



V.O. CHIDAMBARANAR PORT AUTHORITY

Tender No. MEE-PM-EE-7654-2025

e - TENDER

for

Supply, installation of outdoor LED video wall display, CCTV cameras with necessary associated recording, buyback of old CCTV system and CAMC for a period of four years after one year guarantee period

<https://etenders.gov.in/eprocure/app>

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SECTION- I

NOTICE INVITING TENDER (NIT)

- 1.1 V.O. Chidambaranar Port Authority invites electronic tenders (Two Cover System under QCBS) from eligible bidders for the work “ **Supply, installation of outdoor LED video wall display, CCTV cameras with necessary associated recording, buyback of old CCTV system and CAMC for a period of four years after one year guarantee period**”
- 1.2 A complete set of Tender documents may be downloaded by any interested Bidders from e-Tender web portal <https://etenders.gov.in/eprocure/app> . The Bidder shall submit his bid in Central Public Procurement Portal (e-Procurement) at <https://etenders.gov.in/eprocure/app> by following the procedure of Instruction to Bidder (Section - II). Non-submission of Bid along with relevant documents shall lead to rejection of the tender.
- 1.3 Salient features of the Bid:

Tender No.	MEE-PM-EE-7719-2025
Tender Type	Open online e-Tender
Tender Inviting Authority	Chief Mechanical Engineer, VOCPA
Address	V.O. Chidambaranar Port Authority, Harbour Estate, Tuticorin – 628 004, Tamil Nadu
Contact Details & Email	Tel. off: 0461-2372206, 0461-2352226, 0461-2352255 Email: cme@vocport.gov.in
Brief Work Description	Scope of Work includes Supply, installation of outdoor LED video wall display, CCTV cameras, Speed Monitoring System in VOCPA, Under Vehicle Scanning systems(UVSS) with necessary associated recording and CAMC for a period of four years after one year guarantee period Work shall be executed as directed by Engineer or his representative.
Location of the work	VOC Port Estate.
Estimated Cost	Rs. 22,76,01,292/- without GST
Bid Validity	120 days from the date of opening of the Tender
EMD	Rs.45,53,000/-(Rupees Forty Five Lakhs and Fifty Three thousand only). All bidders other than an MSEs should pay the EMD through online payment gateway mode in CPP e- Tender web Portal or shall submit the EMD in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or irrevocable & operative Bank Guarantee from any of the Scheduled Commercial Banks. The validity period of bid security is to remain valid for a period of 45 (forty-five) days beyond the final bid validity period. Otherwise, his/her/their tender will be rejected. EMD in any

	<p>other form shall not be accepted.</p> <p>The MSEs are required to furnish relevant valid Certificate for claiming exemption. This valid certificate shall be uploaded in the Bid, failing which the Technical Bid shall not be evaluated. Similarly, bidders are required to upload scanned copies in the Bid incase payment of EMD in the form of Insurance Surety Bonds, account payee demand draft, fixed deposit receipt, banker's cheque or Bank Guarantee from any of the Commercial Banks, failing which the Technical Bid shall not be evaluated. The originals of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks shall be received only after the bid opening date. If the originals not received within 7 days of bid opening date the bid may not be considered.</p>
Delivery period of the Contract	<ol style="list-style-type: none"> 1. Work Completion Period – 180 days from the date of commencement of work. 2. Comprehensive Guarantee - 1 years 3. CO&M- Four years after completion of comprehensive Guarantee period.
Downloading of Tender documents start date	19.02.2026
Pre-Bid Meeting	27.02.2026 at 15:00 hours
Bid Submission end date & time	16.03.2026 at 15:00 hrs.
Bid opening date & time	17.03.2026 at 16:00 hrs.
Currency of Contract	INR
Language of Contract	English

1.4 Bidders fulfilling following eligibility / pre-qualification criteria may participate in the tender:

a) Financial Capability:

Average Annual financial turnover during the last three years, ending 31st March of the previous financial year, should be at least 30% (Thirty per cent) of the estimated cost. The details shall be furnished by the bidder on **Form III of Annexure A.**

b) Similar Work Experience:

The bidder should have successfully completed similar work(s) as detailed below during the last 07 years from the previous month of date of publication of the NIT with either of the following in any Central / State Government / PSUs / Ports.

i) Three similar completed work each costing not less than the amount equal to 40% (Forty per cent) of the estimated cost.

(OR)

ii) Two similar completed work each costing not less than the amount equal to 50% (Fifty per cent) of the estimated cost.

(OR)

iii) One similar completed work costing not less than the amount equal to 80% (Eighty per cent) of the estimated cost.

“Similar work” shall mean.

- (i) Supply, installation, and commissioning of CCTV with allied accessories in any Central / State Government / PSUs / Ports for eligibility /PQ criteria under similar work experience.
- (ii) Ongoing /Completed works for Operation & Maintenance of CCTV system in Ports without value, for verifying, only the experience of the bidder (only Supporting documents shall be furnished).

Copies of work order(s) & respective satisfactory completion(s) / performance certificate(s) must be furnished in support of meeting similar work experience.

The above-said details shall be furnished by the bidder in Form **IV of Annexure A**.

- 1.5 In addition to the above, the bidders who achieve the minimum technical score specified in the QCBS criteria will only be considered as technically responsive and prequalified. Bids that do not meet this minimum score will be deemed non-responsive and will not be prequalified. The Bidder shall furnish the required details for the evaluation under QCBS as mentioned in the Special conditions of the contract
- 1.6 The bidder shall upload the site inspection as per Form- XIV “Evidence towards site visit” annexed in the tender document, failing which the bid will be treated as non-responsive.
- 1.7 The bidder shall have (i) EPF registration certificate; (ii) ESI; (iii) Permanent Account Number [PAN]; (iv) Income Tax Return of preceding three years; and (v) GST Registration Certificate etc.
- 1.8 Other details can be seen in the Tender documents. The Bidders are advised to read the whole document carefully and submit their tender/bid strictly, meeting the requirements spelled out in the bid document.
- 1.9 The bid document is required to be submitted only through e-tender web portal <https://etenders.gov.in/eprocure/app>.
- 1.10 While E-tendering all the supporting documents as stated in Annexure A have to be signed in each and every page serially numbered along with seal and shall be uploaded by the Bidders. No hard copies need to be sent to the Authority.
- 1.11 The Authority will not be held responsible for any technical snag or network failure during online bidding.
- 1.12 The Authority reserves the right to cancel any or all bids without assigning any reason.

Format and Signing of Bid:

The Price Bid to be submitted on-line shall be signed digitally by a person or persons duly authorized to sign on behalf the Bidders.

The Bid shall contain no alternations additions, except those to comply with instructions issued by the Employer.

Contacts:

1. The Chief Mechanical Engineer
Mechanical & Electrical Engineering Department,
V.O. Chidambaranar Port Authority,
Tele:0461-2352270
Email: cme@vocport.gov.in
2. The Deputy Chief Mechanical Engineer
Mechanical & Electrical Engineering Department,
V.O. Chidambaranar Port Authority,
Tele: 0461-2352270
Email: selvaraj.b@vocport.gov.in
3. The Executive Engineer,
Mechanical & Electrical Engineering Department,
V.O. Chidambaranar Port Authority,
Tele: 0461-2372203
Email: senthilganesh.a@vocport.gov.in

**Chief Mechanical Engineer
V. O. Chidambaranar Port Authority**

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SECTION II

INSTRUCTION TO BIDDERS

2.1 e-TENDER NOTICE:

2.1.1 e-Tenders (Online) are invited in the “TWO COVER” system on behalf of **V.O. CHIDAMBARANAR PORT AUTHORITY (VOCPA)** from interested, reputed and experienced eligible bidders for the work as mentioned in the **Notice Inviting Tender (NIT) Section-I**. The bidder must fulfill the eligibility criteria and other requirements stipulated in the bid document.

