

BANGALORE METRO RAIL CORPORATION LIMITED



Driving Bangalore Ahead

TENDER DOCUMENT

IT Network Infrastructure Revamp at Stations and Depots

TENDER NO. BMRCL/O&M/IT/OT-01/2022

Volume 1

QUALIFICATION OUM TECHNICAL PACKAGE

OCT 2022

BANGALORE METRO RAIL CORPORATION LIMITED

BMRCL Metro Rail Depot,

Old Madras Road, Near NGEF Bus Stop,

Baiyappanahalli, Bangalore - 560038

Karnataka, India



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Tender No: BMRCL/O&M/IT/OT-01/2022		
Description of Work: IT Network Infrastructure Revamp at Stations and Depots		
Sl.No.	Description	
1.	Estimated Value of Work	INR 24,65,61,295 /- (Indian Rupees Twenty Four Crore Sixty Five Lakhs Sixty One Thousand Two Hundred and Ninety Five only)
2.	Earnest Money Deposit / Tender Security	Rs. 24,65,613 /- (Indian Rupees Twenty Four Lakhs Sixty Five Thousand Six Hundred and Thirteen only)
3.	Completion Period	03 Months
4.	Cost of Tender Document (Non-refundable)	INR 59,000 /- [50,000 +9,000 (GST@18%)]
5.	Online Sale of Tender Documents	From 28/10/2022 until midnight of 16/11/2022
6.	Last date for seeking clarification as per Section-10, Annexure-6	15/11/2022 upto 17.30 Hrs (IST)
7.	Date & time of pre bid meeting	14/11/2022 at 11.30 Hrs (IST)
8.	Date and Time for submission of Tender	On 23/11/2022 from 11.00 Hrs (IST) to 15.00 Hrs (IST)
9.	Date and Time of opening of Tender (First and Second Cover)	On 23/11/2022 at 15.30 Hrs (IST)
10.	Date and Time of opening of Tender (Third Cover)	will be intimated to the Qualified Tenderers
11.	Purchase of Tender documents	Tender documents can be downloaded from BMRCL's website by making payment through online Gateway or by depositing DD/Pay Order in BMRCL office.
12.	Place of Submission & Opening of Tenders	Office of the ED (O&M), Bangalore Metro Rail Corporation Ltd (O&M Wing), Admin Building, Baiyappanahalli Depot, S V Road, Bangalore – 560 038, Karnataka, India.
13.	Address for communication	The Manager (Tele & AFC, IT), Bangalore Metro Rail Corporation Ltd., Admin Building, Baiyappanahalli Depot, S V Road, Bangalore – 560 038, Karnataka, India. Ph No : +91-9449874570 Landline No: 080-25191103 Email Id : vinaykumar@bmrc.co.in



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SECTION 1: NOTICE INVITING TENDERS (NIT)

Tender No: BMRCL/O&M/IT/OT-01/2022.

Date: 28-10-2022

1. Bangalore Metro Rail Corporation Ltd (BMRCL) invites Tenders (under Single stage- Two envelope System) from eligible Domestic Tenderers, having work experience in any Central Govt/State Govt/PSU's/Govt bodies/ MES/ Railway/ CPWD /KPWD/ BMRCL and in any Private Limited Companies/Public Limited Companies for the works detailed in the Table below.

Tender No.	Name of work	Estimated value of work (excluding GST) (Rs)	Earnest Money Deposit / Tender Security (Rs.)	Cost of Tender document (Rs.)	Period of completion
1	2	3	4	4	5
BMRCL/O&M/IT/OT-01/2022.	IT Network Infrastructure Revamp at Stations and Depots	24,65,61,295 /-	24,65,613/-	59,000 /- [Rs.50,000+9000 GST @ 18%]	03 Months

2. The Tenderers shall submit Tenders for whole of the Works. The Tenderers are required to submit three separate sealed covers, one containing the '**Earnest Money Deposit / Tender Security**', and the Second Cover containing the Form of Tender and the details of their capability to undertake the Tender (as detailed in ITT Clause 2 and 3), any other submissions as per requirements of Tender Document and signed Tender document, and the Third Cover containing priced Bill of Quantities.
- The First Cover containing the '**Earnest Money Deposit / Tender Security**' shall be opened first.
 - The Second cover will be opened only when the 'EMD' has been found acceptable, and
 - The Third Cover will be opened only of those Tenderers who are found to be qualified to execute the tendered work.
- The Tenderers are advised to note the minimum **Qualification Criteria specified in Clause 3** of the **Instructions to Tenderers** to qualify for award of the Contract.

3. (a) Tenderers can download the Non-transferable Tender document against online payment of a non-refundable fee of INR 59,000.00 [50,000.00+9000.00(GST@18%)] from BMRCL's website www.bmrc.co.in during the period mentioned in 'Key Details'.

Procedure for Tenderers opting for online purchase of Tender documents:

- Visit web site: www.bmrc.co.in
 - Register online (one time process).
 - Make payment through Gate Way as available in the website.
 - Once payment is successful, Download complete Tender document.
 - Frequently check website and also registered E-mail for any Addendum/ Corrigendum/ Answered Pre-bid queries.
 - The Tender submittals containing "**Earnest Money Deposit / Tender Security**", "**Qualification cum Technical Package**" and "**Financial Package**" shall be sealed in separate covers as described in ITT clause 16.1 & 16.2 and should be submitted on the date, time and place as mentioned in 'Key Details'.
- (b) Alternatively, the Tenderers can also obtain **login password** for downloading Tender document, from the Registered Office of 'Bangalore Metro Rail Corporation Ltd', (O&M Wing), Admin building, Baiyappanahalli Depot, S V Road, Bangalore-560038, during all



working days from 11.00 to 17.00 Hours (IST) of sale period of Tender document as mentioned in 'Key Details', on submission of a requisition letter and a non-refundable Tender fee in the form of Crossed 'Demand Draft' or 'Pay Order' issued by an Indian Scheduled Bank (excluding Co-operative Banks) or by a Scheduled Foreign Bank as defined in Section-2 (e) of RBI Act-1934 read with Second Schedule drawn in favour of '**Bangalore Metro Rail Corporation Limited**', payable at Bangalore.

Procedure for Tenderers opting for downloading of Tender documents using Login password against 'Demand Draft' or 'Pay Order'.

- i. Visit web site: www.bmrc.co.in
 - ii. Enter login pass word obtained from BMRCL on submission of 'Demand Draft' or 'Pay Order'.
 - iii. Download complete Tender document.
 - iv. Frequently check website and also registered E-mail for any Addendum / Corrigendum / Answered Pre-bid queries.
 - v. The Tender submittals containing "**Earnest Money Deposit / Tender Security**", "**Qualification cum Technical Package**" and "**Financial Package**" shall be sealed in separate envelopes as described in ITT clause 16.1 & 16.2 and should be submitted on the date, time and place as mentioned in 'Key Details'.
4. One set of downloaded Tender documents along with Employer's clarification on queries including addenda (if any) are to be submitted with the Tender submittal, untampered, duly signed and stamped on each page.
 5. Proof of payment of Tender fee / e-receipt shall be submitted along with 'Qualification cum Technical Package'.
 6. Micro and Small Enterprises registered with NSIC under a single point vendor registration scheme shall be facilitated by providing tenders sets free of cost and exempted from EMD." Under the provision stated in Circular No: FD130 Exp-12/2015 by Government of Karnataka.
 7. Tenders must be accompanied by **Earnest Money Deposit / Tender Security** specified in the Tender document drawn in favour of "Bangalore Metro Rail Corporation Ltd". Earnest Money Deposit / Tender Security will have to be in any one of the form of Demand Draft /Pay Order / Banker's Cheque/Bank Guarantee, payable and extendable at designated branch in Bangalore and shall have to be valid for **45 days** beyond the validity of the Tender (i.e. 165 days from the date of submission of tender)..
 8. Tenders shall be submitted in the office of the "The Executive Director (O&M), O & M Wing, Baiyappanahalli Depot, Bangalore Metro Rail Corporation Ltd at the address given, on 23-11-2022 from **11.00 Hrs. to 15:00 Hrs.** On the same day at **15:30 Hrs.** the tender will be opened. First, the Outer Cover will be opened. On opening of the Outer Tender Cover, it will be checked whether it contains Tender Securing Declaration in the First Cover, Second Cover (Qualification cum Technical Package), and Third Cover (Financial Package) separately or not.

IN CASE THEY ARE NOT SEPARATELY SEALED PROPERLY, THE TENDER OF SUCH TENDERER SHALL BE SUMMARILY REJECTED (as detailed in ITT Clause 16).

Further, First Cover (**Earnest Money Deposit / Tender Security**) will be opened in the presence of the Tenderers or their authorized representative who wish to attend. Thereafter, Second Cover (Qualification cum Technical Package) will be opened, whose **Earnest Money Deposit / Tender Security** has been found acceptable as per clause 14 of ITT.

If the office happens to be closed on the date of receipt of the Tenders as specified, the Tenders will be received and opened on the next working day at the same time and venue.



9. Other details can be seen in the Tender documents and also available on web site: www.bmrc.co.in.
10. Late Tenders, i.e., Tenders received after the stipulated time of submission of Tender on the specified date, shall not be accepted under any circumstances.
11. The **Earnest Money Deposit** is to be submitted as per Clause 14 of the 'INSTRUCTIONS TO TENDERERS'.
12. The Employer requires that Tenderers and Contractors observe highest standard of ethics during the procurement and execution of the Contract. In pursuance of this policy, The Employer;
 - (a) will reject the Tender for the Work or rescind the Contract, if the Employer determines that the Tenderer / Contractor has engaged in corrupt or fraudulent practices.
 - (b) will declare a Contractor ineligible, either indefinitely or for a stated period of time, to be awarded a Contract, if the Employer, at any time, determines that the Tenderer or the Contractor has engaged in corrupt or fraudulent practices in competing for, or in executing, the Contract.
13. All Tenderers are hereby cautioned that Tenders shall be submitted without any deviation, alteration or modification. Tenders containing any deviation from contractual terms and conditions, specifications and other requirements shall be considered as non-responsive and shall be liable for rejection.
14. BMRCL reserves the right to accept or reject any or all Tenders without assigning any reason. No Tenderer shall have any cause of action or claim against BMRCL for rejection of his Tender.
15. A firm after purchase of the Tender document in their name can submit the Tender in their firm name only.
16. Addendum / Corrigendum, if any will be intimated to all the Tenderers and also be will uploaded on web site: www.bmrc.co.in.
17. Last date for submission of queries in writing by Tenderers- 15-11-2022 up to 17:30 Hrs. and Pre-bid meeting shall be held on 14-11-2022 at 11.30 Hrs. at the " Office of the Executive Director (O&M),Bangalore Metro Rail Corporation Ltd (O&M Wing),Admin building, Baiyappanahalli Depot, S V Road,Bangalore-560038," Karnataka, India.
18. For further clarification details, contact The Manager (Tele & AFC, IT)) O&M wing, Admin Building, Baiyappanahalli Depot, S V Road, Bangalore – 560 038, on Ph No : +91-9449874570, Email: vinaykumar@bmrc.co.in

Executive Director (O&M)
Bangalore Metro Rail Corporation Limited



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SECTION – 2 - INSTRUCTIONS TO TENDERERS

A. GENERAL

1. Description of the work

Bangalore Metro Rail Corporation limited (BMRCL), a Special Purpose Vehicle (SPV) established under the Companies Act, 1956 (hereinafter referred to as "BMRCL" or "the Company" or "the Employer" or "the Client"), invites Tenders following Single Stage-Two envelope Tender procedure from the eligible Tenderers for **"IT Network Infrastructure Revamp at Stations and Depots"**. (Hereinafter referred to as "the works") as per terms and conditions contained in this Tender documents.

2. Eligible Tenderers

2.1 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka or BMRCL.

2.2 This is a Domestic Competitive Bidding. Sole Proprietorship Firm/ Partnership Firm/Private Limited Company/ Public Limited Company are eligible to apply

2.3 Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. The Competent Authority for registration will be the Registration Committee constituted by the Department for Promotion of Industry and Internal trade (DPIIT). **For Details** refer to Order (Public Procurement No.1, F.No.6/18/2019-PPD) dated 23/07/2020 issued by Ministry of Finance, Department of Expenditure, Public Procurement Division.

2.3.1 This clause will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects.

2.3.2 All the participating tenderers are mandatorily required to submit a certificate along with the tender regarding their compliance with this clause/order in regard to restrictions of procurement from the bidders from countries sharing land borders with India as per the format included in Annexure-7 to these Contract Conditions. If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law.

2.4 **Tenders from Joint ventures are not acceptable.**

2.5 The Tenderer should not have been blacklisted / debarred by any Government / Government undertaking / semi Government / Govt. Controlled Institutions/projects/ Reputed private organizations in India during last five (5) years. Also the Tenderer should not have rescinded the works after award of the contract during last five (5) years. The Tenderer shall provide an Undertaking as provided at Annexure – 4 of Section-10.

Note: Last five (5) years shall be counted from 28 days prior to the date of submission of the Tender.

2.6 The tenderer shall have the quality standards of ISO 9001:2015, ISO/IEC 20000-1:2018, ISO/IEC 27001:2013 and CMMI Level-3 or better for its quality management systems, information security management systems and service management systems. Relevant documents substantiating the same shall be submitted.



3. Qualification of the Tenderer

Tenderers who meet the below specified minimum Qualification Criteria will only be qualified.

3.1 Tender Capacity:

Eligible Tenderers will be qualified only if their available Tender capacity is more than the total Tender value. The available Tender capacity will be calculated as under:

$$\text{Assessed available Tender capacity} = (A \times N \times 1.5 - B)$$

Where;

A = Maximum value of works executed in any one year during the last five years (updated to 2022-23 price level) taking into account the completed as well as works in progress (Ref Section 3).

N = Number of years prescribed for completion of the works for which Tenders are invited.

B = Value, at 2022-23 price level, of existing commitments and on-going works to be completed during the next (12) Twelve months (i.e. period of completion).

Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the respective Employer in charge, not below the rank of an Executive Engineer or equivalent.

3.2 Work Experience:

3.2.1 The Tenderer should have executed the works / have experience in '**similar works**' in any of the following organizations during last five (5) years:

- (i) In any Metro Rail Corporation Limited/ Central Govt. / State Govt. / PSU's / Govt. Bodies / Military Engineering Service/ Railways. (or)
- (ii) In any Information Technology Parks / Public Limited Companies / Special Economic Zones.

3.2.2 The Bidder shall be

- (i) Original Equipment Manufacturer (OEM) of the Core and Access Level Layer 2/Layer 3 Network Switches
- or
- (ii) Public Sector Undertakings (PSUs) wholly or partially owned by the Central government, PSUs wholly or partially owned by the state government, Central Public Sector Enterprises or any other government bodies with Authorization from the OEMs of Core and Access Level Layer 2/Layer 3 Switch Manufacturers as per the ANNEXURE-8.

In any of the above 2 cases(i and ii), the Bidders themselves or the OEMs proposed by the Bidders should have supplied, installed and commissioned IT Networking System with Aggregation Switches, Core switches, DNS, DHCP, IPAM, Firewall and Access Control Systems with Time and Attendance Software in Metro Rail Stations/Depots in INDIA in the last Three(03) years. The Relevant Letter of Acceptance (LOA)/Work Orders/ Purchase Order copies shall be furnished. The Bidders shall provide the Manufacturer Authorization form as per ANNEXURE-8 for all the BOQ items.

3.3 All Tenderers shall provide the requested information accurately and in sufficient detail in **Section 3: Qualification Information.**

3.4 To qualify for award of this Contract,

- (a) Each Tenderer in its name should have in the last five financial years i.e. 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22 achieved in at least two financial years a minimum annual financial turnover of **Rs 4931.22 Lakhs.**



- (b) Each Tenderer in its name should have successfully completed or substantially completed similar works during last five (05) years either of the following:
- i) **One (1)** similar work costing not less than the amount equal to **Rs. 1232.80 Lakhs;**
 - ii) **Two (2)** similar works costing not less than the amount equal to **Rs. 986.24 Lakhs;**
 - iii) **Three (3)** similar works costing not less than the amount equal to **Rs. 739.68 Lakhs.**
- (c) Each Tenderer or the OEM should have executed in any one year during the last five years, (for a continuous period of 12 months), the minimum quantities of work are as follows;
- i) Core switch- 12 nos
 - ii) Aggregation switch – 318 nos
 - iii) Industrial Grade Optical Network Unit / Optical Network Terminal – 5200 nos
 - iv) Optical Fiber Cable - 6F/2F – 2700 kms
 - v) Fiber Splitter – 3450 nos
 - vi) Firewall – 6 no
 - vii) Cat6 cable – 18.72Km
 - viii) Access Control Systems with Time & Attendance– 936 nos
 - ix) DNS/DHCP and IPAM (5000 End points each) – 6 nos
 - x) Optical Line Terminal – 165 nos

Note: 1. “Similar Works” means **Installation and commissioning of IT Network Infrastructure including Core or Access Level Layer 2/Layer 3 Switches and related IT Systems with having obtained authorization from the OEM of the Core or Access Level Layer 2/Layer 3 Switches.**

2. **Substantially completed works** means those **works** which are at least **90% completed** as on the date of tender submission (i.e. gross value of **work** done up to the last date of submission is 90% or more of the original contract price) and continuing satisfactorily.

3. Last five (5) years shall be counted from 28 days prior to the date of submission of Tender.

4. Completion certificates for works issued by Private parties shall be supported by TDS (Tax Deducted at Source) certificates.

5. In case the Tenderer has executed works/contract for a client , which includes “other works in addition to **similar works**, then the Tenderer should provide a client certificate clearly indicating the amount of work done in respect of the “**similar work**” in support of work experience.

3.5 Each Tenderer should further demonstrate:

- a) Availability by owning of the required / specified key and critical equipment for this work; and can also be deployed on lease / hire basis for all works provided, the relevant documents for availability for this work are furnished.
 - a. OTDR - 02 Nos
 - b. Splicing Machine - 02 Nos
 - c. Visual Fault Locator – 02 Nos
 - d. Drilling Machine set – 02 nos
 - e. Scaffolding materials, Ladders and other tools etc., to cover 50 Mtrs long and height as required (Minimum 6.00M) – 1 set
- b) Liquid assets and /or availability of credit facilities of not less than **Rs 616.40 Lakhs** (Credit lines/ letter of credit/ certificates from banks) for meeting the fund requirement etc.



- 3.6 Not Used.
- 3.7 Not Used.
- 3.8 Even though the Tenderers meet the Qualification criteria in accordance with ITT Clause 3, they are subject to be disqualified if they have:
- (a) made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
 - (b) record of poor performance such as abandoning the works, not properly completing the Contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or
 - (c) Participated in the previous Tender for the same work and had quoted unreasonably high Tender prices and could not furnish rational justification.
- 3.9 Micro and Small Enterprises registered with NSIC under a single point vendor registration scheme shall be given in compliance to government of India's instructions to relax the condition of prior turnover & prior experience in all public procurements subject to their offer meeting of quality and technical specifications of the tender, BMRCL has decided that in case of offers from Micro & Small enterprises, the value/financial limits applicable for eligibility criteria for work experience and Eligibility criteria for average annual turnover (as mentioned in clause 3.4(a) & 3.4(b)) shall be 80% of the corresponding values for these criteria as mentioned in clause 3.4(a) & 3.4(b) above (subject to their offer meeting of quality and technical specifications of the tender).
- 3.10 The Tenderer shall mandatorily quote for all the BOQ items listed under the List of Mandatory Items 1.0 and shall mandatorily propose only one OEM for each of the items listed under Mandatory Items 1.0.
- 3.11 (a.) Non submission of the Prices for any of the BOQ Items .
or
(b.) Non submission of the details of the OEM and its products technical specifications for any of the BOQ items.
or
(c.) Non Submission of the relevant OEMs Metro Rail Experience (Having Supplied, Installed and Commissioned the Product in the Metro Rail Corporations in India)
or
(d.) Submission of More than One OEM for any of the BOQ item.
- Any of the 4 cases of (a.)(b.)(c.)(d.) above shall result in the rejection of the complete bid submitted by such Bidders.

4. **Cost of Tendering**

- 4.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender and BMRCL will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the Tender process.

B. TENDER DOCUMENTS

5. **Content of Tender documents**

- 5.1 Tendering procedures and Contract terms are prescribed in the Tender documents. The Tender document shall include:



Volume 1 : Qualification cum Technical Package

1. Notice Inviting Tenders (NIT)
2. Instructions to Tenderers (ITT)
3. Qualification Information
4. Form of Tender (FOT)
5. General Conditions of Contract (GCC)
6. Special Conditions of Contract (SCC)
7. Technical Specifications
8. Drawings
9. Proforma of Bank Guarantees
10. Annexures

Volume 2 : Financial Package

1. Priced Bill of Quantities.

- 5.2 The Tenderer is expected to examine all Instructions, Forms, Terms, and Specifications in the Tender documents. Failure to furnish all information required by the Tender documents or submission of a Tender not substantially responsive to the Tender documents in every respect will be at the Tenderer's risk and may result in rejection of its Tender.

6. Clarification of Tender Documents

- 6.1 A prospective Tenderer requiring any clarification of the Tender documents may notify the Employer in writing or email at the Employer's mailing address indicated in the Notice Inviting Tenders. The Employer will respond in writing (Letter or email) to any request for clarification of the Tender documents which it receives no later than date specified in "Appendix to form of Tender" (section-4). Written copies of the Employer's response (including an explanation of the query but without identifying the source of inquiry) will be sent to all prospective Tenderers who have received the Tender documents and also will be uploaded in BMRCL's website: www.bmrc.co.in.

6.2 Pre-bid meeting:

- 6.2.1. The Tenderer or his authorized representative is invited to attend a Pre-bid meeting held at the Place, date and time indicated in 'Appendix to Form of Tender'.
- 6.2.2. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage to enable the Tenderers to submit Tenders without conditions.
- 6.2.3. The Tenderer is requested to submit any questions in writing or email, as per the format attached as **Annexure-6**, to reach the Employer not later than the date specified in 'Appendix to Form of Tender'.
- 6.2.4. BMRCL will offer clarifications to the questions raised by the Tenderers and received by BMRCL (without identifying the source of enquiry) and the responses given will be transmitted to all purchasers of the Tender documents. Any modification of the Tender documents listed in ITT Sub-Clause 5.1 which may become necessary as a result of the Pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITT Clause 7.
- 6.2.5. Non-attendance at the Pre-bid meeting will not be a cause for disqualification of a Tenderer.

7. Amendment of Tender documents

- 7.1 At any time prior to the deadline for submission of Tenders, the Employer may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, modify the Tender documents by an amendment / addenda. The same also will be uploaded on BMRCL's website: www.bmrc.co.in.



- 7.2 All prospective Tenderers who have downloaded the Tender documents will be notified of the addenda in writing or by email or by fax, and will be binding on them. The same also will be uploaded on BMRCL's website: www.bmrc.co.in.
- 7.3 To give prospective Tenderers reasonable time in which to take an amendment into account in preparing their Tenders, the Employer shall extend as necessary the deadline for submission of Tenders, in accordance with ITT Sub-Clause 17.2 below.
- 7.4 Without prejudice to the order of preference, the provisions in such addenda shall take priority over the Tender document issued previously. The Tenderers should acknowledge receipt of such addenda and list them in the tender submittals.
8. **Language of Tender**
- 8.1 The Tender prepared by the Tenderer, as well as all correspondence and documents relating to the Tender exchanged by the Tenderer and the Employer, shall be in English language. Supporting documents and printed literature furnished by the Tenderer may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language in which case, for purposes of interpretation of the Tender, the translated version in English shall govern.

C. PREPARATION OF TENDERS

9. Documents comprising the Tender

- 9.1 The Tender duly filled and submitted by the Tenderer shall be in three covers and shall contain the documents as follows:

9.1.1 First Cover: EMD / Tender Security

- a) Earnest Money Deposit (EMD) / Tender Security (in accordance with ITT Clause 14);

9.1.2 Second Cover: Qualification cum Technical Package

- a) The Form of Tender (in the format indicated in Section 4);
- b) Qualification Information Form and Documents (in accordance with Section 3) and any other submissions as per requirements of Tender Document;
- c) "One set of complete Tender documents downloaded from BMRCL's website (including Employer's clarification and addenda, if any). in accordance to ITT clause 16.8";
- d) Proof of payment of Tender fee / e-receipt.

and any other documents required to be completed and submitted by Tenderers in accordance with these instructions. **The documents listed under Sections 3 and 4 shall be filled in without exception.**

9.1.3 Third Cover: Financial Package

- a) Priced Bill of Quantities (in the format indicated in Volume 2);

9.2 Not used.

10. Form of Tender

The Tenderer shall complete the 'Form of Tender' furnished in the Tender documents and submit duly signed and stamped along with the Qualification Cum Technical Package. The Tenderer shall submit the Priced Bill of Quantities indicating the percentage (above or below or at par) and amount with Financial Package.

11. Tender prices

- 11.1 The Contract shall be for the whole of the Works as described in Clause 1.0 of ITT, based on the Bill of Quantities submitted by the Tenderer.

- 11.1.1 The Quoted price shall be inclusive of Labour Cess Charges and duties under applicable law but exclusive of CGST and SGST as specific under GCC Clause 39. BMRCL shall pay the output CGST and SGST as invoiced by the contractor to BMRCL.

The Tenderer shall ascertain applicable duties under applicable Acts and shall be included in the quoted price but excluding the CGST and SGST.

- 11.1.2 The evaluation and comparison of Tenders shall be made accordingly by BMRCL. No claim will be entertained on this account after acceptance of the Tender or during the currency of the Contract.

- 11.1.3 **Income Tax (IT) deduction:** As per the prevailing rate, IT shall be deducted and remitted to the Income Tax authorities and Form 16A shall be furnished by BMRCL in proof of remittance to IT Department. For availing lower deduction of Income Tax, necessary certificate for each financial year issued by the Income Tax Authority shall be furnished by the Contractor, failing which IT at the maximum rate will be deducted.

- 11.2 The Tender is a **Percentage Tender**. The Cost of all the individual items shall be computed for the entire work and the Tender premium (above or below or at par) on the Total (Estimated) cost shall be quoted. Any additional item/s not found in the BOQ and if it is required to be executed for completion of the work under this Contract, the rate for which shall be as per KPWD Schedule of Rates of the respective year above or below Tender premium which the BMRCL has accepted. If the item required is not found in any of the Schedule of Rates of KPWD or CPWD, then rate shall be worked out as stipulated in GCC Clause 35.

- 11.3 The Percentage quoted by the Tenderer shall be fixed for the duration of the Contract and shall not be subject to adjustment on any account, unless provided otherwise in the General Conditions of Contract.

- 11.4 A Tender submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to ITT Clause 23.

- 11.5 The rates or percentage should be written in numerals only (in figures and words) (Limited to Two (2) decimals only). If the Tenderer writes/indicates any other matter/s the Tender will be summarily rejected".

- 11.6 Proof of GST paid to the government shall be submitted to BMRCL along with succeeding Bills and also the GST paid against the final bill shall be submitted before release of Performance Bank Guarantee.

12. **Tender Currency**

- 12.1 Prices shall be quoted in Indian Rupees only.

13. **Tender validity**

- 13.1 Tenders shall remain valid for a period as specified in Appendix to Form of Tender (Section 4) after the deadline date for Tender submission specified in Clause 17 of ITT. A Tender valid for a shorter period shall be rejected by the Employer as non-responsive.

- 13.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the Tenderers may extend the period of validity for a specified additional period. The request and the Tenderers' responses shall be made in writing or by email. A Tenderer may refuse the request without forfeiting his Earnest Money Deposit. A Tenderer agreeing to the request will not be required or permitted to modify his Tender but will be required to extend the validity of his Earnest Money Deposit for a period of the extension and in compliance with ITT Clause 14 in all respects.



14. Earnest Money Deposit (EMD) / Tender Security

- 14.1 Pursuant to ITT Clause 9, the Tenderer shall furnish, as part of its Tender, an Earnest Money Deposit (EMD) / Tender Security in the amount as specified in Appendix to Form of Tender (Section 4).
- 14.2 The Earnest Money Deposit is required to protect the Employer against the risk of Tenderer's conduct which would warrant the security's forfeiture, pursuant to ITT Clause 14.8.
- 14.3 The Earnest Money Deposit shall be denominated in Indian Rupees and shall be in the following form :-
- a) A crossed Demand Draft /Pay Order / Banker's Cheque, issued in favour of **Bangalore Metro Rail Corporation Ltd** from an Indian Scheduled Bank (excluding Cooperative Banks) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule payable **at Bangalore**.
- (OR)
- b) An irrevocable **Bank Guarantee** issued from an Indian Scheduled Bank (excluding Cooperative Banks) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule preferably drawn on and payable and extendable **at a designated branch in Bangalore** (*specify the name of the branch and address*) in the form given in **Proforma A of Section 9** to the Tender documents. However, 'Earnest Money Deposit' Bank Guarantee format is also available in <http://tenderb.bmrc.co.in/>
- 14.4 The Earnest Money Deposit shall be valid for a period as specified in Appendix to Form of Tender (Section 4) and remain deposited with the Employer from the date of opening of Tenders. If the validity of the Tender is extended, the Earnest Money Deposit (EMD) shall also be duly extended, failing which, the Tender after the expiry of the aforesaid period shall not be considered by the Employer.
- 14.5 The Earnest Money Deposit shall be submitted in its original form; copies will not be accepted; and No interest will be payable by the Employer on the Earnest Money Deposit. Any tender not accompanied by an acceptable Tender Guarantee is liable for rejection by the Employer. However, BMRCL reserves the right to accept or reject the Tender Guarantee with any deficiency otherwise not materially affecting the technical qualification criteria of the Tenderer.
- 14.6 Unsuccessful Tenderer's Earnest Money Deposit (EMD) will be discharged / returned upon the Successful Tenderer signing the unconditional acceptance of the Letter of Acceptance (LoA) communicated by the Employer in pursuant to ITT clause 29 and furnishing the Performance Security by them pursuant to ITT clause 30.
- 14.7 The Successful Tenderer's Earnest Money Deposit (EMD) will be discharged upon the successful Tenderer furnishing the Performance Security pursuant to ITT Clause 30 and signing the Contract Agreement in pursuant to ITT clause 29.
- 14.8 The Earnest Money Deposit (EMD) may be forfeited:
- (a) If a Tenderer
 - (i) withdraws or amends or impairs or derogates its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender; or
 - (ii) does not accept the correction of errors pursuant to ITT Clause 24.2; or
 - (b) In case of a successful Tenderer, if the Tenderer fails:
 - (i) To sign the Contract Agreement in accordance with ITT Clause 29; or
 - (ii) To furnish Performance Security in accordance with ITT Clause 30.



- 14.9 Any Tender not accompanied by an acceptable Earnest Money Deposit and not secured as indicated in ITT Sub-Clauses 14.1 to 14.5 shall be rejected by the Employer as non-responsive, pursuant to ITT Clause 23.
- 14.10 Tenderers should ensure that the Earnest Money Deposit (EMD) envelope is available separately and not kept in **"Second" or "Third cover"** of the Tender document. If the Earnest Money Deposit (EMD) is kept elsewhere, the Tender will be summarily rejected.
- 14.11 Tenderers who submit EMD through Demand Draft / Pay order / Banker's Cheque needs to fill **Annexure-3 in Section-10**, along with a **cancelled cheque leaf** for refund of EMD through NEFT/RTGS.
- 14.12 Micro and Small Enterprises registered with NSIC under a single point vendor registration scheme shall be facilitated by providing tenders sets free of cost and exempted from EMD." Under the provision stated in Circular No: FD130 Exp-12/2015 by Government of Karnataka.
15. **Format and signing of Tender**
- 15.1 The Tenderer shall prepare one Original and a Copy of the documents comprising the Tender as described in ITT Clause 9, bound with the volume containing the Form of Tender, and clearly marked **"ORIGINAL"** and **"COPY"** as appropriate. In the event of discrepancy between them, the Original shall prevail.
- 15.2 The Original and a Copy of the Tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer. The authorization letter shall be indicated by written Notarized Power-of-Authority accompanying the Tender. All pages of the Tender submittals where entries, corrections or amendments have been made shall be initialed by the person signing the Tender.
- 15.3 The Tender shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialed by the person signing the Tender.
- 15.4 Any individuals signing the Tender or other documents connected therein should specify whether he is signing:
- (i) as sole proprietor of the firm or as attorney of the sole proprietor;
 - (ii) as a partner or partners of the firm;
 - (iii) as a Director, Manager or Secretary in the case of a limited company with a copy of Notarized Power of Attorney duly authorized by a resolution passed by the Board of Directors or in pursuance of the authority conferred by Memorandum of Articles of Association.
- 15.5 The original Notarized Power of Attorney or other documents empowering the individual or individuals to sign should be furnished to the Employer for verification, if required.

D. SUBMISSION OF TENDERS

16. Sealing and marking of Tenders

16.1 Tender shall be placed in single outer cover consisting of three covers as explained below.

16.1.1 First Cover: EMD / Tender Security

The Tenderer shall submit the **"EMD / Tender Security"**, in accordance with ITT Clause 9.1.1, in a separate envelope marked **"FIRST COVER – EMD / Tender Security for Tender No. BMRCL/O&M/IT/OT-01/2022."Do not open before 15:30 hours on 23-11-2022."**

16.1.2 Second Cover: Qualification cum Technical Package

a) Original documents of "The Form of Tender, Qualification Information, any other submissions as per requirements of Tender Document, duly stamped and signed Tender Document", in accordance with ITT Clause 9.1.2, shall be placed in one cover and marked



***ORIGINAL – QUALIFICATION CUM TECHNICAL PACKAGE for Tender No BMRCL/O&M/IT/OT-01/2022.**

- b) A copy of the above documents except Tender document shall be placed in a separate cover and marked **"COPY - QUALIFICATION CUM TECHNICAL PACKAGE for Tender No. BMRCL/O&M/IT/OT-01/2022."**

These two covers shall be placed in a single separate cover and marked **"SECOND COVER - QUALIFICATION CUM TECHNICAL PACKAGE for Tender No BMRCL/O&M/IT/OT-01/2022. Do not open before 15: 30 hours on 23-11-2022"**.

