Battey and charger and other major items as per latest IEEMA	Refer reply at SN-01 above
296	FIDIC Yellow Book 2017- (Conditions of Contract for Plant)-GCC	Sub-Clause 8.8-Additional Sub Clause,Page 190 of 231		The Contractor shall be entitled to a bonus payment if the Works and/or each Section is completed earlier than the Time for Completion for the Works or Section (as the case may be)	Bidder understand that as per GCC, the bidder is eligible for early completion Bonous. Kindly confirm.	Ref tender document. Bonus is not applicable in this tender.
297	General	General		Safe Custody Bank Guarantee	Bidder understand that safe custody bank guarantee is not applicable in this tender. Kindly confirm the same	Refer reply at SN-53 above
298	General	General		Retention	Bidder understand that, No Retention amount will be deducted form the monthly bills. Kindly confirm.	Refer reply at SN-54 above
299	General	General		Site Office and Store	We understand that the Land for Site Office and Store shall be prvided by Employer at free of cost.	Refer reply at SN-55 above
300	Part-2: General Particular SpecificationAnnexures ,APPENDIX VI-B3 : DATA (TECHNICAL) SHEETS	3.1-315 kVA Auxiliary Transformer for ASS Auxiliary Power Supply & 11.1 Station Auxiliary Transformer 315kVA		GTP of 315 KVA Aux.Transformer	There is a mismatch in the techinical specification of the 315 KVA Auxiliary Transformer,Kindly clarify the same	Refer reply at SN-56 above
301	Part-2 GeneralParticularSpecific ationAnnexures	Scope of work : RSS		2.2.3 Power supply for the above corridors is received at 132 kV level at following locations: (a) Receiving Substation (RSS) near Kanhan River Or Receiving Substation (RSS) near Khasri Fata/All India Radio Metro Station.	The bidder understand that we need to build only one RSS either of the location specified in the document. The bidder request you to provide the exact location for the RSS buliding .It is mandatory to estimate the optimum cost	Refer reply at SN-11 above.
302	General			Soil Test report	Biddder request you to provide soil test report for the RSS Location	Refer reply at SN-22 above
303	General			Cable route : 132 KV Cable	Bidder request you to provide the cable route for 132 KV cable from GSS to the RSS	Refer reply at SN-11 above. Bidder to survey for cable route.
304	General			Cable route : 33 KV Cable	Bidder request you to provide the cable route for 33 KV cable from RSS to the designated ASS	Bidder to survey for cable route. The route length is specified in Part-4, APPENDIX L: SECTION RSS.
305	General	Scope of work :HRW		2.2.3 Shifting / Height Raising of 132 kV Double Circuit Transmission Line Tower. 2.2.3.1 Height raising/ shifting of 132KV Double circuit tower Loc No. 35 & 36 of 132KV Uppalwadi-Parsi Transmission line for rising of height due to Metro Rail corridor Alignment in Reach-2A. The scope of work comprises as below but not limited to a Supply & Erection of New Tower - Loc. Nos. 35 (5+20) Monopole Loc. No 35A (5+20) Monopole Loc. No 36 (0+0) Monopole. Total- 3 Nos b Dismantling of existing tower - Loc No 35 (P+0) & Loc No 36 (P+0) Total – 2 Nos c Destringing - Ext. Loc. No 32 to Ext. Loc No. 37 d. Re-stringing - Loc. Nos. 32 to Loc. No 37 e Route length – 1387 Mtr	Since the height raising of 132 kv double circuit Transmission line tower is technically different work ,The bidder request to remove the same from the scope of the tender	Tender condition prevails.
306	Part-4 CommercialPackageSecti on,SECTION XI: PRICING DOCUMENT	8.Cost Centres,Page 6 of 156		The Bidder, however, may add additional Milestones in a Cost Centre provided such Milestones genuinely relate to that Cost Centre activity. The Cost Centres represent the major items of the Works for which the Employer will pay the Contractor, and the Bidder shall ensure that he has allowed for all his costs he requires for the Contract to meet the Works Requirements	The bidder understand that we can add additional Milestones in a Cost Centre provided such Milestones genuinely relate to that Cost Centre activity.Kindly confirm whether those milestone need to be specified during the tendering stage or it can be done during execution stage	Bidder have to clearly specify such milestone description in the tendering stage itself.
307	Part-3 GCCPCCIEEMAContractFormsSHEManual,Section - VIII: Particular Conditions of Contract (PCC)	PCC-Clause 14.15(g), Page 9 of 139		Wherever any sum in a foreign currency has to be converted into Indian Rupees for any purpose, the exchange rate to be employed for such conversion shall be the selling rate of exchange at the close of base date	The bidder understand that the base date for conversion of foreign currency to INR is 7 days prior to the date of tendering. Kindly confirm the same	The clause is self explanatory. "base date" for the purpose of this clause will be the date of submission of the bill
308	Part2 SectionVIBParticularSpeci fications	PS 3.2.9.2.3,Page 38 of 286		The finished ground level of the Substation site shall be minimum 500 mm above the adjacent peripheral land & Maximum Flood Level (MFL) in the Region to be ascertained by the Contractor and confirmed by the Local Authorities.	1. Kindly Provide MFL/HFL data if available for our reference and also any specific landmark near to RSS which needs to be considered while finalising the FGL. 2. Kindly confirm that any change or increase in FGL level above 500mm from HFL will be considered as extra (Paid seperately)	Refer reply at SN-23 above

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
309	Part2 SectionVIBParticularSpeci fications	PS 3.2.9.3,Page 38 of 286		The Contractor will be required to provide suitable access road to the Substation site, from the nearest main road, which shall have necessary width and strength to carry the Power Supply equipment. The access road to be made of bitumen/cement from main road to substation	1. There is no specific details of the road width/type are mentioned. Kindly confirm bidder is independent to assume the Section Sizes/type of road as per design and requirement. Please mention if any specific make of material required or bidder is independent to choose the make of material as per standard practice.	Refer reply at SN-24 above
310	Part2 SectionVIBParticularSpeci fications			General	2. Please provide the distance of nearest main road from RSS site and any special requirement to connect the road.	Refer tender document. Bidder may survey & may make their own assesment.
311	Part2 SectionVIBParticularSpeci fications	PS 5.5.2.4.1,Page 113 of 286		The Contractor will have to design the General Layout of the SWR & Control RoomBuilding. The structure shall be designed for actual requirement + future 2 floors & constructed as RCC framed structure based on BIS codes	As there is no size for GIS/Control room building provided. Kindly confirm the actual requirement is only one floor (ground floor) for construction. Kindly provide us the tentative floor/elevation plan required to be considered in G+2 design.	Refer reply at SN-20 above
312	Part2 SectionVIBParticularSpeci fications	PS 5.5.2.4.3.2,Page 113 of 286		The internal finishes and facade finish of the RSS building shall be similar to Depot building and station buildings	Kindly provide the reference drawing of Depot for building finishing details	Refer reply at SN-234 above
313	Part2 SectionVIBParticularSpeci fications	PS 3.2.4.5,Page 30 of 286		Geotechnical investigations to determine the safe bearing capacity of the soil and other design parameters, including Soil conductivity	Is there any specific test needs to be conducted during Geo tech investigation like liquification analysis of soil is required irrespective of the soil type.	Refer tender document
314	Part2 SectionVIBParticularSpeci fications	General Specification-2.3.5,Page 20 of 173		Submission of Documents on 5D BIM Platform	Kindly confirm whether the RSS design/drawings shall be submitted in Hardcopy for preliminary approval and BIM based models shall be submitted after final GFC approved drawings.	Refer tender document. Both in hardcopy & BIM based models.
315	Part-2 :TenderDrawing1	16 of 21		Typical layout	Height of the floors is not given. Please provide the sectional view of the building for GIS/CRB, PLCC room and Store room.	Refer reply at SN-20 above
316	Part-2 :TenderDrawing1	16 of 21		Typical layout	Provided plot of 168x48 is final size for RSS or the size may change as per requirment during detail design. In case of increase in area, kindly confirm the same shall be eligible for additional claim beyond the provision of Contract	Tender condition prevails.
317	General			General	1. Please specify the design life of building and other structure.	Bidder may design meeting the Indian regulations, NBC codes etc. Normally life of RSS building shall be 100 years.
318	General			General	2. Design & Engineering shall be based on Technical Specifications of Work in tender documents. In a situation when Tender Specifications are silent, bidder shall satisfy the minimum requirement in IS standards. If such standards are required to be exceeded as per Employer requirement after bidding, the same shall be eligible for additional claim beyond the provision of Contract.	Refer tender document.
319	General			General	3. Please provide standard drawings for switchyard fencing detail, boundary wall, Raod , Drain and cable trenchg.	Bidder to design as per requirement.
320	General			General	4. Please provide the boundary GPS coordinate for RSS(If Possible).	Bidder may survey & may make their own assesment.
321	General			General	5.Please provide the length of drain outside the RSS up to the local drainage system if available	Bidder may survey & may make their own assesment.
322	General			General	6. Please provide total area of landscaping and car parking.	Bidder to design as per requirement.
323	General			General	7. Bidder consider that the source of water supply and electricity supply will be provided by client for construction of RSS	Refer tender document.
324	General			General	8. Kindly provide the minimum grade of concrete & grade of steel for Building and other miscellaneous foundation/structures	Refer reply at SN-236 above
325	General			General	9. Please confirm is there any IGBC requirement in RSS and if so please mention IGBC Rating.	Refer tender document.
326	Part 2, Particular specification, Chapter 7	7.3.6.6.2		Enclosure shall have inspection windows to view primary and secondary sides.	Bidder wishes to know, the minimum/maximum transformer Inspection window size	As per OEM's practice.
327	Part 2, Particular specification, Chapter 7 & chapter 14, table 14, cluase VII.	7.3.9 & chapter 14, table 14, cluase VII.		Panel flooding systems should be provided for all required equipments for protection owards fire. Releavant signals shall be transmitted to SCADA in opearation control centr	Bidder understands that CO2 flooding system shall be provided in 33kV SWGR Panel (AIS) and Transformer enclosure. Please confirm.	FM-200/Novec Gas flooding system to be provided.
328	Part 2, Particular specification, Chapter 7	7.3.10.7		The cable drum dimension shall be as the standards & shall be submitted from approval of engineer	Bidder wishes to know, the maximum allowable drum length & weight for MV Cables	Bidder shall submit for approval of engineer during execution stage.

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
329	Part 2, Particular specification, Chapter 7	7.4.2.1 & 7.4.2.2		Power sockets shall be installed along the viaduct. From each station 2 cables have to be laid, one on each direction. Sockets shall be placed every 50 meters on either side of the viaduct (duly stagerred so that every 25m on socket is available on any one side). They shall be 16 A rated current with 5-pins / 3-phases plus neutral plus earth. They shall ensure a protection of IP 65. Not more than 2 sockets will be operated in one circuit at any time. That is to say, the cable should be designed for carrying a continuous rated current of 32A, after considering the derating factors as applicable. The cable along the viaduct should be of the same cross section (min. 25 sq. mm.) throughout. The 5-wires cables shall be laid along the line on the parapet, under the sockets with space enough between them to install the connection box.	Bidder understanding is that 5 core copper cable of min 25sqmm shall be used for viaduct sockets. Please confirm.	Being a Design & Build contract, Bidder shall submit the design for approval of engineer during execution stage.
330	Part 2, Particular specification, Chapter 2, Overview of project	2.3.1.p and 3.8.2.1.a		(p) The feeding of Mihan Depot ASS shall be modified with 33kV cable feed from ECO Park station ASS replacing the current feed from Khapri ASS. And 33kV feed from Khapri to be extended to ECO park ASS. Necessary additional 33kV GIS panels at ECO Park ASS & 33kV cable to be considered. Similarly, The feeding of Hingna Depot ASS shall be modified with 33kV cable feed from Hingna mount view station ASS replacing the current feed from Lokmanya Nagar ASS. And 33kV feed from Lokmanya Nagar to be extended to Hingna mount view station. Necessary additional 33kV GIS panels at Hingna Mount view ASS & 33kV cable to be considered. (a) 33 kV Auxiliary Network shall be in ring formation for the extended North South corridor. The 33 kV network gets its feed extension from Khapri Station ASS for Corridor-1A and from Automotive Square ASS for corridor-2A. The feeding of Mihan Depot ASS shall be modified with 33kV cable feed from ECO Park station ASS replacing the current feed from Khapri ASS. And 33kV feed from Khapri to be extended to ECO park ASS. Necessary additional 33kV GIS panels at ECO Park ASS & 33kV cable to be considered. And additional 33kV feed shall be available in Corridor 2A/2B either from Khairi Fata RSS / Kanhan RSS. The 33kV supply to be extended from RSS to nearest feasible Station ASS. This 33kV feed from new RSS shall be capable to feed the entire North South corridor. Contractor shall ascertain all anxiliary works of the 33kV Feed extension & shall complete the work. The cost for the above shall be inclusive in the bid price.	Bidder wishes to know, will the 33kV cable which are already installed between Khapri ASS and Mihan ASS be reused for interconnection between Eco Park ASS and Mihan ASS, or New cable shall be laid. Please confirm	Bidder to plan & design as per tender requirement & new cable shall be laid.
331	Part 2, Particular specification, Chapter 2, Overview of project	2.3.1.p and 3.8.2.1.b		p) The feeding of Mihan Depot ASS shall be modified with 33kV cable feed from ECO Park station ASS replacing the current feed from Khapri ASS. And 33kV feed from Khapri to be extended to ECO park ASS. Necessary additional 33kV GIS panels at ECO Park ASS & 33kV cable to be considered. Similarly, The feeding of Hingna Depot ASS shall be modified with 33kV cable feed from Hingna mount view station ASS replacing the current feed from Lokmanya Nagar ASS. And 33kV feed from Lokmanya Nagar to be extended to Hingna mount view station. Necessary additional 33kV GIS panels at Hingna Mount view ASS & 33kV cable to be considered. a) 33 kV Auxiliary Network shall be in ring formation for the extended East West corridor. The 33 kV network gets its feed extension from Lokmanya Nagar Station ASS for corridor-3A and from Prajapati Nagar Station ASS for corridor-4A. The feeding of Hingna Depot ASS shall be modified with 33kV cable feed from Hingna mount view station ASS replacing the current feed from Lokmanya Nagar ASS. And 33kV feed from Lokmanya Nagar to be extended to Hingna mount view station. Necessary additional 33kV GIS panels at Hingna Mount view ASS & 33kV cable to be considered. Contractor shall ascertain all anxiliary works of the 33kV Feed extension & shall complete the work. The cost for the above shall be inclusive in the bid price.	Bidder wishes to know, will the 33kV cables which are already installed between Lokamanya Nagar ASS and Hingna ASS be reused for interconnection between Mount View ASS and Hingna ASS, or New cable shall be laid. Please confirm.	Bidder to plan & design as per tender requirement & new cable shall be laid.

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
332	Part 2, Particular specification , Appendix VI-B7,List of Deliverables			SCADA Signal List	Please confirm the SCADA signal list to be considered for 25kV Load break	The signal list of interrupter to be considered for load break switch also.
333	Part 2, Particular specification, Chapter 7	7.4.3.4		The PST contractor shall interface with E&M contractor of station for availability of cable path inside the station building and availability of lighting distribution board with all other accessories inside the LDB. PST contractor shall raise his requirement to E&M contractor for requirement of switching arrangement with necessary control & protection for viaduct lighting and power sockets.	Please confirm how many cable from each station shall be laid in each direction for viaduct lighting. OR Please confirm weather 3core single cable or 3runs of single core cables of aluminum or copper be used for viaduct light circuiting / looping.	Being a Design & Build contract, Bidder shall submit the design for approval of engineer during execution stage.
334	Part 2, Particular specification, Chapter 7 and Appendix VI-B3: Technical Sheets	7.3.6.1		Dry Type Transformers to be designed with immunity against switching surges. The transformer shall be provided with RC snubber circuit /surge arrester with Phase to Phase & Phase to Earth along with surge counter as per requirement.	Please confirm / provide the technical specification / GTP for 33kV Lightning Arresters.	Bidder & OEM to design as per requirement.
335	Part 2, Particular specification, Chapter 10.	10.3.1		The current carrying capacity of metallic sheath shall be 14kA minimum for 1 sec	We understand that NGR shall be provided at RSS, to limit the fault current to 1kA. Therefore for current carrying capacity of metallic screen as 14kA for 1 sec may be reviewed.	Tender condition prevails.
336	General				ACDB & DCDB SLDs may please be provided.	Being a Design & Build contract, Bidder shall submit the design for approval of engineer during execution stage.
337	General				Alignment layouts/GAD for all four NS & EW corridor may please be provided	Refer Corrigendum-V: SN.44.
338	General				Bidder understands that provision of temporary loading deck for bringing ASS equipment inside the room shall be provided by station building contractor (Civil) as per requirement	Your understanding is correct.
339	Part-2 General Particular Specification Annexures	5.4.1.6.1.7		Battery & Battery charger shall be prefarable of same make/manufacturer.	Preferably same make of Battery & Battery charger shall be considered. However, a different reputed make battery and charger can also be considered by the bidder. Kindly confirm.	Tender condition prevails.
340	Part-2 General Particular Specification Annexures	5.4.1.6.2.13		The status of all battery chargers shall be indicated at the SWGR, as well as at the OCC (through SCADA), as per the following convention:	Bidder understand that the status of battery charger will be indicated within charger itself and the OCC. Kindly confirm	Confirmed.
341	Part-2 General Particular Specification Annexures	3.2.8.4		The PST Contractor have to do the detailed design and arrive at the transformers capacities	Bidder request to provide station auxiliary loads for sizing of 33/0.415kv transformer capacity.	Refer PS table 4.6.
342	Part-2 General Particular Specification Annexures	3.2.8.1		33 kV Auxiliary Network shall be in ring formation for the extended North South corridor. The 33 kV network gets its feed extension from Khapri Station ASS for Corridor-1A and from Automotive Square ASS for corridor-2A. The feeding of Mihan Depot ASS shall be modified with 33kV cable feed from ECO Park station ASS replacing the current feed from Khapri ASS. And 33kV feed from Khapri to be extended to ECO park ASS. Necessary additional 33kV GIS panels at ECO Park ASS & 33kV cable to be considered. And additional 33kV feed shall be available in Corridor 2A/2B either from Khairi Fata RSS / Kanhan RSS. The 33kV supply to be extended from RSS to nearest feasible Station ASS. This 33kV feed from new RSS shall be capable to feed the entire North South corridor. Contractor shall ascertain all anxiliary works of the 33kV Feed extension & shall complete the work. The cost for the above shall be inclusive in the bid price.	Bidder request to share the existing feeder details along with protection detail provided in the existing system.	Refer Corrigendum-V: SN.44.
343	Part-2 General Particular Specification Annexures	3.2.6.1		At existing Mihan TSS feeding post the coupling Interrupter (BM) to be replaced with Circuit Breaker & the same released Interrupter to be installed as feeding BM for depot line with necessary extension of the feeding post gantry.	Bidder request to provide the existing feeding post layout and SLD drawing for our understanding.	Refer Corrigendum-V: SN.44.
344	Part-2 General Particular Specification Annexures	Drawing No A3_G71770		SLD of RSS,AMS and TSS	"Bidders are informed that the tender Single Line Diagram (SLD) with drawing number A3_G71770 is applicable for both Khairi and Kanhan river (RSS). Kindly confirm, as the RSS SLD does not specify the name of the RSS."	There will be 9 no.of bays in Khairi RSS as shown in refered SLD. Whereas at kanhan RSS, there will be only 7 bays (only two Incomers instead of four). Bidder has to quote for 9 bays GIS, however the payment will be made on proportional basis.
345	Part-2 General Particular Specification Annexures	2.2.3		Power supply for the above corridors is received at 132 kV level at following locations:	Bidder understands that Kanhan metro RSS will receive four no of incoming power supply from different MSETCL GSS.And few augmentation work to be done at MSETCl GSS .Kindly confirm our understanding.	Refer reply at SN-344 above. Kanhan metro RSS will shall receive two circuits of incoming power supply from MSETCL Kanhan GSS.

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
346	Part-2 General Particular Specification Annexures	2.2.3		Power supply for the above corridors is received at 132 kV level at following locations:	Bidder request to provide detailing of augmentation work that to be carried out at GSS end.	Refer tender document.
347	General	09 APPENDIX H EHV CABLE SPECIFICATION		220/132KV Cable specification.	Bidder understands that only 132kv cable to be referd in this project and no 220kv cable is to be considered anywhere in this tender, Kindly confirm.	Refer reply at SN-04
348	General	GSS Augmentation work		GSS Augmentation work	Bidder request to provide distance between GSS and Kh RSS	Refer reply at SN-11 above
349	General	GSS Augmentation work		GSS	Bidder understands that the scope of work at GSS end includes installation , erection and testing commissioning of two no of bays inciding control, protection and meterring panel. Please confirm	Your Understanding is correct. Refer tender document for complete scope.
350	Part-2TenderDrawing-1	Transmission tower drawing		132KV/ D/C KHN-UPD/UPD-PRD/Profile & plan/part -01	Referring tender drg.no., we understand that tower hight at location no. 35 and 35A need to raised upto 31.02 mtr. it is also noted that supply & installation including foundation of these two towers are covered under scope of this tender. Please confirm. Also, bidder request to provide the detailed tower drawing (SPS) along with cross-section drawing with metro route alignment showing clear height from top of OHE conductor to bottom of tower line/conductor.	Refer tender document. For further information, Bidder may survey & may make their own assesment.
351	General	General		Protection SLD along with CT and PT parameters	Bidder request to provide details protection SLD for 132kv, 33kv and 25kv TSS.	Refer Tender document.
352	Part-2TenderDrawing-1	RSS Layout			RSS plot size 168 x 48 mtr. Has been indicated in the Tender drawings. Bidder request to provide the area/room size of GIS room, AMS room, CRB room, Battery room etc. Bidder also request to share the RSS layout with dimensions & room height	Refer reply at SN-20
353	General	General			Bidder request to provide the detailed scope of works for construction of LILO and underground cabling work from GSS to proposed RSS as there is uncertainty on location of RSS referring clause 2.2.3 page 194/834.	Refer reply at SN-11 above
354	General	2.1.10			Bidder request to confirm the requirement of power factor correction unit on 33kV bus OR on 25kV bus at RSS level.	Refer Tender document.
355	General	General			Bidder request to provide GSS layout to explore and uderstading the site for agumentation work.	Bidder may survey & may make their own assesment.
356	General	General			Bidder request to provide existing RSS SLD and feedeing philosophy/scenario for load flow studies.	Refer Corrigendum-V: SN.44. Refer PS Cl.4.4.4 for degraded mode feeding scenarios.
357	Part-2 General Particular Specification Annexures	3.2.1.6.2		For accomdation of PLCC & C&R panel, Control room extension is required with shifting of 11kV panel	Bidderd request to provide no of 11kv SWGR that to be shifted and kindly confirm that what to be done 11kv dismantaled panels.	Refer Corrigendum-V: SN.9.
358	Part-2 General Particular Specification Annexures	3.2.1.6.3		The existing staff quarters and fencing besides 132 kV line bay is to be dismantled for accomdation of 2 nos. of 132kV AIS line bays so that space can be made available at one side by extending 132kV Bus(2+1 type)	Bidder requeest to provide the layout of staff quarters to evaluate the quantam of work	Bidder may survey & may make their own assesment.
359	Part-2 General Particular Specification Annexures	3.2.1.7.3		All other equipments, such as Low Voltage distribution board complete with Incoming and outgoing breakers and feeders, DC-UPS including Batteries, Battery chargers and DC Distribution Boards	Please provide the details of ACDB thay	Refer reply at SN-336 above
360	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 9, clause 9.2		The SCADA/SAS system of Nagpur Metro phase-1 is already in operation. Contractor to verify the compatability & propose system that can seamlessly integrated with the existing system.	As per the bidder's understanding, Nagpur Metro Phase 1 is already in operation and Nagpur Phase 2 will simultaneously report to Nagpur Phase 1 SCADA system at OCC/BCC. Kindly provide details of Nagpur Metro Phase 1 SCADA software OEM and confirm the license availability for integrating new RTUs of Nagpur Metro Phase 2 in other corridors SCADA software at OCC/BCC	Refer reply at SN-81 above
361	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 9, clause 9.3.3.2		RTU shall be able to work in standalone mode for minimum 8h, and store locally the data it produces. The minimum features are as follows:	The referred clauses are contradictory. Please confirm that whether Spare I/O required in RTU for futuer expension or not.	Spare I/O are required in RTU.
362	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 9, clause 9.3.4.1		Ethernet switches shall provide VLAN functions. VLAN for safety related functions will	Please provide the technical specifications of SCADA Ethernet switches	Successful bidder to design & submit for approval of employer

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
363	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 3, clause 3.2.7.4		Operation Control Centre Equipment shall be provided at the OCC/BCC to permit the remote monitoring of high level status and fault alarm messages from other Railway Systems at Universal Workstations located in the Operation Control Centre.	As per the bidder's understanding, Nagpur Metro Phase 1 is already in operation and Nagpur Phase 2 will simultaneously report to Nagpur Phase 1 SCADA system at OCC/BCC. Please confirm	Your understanding is correct.
364	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 7, clause 7.6.15		Bidder shall provide the necessary power and control cables, CAT6 cables, FO Cables, Ethernet cables etc and any other modification/ changes required for master-slave communication including SCADA connectivity. Telecom FO cable connectivity from viaduct to TR room and viaduct to OCC & BOCC is in scope of Telecom contractor.	Please provide the technical specifications of the CAT 6 Cable FO cable.	Successful bidder to design & submit for approval of employer
365	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 14, clause 14.8.4 point I		Laptops to access relays at variousASS & RSS for downloading, modification etc	Please provide the technical specifications of the Laptop.	Refer tender document.
366	Part 2 Works Requirement - Particular Specification	Part 2 Works Requirement - Particular Specification, Chapter 3, clause 3.2.6.4		The SCADA configuration of the above works is in the scope of this contract. Necessary relay or BI/BO cards augmentation / additional RTU at Depot ASS to be provided. However the cabling from RTU to field equipment is in the scope of OHE contract.	Please provide the existing RTU spare I/O card details and no. of spare slots in the existing RTU to add additional cards for augmentation work.	Bidder may survey & may make their own assesment.
367	Part-2TenderDrawing1			Over all SCADA network	Please confirm whether the communication medium between RTU to OCC/BCC is over dark fibre or a Shared network.	It is Shared Network.
368	General			Height Raise of 132 KV Line	Kindly confirm how the stringing should be carried out whether in live line or shutdown	As per MSETCL requirement. Bidder may coordinate & ascertain from MSETCL.
369	General			Height Raise of 132 KV Line	kindly confirm any ERS is required,In case ERS is required who will be arranging for the ERS	As per MSETCL requirement. Bidder may coordinate & ascertain from MSETCL.
370	General			Height Raise of 132 KV Line	Kindly Propose store location where dismantled material(Tower) is to be transported	MSETCL store, Nagpur.
371	General			Height Raise of 132 KV Line	Kindly arrange the tower Schedule	Refer tender document & drawings. Further Bidder may coordinate & ascertain from MSETCL.
372	General			Height Raise of 132 KV Line	Kindly arrange the height of Bottom/Middle/Top crossarm & Peak of towers	Refer tender document & drawings. Further Bidder may coordinate & ascertain from MSETCL.
373	General			Height Raise of 132 KV Line	Kindly arrange Existing Tower Drawing for DD Type Tower along with foundation volume for soil classification proposed there	Bidder may survey & may make their own assesment.
374	General			Height Raise of 132 KV Line	Kindly arrange GTP, Sag Tension for conductor stung on the line.	Bidder may survey & may make their own assesment.
375	General			input for traction simulation	Kindly provide Complete input for traction simulation 1.1. Alignment drawing complete phase-1 &2. 1.2. Operation plan 1.3. Rolling stock data 1.4. OHE data 1.5. Feeding point and Neutral section 1.6. Study cases (Outage scenario	Refer tender drawings for: Ph-1 Main Line 25 KV OHE sectioning schematic diagram (with Chainage). Phase-2 GAD attached in Corrigendum-V: SN.44. Refer tender document PS for: Degraded mode feeding scenerio, Rolling stock data, OHE data.
376	General			input for AC load flow studies. refer attached file.	Kindly provide Complete input for AC load flow studies 2.1. Overall single line diagram. 2.2. Transformer capacity at stations. 2.3. 33kv cable specification. 2.4. Station chainages details. 2.5. Outage scenario.	Refer tender drawings for: Ph-1 Main Line 25 KV OHE sectioning schematic diagram (with Chainage). Phase-2 GAD attached in Corrigendum-V: SN.44. Refer Corrigendum-V: SN.44 for Overall single line diagram, Transformer capacity at stations, 33kv cable specifications of Phase-1. Refer tender document PS Cl 4.4.4 for Degraded mode feeding scenerio
377	Part-1: Bidding Procedure Section II: Bid Data Sheet	ITB 1.1 Page 33 of 138		Date & Time of submission of Tender: Online submission up till 16.00 Hrs. on Dt. 28/03/2024 on Maha-Metro, e-tender portal.	we like to draw your kind attention on the fact that this is a EPC contract, necessitating a simulation study. Furthermore, clarification of pre-bid queries is imperative for accurate quantity estimation and optimization. considering the above, we kindly request to extension of the bid submission deadline by a minimum of three weeks, until April 18, 2024, to facilitate the successful submission of our bid."	Refer reply at SN-33 above