2.1.2 Bid document having all details are available at the URL of the e-Tender web portal <https://etenders.gov.in/eprocure/app> or at the Port website www.vocport.gov.in for downloading during the period specified in the **NIT(Section-I)**. The completed bid documents are required to be submitted only through online (e-mode) offered on the e-Tender web portal <https://etenders.gov.in/eprocure/app>. Bids in any other manner will be rejected, and no correspondence on such matter will be entertained. No bids shall be accepted off-line.

2.2 PARTICIPATING IN THE TENDER IN THE E-PROCUREMENT PORTAL:

2.2.1 The intending Bidders are required to register on the e-Tender web portal <https://etenders.gov.in/eprocure/app> (If not already registered) by clicking “Online Bidder Enrollment” option in order to obtain user-id and password and then to activate their respective user-id by using Digital Signature Certificate (Class-III). The bidders will have to accept, unconditionally, the online user portal agreement which contains all the terms and conditions of NIT including commercial and general terms and conditions and other conditions, if any, along with an online undertaking in support of the authenticity of the declarations regarding facts, figures, information and documents furnished by the bidder online; The bidder shall visit the homepage of the e-tender portal for getting information to be followed for bidding in the e- tender portal.

2.2.2 Any prospective bidder can view or download the bid documents from the e-Tender web portal <https://etenders.gov.in/eprocure/app> during the period as indicated in NIT / home page of portal.

2.2.3 In the case of any failure, malfunction, or breakdown of the electronic system used during the e- Procurement process, the Tender Inviting Authority shall not accept any responsibility for such failures or breakdowns other than in those systems strictly within their own control.

2.3 ELIGIBLE BIDDERS:

2.3.1 All eligible bidders meeting the eligibility criteria as defined in NIT (Section-I) can participate in the tender.

2.3.2 Bidder means any eligible person or firm or company; Please refer to Special Condition of Contract (SCC) for applicability of Joint Venture / Consortium.

2.3.3 Bidders who have been non-performing / debarred / blacklisted by any Purchaser / Employer / Client at the time of bidding shall not be allowed to participate in this tender.

2.4 COST OF BIDDING:

The Bidder shall bear all costs associated with site visit(s), pre-bid / post bid conference(s), preparation, and submission of his Bid, opening of price bid and VOCPA will in no case be responsible or liable for those costs regardless of the conduct or outcome of the bidding process.

2.5 LOCAL CONDITIONS:

2.5.1 It will be imperative for each Bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the works covered under the bidding documents and specifications. VOCPA will not entertain any request for clarifications from the Bidders regarding such local conditions.

2.5.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the bid. Neither any change in the time schedule of the contract nor any financial adjustment arising thereof which are based on the lack of such clear information, its effect on the cost of the works to the Bidder shall be permitted by the VOCPA. No claim for financial adjustment to the contract awarded under these specifications and documents will be entertained by the VOCPA.

2.6 SITE VISIT:

2.6.1 The Bidder, at the bidder's own responsibility and risk are encouraged / advised to carry out the site visit to VOC Port at their own cost for the intended work and to inspect / examine & assess the site condition and its surroundings and satisfy themselves prior to submission of his bid.

2.6.2 In general, they shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A Bidder shall be deemed to have full knowledge of the site, whether he inspects it or not and no extra charges arising out of any misunderstanding or otherwise shall be allowed. Bidders shall submit a realistic offer for the execution of the work at their own cost without any liability on VOCPA.

2.6.3 It is implied that on submission of the bid/tender, the Bidder is deemed to have read the Tender document, clearly understood & satisfied himself regarding terms & conditions, scope of work and technical specifications of the work & services to be executed, local conditions and other factors likely to be encountered & having a bearing on the execution of work thereof. The price quoted in the **Cover B – Price bid** is adequate and all- inclusive with respect to all factors, circumstances, and conditions likely to be incidental, both direct and indirect, to the work and services mentioned in the subject tender.

2.7 PRE-BID MEETING

A pre-bid meeting will be conducted on the date & time as specified in **NIT (Section – I)** through hybrid mode. Interested bidders can participate in the pre-bid meeting physically or through the VC link uploaded in the CPP portal and Port website.

2.8 UNDERSTANDING AND CLARIFICATION ON BIDDING DOCUMENTS:

A prospective bidder requiring clarification regarding discrepancies or omissions in the tender documents or in doubt as to the true meaning of any part, may send queries at once

in writing / email / through e-tender portal, provided the queries are raised during the period as mentioned in the NIT / home page of portal. Any queries received after the due date shall not be considered and no reply to such queries will be given. Reply to queries shall be given by VOCPA only if the queries requested are considered appropriate by VOCPA. Verbal clarifications and information given by the VOCPA or his employee(s) or his representative(s) shall not in any way be binding on the VOCPA.

2.9 AMENDMENT TO BID DOCUMENTS:

2.9.1 At any time prior to the due date & time of opening of bids, VOCPA may, for any reason, whether at its own initiative or in response to a clarification sought by any prospective bidder, modify the bidding documents, bidding process, terms & conditions, specifications, etc. by issuing Corrigendum and/or Addendum.

2.9.2 Any Corrigendum and/or Addendum thus issued shall be part of bidding documents and shall be notified only on the web portal <https://etenders.gov.in/eprocure/app>. Bidders intending to participate in the tender shall be solely responsible for checking the portal for any amendment issued in the shape of Corrigendum and/or Addendum.

2.9.3 In order to afford prospective bidders reasonable time to take the amendment into account in preparing their bids, VOCPA may, at its discretion, extend the deadline for the submission of bids.

2.10 BIDDER'S RESPONSIBILITY:

2.10.1 Contacting VOC Port Authority:

Bidder shall not contact VOC Port Authority on any matter relating to its Bid from the time of the Bid Opening to the time the contract is awarded. Any effort by any Bidder to influence VOC Port Authority in the Bid Evaluation, Bid Comparison, or Contract Award decision shall result in disqualification of the bidder.

2.10.2 Undertaking By the Bidders:

- (i)** The Bidder undertakes, if his tender is accepted, has to enter into and execute when called upon to do so, a Contract Agreement as provided in **Annexure B** with such modifications as agreed upon. Until the formal Contract Agreement is prepared and executed, this tender/bid document together with the written acceptance shall form a binding agreement between the Port and the Contractor.
- (ii)** The Bidder undertakes, if his tender is accepted, has to give the required performance security as per **Clause No.2.13 of ITB**.
- (iii)** The Bidder shall submit a declaration as provided in the **Form VII** of the bid document that the Bidder has not been blacklisted or debarred in the last 3years by any of the Central / State Government / Autonomous bodies / PSEs / PSUs and any other organizations in India prior to and as on the bid submission date mentioned in the NIT and the same shall be uploaded along with the bid document in the e-tender portal.
- (iv)** The bidders shall submit a declaration as provided in the **Form VII** of the bid document that they have not made any payment or illegal gratification to any person / authority connected with the bid process so as to influence the bid process and have not committed any offence

under the Prevention of Corruption Act (PC Act) in connection with the bid.

PREPARATION OF BID

2.11 LANGUAGE OF BID:

The bid prepared by the Bidder and all correspondences and documents relating to the bid exchanged by the Bidder and VOCPA shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language so long as it is accompanied by an English translation of its pertinent passages in which case for the purpose of interpretation of the Bid, the English translation shall be considered.