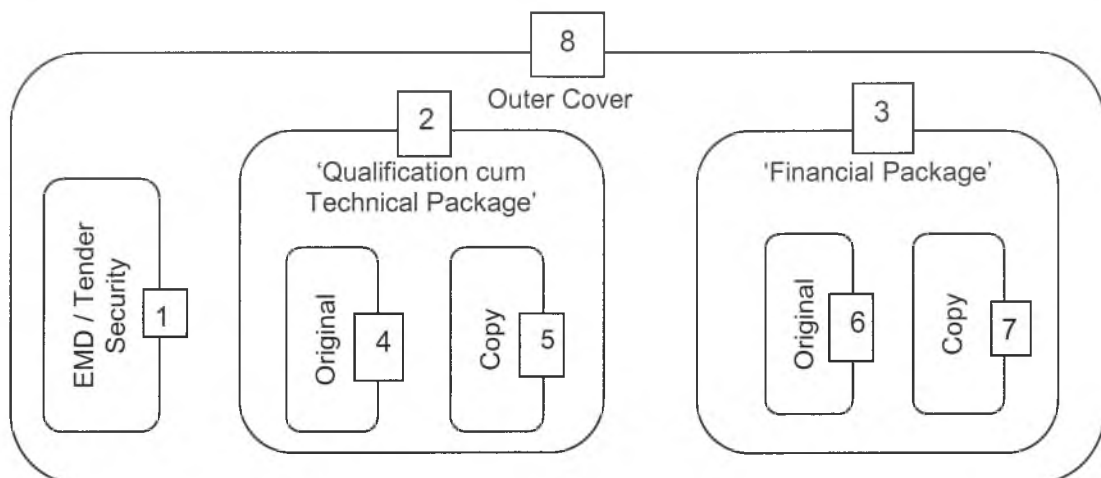
16.1.3 Third Cover: Financial Package

- a) Original documents of "Priced Bill of Quantities", in accordance with ITT Clause 9.1.3, shall be placed in one cover and marked **"ORIGINAL – FINANCIAL PACKAGE for Tender No. BMRCL/O&M/IT/OT-01/2022."**
- b) A copy of the above documents shall be placed in a separate cover and marked **"COPY – FINANCIAL PACKAGE for Tender No BMRCL/O&M/IT/OT-01/2022."**

These two covers shall be put in a single separate cover and marked **"THIRD COVER - FINANCIAL PACKAGE for Tender No BMRCL/O&M/IT/OT-01/2022."**

16.1.4 Outer Cover:

All the above three covers (the First cover, the Second Cover and the Third cover) shall be sealed in an **Outer Cover**. Thus there will be a total of **Eight Covers** altogether.



16.2 The inner and outer envelopes shall

- (a) be addressed to the Employer as given in Appendix to Form of Tender, And
- (b) bear the Project Name, the Notice Inviting Tenders (NIT) title, number and a statement **"Do not open before 15 : 30 hours on 23-11-2022"**

16.3 In addition to the identification required in ITT Sub-Clause 16.2, the inner envelopes shall indicate the **name and address of the Tenderer** to enable the Tender to be returned unopened in case it is declared late.

16.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Tender.

16.5 Telex, cable or facsimile or email Tenders will be rejected.

16.6 Offer / Tender / Bid shall be as per the "Instructions to Tenderers", "General Conditions of Contract" and "Special Conditions of Contract" given in the Tender documents. Each page of the Tender shall be signed and stamped by the Authorized Signatory of the Tenderer.

- 16.7 The Tenderer should avoid ambiguity in his Offer / Tender / Bid.
- 16.8 One set of complete Tender documents downloaded from BMRCL's website (including 'Employer's clarifications on pre-bid queries' and 'addenda' if any) untampered, signed and stamped on right hand bottom corner of each page shall be submitted with the Tender.
- 16.9 Tender document is not transferable and the party to whom Tender has been sold can only quote/submit their offer against the Tender. Tenderer cannot authorize any other party on his behalf. All correspondence will be made with the Tenderer to whom Tender document has been sold.
- 17. Deadline for submission of the Tenders**
- 17.1 Tenders must be received by the Employer at the address specified in Appendix to Form of Tender not later than time and date given in the Notice Inviting Tenders (NIT) Section 1. In the event of the specified date for the submission of Tenders being declared a holiday for the Employer, the Tenders will be received up to the appointed time on the next working day.
- 17.2 The Employer may, at its discretion, extend this deadline for submission of Tenders by issuing an amendment in accordance with ITT Clause 7, in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will thereafter be subject to the deadline as extended.
- 18. Late Tenders**
- 18.1 Any Tender received by the Employer after the deadline for submission of Tenders prescribed by the Employer, pursuant to ITT clause 17, will be rejected and / or returned unopened to the Tenderer.
- 19. Modification and Withdrawal of Tenders**
- 19.1 The Tenderers may modify contents of **First or Second or Third covers** separately for each cover or withdraw their Tenders, after the Tender submission, provided that written notification of the "**MODIFICATION**" or "**WITHDRAWAL**" is received by the Employer prior to the deadline prescribed in ITT Clause 17.
- 19.2 Each Tenderer's modification separately for each cover or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with ITT Clause 15 and 16, not later than the deadline for submission of the Tenders with the outer and inner envelopes additionally marked "**MODIFICATION FOR FIRST / SECOND / THIRD COVER**" or "**WITHDRAWAL**", as appropriate.
- 19.3 No Tender may be modified subsequent to the deadline for submission of Tenders.
- 19.4 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in ITT Sub-clause 13.1 above or as extended pursuant to ITT Sub-clause 13.2 may result in the forfeiture of Earnest Money Deposit pursuant to ITT Clause 14.8.

E. TENDER OPENING AND EVALUATION

- 20. Tender opening**
- 20.1 Opening of First & Second Cover of all Tenderers and Evaluation to determine qualified Tenderers:**
- 20.1.1 The Employer will open the First Cover (EMD / Tender Security) followed by the Second Cover (Qualification cum Technical Package) of the Tenders, whose **EMD** has been found acceptable, (except those received late or withdrawn), including "**MODIFICATIONS FOR FIRST / SECOND COVER**" made pursuant to ITT Clause 19, in the presence of the Tenderers or their



representatives who choose to attend on the date and the place specified in ITT Clause 17. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.

20.1.2 Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. The Tender of a Tenderer for which an acceptable notice of withdrawal has been submitted pursuant to ITT Clause 19 shall not be opened.

20.1.3 The Tenderers names, the presence or absence of Earnest Money Deposit (amount, format and validity), the submission of qualification information and such other information as the Employer may consider appropriate will be announced by the Employer at the Tender opening stage.

No Tender shall be rejected at Tender opening stage except for the late Tenders pursuant to ITT Clause 18 or Tenders not accompanied by an acceptable EMD. Late and withdrawn Tenders will be returned unopened to Tenderers.

20.1.4 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with ITT Sub-Clause 20.1.3.

20.1.5 The Third Cover of all the Tenderers including modifications for Third Cover shall be placed in a large cover and securely sealed in the presence of the Tenderers or their representatives, who are present and also get the same signed by all those Tenderers or their representatives who remain present at the Tender opening. The large cover shall be kept in safe custody of the Employer.

20.1.6 The Employer will evaluate and determine whether each Tender (a) meets the eligibility criteria defined in ITT Clause 2; (b) is accompanied by the required **Earnest Money Deposit** as per stipulations in ITT Clause 14; and (c) meets the minimum qualification criteria stipulated in ITT Clause 3. The Employer will draw out a list of qualified Tenderers.

20.1.7 Tenders which are not accompanied by a valid **EMD / Tender Security** shall be considered as non-compliant and rejected. Second cover and Third cover of such Tenderers will not be opened.

20.1.8 All decisions whether a Tender is Non- Responsive, unacceptable or whether a **EMD / Tender Security** is fraudulent or unacceptable or non-compliant will be that of the Employer.

20.2 Opening of Third Cover of Qualified Tenderers and Evaluation:

20.2.1 The Employer will inform all the Qualified Tenderers the time, date and venue fixed for the opening of the Third Cover (Financial Package). The Employer will open the Third Covers of only those Tenderers who are found to be qualified to execute the tendered works at the appointed time and date in the presence of the Tenderers or their representatives who choose to attend. In the event of the specified date of Third Cover opening being declared a holiday for the Employer, the Third Covers will be opened at the appointed time and location on the next working day.

20.2.2 Envelopes marked "**MODIFICATION FOR THIRD COVER**" shall be opened and the submissions therein read out in appropriate detail.

20.2.3 The Tenderers' names, the Tender prices, the total amount of each Tender, any discounts, Tender modifications and withdrawals, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender opening.

20.2.4 The Employer shall prepare minutes of the Third Cover Tender opening, including the information disclosed to those present in accordance with ITT Sub-Clause 20.2.3.



- 20.3 The Tenderer's designated representatives who choose to attend the Tender opening will be required to sign the minutes recorded during the Tender opening. The omission of Tenderer's signature on the minutes shall not invalidate the content and effect of the record.

21. Process to be confidential

- 21.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a Contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

22. Clarification of Tender submittals

- 22.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by email, but no change in the price or substance of the Tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Tenders in accordance with ITT Sub-clause 24.
- 22.2 Subject to ITT sub-clause 22.1, no Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the Contract is awarded. If the Tenderer wishes to bring additional information to the notice of the Employer, it should do so in writing or email.
- 22.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers' Tender.

23. Examination of Tenders and determination of responsiveness

- 23.1 The Employer will examine the Tenders to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Tenders are generally in order.

The Employer may waive any minor informality or non-conformity or irregularity in a Tender which does not constitute a material deviation, provided such a waiver does not prejudice or affect the relative ranking of any Tenderer.

- 23.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employer's rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

- 23.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

24. Correction of errors

- 24.1 Tenders determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

- (a) where there is a discrepancy between the rates/percentage in figures and in words, the **words will govern**; and



- (b) where there is a discrepancy between “quoted rate of percentage above /below/at par” and amount derived”, the quoted rate of percentage above/below/at par “will govern and the amount will be calculated accordingly.
 - (c) If no percentage rate has been indicated either in words or figures, the percentage rate shall be considered at par and amount shall be calculated accordingly.
 - (d) where there is a discrepancy between the unit rate/percentage and the line item total resulting from multiplying the unit rate by the quantity, the unit rate/percentage as quoted will govern, unless in the opinion of the Employer there is an obvious gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate / percentage will be corrected.
 - (e) If more than one percentage is quoted, then the Tender submitted by the Tenderer will be rejected.
- 24.2 The amount stated in the Tender will be adjusted by the Employer in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Tenderer. If the Tenderer does not accept the corrected amount the Tender will be rejected, and the Earnest Money Deposit shall be forfeited in accordance with Sub-Clause 14.8 of ITT.
- 25. Evaluation and comparison of Tenders**
- 25.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with ITT Clause 23. No Tender will be considered if complete requirements covered in the Schedule is not included in the Tender.
- 25.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:
- (a) making any correction for errors pursuant to ITT Sub-clause 24; and
 - (b) making appropriate adjustments to reflect discounts or other price modifications offered.
- 25.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.
- 25.4 The Tenders received will be evaluated by the Employer to ascertain the lowest acceptable Tender in the interest of the Employer, as specified in the specification and Tender documents. Evaluation criteria not mentioned herein but mentioned specifically in the technical specifications will be taken into consideration in the evaluation of offers.
- 25.5 The estimated effect of the price adjustment conditions, under relevant Clause of the General Conditions of Contract, during the implementation of the Contract, will not be taken into account in Tender Evaluation.
- 25.6 If the Tender of the successful Tenderer is seriously unbalanced in relation to the Employer's estimate of the cost of the work to be performed under the Contract, the Employer may require the Tenderer to produce detailed price analysis 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. After evaluation of the price analysis, the Employer may require that the amount of the Performance Security set forth in ITT Clause 30 be increased at the expense of the successful Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful Tenderer under the Contract, subject to condition as specified in Special Conditions of Contract.



F. AWARD OF CONTRACT

26. Award criteria

- 26.1 Subject to ITT Clause 28, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be
- (a) eligible in accordance with the provisions of ITT Clause 2, and
 - (b) Qualified in accordance with the provisions of ITT Clause 3.

27. Employer's right to vary Quantities during the Contract

- 27.1 The Employer reserves the right during the pendency of Contract to increase or decrease the quantity of the items originally specified in the Bill of Quantity without any change in unit price or other terms and conditions as defined GCC Clause 34 and the respective Special Conditions of Contract.

28. Employer's right to accept any Tender and to reject any or all Tenders

- 28.1 Notwithstanding ITT Clause 26, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer/s or any obligation to inform the affected Tenderer/s of the grounds for the Employer's action.
- 28.2 BMRCL reserves the right to accept the Tender in part or full which is beneficial to BMRCL. BMRCL's decision in this regard shall be final and binding.

29. Notification of award and signing of Agreement

- 29.1 The Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by cable, email or facsimile confirmed by registered letter. This letter (hereinafter and in the General Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 29.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of ITT Clause 30.
- 29.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer within 30 days of receipt of LOA, the successful Tenderer will sign the Agreement and deliver it to the Employer.
- 29.4 Upon the furnishing of the Security Deposit by the Successful Tenderer, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful and will discharge its Earnest Money Deposit, pursuant to ITT Clause 14.
- 29.5 The cost of stamp duties and similar charges imposed by law shall be borne by the contractor.

30. Security deposit / Performance Security

- 30.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer, a Security deposit in accordance with GCC Clause 25 and format given in **Proforma B of Section: 9** for an amount as specified in 'Appendix to Form of Tender' (Section 4).
- 30.1.1 Tenderer shall furnish an additional Performance Security for abnormally low quoted Tenders which shall be calculated as below :
- i) If the Tender price offered by the lowest Evaluated Tenderer is lower than 10% but upto 20% of the Estimated cost, then the additional performance security shall be calculated @ 10%



of the difference in the (a) Estimated cost (as mentioned in NIT) - 10% of the estimated cost and (b) the Tender price offered by the lowest evaluated Tenderer.

- ii) If the Tender price offered by the lowest evaluated Tenderer is lower than 20% of the estimated cost then the additional performance security shall be calculated @ 15% of the difference in the (a) Estimated cost (as mentioned in NIT) - 10% of the estimated cost and (b) the Tender price offered by the lowest evaluated Tenderer.

30.2 Failure of the successful Tenderer to comply with the requirements of ITT Sub-Clause 30.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest Money Deposit..

31. **Corrupt or Fraudulent practices**

31.1 The BMRCL requires that the Tenderers observe the highest standard of ethics during the procurement and execution of such Government Financed Contracts. In pursuance of this policy, BMRCL :

(a) defines, for the purposes of this provision, the terms set forth as follows :

- (i) "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in Contract execution; and
- (ii) "Fraudulent practice" means any omission or misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the detriment of BMRCL/Government, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive BMRCL of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a Government financed contract, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Government financed contract

31.2 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 47.2 of the General Conditions of Contract.

32. **One Tender per Tenderer**

Each Tenderer shall submit only one Tender. A Tenderer who submits or participates in more than one Tender (other than as a sub-contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Tenderer's participation to be disqualified.

33. **Site visit**

The Tenderer at his own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for construction of the Works. The cost of visiting the Site shall be at the Tenderer's own expense.

34. **Make in India Order**

Orders issued by the Government of India regarding eligibility to participate and for purchase preference to "Local Suppliers" to encourage 'Make in India' and promote manufacturing and production of goods and services in India shall apply to this procurement.

The bidder shall be considered as "Class-I Local Supplier" only if all the Items declared as per the List at ANNEXURE-9 is meeting the minimum local content criteria i.e 50% as per the Clause No. 5 of the Order No. P-45021/2/2017-PP (BE II) dated 16.09.2020 of Department for Promotion of Industry and Internal Trade under the Ministry of Commerce and Industry, Government of India. Any deviation herein will result in the bidder being considered as Class-II Local Supplier or Non Local Supplier and will not be eligible for the MII Purchase preference.

35. Purchase Preference

Purchase Preference will be as per the terms of Clause-3A(c), Clause 5, Clause 6, Clause 9 of the Public Procurement (Preference to Make in India), Order No. P-45021/2/2017-PP(BE II) dated 16.09.2020 of Department for Promotion of Industry and Internal Trade under the Ministry of Commerce and Industry, Government of India

36. While all efforts have been made to avoid errors in drafting the Tender documents and the Tenderer is advised to check the same carefully and seek clarification within the scheduled period only. No claim on account of any errors detected in Tender document shall be entertained.

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SECTION 3 : QUALIFICATION INFORMATION

- 1.0 The information to be filled in by the Tenderer hereunder will be used for purposes of evaluating the eligibility and qualification of the Tenderer as provided for in Clause 3.1 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1	Constitution or legal status of Tenderer	(Attach copy)
	Agency in which Registered (with Registration No.)	 (Attach Copy)
	Principal place of business:	

		Financial Year	Total Value of works for the year (Rs. Lakh)	Multiplication factor for updation value of work done to 2022-23	Total value of Works updated to 2022-23 (Rs. Lakh)
1.2	Total value of works (*) executed and payments received year wise in the last five years (in Rs. Lakhs) #	2017-18		1.31	
		2018-19		1.23	
		2019-20		1.14	
		2020-21		1.07	
		2021-22		1.00	

* Value of work as defined in ITT clause 3.

- Attach Certificate from practicing Chartered Accountant

- 1.3 Information on works which are yet to be completed and works for which Tenders have been submitted as on the date of this Tender.

(A) Existing commitments and on-going works:

Description of Work	Place & State	Contract No. & Date	Name and Address of Employer	Value of Contract (Rs. Lakh)	Stipulated period of completion	Value of works ** remaining to be completed (Rs. Lakh)	Anticipated date of completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

** Attach certificates duly attested by the Employer or Engineer-in-Charge of the ongoing works.

(B) Works for which Tenders already submitted:

Description of Work	Place & State	Name and Address of Employer	Estimated value of works (Rs. Lakh)	Stipulated period of completion	Date when decision is expected	Remarks if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)

- 1.4 Name, address, and telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.



- 1.5 Work performed as Prime Contractor (in the same name) on works of similar nature during the last five years counted 28 days prior to the date of Tender Submission. [With respect to ITT Clause 3.4(b)].

Project Name	Name of Employer	Description of Work	Contract Number	Value of contract Rs. Lakhs	Date of issue of Work order	Specified period of completion	Actual date of completion	Remarks explaining reasons for delay in completion of work
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

- 1.6 The following items of equipment are considered essential for successfully carrying out the works. The Tenderer should furnish all the information listed below:

Sl No	Item of Equipment	Requirement	Owned		Hired		Remarks
			Capacity	Age/Condition	Capacity	Age/Condition	
1	OTDR	02 Nos					
2	Splicing Machine	02 Nos					
3	VFL	02 Nos					
4	Drilling Machine	02 Nos					
5	Scaffolding materials, Ladders and other tools etc to cover 50Mtrs long and height as required.(Minimum 6.00M)	1 Set					

- 1.7 Reports on the financial standing of the Tenderer, such as balance sheet, Profit and Loss statements and Auditor's reports for the last five years; (Provisional Financial Statement are not acceptable).
- 1.8 Qualification and experience of the key technical and Management personnel in permanent employment with the Tenderer and those that are proposed to be deployed on this Contract, if awarded.
- 1.9 Not Used
- 1.10 Quantities of work executed as Prime Contractor (in the same name) during the last five years counted 28 days prior to the date of Tender Submission. [with respect to ITT Clause 3.4(c)].

Year	Name of Work	Name of Employer	Quantity of work performed ***		Remarks (Indicate Contract reference)
			Item	Qty	
2017-18					
2018-19					
2019-20					
2020-21					
2021-22					

*** items of works for which data is required should tally with that specified in ITT clause 3

- 1.11 Evidence of access to financial resources to meet the qualification requirement specified in ITT Clause 3.5 (b): Cash in hand, Letter of Credit, etc. List them below and attach certificate from the Banker in the suggested format as under:

BANKER'S CERTIFICATE

This is to certify that M/s. is a reputed company with a good financial standing. If the Contract for this work, namely "..... (*name of the work*)" is awarded to the above firm, we shall be able to provide overdraft / credit facilities to the extent of Rs. to meet the working capital requirements for executing the above Contract, Apart from the facilities provided to the contractor, if any

Sd/-
Name of the Bank, Senior Bank Manger
Address:

1.12 Information on litigations in which the Tenderer is involved

Employer	Other Party(ies)	Details of dispute	Amount involved	Remarks showing present status

.....
.....

1.13 The proposed methodology and program of works, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per key details.



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SECTION 4 : FORM OF TENDER

Tender No: BMRCL/O&M/IT/OT-01/2022

Description of Work: IT Network Infrastructure Revamp at Stations and Depots

To:

The Executive Director (O&M),
Bangalore Metro Rail Corporation Ltd (O&M Wing)
Admin Building, Baiyappanahalli Depot,
S V Road,
Bangalore – 560 038,
Karnataka, India.

Dear Sir / Madam,

Having examined and understood the Instructions to Tenderers, General Conditions of the Contract, Special Conditions of Contract, Technical Specifications and any other documents forming part of the Tender document issued under Tender Notification No BMRCL/O&M/IT/OT-01/2022 dated 00-00-2022 including any addendum/amendments, the receipt of which is hereby duly acknowledged, I/We the undersigned, hereby submit the fully completed Tender documents in duplicate, which includes the following for the said works;

- a) First Cover : Earnest Money Deposit (EMD) / Tender Security
- b) Second Cover : Qualification cum Technical Package
- c) Third Cover : Financial Package

I/We hereby agree to execute the Contract in conformity with the Specifications & Conditions of Contract enumerated in the Tender documents, for the sum stated & quoted in the Tender or such other sums as may be ascertained in accordance with the Bill of Quantities which are made part of the Financial Package.

This Tender and your written acceptance of it shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Tender you receive.

We undertake that, in competing for (and, if the award is made to us, in executing) the above Contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We hereby confirm that this Tender complies with the Tender validity and Earnest Money Deposit (EMD) required by the Tender documents.

We undertake, if our Tender is accepted, to execute the Works in accordance with the Stipulated Completion Date specified in the 'Appendix to Form of Tender'.

If our Tender is accepted, we will submit the Performance Security for a sum equivalent to **Three (03) percent** of the Contract Price for the due performance of the Contract, in the form as prescribed in the Clause 25 of GCC.

We agree to abide by this Tender for the Tender Validity Period specified in Clause 13 of the ITT and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

We confirm that we comply with the eligibility requirements as per ITT Clause 2 and clause 3 of the Tender documents.



Tender No. BMRCL/O&M/IT/OT-01/2022

Section 4: Form of Tender

Dated this day of 2022.

Yours faithfully,

(Signature) (in the capacity of)

Duly authorized to sign Tender for and on behalf of

"....."

(To be submitted duly printed, signed and stamped by the Authorized Signatory of Tenderer on Tenderer's letter pad)



APPENDIX TO FORM OF TENDER
SALIENT FEATURES OF CONTRACTS (CONTRACT DATA)

Sl. No	Reference Contract clauses	Description
1.	Employer's Name & Address	Bangalore Metro Rail Corporation Ltd (O&M Wing), III Floor, BMTCL Complex, K.H Road, Shanthinagar, Bangalore – 560 027, Karnataka, India
2.	Warranty (GCC clause 50)	The Warranty shall start from the date of acceptance by the Employer and shall continue until 12 months from that date of acceptance as in GCC clause 50.
3.	Validity of Tender (ITT clause 13)	120 days from the latest date of submission of Tenders as per ITT clause 13.
4.	Tender Security / Earnest Money Deposit (EMD) (See Clause 14 of ITT)	Tender Security/Earnest Money Deposit (EMD) of INR . 24,65,613 /- (Indian Rupees Twenty Four Lakhs Sixty Five Thousand Six Hundred and Thirteen only) in the form of Demand Draft / Pay Order / Banker's Cheque / Bank Guarantee in favour of the "Bangalore Metro Rail Corporation Ltd", preferably payable and extendable at Bangalore as defined in clause 14 of Instructions to Tenderers and shall have to be valid for 45 days beyond the validity of the Tender (i.e., (120+45) 165 days from the date of Tender submission).
5.	Contractor's Name & Address with telephone No and e-mail id	 (To be filled in by the Tenderer)
6.	Submission of queries and pre-bid meeting, date and time of Tender Submission and Tender opening, and Place	• Last date for submission of queries by Tenderers : Up to 17:30 Hrs (IST) on 15-11-2022 • Date of Pre-bid meeting : At 11:30 Hrs (IST) on 14-11-2022 • Date for Tender Submission: From 11:00 Hrs to 15:00 Hrs (IST) on 23-11-2022. • Date for Tender Opening: At 15:30 Hrs (IST) on 23-11-2022. • Place: Office of The Executive Director (O&M), Bangalore Metro Rail Corporation Ltd (O&M Wing) Admin Building, Baiyappanahalli Depot, S V Road, Bangalore – 560 038, Karnataka, India.
7.	The Work consists of	Installation & commissioning of core switches, aggregate switches, firewall, ONU, GPON, Fibre splitters, cabling, networking, servers, NMS, face recognition devices, EM lock etc., in Bangalore Metro Rail Stations & depots .,
8.	Start Date	The date of signing of 'Contract Agreement' (CA).
9.	The Stipulated Completion Date for the whole of the Works	03 months from the date of Signing of Contract Agreement.

Sl. No.	Reference Contract clauses	Description
10.	The following documents also form part of the Contract (See Clause 2.2 of GCC)	(1) Contract Agreement (2) Letter of Acceptance, Notice to Proceed with the works (3) Instruction to Tenderers/ Bidders (4) General Conditions of Contract (5) Special Conditions of Contract (6) Form of Tender / Bid Form (7) Technical Specifications including scope of work (8) Bill of quantities (9) Drawings (10) Contractor's Proposals (11) All correspondence between the Tenderer and BMRCL from the date of issue of NIT and the date of issue of the LOA. (12) Any other document forming part of the Contract.
11.	The Site Data	BMRCL Metro Stations & Depots
12.	Amount of Performance Security (See Clause 25 of GCC)	a. 3 % of the Contract Value in INR. In the event of variations during the execution of the Contract which result in payments to the Contractor over and above the original contract price, the Performance Security shall be suitably adjusted at every 6 month at the request of the Employer. b. In the event of additional installations carried out during the 5 year contract period, the Performance Security shall be 3% of the cost of additional installations executed as per the unit rates quoted in vol2. Financial Package c. 3% of CAMC cost (In pursuant with Clause 4.34 of Chapter 7-Technical Specifications) The Performance Security shall be in the form of Demand Draft / Pay Order / Banker's cheque / Bank Guarantee shall be drawn on and payable / extendable at a designated branch in Bangalore.
13.	Liquidated Damages (See Clause 40 of GCC)	The liquidated damages for the whole of the works are 0.1% of the Contract price per day. The maximum amount of liquidated damages for the whole of works is Ten percent (10%) of final Contract price.
14.	Program & Methodology (see clause 21 of GCC)	Work program shall be submitted within 15days of issue of LoA or earlier as required by the Employer/Engineer.
15.	Payment upon Termination – Computation of additional cost to the Employer (GCC Clause 47.1)	The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the Works shall be <u>30 percent</u> .
16.	AS BUILT DRAWINGS (If applicable as per GCC Clause 45)	Not Applicable.

Sl. No	Reference Contract clauses	Description		
		Sl. No	Type of Cover	Minimum cover for Insurance
17.	Insurance (GCC Clause 26)	(i)	Works and of Plant and materials	The Sum stated in the Agreement plus 20%
		(ii)	Loss or damage to equipment	Full replacement cost
		(iii)	Loss or damage to property	Full replacement cost
		(iv)	Personal injury or death Insurance (a) For Third Party	For normal works it could be Rs. 20 Lakh to cover 4 persons @ 5 Lakh each.
			(b) For Contractor's Employees or labour	In accordance with the statutory requirements applicable to Karnataka.
18.	The Schedule of Key and Critical Equipment to be deployed on the work as per agreed program of Works (GCC Clause 21).	Not Applicable (No Critical equipment involved)		



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SECTION: 5 GENERAL CONDITIONS OF CONTRACT

A. General

1. Definitions

- 1.1 Terms which are defined in the 'Appendix to Form of Tender' are not also defined in the General Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.
- a. **"Bill of Quantities"** means the priced and completed Bill of Quantities forming part of the Tender.
 - b. The **"Completion Date"** is the date of completion of the whole of the Works certified by the Employer in accordance with Sub Clause 42.1 of GCC.
 - c. The **"Contract"** is the Contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in GCC Clause 2.2.;
 - d. The **"Contractor"** is a person or corporate body whose Tender to carry out the Works has been accepted by the Employer. It means the person, firm or company with whom the order of the Works is placed and shall be deemed to include the Contractor's successors (approved by the Employer), representatives, heirs, executors and administrators, as the case may be unless excluded by the terms of the contract;
 - e. The **"Contractor's Tender"** is the completed Tender document submitted by the Contractor to the Employer.
 - f. The **"Contract Value"** or **"Contract Price"** means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations;
 - g. **"Days"** are calendar days; "months" are calendar months.
 - h. A **"Defect"** is any part of the Works not completed in accordance with the Contract.
 - i. The **"Warranty"** is the period mentioned in the 'Appendix to Form of Tender' and calculated from the Completion Date in accordance with Clause 50 of GCC.
 - j. **"Drawing"** means the drawing or drawings specified in or annexed to the specification;
 - k. The "Employer" or **"BMRCL"** means the Bangalore Metro Rail Corporation Limited or the person named as such in the Tender document and includes the legal successors or permitted assigns of the Employer,
 - l. **"Engineer"** means any person/party nominated or appointed from time to time by the Employer to act as the Engineer for the purposes of the Contract and notified as such in writing to the Contractor.
 - m. **"Engineer's representative"** means any person nominated by Engineer with the approval of the Employer who shall exercise the authority of the Engineer to the extent notified by the Engineer.
 - n. **"Equipment"** is the Contractor's machinery and vehicles brought temporarily to the Site to construct/ execute the Works.
 - o. The **"Initial Contract price"** is the Contract Price listed in the Employer's Letter of Acceptance.
 - p. **"Letter of Acceptance"** means the letter or memorandum communicating to the Successful Tenderer the acceptance of his Tender and includes other communication modes included in the Instructions to Tenderers.



- q. **"Materials"** are all supplies, including consumables, used by the contractor for incorporation in the Works.
- r. **"Notice to Proceed"** means the notice issued by the Employer to the Contractor to proceed with the works at the site.
- s. **"Plant"** is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.
- t. The **"Project Site"** or **"Site"** means the place specified in the contract at which any work is required to be executed by the Contractor under the contract or any other place approved by the Employer for the purpose.
- u. **"Appendix to Form of Tender"** is the Salient Features of Contract that defines the documents and other information which comprise the Contract.
- v. **"Signed"** includes stamped, except in the case of acceptance of Tender or any amendment thereof;
- w. **"Specification"** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.
- x. The **"Start Date"** shall be the date of issue of 'Letter of Acceptance' (LOA) or the date specified in the 'Notice to Proceed', as the case may be.
- y. The **"Stipulated Completion Date"** is the date on which it is intended that the Contractor shall complete the Works. The Stipulated Completion Date is specified in the 'Appendix to Form of Tender'. The Stipulated Completion Date may be revised only by the Employer by issuing an extension of time.
- z. A **"Subcontractor"** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.
- aa. A **"Variation"** is an instruction given by the Employer which varies the Works.
- bb. **"Works"** means what the contractor requires the contractor to construct, install and turn over to the Employer, as defined in the contract Data/ Description of the work / Technical specifications / Scope of works.

2. Interpretation

- 2.1 In interpreting these General Conditions of Contract and Special Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. "Tender" / "Tendering" / "Tenderer" shall also mean "Bid" / "Bidding" / "Bidder". "Offer" also mean Tender / Bid.
- 2.2 The documents forming the Contract shall be interpreted in the following order of priority:
 - (1) Contract Agreement
 - (2) Letter of Acceptance, notice to proceed with the works
 - (3) Bill of quantities
 - (4) Technical Specifications
 - (5) Drawings
 - (6) Special Conditions of Contract
 - (7) General Conditions of Contract
 - (8) Contractor's Proposal and
 - (9) Any other document listed as forming part of the Contract.

3. Law governing Contract

- 3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's decisions

- 4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. Delegation

- 5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

6. Communications

- 6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Not Used**8. Other Contractors**

- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. Personnel:

- 9.1 The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.
- 9.2 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by BMRCL from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.
- 9.3 If the Employer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

9.4 Compliance with Labour Regulations

- 9.4.1 The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

10. Employer's and Contractor's risks

- 10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

11. Employer's risks

- 11.1 The Employer is responsible for the excepted risks which are:
- (a) Rebellion, riot commotion or disorder unless solely restricted to employees of the Contractor or his Subcontractors arising from the conduct of the Works; or
 - (b) a cause due solely to the design of the Works, other than the Contractor's design; or
 - (c) any operation of the forces of nature (in so far as it occurs on the Site) which an experienced Contractor:
 - (i) Could not have reasonably foreseen; or
 - (ii) Could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures;
 - (A) Prevent loss or damage to physical property from occurring by taking appropriate measures or
 - (B) Insure against such loss or damage."