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
378	Part2 SectionVIBParticularSpeci fications	PS-11.5 Monitoring Health of Cable using Distributed fiber Optic Sensing Solutions, Page 231 of 289		**Monitoring Health of Cable using Distributed fiber Optic Sensing Solutions :** Design, Supply, Installation, Testing & commissioning of system as per technicalspecification for Monitoring Health of Cable using Distributed fiber Optic Sensing (For Ph-2 RSS power cables and for all power cable alongwith Control cable laid on UP side parapet of Phase-2 Reach-2A corridor.)	"Please elaborate to provide a clearer understanding of the scope of work."	Ref tender document
379	Part2 SectionVIBParticularSpeci fications	PS-16.1.2.3,Page 276 of 289		A monthly rent and maintenance charges of Rs. 520/Sqm. and Rs. 60/Sqm. respectively per month (exclu. GST), and electrical facilitation charges according to MahaMetro Policy will be charged to the Contractor	Bidder request you to kindly provide the land for the engineers site office at free of cost.	Refer reply at SN-57 above
380	Part-3 GCCPCCIEEMAContracFo rmsSHEManual	PCC -Key date& Acess Date,Page 129 of 139			For section R1A1 and R2A1 the time between acess and commisioning is very less,the bidder request you to provode early acess for the mentioned sections	Refer reply at SN-12 above
381	b), 2.4.1 , Pge 54 of 138			Minimum of Design, Detail Engineering, Supply, Installation , Testing and Commissioning of 11 kv and above indoor Auxiliary Substations One contract of 10 Auxiliary Substations or more OR Two contractors for total **14** Auxiliary Substations or more OR Three contracts for total **17** Auxiliary Substations or more.	we request your kind attention towards a fact an organisation who has experience of construction of higher voltage level of RSS and TSS wull able to construct ASS more easily as most of the GIS also has indoor ASS. We highlight that we are currently executing metro rail projects in Delhi and Patna , but since this project completion depends on various external factors we do not have required no of completed ASS. We request below ammendment , so that capable organisation who has huge ecperience in substation system like us will also be able to participate: **"Minimum of Design , Detail Engineering , Supply, Installation , Testing and Commissioning of at least 10 Indoor Auxiliary Substations with primary voltages 11 kv and above.** The above criteria was accepted in recent Metrorail tenders of Bhopal, Indore and Ahemdabad. We are also enclosed relevant pages of RFP.	Refer Corrigendum-V: SN.3.
382	Part 2 Works Requirement - Particular Specification- CHAPTER 2-Overview of the project			2.2.3 Power supply for the above corridors is received at 132 kV level at following locations: (a) Receiving Substation (RSS) near Kanhan River OR Receiving Substation (RSS) near Khairi Fata/All India Radio Metro Station	We request to kindly clarify the final location of the RSS and the location of the corresponding GSS alongwith its distance	Refer reply at SN-11 above
383	Part 2 Works Requirement - Particular Specification-			CHAPTER 3 3.0 SCOPE OF WORK —3.1.3 -The equipments proposed for Nagpur Metro Phase 2 works shall be compatible with equipments installed in Nagpur Metro Phase 1.	We request to kindly provide the following 1. Rating and make of Power /Auxiliary Transformer for existing RSS and ASS 2. We request to kindly clarify whether the transformerwinding will be of aluminium or copper material	1) Ph-1 RSS SLD with ratings provided at Corrigendum-V: SN.44. 2) Refer tender document.
384	Part 2 Works Requirement - Particular Specification-			CHAPTER 3 3.0 SCOPE OF WORK- 3.2.1.7.5- HT Cabling/Conductor works	We request to kindly clarify the size of 132 kV and 33 kV cables and whether the cables for 132 kV and 33 kV cable will be copper or aluminium	This is a Design and Build tender and Designs are in the scope of Contractor. Refer table 4.6: Minimum rating for major equipment
385	Part 2 Works Requirement - Particular Specification-			3.2.7.9 AUGMENTATION WORK IN EXISTING OCC/BOCC SCADA- The Phase-2 network to be intergrated with the existing Phase-1 SCADA system with necessary modifications in existing SCADA to make the system fully functional. The contractor is required to visit the site i.e. existing SCADA at BOCC and ascertain the quantum of works to be carried out.	We request to kindly clarify the make of existing SCADA in Phase- 1	Refer reply at SN-81 above
386	Part 2 Works Requirement - Particular Specification- CHAPTER 2-Overview of the project				We request to kindly clarify whether any additional transformer/electrical equipment are under the scope for property development works	Refer tender document for detailed scope.
387	Part 2 Works Requirement - Particular Specification-			3.2.3.1 (xi) -The material supplied should be as per MSETCL specifications and procured only from vendors as per approved list of the vendors of MSETCL	We request to kindly provide the approved vendor / make list of MSETCL.	Bidder may arrange the same for themselves from MSETCL office or their website.
388	Part 2 Works Requirement - Particular Specification-			3.2.1- 132 kV Bay Augmentation work at MSETCL Grid Substations	We request to kindly clarify whether adequate space is available for conducting Bay augmentation works at MSETCL Grid substations	Space is available. However bidder may visit the site to ascertain the site preparation work.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
389	Part 2 Works Requirement - Particular Specification-			3.2.2 LILO ARRANEGMENT FROM 132 KV TRANSMISSION TOWER AND INCOMING 132 KV CABLE FOR RSS- (i) ROW liasioning works. 11.2 LILO ARRANGEMENT FOR RSS.(j) ROW liasioning works.	We request that the ROW liasoning works may kindly be deleted from contractor's scope	Refer reply at SN-114 above.
390	Part 2 Works Requirement - Particular Specification-			5.1.2.1.2 The Contractor has to liaise with MSETCL during detailed design stage for the integrated protection scheme	We request that liasoning with MSETCL may kindly be deleted from contractor's scope	Tender Condition prevails
391					We assume that lighting arrangement at grade section is not under contactor scope. Please Clarify	The Guideway lighting arrangment along the at-grade section is in the scope of this contract.
392	Part 2 Works Requirement - Particular Specification- CHAPTER 2-Overview of the project				We request to kindly provide the layout drawing of RSS building.	Refer reply at SN-20 above
393	Part-1: Bidding Procedure Section-III: Evaluation and Qualification Criteria- 2.4.1 Contracts of Similar Size and Nature			b) Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above indoor Auxiliary Sub stations One contract of 10 Auxiliary Substations or more OR Two contractors for total 14 Auxiliary Substations or more OR Three contracts for total 17 Auxiliary Substations or more	We have a rich experience of construction of Grid substations upto 765 kV for various electricity boards both in India and abroad. In General, construction of multiple indoor Auxiliary Substations in one contract are part of Metro power supply packages only. Also, construction of auxiliary substations have similar complexity as construction of Grid substations. Hence, in view of above and to encourage healthier participation, we request to kindly allow following criteria as well: 1. Minimum of Design, Detail Engineering, Supply, Installation, Testing and Commissioning of 11kV and above indoor Auxiliary Sub stations One contract of 10 Auxiliary Substations or more OR Two contractors for total 14 Auxiliary Substations or more OR Three contracts for total 17 Auxiliary Substations or more OR Design,Supply ,Erection ,testing and commissioning of minimum 10 Auxiliary Substations cumulatively in multiple contracts with primary voltages 11 kv and above voltage level as part of Grid Substations for Electricity Authority.	Refer Corrigendum-V: SN.3.
394	Particular Specifications NMRP Phase-2 Contract No. N2-031/TR-03/2023	Cl. 5.3.4.3.1 General		Panel flooding systems should be provided for all required equipments for protection towards fire	We shall provide cutouts in our panels for placing of panel flooding system, however, the fire protection system shall be installed by EPC contractor	Bidder to design & submit for approval from employer during execution stage.
395		Cl. 5.3.4.3.5 & Cl. 7.3.2.3 General Requirement		v. Suitable means of expansions should be provided in the metal enclosure and pipelines to absorb the actual thermal expansion and contraction of the SF6 equipment and to facilitate the alignment of the switchgear assembly.	Kindly note that pipe type of design is not applicable for offered type of GIS switchgear. Also, expansion and contraction equipement i.e. expansion bellows is a requirement used in HV and EHV type of GIS switchgear	Tender condition prevails
396		Cl. 5.3.4.3.5 & Cl. 7.3.2.3 General Requirement		x. The operating height of the instrument panel above floor level shall not exceed 2000 mm unless otherwise reviewed without objection by the Engineer who may require the Contractor to provide, at its own cost, suitable means for easy access to the instrument panel	For components that need manual intervention and operation shall be mounted at heights below 2000mm and if required, only then, some indicative components like lamps, etc. shall be mounted beyond 2000mm. Kindly accept the same.	Tender condition prevails. Shall be dealt during detailed design stage.
397		Cl. 5.3.4.3.5 & Cl. 7.3.2.3 General Requirement		xv. The Relays shall contain all the necessary protection functions/ completed protection scheme. The Relay shall have KEMA IEC61850 edition 2 certificates which are within 7 years from the date of issue of the certificate. The relay shall support Communication with Dual Ethernet port (for ring network) over IEC 61850.	Kindly note that since there has been no design change in our offered numerical relays, there is no need to repeat any type tests as per IEC standards. Kindly accept the type test reports that have just crossed 7 years from the date of issue.	Refer reply at SN-223 above
398		Cl. 5.3.4.3.8 & Cl. 7.3.2.4.2 Operating mechanisms		The circuit-breaker and switch mechanisms shall be of spring-powered stored energy operation by means of a motor charged spring with manual and electrical released, or solenoid operated.	The 3 position disconnector cum earthing switch mechanism shall be manual + motorized mechanism for switching ON, OFF and Earth and shall not be solenoid operated.	Tender condition prevails. Shall be dealt during detailed design stage.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

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399		Cl. 5.3.4.3.18.6 & Cl. 7.3.2.7.6 Insulation Gas		Where interlocking over a distance is required, two independent criteria shall be used, e.g. absence of a voltage and remote feeding circuit breaker open. Indication of the remote condition shall be by single purpose circuit, care being taken that the conductors used are adequately screened and shielded to minimise both transverse and longitudinal voltages resulting e.g. from electromagnetic induction, differences in earth potential or other causes. The Contractor shall ensure that voltages dangerous to personnel or deleterious to correct operation shall not raise.	Request you to kindly clarify the requirement. The same is not clear from the clause	The clause is self explanatory. Where interlocking over a distance is required, two independent criteria shall be used. Example: In Station ASS feeders any of the interlock requires absence of voltage, both the zero PT volatge & preceeding ASS outgoing feeder Circuit breaker voltage to be considered for interlocks.
400		Cl. 5.3.4.3.24.1 & Cl. 7.3.2.13.1 Testing Facilities		The PT shall be provided with isolation links/switches for enabling the high voltage / IR tests to be carried out	For top cable entry panels, wherever bus PTs are required, we shall provide suitable arrangement for removal of PTs in order to perform tests	Refer Corrigendum-V: SN.21
401		Cl. 5.3.4.3.25.6 & Cl. 7.3.2.14.6 Current Transformer		Secondary connection wirings shall have a minimum size of 4mm2 copper conductors.	Kindly note that the DC circuits shall be wired with 1.5sqmm, PT circuits shall be wired with 1.5 sqmm and CT circuit shall be wired with 2.5 sqmm. As per our experience from previous Nagpur metro projects, please note that considering 4 sqmm wire size makes it difficult for preparing wire bunches and it also makes it difficult to close the panel door.	Tender condition prevails Shall be dealt during detailed design stage.
402		Cl. 5.3.4.3.26.2 & Cl. 7.3.2.15.2 Voltage Transformer		Voltage transformer should be provided with manual disconnecting switch at the primary end. The isolation link shall preferably in gas chamber. The secondary windings shall be connected to the secondary circuit through a LV fuse or a miniature circuit breaker (MCB).	For top cable entry panels, wherever bus PTs are required, we shall provide suitable arrangement for removal of PTs in order to perform tests	Refer reply at SN-400 above
403		Cl. 5.3.4.3.27.2 & Cl. 7.3.2.16.2 Paint Work		As a minimum, an initial coat of rust-proofing and anti-corrosion paint will be applied after baring of all metal surfaces; then they will be covered with two coats of paint and one finishing coat, colour to be defined. The Contractor shall submit to the Employer, the complete details of the Switchgear Cubicles Metal work and Paintwork details, including details of the structure, process of finish and painting etc, for Employer's approval	We shall offer 7 tank powder coating process as per our previous supply to Nagpur metro. Kindly accept the same.	Tender condition prevails
404		Cl. 7.3.2.18 Surge Arrestors		Wherever required as per SLD, and as per network requirement derived in the system study, Cable kit connected touchproof Surge Arrestors shall be provided inside GIS Panels	SLD only shows surge arrestors for RSS and TSS switchboards. Kindly clarify the requirement of Surge arrestors for ASS type of switchboards, since the same is not clear from SLD. System study shall not be in OEM scope, the same shall be in contractor scope	Refer tender document. Bidder to design to meet technical & functional requirement.
405		Cl. 5.4.1 to 5.4.1.6.3		Clauses in the specifcation	Cl. 5.4.1 to 5.4.1.6.3 clauses are not applicable for 33kV and 25kV GIS switchgear	The clauses are self-explanatory.
406		Cl. 5.4.1.7.4 to 5.5		Clauses in the specifcation	Cl. 5.4.1.7.4 to 5.5 clauses are not applicable for 33kV and 25kV GIS switchgear	The clauses are self-explanatory.
407		Cl. 6.3.2.1.4 25kV Switchgear		These equipments shall be pole mounted with the switching part at pole top level, separated from the control equipment located at hand level and base pole mounted, both connected together with a transmitting mechanism	Pole mounted equipment not applicable for offered type of switchgear.	The Referred clause is in relation to outdoor 25kV equipment if any. The main 25kV Switchgear is GIS type - Refer Clause.6.3.2.6.
408		Cl. 6.3.2.2.1 Vacuum type Circuit Breaker		The current rupturing part consists of a vacuum bottle embedded in silicon rubber to prevent water condensation. Bottle is fastened on hard porcelain brown glazed insulated at 52 kV (according to the IEC 273), and the moving contact is connected by mean of flexible copper braid	We understand that this clause is not applicable for offered 25kV GIS switchgear	Refer reply at SN-407 above
409		Cl. 6.3.2.2 to 6.3.2.5.3		Clauses in the specifcation	Cl. 6.3.2.2 to 6.3.2.5.3 Clauses are not applicable for 33kV and 25kV GIS switchgear	Refer reply at SN-407 above
410		Cl. 6.3.2.6.6 Technical specifications		Rated Insulation Voltage across the Circuit Breaker/Interrupter : 52kV	We understand that 52kV voltage is mentioned for Open Circuit contacts of circuit breaker / Vacuum interrupter	Your understanding is correct.
411		6.3.2.6.2.14 Main Features required		All gas sampling shall be possible during normal operation and without loss of gas	Request you to clarify the exact requirment of sampling of gas in normal operation	The clause is self explanatory.
412		6.3.2.6.2.17 Main Features required		VTs should be pluggable type and provision should be available to manually disconnect the VTs with disconnector switch at the primary end.	In case of bus PTs required, the VTs shall be plug-in type only. Line side VTs shall be provided with manual 2 position disconnector arrangement	Tender condition prevails.
413		6.3.2.6.2.22 Main Features required		In case of any replacement or extension of switchgear panels at site it should be possible to replace or add a fully assembled GIS panel without disturbing the adjacent feeder as well as without any bus zone degassing. All GIS panels of same rating should be interchangeable.	In case of maintenance or repair required, our offered switchgear consists of repair opening which enables the maintenance of the switchgear without removing the panel from switchgear line-up. In case of extension of panel on either side, panel can be added without gas work. In case of replacement of panel in between(which is rare scenario), shifting of panels shall be required.	The clause is self explanatory.
414		6.3.2.6.4 Monitoring of Gas in the enclosure		Site test shall include leakage test, moisture contents in dielectric medium and power frequency test (if required as per relevant standards).	Since our offered panels are already tested for power frequency test, we recommend to refer the same power frequency reports. However, if still power frequency test is required to be witnessed at site, the same shall be done at 70% of the rated voltage levels.	Tender condition prevails
415		Cl. 6.3.6.1.1 Technical specifications		The switchgear is used for controlling 25kV OHE feeder and 25kV cable. Vender to confirm suitability of equipment for this application and also confirm maximum over voltage during switching operation	We understand that this clause is not applicable for offered 25kV GIS switchgear	Tender condition prevails

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
416		Cl. 6.3.7 Traction Protections		Traction Protections	Traction Protections like WPC, Distance protection and other traction protections are not mentioned. Kindly clarify whether the same are required or not.	Refer PS Cl.6.1.2.3
417		SLD & Excel BoQ		Panel Quantity	Request you to clarify the exact panel quantity of 33kV & 25kV GIS panels. It is not getting clear from SLD and BoQ.	Refer SLD provided at Tender drawings.
418	Part 2 Works Requirement - Particular Specification	13.6.1.3		(b) Provide competent training instructors, training manuals, training simulators, all necessary aids and materials as required for training.	The details Architecture, opertaion mode of the Training simulator may be provided along with details of scenarios for better understanding of the complete requirement.	Refer Corrigendum-V: SN.42.
419	Part- 1 Bidding Procedure - **Section-III: Evaluation and Qualification Criteria**	2.4.1 (b)		d) Experience of 110 kV and above cable laying One work for a route length of 2 km OR Two works for total route length of 3km	RVNL request your good self to allow meeting the above requirement through a specialized Sub- contractor { As required for 2.4.1 (c), (e) & (f) } for Single Entity as well as for One Partner for wider participation and more competitive offers.	Refer Corrigendum-V: SN.3.
420	Part-01, ITB 21.1,21.2 & 21.3			Certificate of registration and other statutory documents of formation of bidder's company or JV/ Consortium or each members of JV/ Consortium (If not incorporated yet) issued by appropriate authority.	In reference to the requirement for the Certificate of Registration and other statutory documents, could you confirm whether unincorporated Joint Ventures or Consortiums are allowed to submit bids. Also kindly provide clarification if successful bidder is a Joint Venture or Consortium are there specific requirements for the legal status of that entity.	In case of JV or consortium, each member has to provide the required information as stipulated in Bid. If JV/consortium is successful bidder, then incorporated or unincorporated status can be considered.
421	Part-01, Format of Joint Bidding Agreement			Cl. 2: The Lead Member is hereby..... be carried out exclusively through the Lead Member. Cl. 15: It is agreed by all the Members that there shall ..... Employer shall be through that account alone.	In the payment process, there seems to be a discrepancy between points 2 and 15 of joint bidding agreement. Point 2 of joint bidding agreement indicates that the entire execution of the contract, including payment, will be carried out exclusively through the Lead Member. We presume this enables Lead Member to raise invoice to the authority on behalf of consortium. However, point 15 of joint bidding agreement mentions a separate Consortium Bank Account to which individual Members contribute, and payments from the Employer are received through that account. Could you provide clarification on how payments will be handled considering these two points.	Refer Corrigendum-V: SN.5.
422	Part-2 Works Requirements – Particulars Specifications			25 kV Power Cable	Kindly clarify the cross-section area of 25 kV cable	This is a Design and Build tender and Designs are in the scope of Contractor. Refer PS Table 4.6 for minimum rating requirement.
423	Part-2 Cl. 1.13.2			The datum used for the Contract shall be Mean Sea Level Datum.	We request you to kindly specify the mean sea level datum.	Bidder may survey & may make their own assesment.
424	Part-2 Cl. 1.6 Design Services			Design Services	Kindly Clarify whether feasibility study needs to be done.	The clause is self-explanatory
425	Part-2 Cl. 2.2.3 (b) Corridors			MSECTL GSS to Kanhan RSS.	Kindly provide with the distance between GSS & RSS. Also kindly confirm ROW if any.	Refer reply at SN-11 above
426	Part-2 Cl. 3.2.1.7.4 Works Requirements			Supply and installation of ABT meter as per specification approved by power supply authority (MSETCL).	Kindly provide the specifications for ABT Meter.	Bidder may ascertain as per MSETCL standards/ requirement.
427	Part-2 Cl. 3.2.3.1			All issues regarding ROW & clearances from Govt. authorities, if required.	We request assistance from Maha-Metro to resolve ROW issues if any.	Refer reply at SN-114 above.
428	Part-2 Cl. 3.2.6			SCADA Configuration	Kindly provide existing make and specifications of SCADA to be provided.	Refer reply at SN-81 above.
429	Part-2 Cl. 7.3.2.12			Cable entry	Kindly confirm and provide cable entry scheme to be adopted.	Refer reply at SN-198 above
430	Part-2 Cl. 11.3.7			Monopole	Request to provide existing characteristics to be provided for calculation 7 type of existing conductors nature of OPGW	132kV Height Raising drawing is provided in Part-2 tender drawings. Bidder may survey & may make their own assesment.
431	Part-2 Cl. 6.2			33 kV cables	Please confirm the type of conducting materials as per para 4.6 it is specified as Cu/Al	Bidder to design meeting the requirement. Both Al & Cu are acceptable.
432	Part 2 Works Requirement - Particular Specification		132 kV Gas Insulated Switchgear (GIS) Clause 5.3.2.1, Page 70 of 286	GIS supplier should have minimum experience of 5 years for manufacturing of similar type GIS in metro rail.	As per given criteria, the Manufacturer should have experience in metro rail only, which restrict the participation of GIS supplier. To increase the participation of GIS supplier, we would request you to amend the criteria for Vendor Selection as per below: *"GIS supplier should have minimum experience of 5 years for manufacturing of similar type GIS in metro rail/* ***Indian Railway/Power Utilities."***	Tender Condition prevails

MAHARASHTRA METRO RAIL CORPORATION LIMITED
NAGPUR METRO

<table>
<tr><th>SN</th><th>Ref Part/ Section No.</th><th>Ref. Section/ Clause No.</th><th>Ref Clause/ Page No.</th><th>Description of Clause</th><th>Tenderer's Query</th><th>Reply</th></tr>
<tr><td>433</td><td>Part 2 Works Requirement - Particular Specification</td><td></td><td>Power Transformers (132/33kV) Clause 5.3.3.1.2, Page 75 of 286</td><td>Transformer supplier should have minimum experience of 5 years for manufacturing of similar transformer type in metro rail or equivalent sector.</td><td>As per given criteria, the Manufacturer should have experience in metro rail only, which restrict the participation of Power Transformer supplier.

To increase the participation of Power Transformer supplier, we would request you to amend the criteria for Vendor Selection as per below:
"Transformer supplier should have minimum experience of 5 years for manufacturing of similar transformer type in metro rail/ Indian Railway/Power Utilities or equivalent sector."</td><td>Tender Condition prevails</td></tr>
<tr><td>434</td><td>Part 2 Works Requirement - Particular Specification</td><td></td><td>Traction Transformers Clause 6.2.5.2, Page 133 of 286</td><td>Transformer supplier should have minimum experience of 5 years for manufacturing of similar transformer type in metro rail.</td><td>As per given criteria, the Manufacturer should have experience in metro rail only, which restrict the participation of Traction Transformer supplier.

To increase the participation of Traction Transformer supplier, we would request you to amend the criteria for Vendor Selection as per below:
"Transformer supplier should have minimum experience of 5 years for manufacturing of similar transformer type in metro rail /Indian Railway."</td><td>Tender Condition prevails</td></tr>
<tr><td>435</td><td>Part 2, APPENDIX VI-B11
VENDOR APPROVAL AND SELECTION PROCEDURE</td><td></td><td>Clause 1.8 MINIMUM CRITERIA FOR MANUFACTURES, Page 5 of 6</td><td>Manufacturers for the following major items of supply or services must meet the following minimum criteria in Metro Rail/Mass Rapid Rail/Indian Railway system in revenue service, herein listed for that item:
<table>
<tr><th>Item No.</th><th>Description of Item</th><th>Minimum criteria to be met</th><th>Years in revenue service</th></tr>
<tr><td>1</td><td>132 kV Cable</td><td>Length of cable provided: 20 km</td><td>3</td></tr>
<tr><td>2</td><td>33Kv Cable</td><td>Length of cable provided: 90 km</td><td>3</td></tr>
<tr><td>3</td><td>25kV Cable</td><td>Length of cable provided: 20 km</td><td>3</td></tr>
<tr><td>4</td><td>132 GIS Switchgear</td><td>Minimum No. of units provided: 10</td><td>3</td></tr>
<tr><td>5</td><td>33kV GIS Switchgear</td><td>Minimum No. of units provided: 20</td><td>3</td></tr>
<tr><td>6</td><td>25kV GIS Switchgear</td><td>Minimum No. of units provided: 10</td><td>3</td></tr>
<tr><td>7</td><td>132/25 kV Traction Transformer</td><td>No. of units provided: 5</td><td>5</td></tr>
<tr><td>8</td><td>132/33 kV Power Transformer</td><td>No. of units provided: 5</td><td>5</td></tr>
<tr><td>9</td><td>Dry Type Transformers</td><td>No. of units provided: 20</td><td>3</td></tr>
<tr><td>10</td><td>ACDB/MDB</td><td>Minimum No. of units provided: 10</td><td>3</td></tr>
<tr><td>11</td><td>Battery and Battery Charger</td><td>Minimum No. of units provided: 20</td><td>3</td></tr>
<tr><td>12</td><td>UPS</td><td>Minimum No. of units provided: 10</td><td>3</td></tr>
<tr><td>13</td><td>RTU</td><td>Minimum No. of units provided: 20</td><td>3</td></tr>
</table></td><td>As per given criteria, the Manufacturer should have experience in Metro Rail/Mass Rapid Rail/Indian Railway system, which restrict the participation of supplier.