2.12 BID PRICES:

2.12.1 The Bidder shall quote, on the prescribed Price Schedule, the landed prices (F.O.R Destination basis) of all the goods and services at VOCPA.

2.12.2 The quoted price shall be a firm lump-sum price and shall be as on the opening of the bid. The Bidder shall ensure that the prices are rational, reasonable. The above lump-sum price shall include all the taxes (except GST), duties, fees, all types of Cess, insurance, transportation, packing, forwarding and all other incidentals required for execution of the contract in all respects. In case of change in /Custom Duties/other Government taxes & levies during pendency of the contract, only incremental change will be paid, provided goods and services are executed during the original completion date of the Contract. Variation of taxes & duties during extended period of Contract shall only be considered on merit.

2.12.3 No price escalation shall be admissible unless the contract specifically provides for it. In general, no price escalation is applicable on any account till the contract is executed in full and its subsequent amendments accepted by the Contractor even though the completion / execution of the contract may take a longer time than the scheduled period incorporated and accepted in the contract.

2.12.4 Also, by submitting a bid for the work, bidders shall be deemed to have satisfied himself by actual inspection of the site and locality of the work, that rates quoted by him in the Bid will be adequate to complete such work according to the specification and conditions attached here to and he has taken into account all conditions and difficulties that may be encountered during its progress and to have quoted labour and material rates which shall include the cost of the material with taxes, duties and incidental and all other charges necessary for the completion of the work, to the entire satisfaction of VOCPA.

2.13 BID VALIDITY:

2.13.1 The bids shall be valid for a period of 120 days from the date of opening of e-Tender.

2.13.2 During this period, the bidder shall not be permitted to withdraw or vary their offers, once made and if they do so, EMD paid by the bidder will be forfeited.

2.13.3 In exceptional circumstances, prior to the expiry of the original time limit, the “Tender inviting Authority” may request the bidders to extend the period of validity for a specified additional period. The request and the bidders’ responses shall be made in writing or by e-mail. A bidder may refuse the request without any risk of forfeiture of Bid Security (EMD).

2.13.4 A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid for the period of the extension.

2.14 BID CURRENCIES:

The prices shall be quoted in the currency of Indian Rupees only. The price quoted in the currency of Indian rupees in the 'Price Schedule' shall be firm and shall not be varied on account of exchange rate fluctuation during the bid validity / contract period.

2.15 BID SECURITY/ EARNEST MONEY DEPOSIT (EMD):

2.15.1 The Bidder shall furnish, as part of its bid, bid security (EMD) for the amount stipulated in the NIT.

2.15.2 Any bid not accompanied by prescribed bid security shall be rejected by the VOCPA as being non-responsive.

2.15.3 All bidders other than an MSEs should pay the EMD through online payment gateway mode in CPP e- tender web Portal or shall submit the EMD in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or irrevocable & operative Bank Guarantee from any of the Scheduled Commercial Banks. The validity period of bid security is to remain valid for a period of 45 (forty-five) days beyond the final bid validity period. Otherwise, his/her/their tender will be rejected. EMD in any other form shall not be accepted.

The MSEs are required to furnish relevant valid Certificate for claiming exemption. This valid certificate shall be uploaded in the Bid, failing which the Technical Bid shall not be evaluated. Similarly, bidders are required to upload scanned copies in the Bid in case payment of EMD in the form of Insurance Surety Bonds, account payee demand draft, fixed deposit receipt, banker's cheque or Bank Guarantee from any of the Commercial Banks, failing which the Technical Bid shall not be evaluated. The originals of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks shall be received only after the bid opening date. If the originals not received within 7 days of bid opening date the bid may not be considered.

2.15.4 The bid securities of unsuccessful bidders will be returned at the earliest after expiry of the final bid validity period and latest by 30th day after the award of contract.

2.15.5 A bidder's bid security will be forfeited if the bidder:

- a. Withdraws or amends its / his bid.
- b. Impairs or derogates from the tender in any respect within the period of validity of the tender.
- c. If the bidder does not accept the correction of his bid price during evaluation.
- d. If the Bidder submits fraudulent documents and / or wrong information in support of its eligibility / qualification
- e. In case of any bidder found indulged in corrupt, fraudulent, coercive, undesirable

and restrictive practices during the bidding process and

- f. If the successful bidder fails to sign the contract or furnish the required performance security within the specified period.

2.15.6 No interest shall accrue or is payable on the EMD from the date of its remittance till it is returned to the bidders.

2.15.7 Bid security shall be refunded to the successful bidder on receipt of a performance security and signing of contract. Bid security of the successful bidder may be adjusted against Performance Security Deposit if requested by the successful bidder.

2.15.8 If successful bidder on award of contract fails to sign the contract or to submit a performance security within the specified period, EMD will be forfeited, and the bidder may be suspended for a period of 3(three) years from being eligible to submit Bids for contracts with VOCPA.

2.15.9 The MSEs are exempted from payment of Bid Security subject to furnishing of relevant valid Certificate by uploading the said valid certificate copy at the time of submission of their bid along with the details duly filled in as per **Form-II A**. MSE bidders claiming exemptions from EMD as per MSME guidelines must also register Udyam Registration Certificate indicating URN (Udyam Registration Number) issued from MSME, in order to avail the benefits available to MSEs as contained in Public procurement policy.

2.16 DOCUMENTS COMPRISING THE BID:

2.16.1 The bidder is required to download all the documents for the preparation of his bid. The bidders are strongly advised to examine all the instructions, forms, terms, and specifications in the Tender/Bid documents. Failure to furnish all the information required by the Tender/Bid Document or submission of a Bid not techno-commercially responsive, in every respect, will be at the Bidder's risk and shall result in the rejection of its Bid.

2.16.2 The bidder shall carefully prepare the list of required documents that are asked for submission along with the bid. The bid shall be a Techno-Commercial bid and financial bid. The bid shall be prepared as under and uploaded the same online through e-Procurement Portal in two cover system and digitally signed by the authorized representative of the bidder as follows:

Cover A – Techno-Commercial Bid:

- (i) Duly filled in **Form -I** – “Bid Cover Letter”
- (ii) Scanned copy of system generated proof towards successful payment of EMD in case of payment through online payment gateway mode in CPP e- tender web Portal **OR** scanned copy of proof towards successful payment of EMD in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks along with filled in **Form-II A OR** valid Certificates by MSEs for claiming exemption along with filled in **Form-II B**.
- (iii) Eligibility / pre-qualification criteria information on **Financial Capability** as detailed under SI. No. 4. a) of Notice Inviting Tender (Section-I):

Scanned copy of Profit & Loss statements for the last 3(three) years ending 31st March of the previous financial year duly certified by the Chartered Accountant in support of meeting Financial Capability along with duly filled in **Form-III**.

- (iv) Eligibility / pre-qualification criteria information on **Similar Work Experience** as detailed under SI. No. 4. b) of Notice Inviting Tender (Section-I):

Scanned copies of work order(s) along with BOQ & respective satisfactory completion with performance certificate in support of meeting Similar Work Experience along with duly filled in **Form-IV**. In case of experience other than Central / State Government / Autonomous bodies / PSEs / PSUs / Public Limited Companies, the bidder has to submit scanned copies of TDS certificate along with duly filled in **Form-IV A**.