12. Contractor's risks

- 12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.



13. Not used**14. Contractor to execute the Works**

14.1 The Contractor shall execute the Works in accordance with the Specification and Drawings.

15. The Works to be completed by the Stipulated Completion Date

15.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the works in accordance with the program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Stipulated Completion Date.

16. Safety

16.1 The Contractor shall be responsible for the safety of all activities on the Site.

17. Discoveries

17.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

18. Possession of the Site

18.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract or Notice to proceed, the reasonable extension of time may be given. However, no monetary claims whatsoever shall be paid to the Contractor or entertained on this account.

19. Access to the Site

19.1 The Contractor shall allow the Employer and any person authorized by the Employer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

20. Instructions

20.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

B. Time Control**21. Program**

21.1 Within the time stated in the 'Appendix to Form of Tender', the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works within 15 days from the date of issue of LOA or earlier as required by the Employer.

21.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations.

22. Extension of the Time for Completion

22.1 The Employer shall extend the Time for Completion of the works if a Variation is issued and which makes it impossible for Completion to be achieved by the Stipulated Completion Date.

22.2 The Employer shall decide whether and by how much to extend the Stipulated Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Variation and submitting full supporting information.



23. Delay ordered by the Employer

- 23.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works. However, no monetary claims whatsoever shall be paid to the Contractor or entertained on this account.

24. Management meetings

- 24.1 The Employer may require the Contractor to attend a Management meeting. The business of a Management meeting shall be to review the progress achieved and the plans for remaining work.
- 24.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the Management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

25. Performance Security / Security Deposit

- 25.1 Within 20 days of receipt of notification communicated by the Employer by issue of "Letter of Acceptance", the Contractor shall furnish a Performance Security (including additional security for unbalanced Tenders, if required) for an amount as specified in **Appendix to Form of Tender (Section 4)** in one of the following forms:

(a) A crossed Demand Draft / Pay Order / Banker's cheque in favour of the "**Bangalore Metro Rail Corporation Ltd.**" from an Indian Scheduled Bank (excluding Cooperative Banks) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule **payable at Bangalore.**

(or)

(b) An irrevocable Bank Guarantee issued from an Indian Scheduled Bank (excluding Cooperative Banks) or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule preferably drawn on and **payable and extendable at a designated branch in Bangalore** (specify the name of the branch and address) in the form given in **Proforma B of Section 9** to the Tender documents. However, 'Performance Security' Bank Guarantee format is also available in <https://tenderb.bmrc.co.in>

In case furnishing of an acceptable Performance Security is delayed by the Contractor beyond the period provided in GCC Clause 25.1, the Employer may forfeit the Earnest Money Deposit / Tender Security.

- 25.2 On the performance and completion of the Contract in all respects the Performance Security will be converted into Guarantee against warranty obligations of the Contractor. The Performance Security shall be valid up to 03 months beyond the Warranty Period for the Entire Work and the additional security for unbalanced Tenders shall be valid until a date 30 days from the date of issue of the certificate of completion. The Performance Security will be returned within 03 months after satisfactory completion of Warranty Period.
- 25.3 The Employer shall be entitled and it shall be lawful on his part to forfeit the amount of the Performance Security in whole or in part in the event of any default, failure or neglect on the part of the Contractor in the fulfillment or performance in all respects of the Contract under reference or any other Contract with the Employer.
- The Employer shall also be entitled to deduct from the amount of the Performance Security any loss or damage which the Employer may suffer or be put by reason of or due to any act or other default, recoverable by the Employer from the Contractor in respect of the Contract under reference or any other Contract.
- On occurrence of either of the aforesaid events, the Employer shall call upon the Contractor to maintain the amount of the Performance Security as its original limit by furnishing fresh Bank Guarantee of additional amount, provided further that the Employer shall be entitled to recover



any such claim from any sum then due or which at any time thereafter may become due to the Contractor under this or any other Contracts with the Employer.

- 25.4 The Performance Security shall remain in full force and effect during the period that would be taken for satisfactory performance/ completion of the Works and fulfillment in all respects of the Contract and shall in the first instance be valid until 3 months beyond the Warranty Period. Before the expiry of the date of validity of the Performance Security, the Contractor on being called upon by the Employer from time to time shall obtain from the Guarantee Bank, extension of time for validity thereof for a period of six months, on each occasion. The extension or extensions aforesaid, executed on non-judicial stamp paper of appropriate value must reach the Employer at least thirty days before the date of expiry of the Performance Security on each occasion.
- 25.5 As and when an amendment is issued to the Contract, the Contractor shall, within 15 days of the receipt of such an amendment furnish to the Employer an amendment to the Performance Security rendering the same valid for the Contract as amended and up to 3 months beyond amended completion of Warranty Period. All expenses of this shall be borne by the Contractor.
- 25.6 The Performance Security and or any amendment thereto shall be executed on a Non Judicial stamp paper of requisite money value in accordance with the laws of the country in which the same is/are executed by the party competent to do so.
- 25.7 If the Contractor, having been called upon by the Employer to furnish Performance Security, fails to furnish the same, it shall be lawful for the Employer :
- i) to recover from the Contractor the amount of Performance Security by deducting the amount from the pending bills of the Contractor under any Contract with the Employer or the government or any other person Contracting through the Employer or otherwise however, OR
 - ii) to cancel the Contract or any part thereof and to execute or authorize to execution of the Works at the risk and cost of the Contractor and in that event the provisions of clause GCC 46 & 47 of GCC shall apply as far as applicable.

26. Insurance

- 26.1 The Contractor shall prior to commencing the works, effect and thereafter maintain insurances , in the joint names of the Employer and the Contractor, (cover from the first working day after the Start Date to the end of Warranty Period), in the amounts stated in the 'Appendix to Form of Tender':
- (a) for loss of or damage to the Works, Plants and Materials and the Contractor's equipment;
 - (b) for liability of both Parties for loss, damage, death and injury to third parties or their property arising out of the Contractor's performance of the Contract including the Contractor's liability for damage to the Employer's property other than the Works and
 - (c) for liability of both Parties and of any Employer's representative for death and injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their Employees.
- 26.2 Policies and certificates for insurance shall be delivered by the Contractor to the Employer for his approval before the Start Date. All such insurance shall provide for compensation to be payable to rectify the loss or damage incurred. All payments received from insurers relating to loss or damage shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.
- 26.3 If the Contractor fails to effect or keep in force any of the insurances referred to in the previous sub- clauses or fails to provide satisfactory evidence, policies or receipts, the Employer may without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor. If no payment is due, the payment of the premiums shall be a debt due.



- 26.4 Alterations to the terms of insurance shall not be made without the approval of the Employer.
- 26.5 Both Parties shall comply with any conditions of the insurance policies.

C. Quality Control

27. Identifying defects

- 27.1 The Employer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect.

28. Tests

- 28.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it has a defect, the Contractor shall pay for the test and any samples. If there is no defect, the testing charges shall be borne by the Employer.

29. Correction of Defects

- 29.1 The Employer shall give notice to the Contractor of any Defects before the end of the Warranty Period, which begins at Completion and is defined in the 'Appendix to Form of Tender'. The Warranty Period shall be extended for as long as Defects remain to be corrected.
- 29.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer's notice.

30. Uncorrected defects

- 30.1 If the Contractor has not corrected a Defect within the time specified in the Employer's notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount or will be recovered from any amount due to the Contractor from the Employer including Performance Security.

31. Inspections and Tests

- 31.1 The Employer or its representative shall have the right to inspect and/or to test the materials or works to confirm their conformity to the Contract specifications at no extra cost to the Employer. Special Conditions of Contract and the Technical Specifications shall specify what inspections and tests the Employer requires and where they are to be conducted. The Employer shall notify the Contractor in writing in a timely manner of the identity of any representatives retained for these purposes.
- 31.2 Should any inspected or tested materials fail to conform to the specifications, the Employer may reject the materials or Works and the Contractor shall either replace the rejected materials or make alterations /rectifications necessary to meet specification requirements free of cost to the Employer.
- 31.3 The Employer's right to inspect, test and where necessary, reject the materials or Works at Project Site shall in no way be limited or waived by reason of the materials or Works having previously been inspected, tested and passed by the Employer or its representative prior to the dispatch of the materials.
- 31.4 Nothing in GCC Clause 31 shall in any way release the Contractor from any warranty or other obligations under this Contract.

32. Acceptance Certificates:

On successful completion of acceptability test, receipt of deliverables etc, and after the Employer is satisfied with the completion of the Works, the Acceptance Certificate signed by the Contractor and the representative of the Employer will be issued. The date on which such certificate is signed shall be deemed to be the date of successful acceptance of the Works.

D. Cost Control**33. Bill of Quantities (BOQ)**

33.1 The BOQ shall contain items for IT Network Infrastructure including installation, testing, and commissioning work (if any) to be done by the Contractor.

33.2 The BOQ is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item.

34. Variations

34.1 The Employer shall have power to order the Contractor to do any or all of the following as considered necessary or advisable during the progress of the work by him;

(a) Increase or decrease of any item of work included in the Bill of Quantities (BOQ);

(b) Omit any item of work;

(c) Change the character or quality or kind of any item of work;

(d) Change the levels, lines, positions and dimensions of any part of the work;

(e) Execute additional items of work of any kind necessary for the completion of the works; and

(f) Change in any specified sequence, methods or timing of construction of any part of the work.

34.2 The Contractor shall be bound to carry out the work in accordance with any instructions in this connection, which may be given to him in writing by the Employer and such alteration shall not vitiate or invalidate the contract.

34.3 Variations shall not be made by the Contractor without an order in writing by the Employer, provided that no order in writing shall be required for increase or decrease in the quantity of an item appearing in the BOQ so long as the work executed conforms to the approved drawings.

34.4 The Contractor shall not make any alteration and/or modification of the Works, unless and until the Engineer instructs or gives consent to a Variation. If the Construction and/or Manufacture Documents or Works are not in accordance with the Contract, the rectification shall not constitute a Variation.

35. Payments for Variations

35.1 Not used.

35.2 Not used.

35.3 If there is no rate for the additional, substituted or altered item of the work in the BOQ, efforts would be made to derive the rates from those given in the BOQ or the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) and if found feasible, the payment would be made at the derived rate for the item plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract.

35.4 If the rates for additional, substituted or altered item of work cannot be determined either as at 35.1, 35.2 or 35.3 above, the Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.

35.5 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer's own forecast of the effects of the Variation on the Contractor's costs.

35.6 Not Used

35.7 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

35.8 The Rates Quoted for the BOQ items shall remain valid for a period of 5 Years from the date of award of the contract. BMRCL shall at the rates quoted by the contractor, continue to procure the BOQ items during the 5 Year period as and when the new reaches or Lines are commissioned.

36. Submission of bills for payment

36.1 The Contractor shall submit to the Employer bills of the value of the work completed less the cumulative amount paid previously.

36.2 The Employer shall check the Contractor's bill and determine the value of the work executed which shall comprise of;

- (i) value of the quantities of the items in the BOQ completed and
- (ii) valuation of Variations.

36.3 The Employer may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

37. Payments

37.1 Payments shall be adjusted for deductions for advance payments, if any, other recoveries in terms of Contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor within 60 days of submission of complete and valid Bill without any deficiency. The Contractor shall be liable to pay liquidated damages for shortfall in progress

37.2 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

38. Not Used

39. Taxes & Duties

39.1 The Contract Price quoted by the Contractor shall be in accordance with the respective Special Conditions of the Contract and the Employer will perform such duties in regard to the deduction of taxes at source as per applicable law.

40. Liquidated damages

40.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the 'Appendix to Form of Tender' for each day that the Completion Date is later than the Stipulated Completion Date (for the whole of the Works or the milestone as stated in the 'Appendix to Form of Tender'). The total amount of liquidated damages shall not exceed the amount defined in the 'Appendix to Form of Tender'. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

40.2 If the Stipulated Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

41 Cost of repairs

- 41.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Warranty Period shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract**42 Completion**

- 42.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

43 Taking over

- 43.1 The Employer shall take over the Site and the Works within seven days of issuing a Certificate of Completion.

44 Final Bill / Account

- 44.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Warranty Period. The Employer shall issue a Warranty Certificate and certify any final payment that is due to the Contractor within 90 days of receiving the Contractor's Final Bill / Account, if it is correct and complete. If it is not, the Employer shall issue within 90 days a Schedule that states the scope of the corrections or additions that are necessary. If the Final Bill / Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor's revised Final Bill / Account.

45 Not used**46 Termination**

- 46.1 The Employer may terminate the Contract if the Contractor causes a fundamental breach of the Contract.
- 46.2 Fundamental breaches of Contract include, but shall not be limited to the following:
- (a) The Contractor stops work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;
 - (b) the Contractor becomes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (c) the Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within thirty (30) days of receipt of notice of failure from BMRCL or within such further time period as BMRCL may have subsequently approved in writing ;
 - (d) the Contractor does not maintain safety and security which is required;
 - (e) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the 'Appendix to Form of Tender'; and
 - (f) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in the executing the Contract.

For the purpose of this paragraph:

- (i) "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in Contract execution.
- (ii) "Fraudulent practice" means any omission or misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the



detriment of the Borrower, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

- 46.3 When either party to the Contract gives notice of a breach of Contract to the Employer for a cause other than those listed under Sub Clause 46.2 above, the Employer shall decide whether the breach is fundamental or not.
- 46.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 46.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

47 Payment upon Termination

- 47.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the Contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the 'Appendix to Form of Tender'. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.
- 47.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the Contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

48 Property

- 48.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

49 Release from performance

- 49.1 If the Contract is frustrated by any event entirely outside the control of either the Employer or the Contractor, the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

F. OTHERS

50 Warranty Period

- 50.1 The Contractor warrants that all Works executed under this Contract shall have no defect arising from materials or workmanship (except when the material is required by the Employer's Specifications) or from any act or omission of the Contractor, that may develop under normal use of the supplied materials or the Works in the conditions prevailing in the country of final destination.
- 50.2 This warranty shall remain valid for a period specified in Appendix to Form of Tender after the materials or Works or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Contract. The Contractor shall, in addition, comply with the performance and/or consumption guarantees specified under the Contract. If for reasons attributable to the Contractor, these guarantees are not attained in whole or in part, the Contractor shall at its discretion either:

- a) make such changes, modifications, and/or additions to the Works or any part thereof as may be necessary in order to attain the Contractual guarantees specified in the Contract at its own cost and expense and to carry out further Performance Tests in accordance to respective Special Conditions of Contract / Technical Specification; OR
 - b) pay liquidated damages to the Employer with respect to the failure to meet the Contractual guarantees. The rate of these liquidated damages shall be as per GCC clause 40 or respective Special Conditions of Contract or as specified in the Technical Specifications.
- 50.3 The Employer shall promptly notify the Contractor in writing of any claims arising under this warranty.
- 50.4 Upon receipt of such notice, the Contractor shall, within the period of 3 days and with all reasonable speed, repair or replace the defective Works or parts thereof, free of cost at the ultimate destination. In the event of any correction of defects or replacement of defective material during the Warranty period, the Warranty for the corrected or replaced material shall be extended to a further period from the date of replacement/repair/renewal.
- 50.5 If the Contractor, having been notified, fails to remedy the defect(s) within 3 days, the Employer may proceed to take such remedial action as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights which the Employer may have against the Contractor under the Contract.

51 Force Majeure

- 51.1 Notwithstanding the provisions of GCC Clauses 21, 22, 23, the Contractor shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 51.2 For purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Employer either in its sovereign or Contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 51.3 If a Force Majeure situation arises, the Contractor shall promptly notify the Employer in writing of such conditions and the cause thereof. Unless otherwise directed by the Employer in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

52 Procedure for Resolution of Disputes

- 52.1 The Employer and the Contractor shall make every effort to resolve amicably through negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 52.2 If the Contractor is not satisfied with the decision taken by the Employer, the dispute shall be referred by either party to Arbitration within 30 days of the notification of the Employer's decision.
- 52.3 If neither party refers the dispute to Arbitration within the above 30 days, the Employer's decision will be final and binding.
- 52.4 The Arbitration shall be conducted in accordance with the arbitration procedure stated in the respective Special Conditions of Contract.

53 Patent Rights

- 53.1 The Contractor shall indemnify the Employer against all third-party claims of infringement of Intellectual Property rights of patent, trademark or industrial design rights arising from use of the materials or design or data or any part thereof in India.



54 Limitation of Liability

- 54.1 Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to GCC Clause 53,
- a) The Contractor shall not be liable to the Employer, whether in Contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer; and
 - b) The aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective Works / equipment.

55 Governing Language

- 55.1 The Contract shall be written in English language. Subject to GCC Clause 3, English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.

56 The Courts of Jurisdiction

- 56.1 Any suit or application, arising out of any dispute or difference on account of this Tender shall be filed in a competent court at Bangalore, Karnataka only and no other court or any other district of the country shall have any jurisdiction in the matter.

57 Notices

- 57.1 Any notice given by one party to the other pursuant to this Contract shall be sent to other party in writing or by facsimile or email or by hand (duly acknowledged) and confirmed in writing to the other Party's address specified in Special Conditions of Contract.

58 Use of Contract Documents and Information; Inspection and Audit by the Government

- 58.1 The Contractor shall not, without the Employer's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Employer in connection therewith, to any person other than a person employed by the Contractor in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 58.2 The Contractor shall not, without the Employer's prior written consent, make use of any document or information enumerated in GCC Clause 58.1 except for purposes of performing the Contract.
- 58.3 Any document, other than the Contract itself, enumerated in GCC Clause 58.1 shall remain the property of the Employer and shall be returned (in all copies) to the Employer on completion of the Contractor's performance under the Contract if so required by the Employer.
- 58.4 The Contractor shall permit BMRCL to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by Auditors appointed by the BMRCL, if so required by BMRCL.

59 Site Investigation Reports

- 59.1 The Contractor, in preparing the Tender, shall rely on any site investigation reports referred to in the 'Appendix to Form of Tender', supplemented by any information available to the Tenderer.



60. Approval by the Employer

- 60.1 The Contractor shall submit Specification and drawings showing the proposed Temporary Works to the Employer, who is to approve them if they comply with the Specifications and Drawings.
- 60.2 The Contractor shall be responsible for the design of Temporary Works
- 60.3 The Employer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- 60.4 The Contractor shall obtain approval of third parties to the design of the temporary Works where required.
- 60.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Employer before their use.

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SECTION 6 : SPECIAL CONDITIONS OF CONTRACT

1. General

The following Special Conditions shall be read in conjunction with Section 5: General Conditions of Contract including Amendments/ Corrigendum thereto. If any provision in these Special Conditions is at variance with that of the aforesaid documents, the later shall be deemed to take precedence there over.

2. Scope of Work / Inspection of Site

The Tender is **Percentage Tender**. The cost of all the individual items shall be computed for the entire work and the Tender premium (plus or minus or at par) on the Total cost shall be quoted. The work under this contract comprises of entire completion of the works described in the document and as specified in the Technical Specifications, Tenderer are advised to visit the Site(s) and ascertain for themselves the exact scope of work and its Working Conditions, viz. Working Hours, Availability of Site(s), availability of labour and materials and such other relevant conditions which effect the execution and the entire completion of the works etc. and quote their Tenders (Percentage) accordingly. Any claim whatsoever will not be entertained by the BMRCL at a later date. For the purpose of inspection of site, the Tenderer is advised to contact the Engineer who will give reasonable instructions/facilities thereof. The Tenderer shall be deemed to have inspected the site and its surrounding beforehand and taken into account all relevant factors pertaining to site in the preparation and submission of this Tender.

3. Subcontracting (GCC Clause 7)

Prior approval of the Employer shall be obtained before sub-contracting any part of the works. However, the Contractor shall not subcontract the whole of the Works.

4. Compliance with labour regulations (GCC Clause 9.4)

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications / bye laws / Acts / Rules / regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of Security Deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

5. Safety (GCC Clause 16)

Fire Precautions:

- 5.1 The Contractor, his agents, representative, workmen etc., shall strictly observe the orders pertaining to fire precautions prevailing within the restricted area.
- 5.2 Motor transport vehicles, if any allowed by the Engineer to enter the restricted area, must be fitted with serviceable fire extinguishers.

6. Access to the Site (GCC Clause 19)

Security and Passes:



- 6.1 Contractor's attention is invited to condition that, he shall employ only Indian Nationals after verifying their antecedent and loyalty. The contractor shall, maintain list of his agents, employees and work people concerned and shall satisfy the Engineer as to the bonafides of such people, and submit to the Engineer / Employer on demand.
- 6.2 The Employer shall at his discretion have the right to issue passes as per rules and regulations of the installation, area in force to control the admission of the contractor, his agents employees and work people to the site of the work or any part thereof. Passes should be returned at any time on demand by the Engineer or the authorities concerned and, in any case on completion of work.
- 6.3 The contractor and his agents, employees and workers shall observe all the Rules promulgated by the authority controlling the installation area in which the work is to be carried out. e.g. Prohibition of smoking and lighting, fire precautions, search of persons on entry and exit, keeping to specific route, observing specified timing etc., nothing extra shall be admissible for any man hours, etc., lost on this account.
- 6.4 **Conditions of working in restricted area**
Work under this contract lies in restricted area.
- 6.4.1 **Visit to site within the restricted area**
Permission to enter the restricted areas at the time of submission of Tenders can be obtained through the Employer or his authorized Representative. Tenderers are advised to send prior intimation of their agents, representatives etc., if any, dates and time of their proposed visit so that necessary arrangements may be made by Employer to secure admission. Whether a Tenderer visits the site or not he shall be deemed to have full knowledge of the restriction of entering into/exit from and working within the restricted area.
- 6.4.2 **Entry/Exit**
The contractor his agents/representatives, workmen etc., and his materials, carts, trucks or other means of transport etc., will be allowed to enter through and leave from only such gate or gates and such times as the employer or authorities in charge of the restricted areas may at their sole discretion permit to be used. The contractor's authorized representatives are required to be present at the place of entry and exit for the purpose of identifying his carts, trucks etc., to the personnel in charge of the security of restricted areas.
- 6.4.3 **Identity Cards or Passes**
The contractor, his agents and representatives are required individually to be in possession of an identity Card or Pass duly verified by the Employer or his authorized Representative. The identity card or pass will be examined by the Security Staff at the time of entry into or exit from the Restricted Area and also at any time or number of times inside the Restricted Area.
- 6.4.4 **Identity of Workmen**
(i) Every workman shall be in possession of an identity card. The Identity Card will be issued after thorough investigation of the antecedents of the labourers by the contractors and attested by Officer-in-Charge of the unit concerned in accordance with the Standing Rules and regulations of the units.
(ii) Contractor shall be responsible for the conduct and action of his workmen, agents or representatives.
- 6.4.5 **Search**
Thorough search of all persons and transport shall be carried out at each gate and for as many times as the gate is used for entry or exit and may also be carried out at any time or any number of times at the work site within the Restricted area.
- 6.4.6 **Working Hours**
6.4.6.1 The Metro stations are restricted areas, usually the work can be carried out during working days in the week and remain closed on the Sunday. The working hours available to contractor's labour



& staff are 9.00AM to 6.00 PM, however appreciably reduced because of the time taken in security checks observed at the time of entry/exit and during working hours.

6.4.6.2 The exact working hours, days and non working days observed for the restricted area, where works are to be carried out shall be deemed to have been ascertained by the contractor before submitting his tender. The Tenderer's attention is, invited to the fact that the total number of working hours for a restricted locations are prescribed in Regulations and they cannot be increased by the BMRCL.

6.4.6.3 Contractor's materials, transport etc., shall normally be permitted to go out of the area (Metro Stations) between 9.00 PM to 6.00 AM only.

6.4.6.4 In an emergency condition, Contractor may also be allowed to carry out the work beyond that mentioned in clause No. 6.4.6.1, but however, no movements of materials and transport out of site of work shall be permitted during night unless special permission is obtained from the higher authorities.

6.4.6.5 Some works has to be carried out during night after revenue hours, duly taking PTW (Permission to Work) on daily basis well in advance. Work shall not be allowed to carry out without prior PTW.

6.4.7 Work on Holidays

(i) The contractor shall not carry out any work on Gazetted Holidays/Weekly holidays and other non-working days except when he is specially authorized in writing to do so by the Engineer or his Representative. The Employer may at his sole discretion, declare any day as holiday or non-working day without assigning any reasons for such declaration.

(ii) The Contractor shall provide adequate lighting and safety arrangements when working on holidays. No increase in rates or additional payments shall be admissible for night work to the Contractor by the Employer.

6.4.8 Access to restricted area after completion of Works :-

After the works are completed and surplus stores etc. are removed, the contractor, his agents, representatives or workmen etc., may not be allowed to have access to the restricted area except for attending any rectification of defects pointed out to him by the Engineer / Employer.

6.4.9 Not Used

6.4.10 Co-operation with other Agencies

The contractor shall permit free access and generally afford reasonable facilities to other agencies or departmental workmen engaged by the BMRCL to carry out their part the work, if any, under separate arrangements.

6.4.11 Electric Supply

Electricity shall be provided on chargeable basis considering the unit rate charged by BESCOM to BMRCL (i.e. based on the prevailing rate/s of BESCOM), if available and feasible. Otherwise, the Contractor shall make his own arrangements at his own cost, for Electrical Power and gas required for his works. Work shall not be delayed for non-availability of electricity/gas.

6.4.12 Emergency Works

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work, under intimation to the Engineer.

7. Inspections and Tests (GCC Clause 31)

7.1 Inspections and tests at final acceptance are as follows:

(i) The inspection of the materials / Works shall be carried out to check whether the materials / Works are in conformity with the Technical Specifications attached to the contract and shall be in line with the inspection/test procedures laid down in the Technical Specifications and



the General Conditions of Contract. Following broad test procedure will generally be followed for inspection and testing of works.

- (ii) The acceptance test will be conducted by the Contractor in presence of the Employer/ Engineer / their representative or any other person nominated by the Employer / Engineer. The acceptance will involve trouble-free operation. There shall not be any additional charges for carrying out acceptance tests. No malfunction, partial or complete failure of the Works should occur.
- (iii) In the event of the materials / Works failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which the Employer reserves the rights to get the Works replaced / redone by the Contractor at no extra cost to the Employer.

7.2 Materials and Samples

- 7.2.1 The contractor shall produce samples of all materials/articles, fittings, accessories etc., that he proposes to use in the Works and get it approved in writing by the Engineer before incorporating in the work. The materials, articles etc., as approved shall be labeled as such and shall be signed by the Engineer and contractor's representative. The samples shall be kept in the custody of the Engineer till payment of final bill.
- 7.2.2 Materials provided by the contractor for incorporation in the work shall unless otherwise specified in the Technical specifications, comply with the requirement of the latest relevant Indian Standard (IS) in the website of BIS i.e. www.bis.org.in and as specified in 'Karnataka Building Specifications (KBS)', 'Karnataka Roads & Bridges Specifications (KRBS)' and 'Karnataka Public Works Ports and Inland Water Transport Department (KPWP&IWTD)', Bangalore Circle. Incase of any difference / discrepancy on the above, the condition in the interest of BMRCL shall prevail.

8. Variations (GCC Clause 34)

- 8.1 The Rates Quoted for the BOQ items shall remain valid for a period of 5 Years from the date of award of the contract. BMRCL shall at the rates quoted by the contractor, continue to procure the BOQ items during the 5 Year period as and when the new reaches or Lines are commissioned.

9. Payments for Variations (GCC Clause 35)

Payments for variations shall be made in accordance to GCC Clause 35.

10. Taxes and Duties (GCC Clause 39)

- 10.1 The Contract price shall be inclusive of Labour Cess Charges and duties under applicable law but exclusive of CGST and SGST. BMRCL shall pay the output CGST and SGST as invoiced by the contractor to BMRCL
- 10.2 **Income Tax (IT) deduction:** As per the prevailing rate, IT shall be deducted and remitted to the Income Tax authorities and Form 16A shall be furnished by BMRCL in proof of remittance to IT Department. For availing lower deduction of Income Tax, necessary certificate for each financial year issued by the Income Tax Authority shall be furnished by the Contractor, failing which IT at the maximum rate will be deducted.
- 10.3 The Contract Price shall be inclusive of all charges of insurance, transportation up to destination, handling, installation, royalties & any other charges leviable and payable by the Contractor under the Contract, or for any other cause and including Tax to be deducted at source and shall be included in the Total Tender Price.
- 10.4 Contractors shall be entirely responsible for license fees, road permits and any other incidentals incurred until completion of the whole of the Works and handover to the Employer.
- 10.5 The Contractor shall maintain complete records of duties, other taxes and levies, etc.; payable to various authorities in relation to the Works and submit the receipts/records for verification as and when demanded in writing by the Employer.



- 10.6 Any increase in CGST and SGST shall not be paid in the extended period of Contract for which the Contractor alone is responsible for delay as determined by the Engineer while granting the extension of time". However, this shall not be applicable for "Variations".

11. Termination (GCC Clause 46)

- 11.1 The Fundamental breach of the contract shall also include that "the Contractor has contravened SCC Clause 3 (Subcontracting) and GCC Clause 9 (Personnel).
- 11.2 In the event the Employer terminates the Contract in whole or in part, pursuant to GCC Clause 46, the Employer;
- (i) shall forfeit the performance Security, and
 - (ii) May carry out the Works, upon such terms and in such manner as it deems appropriate, Works similar to those incomplete, and the Contractor shall be liable to the Employer for any excess costs for such similar Works. However, the Contractor shall continue the performance of the Contract to the extent not terminated.

12. Procedure for Resolution of Disputes (GCC Clause 52)

Arbitration:

The procedure for arbitration shall be as follows:

- 12.1 In case of dispute or difference arising between the Employer and the Contractor relating to any matter arising out of or connected with this agreement it shall be settled in accordance with the Arbitration and Conciliation Act 1996, and its latest amendments. The disputes or differences shall be referred to a Sole Arbitrator. The Sole Arbitrator shall be appointed by agreement between the parties; failing such agreement, a request may be made by BMRCL to the High Court of Karnataka to take necessary measure for appointment of the Sole Arbitrator.
- 12.2 Arbitration proceedings shall be held at Bangalore, Karnataka, India.
- 12.3 The cost and expenses of arbitration proceedings will be paid as determined by the Arbitrator. However the expenses incurred by each party in connection with the preparation, presentation, etc., shall be borne by each party itself.
- 12.4 Performance under the Contract shall continue during the arbitration proceedings and payments due the Contractor by the Employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.

13. Notices (GCC Clause 57)

For the purpose of all notices, the following shall be the address of the Employer and Contractor.

Employer :

Bangalore Metro Rail Corporation Ltd (O&M wing)
Office of Telecom & AFC Department,
Baiyappanahalli Metro Depot,
Swami Vivekananda Road (Old Madras road),
Baiyappanahalli, Bangalore – 560 038,
Karnataka, India

Contractor:

.....

.....
(To be filled in after the award of Contract).



14. Use of Contract Documents and Information; Inspection and Audit by the Government (GCC Clause 58)**14.1 Security of Classified Documents**

The contractor shall not communicate any classified information regarding work to others without prior approval of Engineer. The contractor shall also not make copies of the design/drawings and other documents furnished to him in respect of works and he shall return all documents after completion of works or on earlier determination of contract. The contractor shall along with final bill, attach a receipt from the Engineer in respect of his having returned the classified documents as per condition of General Conditions of Contract.

15. Protection of Environment: (New Clause)

The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor and his sub -contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

16. Approved Materials (New Clause)

16.1 The Contractor shall obtain approved materials from manufacturers authorized stockiest where such authorized stockiest have been appointed. The contractor shall produce original receipt voucher of the same.

16.2 The Contractor shall ensure that approved materials are brought to site in original sealed containers/packing, without breaking manufacturer's markings.

17. Contract Extension

At the discretion of the employer the contract period may be suitably extended till completion of the work in consultation with the contractor with the same terms and conditions of the contract.

18. Payments (GCC Clause 37)

- (i) On Delivery : Ten percent of the Contract price shall be paid on receipt of Final Design Documents and As-Built Documents. Seventy percent of the Contract price shall be paid on receipt of goods and upon submission of documents specified in SCC Clause 3 above; and
- (ii) On Final Acceptance: The remaining twenty percent of the Contract price shall be paid to the Contractor in about 30 days after the date of acceptance Certificate issued by the Purchaser's representative of the respective delivery, installation and training and other necessary documents as finalised by BMRCL.

BMRCL has registered itself in TReDS platform for acceptance of contractor's bills (factor unit), in case the contractor opts for the same.

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SECTION 7 – TECHNICAL SPECIFICATIONS**1. GENERAL**

- 1.1 All works under this contract shall be strictly carried out in accordance with General Rules, specifications, special conditions read in conjunction with Technical specification and General Conditions of Contract. Technical specification shall take precedence over the Schedule wherever in variance.
- 1.2 Materials to be provided by the contractor for incorporation in the work shall unless otherwise specified in the Technical specification comply with their requirements of the relevant Indian Standard (IS) including errata and amendments read in conjunction with latest edition. The contractor may, however, at his own discretion provide and incorporate in the works such materials complying with the requirement of any subsequently amended or revised edition of the corresponding IS without any price adjustment of the lump sum or while pricing deviation.

2. SCOPE OF WORK

- 2.1 The work under this contract comprises of entire completion of the work described in schedule 'A', 'B', 'C' and as specified in these Technical specifications. Tenderer are advised to visit the Site(S)/Building(S) and ascertain for themselves the exact scope of work and its Working Conditions, viz. Working Hours, Availability of Site(s), etc.; and quote their Tenders (Unit Rate) accordingly. Any claim whatsoever will not be entertained by the Employer at a later date.