To increase the participation of supplier, we would request you to amend the criteria for Vendor Selection as per below:
Manufacturers for the following major items of supply or services must meet the following minimum criteria in Metro Rail/Mass Rapid Rail/Indian Railway/Power Utilities system in revenue service, herein listed for that item:
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<tr><td>7</td><td>132/25 kV Traction Transformer</td><td>No. of units provided: 5</td><td>5</td></tr>
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<tr><td>13</td><td>RTU</td><td>Minimum No. of units provided: 20</td><td>3</td></tr>
</table></td><td>Tender Condition prevails</td></tr>
<tr><td>436</td><td>Part 2 Works Requirements - General Specification</td><td></td><td>Clause 2.3.9.3.4, Page 23 of 173</td><td>In order to ensure the quality of BIM Models in 3D Format. The Bidder needs to provide 2 sets of licenses of Revit 2019, Navisworks Manage 2019, and AutoCAD 2019 (Version of mentioned software may be upgraded as and when required by EMPLOYER)</td><td>Please confirm the software versions</td><td>The clause is self-explanatory.</td></tr>
<tr><td>437</td><td>Part 2 Works Requirements - General Specification</td><td></td><td>Clause 2.3.4, Page 20 of 17</td><td>Allocation of 5D BIM License</td><td>Please confirm the 5D BIM License platform to be used</td><td>ERP - SAP, Scheduling - Oracle Primavera, CDE - Bentley (Assetwise & Projectwise)</td></tr>
</table>

NAGPUR METRO

SN	Ref Part/ Section No.	Ref. Section/ Clause No.	Ref Clause/ Page No.	Description of Clause	Tenderer's Query	Reply
438	Part 2 Works Requirements - General Specification		Clause 2.3.5, Page 20 of 173	Types of Documents BIM Dimension Document: 2D / 3D / 4D / 5D / 6D Sl No: Documents	Design	Models	Schedule	Cost	O&M details 1: Method Statement	Design	Information Rich Models	Work Programme	Measurement Book	As Built Drawings 2: Project Management Plan	Drawing			Abstract Sheet	As Built Models 3: Safety Health & Environment Plan (SHE Plan)	Construction Reference Documents (CRD)			RFI – all supporting documents for procurement, manufacture & delivery	Asset Information 4: Factory Acceptance Test (FAT)				RA BILL – all required supporting documents	Maintenance Plan 5: Partial Acceptance Test (PAT)				Milestone Completion Certificate	Maintenance Task 6: System Acceptance Test (SAT)				Invoice Document	List of Spare & Consumables 7: Minutes of Meeting (MOM)				Delivery Challan	OEM manual, part list & Instruction Sheet **The above list is tentative but not limited. Any Other Relevant document may be added as per the requirement	What all is required in 6D BIM? Is it applicable for all the areas or critical areas?	Refer tender document

MAHARASHTRA METRO RAIL CORPORATION LTD * NAGPUR METRO

TP.10: Bidder's Technical Submissions

Requirements for Bidder's Technical Proposals

A. Requirements of Tenderer's Technical Proposals

A.1 The Bidders' attention is drawn to the List of Definitions and List of Abbreviations in the Works Requirements and to Clause 1 of the General Conditions in which terms are defined.

A.2 The Bidders' Technical Proposals shall comply or, subject to reasonable development, be capable of complying with the Works Requirements in all respects. The Bidders' Technical proposal shall demonstrate such compliance.

A.3 The Bidders' Technical Proposals shall establish the safety standards to be followed and installation and testing methods that will be employed.

A.4 The following paragraphs list the minimum documentation that shall be supplied by the Bidder as part of his technical package for technical evaluation of the Bid. The Bidder shall include any further information necessary to demonstrate the suitability of his proposal.

B. General Requirements

B.1 The Bidder shall provide a valid fully compliant proposal for the systems as detailed in the Works Requirement.

B.2 The Bidder shall also advise the conflicts, if any, in the Bidding Documents between various functional requirements or specifications.

B.3 A general description of the complete supply, installation, testing and commissioning of works for mainlines and depots offered for this Contract with brief technical description of each system as indicated in the following sections.

B.4 The Bidder shall provide general schematic drawings for the proposed Contractor's Equipment and shall clearly state any limitations and non-compliance.

B.5 The Bidder shall detail any potential problems or hazards that have been identified during the Bidders' assessment of the Works Requirement.

B.6 Brief plan for installation, testing and commissioning of each sub-system, proposed method of interfacing and final integration of the system with relevant Designated Contractors shall be given.

B.7 The Bidder shall submit the details of proposed systems with specific reference to the parameters, such as Reliability, Availability, Maintainability, Safety, Service-Capacity, Recoverability and corrosion control as stipulated in Works Requirements.

C. Proposal for Sub-Contractors whose experience is being considered for evaluation (as per the provision in Section-III: Evaluation and Qualification Criteria)

The proposals for the subcontractors whose experience is being utilized for pre-qualification purpose shall include the following:

C.1 A Memorandum of Understanding duly notarised and signed between Subcontractor and the Bidder,

C.2 The MOU shall include the following:

(i) The MOU will be in line with the contractual obligations and the subcontractor shall be responsible for their scope of work and accountable to Employer in accordance with the contract terms, and a relevant statement to this effect shall be included in the MOU.
(ii) Subcontractor's Scope of work: The scope of work awarded to the subcontractor shall be clearly defined and it shall be in accordance with the Pre-qualification requirement.
(iii) The subcontractor's compliance for the SHE policy, Labour Laws and Quality assurance during execution of the works.
(iv) The subcontractor's compliance and appropriate resource commitment for the Employer's IT requirements
(v) All the resources including manpower, tools and test equipment shall be deployed as per the work programme of the Bidder.

C.3 Site organisation chart of the subcontractor and supervising manpower from the Bidder (over subcontractor) as per their scope of work

C.4 The details of manpower deployment of key-personnel's with their CV as per the format given in TP. 1. Personnel of Section IV. Bidding Forms.

C.5 The undertaking from the subcontractor that the resources proposed will entirely be dedicated for this project only and will not be shared with other contractors. The subcontractor shall provide an undertaking that:

"We confirm that Experts included for this contract will be solely assigned for this project only and if any expert once approved is not found suitable and/or continuation of any person, if not in the interest of the project he will be suitably replaced."

C.6 Subcontractor's understanding of work and methodology for execution of work

C.7 The subcontractor has to execute the subcontractor's warranty after award of the works as per the format given in Section IX. Contract Forms.

C.8 In case of subcontractor's work/performance found unsatisfactory by Employer at any stage then the Bidder shall replace the subcontractor (from pre-qualified subcontractors) without any extra cost implication to Employer.

C.9 The Bidder should furnish the information for the sub-contracted works proposed by the

Bidder in the format given in the MahaMetro-19 of Section IV Bidding Forms.

C.10 An undertaking for the subcontractor shall be provided as per MahaMetro-21 of Section IV Bidding Forms.

C.11 If the proposed Subcontractor's / Vendor's credentials are acceptable to the Employer, the same will be communicated to the successful Bidder in the Letter of Acceptance. Otherwise the successful Bidder will be required to approach the Employer for his approval of the Subcontractors / Vendors proposed, or the alternative as required, during execution stage.

D. Proposal for Construction Machinery

D.1 The Bidder should confirm availability of minimum plant and machinery, specified in Particular Conditions Appendix VI-B10 (Construction Machinery), he possess or would be available through sub-contractor or through hiring for the purpose of the Contract. The list should specifically explain mobilization of plant and machinery for handling / Installation / Testing & Commissioning of the following equipment:

1. 132kV Switching Substation
2. 132kV cables and RSS
3. 33kV cable erection work on viaducts in buried trenches and depots
4. 33kV Auxiliary Substations
5. SCADA
6. Other activities

D.2 During execution this will be required to be suitably augmented to meet the requirements.

E. Proposal for Transfer of Technology

The Bidder shall identify items, which he proposes to import, and what methodology will be adopted by the Bidder for transfer of technology to ensure availability of spares and services for service life of the equipment. (Refer MahaMetro-18 of Section IV Bidding Forms)

F. Proposal for equipment / systems

F.1 The Contractor shall develop the design based on this specification and on proven and reliable Engineering Practices. The design details shall be submitted with technical data and calculations to the Engineer for review and acceptance.

F.2 The System, including all Sub-systems and Equipment shall be of proven design practice. Sub-systems and Equipment of similar design philosophy shall have been in use and have established their performance reliability. Bidders are required to submit Performance certificates from users in support of the above performance requirements.

F.3 Where similar equipment or Sub-systems of a different rating are already proven in service, then the design shall be based on such equipment. In case these stipulations are not fulfilled, the Contractor shall furnish sufficient information to prove the basic

soundness and reliability of the offered Sub-system and can be adopted only after the approval of the Employer. The system will be permitted to be energized only after the technical audit by an independent renowned agency.

F.4 The Bidder should indicate the details of the sources from which the equipments/systems, complying with the above requirements, for the following activities are proposed to be sourced in MahaMetro-20 of Section IV Bidding Forms.

F.5 The Bidders should note that the submission of details, in respect of providers of equipment / systems, does not mean approval of the Vendor. The successful Bidder will be required to submit proposal for vendor approval for various equipment, assemblies, sub-assemblies, systems and sub-systems after award of the Contract. The vendor detail submission at this stage is only from the point of view of understanding of the offer of the Bidder. The Bidders should satisfy themselves that the vendor details submitted by them are in line with the requirements of Clause 2.7.2, Works Requirements - General Specifications.

G. Spares

The Bidder should submit an undertaking, in MahaMetro-18 of Section IV Bidding Forms that he will make credible arrangements for ensuring availability of critical spares and technical support, during the service life of the equipment / spares / Machinery & Plant / systems commissioned. The Bidders' technical proposal should also explain as to how he will ensure availability of critical spares and technical support for maintenance / up-gradation during the service life of the equipment.

H. Nil

I. Understanding of scope of work and interface requirements

I.1 The technical proposal shall also explain the Bidder's understanding of interfacing with other designated contractors / power supply authorities / statutory authorities (refer MahaMetro-17 of Section IV Bidding Forms).

I.2 The technical proposal should also contain the Bidder's understanding of scope of work (refer MahaMetro-1 of Section IV Bidding Forms).

J. Proposal of agency for simulation studies

The Bidder shall submit the proposal of Agency for carrying out Simulation Studies to be done as per Works Requirements. The Agency should have the previous experience of managing Simulation Studies in a Metro rail system.

MahaMetro-19:

Schedule of Subcontractors

(whose experience is being considered for evaluation as per the provision in Section-III: Evaluation and Qualification Criteria)

Table 1: List of proposals for Sub-contracted Works

SN	Description of Works for Sub-contracting	Name and Address of Sub-contractor identified for executing such works
1	2	3

1. The Bidders shall furnish, in the format of Table-2, experience records of each Sub-contractor by way of works executed by them in last five years and of works in progress at present. Details may be furnished of only works similar in nature to the work proposed for subcontracting.

2. In Col.3 of Table 2 "Employer" means the organization which paid for the works and the "Engineer" means the consulting Engineer for the project.

Table 2: Experience Records of Subcontractor proposed by the Bidder

SN	Name of Subcontractor	Name of work executed by the proposed Subcontractor with location, name and address of Employer as well as Engineer	Total Value of the work (INR millions)	Value for which the proposed Subcontractor was responsible (INR millions)	Contract Period				Certificates placed at	
					Original		Actual			
					Start Date	Completion Date	Start Date	Completion Date	Annexure No.	Page No.
1	2	3	4	5	6	7	8	9	10	11

Notes:
1. Details submitted in any other proforma will not be considered.
2. The Bidder is required to submit completion certificates in support of the above.
3. Additional pages may be attached if required.
4. All the pages must be signed by the authorized signatory of the Bidder

MahaMetro-20: Proposals for Equipment / Systems

SN	Name of the equipment / system	Min nos. required	Name of manufacturer and address	Address of Manufacturing Plant	Contact details
1	2	3	4	5	6
1.	132kV/33kV Power Transformer				
2.	132kV/27.5kV Traction Transformer				
3.	132kV GIS				
4.	Monopoles				
5.	132kV cables				
6.	Substation automation system				
7.	25kV and 33kV cables				
8.	25kV and 33kV cable accessories (joints, terminations etc.)				
9.	25kV cable termination kits				
10.	27.5kV GIS				
11.	Control and Monitoring Equipment				
12.	Measuring & Protection Equipment				
13.	Batteries				
14.	Battery Chargers				
15.	Insulators				
16.	Lightning arresters				
17.	Reactors				
18.	33kV GIS				
19.	XLPE / FRLS / FRLSZH Cables (LT Cables, Control Cables etc.)				
20.	Motorized isolators				
21.	Manual isolators				
22.	Auxiliary transformers (33kV/415V)				
23.	UPS				
24.	SCADA Equipment				
25.	SCADA System				
26.	Other Equipment				

MahaMetro-21: Subcontractor Undertaking

We hereby confirm that if any sub-contractor is proposed by us for any of the works listed below, we will submit a proposal, complying with sub-contractor's requirement of GC and PC for Employer's approval.

We also confirm that Electrical Sub contractor works will be executed by Licensed Electrical Sub Contractors

1. ..... (ITEMS & ACTIVITIES AS IN SCOPE OF WORK)
2. .....
3. .....
4. .....
5. .....

SIGNATURE OF THE BIDDER

Seal
Date:

MahaMetro-4: Form of Joint Bidding Agreement

(JV/ Consortium Agreement)

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution, duly signed on each page and duly notarised by Notary Public. Foreign entities submitting the Bid are required to follow the applicable law in their country)

FORM OF JV/CONSORTIUM AGREEMENT BETWEEN
M/S....., M/S.....,
M/S..... AND M/S.....
FOR (……)

THIS Consortium Agreement (hereinafter referred to as "Agreement") executed on the..... day of ..... (_____)

..... a company incorporated under the laws of ..... and having its Registered Office at ..... (hereinafter called the "Party 1", which expression shall include its successors, executors and permitted assigns), and

..... a company incorporated under the laws of ..... and having its Registered Office at ..... (hereinafter called the "Party 2", which expression shall include its successors, executors and permitted assigns) and

..... a Company incorporated under the laws of ..... and having its Registered Office at ..... (hereinafter called the "Party 3", which expression shall include its successors, executors and permitted assigns)

(The Bidding Consortium should list the name, address of its registered office and other details of all the Consortium Members)

for the purpose of submitting the Bid in response to the Bidding Documents and in the event of selection as Successful Bidderto execute the Contract Agreement and/or other requisite documents, and to carry out the '……' ("Works") for Maharashtra Metro Rail Corporation Limited (Name of Project……) to be awarded by Maharashtra Metro Rail Corporation Limited (hereinafter referred as "Maharashtra Metro Rail Corporation Limited" or "the Company").

Party 1, Party 2, and Party 3 are hereinafter collectively referred to as the "Parties" and individually as a "Party".

WHEREAS Maharashtra Metro Rail Corporation Limited desired to engage a contractor for ……. [name of the Works] for Maharashtra Metro Rail Corporation Limited Rail Project.

AND WHEREAS the Consortium of [.....] (insert the names of all the Members) intends to participate for the Bid, against the Bidding Documents issued to ……. [Insert the name of purchaser of Bidding Document].

AND WHEREAS Para BDS ITB 4.7 of the Instructions to Bidder stipulates that the Bidders bidding on the strength of a Consortium shall submit a legally enforceable Consortium Agreement in a format specified in the Bidding Documents.

NOW THEREFORE, THIS INDENTURE WITNESSTH AS UNDER:

In consideration of the above premises and agreement, all the parties in this Consortium do hereby mutually agree as follows:

1. In consideration of the selection of the Consortium as the Successful Bidder by the Company, we the Members of the Consortium and Parties to the Consortium Agreement do hereby unequivocally agree that M/s..... (Insert name of the Lead Member), shall act as the Lead Member as defined in the Bidding Documents for self and agent for and on behalf of …… (the names of all the other Members of the Consortium to be filled in here) to do on behalf of the Consortium, all or any of the acts, deeds or things necessary or incidental to the Consortium's Bid for the Contract including submission of the Bid, participating in meetings, responding to queries, submission of information/ documents and generally to represent the Consortium in all its dealings with Maharashtra Metro Rail Corporation Limited or any other Government Agency or any person, in connection with the Works until culmination of the process of bidding till the Contract is entered into with Maharashtra Metro Rail Corporation Limited and thereafter till the expiry of the Contract.

2. The Lead Member is hereby authorized by the Members of Consortium and Parties to the Consortium Agreement to bind the Consortium, incur liabilities and receive instructions for and on behalf of all Members. It is agreed by all the Members that entire execution of the Contract shall be carried out exclusively through the Lead Member.

3. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all their respective obligations under the Contract with Maharashtra Metro Rail Corporation Limited. Each Consortium Member further undertakes to be individually liable for the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.

4. In case of any breach of any of the obligations as specified under clause 3 above by any of the Consortium Members, the Lead Member shall be liable to fulfil such obligation.

5. It is agreed that sharing of responsibilities hereto among the Consortium members shall not in any way be a limitation of responsibility of the Lead Member under these presents.

6. This Consortium Agreement shall be construed and interpreted in accordance with the Laws of _____.

7. It is hereby agreed that the Lead Member shall furnish the Bid Security, as stipulated in the Bidding Documents, on behalf of the Consortium.

8. It is hereby agreed that in case of selection of bidding Consortium as the Successful Bidder, the Parties to this Consortium Agreement do hereby agree that the Successful Bidder shall furnish the Performance Security on behalf of the Consortium, as stipulated in the Bidding Documents.

9. It is further expressly agreed that the Consortium Agreement shall be irrevocable and, for the Successful Bidder, shall remain valid over the term of the Contract, unless expressly agreed to the contrary by the Company.

10. The Lead Member is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the Consortium Members respectively from time to time in response to the Bidding Documents for the purposes of the Bidding.

11. It is expressly understood and agreed between the Members that the responsibilities and obligations of each of the Members shall be as follows:

    ……..
    ……..

12. It is agreed by the Members that the above sharing of responsibilities and obligations shall not in any way be a

limitation of joint and several responsibilities and liabilities of the Members, with regards to all matters relating to the execution of the Works as envisaged in the Bidding Documents and the Contract. The Parties shall be jointly and severally liable for execution of the Works in accordance with the terms of the Contract and the Bidding Documents.

13. It is clearly agreed that the Lead Member shall ensure performance under the Contract and if one or more Consortium Members fail to perform its /their respective obligations under the agreement(s), the same shall be deemed to be a default by all the Consortium Members.

14. It is hereby agreed that in case of selection of the Consortium as the Successful Bidder, [the Lead Member shall furnish the Performance Security on behalf of the Consortium as stipulated in the Bidding Documents] / [the Performance Security as stipulated in the Bidding Documents shall be furnished by the Members on behalf of the Consortium in such proportion as may be agreed to between us]

15. The lead member of JV/Consortium shall be authorized to raise the invoices and to do all correspondence for the contract. Payment shall be released to JV account /Consortium account / Lead Member account /Account of Individual members as per their agreed JV/Consortium agreement terms (Strike out which is not applicable).

16. It is hereby expressly agreed between the Parties to this Consortium Agreement that neither Party shall assign or delegate its rights, duties or obligations under this Agreement except with prior written consent of the Company.

17. We hereby agree to ratify all acts, deeds and things lawfully done by the aforesaid Lead Member pursuant to this Agreement and that all acts, deeds and things done by the aforesaid Lead Member shall and shall always be deemed to have been done by us/Consortium.

This Consortium Agreement

(a) has been duly executed and delivered on behalf of each Party hereto and constitutes the legal, valid, binding and enforceable obligation of each such Party,

(b) sets forth the entire understanding of the Parties hereto with respect to the subject matter hereof including the Consortium/Bidder's legal persona and there is or are no other agreements relating to the Consortium/Bidder's incorporation, constitution, powers or organisation which may affect in any way its ability to carry out the Works;

(c) may not be amended or modified except in writing signed by each of the Parties and with prior written consent of the Company.

IN WITNESS WHEREOF, the Parties to the Consortium Agreement have, through their authorized representatives, executed these presents and affixed common seals of their respective companies on the Day, Month and Year first mentioned above.

Common Seal of ..... has been affixed in my/our presence pursuant to the Board of Director's resolution dated .....

For and on behalf of
Consortium Member (party 1)
M/s……

……..
(Signature)
Name: …….
Designation:……..
Place: …….

……
(Signature of authorized representative)
Name: ……..
Designation: …….

Date: ……

Witness:

1. …….
(Signature)
Name …….

Designation.....……..

2. …….
(Signature)
Name …….

Designation.....……..

Common Seal of ..... has been affixed in my/our presence pursuant to the Board of Director's resolution dated .....

For and on behalf of
Consortium Member (Party 2)
M/s……

……. (Signature)

Name:
Designation:
Place:
Date:

……. (Signature of authorized representative)
Name:
Designation:

WITNESS

1. …….
(Signature)
Name …….

Designation.....……..

2. …….
(Signature)
Name …….

Designation.....……..

Attested:

…….
(Signature)

(Notary Public)

Place: …….
Date: …….

Common Seal of ..... has been affixed in my/our presence pursuant to the Board of Director's resolution dated .....

For and on behalf of
Consortium Member (Party 3)
M/s…….

……. (Signature)

Name:
Designation:
Place:
Date:

……. (Signature of authorized representative)
Name:
Designation:

WITNESS

1. …….
(Signature)
Name …….

Designation.....……..

2. …….
(Signature)
Name …….

Designation.....……..

Attested:

…….
(Signature)
(Notary Public)

Place: …….
Date: …….

13.0 AUXILIARY TRANSFORMER

13.1 1600 kVA Auxiliary Transformer for ASS Auxiliary Power Supply

SN	Indications	Unit	Expected values	Values submitted
1	Manufacturer			
2	Place of manufacture			
3	Manufacturer drawing reference			
4	Standards		IEC 76	
5	Insulation type		Cast resin	
6	Rated power	kVA	1600	
7	Cooling mode		AN	
8	Primary rated insulation voltage	kV	36	
9	Primary operating voltage	kV	33	
10	Secondary rated operating voltage	V	415/240	
11	Rated short duration power frequency withstand voltage for primary winding	kV	70	
12	Rated lightning impulse withstand voltage for primary winding	kV	200	
13	Short circuit voltage	%	5	
14	Voltage setting	%	+5, +2.5, 0, -2.5, -5	
15	Vector group		Dyn11	
16	Maximum noise level	dBA	68	
17	Maximum iron losses	W		
18	Maximum load losses	W		
19	Overall Dimensions including IP 31 enclosure (maximum)			
a.	Length	mm		
b.	Width	mm		
c.	Height	mm		
20	Weight (maximum)	kg		
21	Class of insulation		F	
22	Climatic/Environmental/Fire Behaviour		C1/E2/F1	

13.2 1000 kVA Auxiliary Transformer for ASS Auxiliary Power Supply

SN	Indications	Unit	Expected values	Values submitted
1	Manufacturer			
2	Place of manufacture			
3	Manufacturer drawing reference			
4	Standards		IEC 76	
5	Insulation type		Cast resin	
6	Rated power	kVA	1000	
7	Cooling mode		AN	
8	Primary rated insulation voltage	kV	36	
9	Primary operating voltage	kV	33	
10	Secondary rated operating voltage	V	415/240	
11	Rated short duration power frequency withstand voltage for primary winding	kV	70	
12	Rated lightning impulse withstand voltage for primary winding	kV	200	
13	Short circuit voltage	%	4	
14	Voltage setting	%	+5, +2.5, 0, -2.5, -5	
15	Vector group		Dyn11	
16	Maximum noise level	dBA	68	
17	Maximum iron losses	W		
18	Maximum load losses	W		
19	Overall Dimensions including IP 31 enclosure (maximum)			
a.	Length	mm		
b.	Width	mm		
c.	Height	mm		
20	Weight (maximum)	kg		
21	Class of insulation		F	
22	Climatic/Environmental/Fire Behaviour		C1/E2/F1	

13.3 250 kVA Auxiliary Transformer for ASS Auxiliary Power Supply

SN	Indications	Unit	Expected values	Values submitted
1	Manufacturer			
2	Place of manufacture			
3	Manufacturer drawing reference			
4	Standards		IEC 76	
5	Insulation type		Cast resin	
6	Rated power	kVA	250	
7	Cooling mode		AN	
8	Primary rated insulation voltage	kV	36	
9	Primary operating voltage	kV	33	
10	Secondary rated operating voltage	V	415/240	
11	Rated short duration power frequency withstand voltage for primary winding	kV	70	
12	Rated lightning impulse withstand voltage for primary winding	kV	200	
13	Short circuit voltage	%	4	
14	Voltage setting	%	+5, +2.5, 0, -2.5, -5	
15	Vector group		Dyn11	
16	Maximum noise level	dBA	68	
17	Maximum iron losses	W		
18	Maximum load losses	W		
19	Overall Dimensions including IP 31 enclosure (maximum)			
a.	Length	mm		
b.	Width	mm		
c.	Height	mm		
20	Weight (maximum)	kg		
21	Class of insulation		F	
22	Climatic/Environmental/Fire Behaviour		C1/E2/F1	

REAL-TIME OPERATOR TRAINING SIMULATOR (OTS)

1.1 Real time Operator Training Simulator (OTS) will be used as a training device supporting a systematic program for training operators and their supervisors in the safe and efficient operation of complete Electrical networks without disrupting running SCADA/SAS and the electrical network. A dedicated OTS simulator hardware/software to be provided to complete the software & hardware close loop simulation to create real time scenarios.

- Emulating and simulating the real-time plant conditions for on-site competency development and training
- Improve operator competency through hands-on training.
- Use of Software-in-the-Loop to emulate user interface and create a high-fidelity training simulator.
- All the SCADA/SAS functions shall be available for OTS
- Multiple trainer and trainer scenario creation utilizing real-time, historical and simulated data
- Trainer-to-trainees learning environment
- Software-in-the-Loop (SIL) simulation
- Simulate normal or abnormal operation
- Simulate external disturbances
- Simulation speed variability
- Model substation behaviour qualitatively
- Simulate energy consumption
- Evaluation reports, trends, and analysis tools
- Root Cause Analysis through the Playback feature and what if scenario
- Software should be digital twin that can be used from design to operate.

1.2 Operator simulation and training module have the function of preparing operators to respond, quickly and efficiently, too many events and emergency contingencies that may occur in power systems through conducting numerous what-if analysis and predictive simulation. This tool offers a full simulation and training interface, where the engineers can perform control action and check their impact on a virtual environment with real-time system topology and measurements. The training architecture applies a replica of real-time and archived information of SCADA servers to engineers connected to a simulation environment.