- (v) Scanned copies of (i) EPF registration certificate; (ii) ESI; (iii) Permanent Account Number [PAN]; (iv) Income Tax Return of preceding three years; and (v) GST Registration Certificate
- (vi) Duly filled in Form-V – “Declaration of Authorized Representative”
- (vii) Duly filled in Form-VI – “Schedule of No deviation”
- (viii) Duly filled in Form-VII – “Declaration by the Bidder”
- (ix) Duly filled in Form-VIII – “Bank Mandate Form”
- (x) Duly filled in Form-IX – “Tender Acceptance Letter”
- (xi) Duly filled in Form-X – “Local Content declaration & Self Certification” [**wherever applicable if specifically asked for in bid document**]
- (xii) Duly filled in and signed Form-XI – “Integrity pact” [**wherever applicable as per as per Clause No.2.14.2 of ITB – shall be submitted, else treated as non-responsive**]
- (xiii) Details of Technical Manpower to be deployed for execution of work [**wherever applicable if specifically asked for in bid document**]
- (xiv) Scanned copy of valid license "ESB/" "ESA"/"EA" grade issued by the Licensing Board [**wherever applicable if specifically asked for in bid document**]
- (xv) The bidder shall submit the technical details and brochures of the proposed machines /equipment to be deployed along with technical bids with necessary certifications as per the technical requirement.
- (xvi) Any other documents which need to be uploaded, as a support to bidder's qualification/ responsiveness to the bid in compliance to Tender Document.
- (xvii) In Case of JV / Consortium following forms should be filled in and submitted along with bid document

FORM-XII	Declaration Of Power Of Attorney
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	FORM-XIII	Declaration Of Power Of Attorney for Consortium
	FORM-XIV	Joint Bidding Agreement (JBA)

(xviii) In order to file an error-free tender/bid, the bidders may make use of the qualification documents to be uploaded list provided **in the Pre-qualification and Responsiveness Information in Annexure - A** of the bid document to identify the documents to be scanned and uploaded in support of their bid. Scanned copy of duly filled in Annexure - A shall be uploaded by the Bidder.

NB: *Please note that bidders should upload only the documents that are mentioned in the preceding clauses. The bidders need not send any documents (Hard Copy) to the Tender Inviting Authority. The NIT corrigendum/ addendum published by Tender Inviting Authority need not be uploaded and will be deemed to be part of the bid. Bid documents may be scanned with 100dpi with black and white option which helps in reducing size of the scanned document.*

Cover B – “Financial Bid” shall comprise Price Schedule

(i) Price proposal by the bidder:

- a. In the e-Procurement Portal, an intelligent Price Schedule / Bill of Quantity in Microsoft Excel format shall be made available to the bidder.
- b. The bidder shall bid for the whole works as described in the Price Schedule.
- c. The bidder shall be deemed to have satisfied himself/herself as to the correctness and sufficiency of the Tender and the rates and prices quoted in the Price Schedule, all of which shall cover all his/her obligations under the Contract and all matters & things necessary for the proper execution and completion of the work and the remedying of any defects therein.

2.1.2 Bidders shall submit offers that fully comply with the requirements of the Tender documents. Conditional offers or alternative offers will not be considered in the process of bid evaluation.

2.2 FORMAT AND SIGNING OF BID:

2.2.1 The bidder shall upload the completed bid at his/her convenience within the final date and time of submission. The bidder shall only submit a single copy of the required documents and Price Bid in the portal. The Bidders are advised to upload the completed Bid document well ahead of bid closure time to avoid any last-moment problem of power failures, network failure, etc. VOCPA shall not be responsible in any manner.

2.2.2 The bidder shall ensure the correctness of the bid prior to uploading and also ensure clarity/legibility of the document uploaded by him/her to the portal, especially the scanned documents. Non-submission of legible documents may render the bid non-responsive. However, VOCPA, if so desires, can ask for legible copies or original copies of scanned documents and statements uploaded in the portal within the specified period for verification provided such document in no way alters the Bidder’s price bid. If the Bidder fails to submit

the original documents within the stipulated date, his bid shall be considered nonresponsive.

2.2.3 The bidder shall digitally sign on all the statements, documents, certificates uploaded by him/her in support of the **Pre-qualification and Responsiveness of the bid**, owning responsibility for their correctness/ authenticity. The bidder must note that misrepresentation of facts and/or submission of fraudulent documents or submission of bid in an irresponsible manner may disqualify the bidder from participating in any tender of VOCPA and also termination of any other ongoing contracts with forfeiture of the Security Deposit. VOCPA reserves the right to verify the authenticity of the documents/information submitted by the bidder.

2.2.4 Signatory of the bid documents shall be Bidder himself or a person duly authorized and holding power of attorney to do so on behalf of the Bidder, as furnished in **Form-V** of the bid document.

2.3 DEADLINE FOR SUBMISSION OF THE BIDS:

2.3.1 The online bidding will remain active till the last date and time of the bid submission. Once the date and time (Server date and time) are over, the bidder will not be able to submit the bid. The date & time of bid submission should remain unaltered even if the specified date for the submission of bids declared a holiday for the VOCPA.

2.3.2 The Tender Inviting Authority/ VOCPA may extend the deadline for submission of bids by issuing an amendment in accordance with **Clause No.2.9** of this Section, in which case all rights and obligations of the VOCPA and the bidders previously subject to the original deadline will then be subject to the new deadline. The new date after extension shall be available on the Tender portal.

2.4 LATE BIDS:

The system shall reject the submission of any bid through the portal after the closure of the receipt time. For all purposes, the server time displayed in the e-procurement portal shall be the time to be followed by the bidder and concerned officers.

2.5 MODIFICATION AND WITHDRAWAL OF BIDS:

2.5.1 In the E-Procurement Portal, it is allowed to modify the bid any number of times before the final date and time of submission. The bidder shall have to log on to the system and resubmit the documents as asked for by the system, including the price bid. In doing so, the bids already submitted by the bidder will be removed automatically from the system, and the latest bid only will be admitted. But the bidder should avoid modification of bid at the last moment to avoid system failure or malfunction of internet or traffic jam or power failure etc. If the bidder fails to submit his/her modified bids within the designated time of receipt, the bid already in the system shall be taken for evaluation.

2.5.2 In the e-Procurement Portal, withdrawal of bids is allowed. But in such a case, the bidder has to write a confidential letter with appropriate reasons for his/her withdrawal addressed to the Tender Inviting Authority and upload the scanned document to the portal in the respective bid before the closure of submission. The system shall not allow any equipment withdrawal after the expiry of the closure time of the bid.

OPENING AND EVALUATION

2.6 BID OPENING:

- 2.6.1** Bid opening dates are specified during the publishing of tender or can be extended vide corrigendum. These dates are available in NIT / Corrigendum as well as the home page of the portal.
- 2.6.2** If the specified date of bid opening is declared a holiday for VOCPA, the bids shall be opened at the appointed time on the next working day.
- 2.6.3** If the required EMD has not been provided or exemption from EMD is claimed without acceptable proof of exemption, bid will not be considered for techno-commercial evaluation.
- 2.6.4** The Cover A – Techno-commercial Bid containing the techno-commercial documents listed in the Pre- Qualification and Responsiveness Information in Annexure- A and any other documents uploaded by the Bidders as required for bidding purpose will be opened through online on the scheduled date and time in the presence of such bidders and/or their authorized representatives, who wish to be present at the time of opening, at their own cost.
- 2.6.5** The Price bid of the shortlisted bidders i.e., technically qualified bidders will alone be opened by the Port on a date and time to be notified later.