2.2. The Scope of work constitutes the following:

- a. The Supply and Installation of the IT Network Infrastructure as per the List of Mandatory Assets 1.0 for a period of 5 years.
- b. Comprehensive Annual Maintenance contract for a period of 5 years extendable upto 10 years.
- c. Network Infrastructure assets as listed in Appendix-1 are the tentative immediate Requirement of BMRCL and this requirement may be considered for finalizing the cost of Items listed under List of Mandatory Assets 1.0. The BOQ indicated in Appendix- 1 is only indicative and the Decision of the BMRCL upon awarding of the contract shall finalize the Quantities as per the Scope.

3. Supply, Installation and Maintenance of the IT Networking Infrastructure:

The scope of work also includes supply and installation of the Items listed under List of Mandatory Assets 1.0 for a period of 5 years as per the need of BMRCL. The Detailed Design and Technical Specification is given below.

- 3.1 The proposed network aims at providing optimal delivery of Internet service at all the BMRCL stations and Depots. Network can support further enhancement like Traffic Control, Access control and services which can be run on priority. An IP/MPLS Network will fulfil all the requirements of Internet services as well as enterprise services like Data fast forwarding, VPN Services and Multicast Services etc.
- 3.2 Each network node (at stations & depots) shall be connected to ISP-1 and ISP-2 in active-standby mode. When active ISP link goes down, standby link shall become active with automatic changeover of IP.
- 3.3 Proposed Network shall have multiple ring architecture of 18 to 20 stations in a ring of Reach 1, Reach 2, Reach 3, Reach 4, R1-Extension etc.. as per the needs of BMRCL as detailed in the diagram below:-
The proposed network is divided into four parts:
DC and DR
Core Network
Aggregation Network
Access Network



3.4 DC and DR

The DC & DR shall be established in Active -Active mode by a third party. The data center shall be fault tolerant and fully redundant. In case of failure of DC due to natural or manmade disaster, the operation and maintenance of the entire network shall be transferred to DR.

The DC & DR shall have NMS, AAA, DNS, DHCP, Syslog solution etc. The Internet Routers, Switches, Network Gateway, Servers, and storage shall be installed in active-active mode to cater to existing requirement and future expansion of the Network. The DC & DR architecture shall be highly scalable and resilient.

ISP links will be terminated at DC and DR locations. 2 locations are identified for establishing DC & DR for service redundancy. The Ring closure will be through the DC and DR Locations as given in the detailed diagram at High Level Architecture..

3.5 Core Network

As the Core network is critical for connectivity, the proposed devices shall provide a high level of availability and reliability. A fault-tolerant network design is proposed to ensure that failures do not have a major impact on network connectivity.

The core network will be able to accommodate failures by rerouting traffic and responding quickly to changes in network topology. The core provides a high level of redundancy.

A core network contains network elements like routers, switches, firewalls and servers. IP/MPLS supported devices are proposed at this layer to serve services like High-Speed Internet and Data/Enterprise VPN Services.

3.6 Aggregation Network

The devices in aggregation network control access to resources that are available at the core layer and must therefore use bandwidth efficiently. This layer provides redundant connections and also provides the opportunity to load-balance between devices.

The network nodes shall be connected in ring architecture as per the needs of BMRCL. The Node is part of the aggregation ring and terminates at different core Nodes. Network elements like Routers/Switches with IP/MPLS will be installed.

3.7 Access Network

The access network to establish Internet at each station is through GPON based technology. GPON network is proposed at the access level shall be highly resilient and scalable. The network shall support multiple services at the user node. Access network shall support bandwidth up to 1 Gbps (per GPON Device) based on the provisioning in the network.

3.8 Connectivity At Stations & Depots:

The user nodes shall be connected using optical fibre from the IT / Control room. The number of cores required and the deployment shall be based on the number of nodes per network node.

3.9 Network Node Connectivity

The connectivity between the network nodes shall be through optical fiber. The optical fiber shall be provisioned by BMRCL.

3.10 Mandatory compliance of the Revamped Network

- Network architecture is scalable and fault tolerant.
- No single point of failure.
- Active monitoring of the network for network usage, planned and unplanned outages creating resilience to minimize the impact.
- Network architecture provides ease of management and troubleshooting.
- Greater Network Uptime.
- Supports Feature Requirements of bandwidth



- Un-interrupted internet services to user in case of ISP link failure and fiber cuts.
- Creates secure network with User Authentication and Device level access control.
- IP address management
- Remote management with secure access.

3.11 List of Mandatory Assets 1.0

1	Core Switch
2	Optical Line Terminal 8 Ports
3	Industrial Grade Optical Network Unit / Optical Network Terminal
4	EMS and Centralized Help Desk System
5	Aggregation Switch
6	AAA (Device Authentication)
7	Network Management System (Network-Switch/Router)
8	DNS, DHCP & IPAM
9	Windows User CAL for Domain Server
10	Monitoring Workstation (With Antivirus)
11	Optical Fiber Cable - 6F
12	Optical Fiber Cable - 2F
13	Fiber Splitter – 1:4
14	Fiber Splitter – 1:8
15	FDMS - 24 Ports
16	FDMS - 48 Ports
17	Patch Card Cat 6 (5 mtr)
18	Patch Card Cat 6 (10 mtr)
19	LC-LC Single Mode Duplex - 5 Meter
20	LC-LC Multi Mode Duplex - 5 Meter
21	LC-LC Multi Mode Duplex - 10 Meter
22	SC PC-SC PC Single Mode Simplex - 5 Meters
23	SC APC-SC APC Single Mode Simplex - 5 Meters
24	Single Port SC Termination Box
25	FC-FC - 5 Meters
26	Rack 42 U

27	Rack 24 U
28	Firewall
29	Access Control Device and Time Attendance and System Software
30	SMPS Power supply 12-24VDC 5amp
31	Electro Magnetic lock
32	TOUCHLESS EXIT SWITCH
33	Emergency door release box
34	4 core 1 sqmm FR LSZH shielded Twisted pair cable
35	CAT6-UTP Armored FR LSZH Cable
36	2 core 1sqmm FR LSZH shielded Twisted pair cable
37	Mounting Back box and Plate

4. The detailed Technical Specifications of each List item given above is listed here:

4.1 Core Switch:

CORE SWITCH		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	The proposed switch solution must provide a wire-speed 1/10/40/100 Gigabit Ethernet (GbE) switch that provides at least 48 QSFP ports supporting 1Gb, 10Gb and 40GB connectivity.	
2	Switch should support system performance of 8.0Tbps switch bandwidth and 4000 Mpps of frame forwarding performance.	
3	The switch should support minimum 150K or more MAC addresses	
4	Switch must support dual internal, load-sharing, redundant power supplies that are hot-swappable.	
5	Switch must support front-to-back or back-to-front cooling with 1+1 redundancy.	
6	Switch must support both conventional Switched-Routed IP and/or Fabric-based network deployments.	
7	The switch should support minimum 250 VRFs and 50000 ARP records/entries	

8	The switch should support minimum of 120000 IPv4 routes and 80000 IPv6 routes	
9	The switch should support a minimum of 4000 IGMP interfaces and 6000 IP Multicast Routes/streams	
10	Fabric-based capabilities must be standards based supporting IEEE 802.1aq Shortest Path Bridging (SPB), as well as IETF RFC 6329 to extend fabric services to the network edge. Vendor must provide proof of third-party interoperability for their Fabric Solution	
11	Switch must provide a built-in functionality or with addition of external components to extend IEEE 802.1aq fabric solution over an IP infrastructure.	
12	Switch should IS-IS IP shortcut routing and PIM free IP Multicast routing.	
13	Switch should support extensions to IS-IS such that L3 IPv4 and IPv6 VRFs can be extended over the IEEE 802.1aq topology using a single instance of IS-IS.	
14	Switch should support a redundant gateway protocol to avoid traffic tromboning and ensure that default gateway routing happens at the first network hop.	
15	The switch should support Traffic prioritization to enable real-time traffic classification into eight priority levels that will mapped to eight queues	
16	Solution must support a method to support a multi-site data center solution allowing for seamless virtual machine migration between multi-data centers while still maintaining first hop routing functionality.	
17	The Switch should secure management interfaces such as SNMPv3, Telnet, SSH, SSL, and Web	
18	Solution must provide a tracking and provisioning solution for automatic attachment of VM-Ware virtual machines to the correct network segment, irrespective of its location on the fabric.	
19	Switch must support standards-based Fabric operations and management tools, such as IEEE 802.1ag Connectivity Fault Management or equivalent	
20	Switch should support VXLAN Gateway services to connect VXLAN topologies to IEEE 802.1aq topologies.	
21	Switch must support multicast services: PIM-SM/SSM, IGMP v1/ v2/ v3, PIM-Gateway capabilities to ensures interconnect with PIM based IP Multicast networks	

22	Switch must support IP Routing techniques: Static, RIP/RIPng, OSPFv2/v3, BGP/BGP+, ECMP, VRRP/VRRPv3, VRF	
23	All the Switches, Transceivers, AAA, Wireless controller (if any), Access points (If any) and NMS (if any) should be from the same OEM for better integration.	
24	Redundant Management Modules with stateful failover. Failure of one CPU shall not cause any disruption of ports and traffics.	
25	The core Switch shall operate with 230V AC only, any external AC-DC converter shall not be recommended.	
26	Core Switch shall have faster booting time.	
27	The OEM should have TAC centre in India and also 24x7 TAC support with Indian Toll free number – reflected in official website/documents.	

4.2 Aggregation Switch:

AGGREGATION SWITCH		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	1U/2U or chassis based 19 Inch Rack mountable Ethernet switch.	
2	All Functionalities of Switch shall be IPv6 compliant, and it should work on IPv6 Platform without any additional hardware/software.	
3	The switch shall be supplied with the latest Modular OS version	
4	Switch should support minimum 24x1/10G SFP+ Ports and future scalability for 6x40G QSFP or better	
5	Must offer system performance of at least 1Tbps switch bandwidth and 800 Mpps forwarding rate.	
6	Switch should support port with minimum 80Gbps of Stacking/Cluster Capacity. Minimum 1meter Stacking cables and accessories should be supplied along with switches. Switch should support stacking upto 8 units or more	
7	Switch must support dual redundant FAN modules and Hot Swappable power supplies from day 1	
8	Switch should support minimum 2GB RAM and 2GB flash and 8 MB or more packet buffer.	



9	Should support minimum 100K MAC or more, ip multicast entries (S, G, V):20K or more, Minimum IPv4 Route Table: 60K or more and IPv6 Route Table: 30K or more, Switch should support VRF, ECMP in same hardware	
10	Switch Should support IEEE standards: -IEEE 802.3ab, IEEE 802.3z, IEEE 802.3ae, IEEE 802.1ba, IEEE 802.3ad, 802.1br, IEEE 802.1ab, IEEE 802.1v, 802.3ad, 802.1p	
11	VLAN Ids:4000 or more and 4K active VLANs	
12	Switch should support IEEE 802.1d, 802.1S, 802.1W and SNMP v1/v2/v3 and 8 Queues per port	
13	Switch Should support IP FRR/IRF /ITU G.8032 or equivalent for ring resiliency for fast/better convergence from day 1	
14	Switch should support IGMP Snooping, MLD v1/v2 from day 1, Multicast Groups-4K or more	
15	Switch should support shall be supported with Ipv4/Ipv6: Static routing, PBR, RIPv2, RIPv6 and OSPFv2/v3 from day 1 and scalable to BGP and ISIS in future.	
16	Switch should support out-of-band management Port, Console Port and USB port.	
17	Switch should support Port mirroring/RSPAN, RMON (4 Groups)	
18	Switch Shall support Radius and TACACS, NetFlow/IPFIX/Sflow for flow exports.	
19	The switch shall conform to IEC-60950/CSA-60950/EN-60950/UL-60950, EN 300 386, CISPR 32, Class A, IEC 61000-4-5 standard for safety requirements of information technology equipment.	
20	Switch should support Operating temperature: 0°C to 45°C and Relative Humidity: 10% to 95% Non-condensing	
21	All the Switches, Transceivers, AAA, Wireless controller (if any), Access points (If any) and NMS (if any) should be from the same OEM for better integration.	
22	The OEM should have TAC center in India and also 24x7 TAC support with Indian Toll-free number – reflected in official website/documents.	

4.3 Network Firewall:

NETWORK FIREWALL		
Brand :		
Part No :		
Sr. No.	Specification	Compliance

		(Yes/No)
	Firewall	
1	The Firewall shall be a non-ASIC based firewall and should have Multi core architecture to mitigate against the sophisticated threats.If option to disable ASIC is there than OEM must mention the performance numbers in datasheet (without ASIC)	
2	The solution shall have integrated Firewall , VPN, IPS and Application control functionality	
3	Firewall shall deliver a stateful Inspection or Ideal throughput of 30 Gbps and 12 Gbps under Enterprise conditions	
4	Firewall shall deliver IPSEC VPN throughput of minimum 2.6 Gbps	
5	NGFW (Firewall + IPS (bi-directional scanning) + Application control) Throughput must be minimum 5.5 Gbps under ideal conditions	
6	Firewall shall support Min 4,000,000 Concurrent sessions	
7	Firewall shall support at least minimum 90,000 new sessions/second.	
8	The platform must be supplied with at least 8 x10/100/1000Mbps and should have one expansion slot for future upgradable	
9	Deep packet inspection (DPI) analysis through data stream-based inspection, vulnerability signatures, policy configurations, protocol identification, data normalization, and both clear-text HTTP and encrypted HTTPS connections.	
10	The appliances must be supported with hardened OS with field upgradable options of RAM and I/O interface options	
11	Soultion Must have High availability (Active-Active & Active & Standby) from day one	
12	The Firewall shall support Layer 2 (Transparent) mode and Layer 3 mode.	
13	Firewall shall support static NAT; Policy based NAT and PAT (Port Addressed Translation).	
14	Firewall shall provide TCP reassembly for fragmented packet protection.	
15	Firewall shall support Geo-location based rules specifically in IPS	
16	Firewall shall support at least 100 IPsec tunnels	
17	Firewall shall be capable of dynamic routing on VPN.	



18	IPSec ISAKMP methods should support Diffie-Hellman Group 1 & 2, MD5 & SHA Hash, RSA & Manual Key Exchange Authentication, 3DES/AES-256 Encryption of the Key Exchange Material and algorithms like RSA-1024 / 1536	
19	IPSec encryption should be supported with 3DES, AES-128 & AES-256 standards	
20	IPSEc should have the functionality of PFS and NAT-T	
21	Firewall should support PKI Authentication with PCKS#7 & PCKS#10 standards	
22	Firewall shall support Active/Passive High Availability.	
23	Firewall shall support Active/Active High Availability.	
24	Firewall shall support Stateful failover of firewall sessions.	
25	Firewall shall support device failure detection.	
26	Firewall shall support link failure detection.	
27	Firewall shall support authentication for HA members.	
28	Firewall shall support encryption of HA traffic.	
29	Support for OSPF and BGP routing protocol	
30	Support for VRRP and Link Failure Control	
31	Shall support dual stack IPv4 / IPv6 Firewall and VPN	
32	Vendor shouldn't have reported any backdoor vulnerability in there product or OS for past 3years.	
33	Proposed appliances must have local storage capacity of min 240 GB SSD from Day one	
34	The Firewalls should have 8GB of RAM, Options to Upgrade RAM	
	Intrusion Prevention System	
1	The IPS should be constantly updated with new defenses against emerging threats.	
2	IPS updates should have an option of Automatic downloads and scheduled updates so that it can be scheduled for specific days and time	
3	The IPS should scan all parts of the session in both directions	
4	Should have flexibility to define newly downloaded protections will be set in Detect or Prevent mode.	
5	Activation of new protections based on parameters like Performance impact, Confidence index, Threat severity etc.	
6	IPS Engine should support Vulnerability and Exploit signatures, Protocol validation, Anomaly detection, Behavior-based detection, Multi-element correlation.	
7	IPS profile can be defined to Deactivate protections with Severity, Confidence-level, Perormance impact, Protocaol Anomalies.	

8	IPS Profile should have an option to select or re-select specific signatures that can be deactivated	
9	IPS must provide option to deactivate all signature which have high impact on performance with a single click configurable option.	
10	Intrusion Prevention should have and option to add exceptions for network and services.	
11	Solution Must support to deactivate IPS automatically if Resource Utilization (CPU and Memory) reaches 90% and automatically activate IPS if same resource utilization comes down to 30%. Solution must also provide option to configure or modify these limits.	
Security Management		
1	The Management should be a separate hardware/VM and should be able to manage policy and all the functions mentioned in above specifications from one single console	
2	Management must provide functionality to automatically save current state of Firewall & IPS Policy each time when any configuration changes in Security policy is enforced, and should have option to revert back to previous state stored state.	
3	Management Server must allow administrator to choose to login in readonly or readwrite mode. Option must be available for multiple admin logins in management.	
4	Solution must allow scheduling of reports daily, weekly and monthly with start and expiration date for reports to be generated automatically according to defined start and expiration dates	
5	Solution must send reports automatically via email to multiple email-ids in both HTML & PDF format	
6	Solution must support multiple administrators to work on policies on session based, All the policies and objects on which Administrator 1 is working should be locked for all other administrator, however other administrator can work on other policy rules and objects in their respective sessions. Changes done by Administrator-1 should not be visible to other administrators till the time Administrator-1 publish changes	
7	Policy Management should have option to create various Layered policy for various Zones and should have option to create various Administrator to manage specific policy layers.	



8	Security management should provide Compliance monitoring framework so that it can monitor compliance status of these devices in the real time. It is expected, the network solution to provide real-time and continuous assessment of all major regulations like ISO27001, COBIT, NIST, FIPS 200, GLBA, ISO27002, HIPAA security, PCI DSS, SOX etc. For compliance feature 3rd party solution can be quoted.	
9	Solution must be able to segment the rule base in a sub-policy structure in which only relevant traffic is being forwarded to relevant segment	
10	Solution must be able to segment the rule base in favor of delegation of duties in which changes in one segment will not affect other segments	
11	Solution must be able to segment the rule base in a layered structure	
12	Solution must be able to segment the rule base to allow structure flexibility to align with dynamic networks	
13	Solution must be able to re-use segment of the rule base (e.g. use same segment of rules on different policy packages)	
14	Solution must have the granularity of administrators that works on parallel on same policy without interfering each other	
15	Solution must integrate logs, audit logs in one console to have context while working on the security policy	
16	Solution must be able to install threat related protections and access related rules separately in order to allow managing it by separate teams	
17	Security management application must be able to co-exist on the security gateway as an option.	
18	Security management application must support role based administrator accounts. For instance roles for firewall policy management only or role for log viewing only	
19	Solution must include a Certificate-based encrypted secure communications channel among all vendor distributed components belonging to a single management domain	
20	Solution must include an internal x.509 CA (Certificate Authority) that can generate certificates to gateways and users to allow easy authentication on VPNs	
21	Solution must include the ability to use external CAs, that supports PKCS#12, CAPI or Entrust standards	
22	All security applications must be managed from the central console	

23	The management must provide a security rule hit counter in the security policy	
24	Solution must include a search option to be able to easily query which network object contain a specific IP or part of it	
25	Solution must include the option to segment the rule base using labels or section titles to better organize the policy	
26	Solution must provide the option to save the entire policy or specific part of the policy	
27	Solution must have a security policy verification mechanism prior to policy installation	
28	Solution must have a security policy revision control mechanism	
29	Solution must provide the option to add management high availability, using a standby management server that is automatically synchronized with the active one, without the need for an external storage device	
30	Solution must include the ability to centrally distribute and apply new gateway software versions	
31	Solution must include a tool to centrally manage licenses of all gateways controlled by the management station	
32	Solution must have the capabilities for multi-domain management and support the concept of global security policy across domains	
33	The management GUI should have the ability to easily exclude IP address from the IPS signature definition	
34	The Log Viewer should have the ability to easily exclude IP address from the IPS logs when detected as false positive	
35	The management GUI should have the ability to easily get to IPS signature definition from the IPS logs	
36	The Log Viewer should have the ability view all of the security logs (fw,IPS ,urlf...) in one view pane (helpful when troubleshooting connectivity problem for one IP address)	
37	The Log Viewer should have the ability in the log viewer to create filter using the predefined objects (hosts ,network, groups, users...)	
38	The Log Viewer should have the ability in the log viewer to create custom multiple "saved filter" for use at a later time	
Third Party Certifications		
1	Proposed Next Generation Firewall OEM must be Leader in Gartner Magic Quadrant for Enterprise Network in last 3 years.	
2	Firewall shall have ICSA certification for Firewall	



3	Firewall OS shall be EAL 4+ certified	
4	The OEM must be evaluated by NSS Labs(Not necessarily the same model) and should have recommended rating in last 3 years in NGFW tests. Suitable proofs must be attached for the same	
Application Control and URL Filtering		
1	Application control database must contain more than 8000 known applications.	
2	Solution must have a URL categorization that exceeds 200 million URLs and covers more than 85% of top 1M sites	
3	Solution must be able to create a filtering rule with multiple categories	
4	The Solution can inspect HTTPS based URL Filtering without requiring SSL decryption	
5	Solution must have users and groups granularity with security rules	
6	The solution must categorize applications and URLs and applications by Risk Factor	
7	The application control and URLF security policy must be able to be defined by user identities	
8	The application control and URLF database must be updated by a cloud based service	
9	The solution must provide a mechanism to inform or ask users in real time to educate them or confirm actions based on the security policy	
10	The solution must provide a mechanism to limit application usage based on bandwidth consumption	
11	The solution must provide the option to modify the Blocking Notification and to redirect the user to a remediation page	
12	Solution must include a Black and White lists mechanism to allow the administrator to deny or permit specific URLs regardless of the category	
13	Solution must provide an override mechanism on the categorization for the URL database	
Anti-Bot and Anti-Virus		
1	Vendor must have an integrated Anti-Bot and Anti-Virus application on the next generation firewall	
2	Anti-bot application must be able to detect and stop suspicious abnormal network behavior	



3	Anti-Bot application must use a multi-tiered detection engine, which includes the reputation of IPs, URLs and DNS addresses and detect patterns of bot communications	
4	Anti-Bot protections must be able to scan for bot actions	
5	The solution should support detection & prevention of Cryptors & ransomware viruses and variants (e.g. Wannacry, Cryptlocker , CryptoWall...) through use of static and/or dynamic analysis	
6	DNS based attacks - The solution should have detection and prevention capabilities for C&C DNS hideouts:	
7	Look for C&C traffic patterns, not just at their DNS destination	
8	Reverse engineer malware in order to uncover their DGA (Domain Name Generation)	
9	DNS trap feature as part of our threat prevention, assisting in discovering infected hosts generating C&C communication	
10	The solution should have detection and prevention capabilities for DNS tunneling attacks	
11	Anti-virus application must be able to prevent access to malicious websites	
12	Anti-virus application must be able to inspect SSL encrypted traffic	
13	Anti-Bot and Anti-Virus must be have real time updates from a cloud based reputation services	
14	Anti-Virus must be able to stop incoming malicious files	
15	Anti-Virus must be able to scan archive files	
16	The Anti-Virus should support scanning for links inside emails	
17	The Anti-Virus should Scan files that are passing on CIFS protocol	
	Anti-Spam	
1	Anti-Spam and Email security application must be content and language agnostic	
2	Anti-Spam and Email security application must have real-time classification and protections based on detected spam outbreaks which are based on patterns and not content	
3	The Anti-Spam and Email security application must include IP reputation blocking based on an online service to avoid false positives	
4	Anti Spam should cover SMTP as a protocol	
5	Solution must include a Zero-hour protection mechanism for new viruses spread through email and spam without relying solely in heuristic or content inspection	
	Sandboxing	



1	The solution must provide the ability to Protect against zero-day & unknown malware attacks before static signature protections have been created	
2	The solution should support deployment in MTA (Mail Transfer Agent) mode, inspect TLS & SSL	
3	The solution should support deployment in TAP/SPAN port mode	
4	The solution should be able to emulate executable, archive files ,documents, JAVA and flash specifically:	
5	File Sanitization capabilities, to web-downloaded documents. Supported file types: Microsoft Word, Excel, PowerPoint and PDF formats	
6	prevents zero-day and known attacks by proactively removing active malware, embedded content and other potentially-malicious parts from a file. Promptly delivers sanitized content to users, maintaining business flow	
7	Allows access to the original file, if it is determined to be safe	
8	The emulation engine should be able to inspect, emulate, prevent and share the results of the sandboxing event into the anti-malware infrastructure	
9	The solution should be able to perform pre-emulation static filtering	
10	The solution would enable emulation of file sizes larger than 10 Mb in all types it supports	
11	The solution should be able to detect other exploitation techniques (e.g. privilege escalation) by monitoring the CPU flow	
12	The solution must be able to support scanning links inside emails for 0-days & unknown malware	
13	Average Emulation time of a suspected malware verdict as malware should be no more than 5 minutes	
14	The threat emulation solution should allow for 'Geo Restriction' which enables emulations to be restricted to a specific country	
15	The solution must provide the ability to Increase security with automatic sharing of new attack information with other gateways in means of signature updates etc.	
	Compliance and Event Co-relation	
1	Vendor must have an option to provide a fully integrated Governance Risk and Compliance application	
2	Vendor must have an option for Real Time Compliance Monitoring across all security services in the product	

3	Vendor must have an option to Deliver real-time assessment of compliance with major regulations (PCI-DSS,HiPPA,SOX...)	
4	Vendor must have an option for Instant notification on policy changes impacting compliance	
5	Vendor must have an option to Provide actionable recommendations to improve compliance	
6	Vendor must have an option to recommend Security Best Practices	
7	Vendor must have an option to Translate regulatory requirements into actionable security best practices	
8	Vendor must have an option to Monitor constantly gateway configuration with the security best practices	
9	Vendor must have an option to Generate automated assessment reports for compliance rating with top regulations	
10	Vendor must have an option to Fully Integrate into Software Architecture & Management infrastructure	
11	Vendor must have an option to Check compliance with every policy change for all Network Security Software Blades	
12	Solution must be fully integrated in the management application	
13	Solution must include a tool to correlate events from all the gateway features and third party devices	
14	Solution must allow the creation of filters based on any characteristic of the event such as security application, source and destination IP, service, event type, event severity attack name, country of origin and destination, etc.	
15	The application must have a mechanism to assign these filters to different graph lines that are updated in regular intervals showing all events that matches that filter. Allowing the operator to focus on the most important events	
16	The event correlation application must supply a graphical view events based on time	
17	Solution must show the distribution of events per country on a map	
18	Solution must allow the administrator to group events based on any of its characteristics, including many nesting levels and export to PDF	
19	Solution must include the option to search inside the list of events, drill down into details for research and forensics.	



20	It the event list view Solution must include the option to automatically generate small graphs or tables with the event, source and destination distribution	
21	Solution must detect Denial of Service attacks correlating events from all sources	
22	Solution must detect an administrator login at irregular hour	
23	Solution must detect credential guessing attacks	
24	Solution must report on all security policy installations	
25	Solution must include predefined hourly, daily, weekly and monthly reports. Including at least Top events, Top sources, Top destinations, Top services, Top sources and their top events, Top destinations and their top events and Top services and their top events	
26	The reporting tool must support at least 25 filters that allow to customize a predefined report to be closest to administrator's needs	
27	Solution must support automatic reports scheduling for information that need to extract on regular basis (daily, weekly, and monthly). Solution must also allow the administrator to define the date and time that reporting system begins to generate the scheduled report	
28	Solution must support the following reports formats: PDF & Excel	
Logging and Monitoring		
1	The central logging must be part of the management system. Alternatively administrators can install dedicated Log Servers	
2	Solution must provide the option to run on the management server or on a dedicated server	
3	Solution must be able to run on an X86 based open servers listed on a hardware compatibility list	
4	Solution must have the ability to log all rules.	
5	Log viewer must have an indexed search capability	
6	Solution must have the ability to log all integrated security applications on the gateway and including IPS, Application Control, URL Filtering, Anti-Virus, Anti-Bot, , User Identity, Mobile Access	
7	Solution must include an automatic packet capture mechanism for IPS events to provide better forensic analysis	
8	Solution must provide different logs for regular user activity and management related logs	

9	Solution must be able to move from security log record to the policy rule with one mouse click.	
10	For each match rule or type of event Solution must provide at least the following event options: Log, alert, SNMP trap, email and execute a user defined script	
11	The logs must have a secure channel to transfer logging to prevent eavesdropping, Solution must be authenticated and encrypted	
12	The logs must be securely transferred between the gateway and the management or the dedicated log server and the log viewer console in the administrator's PC	
13	Solution must include the option to dynamically block an active connection from the log graphical interface without the need to modify the rule base	
14	Solution must support exporting logs in database format	
15	Solution must support automatic switch of the log file, based on a scheduled time or file size	
16	Solution must support adding exceptions to IPS enforcement from the log record	
17	Solution must be able to associate a username and machine name to each log record	
18	Solution must include a graphical monitoring interface that provides an easy way to monitor gateways status	
19	Solution must provide the following system information for each gateway: OS, CPU usage, memory usage, all disk partitions and % of free hard disk space	
20	Solution must provide the status of each gateway components (i.e. firewall, vpn, cluster, antivirus, etc)	
21	Solution must include the status of all VPN tunnels, site-to-site and client-to-site	
22	Solution must include customizable threshold setting to take actions when a certain threshold is reached on a gateway. Actions must include: Log, alert, send an SNMP trap, send an email and execute a user defined alert	
23	Solution must include preconfigured graphs to monitor the evolution in time of traffic and system counters: top security rules, top P2P users, vpn tunnels, network traffic and other useful information. Solution must provide the option to generate new customized graphs with different chart types	
24	Solution must include the option to record traffic and system views to a file for later viewing at any time	

25	Solution must be able to recognize malfunctions and connectivity problems, between two points connected through a VPN, and log and alert when the VPN tunnel is down	
26	Solution must support integration with leading SIEM vendors for Log exports	
	Https Inspection	
1	The Solution offers support for SSL Inspection/Decryption with leading performance across all threat mitigation technologies	
2	Server Name Indications (SNI)	
3	Next Generation Bypass - TLS inspection based on Verified Subject Name	
	Identity Awareness	
1	Must be able to acquire user identity by querying Microsoft Active Directory based on security events	
2	Must have a browser based User Identity authentication method for non-domain users or assets	
3	Must support Kerberos transparent authentication for single sign on	
4	Must support the use of LDAP nested groups	
5	Identity Tags support the use of tags defined by an external source to enforce users, groups or machines in Access Roles matching	
6	Two Factor Authentication for Browser-Based Authentication (support for RADIUS challenge/response in Captive Portal and RSA SecurID next Token/Next PIN mode)	
7	Support for Captive Portal integration with SAML 2.0 and third party Identity Providers.	
	Support	
1	All devices should come with warranty and software licences and support.	

4.4 Enterprise Management System (EMS) and Centralized Help Desk System.

Sr. No.	Specification	Compliance (Yes/No)
1	Solution should provide fault & performance management to the server-side infrastructure and should monitor IP/SNMP enabled devices like Routers, Switches, PA System, VMS, etc.	

2	Proposed Network Management system shall also help monitor key KPI metrics like availability to measure SLA's. Following are key functionalities that are required which will assist administrators to monitor network faults & performance degradations in order to reduce down times, increase availability and take proactive actions to remediate & restore network services.	
3	The proposed solution must automatically discover management elements connected to the infrastructure and map the connectivity between them. Solution should provide centralized monitoring console displaying network topology map.	
4	Proposed solution should provide customizable reporting interface to create custom reports for collected data	
5	The System must use advanced root-cause analysis techniques, discovered topology data and policy-based condition correlation technology for comprehensive analysis of infrastructure faults.	
6	The system should be able to clearly identify configuration changes and administrators should receive an alert in such cases	
7	The system should provide complete and up-to date picture of the managed environment. Should have capability to receive and topology information from multiple automated discovery sources on a near realtime basis Solution should provide a consolidated event dashboard of the entire IT environment covering virtualization technologies, third-party products, applications, servers, storage, networks	
8	Solution should support effective root cause analysis, support capabilities for investigating the root causes of failed service levels and must make it possible to find the underlying events that cause the service level contract to fail.	
9	Accept Data from a variety of formats, provide pre-configured connectors and adapters, Ability to define Adapters to data source in a visual manner without coding.	
10	System should also automatically create tickets based on alarm type	
11	There should be only one integration/interface to Helpdesk after event suppression, correlation and consolidation across the IT landscape to reduce number of tickets in helpdesk	
12	The proposed tool should integrate with network performance management system and support operating system monitoring for various platforms supplied as part of this RFP.	
13	The proposed tool should be able to monitor various operating system parameters such as processors, memory, files, processes, file systems, etc. where applicable.	