1.3 CLIENT has planned to establish a SCADA training centre for SCADA operators. The simulator used for the training of trainees shall have the following highlights:

i. Two nos. of monitor for Trainer & two nos. of monitor for trainees shall be provided.
ii. Second monitor shall show the alarm lists. Critical & non-critical alarms shown in different colours.
iii. There shall be provision of seven different colours as per sensitivity of different level of alarm. For most critical alarm there shall be provision of audio alarm.
iv. Trainee shall be given various situations. Trainer clicks on certain present fault. Immediately all the sequence of events starts in the screen of trainees and trainers both. Trainee will see the synoptic screen and event list in front of him and will inform the trainer over phone all happenings. Trainee shall take all the action which are necessary for real condition.

v. Training work station should have all the synoptic of ASS, traction and RSS of complete proposed line Corridor. Sequence of operation and time taken can be analysed through event list.

vi. The software shall respond in the similar manner as in live condition. Trainee shall talk to Trainer whenever he wants rescue from any difficult situation

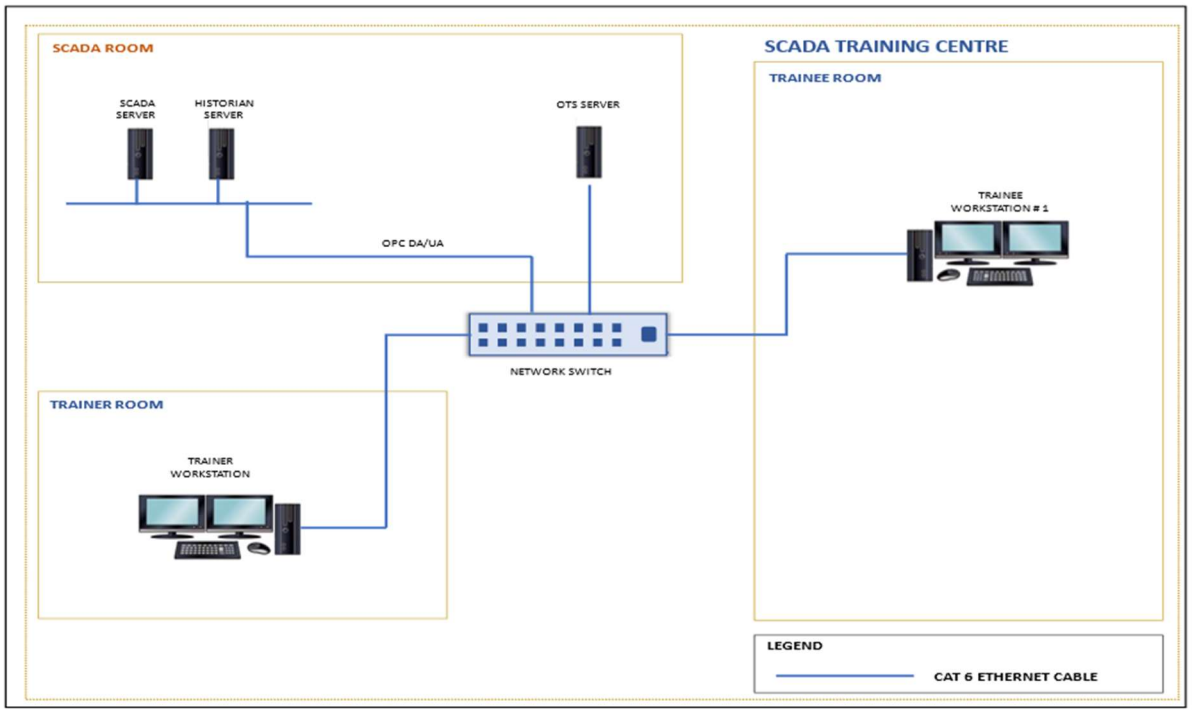
vii. Software should be capable of showing various interlocking provided for failsafe operation

viii. Software hence provided should have flexibility for addition of many other conditions which may arise time to time

ix. Training manual of the software may also be given.

1.4 Standards/Communication Protocol: The following reference standards and specifications apply to work included in this Section: EN 60529, EN 60950, IEC 60870-5-1, UL 1950, CSA 950 for safety / IEC 60950.

1.5 Proposed Architecture:



The above picture is for reference purposes only; the actual quantity can vary based on the actual requirements.

MAHARASHTRA METRO RAIL CORPORATION LIMITED (MAHA-METRO)

NAGPUR METRO RAIL PROJECT-PHASE-II

DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF RECEIVING CUM AUXILIARY MAIN CUM TRACTION SUB STATIONS INCLUDING EHV CONNECTION FROM GRID SUBSTATION, 33 KV CABLE NETWORK, ASS & SCADA SYSTEM FOR NAGPUR METRO RAIL PHASE-II PROJECT

CONTRACT NO.
N2-031/TR-03/2023

PART 2: WORKS REQUIREMENTS
SECTION VI-C: TENDER DRAWINGS

Existing Ph-1 33kV ASS panels details

1.00.00 System Parameters

1.01.00	**Ambient Temperature**		
1.01.01	Maximum ambient air temperature	:	50 ° C
1.01.02	Reference ambient temperature for design	:	50 ° C
1.02.00	**Main System**	:	3 Phase 3 Wire AC, 50 Hz
1.03.00	**Rated operational voltage**	:	33kV AC
1.04.00	**Rated Insulation voltage**	:	36kV AC
1.06.00	**Dry Frequency withstand voltage**	:	70kV
1.07.00	**Rated Impulse voltage**	:	170kV
1.08.00	**Neutral System**	:	Solidly / Effectively Earthed
1.09.00	**Altitude**	:	Less than 1000 metres
1.10.00	**System fault level / Duration**	:	12.5KA for 3 S
1.11.00	**CT fault level / Duration**	:	12.5KA for 3 S
1.12.00	**Internal Arc Duration**	:	25 kA for 1 sec

2.00.00 Construction

2.01.00	**Type of switchboard**	:	8BK80(36kV-RD)
2.02.00	**Installation**		
2.02.01	Location	:	Indoor
2.02.02	Mounting	:	Refer O & M Manual
2.02.03	Lifting arrangement	:	None (to be lifted with packing)
2.02.04	Additional base channel for embedment in foundation	:	None
2.02.05	Front access	:	Hinged door
2.02.06	Rear access	:	Bolted Cover
2.02.07	Future extension	:	Both sides
2.02.08	Alignment with existing board	:	Refer FV
2.03.00	**Degree of protection for enclosure**	:	IP4X
2.04.00	**Painting**		
2.04.01	Procedure	:	Pre-treatment & painting as per Siemens standard
2.04.02	Material	:	Alkyd melamine epoxy base Powder Coating
2.04.03	Shade inside	:	Same as outside
2.04.04	Shade outside	:	Pebble Grey (No. RAL 7032)

Client :- STERLING & WILSON PVT. LTD.					**Sales Ref No.:**	**IC-LMV-MS/3005554014**
Project : - NMRCL					**W.O. :**	**3005627625**
					Item No :	**Ref. Index** **Qty :** **1X**
D				**Date: 20.12.2017**	**Description : -**	**33KV SWITCHBOARD** **Sh. No.**
C				**Prep: PKS**		2
B				**Ckd:**	**Work : -**	**8BK80+3AH0**
A				SIEMENS		
Issue	Remarks	Date	Name		**Details : -**	**DESIGN INST. SHEET**
Original / Replacement for Replaced :						**No of Sh**
					Drg. No.:- (4) G71570-K5135-D003-A	8
Since irrelevant points are deleted, Sr No. may not be in sequence.						

2.05.00	**Name plate**		
2.05.01	Name plate material / Colour / Details	:	Refer Name Plate List
2.05.02	Identification of equipments mounted inside panel	:	Permanent marker / Paints
2.05.03	Feeder Nameplate	:	On Front and Rear
2.06.00	**Padlocking of door**	:	Provided on HT doors
2.07.00	**Facility for switching ON/OFF mechanically through Push Rod arrangement**	:	Provide

3.00.00 Busbars/Connection

3.01.00	**Main horizontal busbars**		
3.01.01	System	:	3 Ph.3W L1,L2,L3
3.01.02	Temperature rise limit	:	For silver plated joints it is 115deg. For bare joints it is 90deg.
3.01.03	Rated current	:	400A
3.01.04	Material	:	Copper
3.01.05	Cross-section for each phase	:	1 x 60 x 4 Δ
3.01.06	Insulation(except at joints & tap-offs)	:	PVC Sleeves
3.01.07	Insulation at MBB joints and tap-offs	:	PVC Shrouds
3.01.08	Colour coding	:	Coloured Sticker at suitable locations
3.01.09	Plating of Busbar joints	:	Silver
3.02.00	**Earth busbar**	:	
3.02.01	Material / Size	:	Copper 1 x 30 x 10 mm
3.02.02	Colour coding	:	Coloured Sticker at suitable locations
3.02.03	Extension of earth busbar outside the switchboard	:	To be provided on both sides
3.03.00	**Feeder Connections (In Main busbar Chamber)**	:	As per feeder Rating
3.03.02	Insulation	:	Integrated Upper Bushing
3.04.00	**Feeder Connections (In Cable Chamber)**	:	As per feeder Rating
3.04.02	Insulation	:	Integrated lower Bushing

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D				**Date: 20.12.2017**	**Description : -**	**33KV SWITCHBOARD** **Sh. No.**
C				**Prep: PKS**		3
B				**Ckd:**	**Work : -**	**8BK80+3AH0**
A				SIEMENS		
Issue	Remarks	Date	Name		**Details : -**	**DESIGN INST. SHEET**
Original / Replacement for Replaced :						**No of Sh**
					Drg. No.:- (4) G71570-K5135-D003-A	8
Since irrelevant points are deleted, Sr No. may not be in sequence.						

4.00.00 Auxiliary Equipment and Supply

	CIRCUIT	VOLTAGE	BUSWIRE / BUSBAR	SOURCE
4.00.01	CB MOTOR	110V DC	BUSWIRE	External supply-1
4.00.02	CB CLOSING	110V DC	BUSWIRE	External supply-1
4.00.03	CB-TRIPPING1	110V DC	BUSWIRE	External supply-1
4.00.04	CB-TRIPPING2	110V DC	BUSWIRE	External supply-2
4.00.05	INDICATION / ANNUNCIATION	110V DC	BUSWIRE	External supply-1
4.00.06	METERING AUXILIARY SUPPLY	240V AC	BUSWIRE	External Client's supply
4.00.07	Pnl space heater / ILL. lamp/Plug-socket	240V AC	BUSWIRE	External Client's supply

4.01.00	**Panel Space Heaters**	:	
4.01.01	Rating	:	100W
4.01.02	Location	:	In CB Chamber & Cable Chamber
4.01.03	Control/Protection	:	Thermostat + 1P MCB
4.02.00	**Socket for Hand Lamp / Maintenance**	:	
4.02.01	Rating	:	6A/16A
4.02.02	Location	:	LT Chamber
4.02.03	Control/Protection	:	Built in 1P MCB
4.03.00	**LT Chamber Illuminatimg Lamp**	:	CFL (HPL Make)
4.03.01	Type/Rating	:	11W
4.03.02	Location	:	LT Chamber
4.03.03	Control/Protection	:	Door Limit Switch + 1P MCB

5.00.00 Wiring

5.01.00	**Auxiliary Circuits**	:	FRLS
5.01.01	Insulation grade	:	1100 V

Client :-	**STERLING & WILSON PVT. LTD.**			**Sales Ref No.:**	**IC-LMV-MS/3005554014**
Project : -	**NMRCL**			**W.O. :**	**3005627625**
				Item No :	**Ref. Index** **Qty : 1X**
D				**Date: 20.12.2017**	**Description : - 33KV SWITCHBOARD** **Sh. No.**
C				**Prep: PKS**	4
B				**Ckd:**	**Work : - 8BK80+3AH0**
A				SIEMENS	
Issue	Remarks	Date	Name		**Details : - DESIGN INST. SHEET**
Original / Replacement for Replaced :					**No of Sh**
					Drg. No.:- (4) G71570-K5135-D003-A 8
Since irrelevant points are deleted, Sr No. may not be in sequence.					

5.02.00	**Size of wire (Control & auxiliary Circuits)**	:	
5.02.01	CT circuit	:	Refer additional point 7.00.08 / Red,Yellow,Blue,Black
5.02.02	PT circuit	:	4.0mm.²/ Red,Yellow,Blue,Black
5.02.03	VCB to X2 terminals	:	1.5mm.²/ Grey
5.02.04	Control / annunciation circuit	:	2.5mm.²/ Grey
5.02.05	Auxiliary Buswire	:	4 mm.² / Grey for DC ; Red & Black for AC
5.02.06	Circuit identification	:	Tubular Printed ferrules at termnations as per " Local Dependent End Marking"
5.03.00	**Inter-module / Inter-panel wiring**		
5.03.01	Within shipping section	:	To be done at Works
5.03.02	Between shipping sections	:	By client at site (Works to provide necessary length of wires complete with lugs & ferrules at both ends,terminated at one end and the length coiled at that end)

6.00.00 Termination Arrangements

6.01.00	**Bus Trunking**		
6.01.01	Entry from	:	N A
6.02.00	**Cables**		
6.02.01	Power cable entry from	:	Refer additional points 7.00.04
6.02.02	Control cable entry from	:	Refer additional points 7.00.04
6.02.03	Glands / lugs	:	Client's scope
6.02.04	Drilling of gland plate	:	By Client at site
6.04.00	**Control Terminals**		Polyamide
6.04.01	Type of terminals for CT	:	Disconnecting Type
6.04.02	Type of fixed terminals for PT & Control Ckt.	:	Screw Type
6.04.03	Terminal size	:	6 sq.mm (VCB-2.5 Sq.mm)
6.05.00	**Earthing terminals**		
6.05.01	Arrangement for connection to external earthing grid	:	Two hole with bolt / nut / Washer on earth busbar at each end of the board
6.05.02	Colour of earthing wire	:	Green

Client :- STERLING & WILSON PVT. LTD.				**Sales Ref No.: IC-LMV-MS/3005554014**		
Project : - NMRCL				**W.O. :**	**3005627625**	
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Issue	Remarks	Date	Name		**Details : - DESIGN INST. SHEET**	
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					Drg. No.:- (4) G71570-K5135-D003-A	8
Since irrelevant points are deleted, Sr No. may not be in sequence.						

7.00.00 Additional Points

7.00.01 For make of Equipment refer Annexure-I

7.00.02 For Sheet metal thickness refer Annexure -II

7.00.03 Identical VCB of same rating shall be interchangeable. A

7.00.04 Power & Control cable entry from BOTTOM for RSS SWBD and TYPE 6 SWBD and rest of the switchboard the same shall be from TOP(control cable entry will be from rear TOP).

7.00.05 Painted mimic shall be provided [Color : Olive Green, Shade no : 220] on each HT door.

7.00.06 All feeder joints (except outgoing feeders) shall be silver plated. A

7.00.07 20% spare Terminals shall be provided except for VCB CT&PT Terminas subject to availabity of space

7.00.08 CT to Disconnecting Terminals wire size shall be 6sq.mm and Disconnecting Terminals to relay/meter wire size shall be 6sq.mm

7.00.09 Padlocking facility shall be provided for machnical on/off push button.

7.00.10 Danger sticker shall be provided at rear side of each panel.

7.00.11 1No. Double bit key shall be provided per panel.

7.00.12 VCB & PT Trolly ramp (V shape opening) 1no. Each per switchboard shall be provided

7.00.13 Seperator between CTs should have nuts and bolts only on one end which is accessible.

7.00.14 Spring discharge mach. Indication on HT door to be made available.

7.00.15 Padlocking shutter for mech. "ON" & "OFF" on HT door shall be provided to improve holding screw.

7.00.16 For earth switch groove adjustment shall be made on earth switch moving blades all three bolts shall be locked with nylone nuts instead of normal nuts.

7.00.17 Plug socket provided for PT wiring shall be clearly identified (male/female).

7.00.18 1no.ball grip handle shall be provided on LT chamber door.

\

Client :- STERLING & WILSON PVT. LTD.					**Sales Ref No.: IC-LMV-MS/3005554014**		
Project : - NMRCL					**W.O. :**	**3005627625**	
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D				**Date: 20.12.2017**	**Description : - 33KV SWITCHBOARD**		**Sh. No.**
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A				SIEMENS			
Issue	Remarks	Date	Name		**Details : - DESIGN INST. SHEET**		
Original / Replacement for Replaced :							**No of Sh**
					Drg. No.:- (4) G71570-K5135-D003-A		8
Since irrelevant points are deleted, Sr No. may not be in sequence.							

Annexure - I

MAKES OF EQUIPMENT

Equipment	Make
Vacuum Circuit Breaker	Siemens
Auxiliary Contactors	Siemens
CT / PT	ECS / Gemini / Naryan powertech
Digital Meters	AE / Schneider electric
Multi Function Meters	Secure
Protective / Auxiliary Relays	Alstom
Numerical Relays	Siemens
LED Indicating Lamps	Siemens
Control Switches	Switron / Kaycee
Breaker Control Switches	Switron / Kaycee
Power receptacles	Siemens
MCB	Siemens
Control Fuse/Link/Base	Siemens
Terminals	Connectwell / Elmex
Door Limit Switch	Elmex
Cable earth switch	Shubhada
Control wires	Polycab / RR Kabel Rolliflex / Finolex

Client :- STERLING & WILSON PVT. LTD.				**Sales Ref No.: IC-LMV-MS/3005554014**	
Project : - NMRCL				**W.O. :** **3005627625**	
				Item No : **Ref. Index**	**Qty : 1X**
D				**Date: 20.12.2017**	**Description : - 33KV SWITCHBOARD** **Sh. No.** 7
C				**Prep: PKS**	
B				**Ckd:**	**Work : - 8BK80+3AH0**
A				SIEMENS	
Issue	Remarks	Date	Name		**Details : - DESIGN INST. SHEET**
Original / Replacement for Replaced :					**No of Sh**
					Drg. No.:- (4) G71570-K5135-D003-A 8
Since irrelevant points are deleted, Sr No. may not be in sequence.					

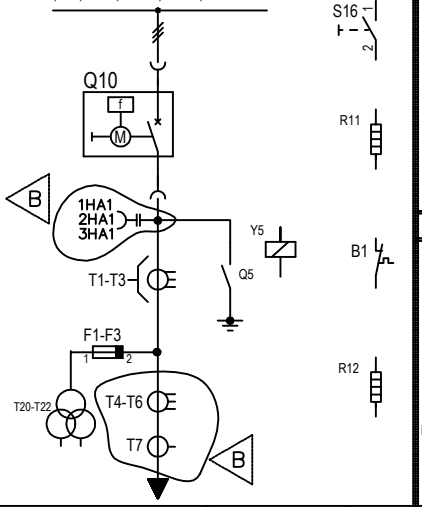
Annexure - 2

SHEET METAL THICKNESS

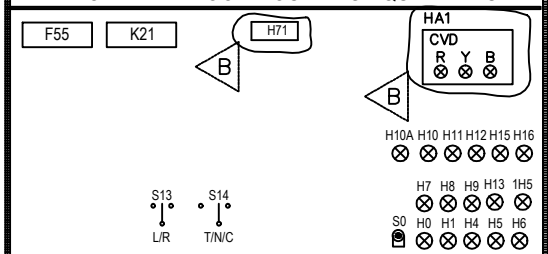
MV-8BK80-36kV

Sr. No.	Description	Size in mm
1	Front Door LT Chamber	2.5 mm
2	Front Door VCB Chamber	2 mm
3	Structural Members(Vertical & Horizontal Members)	2.5 mm
4	Top Cover / Explosion Cover	1 mm
5	Bottom sheet	2 mm
6	Partition for LT Chamber	2 mm
7	Partition Cover between Panels	2 mm
8	Rear Cover / Side Cover	2 mm
9	Barrier sheets between VCB, Busbar and Cable Chamber	2 mm
10	Shutter	1 mm

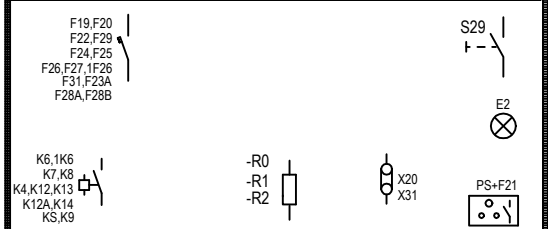
Client :- STERLING & WILSON PVT. LTD.				**Sales Ref No.: IC-LMV-MS/3005554014**	
Project : - NMRCL				**W.O. : 3005627625**	
				Item No : Ref. Index	**Qty : 1X**
D				**Date: 20.12.2017**	**Description : - 33KV SWITCHBOARD**
C				**Prep: PKS**	**Sh. No. 8**
B				**Ckd:**	**Work : - 8BK80+3AH0**
A				SIEMENS	
Issue	Remarks	Date	Name		**Details : - DESIGN INST. SHEET**
Original / Replacement for Replaced :					**No of Sh**
Since irrelevant points are deleted, Sr No. may not be in sequence.					**Drg. No.:- (4) G71570-K5135-D003-A** **8**



L.T. CHAMBER DOOR MOUNTING EQUIPMENTS



L.T. CHAMBER BASE PLATE EQUIPMENTS



BOARD DESCRIPTION	ITEM NO.	QTY.	1X(+H01)
33KV SWITCHBOARD		2X	AS PER RESPECTIVE SWITCHBOARD (REFER NAMEPLATE LIST)
TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
FEEDER DESIGNATION			HZ01
FEEDER TYPE			TIE-1
FEEDER RATING			400A
WIRING DIAGRAM NO. (3) G71570-K5135			W014
CB TYPE / RATING / DETAILS / MAKE		Q10	33kV, 3AH0, 800A, 26.3KA/3SEC,12NO+12NC, 64 PINS SIEMENS MAKE
			MOTOR : 110V DC, CC : 110V DC, TC-1 : 110V DC, TC-2 : 110V DC
LIMIT SWITCH (TEST & SERVICE)		S16	4NO TEST + 4NO SERVICE
CURRENT TRANSFORMER (WOUND)	CORE-1 (PROTECTION)	T1-T3	CTR : 400-200/1A, BURDEN : 15VA, CLASS : 5P15 @200/1A BIL:36/70/170KVP,STC:12.5kA/3s
WITH BUILT-IN PRIMARY FUSES		F1-F3	33KV, 3.15A
CABLE EARTHING SWITCH		Q5	EARTHING SWITCH SUITABLE FOR 12.5KA/3SEC, AUX. CONTACT 2NO+2NC
SOLENOID		Y5	110V DC
POTENTIAL TRANSFORMER	FIXED (NON-GUN TYPE)	T20-T22	PTR : 33KV/RT3/110V/RT3, BURDEN : 30VA, CL : 0.5/3P BIL:36/70/170KVP
			PTR : 33KV/RT3/110V/3, BURDEN : 30VA, CL : 3P (OPEN DELTA) BIL:36/70/170KVP
DAMPING RESISTOR FOR OPEN DELTA CORE		R0	200W, 75 OHMS
RESISTOR FOR TCS		R1,R2	SUITABLE VALUE FOR 7SR12 RELAY,3.3K Ohms, 20 Watt
CURRENT TRANSFORMER FOR S/C INDICATOR		T4-T6	CT FOR S/C INDICATOR
CURRENT TRANSFORMER FOR E/F INDICATOR		T7	CT FOR E/F INDICATOR
SHORT CIRCUIT & EARTH FAULT INDICATOR		H71	S/C AND E/F INDICATOR, MAKE: CSPC, MODEL: CSFPI-E-D-H, Cutout : 91x46x84(WxHxD)

TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
NUMERICAL PROTECTION RELAY	7SR1206-2NA77-2CA0	F55	CT SEC.: 1A, PTR : 33KV/110V/RT3, 6BI+8BO, AUX. SUPPLY: 110V DC
			FLUSH MTG. WITH IEC61850, WITH ELECTRICAL ETHERNET PORT(2x),CASE SIZE : E6
			2,27,67,67N,50,51,50N,51N,74TC,74CC
MASTER TRIP RELAY	VAJH13 (1/4NV)	K21	3NO+1NC HR, AUX. SUPPLY : 110V DC, {PROT.:86}
CAPACITIVE VOLTAGE INSULATOR		1HA1,2HA1,3HA1	33KV
CAPACITIVE VOLTAGE INDICATOR		HA1	33KV
AUXILIARY CONTACTOR	3TH30	K4,K9,K12,K12A,K6,1K6	2NO+2NC, 110V DC
AUXILIARY CONTACTOR	3TH30	KS,K7,K8,K13,K14	4NO, 110V DC
LOCAL REMOTE SELECTOR SWITCH (L/R)		S13	5P, 2WAY WITHOUT OFF, 16A, 240V AC/DC, (LOCKABLE)
CB CONTROL SWITCH (T/N/C)		S14	2 CONTACTS IN CLOSE + 2 CONTACTS IN TRIP (NON-LOCKABLE)
LED LAMP CB OFF (GREEN)		H0	110V DC
LED LAMP CB ON / PT MCB TRIP (RED)		H1,H13	110V DC
LED LAMP AUTO TRIP (AMBER)		H4	110V DC
LED LAMP 1st TRIP CKT. HEALTHY (WHITE)		H5	110V DC
LED LAMP 2nd TRIP CKT. HEALTHY (WHITE)		1H5	110V DC
LED LAMP SPRING CHARGED (BLUE)		H6	110V DC
PUSH BUTTON EMERGENCY TRIP MUSHROOM TYPE (RED)		S0	2NO+2NC
LED LAMP CB IN TEST / ES OFF(GREEN)		H11,H16	110V DC
LED LAMP CB IN SERVICE / ES ON (RED)		H12,H15	110V DC
LED LAMP DC SUPPLY-1/2 FAIL (RED)		H10,H10A	240V AC
LED LAMP L1 ON (RED)		H7	63.5V AC
LED LAMP L2 ON (YELLOW)		H8	63.5V AC
LED LAMP L3 ON (BLUE)		H9	63.5V AC
MCB FOR PANEL AC CONTROL SUPPLY		F19	16A, 2P, 240V AC
MCB FOR PANEL DC CONTROL SUPPLY		F29	16A, 2P, 110V DC
MCB FOR SPACE HEATER CKT.		F20	6A, 1P, 240V AC
MCB FOR ILLUMINATION CKT.		F22	6A, 1P, 240V AC
MCB FOR CB MOTOR CKT.		F24	6A, 2P, 110V DC
MCB FOR CLOSING CKT.		F25	6A, 2P, 110V DC
MCB FOR 1st TRIPPING CKT.		F26	6A, 2P, 110V DC
MCB FOR 2nd TRIPPING CKT.		1F26	6A, 2P, 110V DC
MCB FOR INDICATION CKT		F27	6A, 2P, 110V DC
MCB FOR BOARD AC CONTROL SUPPLY		F23A	32A, 2P, 240V AC
MCB FOR BOARD DC CONTROL SUPPLY		F28A,F28B	32A, 2P, 110V DC
MCB FOR PT SECONDARY		F31	2A, 3P, 110V AC WITH 1NO+1NC AUX. CONTACT
NEUTRAL LINK		X20,X31	20A
LT CHAMBER LAMP+DOOR LIMIT SWITCH		E2 + S29	CFL 11W, 240V AC + 1NO+1NC
PLUG SOCKET WITH BUILT IN 1P MCB		PS+F21	6/16A, 250V AC, 3-PIN
THERMOSTAT		B1	25-75 DEG.C
SPACE HEATER		R11,R12	100W, 240V AC
POWER CABLE NO. / CORES / SIZE			1Rx1Cx240 Sq.mm./Ph(Top Cable Entry)

Issue	Remarks	Date	Name
			Norm

Date 20.12.17 | Prep. PKS | Ckd.

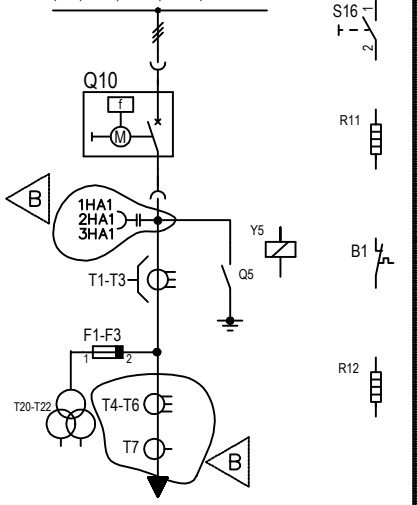
Client : STERLING & WILSON PVT. LTD.
Project : NMRCL
Consultant:
Original/Replacement for /Replaced by:-

SIEMENS

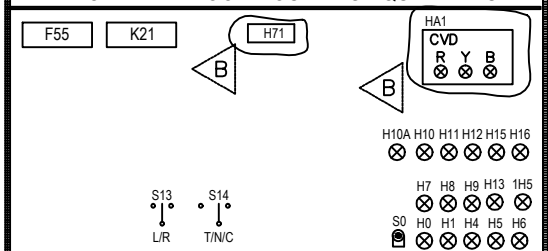
Description: 33kV SWITCHBOARD
Details : MASTER SINGLE LINE DIAGRAM
Work : 8BK80+3AH0

Sales Ref.: EM-MS/3005554014
W.O. No.: 3005627625 Qty.: 2x
Item No.: Ref. Index (3) G71570 - K5135 - S003 B

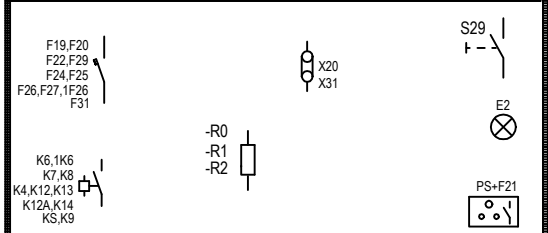
Sheet 1 + Sh.