2.7 CLARIFICATION ON BIDS:

During evaluation and comparison of the bids, the VOCPA may, at his discretion, ask the bidder for clarification on the bid. The request for clarification shall be given in writing by registered/ Speed Post/Registered e-mail/uploaded on the e-procurement Portal, asking the bidder to respond by a specified date, and also mentioning therein that, if the tenderer does not comply or respond by the date, his tender will be liable to be rejected. Depending on the outcome, such tenders are to be ignored or considered further. No change in prices or substance of the bid shall be sought, offered, or permitted. No post-bid clarification at the initiative of the bidder shall be entertained. The shortfall information/documents should be sought only in case of historical documents which pre-existed at the time of the tender opening, and which have not undergone change since then. (Example: if the Permanent Account Number, *registration with GST* has been asked to be submitted and the tenderer has not provided them, these documents may be asked for with a target date as above). So far as the submission of documents is concerned with regard to qualification criteria, after submission of the tender, only related shortfall documents should be asked for and considered. For example, if the bidder has submitted a work /supply order without its completion/ performance certificate, the certificate can be asked for and considered. However, no new work supply/work order should be asked for so as to qualify the bidders.

2.8 EVALUATION & COMPARISON OF BID:

2.8.1 Evaluation of Techno-Commercial Bid:

In evaluation of the techno-commercial bid, conformity of the eligibility/ qualification, technical and commercial conditions to those in the bid document is ascertained. Additional

factors, if any, incorporated in the tender documents may also be considered in the manner indicated therein. A responsive tender is one which inter-alia confirms to all the terms and conditions including General and Special conditions of the entire bid documents without any deviation or reservation and the same shall be determined as described below:

- (a) The documents uploaded by the bidder as specified in **Form- IV** read with **Section - II, Clause 2.11.6.2 (iv)**, will be evaluated basing on the work orders, Performance Certificate / work completion certificate of similar nature of the work and value of the work fulfilling the eligibility criteria.
- (b) The financial capability will be evaluated based on the information provided in **Form III** read with **Section- II, clause 2.11.6.2 (iii)**.
- (c) After scrutiny of the documents uploaded in the **Cover A – Techno-commercial Bid**, the eligible bidders will be pre-qualified based on the details provided by them.
- (d) The Port may verify the original documents of the scanned copies uploaded by the Bidder during evaluation or at any time, if required. In case the documents submitted by the bidders found to be forged/ false, the port will take appropriate penal action including cancellation of the work order issued and blacklisting of the firm/ company for a period of 3 years.
- (e) The shortlisted bidders after the Techno-Commercial evaluation will be informed through emails after short listing and the same will also be published in the Port website. Any bidders who had participated in the tender having any objections or observations shall inform the same to the designated Email id, within a period of seven days from the date of publishing in the website. Objections if any, received after this date will not be entertained.
- (f) Objections so received will be duly examined as per the Terms and Conditions of the tender and the decision will be posted on the website or intimated to the firm. The decision of the competent authority, in this regard, will be final and binding and no further objections will be entertained once the decision is finalized.

2.8.2 Financial Evaluation:

- (a) The due date of opening of **Cover B- Financial Bid** shall be scheduled and intimated to the prequalified bidders through portal.
- (b) The Financial Bid of the pre-qualified & responsive bidders will be opened on the pre-published / notified date &time in the presence of bidders or their authorized representative who wish to be present. The participating bidders can also witness the opening of price bids online by logging on to the portal with his DSC from anywhere.
- (c) The financial evaluation shall be made on the basis of total price as indicated price schedule/ Bill of quantity. VOCPA is not bound to accept the lowest quoted offer. Conditions, if any, with Price Bid shall not be considered for any purpose.

2.8.3 Evaluation of the bid does not exonerate the bidders from checking their original documents. VOCPA reserves the right to verify the authenticity of the documents/information submitted by the bidder.

As per Section-468(Forgery for the purpose of Cheating) and Section-471(using as genuine, a forged document) of IPC-1860, use of fraudulent/forged document for the purpose of

participating in any tender is a punishable offense. Hence, in such cases, VOCPA shall have no other option than to take the following actions against the firm, which has restored to use of forged/fraudulent documents in any tender. It is also applicable if, at a later date, the bidder is found to have misled the evaluation through wrong information.

At the time of the bidding stage

- (a) Termination of any other ongoing contracts with forfeiture of the Security Deposits.
- (b) Blacklisting / debarring / tender holiday of the firm under the Prevention of Corruption Act, 1988 for a period of three years from the date of blacklisting.

At the time of contract execution

- (a) Termination of the contract with forfeiture of the Security Deposits.
- (b) Termination of any other on-going contracts with forfeiture of the Security Deposits.
- (c) Blacklisting of firm under Prevention of Corruption Act, 1988 for a period of three years from the date of blacklisting.

- 2.8.4** Conditional bids may be rejected by VOCPA. Conditions, if any, on any document enclosed with Price Bid shall not be considered for any purpose.

AWARD OF CONTRACT

2.9 AWARD CRITERIA:

The Tender Inviting Authority, on behalf of VOC Port Authority, will award the contract to the bidder whose bid is the lowest evaluated Bid as per tender conditions and their price schedule will be considered.

2.10 PURCHASER'S RIGHT TO ACCEPT OR REJECT ANY OR ALL THE BIDS:

VOC Port reserves the right to accept or reject any bid and the bidding process at any time prior to award of contract without thereby incurring any liability to the affected Bidder or Bidders on the grounds of VOC Port Authority's action.

2.11 NOTIFICATION OF AWARD:

Prior to the expiration of Bid Validity, the Successful bidder will be notified in the form of Letter of Acceptance / Award or Work Order which will be communicated by registered or by mail that his Bid has been accepted. The successful bidder has to furnish Performance Security & additional security (if any), and non-judicial stamp paper for signing of Contract / Agreement within 15 days from date of issuance of Letter of Acceptance/ Award of Work Order. The issue of the letter of acceptance shall be treated as the closure of the Bid process.

2.12 SIGNING OF CONTRACT:

The successful has to furnish the Performance Security Deposit (PSD), as per the Tender Conditions. The Contractor shall be required to execute an agreement in the proforma prescribed by the V.O.Chidambaranar Port Authority (**as per Annexure- B**) on Tamil Nadu Government State stamp paper of the required value within 28 days from the date of issue

of Letter of Acceptance / Work Order. In the event of failure on the part of the successful bidder to execute the agreement within the above stipulated period, or the period agreed by the Port, VOC port being in such circumstances entitled to treat the successful bidder as in breach of contract and proceed accordingly.

2.13 **PERFORMANCE SECURITY DEPOSIT or PERFORMANCE GUARANTEE:**

2.13.1 The successful bidder (Contractor) shall furnish an amount of 5% of the Contract Price as Performance Security in the form of Insurance Surety Bond, account payee demand draft, fixed deposit receipt from Scheduled Commercial bank, irrecoverable and operative Bank Guarantee issued / confirmed from any of the Scheduled Commercial bank in India, as per specimen in **Annexure D** or online payment through RTGS/NEFT to the account whose details are provided as below:

A	Name and address of the bank	Indian Overseas Bank, Harbour Branch, Tuticorin-628004.
B	Name of the branch	Harbour Branch
C	IFSC code	IOBA0000143
D	Account Number	014301000000001
E	Type of Account	Savings Account
F	Beneficiary's Name	FA & CAO, V.O. Chidambaranar Port Authority, Tuticorin

Performance Security is to be furnished within 15 days from the date of issuance of Letter of Acceptance/ Award of Work Order towards successful performance of the Contract and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the Contractor, including warranty period. However, the Engineer may relax the time limit of 15 days for submission Performance Security and extend it by further period in extraordinary circumstances for the reasons recorded. If the performance Security is not deposited in time as prescribed above, the LOA shall stand cancelled automatically and the Earnest Money Deposit will be forfeited, and action shall be initiated as per **Clause No. 2.15.8 of ITB**

The Contractor shall furnish the BG towards performance security by the issuing bank directly to the Port through SFMS mode.