CENTRALIZED HELP DESK SYSTEM		
1	Proposed helpdesk solution must provide flexibility of logging, viewing updating and closing incident manually via web interface for issues.	
2	Helpdesk system should provide incident management, problem management templates along with helpdesk SLA system for tracking SLA's pertaining to incident resolution time for priority / non- priority incidents.	
3	Helpdesk should be an ITIL complied tool for Incident, Problem, Change, Knowledge, Configuration and SLA Management processes.	
4	The proposed helpdesk solution must have a built-in workflow engine to define escalations or tasks to be carried out after issues or change order are logged pertaining to surveillance project.	
5	Solution should provide a clustered view of recurring themes hidden in the huge quantities of data for spotting service desk trends easily	
6	Helpdesk should have capability to automatically categorize, understand the impact, and assign the service desk ticket to relevant helpdesk team members	
7	Centralized Help Desk System should have integration with Network / Server Monitoring Systems so that the Help Desk Operators can to associate alarms with Service Desk tickets	

4.5 DNS, DHCP & IPAM

DNS, DHCP & IPAM		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	DDI System must be an Virtual based solution providing all DNS, DHCP & IPAM with defined features & capacity from single vendor.	
2	DDI System should support System logs forwarding/redirection of logs to a defined syslog host.	
3	DDI system should support monitoring using SNMPv2 and/or SNMPv3	
4	DDI system should support NTP time synchronization (client-mode) to multiple servers.	
5	DDI system should integrate with multiple pass-through authentication options including RADIUS, LDAP, Active Directory	
6	DDI Solution should support GUI & CLI based configuration.	

7	DDI Solution should have DNS, DHCP & IPAM solution be integrated together	
8	The proposed DDI Solution from the OEM should have minimum 4 Indian successful DDI deployment of which at least 2 in Indian Government organization in the last 3 years.	
9	The product must be Common Criteria 2 certified EAL2.	
10	The solution shall support termination of DNS over HTTPS and DNS over TLS on the DNS servers so the communication between client and offered DNS server can be encrypted for. privacy	
11	Product must support the ability to view DNS data in different ways (by zone, by server) in order to easily determine which data are served by each server, or to manage zones independently of name server	
12	Solution must support accepting dynamic DNS updates (DDNS) in real time and Solution must support DDNS updates with GSS-TSIG from Microsoft clients to the DNS server	
13	DNS Server	
a	Solution should support standards-based DNS services.	
b	The solution should support the ability to act as an Cache & Recursive DNS server	
c	The Solution should support 10,000 DNS QPS acting as internal DNS Server.	
d	The solution must allow adding the following types of zones: Forward Mapping (Authoritative, Forward, Stub), Reverse Mapping (IPv4 and IPv6)	
e	The Solution should support A Type, NAPTR, SRV, NS, MX, CNAME records	
f	Should support IPv6: AAA, PTR, host, ip6.arpa, DDNS records	
g	The Solution should have a Cache DNS Architecture to switch on demand from BIND to UNBOUND and vice versa.	
h	Solution should support multiple DNS views based on IPv4/Ipv6 Addresses	
i	The Solution must support Instant propagation of changes to the architecture, such as ACLs, DNS Server Options, Forwarders, etc.	
j	The solution should support easy search, sort and filter on any DNS Zone or RR, using any field	
k	The solution should provide a simplified/streamlined process to identify and manage DKIM, DMARC, ADSP, SPF and/or other similar DNS TXT records.	



l	The system should be able to display all hosted DNS Resource Records in one GUI pane	
m	Import Wizard solution must be built-in solution by the DNS Appliance and must not require any external Java program or external Virtual Machines	
n	The solution must support the standard DNSSEC specifications for serving of DNSSEC signed zones and the pass through of client resolution of external zones	
o	The solution must support secure dynamic updates from Microsoft clients using the Microsoft Generic Security Service Transaction Signature (GSS-TSIG) standard	
p	The solution must support TSIG for authentication of zone transfers and dynamic updates	
q	DDI DNS should have a built-in RPZ functionality and does not require additional licenses to enable such feature	
r	The solution must have inbuilt reports & Stats.	
14	DHCP	
a	The solution must provide an easy to use "import wizard" to import DHCP records from legacy DHCP Solution	
b	Import Wizard solution must be supported by the DHCP Appliance and must not require any external Java program or external Virtual Machines	
c	The DHCP solution must provide high availability across two (2) datacenters	
d	The solution must track and log all user changes to DHCP configurations. The audit logs must be able to identify the change(s) made, the user/system making the change, and a timestamp. The solution should also be able to identify the client ip address from where the change was made.	
e	The solution must be able to handle 150 DHCP Lease/sec and upto 5000 active lease IP to maintain	
f	The solution must be able to perform Dynamic DNS for both IPv4 and IPv6 while linking all associated IP addresses to a single device/object.	
g	The solution must graph (visually display) the different scopes based on number of IP's used/available over a set period of time	
h	The DHCP solution must support one IP per MAC address (one lease per client).	
i	The DHCP solution must be able to release the DHCP lease if the MAC address has moved to another IP	

j	The solution must provide device finger printing and display or report the data in the GUI	
k	The solution must support creating DHCP custom options.	
l	The solution must provide the ability to detect or block devices attempting to use DHCP based on various attributes. These attributes must include MAC address but can include device fingerprint, DHCP options, etc.	
m	The DHCP Solution must integrate to IPAM for lease consolidation and capacity planning	
n	The DHCP Solution must have its built-in security mechanism against Rogue Clients performing DHCP Storm attacks without the need for additional licenses	
o	The DHCP Solution must be able to send alerts in case of DHCP related attacks	
p	The DHCP Solution must have inbuilt Reports & stats.	
15	IPAM	
a	The IPAM Solution must support 10,000IP Address Management for both IPv4 & IPv6 together.	
b	The solution must NOT use software agents or thick clients	
c	The IPAM solution must provide high availability within Datacenters	
d	The solution must be flexible to allow the creation of custom fields for objects in IPAM. This must be configurable via the Web GUI.	
e	The solution must include an application programming interface (API) in order to interface with network and/or asset management systems, a configuration management database (CMDB) solution or other applications.	
f	The IPAM solution should be able to seamlessly integrate with proposed DNS and DHCP and should be able to manage centrally from IPAM	
g	The IPAM solution should be able to create its own widget to display customized subnet reports, free IP, used IP.	
h	The IPAM solution should have the ability to locate the available subnets inside a Super net. This is to provide assistance to users when creating subnets inside an aggregated Network.	
i	DDI IPAM user interface must be web-based without specific browser vendor requirements	
j	DDI IPAM system should support High Availability failover	
k	DDI IPAM system should support VLSM (Variable Length Subnet Masks)	



l	DDI IPAM system should be able to export reports in PDF, CSV format	
m	DDI IPAM system should have support for workflow process for various administrator roles and should include a change approval oversight capability.	
n	DDI audit records should contain a timestamp, username and record modified.	
o	DDI Reporting engine should include audit reports.	
p	DDI system should support granular rights administration limiting the function and rights to user and Zone level	
q	IPAM solution should be able to seamlessly integrate to ITSM solution such as Service Now keep track of changes to Private / Public Infrastructure using a ready-made plugin	
r	IPAM solution should be to seamlessly integrate to VRA/VRO to keep track of changes to Private / Public Virtual Infrastructure using a ready-made plugin	
s	IPAM Solution should be able to integrate with Cisco DNA to assist in proper Subnet allocation for diversified office locations	
t	IPAM should be able to perform agentless Cloud synchronization to discover objects on AWS Cloud Infrastructure such as	
	i. Virtual Private Cloud ID and Name	
	ii. VPC Subnet Name, ID and Network Address	
	iii. Availability Zone and Available IP Addresses	
	iv. Hostname and IP Address of the instance	
16	IPAM should be able to perform agentless Cloud synchronization to discover objects on Azure Cloud Infrastructure such as:	
a	Resource Group Name	
b	Virtual Network ID and Location	
c	Subnet ID	
d	Tenant ID	
e	Azure Network Interface IP Address	
17	Management Requirements	
a	The management interface must be web-based with a multi-tenant architecture. It must allow to create different user profiles with different level of permissions. As an example, the roles must include:	
b	Administrator	
c	Reporting User	
d	Read-Only Users	
e	The policy editor must allow to forward the blocked connection to an internal URLs	

f	The Solution should have security policy to prevent from DNS Based Fast attacks using Hold down feature, Recursive Query Timeout, Fetches per server, Fetches per zone without any additional license.	
g	The DNS, DHCP and IPAM must have access to comprehensive logs also able to export the log in CSV format to any 3rd party reporting and analytics used by the operator.	
h	The Management console must provide real time reports on system Operation also must be able to create and maintain audit trails	
i	The DNS, DHCP and IPAM must be capable of generating Graphical representation charting report data.	
18	Security Requirements	
a	The solution must provide signature based, reputational based, behavioural based security measures	
b	The proposed solution has to provide updates to the security protection rules.	
c	The proposed solution MUST support DNS Security features below:	
d	Solution shall use technology to automatically update protection against new and evolving threats as they emerge to protect DNS service	
e	The vendor must have his own Threat Intelligence unit.	
f	The solutions must be able to deliver contextual awareness service and analysis to block threats from a dynamic set of high-risk IP addresses, to Detect malicious activities and sites and IP addresses	
g	The solution must be able to prevent infections, blocking the DNS requests towards malware distribution domains or drive-by domains, and contain the pre-existing infections, blocking the DNS requests towards command and control infrastructures. The solution should support following Feeds :-	
	Base Hostnames	
	Anti-malware	
	Ransomware	
	Bogon	
	DHS_AIS_IP	
	DHS_AIS_ Hostname	
	DHS AIS NCCIC Watch list Hostnames and Domains	
	DHS AIS NCCIC Watch list IPs	

h	DNS firewall and DNS malware prevention must work on all DNS query types such as A, AAAA, NS, SOA, MX, CNAME, ANY, PTR etc.	
i	OEM must have tool that security analysts can use to report on why domains were classified as malicious by the DNSFW/threat feed (Threat Lookup)	
j	DNS behavior analytics engine shall use machine learning algorithms such as entropy, ngram, lexical size, frequency to detect anomalous patterns	
k	The behavior engine shall detect the DNS tunneling and DNS exfiltration / infiltration automatically and once detected automatically apply policy using RPZ to block the communication	
l	The vendor shall have an in-house threat research team to provide real-time intelligence and not depend on third party feeds or lists	
m	The proposed solution shall also protect users when they are outside of enterprise network and regardless of where they connect from, so far as they're using corporate asset to connect to internet	
n	The Solution should have security policy to prevent from DNS Based Fast attacks using Hold down feature, Recursive Query Timeout, Fetches per server, Fetches per zone without any additional license.	
19	3rd Party Security Integration	
a	SIEM - DNS event correlation	
b	The Solution should provide the integration with Next Generation firewall for automated integration of security to block the user	
c	The solution should provide the integration with for automated integration with NAC Solution	
d	The solution should provide the integration with for automated integration with VAPT Solution	
e	The Vendor must have TAC and Development center in India	

4.6 AUTHENTICATION, AUTHORIZATION & ACCOUNTING

AUTHENTICATION, AUTHORIZATION & ACCOUNTING		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)

1	Dedicated redundant hardware Appliance or virtualized platform and one Centralized Console. Should be supplied with 5000 AAA (Endpoint Security) perpetual licenses.	
2	Should be able to integrate with all makes of manageable network devices which can support open standard based protocols required for NAC operation	
3	Must provide Network Access Control, End point Integrity Check and visibility in single pane of glass for the entire infrastructure from day 1 spread across multiple Network Locations / Zones	
4	Each appliance should scale to at least 10000 devices	
5	Solution must utilize standards-based authentication mechanisms enabling non-intelligent devices the ability to connect to the network and receive the proper network services.	
6	Should be able to gather Detailed identity and access information with OS	
7	Detect and protect any device with IP address without the need for a client application on each endpoint including detection of VoIP phones, printers, wireless devices, machinery, cameras, sensors etc.	
8	Should be able to perform VAPT check using built-in or integrating with third-party scanner for network-based vulnerabilities	
9	Device search functionality by attributes such as username / OS type / IP- MAC address / System Name	
10	Support Management Access Authentication and Authorization for Network Device Access	
11	Must be able to create correlated topology based on LLDP, SNMP, L2 and L3 protocol connectivity hierarchy	
12	Must allow scheduled events or tasks that the user can perform behind the scenes or schedule an event for another time in the future.	
13	Must support RADIUS or LDAP Authentication for users of the application.	
14	Must allow IT administrators to easily define number of pre-configured network policies, and designate select personnel to activate/deactivate these policies as appropriate	
15	The OEM should provide support services 24x7 TAC.	



4.7 OPTICAL LINE TERMINAL:

OPTICAL LINE TERMINAL		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	Generic Requirements	
a	The FTTx solution should be based on GPON	
2	Service Interfaces	
a	GPON, 2.5G downstream, 1.25G upstream.	
b	The equipment must be able to operate at the physical distance of 20 km and above (between OLT and ONU/ONT) without any additional amplification required.	
c	The OLT should support 1310 and 1490 nm wavelengths	
d	No. Of Subscribers per GPON port minimum is 128 (Splitting ratio 1:128)	
e	The system shall be support multiple GbE / 10xGbE network connections.	
f	The FTTx platform shall be modular, with minimum of 40Gbps switching capacity.	
g	The Interfaces for the offered FTTx systems shall be of "plug in type (PIU) SFP modules"	
3	Element management Requirements	
a	Unified Element Management system (EMS) which can manage all the supplied OLTs & ONTs should be offered.	
b	The offered OLT must be able to integrate with Network Management System to provide the capabilities for configuration, operation, monitoring, remote monitoring, fault localization, and data storage.	
c	The management solution must support comprehensive service assurance functions including fault and performance monitoring	
d	The management solution should expose REST API for integration with other systems	
4	FTTx SYSTEM GENERAL REQUIREMENTS	
a	Compliant to the relevant ISO/ETSI industry quality standards (e.g. ISO 9000/9001), defining the quality system requirements for the design, development, production, delivery, installation and maintenance of product and services.	
b	The offered equipment shall be able to inter-work with the other user end equipment supplied by other vendors as per ITU-T specifications.	

c	The offered equipment shall support single fiber operation on standard SMF G.652, G.655 & G.657.	
d	The IGMP forwarding capabilities on OLT should be no less than 2000pps,	
e	The equipment shall support IPv4 and IPV6.	
f	The equipment shall support Multicast IPv4 & IPv6 and MLD Version1 & 2	
g	The equipment shall detect the optical power transmission of every ONT, once that it detects some problems in the status of the optical transmission power. The system shall disable the defective ONT automatically in order to guarantee the normally use of the others.	
5	The following VLAN Operations need to be supported:	
a	Mapping of subscriber VLAN to a common service VLAN	
b	Translate/re-write subscribers VLAN ID to another VLAN ID	
c	VLAN switching	
d	Mapping of the subscriber traffic based on the IEEE 802.1p priority tagging to a specific VLAN.	
e	Mapping of the subscriber traffic based on the IEEE 802.1Q VLAN ID to a specific VLAN	
f	Mapping of the subscriber traffic based on the combination of IEEE 802.1p and 802.1Q tagging to a specific VLAN	
6	Subscriber Access methods supported	
a	DHCP, DHCP option 82/60/43/37/18, Static IP, PPPoE	
b	Shall support multiple service delivery of data, voice and video.	
c	Shall support IP policing at the network and subscriber end.	
d	Shall support Ethernet 802.1p and IP TOS bit prioritization.	
e	The OLTs shall be able to support mobile traffic backhauling.	
f	The Equipment must support IP Multicasting to cater for interactive services such as broadcast IPTV, distance learning, etc. The detail implementation of multicasting mechanism must be explained.	
7	QoS Features supported	
a	Trusted connectivity where the QoS setting / traffic prioritization configured by customer can be preserved.	
b	Un-trusted connectivity where the QoS setting / traffic prioritization configured by customer can be overwritten by the Equipment.	



c	The detail Downstream and Upstream QoS and traffic prioritization mechanism supported inclusive of the hardware queue available for each direction. A minimum of 8 hardware queues should be supported at both directions. The OLT should implement some queuing mechanism to manage the hardware queue such as SP, WRR, etc.	
d	Management System shall support bandwidth provisioning starting from 64 kbps granularity.	
e	Shall support Dynamic Bandwidth Allocation (DBA) mechanism to allow optimum bandwidth utilization on each PON interface. The detail implementation and capability of DBA mechanism should be explained in detail.	
f	Shall support basic OAM features such as loop back, remote diagnostic, CC and Link Trace complies with IEEE 802.1ag.	
g	Shall support port-mirroring function for trouble shooting, monitoring, and tracing purpose. The bidder shall explain the port-mirroring function mechanism in detail.	
8	ITU-T / IEEE RELATED SPECIFICATIONS	
a	Shall comply to ITU-T/IEEE recommendations.	
b	ITU-T G.652: Characteristics of a single-mode optical fiber and cable.	
c	ITU-T G.757: Characteristics of a Bending Loss Insensitive Single Mode Optical Fiber and Cable for the Access Network	
d	ITU-T G.703: Physical/electrical characteristics of hierarchical digital interface.	
e	ITU-T G.984.1: GPON General Characteristics.	
f	ITU-T G.984.3: GPON Transmission convergence layer specification.	
g	ITU-T G.984.4: GPON ONT management and control interface specification.	
h	IEEE 802.1ad Provider Bridges	
i	IEEE 802.1ag Ethernet OAM	
j	IEEE 802.1D Spanning Tree Protocol	
k	IEEE 802.1p VLAN prioritization	
l	IEEE 802.1Q VLAN tagging	
m	IEEE 802.1w Rapid Spanning Tree Protocol of at least 8 ports, based on port-based, address-based, and round robin	
n	IEEE 802.1p VLAN prioritization.	
o	IEEE 802.1Q VLAN tagging.	
p	IEEE 802.3 10 Mbps Ethernet	
q	IEEE 802.3u 100 Mbps Fast Ethernet	

r	IEEE 802.3ad Ethernet Link Aggregation	
s	IEEE 802.3ae 10 Gigabit Ethernet	
t	IEEE 802.3z Gigabit Ethernet	
u	IEEE 802.3x Flow Control	
v	IETF RFC 2131: DHCP	
w	IETF RFC 2236: Internet Group Management Protocol, Version 2.	
x	IETF RFC 2933: Internet Group Management Protocol Management Information Base	
y	IETF RFC 3046: DHCP Relay Agent Info Option (Option 82)	
z	IETF RFC 3376: Internet Group Management Protocol, Version 3	
9	OLT Hardware features	
a	The OLT shall be rack mountable and meet ETSI standards for indoor equipment requirement.	
b	The OLT shall be designed to Operate at 210-250V ac Dual Redundant Power supplies	
c	Operating temp -5 to 50 centigrade	
d	Fan is required for cooling the OLT to force airflow.	
e	The OLT shall provide one craft port for local configuration access.	
f	The OLT shall support one 10/100M Ethernet port for linking with EMS.	
g	The equipment must support a minimum splitting ratio of 32 splits or more.	
10	Physical interfaces supported/loaded	
a	Supporting Ethernet interfaces towards the FTTx network is the mandatory requirement.	
b	The offered OLT should support 8 GPON interfaces, 4 x 1G SFP interfaces, 2 x 10 G SFP+ interfaces	

4.8 OPTICAL NETWORK UNIT:

OPTICAL NETWORK UNIT		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	GPON	
a	Standard: ITU-T G984.1 /G984.2 /G984.3 /G984.4 /G984.5 /G988 (rev10- 2012)	



b	Encapsulation Method (GEM) supports Ethernet	
c	Configurable AES (Downstream) and FEC (Downstream and Upstream)	
d	Bitrates: 2488Gbps (Downstream) /1244Gbps (Upstream)	
e	Receiver Sensitivity: -28 dBm	
2	WAN Uplink Interfaces : G.984 GPON B+	
3	L2/L3 layer	
a	VLAN-ID to GEM port-ID mapping (per WT-156): -N:1 VLAN , -1:1.	
b	Transparent VLAN	
c	Classification: DSCP/TOS, 802.1p TCI, VLAN-ID, MAC address;	
d	Traffic Management: up to 8 queues per T-CONT	
e	Priority-controlled mode or up to 8 queues per T-CONT	
f	Rate-controlled scheduling mode;	
g	802.1q VLAN processing: Q-in-Q, tagging, removing tag,	
h	Replacing tag or transparent forwarding;	
i	Routing: Network Access Translation (NAT) and Network	
j	Access Port Translation (NAPT)	
k	Firewall	
l	VPN	
m	DHCP Client and Server	
n	PPPoE Client	
o	Performance: 1000Mbps bidirectional	
4	Features	
a	ONT should support IPv4, IPv6, Dual stack (IPv4/IPv6).	
b	ONT should support Dual stack through IPoE termination.	
c	ONT should be able to operate with some LAN ports in routed and some in bridge mode with IPv4/IPv6 dual stack support.	
d	ONT should be able to handle multiple VLAN on WAN side with flexibility to map to LAN side ports.	
e	ONT should support dot1q LAN encapsulation mode in WAN side.	
f	ONT should be able to map Analog Voice port to any of the WAN side	
g	VLAN interface (FX port mapping to the non-default wan VLAN/interface should be supported.	
h	ONT should support configuring multiple Static Routes.	
i	ONT should be able to share DNS information received via DHCP to LAN side	

j	ONT should support DHCPv4 ip-address assignment from local pool (Example pool 192.168.x.x) to devices in LAN.	
k	DNS server info must propagate to devices via DHCPv4 OFFER MESSAGE from ONT to LAN clients.	
l	ONT should be capable of sending periodic IPv6 RA messages.	
m	ONT should support the delegated IPv6 Prefix assignment.	
n	ONT should support NAT44 (translation of private address to wan side IPv4 address).	
o	ONT should have ability to set COS fields as 802.1p in tagged packets towards BNG	
p	ONT should have ability to set DSCP values.	
q	ONT should support assignment of Static IPv6 address on WAN side (ability to configure IPv6 address, prefix length, Default IPv6 gateway address, primary & secondary IPv6 DNS server should be supported)	

4.9 NETWORK MANAGEMENT SOFTWARE

NETWORK MANAGEMENT SOFTWARE		
Brand :		
Part No :		
Sr. No.	Specification	Compliance (Yes/No)
1	NMS should be virtual / hardware-based appliance and from the same OEM providing switching and wireless solution	
2	Must be able to support minimum 125 Switches and should be scalable to support minimum 1000 switches on the same virtual appliance	
3	Must provide centralized management that should be able to manage wired, wireless & security components of 3rd party OEMS's	
4	Must allow system-level operations such as device discovery, event management, logging and application maintenance to be performed centrally.	
5	Must provide the capabilities to modify, filter, and create your own flexible views of the network. Must provide an audit trail (event log).	
6	Must allow for graphing or viewing in table format and multiple OIDs that are user selectable.	



7	Must allow scheduled events or tasks that the user can perform behind the scenes or schedule an event for another time in the future.	
8	Must provide a system wide deployment of VLAN configuration and monitoring capabilities.	
9	Must support RADIUS / LDAP Authentication.	
10	Must have SNMP MIB compile capability to integrate any SNMP compliant device	
11	Must provide a tool to find the physical location of systems and end users, and where they are connected, quickly and easily.	
12	Must provide automated functionality to ensure that appropriate services are available to each user, no matter where they log on.	
13	Must be able to integrate with NAC and Wireless devices	
14	Must allow IT administrators to easily define a number of pre-configured network policies, and designate select personnel to activate/deactivate these policies as appropriate	
15	Must provide a detailed inventory of products organized by device type.	
16	Must support the ability to present detailed configuration information including date and time of configuration saves, firmware version and file size.	
17	Must record a history of device attributes such as firmware, configuration changes and reports any changes made to the device.	
18	Must be able to generate valuable, in-depth reports for network inventory for planning purposes.	
19	Must support the ability to download firmware to single or multiple devices simultaneously and should support automatic or manual backup of configuration	
20	NMS should be integrated with security devices such as NAC or IDS. The Bidder must provide a NAC solution based on the number of End point devices	
21	Must provide a web interface that contains reporting, dashboards, troubleshooting and monitoring tools.	
22	Must provide web-based flexible view, device views and event logs for the entire infrastructure.	
23	Must enable diagnosis of network issues and performance through real-time flow analysis.	
24	Must provide port level analysis capability and customizable reports.	

25	Should have the capability to integrate with 3rd Party Vendors.	
26	Should have the capability to reduce risk and ensure network configurations comply to HIPAA / PCI or equivalent with that analyses and assesses network configuration for compliance across entire wired / wireless network.	
27	Should have the ability to get actionable business insights and speeding up troubleshooting by separating network from applications	
28	All the Switches, Transceivers, AAA, Wireless controller (if any), Access points (If any) and NMS (if any) should be from the same OEM for better integration.	
29	The OEM should have TAC center in India and also 24x7 TAC support with Indian Toll free number – reflected in official website/documents.	

4.10 MONITORING WORKSTATION:

A. CPU			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Processor	Intel i7 10th Gen or better	
2	Frequency	3.5 Ghz or better	
3	RAM	16GB	
4	HDD	256 GB SSD for OS + 1TB SATA HDD	
5	OS	Windows 10 Professional or latest	
6	Interface	HDMI, VGA, 2 * USB 3.0, 2 * USB 2.0	
7	Network Interface	Gigabit Ethernet	
8	Wireless Interface	Bluetooth 4.0 or latest and Wifi	
9	Audio	1 Audio mic in, 1 Audio out, 1 audio in-out 3.5mm jack	
10	Form factor	SFF	
11	Type	Business/Office/Pro edition CPU model should be able to work 24x7x365	

B. MONITOR			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Display Size	24 " Monitor,	



2	Technology	IPS Panel, LED backlit LCD/TFT	
3	Resolution	Full HD	
4	Interface	HDMI, VGA, DVI	
5	Power Input	AC 220V	

C. Graphics Card			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Type	External	
2	RAM	2GB	
3	Video Interface	HDMI (2) with 2 HDMI to DVI converter	

D. Keyboard & Mouse			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Interface	USB Wired	
2	Type	Standard 104 keys	

E. Software Tools			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Office	MS Office Professional/Business/corporate Edition or latest with full time license	
2	Antivirus	Full time licensed Antivirus having end point security, web protection, privacy control, antispam, mail protection, firewall	

4.11 FACIAL RECOGNITION BIOMETRIC SYSTEM:

FACIAL RECOGNITION BIOMETRIC SYSTEM			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Functional Specification	The Access Control Software (ACS) software shall provide menu driven functions for ease of use and best user experience.	



2	User Management Module	The User Management Module of ACS Software shall support following:	
		1. Seamless active directory integration for single sign on, automatic import of employee details and automatic deactivation of access rights on employee profile deactivation in active directory server	
		2. Adding users with standard fields like name, email, employee id, contact details, blood group etc. and option shall be available to create at-least 40 additional custom fields	
		3. Adding employee photograph along with provision to add at-least three more pictures corresponding to an employee such as scanned copies of national ID card, passport, police verification etc.	
		4. Managing access rules in terms of setting up extended access time for physically challenged users, pass back exemption for specific users, PIN exemption for specific users and Multi Man Role.	
		5. Assigning up to 8 access levels per user, additional 2 elevator/lift access levels and unlimited shared access levels. The users shall get access to the different areas of the premises based on these access levels. It shall be possible to group users and assign them the access levels in bulk.	
		6. Assigning current and future shift roster to an employee. It shall be possible to assign Shift roster to employees in bulk.	



		7. Defining custom employee groups. The feature shall facilitate the logical grouping of employees based on management structure, thus shall empower the project coordinators, floor-managers or project managers to manage access & time attendance rules and view reports of a specific user- group. It shall be possible to delete these groups.	
		8. Assigning privilege level of an employee like Administrator for the entire system, administrator for a branch only, report viewer and a normal user having access to own personal information/ personal reports/ability to file outstation duty request, visitor request as minimum. It shall be possible to create group users to manage access and attendance of groups. Assigning a privilege to approve visitor request and outstation duty request. Assigning privilege of a security administrator who can configure and monitor the access control hardware and a security viewer privilege who can only monitor and respond to the event and alarms. It shall also be possible to select 'None' as a privilege which allows no access to the software.	
		9. Advanced search form to search users on fixed and mixed search criteria such as: name, department, title, access group, time attendance rule, card status etc.	
		10. Assigning access levels to an employee of the same organization visiting from a different branch.	



		11. Assigning Mobile App and Mobile credentials to users. This shall also allow to edit the mobile privilege of a user, remove mobile privilege of a user and delete a mobile device from the user authorized list of devices.	
		12. Importing the employee or contractor profile information from excel/csv file.	
3	Credential Management Module	The credential management module shall provide following functionalities:	
		1. Create and maintain credential directory. It shall be possible to upload all card details (format and/ or card ID) in the ACS Software and whenever required it can be issued to employee. The card IDs which are not issued to any users shall be made available by the software to be issued to employees.	
		2. Searching of cards on the basis of various searching criteria drop downs such as Employee ID, Employee Name, Card Number, Format Name, Status (active/inactive). It shall also be possible to search the mobile ids/credentials issued to different users using the search tool.	
		3. Issuing a credential where the credential can be issued to either a human or vehicle, access type shall be selectable from different modes, 'card only', 'card + pin', 'card or pin' and 'pin only'. It shall also be possible to issue card/credentials from the list of available credentials or manually adding a card id.	



		4. Editing a credential where cards can be searched either by Employee Id or Card Number and allows the user to edit PIN, Card Issue Date, Card Type and Expiry Date. It shall also allow to set the status of a card to active or inactive.	
		5. Segregate credentials in to different categories based on owner types such an employee, vehicle, visitor etc.	
		6. Assigning credentials to employees in bulk and also assigning multiple credentials to single user.	
		7. Capable of managing multifactor authentication for biometric readers also like finger only, finger + card, card only, finger or card etc.	
		8. Searching interface to edit the credentials or to get the complete visibility of the company owned credentials along with their current status.	
		9. Assigning priority or VIP category to a card id or to a user so that the credential is never denied access on the ACS System.	
4	Badge Designing & Printing	The ACS Software shall also be capable of designing the Identity Badges for the users and it shall be possible to print these cards using open platform card printers. This functionality shall support windows based image printing command so that the designed badges can be printed from a variety of card printers.	
		Following options shall be available for ID Card/Badge Designing:	
		1. Select or define the size of the ID card/Badge.	

		2. Pick & Drop user information from the available list of profile information fields like name, department, designation etc.	
		3. Uploading the Photo or Automatically fetching the photo of a user from the database.	
		4. Uploading corporate logo as opaque or as a background image	
		5. Alignment shall be possible for all fields.	
		6. Save the ID card/ Badge template in the software for printing.	
		Following options shall be available for ID Card/Badge Printing:	
		1. Automatic fetching the user profile information according to the saved template of badges.	
		2. Automatically managing the static & variable data printing.	
		3. Single or Dual side printing	
5	Biometric Enrolment and Distribution	1. The ACS Software shall be integrated with different biometric technologies which are fingerprint, face recognition, Iris, 3D Fingerprint (Wave). The Enrolment module shall support enrolment of all these technologies from a single software interface.	
		2. The ACS Software shall be integrated with different biometric manufacturer's directly with the devices, it shall not use any middleware software or database from the manufacturer, for enrolment of the biometric templates of the users.	



		3. The ACS Software shall be integrated in such a way that it shall not use any middleware software or database from the manufacturer, for communication and distribution of the biometric templates of the users to all the biometric devices.	
		4. The ACS software shall enable enrolment directly from the Biometric device over TCP/IP or from the USB based enrollment setup. It shall have no effect on the distribution, which shall happen to all devices.	
6	Access Control Module	1. The ACS Module shall provide options to configure multiple access levels. The Access Level shall be a combination of various access parameters such as working day/holiday, time codes, reader groups, elevator groups etc.	
		2. The ACS Module shall support assigning access levels (up to 8 access levels per facility/branch/business-unit) to a set of users to enable them to access specified areas & additional 2 access levels for elevators during a specified period.	
		3. The ACS Module shall support Multi-Man role enforcing more than one user to present their cards to get access through the designated access controlled points.	
		4. The ACS Module shall support Timed Anti-pass-back (APB) which means it shall be possible to define a time delay between 2 readings of a same access card. This shall enable to avoid unwanted events logged in the system and also within the defined time, it shall avoid reading the same card if passed back by its user to another person.	



		5. The ACS Module shall support Soft APB and Hard APB, where Soft APB shall generate an alarm in the Module if a user has any miss punch on any of the entry or exit reader of a door but shall not deny access, the Hard APB shall generate Module alarm if a user has any miss punch on any of the entry or exit readers & additionally the controller shall deny access for the same user on the door	
		6. The ACS Module shall support Local Anti-pass-back and Global Anti-Pass-Back to deter tailgating. This shall mandate a user to flash access card at each access point whether entry or exit. Bypassing any access point deactivates the access rights of the user. Local refers to the entry and exit of a single access door/point and Global means the entry & exit points of multiple doors.	
		7. The ACS Module shall support allocation of extended access time to some specific users like physically challenged users who needs extra time to move in and out. The extended access time shall be configurable in the Module and the access control rules shall be applicable accordingly to such users.	
		8. The ACS Module shall have option to define Time Code which means the total duration of time in a day when users/employees can get access through the access barriers/doors. This shall be configurable between 00:00 hrs. to 23:59 hrs. It shall possible to define multiple time codes.	



		9. The ACS Module shall have option to define multiple holidays up to unlimited number of days. The interface shall provide option to make a specific holiday as repeating holiday which means the holiday will automatically gets repeated on the same day of upcoming years also. Further, the Module shall provide option to group multiple holidays so that all branches available in different geographical locations can have their regional holidays to be applicable on access rules.	
		10. The ACS Module shall support defining of Time Zone that are the combination of Time Code and Holiday groups applicable to number of days in a week. The access rule shall work according the defined Time Zone. It shall be possible to create Multiple Time zones in the system.	
		11. The ACS Module shall allow grouping of access readers for user/employee access. The list of all the installed readers shall be available in this section that can be grouped floor-wise, area-wise or location-wise.	
		12. The ACS Module shall further support combining Time Zone and Reader Groups to create Access Groups. It shall be possible to define it either for Employee or Vehicle and for applicable to Visitor as well. All user/vehicle shall be issued this Access Groups and the respective time code, time zone, holidays & readers shall be available for that user to get access in the premises.	