L.T. CHAMBER DOOR MOUNTING EQUIPMENTS



L.T. CHAMBER BASE PLATE EQUIPMENTS



BOARD DESCRIPTION	ITEM NO.	QTY.	1X(+H03)
33KV SWITCHBOARD		2X	AS PER RESPECTIVE SWITCHBOARD (REFER NAMEPLATE LIST)
TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
FEEDER DESIGNATION			HZ02
FEEDER TYPE			TIE-2
FEEDER RATING			400A
WIRING DIAGRAM NO. (3) G71570-K5135			W024
CB TYPE / RATING / DETAILS / MAKE		Q10	33kV, 3AH0, 800A, 26.3KA/3SEC,12NO+12NC, 64 PINS SIEMENS MAKE
			MOTOR : 110V DC, CC : 110V DC, TC-1 : 110V DC, TC-2 : 110V DC
LIMIT SWITCH (TEST & SERVICE)		S16	4NO TEST + 4NO SERVICE
CURRENT TRANSFORMER (WOUND)	CORE-1 (PROTECTION)	T1-T3	CTR : 400-200/1A, BURDEN : 15VA, CLASS : 5P15 @200/1A BIL:36/70/170KVP,STC:12.5kA/3s
CABLE EARTHING SWITCH		Q5	EARTHING SWITCH SUITABLE FOR 12.5KA/3SEC, AUX. CONTACT 2NO+2NC
SOLENOID		Y5	110V DC
POTENTIAL TRANSFORMER	FIXED (NON-GUN TYPE)	T20-T22	PTR : 33KV/RT3/110V/RT3, BURDEN : 30VA, CL : 0.5/3P BIL:36/70/170KVP
			PTR : 33KV/RT3/110V/3, BURDEN : 30VA, CL : 3P (OPEN DELTA) BIL:36/70/170KVP
WITH BUILT-IN PRIMARY FUSES		F1-F3	33KV, 3.15A
DAMPING RESISTOR FOR OPEN DELTA CORE		R0	200W, 75 OHMS
RESISTOR FOR TCS		R1,R2	SUITABLE VALUE FOR 7SR12 RELAY,3.3K Ohms, 20 Watt
CURRENT TRANSFORMER FOR S/C INDICATOR		T4-T6	CT FOR S/C INDICATOR
CURRENT TRANSFORMER FOR E/F INDICATOR		T7	CT FOR E/F INDICATOR
SHORT CIRCUIT & EARTH FAULT INDICATOR		H71	S/C AND E/F INDICATOR, MAKE: CSPC, MODEL: CSFPI-E-D-H, Cutout : 91x46x84(WxHxD)

B

TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
NUMERICAL PROTECTION RELAY	7SR1206-2NA77-2CA0	F55	CT SEC.: 1A, PTR : 33KV/110V/RT3, 6BI+8BO, AUX. SUPPLY: 110V DC
			FLUSH MTG. WITH IEC61850, WITH ELECTRICAL ETHERNET PORT(2x),CASE SIZE : E6
			2,27,67,67N,50,51,50N,51N,74TC,74CC
MASTER TRIP RELAY	VAJH13 (1/4NV)	K21	3NO+1NC HR, AUX. SUPPLY : 110V DC, {PROT.:86}
CAPACITIVE VOLTAGE INSULATOR		1HA1,2HA1,3HA1	
CAPACITIVE VOLTAGE INDICATOR		HA1	
AUXILIARY CONTACTOR	3TH30	K4,K9,K12,K12A,K6,1K6	2NO+2NC, 110V DC
AUXILIARY CONTACTOR	3TH30	KS,K7,K8,K13,K14	4NO, 110V DC
LOCAL REMOTE SELECTOR SWITCH (L/R)		S13	5P, 2WAY WITHOUT OFF, 16A, 240V AC/DC, (LOCKABLE)
CB CONTROL SWITCH (T/N/C)		S14	2 CONTACTS IN CLOSE + 2 CONTACTS IN TRIP (NON-LOCKABLE)
LED LAMP CB OFF (GREEN)		H0	110V DC
LED LAMP CB ON / PT MCB TRIP (RED)		H1,H13	110V DC
LED LAMP AUTO TRIP (AMBER)		H4	110V DC
LED LAMP 1st TRIP CKT. HEALTHY (WHITE)		H5	110V DC
LED LAMP 2nd TRIP CKT. HEALTHY (WHITE)		1H5	110V DC
LED LAMP SPRING CHARGED (BLUE)		H6	110V DC
PUSH BUTTON EMERGENCY TRIP MUSHROOM TYPE (RED)		S0	2NO+2NC
LED LAMP CB IN TEST / ES OFF(GREEN)		H11,H16	110V DC
LED LAMP CB IN SERVICE / ES ON (RED)		H12,H15	110V DC
LED LAMP DC SUPPLY-1/2 FAIL (RED)		H10,H10A	240V AC
LED LAMP L1 ON (RED)		H7	63.5V AC
LED LAMP L2 ON (YELLOW)		H8	63.5V AC
LED LAMP L3 ON (BLUE)		H9	63.5V AC
MCB FOR PANEL AC CONTROL SUPPLY		F19	16A, 2P, 240V AC
MCB FOR PANEL DC CONTROL SUPPLY		F29	16A, 2P, 110V DC
MCB FOR SPACE HEATER CKT.		F20	6A, 1P, 240V AC
MCB FOR ILLUMINATION CKT.		F22	6A, 1P, 240V AC
MCB FOR CB MOTOR CKT.		F24	6A, 2P, 110V DC
MCB FOR CLOSING CKT.		F25	6A, 2P, 110V DC
MCB FOR 1st TRIPPING CKT.		F26	6A, 2P, 110V DC
MCB FOR 2nd TRIPPING CKT.		1F26	6A, 2P, 110V DC
MCB FOR INDICATION CKT.		F27	6A, 2P, 110V DC
MCB FOR PT SECONDARY		F31	2A, 3P, 110V AC WITH 1NO+1NC AUX. CONTACT
NEUTRAL LINK		X20,X31	20A
LT CHAMBER LAMP+DOOR LIMIT SWITCH		E2 + S29	CFL 11W, 240V AC + 1NO+1NC
PLUG SOCKET WITH BUILT IN 1P MCB		PS+F21	6/16A, 250V AC, 3-PIN
THERMOSTAT		B1	25-75 DEG.C
SPACE HEATER		R11,R12	100W, 240V AC
POWER CABLE NO. / CORES / SIZE			1Rx1Cx240 Sq.mm./Ph(Top Cable Entry)

B

Project: 1: 2: 3: 4:

Issue	Remarks	Date	Name	
			Date	20.12.17
			Prep.	PKS
			Ckd.	
			Norm	

Client : STERLING & WILSON PVT. LTD.
Project : NMRCL
Consultant:
Original/Replacement for /Replaced by:-

SIEMENS

Description: 33kV SWITCHBOARD
Details : MASTER SINGLE LINE DIAGRAM
Work : 8BK80+3AH0

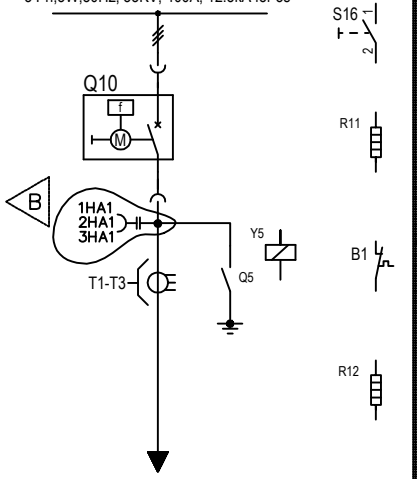
Sales Ref.: EM-MS/3005554014
W.O. No.: 3005627625 Qty.: 2x

Item No.: Ref. Index (3) G71570 - K5135 - S003 B

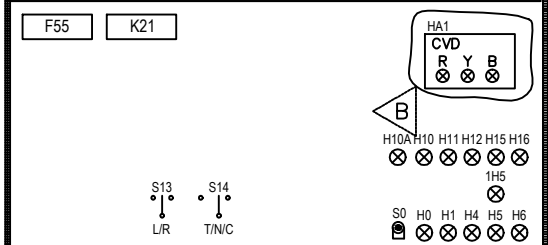
Sheet 2 + Sh.

A: B: C: D: C_FB_E.elr

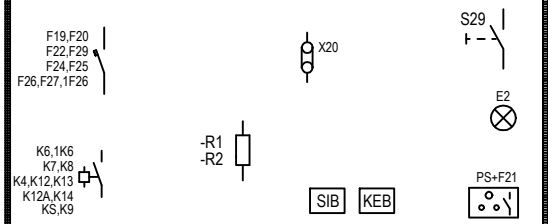
Project: 1: 2: 3: 4:



L.T. CHAMBER DOOR MOUNTING EQUIPMENTS



L.T. CHAMBER BASE PLATE EQUIPMENTS



BOARD DESCRIPTION	ITEM NO.	QTY.	1X(+H02)
33KV SWITCHBOARD		2x	AS PER RESPECTIVE SWITCHBOARD (REFER NAMEPLATE LIST)
TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
FEEDER DESIGNATION			HZ03
FEEDER TYPE			TR
FEEDER RATING			50A
WIRING DIAGRAM NO. (3) G71570-K5135			W034
CB TYPE / RATING / DETAILS / MAKE		Q10	33kV, 3AH0, 800A, 26.3KA/3SEC,12NO+12NC, 64 PINS SIEMENS MAKE
WITH CASTLE KEY TYPE B			MOTOR : 110V DC, CC : 110V DC, TC-1 : 110V DC, TC-2 : 110V DC
LIMIT SWITCH (TEST & SERVICE)		S16	4NO TEST + 4NO SERVICE
CURRENT TRANSFORMER (WOUND)	CORE-1 (PROTECTION)	T1-T3	CTR : 50-25/5A, BURDEN : 15VA, CLASS : 5P15 @25/5A BIL:36/70/170KVP,STC:12.5kA/3s
CABLE EARTHING SWITCH		Q5	EARTHING SWITCH SUITABLE FOR 12.5KA/3SEC, AUX. CONTACT 2NO+2NC
SOLENOID		Y5	110V DC
RESISTOR FOR TCS		R1,R2	SUITABLE VALUE FOR 7SR12 RELAY,3.3K Ohms, 20 Watt

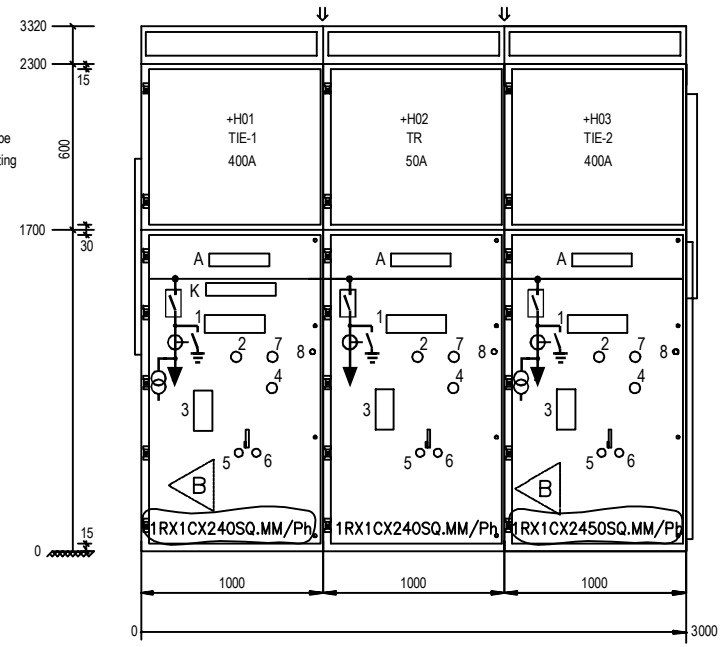
TECH. DATA & EQUIPMENTS DETAILS		DESIG.	BRIEF DESCRIPTION OF EQUIPMENTS
NUMERICAL PROTECTION RELAY 7SR1206-2NA77-2CA0		F55	CT SEC.: 5A, PTR : 33KV/110V/RT3, 6BI+8BO, AUX. SUPPLY: 110V DC, 50,51,50N,51N,74TC,74CC
			FLUSH MTG. WITH IEC61850, WITH ELECTRICAL ETHERNET PORT(2x),CASE SIZE : E6
MASTER TRIP RELAY VAJH13 (1/4NV)		K21	3NO+1NC HR, AUX. SUPPLY : 110V DC, {PROT.:86}
CAPACITIVE VOLTAGE INSULATOR	1HA1,2HA1,3HA1	33KV	
CAPACITIVE VOLTAGE INDICATOR		HA1	33KV
AUXILIARY CONTACTOR 3TH30	K4,K9,K12,K12A,K6,1K6		2NO+2NC, 110V DC
AUXILIARY CONTACTOR 3TH30	KS,K7,K8,K13,K14		4NO, 110V DC
LOCAL REMOTE SELECTOR SWITCH (L/R)		S13	5P, 2WAY WITHOUT OFF, 16A, 240V AC/DC, (LOCKABLE)
CB CONTROL SWITCH (T/N/C)		S14	2 CONTACTS IN CLOSE + 2 CONTACTS IN TRIP (NON-LOCKABLE)
LED LAMP CB OFF (GREEN)		H0	110V DC
LED LAMP CB ON (RED)		H1	110V DC
LED LAMP AUTO TRIP (AMBER)		H4	110V DC
LED LAMP 1st TRIP CKT. HEALTHY (WHITE)		H5	110V DC
LED LAMP 2nd TRIP CKT. HEALTHY (WHITE)		1H5	110V DC
LED LAMP SPRING CHARGED (BLUE)		H6	110V DC
LED LAMP CB IN TEST / ES OFF(GREEN)		H11,H16	110V DC
LED LAMP CB IN SERVICE / ES ON (RED)		H12,H15	110V DC
LED LAMP DC SUPPLY-1/2 FAIL (RED)		H10,H10A	240V AC
PUSH BUTTON EMERGENCY TRIP MUSHROOM TYPE (RED)		S0	2NO+2NC
SOLENOID INTERLOCK BOX		SIB	WITH INDICATING LAMP PB. CASTLE KEY & SOLENOID (110V DC)
KEY EXCHANGE BOX		KEB	WITH KEY A,B & C
MCB FOR PANEL AC CONTROL SUPPLY		F19	16A, 2P, 240V AC
MCB FOR PANEL DC CONTROL SUPPLY		F29	16A, 2P, 110V DC
MCB FOR SPACE HEATER CKT.		F20	6A, 1P, 240V AC
MCB FOR ILLUMINATION CKT.		F22	6A, 1P, 240V AC
MCB FOR CB MOTOR CKT.		F24	6A, 2P, 110V DC
MCB FOR CLOSING CKT.		F25	6A, 2P, 110V DC
MCB FOR 1st TRIPPING CKT.		F26	6A, 2P, 110V DC
MCB FOR 2nd TRIPPING CKT.		1F26	6A, 2P, 110V DC
MCB FOR INDICATION CKT.		F27	6A, 2P, 110V DC
NEUTRAL LINK		X20	20A
LT CHAMBER LAMP+DOOR LIMIT SWITCH		E2 + S29	CFL 11W, 240V AC + 1NO+1NC
PLUG SOCKET WITH BUILT IN 1P MCB		PS+F21	6/16A, 250V AC, 3-PIN
THERMOSTAT		B1	25-75 DEG.C
SPACE HEATER		R11,R12	100W, 240V AC
POWER CABLE NO. / CORES / SIZE			1Rx1Cx240 Sq.mm./Ph(Top Cable Entry)

Issue	Remarks	Date	Name	Date	20.12.17	Client : STERLING & WILSON PVT. LTD.	SIEMENS	Description: 33kV SWITCHBOARD	Sales Ref.: EM-MS/3005554014	Sheet 3
				Prep.	PKS	Project : NMRCL		Details : MASTER SINGLE LINE DIAGRAM	W.O. No.: 3005627625 Qty.: 2x	- Sh.
				Ckd.		Consultant:		Work : 8BK80+3AH0	Item No.: Ref. Index (3) G71570 - K5135 - S003 B	
				Norm		Original/Replacement for /Replaced by:-				

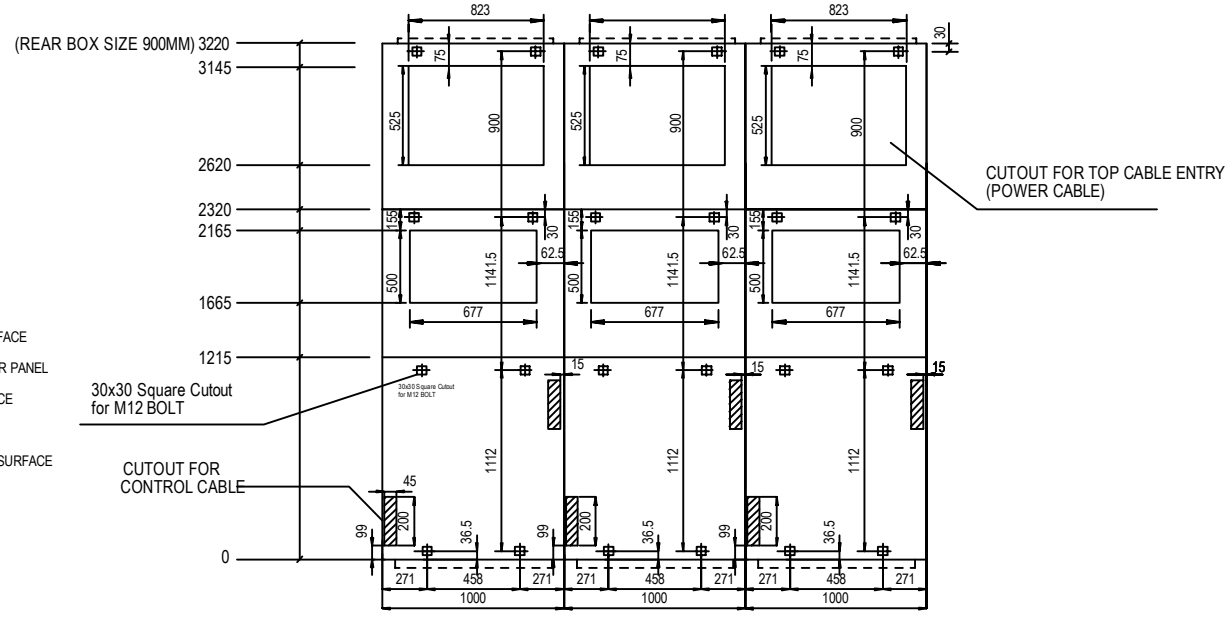
FRONT VIEW

LEGEND

1 : INSPECTION WINDOW
2 : SPRING CHARGING
3 : MECHANICAL ON
OFF INDICATOR + SPRING
CHARGED INDICATOR
4 : MECHANICAL OFF
5 : CRANKING LEVER
6 : KEY FOR CRANKING LEVER
7 : MECHANICAL ON(OPTIONAL FEATURE)
8 : DOOR KNOB
K : BOARD NAME PLATE
A : FEEDER NAME PLATE
⇓ TRANSPORT SECTION
TOP CABLE ENTRY



PANEL FIXING PLAN



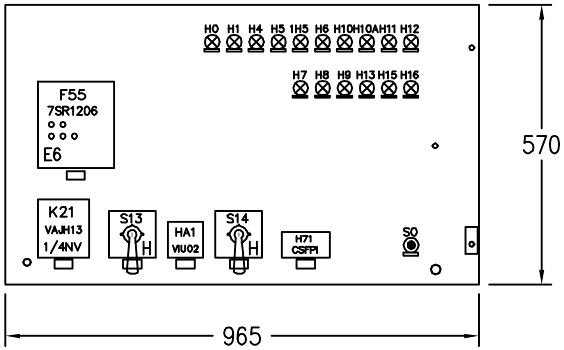
1. 2500 mm - FROM FRONT WALL / SURFACE
2. 4000 mm - FROM FRONT OF ANOTHER PANEL
3. 800 mm - FROM REAR WALL / SURFACE
4. 600mm ABOVE THE LT CHAMBER
5. 800 mm - FROM LHS / RHS WALL OR SURFACE

ALL DIMENSION ARE N.T.S.
ALL DIMENSION IN MM

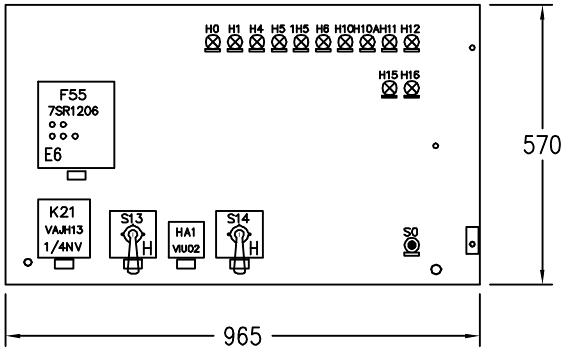
D				Date	14.12.12	Client : STERLING & WILSON PVT LTD	SIEMENS	Description: 33kV SWITCHBOARD	Sales Ref.: EM-MS/3005554014
B				Prep.	PKS	Project : NMRCL		Details : General Arrangement	Item No.: Ref Index Qty.: 2x
A				Ckd.		Consultant :		Work : 8BK80_RD+3AH0	W.O. No.: 3005627625 (3) G71570 -K5135- V003 - B
Issue	Remarks	Date	Name	Norm		Original/Replacement for /Replaced by:-			Sheet 1 - Sh.

1 2 3 4 5 6 7 8

Feeder type:-TIE-1,TIE-2
Panel No:-H01,H03



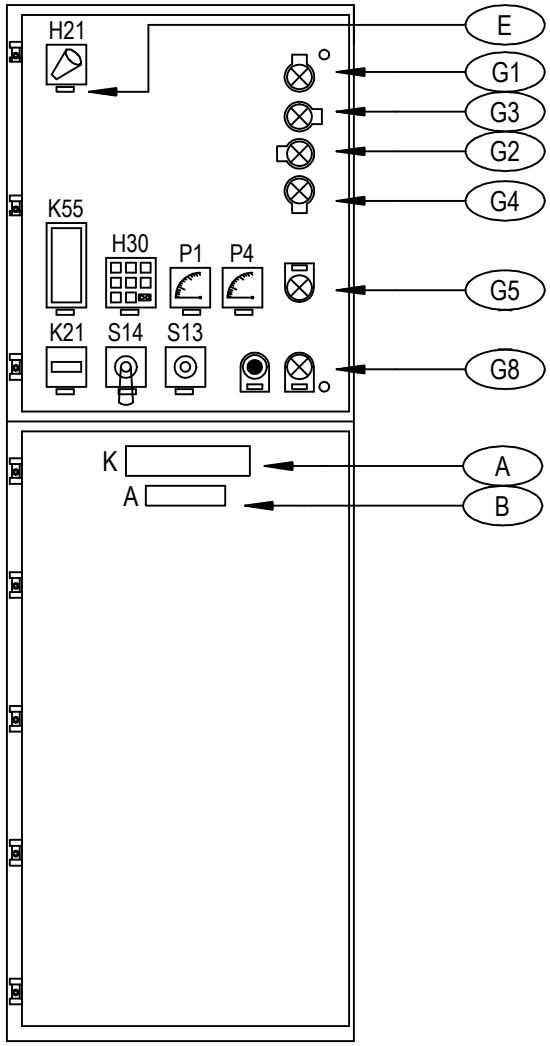
Feeder type:-TRAFO
Panel No:-H02



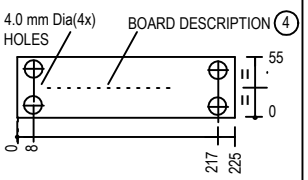
** Equipments picture shown on the LV door is representative only
However actual picture may differ depending upon type & make of equipment.

Scale 1:10
All Dimensions in mm.

				Date	22-12-17	Client :- STERLING & WILSON PVT.LTD.	SIEMENS	Descr : 33KV SWITCHBOARD	Sales Ref. : EM-MS/3005554014	=.
				Prep	ART	PROJECT: NMRCL		Work : 8BK80+3AH0	WO No. : 3005554190 Qty. : 1X	+.
				Ckd.					Item No. : 110	Drg. No: (3)G71570 -K5135 - P003	Sh. 1 + Sh.
Issue	Remarks	Date	Name	Norm.		Original/Replacement for/Replaced by :-		Details : DOOR EQPT. LAYOUT		

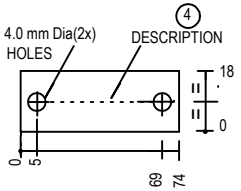


NAME PLATE TYPE - A



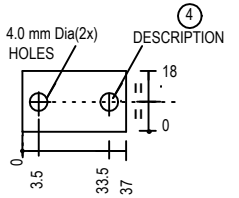
LETTER HEIGHT - 15mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE - C



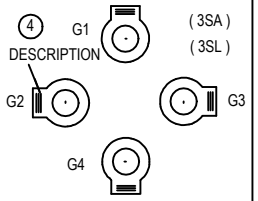
LETTER HEIGHT – 3mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE - E



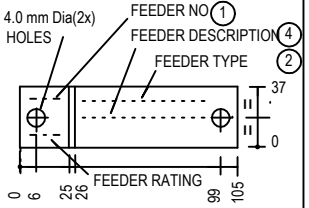
LETTER HEIGHT – 2.5mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE G1-G4



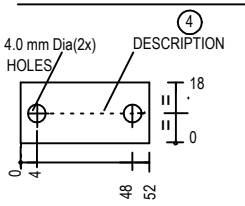
LETTER HEIGHT – 2mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE - B



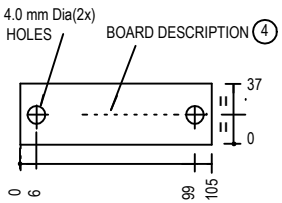
LETTER HEIGHT - 5mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE - D



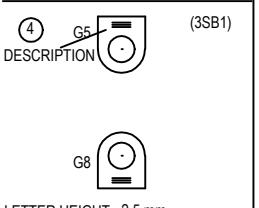
LETTER HEIGHT – 3 mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE - F



LETTER HEIGHT - 3 mm
MATERIAL - 2-PLY RAPELITE

NAME PLATE TYPE G5 & G8



LETTER HEIGHT - 2.5 mm
MATERIAL - 2-PLY RAPELITE

NOTES:- 1. NAME PLATES TYPE A-F, G1-G4,G5 & G8 ARE WITH BLACK LETTERS ON WHITE BACKGROUND
2. NAME PLATES TYPE G1-G4,G5 & G8 ARE MOUNTED EXACTLY AS THEY ARE SHOWN ABOVE. ENGRAVING IS DONE TO SUIT THIS POSITION.
3. NAME PLATES ARE ENGRAVED EXACTLY AS SHOWN UNLESS OTHERWISE MENTIONED.
4. ALL DIMEMSIONS ARE IN mm, UNLESS OTHERWISE MENTIONED.
5. LOCATION & TYPE OF EQ. NAME PLATE SHOWN IS INDICATIVE ONLY AND IRRESPECTIVE OF PROJECT.HOWEVER FOR ACTUAL PROJECT RELATED DETAILING DOOR LAYOUT (DRG. NO. Pxx3) SHALL BE REFERED IN CONJECTION OF DOCUMENT.