This will not bear any interest. Bank Guarantee, obtained from the Nationalized Bank /Scheduled bank in the format prescribed, ***shall be in compliance with for a digital confirmation for the Bank Guarantee and the BG not complying with this shall not be considered.***

The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works including warranty period and remedied any defects. If required, the Contractor shall extend the validity of the Performance Security

accordingly.

The performance security will be forfeited in the event of breach of contract by the Contractor.

The performance security should be refunded to the Contractor without interest, after the Contractor duly performs and completes all obligations under the contract.

2.13.2 Security Deposit / Retention Money:

In addition to Performance Security, Security deposit / retention money for an amount of 5% of the contract value shall be recovered by deducting @10% from each running bill subject to a maximum accumulation of 5% of the contract value. The earnest money instead of being released may form part of the security deposit. The contractor may, at his option, replace the retention amount with an unconditional BG at the following stages:

- (a) After the amount reaches half the value of the limit of retention money; and
- (b) After the amount reaches the maximum limit of retention money. One-half of the retention money (or BG, which replaced retention money) shall be released to the contractor without interest on the issue of completion certificate. The other half of the retention money (or BG, which replaced the retention money) shall be released to the contractor without interest, after he duly performs and completes all obligations.

2.14 OTHER INSTRUCTIONS

2.14.1 PROVISION OF PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA):

The provisions contained in Public Procurement (Preference to Make in India) Order 2017 as Amended by OM No. P-45021/2/2017 – PP(BE-II) dated 16.09.2020 further as amended from time to time if any, shall be applicable to this tender.

- i. The margin of purchase preference applicable is 20% or as decided by the relevant Nodal Ministry for the item from time to time.
- ii. The minimum local content for Class I and Class II local suppliers shall be 50 % and 20 % respectively or as decided by the relevant Nodal Ministry for the item.
- iii. Procurements where the estimate value is less than Rs.5.00 Lakhs shall be exempted from this order.
- iv. Verification of Local Content:
 - a. For procurement value up to 10.00Crores: The class I local supplier /Class II local supplier at the time of tender, bidding or solicitation shall be obliged to indicate percentage of local content and provide Self Certification (as per the format enclosed) that the item offered meets the local content requirement for Class I local supplier / Class II suppliers as the case may be. They shall also give details of the locations at which the local value addition is made.

- b. For procurement value above Rs.10.00 Crores: The Class I local supplier / Class II local supplier at the time of tender, bidding or solicitation shall be required to provide certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. The Tenderer shall submit the Declaration as per **Form XI**.

2.14.2 INTEGRITY PACT:

For every work / procurement / contract the value of which is Rs.1crore and above, the Integrity Pact agreement format as given at **Form – X** shall form a part of the bid document and it shall be prepared in Non-judicial stamp paper shall be uploaded along with technical bid by all the participating bidders and the original shall be submitted to Notice Inviting Tender Authority within 7 (Seven) days of opening of tender by all the participating bidders. The Integrity pact signed by the Purchaser and the bidder (successful bidder – Contractor) shall be made part of contract agreement.

Each page of such Integrity pact proforma would be duly "signed" by Purchasers/Procuring Entity's competent signatory. All pages of the Integrity Pact are to be "returned" by the bidder (along with the technical bid) duly signed by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid and to make binding commitments on behalf of his company. Any bid not accompanied by the Integrity Pact duly signed by the bidder shall be considered to be a non-responsive bid and shall be rejected straightway."

The details of Independent External Monitors (IEM) are:

- 1) Shri Hermanprit Singh, IPS (Retd.),
12, Belevredre Road,
Alipore,
Kolkata – 700027.
Phone No: 9830197103
Email id: hermanprit@gmail.com.
- 2) Shri Trivikram Nath Tiwari, ILS Rtd,
301-B, Black – 3B, HIG DDA Flats,
Rani Jhansi Road, DDA complex,
Moti Khan,
New Delhi-110055
Phone No.9871788277
e-mail i.d –trivikramnt@yahoo.co.in

SECTION III

GENERAL CONDITIONS OF CONTRACT

3.1 GENERAL PROVISIONS:

3.1.1 Definitions:

In the Conditions of Contract ("these Conditions"), which include Particular Conditions and these General Conditions, the following words and expressions shall have the meanings hereby assigned to them, except where the context requires otherwise.

3.1.1.1 The Contract:

3.1.1.1.1 “Contract” means the Notice Inviting Tender, the Bid / Tender and acceptance thereof and the formal legal Agreement, if any, executed between the Employer and the Contractor together with the documents referred to therein including General Conditions with appendices and any Special Conditions of Contract, the Specifications, Designs & Drawings, Scope of Work, Priced Schedule / Bill of Quantities and further any documents. All these documents taken together shall be deemed to form one Contract and shall be complementary to one another.

3.1.1.1.2 "Contract Agreement" means the Employer and the Contractor shall enter into a Contract Agreement within stipulated days after the Contractor receives the Letter of Acceptance / Work Order, unless they agree otherwise. The Contract Agreement shall be in the format annexed to the bid document. The costs of non-judicial stamp paper of applicable value and other statutory charges (if any) in connection with entry into the Contract Agreement shall be borne by the Contractor.

3.1.1.1.3 "Letter of Acceptance (LOA)/ Letter of Award / Notification of Award / Work Order (WO)" means the letter of formal acceptance, signed by the Employer.

3.1.1.1.4 "Specification" means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the works.

3.1.1.1.5 "Drawings" means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract.

3.1.1.1.6 "Schedules" means the document(s) entitled schedules, completed by the Contractor and submitted, as included in the Contract. Such document may include the Bill of Quantities, data, lists, billing package and schedules of rates and/or prices.

3.1.1.1.7 "Price Schedule / Bill of Quantities" means the documents so named (if any) which are comprised in the Schedules.

3.1.1.1.8 “Tender/Bid” (including terms offers, quotations or proposals in certain contexts) means an offer to supply of goods, services, or execution of works made in accordance with the terms and conditions set out in the bid document inviting such offers.

3.1.1.1.9 “Tender/Bid documents” means a document issued by Employer, including any amendment / corrigendum thereto, that sets out the terms and conditions of the given procurement process including ‘Notice Inviting Tender’.

3.1.1.1.10 “e-Tender” means conducting of procurement processes by the Employer with bidders for execution of works and services through use of information and communication technology (specially the internet) with the aim of open, nondiscriminatory and efficient procurement through transparent procedures.

3.1.1.2 Parties and Persons:

3.1.1.2.1 "Party" means the Employer or the Contractor, as the context requires.

3.1.1.2.2 "Employer/ Purchaser" (“Board”) means the Board of V.O. Chidambaranar Port Authority and assigns, acting through its Chairperson or any other Officer so nominated by the Board.

3.1.1.2.3 "Contractor / Service Provider" means the person(s), firm or company whose Tender has been accepted by the Employer and includes the Contractor’s Representative(s), the successors and/or permitted assigns for the subject Contract.

3.1.1.2.4 "Engineer" means the Chief Mechanical Engineer / V.O. Chidambaranar Port Authority or any other Officer nominated by Chairman.