		13. The Access Groups shall also support functionality of Shared access Groups which means an access group can be made applicable to multiple branch users. The users of different branches can be issued with this shared access group and they can access multiple branches using the same access credential.	
		14. The ACS Module shall support Multi-man Access rule in such a way that for getting access from a particular door, it shall become a mandate for all the users in the Multi-man Access Rule to show their credentials.	
		15. The ACS Module shall support allocation of access rights to Visitors also in order to track a visitor.	
		16. The ACS Module shall provide real time occupancy count of whole location or any of the area	
7	Graphical User Interface	It shall be possible to create a Graphical User Interface (GUI) by uploading floor maps in image formats into the Module.	
8	Time & Attendance Module	1. The Time Attendance Module shall be by default part of Access Control software and shall utilize same database. Any system providing a time attendance software as a separate software with separate database is not acceptable. Both Time attendance & Access Control shall be managed from a single user interface.	
		2. The Module shall integrate with various kinds of RFID Cards, PIN, Magnetic Stripe, Biometrics (Fingerprint, Vein, IRIS, Palm, Face) to Identify and mark the attendance of the employees.	



		3. It shall be possible to configure the readers as login-logout readers. The readers configured as login-logout readers shall be taken as the attendance readers in the software. Any event coming from any other readers shall not be considered in attendance.	
		4. The Attendance rules can be defined to support attendance calculations based either on Total Working hours (total time from first login till last logout) or based on Effective Working Hours (deducting the time a person has spent outside the attendance reader zone from total time from first login till last logout). Such rule can be applicable on any type of shifts defined in the system.	
		5. The attendance module shall support web login for every employee to achieve workflows related to request by employees regarding leave & attendance regularization etc. and also approval/ rejection by their immediate superior or reporting manager. The regularized attendance shall overwrite the previous record of attendance for the requested day but it shall be specifically displayed as regularized attendance in the reports.	
		6. The Attendance module shall support all types of shifts whether these are Single Fixed Shifts, Multiple Shifts, Shift Roasters, Automatic Shifts and Flexible Shifts.	



		7. The Attendance module shall support overtime rules like duration of overtime in shift rules, minimum over time hours which means at least the defined number of hours a person has to work before getting it counted in overtime. It shall also be possible to define maximum overtime hours a person can get for a particular day.	
		8. The attendance module shall support defining non-working hours like lunch break or tea breaks for each shift.	
		9. The software shall provide a default Application Processing Interface (API) to integrate with ERP/Payroll/HRMS supporting two way integration. It shall be automatic user profile mapping from ERP/HRMS/Payroll system to ACS Software and also transferring back attendance logs to ERP/HRMS/Payroll which can be further processed by ERP/HRMS/Payroll for generating salaries for the employees.	
		10. The attendance module shall support leave management policy in terms of defining leave types like 'comp off', 'Medical leave', casual leave, half day leave and minimum & maximum leaves allowed per leave application. It shall be possible to set leave approval policy	
		11. It shall be possible to define leave accrual policy in terms of accrual frequency, accrual quantity, maximum balance & opening balance which can further work in accordance with year end policy to be defined in terms of reset date of accrual leaves, maximum carry forward leaves and accrual prorated based on nearest day, minimum day, maximum day or no round off.	

		12. It shall be possible to define additional policy regarding days of weekend between leaves to be counted as leaves or not to be counted as leaves.	
		13. It shall be possible to define additional policy regarding holidays between leaves to be counted as leaves or not to be counted as leaves.	
9	Reporting Module Standard Features	1. The section shall provide option to filter the reports based days like today, weekly, monthly & custom date (from date – to date selectable).	
		2. Further filtration shall be supported based on Employee Criterion like Employee, branch & department, selectable.	
		3. It shall provide Ordering of reports on the basis of various parameters like employee name, employee id, shift name etc., in ascending or descending order and then by parameters like date of duty, first login, last logout etc., again in ascending or descending order.	
		4. The reports shall be available at-least in CSV and pdf format.	
		5. Beside from the standard reports the system shall allow customized report templates to be created utilizing the above filtering and ordering along with enabling, disabling any field and sequencing of rows and columns. These customized reports shall be saved as templates to be generated at any time by the user.	
		6. The system shall support report scheduling which shall enable to user to create a criteria and save it for the system to create, generate, download and send the report to the provided email id in the criteria.	



10	Attendance Reports	1. Individual Report: Here, privileged user shall generate report of employee(s)' attendance status (full day, half day, etc) on a daily, weekly, monthly or custom period basis.	
		2. Individual Detailed Report: Here, user shall generate detailed report of employee(s) for access information with event date, time and ID.	
		3. Daily Summary Report: As suggested by the name, this report shall provide daily summarized details on the total number of employees present, absent, on half day leaves, on full day leaves, late to work and left early from work.	
		4. Individual Summary Report: Here, privileged user shall generate detailed summary report of every employee including number of days present, absent, on half day leaves, on full day leaves, late to work and left early from work.	
		5. Daily Muster Report: On clicking this report, user shall generate present or absent wise report of employee(s).	
		6. Late Entry Muster Report: As the name suggests, Late entry reports shall be generated of the employee(s) through this report.	
		7. Early Exit Muster Report: Early Exit report of the employee(s) shall be generated through this report.	
		8. Absentees Report: Privileged user shall generate a complete report for the employee(s) who haven't marked their attendance.	
		9. Total Working Hours Report: Privileged user shall generate the report to determine the total	

		11. The Report on the number of working hours of the employee(s).	
		10. Weekly Report: Privileged user shall get the In/ Out, total working hours and Status (Absent/ Present) details of each employee on a weekly basis.	
		11. More Than Working Hour Report: Privileged user shall generate the report of employee(s) who worked for more than the specified number of working hours. This differs on the basis of Attendance Status such as full day, half day, overtime, etc. Working for more than the specified number of hours in any of these attendance status types shall be known through this report.	
		12. Less than Working Hour Report: Privileged user shall generate the report of employee(s) who worked for less than the specified number of total working hours. This differs on the basis of Attendance Status such as full day, half day, overtime, etc. Working for less than the specified number of hours in any of these attendance status types shall be known through this report.	
		13. First Login – Last Logout Report: In this section, user can generate first login and last logout report of the employee(s).	
		14. Detailed Muster Report: A detailed report shall be generated including month's day status report, login time, logout time, late in, early out & total working hours through this report.	
		15. Detailed Muster Time Keeping Report: A report shall be generated indicating first login and last logout of the employee(s).	

11	Access Reports	1. Individual Access Report: In this section, the user shall generate access (In/Out) report of the employees.	
		2. Reader Access Report: In this section, user shall generate an access report on the basis of a specific reader.	
		3. Reader Group Access Report: In this section, user shall generate an access report on the basis of a reader group.	
		4. Card Not Shown Report: In this section, the user shall generate a report which gives details of employees who have not shown their card for a specified number of days.	
		5. Who's Where Report: In this section, user shall generate a report to find out the current area of the employee's presence	
		6. Muster Point Report: This generates a report of all the employees gathered at a muster point (Know Muster Point here)	
		7. Individual Reader Assignment Report: In this section, the report will provide details about which reader is assigned to each employee.	
		8. Reader Assignment Report: In this section, user shall generate a report showing the employees who are provided access to a particular reader.	
		9. Guard Tour Report: In this section, user shall generate a guard tour report by scanning all the checkpoints used during the guard tours.	
		10. Employee Verification Report: In this section, user shall generate the reports of employees verified by the tab application (verified by authorized supervisor).	

		11. Logical Access Report: In this section, user shall generate a report which consists of login and logout details of users/ employees who accessed Access Control Software Web Interface and Client Interfaces.	
		12. Biometric Enrollment Report: Generate a report of employee(s) enrolled through various biometric/ biometric enrollment devices.	
		13. Employee Muster Point Report: Generate a muster point report of employee(s), i.e, who all gets gathered in an area during a specified period.	
12	Employee Audit Log Reports	1. Employee Card Assignment Report, in this section, the card assignment history of employee(s) shall be audited.	
		2. Employee Access Rule Assignment History, In this section, the access rule assigned to the employee(s) for a particular time period shall be audited.	
		3. Employee Current Card Report, In this section, a detailed report shall be generated elaborating details of the current cards issued to the employees with date and time.	
		4. Employee Current Access Rule Report, In this section, user shall generate a report that provides details of the current access rule assigned to the employee(s).	



13	Security & Data Integrity	Each and every component of the ACS system shall be secured using the best encryptions and security standards. All the communication channels between different components shall also be encrypted making it a highly secured system. Following are the minimum security standards and encryption methodologies which shall be provided in ACS:	
		1. Software Login shall be secured providing strong password implementation policy, enforcing strong password with minimum/maximum limits, use of upper & lower case characters, numeric, special characters. It shall also support policy for password expiry, portal lockout, audit trails, use of captcha etc.	
		2. Server to Browser communication shall be secured using Hypertext Transfer Protocol using Secured Sockets Layer [HTTPS (SSL)].	
		3. Server Application Security shall be ensured by developing the software according to ISO 27001 Standards or Information Security & Management Systems (ISMS). Further, it shall be certified for any Vulnerability Assessment & Penetration Testing (VAPT) by a recognized 3rd party testing authority	
14	Dashboard	The ACS software shall process the raw data and add dimensions. The system also combine the access control data with meaning and context, generating usable information. The information should be available in the form of a comprehensive reporting engine as well as underlying information tables in Insight dashboards.	

		The ACS software shall also provide advanced machine learning algorithms based artificial intelligence insights dashboards to contextualize data and present it to the users, guiding them through the root cause analysis, risk identification and making informed decisions, subsequently strengthening their security framework.	
		The ACS software dashboard shall provide the total number of hardware components installed and configured within the facility.	
		The ACS dashboard shall be a set of interactive and analytical dashboards that aggregates logs, trends, policies, and best practices with the help of advanced Machine Learning (ML) engines to provide actionable predictive insights for preemptive risk management.	
		It should offer operators single-click underlying data access and comprehensive filtration criteria for prompt actions and informed decision-making.	
		It shall also provide statistical analysis by aggregation of multiple security information point's alarm, infrastructure, Administration Score for simplified visualization of security status across facilities by using scores to uses advanced machine learning algorithms.	



		The Alarm dashboard should provide analytical insights about alarms collected in access control system databases. The alarms dashboard should be a graphical and statistical representation of alarms based on multiple contextual information points: alarm severity, response, escalation, event sources, and location.	
		The dashboard should be a hawk-eye view to a security director on sites requiring immediate attention.	
		The Credential dashboard provides analytical insights about credentials in use. Credentials should be used as the keys to a facility, and mismanagement has severe consequences. The panels should highlight credentials that need a review, the overall distribution pattern, and credential types across the different Metro facilities.	
		The attendance dashboard should display the trends of employee turnout (half days, early-outs, leaves, late-ins, miss punches, etc.) over the selected time duration. It should help the Metro to identify an unusual attendance pattern on respective dates and bring it to the Metro management's notice.	
		The Personnel dashboard accurately represent the total users within a facility, active headcount, user status, type-wise, and department-wise user count. It gives a one-shot glimpse of the organization's complete workforce/personnel/resident profile etc.	



		The anomaly dashboard should provide insights on anomalous events and defaulting users based on predictive analysis of personnel's and system's historical behavioral patterns, allowing the security director to identify the risky profiles and faulty devices and take corrective actions.	
		Security Audits and scores dashboard should use advanced ML engines to measure and rate the robustness of physical access management infrastructure on multiple parameters such as alarms, response, infrastructure, and administration.	
		The dashboard to pinpoint vulnerabilities and threats to each Metro facility, facilitating security directors to take corrective actions to improve an Metro's scores and overall security.	
		By comparing multiple knowledge points gathered from internal and external sources, the ACS system should determine whether the Metro's security performance is good or bad.	
		The vulnerabilities and threats should give heads-up to the users. The final stage of the analysis should provide summary if the Metro is maintaining its security infrastructure as per the global standards or not.	
15	CPU	Nvidia ARM Cortex-A15 Quad-Core 2.1GHz	
16	Display	7" WVGA color capacitive touchscreen Display	
17	Operating System	Embedded OS/Linux/Windows	
18	Algorithm	3-Dimensional Recognition - NIST approved	



19	Sensor	3D Camera, Infared Camera, Visible Image Camera	
20	Key Pad	Touch keypad	
21	Input Keys	Sixteen Configurable Touch Input keys on Device	
22	Network/Communication:	Ethernet, RS485, RS422, USB	
23		- Wi-Fi and 4G options	
24	Other Communication	Loudspeaker & microphone	
25	Display Customisation	Corporate video Playback, wallpapers, custom Greetings.	
26	Embedded Players	Audio & Video player	
27	Time & Attendance	Touchscreen Time Clock, featuring programmable function keys	
28	Verification Time	< 1 sec	
29	Verification Technology	Match on Card/ Match on device	
30	Face Template Capacity	20,000 users and go upto 40,000 users; One Face template per person.	
31	1:N and 1:1 In Device	20,000 - upto 40,000 Templates - One face template per person	
32	Template on Card 1:1	250,000 IDs in authorized user list,	
33	Template Size	1:N 1962 bytes max (Template on device)	
34		1:1 962 bytes max (template on Card)	
35	Log Capacity	1 Million transaction logs (10,00,000 logs)	
36	Administration	Seamless on-device administration	
37	RF Card	Contact less Mifare (13.56MHz)/Desfire	
38	Multi Factors	Contactless smartcard, PIN and BioPIN	
39	Matching Method	1:1, 1:N, Auto	
40	Authentication Type	FACE Only, Card + FACE, Card + PIN + FACE	
41	Face Detection Distance	0.50M to the face device. No multiple faces should Identify	
42	Viewing Angle of Face Reader	People from 1.2 to 2m – including wheel-chaired persons	



43	Inputs/outputs:	Wiegand In & Out (customizable up to 512 bits), OSDP, Door Relay, 3 General Purpose Inputs (including Door monitoring), 3 General Purpose Outputs	
44	Internal Relay	Deadbolt, EM lock, door strike, automatic door	
45	Tamper Evident	Anti tamper switch	
46	Sound and Interface	Multi tone Buzzer	
47	Operating Voltage	12 to 24 V DC (3A min @12V)	
48	Operating Temperature	-10°C to 45°C (14°F to 131°F)	
49	Humidity	10% to 80% (non condensing)	
50	Certification	CE, CB, FCC, RoHs, REACH and WEEE	
51	BIS Certification	BIS approved	
52	UL Listed	UL294	
53	Ingress protection:	IP65	
54	Impact protection:	Outdoor ready	
55	Anti-fraud features	Liveness detection, timed anti-pass back, Banned/authorized user lists	

4.12 TOUCHLESS EXIT SWITCH:

TOUCHLESS EXIT SWITCH			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Input	12 Volt DC	
2	Output	1-relay output, 3 Amp Dry Contact	
3	Connectors	NO, NC, COM, +12V & GND	
4	Activation Time	1 second or as long as sensor is triggered	
5	LED Color	Standby ; Active	
6	Operating temp	-20~+50	
7	Mechanical Life	100,000 Operations	
8	Humidity Tolerance	0-95% (non- condensing)	



4.13 1200 LBS ELECTRO MAGNETIC LOCK:

1200 LBS ELECTRO MAGNETIC LOCK			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Holding Force	Upto 600 LBS * 2	
2	Magnet Size	500 X 42 X 26 mm	
3	Armature Size	180 X 38 X 11 mm	
4	Current Drain	480mA±10%/12Vdc ; 240mA±10%/24Vdc	
5	Operating Temperature	(-10 to 55)°C (14 to 131)°F	
6	Housing Finishing	Anodized Aluminium	

4.14 CAT 6 UTP - LSZH CABLE:

CAT 6 UTP - LSZH CABLE			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Category	6 UTP SS Braid Armored Double sheathed, Rodent Proof, Solid cable - LSZH	
2	Conductor Metal	Bare Copper	
3	Pairs	4 Insulated conductors twisted together	
4	Cable Diameter	6.1 mm nominal	
5	Conductor	23 AWG (Solid)	
6	Insulation Material	HD-PE	
7	Outer Jacket	FR-LSZH	
8	Inner Jacket	LSZH	
9	Conductor DCR	93.8 Ohm/km	
10	Max. Capacitance Unbalance	330 pF/100m	
11	Nominal Characteristic Impedance	100 Ohm	
12	Operating Temperature	-20 Deg Cel ~ +75 Deg Cel	
12	Compliance	UL444 , ISO / IEC 11801, ANSI / TIA-568-D.2	

4.15 LC-LC SINGLE MODE PATCH CORD:

LC-LC SINGLE MODE PATCH CORD			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Optical Fiber	Single Mode Duplex	
2	Connector Type	LC – LC	
3	Polish or Ferrule Interface Type	PC/UPC/APC	
4	Cable Diameter	2.0mm/ 3.0mm	
5	Length	5 Meter / 10 Meter / 15 Meter	
6	Strength member	Aramid Yarn	
7	Outer Jacket	LSZH	
8	Cable Assembly Length (<15 Meter Tolerance)	-0/+100mm	
9	Cable Assembly Length (>15 Meter Tolerance)	0	
10	Jacket Color (Multimode: OM1 & OM2)	Orange	
11	Jacket Color (Multimode: OM3 & OM4)	Aqua	
12	Jacket Color (Single Mode: OS1 & OS2)	Yellow	
13	Insertion Loss	<0.2 db.	
14	Ferrule Concentricity	<1µm	
15	Repeatability	< 0.2 db	
16	Durability	1000 mate/demate cycle	
17	Working Temp	40 deg C.to + 85 deg. C	
18	Humidity	90-95% at 40 deg. C	



4.16 LC-LC MULTI MODE PATCH CORD:

LC-LC MULTI MODE PATCH CORD			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Optical Fiber	Multimode Duplex	
2	Connector Type	LC – LC	
3	Polish or Ferrule Interface Type	PC/UPC/APC	
4	Cable Diameter	2.0mm/ 3.0mm	
5	Length	5 Meter / 10 Meter / 15 Meter	
6	Strength member	Aramid Yarn	
7	Outer Jacket	LSZH	
8	Cable Assembly Length (<15 Meter Tolerance)	-0/+100mm	
9	Cable Assembly Length (>15 Meter Tolerance)	0	
10	Jacket Color (Multimode: OM1 & OM2)	Orange	
11	Jacket Color (Multimode: OM3 & OM4)	Aqua	
12	Jacket Color (Single Mode: OS1 & OS2)	Yellow	
13	Insertion Loss	<0.2 db.	
14	Ferrule Concentricity	<1µm	
15	Repeatability	< 0.2 db	
16	Durability	1000 mate/demate cycle	
17	Working Temp	40 deg C.to + 85 deg. C	
18	Humidity	90-95% at 40 deg. C	

4.17 SC (PC)-SC (PC) SINGLE MODE PATCH CORD:

SC (PC)-SC (PC) SINGLE MODE PATCH CORD	
Brand :	
Part No :	



Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Optical Fiber	Single Mode Simplex	
2	Connector Type	SC-SC	
3	Polish or Ferrule Interface Type	PC	
4	Cable Diameter	2.0mm/ 3.0mm	
5	Length	5 Meter / 10 Meter / 15 Meter	
6	Strength member	Aramid Yarn	
7	Outer Jacket	LSZH	
8	Cable Assembly Length (<15 Meter Tolerance)	-0/+100mm	
9	Cable Assembly Length (>15 Meter Tolerance)	0	
10	Jacket Color (Single Mode: OS1 & OS2)	Yellow	
11	Insertion Loss	<0.2 db.	
12	Ferrule Concentricity	<1μm	
13	Repeatability	< 0.2 db	
14	Durability	1000 mate/demate cycle	
15	Working Temp	40 deg C.to + 85 deg. C	
16	Humidity	90-95% at 40 deg. C	

4.18 SC (APC)-SC (APC) SINGLE MODE PATCH CORD:

SC (APC)-SC (APC) SINGLE MODE PATCH CORD			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Optical Fiber	Single Mode Simplex	
2	Connector Type	SC-SC	
3	Polish or Ferrule Interface Type	APC	
4	Cable Diameter	2.0mm/ 3.0mm	
5	Length	5 Meter / 10 Meter / 15 Meter	
6	Strength member	Aramid Yarn	
7	Outer Jacket	LSZH	



8	Cable Assembly Length (<15 Meter Tolerance)	-0/+100mm	
9	Cable Assembly Length (>15 Meter Tolerance)	0	
10	Jacket Color (Single Mode: OS1 & OS2)	Yellow	
11	Insertion Loss	<0.2 db.	
12	Ferrule Concentricity	<1µm	
13	Repeatability	< 0.2 db	
14	Durability	1000 mate/demate cycle	
15	Working Temp	40 deg C.to + 85 deg. C	
16	Humidity	90-95% at 40 deg. C	

4.19 FC-FC SINGLE MODE PATCH CORD:

FC-FC SINGLE MODE PATCH CORD			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Optical Fiber	Single Mode	
2	Connector Type	FC-FC	
3	Polish or Ferrule Interface Type	PC/UPC/APC	
4	Cable Diameter	2.0mm/ 3.0mm	
5	Length	5 Meter / 10 Meter / 15 Meter	
6	Strength member	Aramid Yarn	
7	Outer Jacket	PVC or LSZH	
8	Cable Assembly Length (<15 Meter Tolerance)	-0/+100mm	
9	Cable Assembly Length (>15 Meter Tolerance)	0	
10	Jacket Color (Single Mode: OS1 & OS2)	Yellow	
11	Insertion Loss	<0.2 db.	

12	Ferrule Concentricity	<1µm	
13	Repeatability	< 0.2 db	
14	Durability	1000 mate/demate cycle	
15	Working Temp	40 deg C.to + 85 deg. C	
16	Humidity	90-95% at 40 deg. C	

4.20 FIBER DISTRIBUTION MANAGEMENT SYSTEM - 24 PORTS:

FIBER DISTRIBUTION MANAGEMENT SYSTEM - 24 PORTS			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Height	465 mm	
2	Width	525 mm	
3	Depth	150 mm	
4	Adapters Pre-Installed	20 Nos.	
5	Type	SC/APC	
6	Insertion Loss	< 0.2 db	
	Pig Tails Pre-Installed		
7	Type	SC/APC	
8	SCAPC Buffer Pigtail	20 Nos.	
9	Insertion Loss	< 0.3 db	
10	Return Loss	> 45 db	
11	Length	1.5 meters	
12	Diameter - Buffer	900 micron	
	Splicing Cassettes		
13	Quantity	2 Nos.	
14	Capacity	12 F Each	
15	Splice Location	Peripheral	
16	Cable Entry	Bottom	
17	Minimum Bending Diameter	70 mm	
18	Cable Clamp	Bottom Side & Rear Side	
19	Splice Protection Sleeves		
	Quantity	24 Nos Single Fibre SPS	
20	Recovered	2.5 mm	



	Diameter		
21	Additional Features	Standard fiber count 24F	
		Universal type i.e., suitable for all type of cable (ADSSOFC, Armored and metal free cable) Fiber tray should have the capacity to hold 36 fiber slices and capable of enhancing up to 48 slices.	
		Splices shall be securely housed.	
		Power coated metal body; Totally corrosion proof	
22	Dimension	Fiber tray should be of suitable size to accommodate the above requirements	

4.21 FIBER DISTRIBUTION MANAGEMENT SYSTEM - 48 PORTS:

FIBER DISTRIBUTION MANAGEMENT SYSTEM - 48 PORTS			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Height	465 mm	
2	Width	525 mm	
3	Depth	150 mm	
4	Adapters Pre-Installed	20 Nos.	
5	Type	SC/APC	
6	Insertion Loss	< 0.2 db	
	Pig Tails Pre-Installed		
7	Type	SC/APC	
8	SCAPC Buffer Pigtail	20 Nos.	
9	Insertion Loss	< 0.3 db	
10	Return Loss	> 45 db	
11	Length	1.5 meters	
12	Diameter - Buffer	900 micron	
	Splicing Cassettes		
13	Quantity	4 Nos.	
14	Capacity	12 F Each	
15	Splice Location	Peripheral	
16	Cable Entry	Bottom	

17	Minimum Bending Diameter	70 mm	
18	Cable Clamp	Bottom Side & Rear Side	
	Splice Protection Sleeves		
19	Quantity	48 Nos Single Fibre SPS	
20	Recovered Diameter	2.5 mm	
21	Additional Features	Standard fiber count 48F	
		Universal type i.e., suitable for all type of cable (ADSSOFC, Armored and metal free cable) Fiber tray should have the capacity to hold 36 fiber slices and capable of enhancing up to 48 slices.	
		Splices shall be securely housed.	
		Power coated metal body; Totally corrosion proof	
22	Dimensions	Fiber tray should be of suitable size to accommodate the above requirements	

4.22 LSZH NETWORK PATCH CORD:

LSZH NETWORK PATCH CORD			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Commercial Standards	ISO/IEC 11801, TIA-568-C.2 Cat. 6, EN50173 Cat.6	
2	Mechanical Characteristics		
a	Cable		
i.	Conductor size	24 AWG	
ii.	Screen material	Multi stranded copper wire	
iii.	Nom. O.D	max 6.3mm	
iv.	Sheath	LSZH	
v.	Bend radius	8X O.D.	
vi.	Operating temperature range	-20°C to 60°C	
vii	Length	5 meter/10 meter	
b	Plug		

i.	MIN operating life	750 insertion cycles	
ii.	RJ45 plug material	Clear polycarbonate (PC)	
iii.	Boot material	Clear polyvinylchloride (PVC)	
iv.	Contact material	0.35 mm thick copper	
v.	Contact plating	1.27 μ m gold	
vi.	Rj45 plug dimensions compliant with	ISO/IEC 60603-7 and FCC 47 Part 68	
3	Electrical/Optical Characteristics:		
i.	Max voltage	150 VAC (max)	
ii.	Max current	1.5A @ 25°C	

4.23 6F OPTIC FIBER CABLE:

6F OPTIC FIBER CABLE			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Fibre Type	Single Mode G.652D	
2	Fibre Count	6	
3	Fibres per Tube	6	
4	No. of Tubes	1	
5	Tube Diameter (mm)	2.1 $\pm$ 0.1	
6	Embedded Strength Member (mm)	2 x 0.6 mm steel wire embedded in sheath	
7	Water Blocking Element	WS Tape below armor	
8	Armoring	Corrugated ECCS Tape	
9	Outer Sheath Material	FR-LSZH, Anti Rodent & Anti termite	
10	Nominal Cable Diameter (mm)	7.5 $\pm$ 0.3	
11	Cable Weight (Kg/Km)	58 $\pm$ 10%	
12	Tensile Strength (N) [Long Term/Short Term]	1000/1500	



13	Crush Resistance (N/100 mm)	2000	
14	Impact Strength (N.m)	25	
15	Torsion	$\pm 180^\circ$	
16	Repeated Bend (@5 Kg load)	30 Cycles	
17	Bending Radius	20 x D (Dynamic)	
		10 X D (Static)	
18	Temperature Range	-10°C to +60°C (Installation)	
		-20°C to +70°C (Operation)	
		-30°C to +70°C (Storage)	
19	Attenuation (dB/Km)	@ 1310 nm: ≤ 0.36	
		@ 1550 nm: ≤ 0.24	
		@ 1625 nm: ≤ 0.26	
20	Chromatic Dispersion (ps/nm.km)	@ 1285-1330 nm: ≤ 3.5	
		@ 1270-1340 nm: ≤ 5.3	
		@ 1550 nm: ≤ 18.0	
		@ 1625 nm: ≤ 22.0	
21	PMD @ 1310 and 1550 nm (ps/Ökm)	≤ 0.2	
22	Zero Dispersion Slope (ps/nm ² .km)	≤ 0.092	
23	Zero Dispersion wavelength (nm)	1300 to 1324 nm	
24	Cable Cut Off Wavelength (nm)	≤ 1260	
25	MFD (mm)	8.8 to 9.8	
26	Clad dia. (mm)	125 ± 1.0	
27	Clad non-circularity (%)	≤ 1	
28	Core-Clad concentricity error (mm)	≤ 0.6	
29	Coating dia. (mm)	245 ± 10	
30	Coating-Cladding concentricity (mm)	≤ 12.0	
31	Length Tolerance	$\pm 10\%$	

4.24 2F OPTIC FIBER CABLE:

2F OPTIC FIBER CABLE			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Fiber Type	Single Mode ITU-T G.657A1	
2	Fiber Per Tube	2	
3	Outer Sheath Material	FR-LSZH, Anti Rodent & Anti termite	
4	Outer Sheath Color	Yellow	
5	Cable Diameter	4.0x6.4 ± 1.0 mm Width x Height	
6	Strength Member	FRP Rod embedded in sheath on either side of loose tube	
6	Armouring	Corrugated ECCS Tape	
7	Maximum Tensile strength	750 N	
8	Span Length	65 mts	
9	Embedded Strength Member Diameter	1.4 +/- 0.1 mm	
10	Crush resistance	1000/100*100mm	
11	Impact resistance	25 Nm	
12	Min Bend radius	20D	
13	Cable attenuation at 1310 nm	≤ 0.35	
14	Cable attenuation at 1550 nm	≤ 0.22	
15	No of loose tube	1	
16	Loose Tube Material	PBT	
17	Cable Weight	25 ± 10%	
18	Operating Temperature	.-30°C to +70° C	
Geometrical Characteristics:			
20	MFD at 1310nm	8.8 - 9.4 μm	
21	Cladding Diameter	125 μm +/- 0.7 μm	
22	Cladding Non-circularity	≤ 0.8%	

23	Core Clad concentricity error	$\leq 0.5 \mu\text{m}$	
24	Diameter over primary coated with (Shall be measured on un-colored fibre)	$242 \mu\text{m} \pm 5 \mu\text{m}$ double UV cured acrylate.	
25	Coating/Cladding Concentricity	$\leq 12 \mu\text{m}$	
26	Colored Fiber Diameter	$252 \mu\text{m} \pm 10 \mu\text{m}$	
27	Fibre attenuation before Cabling		
a	At 1310 nm	$\leq 0.34 \text{ dB/km}$	
b	At 1550 nm	$\leq 0.20 \text{ dB/km}$	
c	At 1625 nm	$\leq 0.23 \text{ dB/km}$	
28	Total Dispersion		
a	In 1285-1330 nm band	$\leq 3.5 \text{ ps/nm.km}$	
b	In 1270-1340 nm band	$\leq 5.3 \text{ ps/nm.km}$	
c	At 1550 nm	$\leq 17.5 \text{ ps/nm.km}$	
d	At 1625 nm	$\leq 22.0 \text{ ps/nm.km}$	
29	Polarization mode dispersion at 1310 & 1550 nm		
a	Fiber	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$	
b	Cabled Fiber	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$	
c	Link design value (Fiber Stage)	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$	
d	Zero Dispersion Slope	$\leq 0.090 \text{ ps}/(\text{nm}^2 \text{ km})$	
e	Zero dispersion wave length range	1300 - 1324	
f	Cable cut off wavelength	1260 nm Max	
30	Mechanical Characteristics		
a	Proof test for minimum strain level (Test method IEC- 60793 -1-30)	1%	

b	Strip ability force to remove primary coating of the fibre. (Test method IEC- 60793 -1-32)	$1.3 \leq F \leq 8.9 \text{ N}$	
c	The force required to remove 30 mm $\pm$ 3 mm of the fibre coating shall not exceed 8.9 N and shall not be less than 1.3 N.		
d	Dynamic Tensile Strength (Test method IEC- 60793 -1-31)		
i	Un-aged	$\geq 550 \text{ KPSI (3.80 Gpa)}$	
ii	Aged	$\geq 440 \text{ KPSI (3.00 Gpa)}$	
e	Dynamic Fatigue (Test method IEC- 60793 – 1-33)	≥ 20	
f	Static Fatigue (Test method IEC- 60793 – 1-33)	≥ 20	
31	Fibre Macro bend		
a	Change in attenuation when fiber is coiled 10 turns on 15 mm radius mandrel	$\leq 0.25 \text{ dB at } 1550 \text{ nm ; } \leq 1.0 \text{ dB at } 1625 \text{ nm}$	
b	Change in attenuation when fiber is coiled 1 turns on 10 mm radius mandrel	$\leq 0.75 \text{ dB at } 1550 \text{ nm ; } \leq 1.50 \text{ dB at } 1625 \text{ nm}$	

4.25 1*4 FIBER SPLITTER:

1*4 FIBER SPLITTER			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Splitter	1x4	
2	Insertion Loss Maximum(dB)(CR)	7.1dB	

3	Uniformity Maximum(dB)	0.5	
4	PDL (dB)	<0.2	
5	Operating Wavelength	1260-1360 & 1480-1580nm	
6	Return Loss(dB)	>55	
7	Directivity (dB)	>55	
8	Fiber type	Single mode Fiber, G657A	
9	Lead type	900um white with wire marker, 1.0meter length	

4.26 1*8 FIBER SPLITTER:

1*8 FIBER SPLITTER			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Splitter	1x8	
2	Insertion Loss Maximum(dB)(CR)	10.5dB	
3	Uniformity Maximum(dB)	0.8	
4	PDL (dB)	<0.2	
5	Operating Wavelength	1260-1360 & 1480-1580nm	
6	Return Loss(dB)	>55	
7	Directivity (dB)	>55	
8	Fiber type	Single mode Fiber, G657A	
9	Lead type	900um white with wire marker, 1.0meter length	

4.27 FR LSZH Power Cable

FR LSZH POWER CABLE			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	No of Cores	2 , 4	
2	Nominal Cross Sectional	1 sqmm	



3	Working voltage	220V	
4	Conductor	Annealed Bare Stranded Copper	
5	Insulation	LSZH	
6	Sheath	LSZH	
7	Operating Temperature	+5 °C to +50 °C	
8	Flame Retardant	IEC / ISO Certified	

4.28 Emergency Door Release BOX

EMERGENCY DOOR RELEASE BOX			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Alarm Status Indicator	Green / Red / Yellow	
2	IP Rating	IP 50	
3	Relay	NO / NC	
4	Colour	Green	

4.29 24U & 42U NETWORK RACK:

24U & 42U NETWORK RACK			
Brand :			
Part No :			
Sr. No.	Parameter	Specification	Compliance (Yes/No)
1	Enclosure Type	Floor Stand (Sheet steel bended profile upright outer frame bolted to top and bottom cover)	
2	Assembly	SKD & assembled	
3	Compliance with standards	IS 9606-1980, UL 2416, ISO 9001:2008, ISO14001: 2015	
4	Electrical Continuity	Equipotential bonding bracket is mounted on side and rear panels which will be in contact with the continuity plate on bottom cover to maintain continuity throughout the cabinet.	
5	Weight Capacity	Load Capacity of up to 400 Kg.	
6	Powder coating Shade	RAL 7035 fine texture- 60 to 80uM.	