ELCAD Version
A:
B:
C: C_FB_E.ett
D:
Project:
1:
2:
3:
4:

				Date	20.12.17	Client : STERLING & WILSON PVT. LTD.	SIEMENS	Description: 33kV SWITCHBOARD	Sales Ref.: EM-MS/3005554014
				Prep.	PKS	Project : NMRCL		Details : LIST OF LABLE	W.O. No.: 3005627625 Qty.: 2X
				Ckd.		Consultant:		Work : 8BK80+3AH0	Item No.: Ref. Index (3) G71570 - K5135 - P003 -
Issue	Remarks	Date	Name	Norm		Original/Replacement for /Replaced by:-			Sheet 2 3 - Sh.

SR. NO.	PANEL NO.	FEEDER TYPE	FEEDER RATING	DESCRIPTION IN CAPITALS	N.P. TYPE	QTY.	EQ. DESIG.	REMARKS
	①	②	③	④	⑤	⑥	⑦	⑧
1	H01			33kV SWITCHBOARD-1	A	1X		BOARD NP
2	H01			33kV SWITCHBOARD-2	A	1X		BOARD NP
3	H01	TIE-1	400A	TIE FEEDER-1	B	2X		FDR. NP
4	H02	TR	50A	TRAFO FEEDER	B	2X		FDR. NP
5	H03	TIE-2	400A	TIE FEEDER-2	B	2X		FDR. NP
6				VCB OFF	G8	3X	H0	EQIP. NP
7				VCB ON	G8	3X	H1	EQIP. NP
8				AUTO TRIP	G8	3X	H4	EQIP. NP
9				1st TRIP CKT. HEALTHY	G8	3X	H5	EQIP. NP
10				2nd TRIP CKT. HEALTHY	G8	3X	1H5	EQIP. NP
11				SPRING CHARGED	G8	3X	H6	EQIP. NP
12				L1-ON	G8	2X	H7	EQIP. NP
13				L2-ON	G8	2X	H8	EQIP. NP
14				L3-ON	G8	2X	H9	EQIP. NP
15				LINE PT CHARGED	G8	2X	H14	EQIP. NP
16				LOCAL / REMOTE SWITCH (L/R)	E	3X	S13	EQIP. NP
17				BREAKER CONTROL SWITCH (T/N/C)	E	3X	S14	EQIP. NP
18				MASTER TRIP RELAY	E	3X	K21	EQIP. NP
19				O/C & E/F PROTECTION RELAY	E	3X	F50	EQIP. NP
20				EMERGENCY TRIP	G8	3X	S0	EQIP. NP
21			A	PT MCB TRIP	G8	2X	H13	EQIP. NP
22				DC SUPPLY-1 FAIL	G8	3X	H10	EQIP. NP
23				DC SUPPLY-2 FAIL	G8	3X	H10A	EQIP. NP
24				CB IN TEST	G8	3X	H11	EQIP. NP
25				CB IN SERVISE	G8	3X	H12	EQIP. NP
26				ES ON	G8	3X	H15	EQIP. NP
27				ES OFF	G8	3X	H16	EQIP. NP
28				CAPACITIVE VOLTAGE INDICATOR	E	3X	HA1	EQIP. NP
29				FPI	E	2X	H71	EQIP. NP
30								

SR. NO.	PANEL NO.	FEEDER TYPE	FEEDER RATING	DESCRIPTION IN CAPITALS	N.P. TYPE	QTY.	EQ. DESIG.	REMARKS
31								
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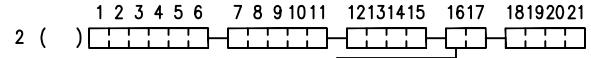
C				Date	20.12.17	Client : STERLING & WILSON PVT. LTD.	SIEMENS	Description: 33kV SWITCHBOARD	Sales Ref.: EM-MS/3-005554014		
				Prep.	PKS	Project : NMRCL		Details : LIST OF LABLE	W.O. No.: 3005627625 Qty.: 2X		
				Ckd.		Consultant:		Work : 8BK80+3AH0	Item No.: Ref. Index (3) G71570 - K5135 - P003 - A		Sheet 3
Issue	Remarks	Date	Name	Norm		Original/Replacement for /Replaced by:-					3 - Sh.

1 2 3 4 5 6 7 8

Procedure for carring out amendments

1. Total no. of sheets. pertaining to a Drawing No. are mentioned only on Sheet No. 1 and on last Sheet.



Alphabet in the 1st square, of the 4th Block of squares, indicates latest amendment or the status of drawing.

3. In case of changes, the amendment to Drawing No. will be carried out only on those sheets, in which changes have taken place and on Sheet No. 1 for the purpose of summary of amendments. The same procedure will continue for subsequent changes but every additional change will be indicated by use of next alphabet.
e.g. Say amendment 'A' takes place in Sheet No. 3,4,7. Then alphabet 'A' will appear in 1st square of 4th Block of Drawing No. written on Sheet No. 3,4,7 & 1. Further, say, next amendment takes place in Sheet No. 3,5,9. Then alphabet 'B' will appear in 1st square of the 4th Block of Drawing No. written on Sheet No. 3,5,9 & 1. Even though Sheet No. 5 & 9 do not have amendment 'A' earlier. They directly will have amendment 'B'.

4. Separate tabular form of amendment column does not appear on Sheet No. 1 but does appear on all remaining sheets. The brief description in these columns indicates the reference of Client's/Sales Office's/Work's letter or actual changes done in the Drawing. The date column indicates when the amendment has been carried out. The actual and latest changes are highlighted by drawing circular shapes around them and by writing amendment–alphabet in a triangle near this circular form.

5. Reference Drawing Nos. wherever mentioned, show basic Drawing Nos. without any amendment. The information about the latest issue of any drawing can be obtained only from latest copy of 'Record of Drawing' which is sent along with set of drawings for every drawing submission.

Index	Summary of Amendments	Date	Drawn	Checked
A	ISSUED FOR RE–AAPROVAL, SH 2,4–9,11,12,13 & 1 REVISED	06-01-18	PKS	
B	ISSUED FOR CONSTRUCTION, SH 2,3,6,7,12,13,14 & 1 REVISED	23-02-18	PKS	
C				
D				
E				
F				
G				
H				
J				
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				
U				
V				
W				
X				
Y				
Z				

B :– BUS BAR
C :– CABLE CHAMBER
D :– LV DOOR
E :– LV REAR
L :– LV PLATE
P :– CB CHAMBER
T :– CB TROLLEY

LEGEND FOR CIRCUIT BREAKER

M = SPRING CHARGING MOTOR
Y9 = CLOSING COIL
Y1 = TRIPPING COIL
K1 = ANTIPUMPING CONTACTOR
S1 = BREAKER AUXILIARY SWITCH (@ 12NO+12NC)
S2,S3,S4,S21,S22 = SPRING LIMIT SWITCH (OPERATES WHEN SPRING IS CHARGED)
S16 = SERVICE+TEST POSITION LIMIT SWITCH (4NO)

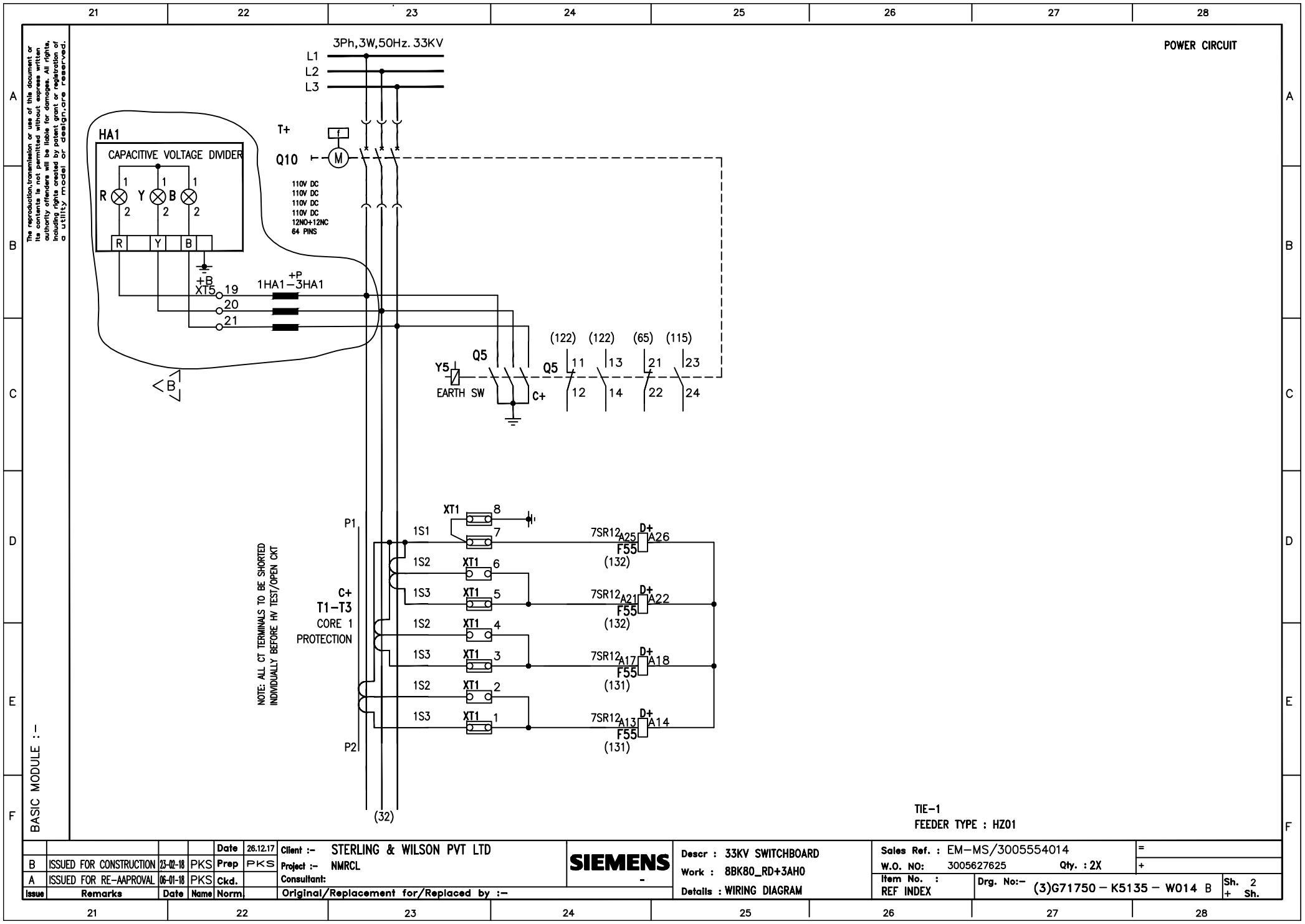
TERMINAL GROUP

X2 = CB TERMINALS
XT1 = CT TERMINALS
XR1 = 240V AC TERMINALS
XR2 = 110V DC TERMINALS
XC30 = CONTROL TERMINALS
XT5 = PT SEC. TERMINALS

TIE–1
FEEDER TYPE : HZ01

BASIC MODULE :–

				Date	26.12.17	Client :– STERLING & WILSON PVT LTD	SIEMENS	Descr : 33KV SWITCHBOARD	Sales Ref. : EM–MS/3005554014 =
				Prep	PKS	Project :– NMRCL		Work : 8BK80_RD+3AH0	W.O. NO: 3005627625 Qty. : 2X +
				Ckd.		Consultant:		Details : WIRING DIAGRAM	Item No. : REF INDEX / Drg. No:– (3)G71750 – K5135 – W014 B / Sh. 1 + Sh.
Issue	Remarks	Date	Name	Norm		Original/Replacement for/Replaced by :–			



Issue	Remarks	Date	Name	Norm
B	ISSUED FOR CONSTRUCTION	23-02-18	PKS	Prep PKS
A	ISSUED FOR RE-AAPROVAL	06-01-18	PKS	Ckd.

Date 26.12.17

Client :- STERLING & WILSON PVT LTD
Project :- NMRCL
Consultant:
Original/Replacement for/Replaced by :-

SIEMENS

Descr : 33KV SWITCHBOARD
Work : 8BK80_RD+3AH0
Details : WIRING DIAGRAM

Sales Ref. : EM–MS/3005554014
W.O. NO: 3005627625 Qty. : 2X
Item No. : REF INDEX
Drg. No:– (3)G71750 – K5135 – W014 B
Sh. 2 + Sh.

MAHARASHTRA METRO RAIL CORPORATION LIMITED (MAHA-METRO)

NAGPUR METRO RAIL PROJECT-PHASE-II

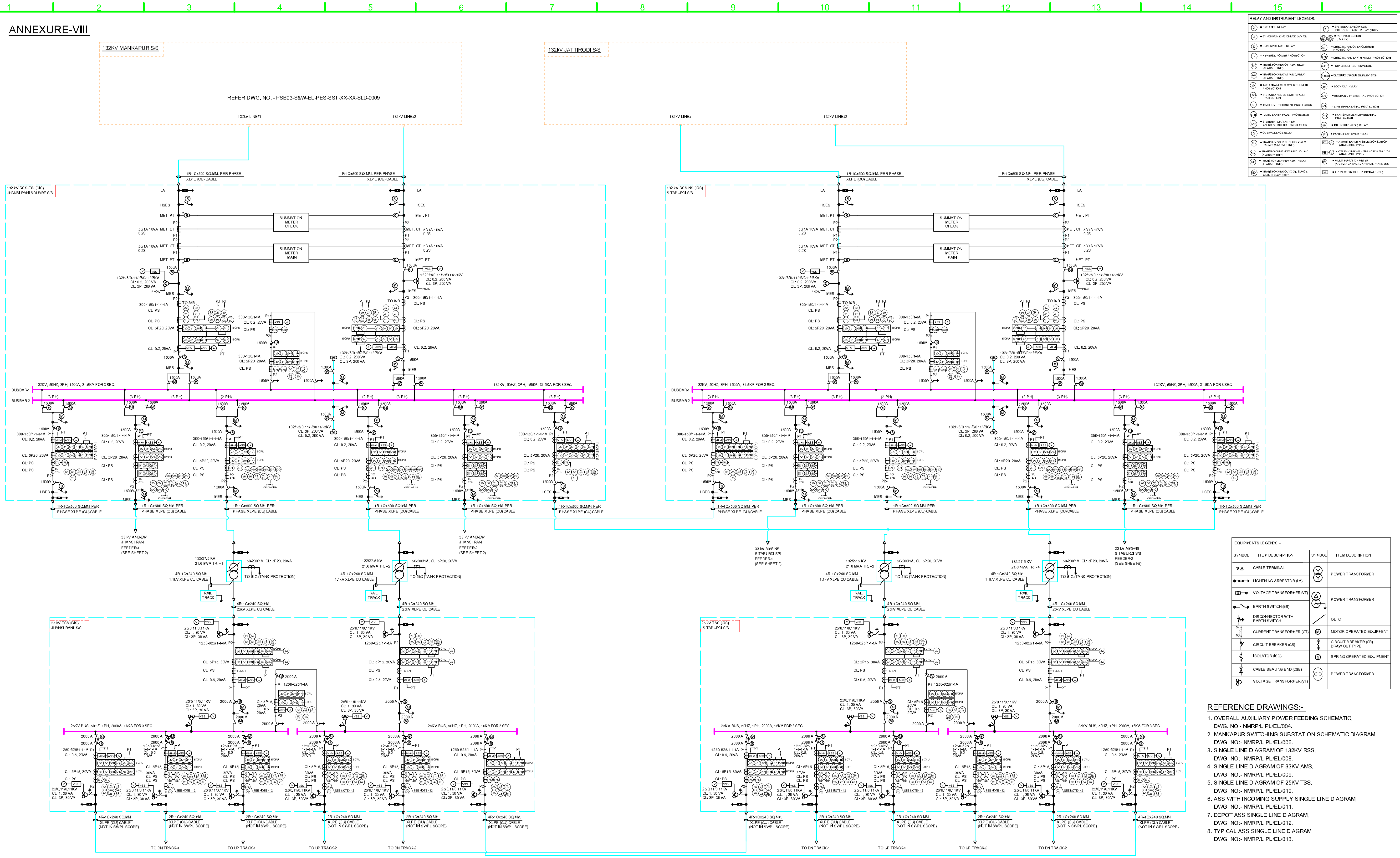
DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF RECEIVING CUM AUXILIARY MAIN CUM TRACTION SUB STATIONS INCLUDING EHV CONNECTION FROM GRID SUBSTATION, 33 KV CABLE NETWORK, ASS & SCADA SYSTEM FOR NAGPUR METRO RAIL PHASE-II PROJECT

CONTRACT NO.
N2-031/TR-03/2023

PART 2: WORKS REQUIREMENTS
SECTION VI-C: TENDER DRAWINGS

Ph-1 Sitabuldi & Jhansi Rani RSS SLD

ANNEXURE-VIII



REFERENCE DRAWINGS:-

1. OVERALL AUXILIARY POWER FEEDING SCHEMATIC, DWG. NO.:- NMRP/L/PL/EL/004.
2. MANKAPUR SWITCHING SUBSTATION SCHEMATIC DIAGRAM, DWG. NO.:- NMRP/L/PL/EL/006.
3. SINGLE LINE DIAGRAM OF 132KV RSS, DWG. NO.:- NMRP/L/PL/EL/008.
4. SINGLE LINE DIAGRAM OF 33KV AMS, DWG. NO.:- NMRP/L/PL/EL/009.
5. SINGLE LINE DIAGRAM OF 25KV TSS, DWG. NO.:- NMRP/L/PL/EL/010.
6. ASS WITH INCOMING SUPPLY SINGLE LINE DIAGRAM, DWG. NO.:- NMRP/L/PL/EL/011.
7. DEPOT ASS SINGLE LINE DIAGRAM, DWG. NO.:- NMRP/L/PL/EL/012.
8. TYPICAL ASS SINGLE LINE DIAGRAM, DWG. NO.:- NMRP/L/PL/EL/013.

NOTES:-

1. MSETCL MANKAPUR S/S FEEDER ARRANGEMENT HAS BEEN SHOWN IN THIS DRAWING AS PER THE REVISED REQUIREMENT POST CONTRACT STAGE INFORMED BY MMRC/GC DURING KOM ON DATED 4-5/05/2017.
2. THE FEEDER ARRANGEMENT AT JATTIRODI MSETCL S/S IS TO BE FINALIZED IN CONSULTATION WITH MMRC/GC.
3. VA RATING OF 33KV CT & PT ARE NOT MENTIONED IN TECHNICAL SPECIFICATION OF MMRC. IT IS CONSIDERED AS 20 VA & 100VA RESPECTIVELY FOR AMS. SAME WILL BE FINALIZED DURING COURSE OF ENGINEERING.
4. THE SINGLE LINE DIAGRAM IS PREPARED IN CONSIDERATION OF REDUNDANT OPERATION OF ALL 132/33kV & 132/27.5kV TRANSFORMERS i.e. INDEPENDENT OPERATIONS OF THE TRANSFORMER AND NOT PARALLEL OPERATION.
5. THE LOCATION OF RSS1 & RSS2 & TSS1 & TSS2 & AMS1 & AMS2 HAVE UNDERGONE CHANGE POST CONTRACT AND THE REVISED LOCATION HAS BEEN SHOWN IN THIS DRAWING.
6. RATING OF CT, CABLES, POWER TRAFO, TRACTION TRAFO & CB WILL BE WILL BE FINALISED AFTER SIMULATION STUDY.
7. 50LBB IS INBUILT FEATURE OF BUS BAR DIFFERENTIAL PROTECTION OF 132kV.
8. [*] MARKED METERING CT RATING MAY VARY AS PER MSEDCL REQUEST.
9. SF-6 GAS PRESSURE HV & LV ALARM, TRIP AND DC/AUXILIARY SUPPLY ALARM & TRIP IS CONSIDERED.
10. ALL DISTANCE PROTECTION RELAY HAVE AUTO RECLOSURE FEATURE.
11. INTERLOCK FOR AN TRANSFORMER CAGE AND 33KV CB INCLUDED. HOWEVER, POTENTIAL FREE CONTRACT SHALL BE MADE AVAILABLE AT 33KV CB FOR USE BY LV CONTRACTOR.
12. 87L RELAY WITH PILOT WIRE FOR BOTH END TO BE PROVIDED BY OHE CONTRACTOR.
13. DISTANCE PROTECTION (21) AND REVERSE POWER PROCTION (32) SHALL BE IN-BUILT WITH 87 RELAY.
14. BOTH MAIN & STANDBY IED/RELAY IN RSS CONNECTED TO SAME CT CORE AND OPERATIONAL IN PARALLEL. OUTAGE OF MAIN IED/RELAY, STANDBY IED/RELAY WILL BE OPERATIONAL AUTOMATICALLY.
15. THIS DRG. INCLUDING DESIGN AND DETAILING HAS BEEN FOUND SUITABLE FOR THE PRIMARY SUBMISSION PURPOSE AND ISSUED AS GOOD FOR CONSTRUCTION / NO OBJECTION. HOWEVER, THE RATING/SIZE OF EQUIPMENT AS SHOWN WILL BE FINALISED AFTER THE SIMULATION STUDY RESULTS CONSENTED BY THE ENGINEER/EMPLOYER.
16. VA RATING OF CT & PT INDICATED MAY UNDERGO CHANGE BASED ON REQUIREMENT OF ACTUAL MANUFACTURER.
17. Imag, Vk, Rct VALUE FOR PS CLASS CT WILL BE DECIDED AS PART OF MANUFACTURER DRAWINGS.
18. CT POLARITY, CORE MARKINGS WILL BE AS PER MANUFACTURER RECOMMENDATION.

REV NO	DATE	DESCRIPTION	SIGN
06	12.10.2017	FEEDING ARRANGEMENT FROM RSS REVISED AS INFORMED BY MMRCL	
05	24.08.2017	TRANSFORMER RATING REVISED & NOTES ADDED	
04	10.08.2017	STANDBY IED INCORPORATED	
03	30.07.2017	GENERALLY REVISED	
02	22.06.2017	REVISED AS PER COMMENTS	
01	25.05.2017	ISSUE FOR APPROVAL	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT / DETAILED DESIGN CONSULTANT & CONTRACTOR.

IT IS CERTIFIED THAT THERE IS NO CHANGE IN THIS GFCD FROM THE ALREADY APPROVED CR DWG NO. "....................REV......." APPROVED ON DATE ....

DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN: [signature]	SIGN: [signature]	SIGN: [signature]	SIGN: [signature]	SIGN:
DATE: 22.06.17	DATE: 22.06.17	DATE: 22.06.17	DATE: 22.06.17	DATE:
NAME: R.G.S	NAME: R.G.S	NAME: K.K.L	NAME: S.S	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

STERLING & WILSON PVT LTD.
Universal Majestic, 13th Floor,
P.L. Lokhande Marg, Chembur (W),
Mumbai - 400043

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN **PROOF CHECKED** INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND IS RECOMMENDED FOR GFC / NO OBJECTION'.

PROOF CONSULTANT

SIGN:
DATE:
NAME:

PROOFCONSULTANT

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN **PROOF CHECKED/REVIEWED** AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ISSUED AS 'GOOD FOR CONSTRUCTION'/BEING GIVEN NO OBJECTION

GENERAL CONSULTANT TO NMRP

SIGN:
DATE:
NAME:

SYSTRA-AECOM-EGIS-RITES
Church House, Above SBI Bank,
First floor, Civil Lines Nagpur- 440001

COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro House, 28/2, CK Naidu Marg, Anand Nagar,
Civil Lines, Nagpur - 440 001
Phone No: 07122554217

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: -

TITLE: OVERALL SINGLE LINE DIAGRAM

SCALE: NTS | DATE: 22.06.17 | STATUS: - | SHEET NO :- 1 OF 2 | REVISION NO: 06

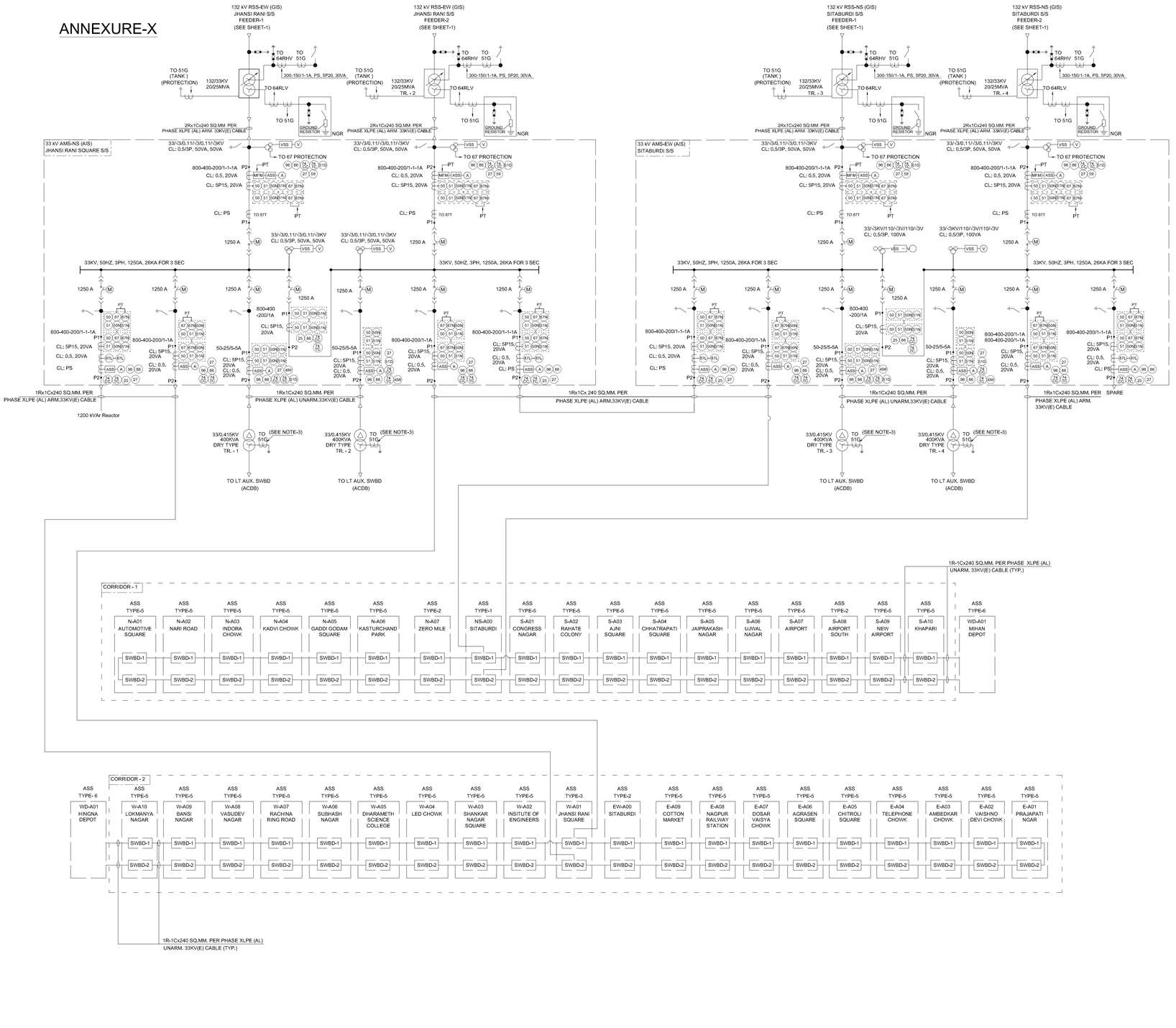
DRG NO: PWB03-S&W-EL-PES-XXX_XX_SLD-0001

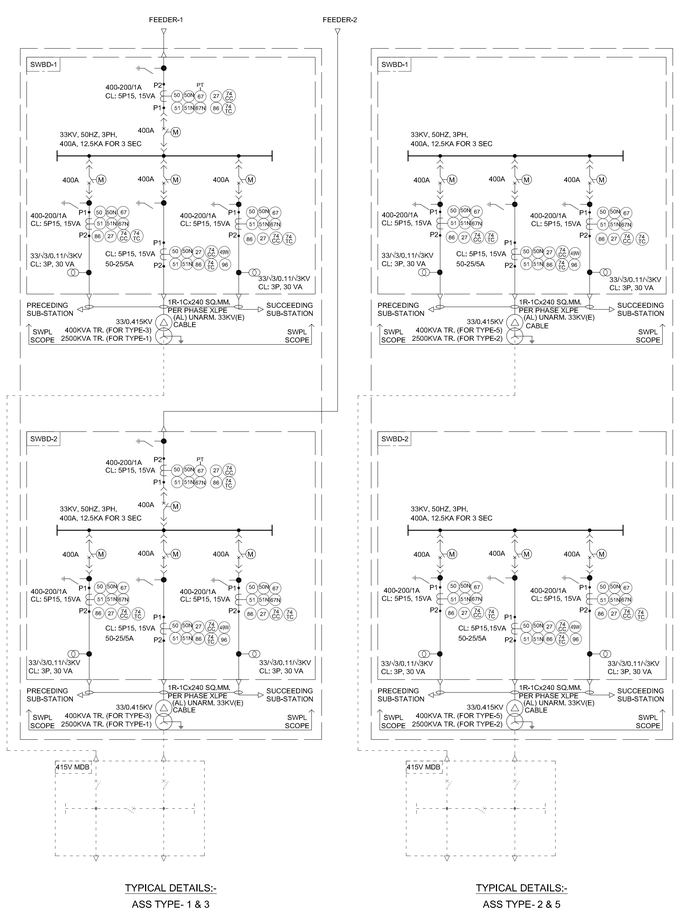
NAGPUR METRO

plot scale 50mm

TBA

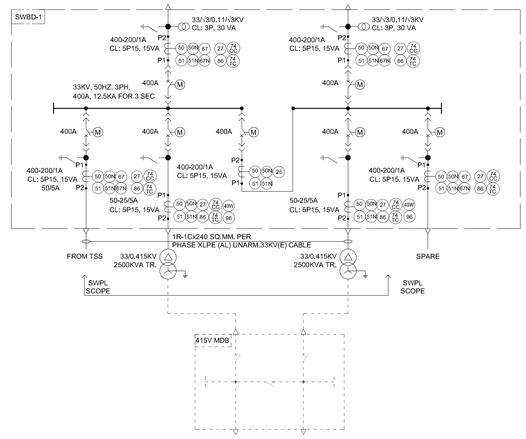
ANNEXURE-X





TYPICAL DETAILS:-
ASS TYPE- 1 & 3

TYPICAL DETAILS:-
ASS TYPE- 2 & 5



TYPICAL DETAILS:-
ASS TYPE- 6

NOTES:-

1. FOR NOTES, LEGENDS & REFERENCES, SEE SHEET 1 OF 2.

REV NO	DATE	DESCRIPTION	SIGN
06	12.10.2017	FEEDING ARRANGEMENT FROM RSS REVISED AS INFORMED BY MMRCL	
05	24.08.2017	TRANSFORMER RATING REVISED & NOTES ADDED	
04	10.08.2017	STANDBY IED INCORPORATED	
03	30.07.2017	GENERALLY REVISED	
02	22.06.2017	REVISED AS PER COMMENTS	
01	25.05.2017	ISSUE FOR APPROVAL	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT / DETAILED DESIGN CONSULTANT & CONTRACTOR.
IT IS CERTIFIED THAT THERE IS NO CHANGE IN THIS GFCD FROM THE THE ALREADY APPROVED CR DWG NO. "..... APPROVED ON DATE .....

DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.06.17	DATE: 22.06.17	DATE: 22.06.17	DATE: 22.06.17	DATE:
NAME: R.G.S	NAME: R.G.S	NAME: K.K.L	NAME: S.S	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

STERLING & WILSON PVT LTD.
Universal Majestic, 13th Floor,
P.L. Lokhande Marg, Chembur (W),
Mumbai - 400043

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN **PROOF CHECKED** INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND IS RECOMMENDED FOR GFC / NO OBJECTION'.

PROOF CONSULTANT
SIGN:
DATE:
NAME:
PROOFCONSULTANT

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN **PROOF CHECKED/REVIEWED** AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ISSUED AS 'GOOD FOR CONSTRUCTION'/BEING GIVEN NO OBJECTION

GENERAL CONSULTANT TO NMRP
SIGN:
DATE:
NAME:
SYSTRA-AECOM-EGIS-RITES
Church House, Above SBI Bank,
First floor, Civil Lines Nagpur- 440001

COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro House, 28/2, CK Naidu Marg, Anand Nagar,
Civil Lines, Nagpur - 440 001
Phone No: 07122554217

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: -

TITLE: OVERALL SINGLE LINE DIAGRAM

SCALE: NTS	DATE: 22.06.17	STATUS: -	SHEET NO :- 2 OF 2	REVISION NO:

DRG NO: PWB03-S&W-EL-PES-XXX_XX_SLD-0001

06

NAGPUR METRO

plot scale 50mm

TBA

MAHARASHTRA METRO RAIL CORPORATION LIMITED (MAHA-METRO)

NAGPUR METRO RAIL PROJECT-PHASE-II

DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF RECEIVING CUM AUXILIARY MAIN CUM TRACTION SUB STATIONS INCLUDING EHV CONNECTION FROM GRID SUBSTATION, 33 KV CABLE NETWORK, ASS & SCADA SYSTEM FOR NAGPUR METRO RAIL PHASE-II PROJECT

CONTRACT NO.
N2-031/TR-03/2023

PART 2: WORKS REQUIREMENTS
SECTION VI-C: TENDER DRAWINGS

Ph-1 33kV cable GTP

Sterlite Power

33kV, 240 sq. mm. (UA) Cables Statement

SN	Indications	Unit	Expected Values	STERLITE POWER
1	Manufacturer			STERLITE POWER TRANSMISSION LIMITED
2	Cable size	Sqmm		240
3	Cable type	XLPE/PVC		ALUMINIUM/XLPE/CWS/PVC (A2XY FRLS)
4	Voltage grade (Uo / U (U2)	kV	19/33 (36)	19/33 (36) OR 18/30 (36)
5	Reference standard		IEC 60502	IEC 60502-2-2014
6	Nos and cross sectional area of conductor			1C x 240
7	Conductor material		Cu or AL	Aluminium as per IEC 60228
8	Shape		Circular compact	Circular compact stranded
9	Class / standard		Class 2 / IEC 228	Class 2 / IEC 60228
10	Nominal diameter of conductor	mm		17.8 Approximate
11	Conductor screen materials		Extruded semi conducting compound	Extruded semi-conducting compound
12	Nominal thickness of conductor screen	mm		0.3
13	Insulation material	XLPE		XLPE
14	Nominal thickness of insulation	mm		8
15	Nominal diameter over insulation	mm		35.0 Approximate
16	Insulation screen material (non-metallic)		Extruded semi conducting compound	Extruded semi-conducting compound (Strippable)
17	Nominal thickness of insulation screen	mm		0.3
18	Insulation screen material (metallic)			Plain Copper Wire screen followed by Open Helix Copper Tape
19	Nominal thickness of tape	mm		0.05 (Open Helix Copper Tape with suitable gap)
20	Nos. and diameter of wires	No. / mm		22 /0.82
21	Cross sectional area	sq. mm		11.6 (Suitable to carry a fault current of 1 kA for 3 seconds)

22	Outer sheath material		Flame retardant Polyvinyl Chloride	FRLS PVC ST-2
23	Nominal thickness of outer sheath	mm		2.3 Nominal & 1.64 Minimum (Only minimum thickness is mandatory as per IEC 60502-2)
24	Nominal overall diameter (+/- 2mm)	mm		43.0
25	Minimum bending radius	mm		860
26	Max DC conductor resistance at 20°C	Ω/km		0.125
27	Max AC conductor resistance at 65°C	Ω/km		0.161 at 90°C & 0.149 at 65°C
28	Star resistance per phase at 50 Hz	Ω/km		0.116
29	Capacitance per phase	μF/km		0.226
30	Charging current per phase at Uo, 50Hz	A/km		1.35
31	Max current rating in air	A		411 at 50°C #
32	Max current rating in ground	A		326 at 35°C #
33	Max conductor temperature on continuous	°C	90	90
34	Max conductor temperature in short circuit	°C	250	250
35	Max short circuit current rating of Conductor			Conductor
i)	t = 0.1 sec	kA		52.00
ii)	t = 0.2 sec	kA		36.77
iii)	t = 0.3 sec	kA		30.02
iv)	t = 0.4 sec	kA		26.00
v)	t = 0.5 sec	kA		23.26
vi)	t = 1.0 sec	kA		16.44
36	Earth fault current capacity of screen	kA	1 kA for 3 sec	1 kA for 3 sec

CONTRACTOR / DDC

STERLING & WILSON PVT LTD.

NOT APPLICABLE

PROOFCONSULTANT

SYSTRA-AECOM-EGIS-RITES

NAGPUR METRO RAIL PROJECT

MAHARASHTRA METRO RAIL CORPORATION LTD

NAGPUR METRO

37	Length marking (length shall be marked with number at one meter intervals on the sheath)			Yes shall be provided through printing or embossing
38	Approx weight of cable	Kg/km		1900
39	Drum Material			Steel
40	Standard drum length	Meter		1000/1500 + 5%
41	Tests to be conducted as per Specification requirement			Yes as per IEC 60502-2-2014
42	'No Deviation' confirmation to the Technical Specification			No Deviation.Signed & stamped TS for 33 KV cables enclosed
	Embossing			"LOGO" "STERLITE POWER TRANSMISSION LIMITED" "XLPE CABLE" "18/30(36) KV" "A2XY FRLS" "1 X 240 AL" "YEAR" "MMRCL" "Phase Number"

- Depth of laying : 0.8 m & Thermal resistivity of soil : 1.5 K.m/W

*Cables shall be supplied in returnable steel drums only.

**Non Standard Length shall be 5% of the Order Quantity & no length less than 100 mtrs

FRLS PROPERTIES

Oxygen Index Test as per ASTM-D-2863

Specified Value : 29 Minimum

Temperature Index Test at 250 Deg.C as per ASTM-D-2863

Specified Value : Oxygen Index 21 Minimum

HCL Gas Immition as per IEC:754,Part 1

Specified Value : 20 % Maximum

Smoke Density Test as per ASTM-D-2843

Smoke Density Rating Maximum 60%

Flammability test as per IEC-332,Part 1

(Single Vertical Flame Test)

33kV, 240 sq. mm. (AR) Cables Statement

SN	Indications	Unit	Expected Values	STERLITE POWER
1	Manufacturer			STERLITE POWER TRANSMISSION LIMITED
2	Cable size	Sqmm		240
3	Cable type	XLPE/PVC		ALUMINIUM/XLPE/CWS/PVC/DAT/PVC (A2XTaY FRLS)
4	Voltage grade (Uo / U (U2)	kV	19/33 (36)	19/33 (36) OR 18/30 (36)
5	Reference standard		IEC 60502	IEC 60502-2-2014
6	Nos and cross sectional area of conductor			1C x 240
7	Conductor material		Cu or AL	Aluminium as per IEC 60228
8	Shape		Circular compact	Circular compact stranded
9	Class / standard		Class 2 / IEC 228	Class 2 / IEC 60228
10	Nominal diameter of conductor	mm		17.8 Approximate
11	Conductor screen materials		Extruded semi conducting compound	Extruded semi-conducting compound
12	Nominal thickness of conductor screen	mm		0.3
13	Insulation material	XLPE		XLPE
14	Nominal thickness of insulation	mm		8
15	Nominal diameter over insulation	mm		35.0 Approximate
16	Insulation screen material (non-metallic)		Extruded semi conducting compound	Extruded semi-conducting compound (Strippable)
17	Nominal thickness of insulation screen	mm		0.3
18	Insulation screen material (metallic)			Plain Copper Wire screen followed by Open Helix Copper Tape
19	Nominal thickness of tape	mm		0.05 (Open Helix Copper Tape with suitable gap)
20	Nos. and diameter of wires	No. / mm		22 /0.82
21	Cross sectional area	sq. mm		11.6 (Suitable to carry a fault current of 1 kA for 3 seconds)
22	Outer sheath material		Flame retardant Polyvinyl Chloride	FRLS PVC ST 2
23	Nominal thickness of outer sheath	mm		2.5 Nominal & 1.8 Minimum (Only minimum thickness is mandatory as per IEC 60502-2)
24	Nominal overall diameter (+/- 2mm)	mm		47.0
25	Minimum bending radius	mm		940
26	Max DC conductor resistance at 20°C	Ω/km		0.125
27	Max AC conductor resistance at 65°C	Ω/km		0.161 at 90°C & 0.149 at 65°C
28	Star resistance per phase at 50 Hz	Ω/km		0.121
29	Capacitance per phase	µF/km		0.226

15.12.17

15.12.17

PROJECT NAGPUR METRO RAIL PROJECT

CLIENT MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION

TITLE

SCALE 1:NA DATE 09.10.2017 STATUS

DRG NO

R2

30	Charging current per phase at Uo, 50Hz	A/km		1.35
31	Max current rating in air	A		411 at 50°C #
32	Max current rating in ground	A		326 at 35°C #
33	Max conductor temperature on continuous	°C	90	90
34	Max conductor temperature in short circuit	°C	250	250
35	Max short circuit current rating of Conductor			Conductor
i)	t = 0.1 sec	kA		52.00
ii)	t = 0.2 sec	kA		36.77
iii)	t = 0.3 sec	kA		30.02
iv)	t = 0.4 sec	kA		26.00
v)	t = 0.5 sec	kA		23.26
vi)	t = 1.0 sec	kA		16.44
36	Earth fault current capacity of screen	kA	1 kA for 3 sec	1 kA for 3 sec
37	Length marking (length shall be marked with number at one meter intervals on the sheath)			Yes shall be provided through printing or embossing
38	Approx weight of cable	Kg/km		2350
39	Inner sheath			PVC ST-2
40	Thickness of inner sheath (Approx.)	mm		0.92 Minimum
41	Armour			Double Aluminium tape
42	Armour dimension	mm		0.50 (Nominal thickness of each tape)
43	Drum Material			Steel

44	Standard drum length	Meter		1000/1500 ± 5%
45	Tests to be conducted as per Specification requirement			Yes as per IEC 60502-2-2014
46	'No Deviation' confirmation to the Technical Specification			No Deviation.Signed & stamped TS for 33 KV cables enclosed
	Embossing			"LOGO" "STERLITE POWER TRANSMISSION LIMITED" "XLPE CABLE" "18/30(36)KV" "A2XTaY FRLS" "1X240 AL" "YEAR" "MMRCL" "Phase Number"

- Depth of laying : 0.8 m & Thermal resistivity of soil : 1.5 K.m/W

*Cables shall be supplied in returnable steel drums only.

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FRLS PROPERTIES

Oxygen Index Test as per ASTM-D-2863

Specified Value : 29 Minimum

Temperature Index Test at 250 Deg.C as per ASTM-D-2863

Specified Value : Oxygen Index 21 Minimum

HCL Gas Immition as per IEC:754,Part 1

Specified Value : 20 % Maximum

Smoke Density Test as per ASTM-D-2843

Smoke Density Rating Maximum 60%

Flammability test as per IEC-332,Part 1
(Single Vertical Flame Test)

CONTRACTOR | CONTRACTOR / DDC

STERLING & WILSON PVT LTD.

NOT APPLICABLE

PROOFCONSULTANT

GENERAL CONSULTANT

SYSTRA-AECOM-EGIS-RITES

NAGPUR METRO RAIL PROJECT

CLIENT MAHARASHTRA METRO RAIL CORPORATION LTD

NAGPUR METRO

R1

15.12.17

MAHARASHTRA METRO RAIL CORPORATION LIMITED (MAHA-METRO)

NAGPUR METRO RAIL PROJECT-PHASE-II

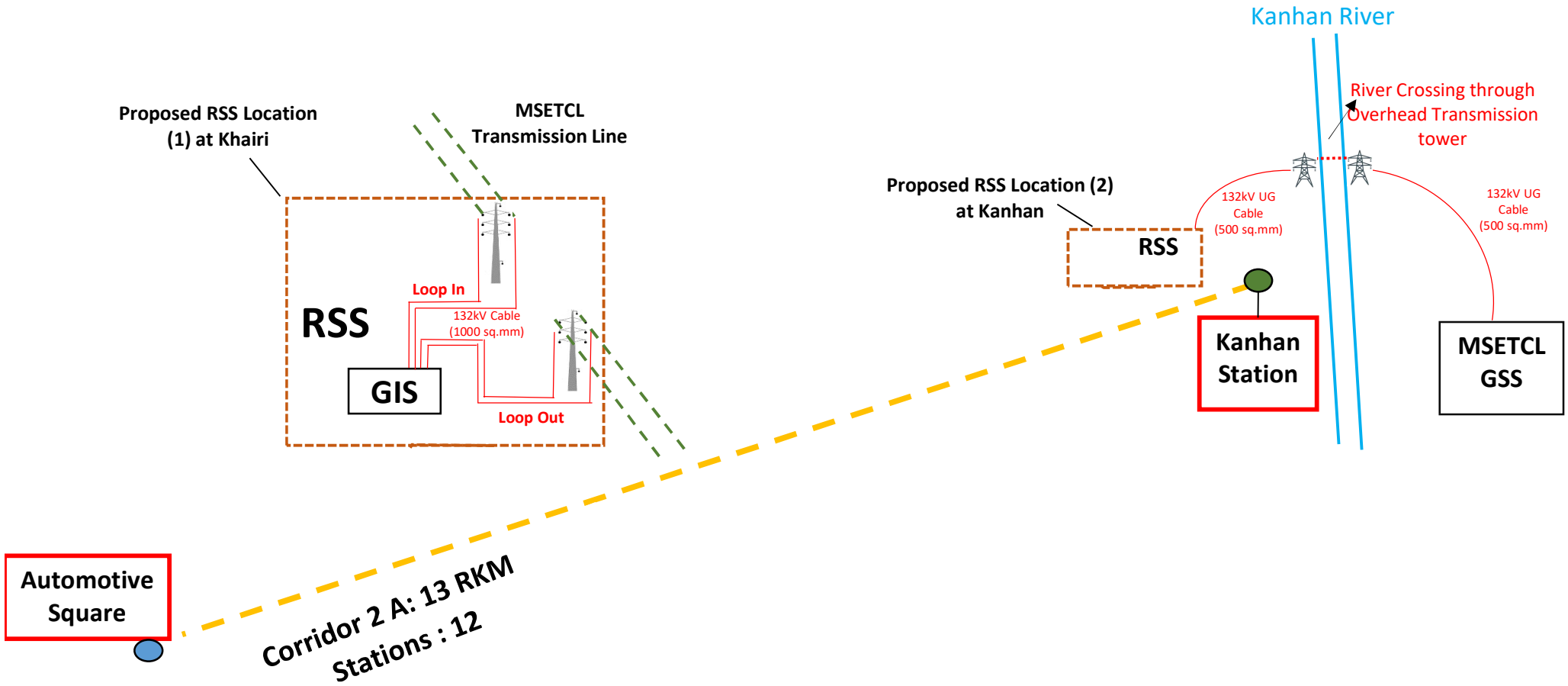
DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF RECEIVING CUM AUXILIARY MAIN CUM TRACTION SUB STATIONS INCLUDING EHV CONNECTION FROM GRID SUBSTATION, 33 KV CABLE NETWORK, ASS & SCADA SYSTEM FOR NAGPUR METRO RAIL PHASE-II PROJECT

CONTRACT NO.
N2-031/TR-03/2023

PART 2: WORKS REQUIREMENTS
SECTION VI-C: TENDER DRAWINGS

Sketch showing the interconnectivity between MSETCL GSS, LILO GIS, Metro RSS & OH/UG Cable.

Sketch showing the interconnectivity between MSETCL GSS, LILO GIS, Metro RSS & OH/UG Cable



MAHARASHTRA METRO RAIL CORPORATION LIMITED (MAHA-METRO)

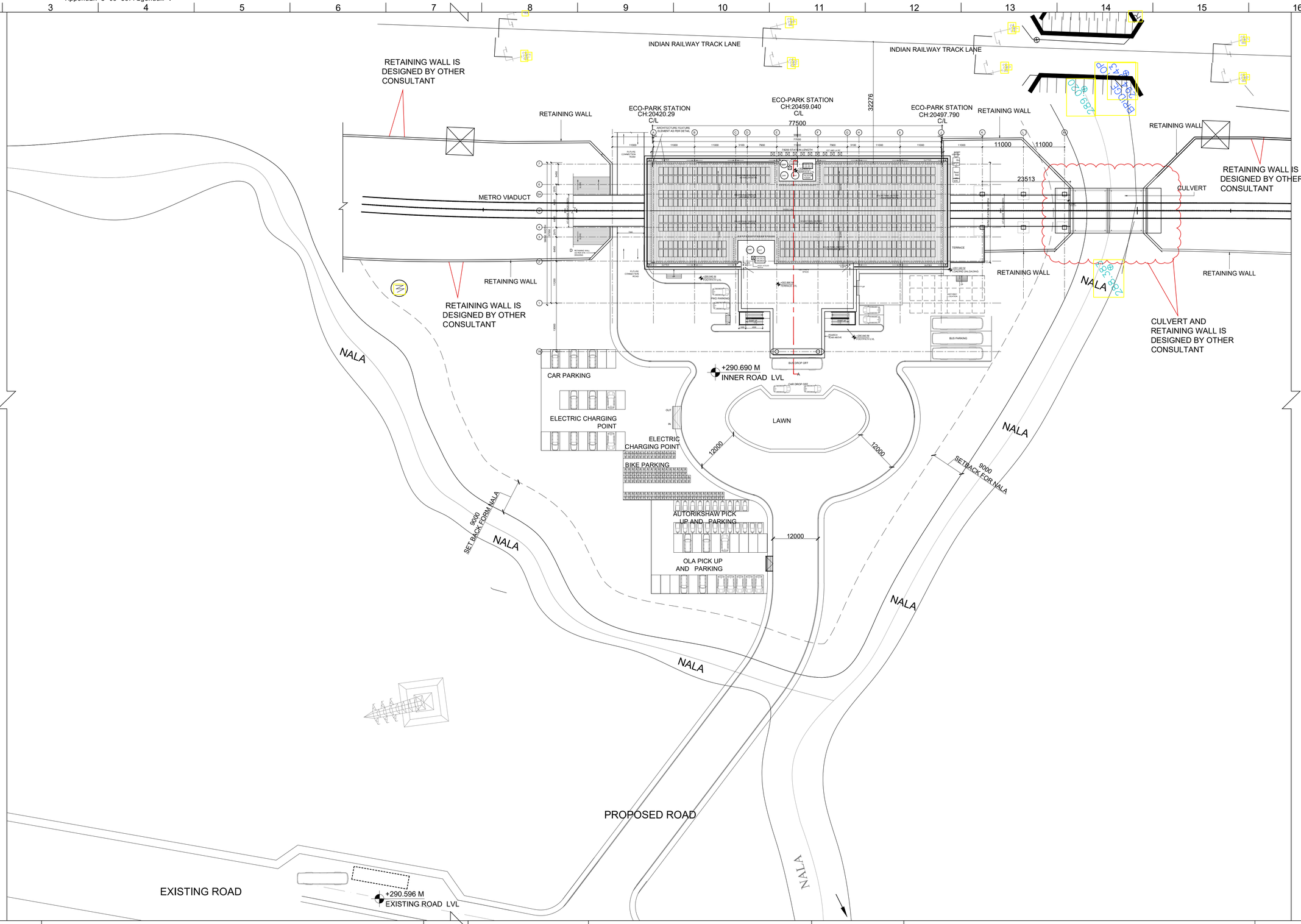
NAGPUR METRO RAIL PROJECT-PHASE-II

DESIGN, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF RECEIVING CUM AUXILIARY MAIN CUM TRACTION SUB STATIONS INCLUDING EHV CONNECTION FROM GRID SUBSTATION, 33 KV CABLE NETWORK, ASS & SCADA SYSTEM FOR NAGPUR METRO RAIL PHASE-II PROJECT

CONTRACT NO.
N2-031/TR-03/2023

PART 2: WORKS REQUIREMENTS
SECTION VI-C: TENDER DRAWINGS

Typical Ph-2 station drawing



01 GROUND/CONCOURSE LEVEL PLAN

SCALE: 1:150

NOTES:

1. ALL DIMENSIONS ARE IN MM
2. ALL LEVELS IN METERS FROM MEAN SEA LEVEL UNLESS OTHERWISE MENTIONED
3. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
4. ALL DIMENSIONS ARE INDICATIVE AND ARE SUBJECTED TO CHANGE DURING DETAILED DESIGN.
5. GRID DIMENSIONS FROM CENTER TO CENTER OF COLUMN

REV NO	DATE	DESCRIPTION	SIGN
B01	22.02.24	REVISED AS PER GC COMMENTS	

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IT IS CERTIFIED THAT THERE IS NO CHANGE IN THIS GFCD FROM THE ALREADY APPROVED CR DWG NO. "……REV……" APPROVED ON DATE ……

DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

consortium of enia & Mahendra raj

Sub-consultants:

KG-1/265, Vikaspuri, New Delhi, India
tel.: +91 9971 691803 / +91 9818 629588
s.manchanda@enia.in / a.joshi@enia.in
www.enia.in

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PROOF CONSULTANT

SIGN:
DATE:
NAME:

NOT APPLICABLE

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GENERAL CONSULTANT TO NMRP

SIGN:
DATE:
NAME:

SYSTRA-AECOM-CEG
GC to NMRC,
1ST Floor, Zero Mile Metro Station,
Near Zero Miles Stone, Civil Lines,
Nagpur,440001. Maharashtra.

COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010 Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: SITE PLAN

SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B01

DRG NO: R1AD01-ENI-AR-PRM-EPK-DRP-0001

ARCHITECTURE

plot scale 50mm

RETAINING WALL IS DESIGNED BY OTHER CONSULTANT

RETAINING WALL

ECO-PARK STATION CH:20420.29 C/L

ECO-PARK STATION CH:20459.040 C/L

ECO-PARK STATION CH:20497.790 C/L

ARCHITECTURE FEATURE ELEMENT AS PER DETAIL

CUT OUT IN SLAB ABOVE FOR MEP SERVICES

78200 STATION LENGTH

CET AND LA PIT

FUTURE CONNECTION ROAD

STAIRCASE-1

STAIRCASE-2

STAIRCASE-3

STAIRCASE-4

ESCALATOR-1

ESCALATOR-2

LIFT

UP TO PLATFORM

4500 QUEUING

8000 QUEUING

MAINTAINERS ROOM

PROPERTY DEVELOPMENT SPACE 330SQM

PAID CONCOURSE

SCR 52.0m²

PD ENTRANCE LOBBY

UNPAID CONCOURSE

CLEANERS ROOM

BABY CARE ROOM

PWD TOILET

FEMALE TOILET

MALE TOILET

DRINKING WATER

450 SUNKEN SLAB

screen chamber

Bio Digester

Reed Bed

UG tank

STAFF /LUNCH ROOM 31.00 SQM

S&T UPS 51.00m²

S.E.R. & T.E.R. 72.00M²

MAINTENANCE ROOM 27 SQM

ASS ROOM 211 m²

STORE ROOM 21.00 SQM

DOMESTIC TANK -1 &2 CAPACITY 25 KL EACH

FIRE TANK -1 50KL

FIRE TANK -2 50KL

PUMP ROOM BELOW

EARTHMAT LOCATION

+291.590 M FFL

+291.890 M FFL

+291.540 M LOADING UNLOADING

+290.840 M FOOTPATH LVL

+290.690 M INNER ROAD LVL

CULVERT AND RETAINING WALL IS DESIGNED BY OTHER CONSULTANT

CULVERT

RETAINING WALL

RETAINING WALL IS DESIGNED BY OTHER CONSULTANT

26750 STATION WIDTH

8500 AT GRADE TRACK WIDTH

8500 VIADUCT WIDTH

38050 WIDTH

SLOPE

PWD PARKING

ARCHITECTURE FEATURE ELEMENT AS PER DETAIL

CAR PARKING

ENTRANCE POARCH

CAR DROP OFF

POARCH SLAB ABOVE

BUS DROP OFF

BUS PARKING

01 GROUND/CONCOURSE LEVEL PLAN

SCALE: 1:150

NOTES:

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REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

consortium of enia & Mahendra raj

Sub-consultants:

KG-1/265, Vikaspuri, New Delhi, India
tel: +91 9971 691803 / +91 9818 629588
s.manchanda@enia.in / a.joshi@enia.in
www.enia.in

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PROOF CONSULTANT

SIGN:
DATE:
NAME:

NOT APPLICABLE

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GENERAL CONSULTANT TO NMRP

SIGN:
DATE:
NAME:

SYSTRA-AECOM-CEG
GC to NMRC,
1ST Floor, Zero Mile Metro Station,
Near Zero Miles Stone, Civil Lines,
Nagpur,440001. Maharashtra.

COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010 Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: AT GRADE LEVEL PLAN

SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPK-DRP-0002

ARCHITECTURE

plot scale 50mm

TBA

RETAINING WALL IS DESIGNED BY OTHER CONSULTANT

RETAINING WALL BELOW

ECO-PARK STATION
CH:20420.29
C/L

ECO-PARK STATION
CH:20459.040
C/L

ECO-PARK STATION
CH:20497.790
C/L

RETAINING WALL IS DESIGNED BY OTHER CONSULTANT

77500

99000

77000

11000 | 11000 | 11000 | 3100 | 7900 | 11000 | 7900 | 3100 | 11000 | 11000 | 11000

78200 STATION LENGTH

CUT OUT IN SLAB ABOVE FOR MEP SERVICES

ROOF ABOVE

+297.590 M PLATFORM LVL

DIGITAL CLOCK

PIDS

METAL STAIRS TO VIADUCT

DN

PLATFORM EDGE

℄ OF TRACK

℄ OF ALIGNMENT

PROPERTY DEVELOPMENT SPACE 400.38 SQM

4NOS. 400X200 MM CUTOUT IN TRACK PARAPET (FOR DETAIL REFER SPA DWG.)

EO EO EO

PLATFORM -1

PLATFORM -2

STAIRCASE-1

STAIRCASE-2

STAIRCASE-4

ESCALATOR-1

ESCALATOR- 2

CUTOUT

UP FROM GL

4500

8000

2700

1800

ROOF ACCESS HATCH

2150

2550

2500

LIFT

FHC

3050

3150

1525

2050

7150

8500 VIADUCT WIDTH

26750 STATION WIDTH

38050 WIDTH

37550

5450

4450

2575

6450

11200

13000

8625

9325

OPEN TO SKY TERRACE

+297.540 M TERRACE LVL

ODU UNITS

+291.540 M LOADING UNLOADING

SS RAILING WITH GLASS

EFO SLAB

TOM SLAB

TVM-1

CUT OUT IN SLAB ABOVE FOR MEP SERVICES

CUTOUT IN SLAB

UNPAID CONCOURSE BELOW

+291.590 M FFL

POARCH SLAB ABOVE

FUTURE CONNECTION ROAD

01 PLATFORM LEVEL PLAN

SCALE: 1:150

NOTES:

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4. ALL DIMENSIONS ARE INDICATIVE AND ARE SUBJECTED TO CHANGE DURING DETAILED DESIGN.
5. GRID DIMENSIONS FROM CENTER TO CENTER OF COLUMN

REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT / DETAILED DESIGN CONSULTANT & CONTRACTOR.
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DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

consortium of enia & Mahendra raj

Sub-consultants:

KG-1/265, Vikaspuri,
New Delhi, India
tel.: +91 9971 691803 / +91 9818 629588
s.manchanda@enia.in / a.joshi@enia.in
www.enia.in

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PROOF CONSULTANT

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NAME:

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GENERAL CONSULTANT TO NMRP

SIGN:
DATE:
NAME:

SYSTRA-AECOM-CEG
GC to NMRC,
1ST Floor, Zero Mile Metro Station,
Near Zero Miles Stone, Civil Lines,
Nagpur,440001. Maharashtra.

COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010
Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: PLATFORM LEVEL PLAN

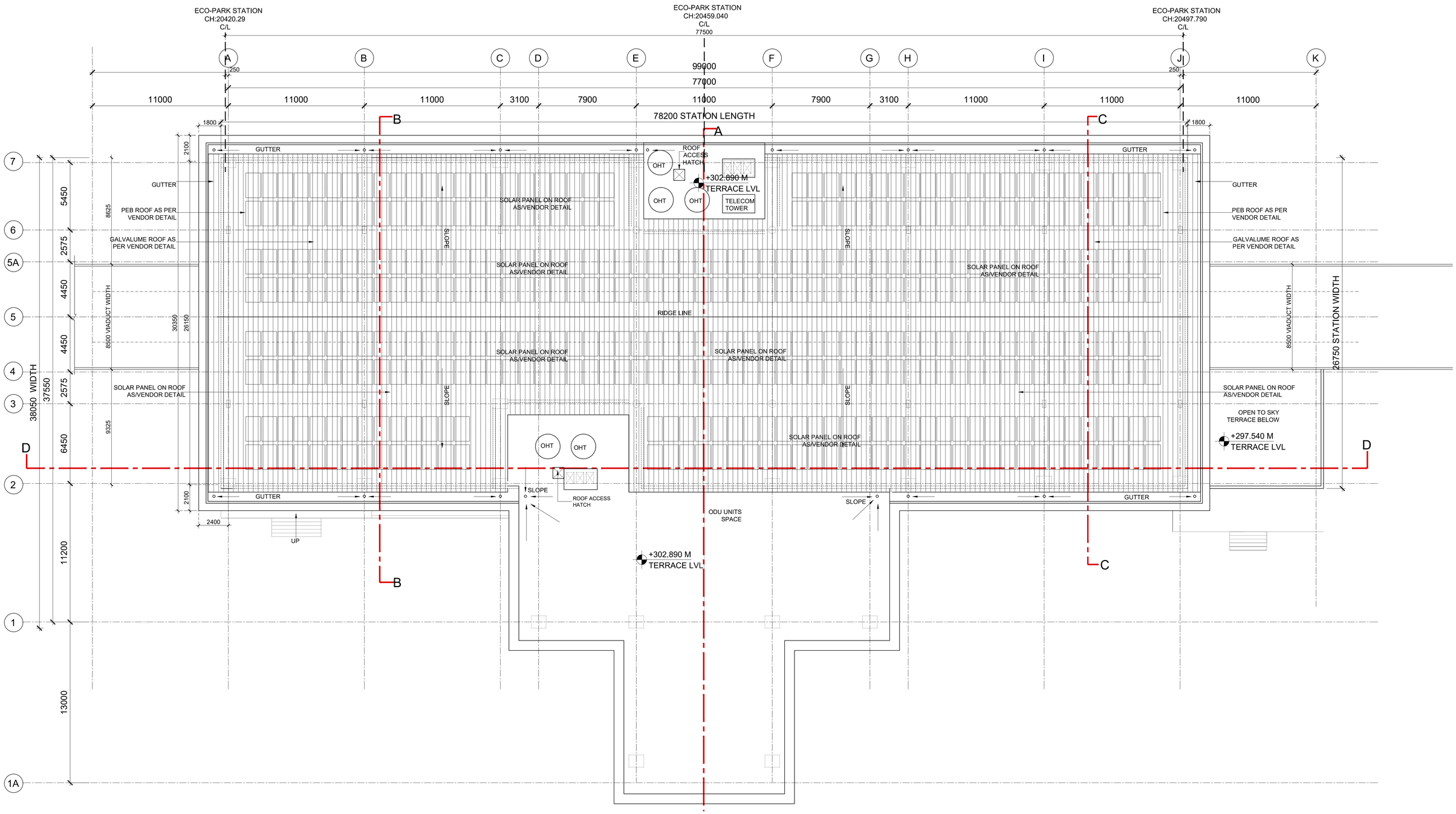
SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPK-DRP-0003

ARCHITECTURE

plot scale 50mm

TBA



01 ROOF LEVEL PLAN

SCALE: 1:150

NOTES:

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5. GRID DIMENSIONS FROM CENTER TO CENTER OF COLUMN

REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
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PROOF CONSULTANT

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GENERAL CONSULTANT TO NMRP

SIGN:
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SYSTRA-AECOM-CEG
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COUNTER SIGNED BY MAHARASHTRA METRO RAIL CORPORATION LTD.

PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010
Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: ROOF LEVEL PLAN

SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

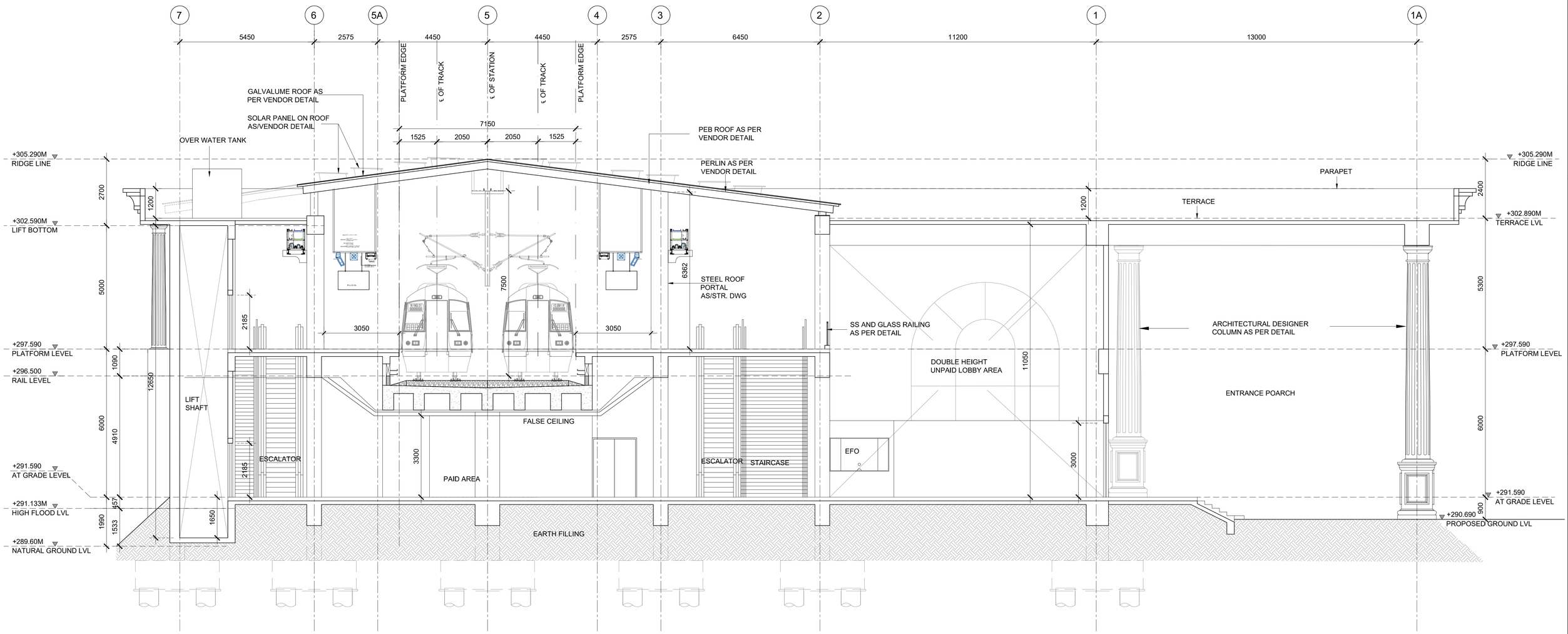
DRG NO: R1AD01-ENI-AR-PRM-EPK-DRP-0004

ARCHITECTURE

NAGPUR METRO

plot scale 50mm

TBA



01 SECTION AA

SCALE: 1:75

NOTES:

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REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

consortium of enia & Mahendra raj

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PROOF CONSULTANT
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DATE:
NAME:

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PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010
Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: SECTION AA

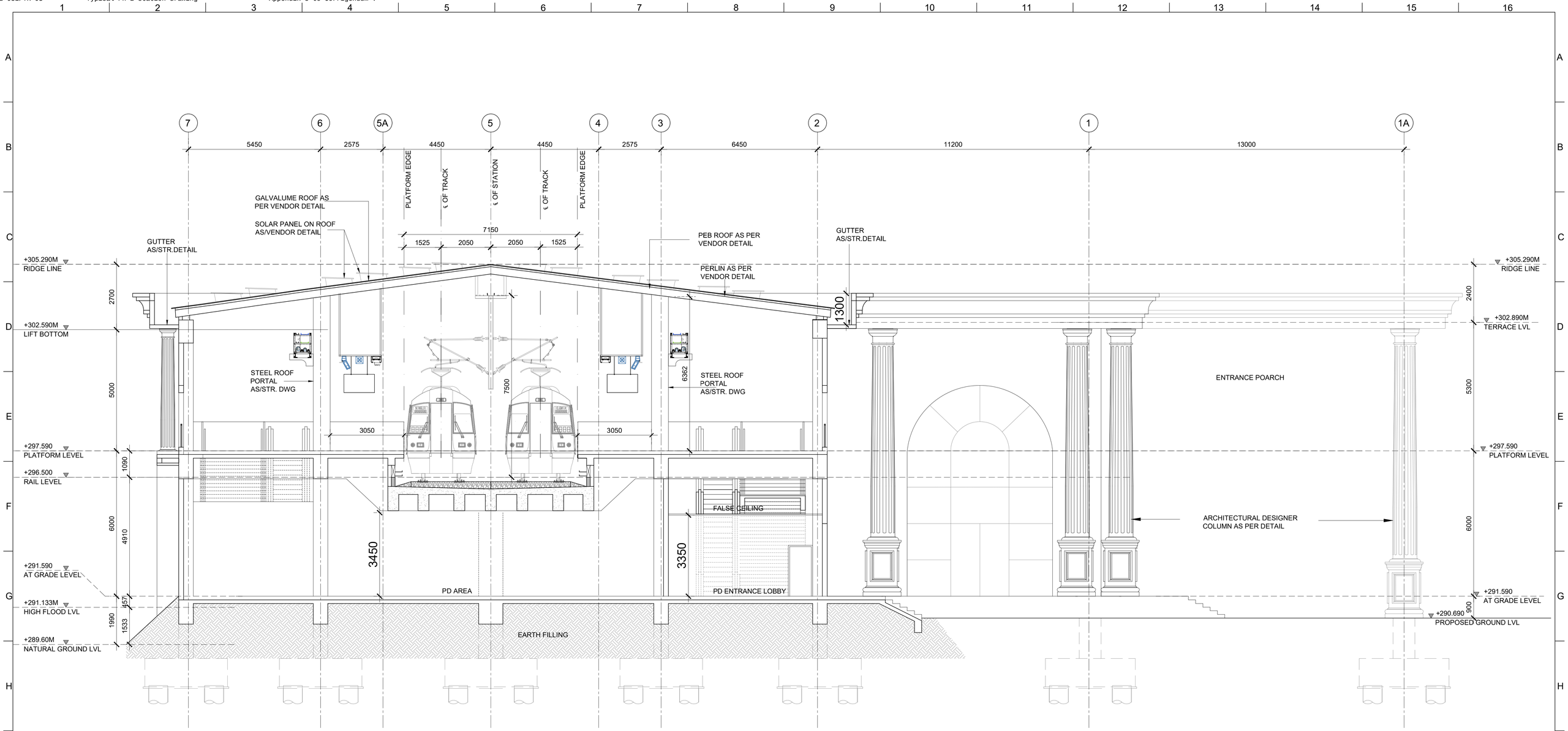
SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPK-DSC-0200

ARCHITECTURE

plot scale 50mm

TBA



section bb

01 SECTION BB
SCALE: 1:75

NOTES:

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REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

NOT APPLICABLE

consortium of enia & Mahendra raj

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PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010
Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: SECTION BB

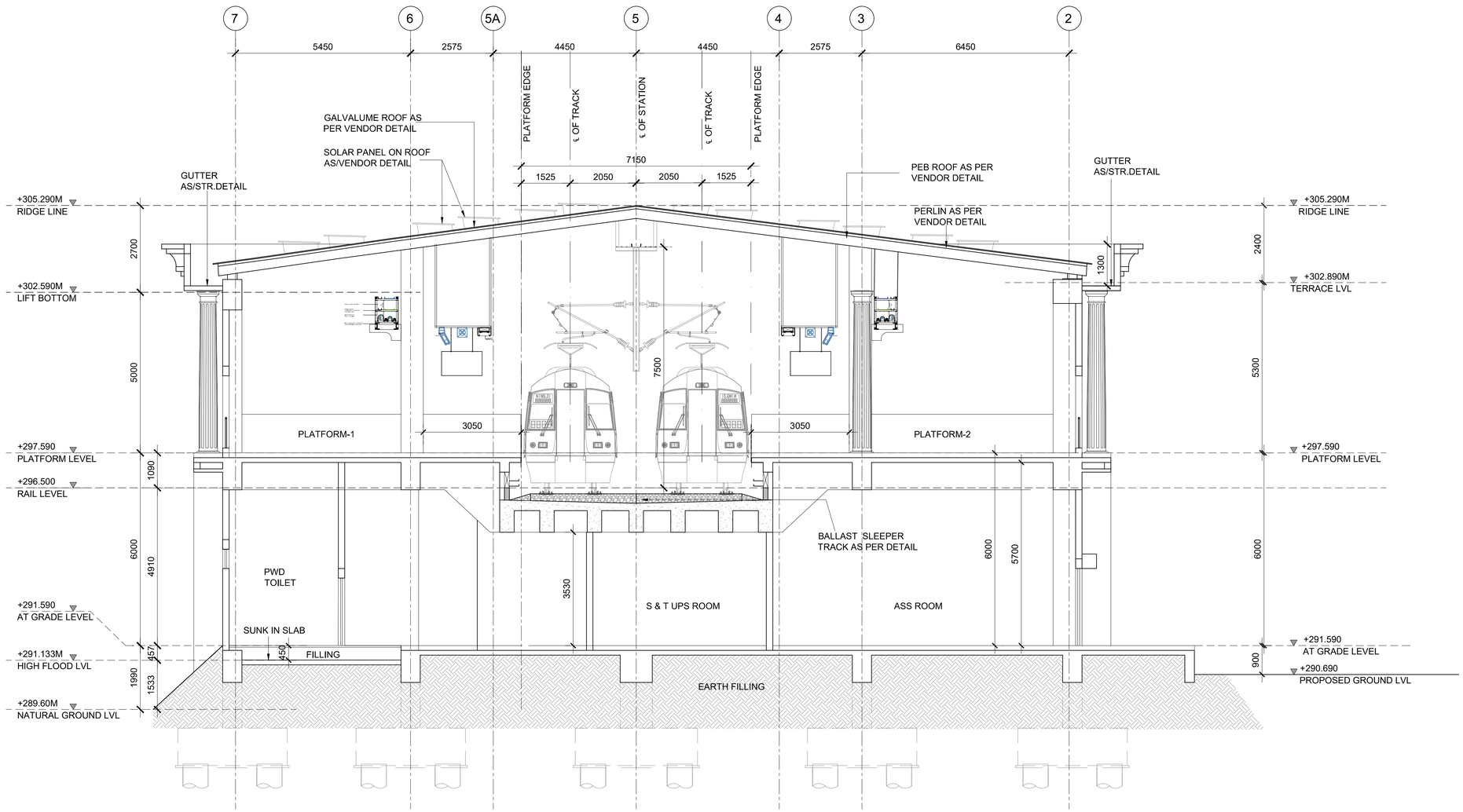
SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPk-DSC-0201

ARCHITECTURE

plot scale 50mm

TBA



01 SECTION CC

SCALE: 1:75

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REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
NAME: DB	NAME: DB	NAME: VP	NAME: SM	NAME:
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PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010
Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: SECTION CC

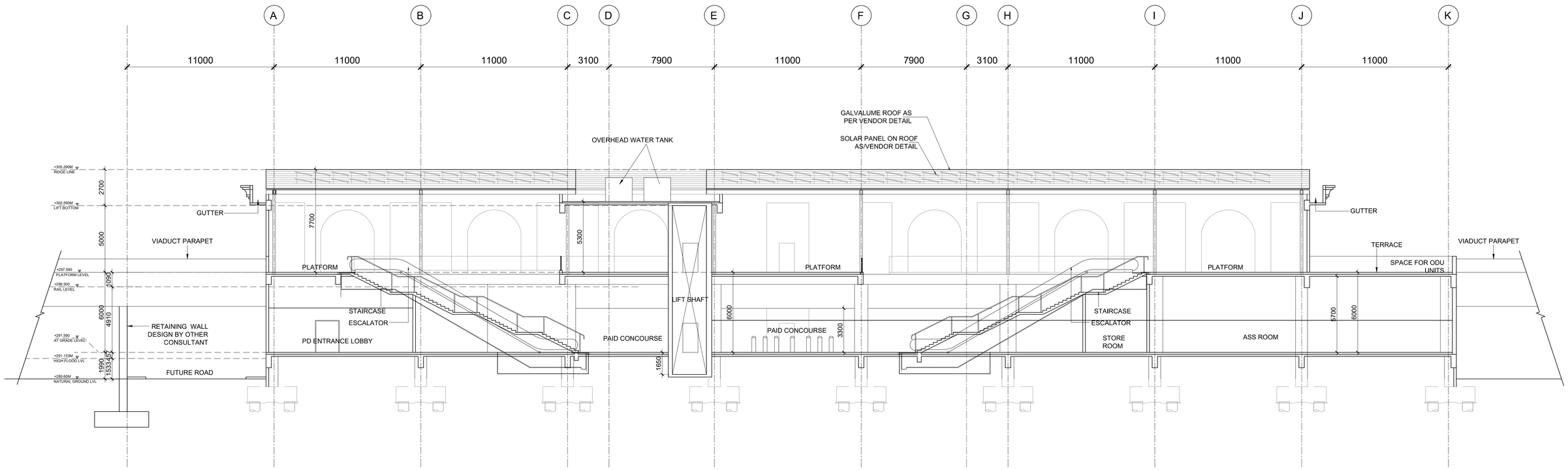
SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPK-DSC-0202

ARCHITECTURE

plot scale 50mm

TBA



01 SECTION DD

SCALE: 1:150

NOTES:

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5. GRID DIMENSIONS FROM CENTER TO CENTER OF COLUMN

REV NO	DATE	DESCRIPTION	SIGN
B03	22.02.24	REVISED AS PER GC COMMENTS	

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DDC / CONTRACTOR				CONTRACTOR / DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE: 22.02.24	DATE:
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PROJECT: NAGPUR METRO RAIL PROJECT
Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010 Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: ECO PARK STATION

TITLE: SECTION DD

SCALE: AS SPECIFIED | DATE: 22.02.24 | STATUS: SCHEMATIC | REVISION NO: B03

DRG NO: R1AD01-ENI-AR-PRM-EPK-DSC-0203

ARCHITECTURE

plot scale 50mm

TBA

PROPOSED C/L KHAIRI FATA CH: -5325.8

TOWARDS AUTOMOTIVE SQUARE

TOWARDS KANHAN RIVER

C/L KHAIRI FATA CH: -5247.315

C/L KHAIRI FATA CH: -5225m

AREA 150.0 Sqm

TBM EX P-41 ON TOP OF CULVERT MSL=290.155

LOCATION FOR BIODIGESTER BELOW (AREA AS/MEP)

ENTRY STRUCTURE 01

PLINTH 1 LEVEL LVL +1.600M

FOOTPATH LEVEL LVL +0.150 M

PLINTH 2 LEVEL LVL +0.790 M

SPACE FOR SURFACE PARKING 3 M WIDE PARKING LANE

SPACE FOR SURFACE PARKING 3M WIDE PARKING LANE

DA PARKING

LOCATION FOR PUMP ROOM BELOW (AREA AS/MEP)

ROAD LEVEL LVL +00 M

MAIN CARRIAGE WAY

2SP160 2SP161 2SP162 2SP163 2P164 2P165 2P166

℄ OF TRACK

℄ OF ALIGNMENT

MEDIAN

STATION BOX ABOVE

ROAD LEVEL LVL +0.0 M

FOOTPATH

FOOTPATH LEVEL LVL +0.150 M

TWO WHEELER PARKING

RETAIL

ENTRY STRUCTURE 02 PLINTH 1. LEVEL LVL +1.690 M ENTRY

PLINTH LVL +0.79

SPACE FOR CYCLE PARKING

CYCLE PARKING

UP TO MEZZ

LOCATION FOR EARTH MAT BELOW (AREA AS/MEP)

PROPOSED STATION CENTER

REVISED ALIGNMENT OF BUDDHIST

MARUTI SUZUKI AUTOMOTIVE MANUFACTURING PLANT

NOTES:
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REV NO	DATE	DESCRIPTION	REMARKS
REV.03	29.01.2024	Concept Plan: Change in Land Parcel vide mail dated 17.01.2024.	
REV.02	08.01.2024	Concept Plan: Change in Land Parcel vide mail dated 05.01.2024.	
REV.01	21.12.2023	Concept Plan: Change in Land Parcel vide mail dated 01.12.2023.	
REV.0	16.11.2023	Concept Plan Ref. As/ Alignment & Land Profile received via mail dated 18.09.2023	

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DDC				DDC
SIGN:	SIGN:	SIGN:	SIGN:	SIGN:
DATE: 29.01.2024	DATE: 29.01.2024	DATE: 29.01.2024	DATE: 29.01.2024	DATE: 29.01.2024
NAME: INDU	NAME: POOJA LAKHCHAURA	NAME: JANNU TYAGI	NAME: JAVED SAROSH ZAIDI	NAME: LOKESH KUMAR TYAGI
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY	ACCEPTED BY

DETAIL DESIGN CONSULTANT:

LKT ENGINEERING CONSULTANTS LTD.

LKT HOUSE
WZ-62, 63, 64 Ugrasain Market,
Ashok Nagar, Near Tilak Nagar Police Station,
New Delhi-110018

Phone : 011-455 65818
Email : info@lktengineering.com
Web : www.lktengineering.com

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Metro Bhavan, Metro Landra, Opp. Ambedkar College, Nagpur - 440010 Maharashtra, India

CLIENT: MAHARASHTRA METRO RAIL CORPORATION LTD.

LOCATION: KHAIRI FATA STATION

TITLE: SITE PLAN

SCALE: 1:300 DATE: 29.01.2024 STATUS: Conceptual design

DRG NO: NMRP-01-LKT-R2A-ST-04-KHRF-SP-1002

REVISION NO: REV.03

ARCHITECTURE

plot scale 50mm

TBA