3.1.1.2.5 "Employer's Personnel" means the Engineer, his representative and all other staff, labour and other employees of the Employer; and any other personnel notified to the Contractor, by the Employer or the Engineer, as Employer's Personnel.

3.1.1.2.6 "Contractor's Personnel" means the Contractor's Representative and all personnel whom the Contractor utilizes on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the works.

3.1.1.2.7 "Contractor's Representative" means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under **Sub-Clause 3.4.2** [Contractor's Representative], who acts on behalf of the Contractor.

3.1.1.2.8 "Engineer’s Representative" means any Representative(s) of the Engineer, the assistants referred to in **Sub-Clause 3.3.2** [Delegation by the Engineer] whose authority shall be notified in writing to the Contractor by the Engineer.

3.1.1.2.9 "Sub-contractor" means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.

3.1.1.3 Money & Payments:

3.1.1.3.1 "Contract Price" means accepted contract amount mentioned in the Letter of Acceptance towards execution and completion of the Works and the remedying of any defects.

3.1.1.3.2 “Executed value” means the price defined in **Sub-Clause 3.13.3** and includes adjustments in accordance with the Contract.

- 3.1.1.3.3 "Cost" means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.
- 3.1.1.3.4 "Currency" means Rupees in which part (or all) of the Contract Price is payable.
- 3.1.1.3.5 "Performance Security" means the security (or securities, if any) under Clause 2.28.1 of ITB [Performance Security].
- 3.1.1.4 Dates, Periods and Completion:**
- 3.1.1.4.1 "**Commencement Date**" means the date notified under **Sub-Clause 3.7.1** [*Commencement of Work*].
- 3.1.1.4.2 "**Time for Completion**" means the time for completing the Works or a Section (as the case may be) under **Sub-Clause 3.7.2** [Time for Completion], as stated in NIT/ Special Condition of Contract / Scope of Work / LOA (with any extension under **Sub-Clause 3.7.4** [*Extension of Time for Completion*]), calculated from the Commencement Date.
- 3.1.1.4.3 "**Acceptance**" means as defined under **Clause 3.9** [Acceptance].
- 3.1.1.4.4 "**Completion Certificate**" means the certificate issued under **Clause 3.9** [Acceptance].
- 3.1.1.4.5 "**Warranty Period**" means the period as mentioned under **Sub-Clause 3.10.2**.
- 3.1.1.4.6 "**Day**" means a calendar day of 24 hours from midnight to the next midnight irrespective of the number of hours worked in that day.
- 3.1.1.4.7 "**Week**" means, seven days without regard to the number of hours worked in any day in the week.
- 3.1.1.4.8 "**Month**" means, month according to Gregorian calendar.
- 3.1.1.4.9 "**Year**" means 365 days.
- 3.1.1.5 Works & Goods:**
- 3.1.1.5.1 "**Contractor's Equipment**" means all apparatus, machinery, vehicles and other things required for the execution and completion of the works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Employer's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.
- 3.1.1.5.2 "**Permanent Works**" means the permanent works to be executed / maintained by the Contractor under the Contract.
- 3.1.1.5.3 "**Plant & equipment**" means the apparatus, machinery and vehicles intended to form or forming part of the Permanent Works.
- 3.1.1.5.4 "**Materials**" means things of all kinds (other than Plant & equipment) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.

3.1.1.5.5 **"Temporary Works"** means all temporary works of every kind (other than contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.

3.1.1.5.6 **"Works"** mean the Permanent Works and the Temporary Works, or either of them as appropriate including services under the Contract.

3.1.1.5.7 **"Section"** means a part of the Works

3.1.1.5.8 **"Goods"** means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate. The term 'goods' also includes works & services which are incidental or consequence to supply of such goods, such as transportation, insurance, installation, commissioning, training and maintenance.

3.1.1.6 Other Definitions:

3.1.1.6.1 **"Contractor's Documents"** means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

3.1.1.6.2 **"Employer's Equipment"** means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the specification; but does not include Plant which has not been taken over by the Employer.

3.1.1.6.3 **"Force Majeure"** is defined as in **Clause 3.17** [*Force Majeure*].

3.1.1.6.4 **"Laws"** means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.

3.1.1.6.5 **"Site"** means the locations /places/lands where the Permanent Works are to be executed and to which Plant and materials are to be delivered or services to be provided or works to be executed and any other places as may be specified in the Contract as forming part of the Site.

3.1.1.6.6 **"Variation"** means any change to the Works, which is instructed or approved as a variation under **Clause 3.12** [*Variations*].

3.1.2 Interpretations:

In the Contract, except where the context requires otherwise:

- (a) words indicating one gender include all genders.
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular.
- (c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
- (d) "written" or "in writing" means hand-written, printed, or electronically made, and resulting in a permanent record.
- (e) the marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

3.1.3 Communications:

Wherever these Conditions provide for giving or issuing of approvals, certificates, consents, determinations, notices and requests, these communications shall be:

- (a) in writing and delivered by hand (against receipt), sent by mail or courier, or speed post.
- (b) delivered, sent or transmitted to the address for the recipient's communications.

3.1.4 Law, Language and Jurisdiction:

The language for communications shall be in English. The contract shall be governed by and constructed according to the laws in force in India. All disputes shall be subjected to exclusive jurisdiction of the courts at Tuticorin only for the purpose of actions and proceedings arising out of this contract.

3.1.5 Priority of Documents:

In case of any variation in Instructions to Bidders (ITB), General Conditions of Contract (GCC) and Special Conditions of Contract (SCC), the Special Conditions of Contract – if any, shall prevail. But in case of any requirement / condition specified in the Scope of Work, it shall prevail over all other conditions. It may please be noted that at any time prior to the deadline for submission of Bids, Employer may, for any reason, whether at its own initiative or in response to a clarification requested by any prospective bidder, modify the tender document by amendment / issue of addendum. In such cases, clarifications shall be treated as the appropriate meaning of the respective conditions of bid document.

3.1.6 Assignment:

The Contractor shall not assign the whole or any part of the work to any other Party/Firm/Individual without prior written consent of the Employer.

3.1.7 Care and Supply of Documents:

The Contractor shall keep on the Site, a copy of the Contract, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times.

3.1.8 Contractor's use of Employer's Documents:

As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

3.1.9 Confidential Details:

The Contractor shall disclose all such confidential and other information as the Engineer may reasonably require in order to verify the Contractor's compliance with the Contract.

3.1.10 Compliance with Laws, Statutes & Regulations:

The Contractor shall, in performing the Contract, comply in all respect with applicable Laws, Statutes and Regulations including clearance from State / Central Govt. Authorities, Pollution Control Boards, labour enforcement and local authorities. The Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.

3.1.11 Details to be Confidential:

The Contractor shall treat the details of the contract as private and confidential, except to the extent necessary to carry out obligations under it or to comply with applicable laws. The Contractor shall not publish, permit to be published or disclose any particulars of the works in any trade or technical paper or elsewhere without the previous agreement of the Employer.

3.2 THE EMPLOYER:

3.2.1 Right of Access to the Site:

The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract. If no such time is stated in the Contract, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as may be required to enable the Contractor to proceed in accordance with the time schedule (bar chart) submitted under **Sub-Clause 3.7.3** [Time Schedule / Bar Chart].

If the Contractor suffers delay as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Engineer within 7 (seven) days from end of such time or period and shall be entitled to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under **Sub-Clause 3.7.4** [Extension of Time for Completion],

However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time.