7	Corrosion Resistance	Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤ 1 mm according to ISO 4628-8.	
8	Material & Features		
a	Enclosure	Construction of the rack made of 4 upright outer frame bolted to the top and bottom cover. Castor provision on the bottom side	
b	TOP	Top cover has 3 precut area for cable entry, it can be knocked off with mallet when necessary. Top cover has precut area for 2/4 fan mounting, it can be knocked off with mallet when necessary	
c	Bottom	Bottom cover has 3 precut area for cable entry, it can be knocked off with mallet when necessary	
d	Front Door	5mm thick Lockable screen-printed flat glass door	
e	Side Panel	Sheet steel, Removable Side panels, single point locking	
f	Rear Square Slot Ventilation Panel	Sheet steel, Removable Rear panels, single point locking	
g	Mounting Angle	4 No Adjustable. 19" verticals with Punched 9.5mm Squarer Hole and Universal 12.7 mm-15.875 mm-15.875 mm alternating hole pattern offers greater mounting flexibility, maximizes usable mounting space. It is mounted to the depth bar.	
h	Depth bar	19" verticals are mounted to the depth bar leaving additional width space for cable management	
i	Leveling Leg	4 no's of adjustable leg M8 size	
9	Accessories		
a	Cooling Fans	Fan's -230V AC - 90 CFM, dB 42. It can be mounted at the top cover by knocking off the precut area by mallet.	

b	Power box	Power Distribution Unit - 06/16 Amp Indian-Standard - 12 Socket - Single Pole / Screw Mountable / 32 Amp MCB / Alternating Current - Industrial Plug 32A with Power Cable 6 sq.mm 3-meter Length - Black Fine Tex. - Assembly	
c	Castor	Set of 4 castors, 2 with brakes on front side and 2 without brakes.	
d	Mounting Hardware	Mounting Hardware Packets with set of M 6 screw, Cage Nuts and Washer set of 10 or 20	
e	Fix shelf	Sheet steel, duly powder coated texture finish - _____D	
f	Horizontal Cable Manager	19"Horizontal sheet steel powder coated texture finish cable manager with PVC cable loops	
g	Blank Panel	19"Horizontal Metal Blank Panels - 1U, 2U and 3U	
h	Base Plinth	100mm high metal plinth	
i	Earthing Strip	Copper bare finish Earthing strip provided for achieving electrical ground - 150mm	
j	Equipment Shelf	Front mounted vented 1U Cantilever Tray - 255D and 2U Cantilever Tray - 400D	
k	Keyboard Tray	Sheet steel, rotating type, duly powder coated texture finish with telescopic slide rail.	
l	Sliding drawer	mounted on the slide which is attached to the sliding bracket and mounted on the upright	
m	PVC Cable Manager	19"Horizontal sheet steel powder coated texture finish PVC duct is fixed on the metal channel - 1U and 2U	
n	Vertical cable guide	CRCA sheet + plated vertical cable guide	
o	Baying kit	CRCA sheet + powder coated baying kit	
p	Cable management rings	CRCA sheet + powder coated cable management rings	



q	Brush cable entry	Plastic brush can be mounted by knocking off the precut area at the top and bottom cover.	
10	Characteristics value Indicated		
a	Floor stand	Yes	
b	24U & 42U	800W x 1000D	
c	Doors	Flat glass door	

- 4.30 All the Technical Scope mentioned above must be mandatorily part of the product and should be complied with as part of the contract.
- 4.31 The OEMs for the Network Switches and the GPON solution (ONU, OLT) shall be mandatorily from a Single OEM for better Interoperability.
- 4.32 The SFP/SFP+/XFP required for the completion of this contract shall be ascertained by the contractor as per the final design approval given by BMRCL and the Installation and commissioning of these SFP/SFP+/XFPs shall be under the scope of the Contractor.
- 4.33 The Comprehensive Annual Maintenance Contract (CAMC) is for the period of Five (05) Years from the date of Commissioning and acceptance of the BoQ items as per the terms & conditions in the Contract. The CAMC cost paid by BMRCL to the contractor is fixed every year at 23% (Twenty Three Percent) of the Accepted Contract Price quoted in Pricing Schedule A of Vol2.Financial Package of this Tender and is applicable throughout the Contract period of the Tender. The CAMC percentage is also applicable for the additional assets as and when installed during this Five (05) year contract period as per the Price quoted in Pricing Schedule D of Vol2.Financial Package of this Tender.**
- 4.34 The CAMC Cost also includes 5 Nos of Trained manpower in 2 shifts each (5:00 Hours to 14:00 Hours and 14:00 Hours to 23:00 Hours) and 2 No of Trained manpower in the Night Shift (23:00 Hours to 05:00 hours) deployed at BMRCL Premises. The Total deployment of manpower in a day will be 12 Nos for all the Days including public holidays and Sundays. The Leave Reserves and Rest Reserves have to be managed by the contractor separately for the deployment of 12 Nos of Trained Manpower on all the Days. The Trained Man power deployment under this CAMC contract for additional assets (as & when installed & commissioned) is calculated based on the pro-rata basis to the existing contractual value.**
- 4.35 The CAMC contract can extended for a period of 10 Years from the date of Installation subject to the acceptance of both the BMRCL and Contractor, the CAMC Cost paid on the 5th year shall be freezed for every year for the next 5 years.



- 4.36 The Contractor upon commissioning the entire IT Networking Infrastructure shall get it certified from the CERT-In Empaneled List of Vendors. CERT-In is the national nodal agency under the Ministry of Electronics and Information Technology, Govt of India for responding to computer security incidents as and when they occur.
- 4.37 The contractor shall provide compliance to all the vulnerabilities identified by the CERT-In agency from time to time for the commissioned IT Network Infrastructure throughout the period of the CAMC contract. All the complied documents shall be submitted on Quarterly basis.
- 4.38 All the existing BMRCL computers, laptops & printers, upon completion of the Installation and Commissioning as per the scope of this contract shall be integrated to the IT network infrastructure. Also these computers, laptops & printers which are less than 5 Years old shall be maintained as part of the CAMC Contract.
- 4.39 Contractor shall keep sufficient Nos. of spares and consumables required for replacement during servicing and Breakdowns to avoid any delay
- 4.40 The contractor shall plan the Scheduled Preventive Maintenance activity, in such a way that, the activities shall be uniformly spread throughout the year. The Contractor shall depute Nine Nos of sufficient trained, Experienced and competent personnel in different shifts (as indicated in Appendix-5) for carrying out Preventive servicing / Breakdown maintenance. The deployed man power should be Minimum Engineer Graduate in Computer Science/Information Science or equivalent and should have 2 years' experience in IT and Networking Domain knowledge.
- 4.41 The Contractor shall submit the detailed Preventive Maintenance Schedule for Employer's approval before starting the works. The contractor shall strictly follow the approved Maintenance Schedule.
- 4.42 Quarterly Payments under CAMC shall be made subject to Completion of all activities as per the approved maintenance schedule. Quarterly Payments will not be released if there is any lag in Installation or Maintenance Schedule.
- 4.43 All scheduled planned maintenance work which requires shutdown of any essential equipment, passenger amenity equipment's, emergency equipment's shall be normally carried out in non-revenue hours (night shift). However, these criteria can be relaxed by engineer in charge on case to case basis depending upon redundancy available of particular equipment, passenger load on station, weather condition or requirement of particular equipment at that time. The scheduled activity performed after revenue hours should be based on weekly maintenance block provided. An integrated block will be communicated by BMRCL to all concerned and a maintenance plan is to be made in line with this.
- 4.44 The contractor shall carry out the following checks/works during Preventive Maintenance/Servicing as per the approved maintenance schedule.

5. BREAKDOWN MAINTENANCE.

- 5.1 In case of any breakdown, the contractor shall depute their engineer for servicing of the defective system. If any components have to be replaced, it must be done as per the timelines at Appendix 3.
- 5.2 A failure / breakdown shall be registered to the contractor when any defect is noted by the Concerned Site In charge of BMRCL due to any of the following:

- a) Operational defect



- b) Failure of any Component/system.
- c) Failure of any Sub-component/sub-system
- d) Any Maintenance lapse (whether material or workmanship)

The contractor shall not provide any excuse for not attending any breakdown occurring on account of the above-mentioned conditions except for breakdown occurring on account of Physical Damage to the equipment's due to any extreme cause. All breakdown occurring on account of present/previous operational problem, maintenance lapse, ageing, power fluctuation /interruption, failure due expiry of designed life, etc., of component/subcomponent/ system/subsystem shall be the responsibility of the contractor. The scope of Breakdown Maintenance shall include the attending/rectification of the Breakdown and failures occurring in the system at any time during 24hrsx365days inclusive of all Sundays &Holidays.

The Maintenance Contractor personnel will perform the maintenance and troubleshooting (as per manuals) and restore the working with stock of spare module/card/equipment wherever necessary

The Maintenance Contractor personnel will perform the maintenance and troubleshooting (as per manuals) and restore the working with stock of spare module/card/equipment wherever necessary

Minor Breakdown: The Minor failures/defects (due to which the IT Networking system does not get affected) occurring in the system during operation which includes repairing/replacement of defective items shall be done by the contractor within the time specified as follows (also as detailed in Appendix-3):

Response Time (Max) : 02Hours

Rectification Time (Max) : 06Hours

Major Breakdown: Major failures (due to which operation of IT Networking system gets affected) taking place in the system which cover all type of Breakdown of the Major Equipment's and which includes Repair/Replacement of Assemblies, Sub-Assemblies, and Components,etc.as a whole shall be attended and rectified within the time frame specified as follows (also as detailed in Appendix-3):

Response Time (Max) : 02Hours

Rectification Time (Max) : 04 Hours

The contractor shall be responsible for ensuring prompt & proper attention to breakdowns/failures along with undertaking detailed root-cause analysis of the breakdown/failure, so that appropriate corrective measures are taken to prevent their recurrence in future.

- 5.3 Soon after detection of any failure in the IT Networking system, BMRCL will notify the contractor to depute their engineers on urgent basis .The vendor should provide immediate support services with 2 hours response time for Severity 1 & 2 problems. Engineer will respond back immediately with remote support upon intimation and would reach site within 2 hours of intimation if problem is not resolved thru Remote dial in support



The system faults and their severity levels are defined as:

- Severity 1 This is defined as a failure, which denies or severely limits users "access to a live" or on-line system.
- Severity 2 This is defined as a failure that results in diminished functionality of the system / diminished functionality to the users.
- Severity 3 This is defined as the problem in the redundant unit or the local problem which don't affect group of users or impacts only the non-critical services.
- Severity 4 System issues fall within this category include assistance with routine or planned maintenance upgrades for a system. Issues within this category are always operations or procedures that have planned for some time in advance

5.4 The contractor shall attend any number of breakdown calls at no additional cost within the contract period.

6. **Maintenance Requirements/ Terms and Conditions:**

6.1 The Contractor shall maintain the entire IT Networking System in good working order at all times.

6.2 The Contractor shall replace all the faulty components without any compromise in service. The Contractor shall maintain adequate quantity of consumable and contingent spare parts in his custody in order to minimize the shutdown time.

6.3 During the period of contract, wherever required components shall be replaced with the item of OEM only for reasons of compatibility & characteristics. Replacement of item of other make / other part number is not acceptable. In this regard, the bidder has to furnish authorization from OEM for the supply / replacement of major components. In case the bidder is OEM then self-declaration for the supply / replacement of major components shall be furnished.

6.4 The Contractor shall provide Preventive maintenance service reports duly signed jointly by both Contractor and Employer, detailing the overhauling made on each sub system of the IT networking system. In case of replacement of defective parts reasons for its failure shall be indicated in the service report.

6.5 The spares utilized shall be from the original equipment manufacturer for the supplied equipment.

6.6 The Contractor staff shall be provided with Smart phones with data pack and shall keep the phone active for attending to any call, the cost of which shall be borne by the contractor

6.7 The Contractor will have to engage a minimum of 5 Nos of well trained staff on site in 2 Shifts of 8 Hours each and 2 Nos of Staff in the Night Shift to ensure proper Maintenance and to attend Breakdown calls round the clock all 7 days a week & 365 days a year inclusive of all holidays & Sundays. The cost of Each additional manpower over and above the CAMC requirement may be indicated separately as in Appendix- 4. BMRCL shall utilize the additional man power only if required and the same shall be intimated to the contractor as and when the need arises. The contractor shall deploy this additional manpower within 48 hours of intimation in writing by BMRCL.

6.8 Tools & Test Equipment:

The contractor shall bring all tools and test equipment which is essential in day to day use in both preventive and breakdown maintenance. The contractor shall maintain tools and test equipments along with its calibration certificate (if any). If the list of tools and test equipments is found insufficient, the same shall be augmented for preventive and breakdown maintenance of all the equipments covered under the contract.



6.9 Performance & Quality Audit:

BMRCL will perform random and periodic audits to ascertain the quality of maintenance to meet expected levels of KPI. The contractor will be penalized for the non-conformances observed during the audit. The contractor should strive to exceed the expectations of BMRCL through continual improvements in methods, sequences, processes and practices.

6.10 Penalty for Non-Conducting Of Preventive Maintenance Activity as per Appendix 2:

If the contractor fails to Perform a particular preventive maintenance activity as per time schedule and procedure laid down in the employer's requirement in the tender due to shortage of spares/manpower or any other reason, then a penalty of Rs.1000/- for every period of 48 hrs shall be levied upon the contractor for each such maintenance activity, which shall be in addition to the cost assessed by BMRCL for cost implications which would come on BMRCL as a result of non- fulfillment of carrying out the AMC work as per time schedule or procedure laid down

6.11 Penalty for Delay for Attending the Breakdowns/Faults:

If any major equipment is out of order for more than the time specified either due to lack of proper attention or due to non-availability of man power, then BMRCL shall impose a penalty of Rs 50000/- for every period of 24 hours for which the equipments is out of service. If a minor equipment remains in fault for more than the time specified, then also a penalty of Rs.10000/- shall be imposed for every period of 24 hours, for which the equipment is out of service. The decision of BMRCL is final and binding on the contractor on the imposed penalty.

6.12 Procedure for Rectification of faults delayed beyond maximum permissible time:

In the event of breakdown of any equipment in which the contractor is not able to rectify the fault within the maximum permissible time as prescribed in Appendix-3, due to any reason and the Employer desires to rectify the faulty system in order to ensure proper function of the system, then the Employer can carry out the rectification of the faulty equipment from the OEM or its authorized dealer. The expenditure incurred against the rectification of the faulty equipment shall be paid either by the contractor directly to the agency deployed by the Employer or Employer will pay the bill to the agency (deployed by the Employer for rectification of the faulty equipment) and recover the same amount from the running bills of the contractor. The decision of the Employer in this regard shall be final and binding on the contractor.

6.13 Service Reports:

As per the BMRCL prescribed format, where in information pertaining to details related to breakdowns/failures, complaints registered by authorized representative of BMRCL to the contractor is elaborated. The above details would also clearly bring on record the failures/breakdowns cases, cause of the failures, corrective action taken for rectification of failure and time taken for closure of the complaint. The above data/record will have to be correctly and properly maintained and produced by the contractor, as the same would enable BMRCL to effectively monitor the AMC work being undertaken by the contractor.

Quarterly summary of the failure report along with the analysis giving details of nature of faults, remedial action taken shall be submitted to the BMRCL in a separate format prescribed by BMRCL



6.14 Procedure for handing over of complete system:

The contractor shall be required to conduct a joint assessment with BMRCL before the start of second last quarter of CAMC (i.e. before the start of 19th quarter of CAMC) for identification of all defects persisting in the system which are covered under CAMC. The contractor shall be required to attend and rectify all such defects (assessed during above joint inspection) before the completion of the contract period of Five Year of CAMC. The system shall be handed over to BMRCL after completion of contract period in working condition after duly verifying the closure of all the defects arising in the system during the period of contract. At the end of the contract period or on termination, all the equipment, hand tools, software or maintenance data or hard copies of maintenance documents or maintenance manuals or any other items belonging to BMRCL shall be handed back in good condition. Any damages as assessed by BMRCL, shall be recovered from the contractor

6.15 Replacement of a System/Body on account of External Damage.

In the event of failure of any equipment requiring complete replacement on account of any external damage, the same shall not be covered under the scope of contract of CAMC. However the contractor shall carry out a detailed inspection of the system and there after submit a technical cum commercial offer for replacement of the equipment. The above submitted offer of the contractor shall be examined by BMRCL in all respects (i.e. technical, financial, commercial etc.) for taking further needful action in this regard.

6.16 Key Performance Indicators (KPI):

Key performance indicator and criteria for evaluation is given below:

- a) Completion of preventive maintenance and checks as per the schedule in Appendix 2 (20%)
- b) Corrective maintenance, Rectify the defects in time by in-house staffs (20%)
- c) Staff Technical Competency: Be Conversant with the Operations & Maintenance of the equipment pertaining to the system and adequate training shall be given for all maintenance staffs.(10%)
- d) Have the plan for the day's work and consolidated weekly plan shall share to system manager. (5%)
- e) Punctuality of staff, on time reporting, Wearing uniform with necessary PPE, safety and protective gear for work. Should be civil and courteous while on duty. Should adhere to the rules / procedures (10%)
- f) Inventory management – Tools, Instruments, etc., Should timely arrange for tools required for the work. (15%)
- g) Report the failures occurring in the equipment under CAMC and coordinate works for rectification. (5%)
- h) Keep and update records like equipment checklist, defects register, maintenance register, etc. (10%)
- i) Should move from one station to another in need of emergency and other requirements for work. Should coordinate with other agencies for any work. (5%)



6.17 Performance Management:

The overall performance grading will be done on a monthly basis in each station. The payment as per the bill raised by the contractor will depend upon the overall score obtained by the contractor in each station. The payment terms shall be as below:-

Monthly Score of 85% and above: 100% payment

Monthly Score of between 80% to <85%: 95% payment.

Monthly Score of between 75% to <80%: 85% payment

Monthly Score of between 60 to <75%:75%

Monthly Score of <60%:60% payment

If the score is consistently below 60% for 3 consecutive months in a period of one year from the date of issue of LOA then the contract will be subjected to termination. However the CAMC Payment will be made on Quarterly Basis.

6.18 Documentation of Maintenance Records

The following minimal records are to be properly maintained in agreed Digital /Hard forms.

- Record of Preventive Maintenance schedule and status.
- Record of Job card, PTW applied/Closed.
- Record of Tools including special tools.
- Record of Corrective Maintenance.
- Record of failures and analysis, updated Failure report.
- Record of faulty items. (Segregated as repairable and non-repairable)



Appendix-1

List of IT Networking Assets (This is a Tentative Quantity List and will vary based on site conditions and with addition of New Stations) .The Items described below is for 51 Operational stations and 2 Depots.

Sl. No.	Description	UoM	Quantity
1	Core Switch	Nos	4
2	Optical Line Terminal 8 Ports	Nos	55
3	Industrial Grade Optical Network Unit / Optical Network Terminal	Nos	1800
4	EMS and Centralized Help Desk System.	Nos	2
5	Aggregation Switch	Nos	106
6	AAA (Device Authentication)	Nos	2
7	Network Management System	Nos	2
8	DNS, DHCP & IPAM	Nos	2
9	Windows User CAL for Domain Server	Nos	1800
10 A	Monitoring Workstation - CPU	Nos	6
10 B	Monitoring Workstation - Monitor	Nos	6
10 C	Monitoring Workstation – Graphics Card	Nos	6
10 D	Monitoring Workstation – Keyboard & Mouse	Nos	6
10 E	Monitoring Workstation – Software tools	Nos	6
11	Optical Fiber Cable - 6F	Km	600
12	Optical Fiber Cable - 2F	Km	900
13	Fiber Splitter – 1:4	Nos	400
14	Fiber Splitter – 1:8	Nos	1150
15	FDMS - 24 Ports	Nos	52
16	FDMS - 48 Ports	Nos	5
17	Patch Card Cat 6 (5 mtr)	Nos	3700
18	Patch Card Cat 6 (10 mtr)	Nos	30
19	LC-LC Single Mode Duplex - 5 Meter	Nos	150
20	LC-LC Multi Mode Duplex - 5 Meter	Nos	150
21	LC-LC Multi Mode Duplex - 10 Meter	Nos	50
22	SC PC-SC PC Single Mode Simplex - 5 Meters	Nos	480
23	SC APC-SC APC Single Mode Simplex - 5 Meters	Nos	3900
24	Single Port SC Termination Box	Nos	3600
25	FC-FC - 5 Meters	Nos	150
26	Rack 42 U	Nos	4
27	Rack 24 U	Nos	54



28	Firewall	Nos	2
29	Installation & Commissioning of the IT Networking	Stations/ Depots	53
30	3D facial recognition reader for frictionless Access & Time, Standalone reader to connect lock and exit switch. IP65 embedded MIFARE/DESFire card reader. 7" WVGA color touchscreen, BIS Certified, UL294, EMC/Safety standards: CE, CB, FCC, RoHS, REACH and WEEE compliant, 1 Million transaction logs, Standard 20K users, Time Attendance & Access System Software - For Administration and user management. Installed at central location and which can connect multiple clients. Integrated with Face Biometric reader for seamless Access operation	Nos	1
31	SMPS power supply 12-24VDC 5amp, BIS certified.	Nos	1
32	Electro Magnetic lock having Min holding force of 1200 Lbs with required mounting accessories for double door , ZL brackets (where ever required) for all type of doors and with external (surface / recess mountable) door contacts	Nos	1
33	Touchless Exit Switch	Nos	1
34	Resettable Press to open type Emergency door release box (Green) with a relay contact to indicate to the access controller when it is operated	Nos	1
35	4 core 1 sqmm LSZH PVC shielded Twisted pair cables for Lock, Exit switch and door release with conduit & laying	Mtrs	1
36	CAT6-UTP Armoured LSZH Cable with conduit & laying	Mtrs	1
37	2 core 1sqmm LSZH PVC shielded Twisted pair for Power supply to lock and Face biometric reader with conduit & laying	Mtrs	1
38	Mounting Back box and Plate	Nos	1
39	System Installation, Programing and Commissioning the entire system as per the scope defined	Locations	1



Appendix-2

Preventive maintenance schedule of IT networking and Access Control systems

Details of Maintenance Schedules of various IT. Sub-systems		
Sub-system	Period	Details of Maintenance
1. IT Networking Infrastructure 2. Access Control Devices.	Daily, Weekly, Monthly, Half yearly, Yearly.	The Preventive Maintenance List shall be proposed and the approval of BMRCL shall be obtained for finalizing the Preventive Maintenance Schedules



Appendix -3

The Maximum permissible rectification time for IT networking system faults is given in below table.
This will be reviewed periodically based on requirements

Permissible Fault Rectification Time (Max.)		
S N.	Fault Details	Max. Permitted Time to Rectify the faults
1	Major IT Networking failure affecting operations	4 hours
2	Major software failure affecting operations	4 hours
3	Major hardware failure affecting operations	4 hours
4	Major hardware failure NOT affecting operations	6 hours
5	Major software failure NOT affecting operations	6 Hours
6	Major or critical alarms rectification NOT affecting operations	6 Hours

Appendix -4

The cost of deployment of additional man power- Trained and Skilled Engineer with IT Networking Domain knowledge

Trained and Skilled Engineer with IT Networking Domain knowledge		
SL No.	Description of the Resource	Cost per month per head in INR (includes all the mandatory payments to be made to the employee by the employer as per the labour laws)
1	Trained and Skilled Engineer with IT Networking Domain knowledge	

Appendix-5

Man Power Deployment Under this CAMC		
S N.	Shift Details	Total Manpower to be deployed
1	Shift A: 05:00 hrs to 14:00 hrs	5 No's
2	Shift B: 14:00 hrs to 23:00 hrs	5 No's
3	Shift C: 23:00 hrs to 05:00 hrs	2 No's

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SECTION 8 – DRAWINGS

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SECTION 9: PROFORMA OF BANK GUARANTEES

PROFORMA – A: Form of Bank Guarantee for Tender Security / Earnest Money Deposit

PROFORMA – B: Form of Bank Guarantee for Performance of Contract



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PROFORMA - A**FORM OF BANK GUARANTEE FOR TENDER SECURITY /****EARNEST MONEY DEPOSIT**

To

BANGALORE METRO RAIL CORPORATION LIMITED (BMRCL)
III FLOOR, BMTc COMPLEX,
K.H.ROAD, SHANTHINAGAR,
BANGALORE- 560027.
KARNATAKA, INDIA.

1. **WHEREAS** “.....(*Name and Address of the Tenderer*)”
 (hereinafter called the “Tenderer”) has undertaken for submission of Tender in pursuance of Contract
 No. (*work of*) Bangalore Metro Rail Project
 to be specified) (hereinafter called “the Tender”)

2. **AND WHEREAS** it has been stipulated in the concerned Tender notification issued by Bangalore
 metro Rail Corporation Limited (BMRCL) which expression shall unless repugnant to the context or the
 meaning thereof, include its successors, administrators, executors and assignees, herein after called
 the Employer) to the Tenderer that the Tenderer shall furnish to EMPLOYER (BMRCL) with a Bank
 Guarantee as per the conditions of the Tender, from an Indian scheduled Bank (excluding Cooperative
 Bank) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 r/w second schedule
 for, the sum specified herein below as Tender security for compliance of the obligation and
 performance, in accordance with the concerned Tender conditions.

3. **AND WHEREAS** we..... (*the name and full address of the Bank*
including Email address) having registered office at (hereinafter referred to as the issuing
 Bank) which expression shall unless repugnant to the context or the meaning thereof, include its
 successors, administrators, executors and assignees, do hereby agree to give the Contractor such a
 Bank Guarantee, drawn and payable at Bangalore through Bangalore Branch.

4. **NOW therefore**, we hereby affirm that we are the guarantor and responsible to EMPLOYER
 (BMRCL) and their successor, on behalf the Tenderer up to a total sum of INR-
 (*amount of Guarantee to be specified in figure and words*), and we hereby further unconditionally,
 irrevocably and without demur undertake to immediately pay you, upon your first written demand and
 without cavil, or arguments any sum or sums within the limits of Indian
 Rupee..... (*Bank guarantee amount to be specified*) as aforesaid without your
 needing to prove or to show grounds or reasons for your demand, by depositing/crediting to the Current
 A/c. of EMPLOYER (BMRCL), the sums specified therein.

5. This Bank Guarantee is cashable or extendable at our designated Branch in Bengaluru (Bangalore)
 Karnataka, India, as mentioned below:

Name of the Bank, Branch and contact details Address
 Telephone no: & Fax No:
 E-mail Address
 Branch Manager Name & Mobile No:
 Bank Zonal Office Address, Telephone No:, Fax Number,
 E-mail Address

6. “This Bank Guarantee shall be encashed unless renewed by the Contractor at the request of the
 Employer, before the due date”.

7. The Bank is liable to pay the EMPLOYER (BMRCL), any amount upto and inclusive of the



aforementioned full amount upon written order from the EMPLOYER (BMRCL). The Bank will pay the money required by the EMPLOYER (BMRCL) immediately on demand without delay without reference to the Tenderer and without the necessity of a previous notice or of judicial or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the Tenderer.

8. BMRCL shall have full rights to encash this Bank Guarantee at any time during the guarantee period and the Tenderer shall have no right or claim whatsoever in the matter of encashment of the Bank Guarantee amount by the Employer (BMRCL). The Bank will have their responsibility in terms of the guarantee and obligation, to make immediate payment to the EMPLOYER (BMRCL), without the consent of the Tenderer and without referring the matter to the Tenderer.

9. Courts at Bangalore, Karnataka, India shall have exclusive jurisdiction to adjudicate disputes arising out of encashment of the Guarantee, and we, the said Bank, undertake not to revoke this Guarantee during its currency, except with the previous consent of the Employer in writing and agree that any change in the constitution of the Bank shall not discharge our liability hereunder.

10. This Bank Guarantee will not be discharged due to the change in the constitution of the Tenderer or change in the constitution of the issuing bank

11. This guarantee is executed and issued by Shri who is/are authorized by the Bank for issuing the guarantee in its behalf and his ID No. and Email address being.....

12. The Banks liability under this Guarantee shall not exceed the amount of INR..... (to be specified in words and figures).

13. This guarantee shall be valid for (period to be specified) till (Period to be mentioned).

14. The pendency of any dispute or arbitration or other proceedings shall not affect this guarantee in any manner.

15. It is hereby agreed that the liability of the Bank under this guarantee shall cease on the first occurrence of either of the following events:.

a) Payment by the Bank of the Guaranteed sum in full to the Employer/
BMRCL

or

b) Receipt of written communication from the Employer/BMRCL, to the issuing Bank, along with the Original Bank Guarantees discharging the Bank of its liability covered by this Bank Guarantee.

SIGNATURE AND SEAL OF THE GUARANTOR SIGNATURE AND SEAL OF THE GUARANTOR
NAME OF THE BANK NAME OF THE BANK
ADDRESS ADDRESS

Notes:

1. The stamp papers of appropriate value shall be purchased in the name of the Bank, who issue the Bank Guarantee.
2. The Bank Guarantee shall be from an Indian Scheduled bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule, preferably drawn on and payable/extendable at a designated branch at Bangalore only.



PROFORMA – B**FORM OF BANK GUARANTEE FOR PERFORMANCE OF CONTRACT**

To
BANGALORE METRO RAIL CORPORATION LIMITED (BMRCL)
BMRL Metro Rail Depot,
Old Madras Road, Near NGEF Bus Stop,
Baiyappanahalli, Bangalore - 560038
Karnataka, India.

1. **WHEREAS** “.....(*Name and Address of the Contractor*)”
 (hereinafter called the “Contractor”) has undertaken for due performance of Contract, in pursuance of
 Contract No. (*description of the Contract work of Bangalore Metro Rail*
Project to be specified) (hereinafter called “the Contract”)

2. **AND WHEREAS** it has been stipulated in the concerned Contract awarded by Bangalore Metro Rail Corporation Limited (BMRCL) hereinafter called the “Employer” which expression shall unless repugnant to the context or the meaning thereof, include its successors, administrators, executors and assignees, to the Contractor that the Contractor shall furnish to EMPLOYER (BMRCL) with a Bank Guarantee for due performance of Contract from an Indian scheduled Bank (excluding Cooperative Bank) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with second schedule for, the sum specified herein below as security for compliance of the obligation and performance of the Contractor, in accordance with the concerned Contract.

3. **AND WHEREAS** we (*the name and full address of the Bank including*
Email address) having registered office at (hereinafter referred to as the issuing Bank) which
 expression shall unless repugnant to the context or the meaning thereof, include its successors,
 administrators, executors and assignees, do hereby agree to give the EMPLOYER (BMRCL) on behalf
 of the Contractor such a Bank Guarantee, drawn and payable at Bangalore through our
 Bangalore Branch.

4. **NOW therefore**, we hereby affirm that we are the guarantor and responsible to EMPLOYER (BMRCL) and their successors, on behalf of the Contractor upto a total sum of INR (*amount of Guarantee to be specified in figure and words*), Further, we hereby unconditionally, irrevocably and without demur undertake to immediately pay you, upon your first written demand and without cavil, or arguments any sum or sums within the limits of the sum specified in this Bank Guarantee as aforesaid without you being required to prove or to show grounds or reasons for your demand, by depositing/crediting to the Current A/c. of EMPLOYER (BMRCL), the sums specified.

5. This Bank Guarantee is encashable or extendable at our designated Branch in Bengaluru (Bangalore) Karnataka, India, as mentioned below:

Name of the Bank, Branch and contact details
 Address
 Telephone no: & Fax No:
 E-mail Address
 Branch Manager Name & Mobile No:
 Bank Zonal Office Address, Telephone No:, Fax Number,
 E-mail Address

6. “This Bank Guarantee shall be encashed unless renewed by the Contractor at the request of the Employer, before the due date”.



7. BMRCL shall have rights to encash this Bank Guarantee at any time during the guarantee period and the Contractor shall have no right or claim whatsoever in the matter of encashment of the Bank Guarantee amount by the Employer. The Bank will have their responsibility in terms of the guarantee and obligation, to make immediate payment to the EMPLOYER (BMRCL), without the consent of the Contractor and without referring the matter to the Contractor.

8. The Bank shall be liable to pay the EMPLOYER (BMRCL), any amount upto and inclusive of the aforementioned full amount upon written order from the EMPLOYER (BMRCL) to indemnify the BMRCL for any liability of damage resulting from any defects and/or shortcomings of the Contractor and/or the debts the Contractor may have incurred, to EMPLOYER(BMRCL) and/or any parties involved in the Works under the Contract mentioned above, whether these defects and/or shortcomings and/or debts are actual and/or estimated and/or expected. The Bank will deliver the money required by the EMPLOYER (BMRCL) immediately on demand without delay without reference to the Contractor and without the necessity of a previous notice or of judicial or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the Contractor.

9. Courts at Bangalore, Karnataka, India shall have exclusive jurisdiction for adjudicating the disputes arising out of encashment of the Guarantee, and we, the said Bank undertake not to revoke this Guarantee during its currency, except with the previous consent of the Employer in writing and agree that any change in the constitution of the Bank shall not discharge our liability hereunder.

10. This Bank Guarantee will not be discharged due to the change in the constitution of the Contractor or change in the constitution of the issuing bank.

11. This Deed of guarantee is signed and executed by Shri who is/are authorized by the Bank for issuing the guarantee in its behalf and his ID No. and Email address being

12. The Bank's liability under this Guarantee shall not exceed the amount of INR. (to be specified in words and figures)

13. This guarantee shall be valid for till

14. The pendency of any dispute or arbitration or other proceedings shall not affect this guarantee in any manner.

15. It is hereby agreed that the liability of the Bank under this guarantee shall cease on the happening of any of the following events:

- a) Payment by the Bank of the Guaranteed sum in full to the Employer/BMRCL
Or
- b) Issue of written communication by the Employer / BMRCL, to the issuing Bank, along with the Original Bank Guarantees discharging the Bank of its liability covered by this Bank Guarantee. .

Date

SIGNATURE AND SEAL OF THE GUARANTOR

NAME OF THE BANK

ADDRESS

Notes:

- 1 The stamp papers of appropriate value shall be purchased in the name of the Bank, who issue the Bank Guarantee.
- 2 The Bank Guarantee shall be from an Indian Scheduled bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2(e) of RBI Act 1934 read with Second Schedule, preferably drawn on and payable/extendable at a designated branch at Bangalore only.



SECTION 10: ANNEXURES

ANNEXURE 1 - FORM OF CONTRACT AGREEMENT

ANNEXURE 2 - CHECKLIST

ANNEXURE 3 - DETAILS OF BANK ACCOUNT

ANNEXURE 4 - FORMAT OF DECLARATION TOWARDS DEBARMENT/ BLACKLISTING

ANNEXURE 5 - UNDERTAKING

ANNEXURE 6- FORM FOR SEEKING CLARIFICATION ON TENDER DOCUMENT

**ANNEXURE 7- CERTIFICATE FOR COMPLIANCE OF RESTRICTIONS IN REGARD TO
PROCUREMENT FROM BIDDERS FROM COUNTRIES SHARING LAND
BORDERS WITH INDIA**

ANNEXURE 8 - MANUFACTURER'S AUTHORIZATION FORM (MAF)

ANNEXURE 9 - MAKE IN INDIA (MII) DECLARATION



ANNEXURE- 1

FORM OF CONTRACT AGREEMENT

CONTRACT No. BMRCL/O&M/IT/OT-01/2022

IT Network Infrastructure Revamp at Stations and Depots

This Contract Agreement (hereinafter referred to as the "Contract") is made at Bangalore on the day of, 20.... by and between:

BANGALORE METRO RAIL CORPORATION LIMITED, a Public Limited Company incorporated under Companies Act 1956 and a 50 : 50 Joint Venture of Government of India and Government of Karnataka for the purposed of execution of a Mass Rapid Transit System in the city of Bengaluru, represented herein by its Executive Director (O & M), authorized to sign and bind the Company, with its registered and corporate office located at III Floor, BMTC Complex, K.H. Road, Shanthinagar, Bengaluru 560 027, Karnataka State, India hereinafter referred to as the "BMRCL" or the "EMPLOYER", as the case may be, which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and assigns, of the one part,

and

M/s.(Name of the Contractor)....., a(legal status).....Company incorporated under Companies Act 1956, having its office at(Contractor's office address)represented herein by Mr..... [Name and designation of the representative], authorized to sign and bind the Company under the Power of Attorney datedand the Board Resolution dated.....,who shall be responsible to the Employer under the **Contract No BMRCL/O&M/IT/OT-01/2022 for "IT Network Infrastructure Revamp at Stations and Depots"**, hereinafter referred to as the "CONTRACTOR" which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and assigns, on the other part,

Hereinafter, BMRCL/Employer and Contractor are collectively referred to as "Parties" and individually as "party".

WHEREAS, the Employer invited Tenders for Contract No.....vide notification no.....dated.....and the Contractor has in response submitted a Tender for "**IT Network Infrastructure Revamp at Stations and Depots**" (hereinafter referred to in this Agreement as "the Works") and agrees to undertake performance of the Works under the terms and conditions set forth in this Contract.

AND WHEREAS, the Contractor emerged as the successful Tenderer and the Employer awarded the Contract to the Contractor and the Contractor agrees for "**IT Network Infrastructure Revamp at Stations and Depots**" under the Terms and conditions specified in this Contract Agreement and the other Contract Documents, forming part thereof.

NOW THEREFORE THE PARTIES HEREBY AGREE AS FOLLOWS:

Clause 1: Words and Expression

In this Contract, all the words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

Clause 2: The Contract Documents

2.1 The following shall be deemed to form and be read and construed as a part of the Agreement

- (a) Letter of Acceptance No. dated
- (b) The Tender (Bill of Quantities)
- (c) Instruction to Tenderers/ Bidders



- (d) General Conditions of Contract
 - (e) Special Conditions of Contract
 - (f) Bid Forms/ Tender Forms
 - (g) Technical Specifications including scope of work
 - (h) Drawings-Attached
 - (i) Employer's clarification to Pre-bid Queries and Addendum No.....dated.....
 - (j) Contractor's 'Qualification cum Technical' and Financial proposals submitted vide letter no.....dated.....
 - (k) All correspondence between the Tenderer/ Bidder and BMRCL from the date of issue of NIT and the date of issue of LOA.
 - (l) Performance Security in the form of Bank Guarantee issued by.....(name & address of the issuing bank)....., vide BG No.....dated.....amounting tovalid upto..... and its authenticity confirmed by the bank vide their letter No.....dated.....
 - (m) Any other document forming part of this Contract.
- 2.2 All of the foregoing documents, together with this Contract Agreement, are referred to herein as the Contract. Also incorporated into the Contract and made part hereof, are all codes, standard specifications, and similar requirements that are referred to therein. In the event of a conflict, inconsistency, ambiguity or discrepancy between the contents of the Contract, the order of precedence shall be according to the General Conditions of Contract.

Clause 3: Integration

The Employer and the Contractor agree that this Contract Agreement, together with other Contract Documents, expresses all of the agreements, understandings, promises and covenants of the parties, and that integrates, combines and supersedes all prior and contemporaneous negotiations, understandings and agreements, whether written or oral and that no modification or alteration of the Contract Documents shall be valid or binding on either party, unless expressed in writing and executed with the same formality as this Contract Agreement, except as may otherwise be specifically provided in the Contract Documents.

Clause 4: Contract Price and Completion Time:

The Contract price shall be inclusive of Labour Cess charges and duties under applicable law but exclusive of CGST and SGST. BMRCL shall pay the output CGST and SGST as invoiced by the contractor to BMRCL. Hence as per clause 39 of General Conditions of Contract and respective Special Conditions of Contract) and completion time for executing the works under the Contract is as below:

1.	Estimated Cost specified in the Tender	Rs.
2.	Accepted percentage (Tender premium) (Above or Below or At par)	 % put to Tender.
3.	Total Contract Price	Rs..... (Indian Rupees.....only).
4.	Date of Commencement of Works	Date of issue of Letter of Acceptance (LOA) as per clause 29 of ITT.
5.	Completion period	03 Months from the date of Contract Agreement.

Clause 5: Obligations of the Contractor:

The mutual rights and Obligations of the Employer and the Contractor shall be as set forth in the Contract and in particular:-



- a) The Contractor agrees, subject to the terms and conditions of the Contract, to perform efficiently and faithfully all of the Works of **"IT Network Infrastructure Revamp at Stations and Depots"** under the Contract Concreting, plastering, Flooring, Tiling, painting, carpentry works, Structural glazing works etc requisite *for or* incidental to the successful completion of the Works and in carrying out all duties and obligations imposed by the Contract
- b) The Contractor shall ensure full compliance with Tax laws of India with regard to this Contract and shall be solely responsible for the same. He shall submit copies of acknowledgements evidencing filing of returns and shall keep the Employer fully indemnified against liability of tax, interest, penalty etc., of the Contractor in respect thereof, which may arise.

Clause 6: Obligation of the Employer

The 'EMPLOYER' agrees, subject to the terms and conditions of the Contract, to pay Contractor the amount specified and at the rates and terms and in the manner set forth in the Contract.

Clause 7: Governing Law

This Contract is construed/interpreted and enforceable under the applicable laws of the Republic of India.

Clause 8: Language

This Contract Agreement and the other Contract Documents are made in the English language.

Clause 9: Notices

All Notices called by the Terms of the Contract shall be in writing in English Language and shall be delivered by hand or by registered mail with acknowledgement due. All notices shall be deemed to be duly made by the party to whom it is addressed at the following address or such other addresses as such party may subsequently notify the other.

To Employer:

Bangalore Metro Rail Corporation Ltd.
III Floor, BMTC Complex,
K.H Road, Shanthinagar,
Bangalore – 560 027,
Karnataka, India

To Contractor:

.....
.....
.....
.....
.....

Clause 10: Jurisdiction of Court

The Courts at Bengaluru shall have exclusive jurisdiction in respect of all the disputes arising out of this Contract Agreement between the Parties.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names by the hands of their authorized representatives on the day and date first above written.



For Bangalore Metro Rail Corporation Limited

The Contractor

Employer

()

(.....)

Proprietor

The Executive Director (O & M)

M/s

WITNESS

WITNESS

()

()

Note:

This Contract Agreement is tentative and may be modified as considered necessary at the time of finalization /signing of the Contract.



ANNEXURE - 2**CHECK LIST**

- (A) The following check list is intended to help the Tenderers in submitting offer which are complete. An incomplete offer is liable to be rejected. Tenderers are advised to go through the Tender documents and the list carefully and take necessary action.
- (B) Tenderers are also required to submit copy of the checklist, duly marked, along with their offer.

The Tender submittals shall consist of the following:

I. QUALIFICATION CUM TECHNICAL PACKAGE		
a.	Earnest Money Deposit (Clause 14 of ITT)	Submitted / Not Submitted
b.	Form of Tender on firm's Letter head (Clause 10 of ITT)	Submitted / Not Submitted
c.	Notarized Power of Attorney (Clause 15.2 of ITT) / Attested copy of the Partnership deed / Ownership record to demonstrate the authority to sign the Tender submittals.	Submitted / Not Submitted
d.	One set of downloaded untampered Tender documents along with Employer's clarification on queries including addenda (if any) duly signed and stamped on each page (Clause 16.8 of ITT) (Original only)	Submitted / Not Submitted
e.	Proof of payment of Tender Fee/e-Receipt	Submitted / Not Submitted
f.	Evidence of 'Tenderer's Eligibility and Qualification Criteria (Clause 2 & 3 of ITT) and Qualification Information (Section 3) with CA's certifications.	Submitted / Not Submitted
g.	Copy of PAN card	Submitted / Not Submitted
h.	Copy of GST Registration certificate	Submitted / Not Submitted
i.	Bank Details in prescribed Proforma given in Annexure-3 in Section-10 along with a cancelled Cheque leaf (clause 14.11 of ITT)	Submitted / Not Submitted
j.	Undertakings as per prescribed Proforma given in Annexure-4 & Annexure-5 in Section-10 .	Submitted / Not Submitted
k.	Constitution or legal status of Tenderer as per clause 1.1 of Section 3 .	Submitted / Not Submitted
l.	List of works executed and payments received year wise in the last five years as per clause 1.2 of Section 3 duly certified by CA .	Submitted / Not Submitted
m.	Existing commitments and ongoing works as per clause 1.3 (A) of Section 3 .	Submitted / Not Submitted
n.	Works for which Tenders already submitted as per clause 1.3 (B) of Section 3 .	Submitted / Not Submitted
II. FINANCIAL PACKAGE		
a.	Priced Bill of Quantities in the format prescribed in Volume -2 (Clause 10 of ITT)	Submitted / Not Submitted



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ANNEXURE - 3

DETAILS OF BANK ACCOUNT FOR REFUND OF EMD

- Name of the Firm/Tenderer:
- Name of the account to which amount to be remitted:
- Complete Address:
- Name of the Bank:
- Branch:
- Address of the Bank Branch:
- Account Type:
- Account Number:
- IFS Code of the Bank Branch:
- MICR Code of the Bank Branch:
- Whether a cancelled Cheque of the Tenderer/Firm is submitted: Yes or No (please tick)

Certified that the information furnished above is correct.

Signature of the Tenderer



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ANNEXURE – 4**FORMAT OF DECLARATION TOWARDS DEBARMENT / BLACKLISTING**

We, M/s.[Name of the Tenderer]....., herein after called “ the Tenderer”, do hereby affirm and declare that we have NOT been Black listed /Debarred by any Government / Government undertaking / semi Government / Govt. Controlled Institutions/projects/ Reputed private organizations in India, during the last Five (5) years. Also we have not rescinded the works after award of the contract during the last Five (5) years.

In case it is found that above statement is not true, any time during effect of this Tender or currency of the Contract entered between the parties based on the above statement, BMRCL reserves its rights to terminate the Contract and forfeit the Tender Security / Performance Security at its discretion.

Place:

Signature of the Tenderer

Date:

Name

Designation

Seal of the Company

Phone

Note :

Last five (5) years shall be counted from 28 days prior to the date of submission of Tender



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ANNEXURE - 5**UNDERTAKING**

We, M/s..... [Name of the Tenderer]....., herein after called "the Tenderer", do hereby affirm and undertake to abide by all the terms, conditions and specifications given in the Tender document while performing the contractual obligations relating to **"IT Network Infrastructure Revamp at Stations and Depots"** of BMRCL, Bangalore. We do hereby affirm and undertake to follow all labour laws that are applicable from time to time.

We also undertake that the Tender submittals do not contain any deviation or amendment or modification or change of any type whatsoever with regard to tender conditions and specifications.

Place:

Signature of the Tenderer

Date:

Name

Designation

Seal of the Company

Phone

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ANNEXURE – 6**FORM FOR SEEKING CLARIFICATION ON TENDER DOCUMENT**

To,

The Executive Director (O&M)
 Bangalore Metro Rail Corporation Ltd (O&M Wing),
 Admin Building, Baiyappanahalli Depot,
 S V Road,
 Bangalore – 560 038,
 Karnataka, India.

Dear Sir,

Sub:(Name of the Work)

Ref:(Tender No.).

In reference to the above Tender, we need the clarification on the following clauses

Sl No.	Section No.	Section Description	Clause No.	Tender Condition	Tenderer's Queries
1					
2					
3					
4					
5					
6					
7					
8					

Name of the Tenderer

Telephone:

Email:

Date:

Signature of the Tenderer



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ANNEXURE – 7**CERTIFICATE FOR COMPLIANCE OF RESTRICTIONS IN REGARD TO PROCUREMENT FROM
BIDDERS FROM COUNTRIES SHARING LAND BORDERS WITH INDIA**

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India (Restrictions in regard to procurement from the bidders from countries sharing land borders with India, BMRCL letter dated 24/02/2021) and in this regard I certify that (Please tick either (a) or (b) below as applicable and strike out the option which is not applicable)

(a) I certify that I am not from such a country; or

(b) I am from such a country and have been registered with the Competent Authority. I hereby certify that I fulfill all requirements in this regard and eligible to be considered. Evidence of valid registration by the Competent Authority is attached."

.....
Signature and seal of Tenderer



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ANNEXURE - 8**Manufacturers'/Producers' Authorization Form (MAF)**

(This form has to be provided by the OEMs of the hardware and software solution providers as per the format or a similar format capturing the relevant information provided below. This letter of authority should be on the letterhead of the Original Equipment Manufacturer (OEM) and should be signed by a person competent and having the power of attorney to bind the manufacturer.)

To,
The Executive Director (O&M)
Bangalore Metro Rail Corporation Ltd (O&M Wing),
Admin Building, Baiyappanahalli Depot,
S V Road,
Bangalore – 560 038,

Subject: Manufacturer's Authorization Form Ref: Tender No. BMRCL/O&M/IT/OT-01/2022, Dated 28/10/2022

Dear Sir,

We M/s. _____ (Name of the OEM) who are established and reputable manufacturers of (List of Goods/Services as per the BOQ) having factories or product development centres at the locations or as per list attached, do hereby authorize M/s. _____ (Name and address of the Bidder) to bid, negotiate and conclude the contract with you against Tender No. BMRCL/O&M/IT/OT-01/2022, Dated <<>> for the above goods manufactured or services provided by us.

We hereby extend, our warranty for the hardware goods supplied by the bidder and or maintenance or support services for software products against this invitation for bid by (Name of the Bidder) as per requirements and for the duration of contract as specified in this Tender.

Further, we declare that we meet the following criteria (as applicable) detailed below:

- Products or technology quoted are neither end-of-sale nor end-of-life as on the Date of installation and commissioning and are not end-of-support till the successful completion of the CAMC Contract period of this Tender or for a period of 10 Years whichever is later.
- We have not have been blacklisted / barred by any State / Central Government Department or Central / State PSUs in last 5 years.
- We have not filed for bankruptcy and are profitable for at least last 5 consecutive financial years.
- We have quality standard certifications viz. ISO 9001 or ISO 14001 or ISO 27001, or ISO 20000 as applicable, as on date of Tender release.



- We have a registered office in India and have been directly present for last ____ years, from date of Tender publication. We also have a development centre in India.
- We have an installed base of at least 100% of the quantities proposed in the BoQ for the quoted product or technology globally (including India).

Thanking you,

Yours faithfully,

(Signature)

For & on behalf of M/s. _____ (Name of OEM)

Name :

Designation :

Place :

Date :



ANNEXURE - 9**MAKE IN INDIA (MII) DECLARATION:**

The Bidder or the OEM bidding for the Tender No BMRCL/O&M/IT/OT-01/2022, Dated 28/10/2022 shall provide the Make In India Declaration on the Bidder's Letter Head as per the Table given below. The Percentage of Local content declaration shall be in accordance with the Order No. P-45021/2/2017-PP (BE II) dated 16.09.2020 of Department for Promotion of Industry and Internal Trade under the Ministry of Commerce and Industry, Government of India.

Make In India - Content Declaration				
Sl. No.	Description	Make & Model	Local Content Percentage	Class-I Local Supplier or Class-II Local Supplier or Non Local Supplier.
1	Core Switch (Chassis)			
2	Optical Line Terminal 8 Ports			
3	Industrial Grade Optical Network Unit / Optical Network Terminal			
4	Aggregation Switch			
5	Network Management System			
6	Enterprise Management System and Centralized Help Desk management System			
7	DNS, DHCP & IPAM			
8	Monitoring Workstation (With Antivirus)			
9	Optical Fiber Cable - 6F			
10	Optical Fiber Cable - 2F			
11	Fiber Splitter – 1:4			
12	Fiber Splitter – 1:8			
13	FDMS - 24 Ports			
14	FDMS - 48 Ports			
15	Patch Card Cat 6 (5 mtr)			
16	Patch Card Cat 6 (10 mtr)			
17	LC-LC Single Mode Duplex - 5 Meter			
18	LC-LC Multi Mode Duplex - 5 Meter			
19	LC-LC Multi Mode Duplex - 10 Meter			
20	SC PC-SC PC Single Mode Simplex - 5 Meters			
21	SC APC-SC APC Single Mode Simplex - 5 Meters			
22	Single Port SC Termination Box			
23	FC-FC - 5 Meters			
24	Rack 42 U			
25	Rack 24 U			



26	3D Facial Recognition Reader and Time & Attendance, Access Management and System Software.			
27	SMPS power supply 12-24VDC 5amp			
28	Resettable Press to open type Emergency Door Release Box			
29	4 core 1 Sqmm LSZH Armored shielded Twisted Pair cables			
30	CAT6-UTP Armored LSZH Cable.			
31	2 core 1sqmm LSZH shielded Twisted Pair Cable			
32	Mounting Back box and Plate			

.....
Signature and seal of Tenderer



BANGALORE METRO RAIL CORPORATION LIMITED



Driving Bangalore Ahead

TENDER DOCUMENT

IT Network Infrastructure Revamp at Stations and Depots

TENDER NO. BMRCL/O&M/IT/OT-01/2022

Volume 2

FINANCIAL PACKAGE

OCT 2022

**Bangalore Metro Rail Corporation Ltd.
BMRCL Metro Rail Depot, , Old
Madras Road, Near NGEF Bus
Stop Baiyappanahalli,
Bangalore - 560038 Karnataka,
India**



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PRICED BILL OF QUANTITIES

Pricing Schedule A:

Name of work: "Supply, Installation and Commissioning of the IT Networking and Access Control Devices for a period of 5 Years"

Price for Supply and Installation of the Items at BMRCL stations and Depots are defined below:

Sl. No.	Description	UoM	Quantity	Unit Price	Total Price
1	Core Switch	Nos	4	23,25,074	93,00,296
2	Optical Line Terminal 8 Ports	Nos	55	3,89,423	2,14,18,265
3	Industrial Grade Optical Network Unit / Optical Network Terminal	Nos	1800	9,615	1,73,07,000
4	EMS for GPON	Nos	2	64,90,385	1,29,80,770
5	Aggregation Switch	Nos	106	8,20,311	8,69,52,966
6	AAA (Device Authentication)	Nos	2	16,35,577	32,71,154
7	Network Management System (Network-Switch/Router)	Nos	2	28,91,466	57,82,932
8	DNS, DHCP & IPAM	Nos	2	31,80,288	63,60,576
9	Windows User CAL for Domain Server	Nos	1800	3,894	70,09,200
10A	Monitoring Workstation - CPU	Nos	6	79,769	4,78,614
10B	Monitoring Workstation – Monitor	Nos	6	20,000	1,20,000
10C	Monitoring Workstation – Graphics Card	Nos	6	15,000	90,000
10D	Monitoring Workstation - Keyboard & Mouse	Nos	6	1,000	6,000
10E	Monitoring Workstation – Software tools	Nos	6	40,000	2,40,000
11	Optical Fiber Cable - 6F	Km	600	16,875	1,01,25,000
12	Optical Fiber Cable - 2F	Km	900	10,385	93,46,500
13	Fiber Splitter – 1:4	Nos	400	1,298	5,19,200
14	Fiber Splitter – 1:8	Nos	1150	1,558	17,91,700
15	FDMS - 24 Ports	Nos	52	7,788	4,04,976
16	FDMS - 48 Ports	Nos	5	9,027	45,135
17	Patch Card Cat 6 (5 mtr)	Nos	3700	506	18,72,200
18	Patch Card Cat 6 (10 mtr)	Nos	30	701	21,030
19	LC-LC Single Mode Duplex - 5 Meter	Nos	150	909	1,36,350
20	LC-LC Multi Mode Duplex - 5 Meter	Nos	150	1,103	1,65,450
21	LC-LC Multi Mode Duplex - 10 Meter	Nos	50	1,688	84,400
22	SC PC-SC PC Single Mode Simplex - 5 Meters	Nos	480	1,947	9,34,560
23	SC APC-SC APC Single Mode Simplex - 5 Meters	Nos	3900	909	35,45,100
24	Single Port SC Termination Box	Nos	3600	779	28,04,400
25	FC-FC - 5 Meters	Nos	150	1,168	1,75,200
26	Rack 42 U	Nos	4	77,885	3,11,540



27	Rack 24 U	Nos	54	25,962	14,01,948
28	Firewall	Nos	2	70,12,612	1,40,25,224
29 A	Installation & Commissioning of the IT Networking - Stations	Stations	51	4,93,454	2,51,66,154
29 B	Installation & Commissioning of the IT Networking - Depots	Depots	2	10,00,000	20,00,000
30	3D facial recognition reader for frictionless Access & Time, Standalone reader to connect Lock and Exit switch. IP65 embedded MIFARE/DESFire card reader. 7" WVGA color touchscreen, BIS Certified, UL294, EMC/Safety standards: CE, CB, FCC, RoHS, REACH and WEEE compliant, 1 Million transaction logs, Standard 20K users, Time Attendance & Access System Software - For Administration and user management. Installed at central location and which can connect multiple clients. Integrated with Face Biometric reader for seamless Access operation	Nos	1	3,25,000	3,25,000
31	SMPS power supply 12-24VDC 5amp	Nos	1	1,500	1,500
32	Electro Magnetic lock having Min holding force of 1200 Lbs with required mounting accessories for double door, ZL brackets (where ever required) for all type of doors and with external (surface / recess mountable) door contacts	Nos	1	10,000	10,000
33	Touchless Exit Switch	Nos	1	1,000	1,000
34	Resettable Press to open type Emergency door release box (Green) with a relay contact to indicate to the access controller when it is operated	Nos	1	3,000	3,000
35	4 core 1 sqmm LSZH Armoured shielded Twisted pair cables for Lock, Exit switch and door release with conduit & laying	Mtrs	1	155	155
36	CAT6-UTP Armoured LSZH Cable with conduit & laying	Mtrs	1	150	150
37	2 core 1sqmm LSZH PVC shielded Twisted pair for Power supply to lock and Face biometric reader with conduit & laying	Mtrs	1	150	150
38	Mounting Back box and Plate	Nos	1	1,500	1,500
39	System Installation, Programing and Commissioning the entire system as per the scope defined	Locations	1	25,000	25,000
Total Estimate Cost in INR					24,65,61,295 /-



Schedule B:

Name of work:- Trained and Skilled Engineer with IT Networking Domain knowledge over and above the CAMC Requirement.

Trained and Skilled Engineer with IT Networking Domain knowledge		
SL No.	Description of the Resource	Cost per month per head in INR (includes all the mandatory payments to be made to the employee by the employer as per the labour laws)
1	Trained and Skilled Engineer with IT Networking Domain knowledge	

Schedule C:

Name of work: Unit Price for different types of SFP/SFP+/XFP's/ Equivalent modules to be utilized by BMRCL as & when required **(The Unit Prices shall remain valid throughout the period of the contract)**

SL No	Transceiver Description	Unit Price
1	1000BASE-T	
2	1000BASE-LX	
3	1000BASE-SX	
4	10GBASE-T	
5	10GBASE-SR	
6	10GBASE-LR	
7	10GBASE-ER	
8	10GBASE-ZR	
9	25GBASE-SR	
10	25GBASE-LR	
11	40GBASE-SR4	
12	40GBASE-LR4	
13	40GBASE-ER4	
14	Industry Grade 1000BASE-T	
15	Industry Grade 1000BASE-LX	
16	Industry Grade 1000BASE-SX	
17	Industry Grade 10GBASE-T	
18	Industry Grade 10GBASE-SR	
19	Industry Grade 10GBASE-LR	
20	Industry Grade 10GBASE-ER	
21	Industry Grade 10GBASE-ZR	

**Schedule D: Breakup Price List in accordance with the Total Tender Price quoted by the Tenderer
(The Unit Prices shall remain valid throughout the period of the contract)**

Sl. No.	Description	UoM	Quantity	Unit Price	Total Price
1	Core Switch	Nos	4		
2	Optical Line Terminal 8 Ports	Nos	55		
3	Industrial Grade Optical Network Unit / Optical Network Terminal	Nos	1800		
4	EMS for GPON	Nos	2		
5	Aggregation Switch	Nos	106		
6	AAA (Device Authentication)	Nos	2		
7	Network Management System (Network-Switch/Router)	Nos	2		
8	DNS, DHCP & IPAM	Nos	2		
9	Windows User CAL for Domain Server	Nos	1800		
10A	Monitoring Workstation - CPU	Nos	6		
10B	Monitoring Workstation – Monitor	Nos	6		
10C	Monitoring Workstation – Graphics Card	Nos	6		
10D	Monitoring Workstation - Keyboard & Mouse	Nos	6		
10E	Monitoring Workstation – Software tools	Nos	6		
11	Optical Fiber Cable - 6F	Km	600		
12	Optical Fiber Cable - 2F	Km	900		
13	Fiber Splitter – 1:4	Nos	400		
14	Fiber Splitter – 1:8	Nos	1150		
15	FDMS - 24 Ports	Nos	52		
16	FDMS - 48 Ports	Nos	5		
17	Patch Card Cat 6 (5 mtr)	Nos	3700		
18	Patch Card Cat 6 (10 mtr)	Nos	30		
19	LC-LC Single Mode Duplex - 5 Meter	Nos	150		
20	LC-LC Multi Mode Duplex - 5 Meter	Nos	150		
21	LC-LC Multi Mode Duplex - 10 Meter	Nos	50		
22	SC PC-SC PC Single Mode Simplex - 5 Meters	Nos	480		
23	SC APC-SC APC Single Mode Simplex - 5 Meters	Nos	3900		
24	Single Port SC Termination Box	Nos	3600		
25	FC-FC - 5 Meters	Nos	150		
26	Rack 42 U	Nos	4		
27	Rack 24 U	Nos	54		
28	Firewall	Nos	2		



29 A	Installation & Commissioning of the IT Networking - Stations	Stations	51		
29 B	Installation & Commissioning of the IT Networking - Depots	Depots	2		
30	3D facial recognition reader for frictionless Access & Time, Standalone reader to connect Lock and Exit switch. IP65 embedded MIFARE/DESFire card reader. 7" WVGA color touchscreen, BIS Certified, UL294, EMC/Safety standards: CE, CB, FCC, RoHS, REACH and WEEE compliant, 1 Million transaction logs, Standard 20K users, Time Attendance & Access System Software - For Administration and user management. Installed at central location and which can connect multiple clients. Integrated with Face Biometric reader for seamless Access operation	Nos	1		
31	SMPS power supply 12-24VDC 5amp	Nos	1		
32	Electro Magnetic lock having Min holding force of 1200 Lbs with required mounting accessories for double door, ZL brackets (where ever required) for all type of doors and with external (surface / recess mountable) door contacts	Nos	1		
33	Touchless Exit Switch	Nos	1		
34	Resettable Press to open type Emergency door release box (Green) with a relay contact to indicate to the access controller when it is operated	Nos	1		
35	4 core 1 sqmm LSZH Armoured shielded Twisted pair cables for Lock, Exit switch and door release with conduit & laying	Mtrs	1		
36	CAT6-UTP Armoured LSZH Cable with conduit & laying	Mtrs	1		
37	2 core 1sqmm LSZH PVC shielded Twisted pair for Power supply to lock and Face biometric reader with conduit & laying	Mtrs	1		
38	Mounting Back box and Plate	Nos	1		
39	System Installation, Programing and Commissioning the entire system as per the scope defined	Locations	1		
Total Price in INR					

FINANCIAL BID PROPOSAL SHEET		
Particulars	In Figures	In Words
Total Estimated cost for Schedule A (a)	Rs. 24,65,61,295 /-	Rupees Twenty Four Crore Sixty Five Lakhs Sixty One Thousand Two Hundred and Ninety Five only
Quoted Percentage (Tender Premium)	 % (Above / Below / At Par)	 Percentage (Above / Below / At Par)
Quoted Price (b) (Tender Premium)	Rs.	Rupees only
Total Tender Price = [Total Estimated Cost (a) + Quoted Price (b)]	Rs.	Rupees only

The Tender Total comprises:

Indian Rupees: (in figures)

..... (in words)

Note:

1. The quoted price shall be inclusive of all applicable Taxes and excluding GST and shall remain valid for a period of 5 Years from date of acceptance of the BOQ Items. BMRCL reserves the right to place the orders for any number of quantities against these rates as per the additional Scope of Work as and when the new Lines or reaches are commissioned.
2. **Income Tax deduction:** As per the prevailing rate shall be deducted and remitted to the Income Tax authorities and Form 16 shall be furnished by BMRCL in proof of remittance to IT Department. For availing lower deduction of Income Tax, necessary certificate for each financial year issued by the Income Tax Authority shall be furnished by the Contractor, failing which IT at the maximum rate will be deducted.
3. Unit rates and prices shall be quoted by the Bidder in Indian Rupees Only.
4. Where there is a discrepancy between the rate in figures and words, the lower of the two will govern.
5. Where there is a discrepancy between Quoted percentage & Quoted price, the lower of the two will govern.
6. Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern.
7. Where there is a discrepancy between the Total Tender price of schedule D and quoted Total Tender Price in Financial Bid Proposal Sheet, the lowest of the two shall govern as Total Tender



Price for this Tender. If the lowest figure is obtained from the Total Tender Price of Financial Bid Proposal Sheet, contractor should submit revised Breakup Price List.

8. The Contract Price shall be inclusive of all charges of insurance, transportation up to destination, handling, installation, royalties & any other charges leviable and payable by the Contractor under the Contract, or for any other cause and including Tax to be deducted at source and shall be included in the Total Bid Price.
9. The Contractor shall be entirely responsible for license fees and any other incidentals incurred until completion of the whole of the Works and handover to the Employer.
10. The Contractor shall maintain complete records of duties, other taxes and levies, etc; payable to various authorities in relation to the Works and submit the receipts/ records for verification as and when demanded in writing by the Employer.
11. Any increase in GST shall not be paid in the extended period of Contract for which the Contractor alone is responsible for delay as determined by the Engineer while granting the "extension of time". However, this shall not be applicable for "variations".
12. **UNPRICED ITEMS:** Items against which no rate or sum is entered by the Bidder, whether quantities are stated or not, such bids shall be summarily rejected.

SIGNATURE OF THE BIDDER

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