3.2.2 Permits, Licenses or Approvals:

The Employer shall (where he is in a position to do so) provide administrative support to the Contractor at the request of the Contractor:

- (a) by obtaining copies of the Laws of the Country which are relevant to the Contract but are not readily available, and
- (b) for the Contractor's applications for any permits, Licenses or approvals required by the Laws of the Country for execution of work under the Contract:
 - (i) which the Contractor is required to obtain.
 - (ii) for the delivery of Goods, including clearance through customs, and for the export of Contractors Equipment when it is removed from the Site.
 - (iii) which the Contractor is required to obtain under the Contract

3.2.3 Employer's Claims:

If the Employer considers himself to be entitled for any payment (claim) under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Liability Period, the Employer or the Engineer shall give notice and particulars to the Contractor.

The notice shall be given as soon as practicable after the Employer became aware of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Liability Period shall be given before the expiry of such period.

The particulars shall specify the Clause or other basis of the claim and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The claim amount shall be considered as a deduction in the Contract Price.

3.3 ENGINEER AND ENGINEER'S REPRESENTATIVE:

3.3.1 The Engineer shall carry out such duties in issuing decision, certificates and orders as are specified in the contract. The Engineer's Representative shall be responsible to the Engineer and be the Engineer-in-Charge of the work.

3.3.2 Delegation by Engineer:

The duties of the Engineer's Representative is to watch and supervise the work and to test and examine any materials to be used or workmanship employed in connection with the works. He shall have no authority to relieve the Contractor or any of his duties or obligations under the contract nor except as expressly provided hereunder or elsewhere in the contract to order any work involving delay or any extra payment by the Employer nor to make any variation of or in the works.

Any written instructions or approval given by the Engineer's Representative to the Contractor within the terms of such delegation (but not otherwise) shall bind the Contractor and the Employer as though it had been given by the Engineer provided, however, that.

a) Failure of the Engineer's Representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or materials and to order the pulling down, removal or breaking up thereof.

b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's Representative, he shall be entitled to refer the matter to the Engineer who shall thereupon confirm, reverse or vary such decision.

3.4 THE CONTRACTOR'S OBLIGATIONS:

3.4.1 Contractor's General Obligations:

The Contractor shall design (to the extent specified in the contract) if stipulated in the Contract, execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works.

The Contractor shall provide the Plant& equipment, materials and Contractor's Documents specified in the contract, and all Contractor's Personnel, Goods, consumables and other

things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

All the material, equipment offered and used in the execution of the work shall be suitable for sustained service in a marine atmosphere and local environment condition.

The Contractor shall be responsible for the adequacy, stability, and safety of all Site operations and of all methods of construction. The Contractor shall, in consideration of payments to be made to him as hereinafter provided, execute and do the Works set forth as described in the Scope of Work and specifications, including any amendments to tender clauses.

The Contractor shall exercise all reasonable care and diligence in the discharge of all technical, professional and Contractual duties to be performed by them under this Contract as specified in the Scope of Work within the Time for Completion and provide all labour, including the supervision and security thereof, Contractor's Equipment necessary thereof and for carrying out his obligation, so far as the necessity for providing the same is specified in or is reasonable to be inferred from the Contract. The Contractor shall be fully responsible to Employer for proper, efficient, and effective discharge of their duties.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods, which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

If the Contract specifies that the Contractor shall design any part of the Permanent Works, then.

- (a) the Contractor shall submit to the Engineer the Contractor's Documents for this part in accordance with the procedures specified in the Contract.
- (b) these Contractor's Documents shall be in accordance with the Specification and Drawings and shall include additional information if required by the Engineer to add to the Drawings.
- (c) the Contractor shall be responsible for this part, and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract;

3.4.2 Contractor's Representative:

The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract. The Contractor shall submit the name and particulars of the representative prior to commencement of work.

3.4.3 Assignment and Subcontracting:

The Contractor shall not, assign the contract or any part thereof or any benefit or interest therein or there under without the prior written consent of the Engineer.

The Contractor shall not sub-contract the whole of the works. Except otherwise provided by the Contract, the Contractor shall not sub-contract any part of the Works without the prior

written consent of the Engineer and such consent if given shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the facts, defaults and neglects of any sub-Contractor, his agents, servants or workmen fully as if they were the acts, defaults or neglects of the Contractor.

In the event of the Contractor contravening this condition, Employer shall be entitled to terminate the Contract forthwith and award a fresh Contract to some other party at risk and cost of the Contractor who shall be liable for any loss or damage which Employer may sustain in consequence arising out of such replacement of the Contractor. In such a case, the performance security deposit shall be forfeited.

3.4.4 Cooperation:

The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

- (a) the Employer's Personnel,
- (b) any other contractors /PMC/ 3rd party Inspecting Agency employed by the Employer, and
- (c) the personnel of any legally constituted public authorities,

who may be employed in the execution on or near the Site of any work not included in the Contract.

3.4.5 Setting Out:

The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

3.4.6 Safety Procedures:

The Contractor shall:

- (a) comply with all applicable safety regulations,
- (b) take care for the safety of all persons entitled to be on the Site,
- (c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- (d) provide fencing, lighting, guarding, and watching & warding of the Works until completion and taking over under **Clause 3.9 [Acceptance]**, and
- (e) provide any Temporary Works (including roadways, footways, guards and fences), which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.
- (f) provide all lights be placed or screened so as not to interfere with any signal lights on the Employer's railways or with any traffic lights of any local or other authority.

3.4.7 Site Data:

The Employer shall have made available to the Contractor for his information, all relevant data if available in the Employer's possession on conditions at the Site, including environmental aspects. The Contractor shall be responsible for interpreting all such data.

The Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- (a) the form and nature of the Site, including sub-surface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of the work/service and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- (d) the Laws, procedures, and labour practices of the State / Country, and
- (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

3.4.8 Sufficiency of the Accepted Contract Amount:

Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums; If any) and all things necessary for the proper execution and completion of the Works.

3.4.9 Rights of Way and Facilities:

The Contractor shall bear all costs and charges for special and/or temporary rights of-way which he may require, including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facilities outside the Site, which he may require for the purposes of the Works.

3.4.10 Transport of Goods:

Unless otherwise stated in the Particular Conditions:

- (a) the contractor shall give the Engineer not less than 07 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- (b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- (c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of goods and shall negotiate and pay all claims arising from their transport.

3.4.11 Contractor's equipment:

The Contractor shall be responsible for all Contractor's equipment. When brought on to the Site, Contractor's equipment shall be deemed to be exclusively intended for the execution of the Works and shall be retained at the site till the completion of the work. The Contractor

shall not remove from the Site any major items of Contractor's equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

3.4.12 Protection of the Environment:

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values indicated in the Specification and shall not exceed the values prescribed by applicable Laws.

3.4.13 Site Facilities:

Facilities Supplied by the Contractor:

The Contractor shall supply all services, amenities, temporary structures including security fencing if required and storage compounds if required, machinery, temporary sheds and construction equipment necessary for the proper execution of the Works at Site at his cost except for the items specified below, which will be provided by the Employer.

Facilities Supplied by the Employer:

The Employer will make available to the Contractor the following services which will be charged at the prevailing rates.

(a) Supply of land for Contractor's site establishment and lay down areas:

The above shall be made available at rates as given in the Scale of Rates as relevant and applicable subject to revision from time to time.

(b) Construction Water / Drinking Water:

The Employer will provide a source for reasonable quantity of construction water at one point adjacent to the Contractor's work area on chargeable basis. Any further reticulation to the Contractor's individual facilities shall be the Contractor's responsibility and cost. Similarly drinking water may be supplied on chargeable basis. However, all necessary arrangement like plumbing / installation of water meter etc. to be made by the contractor. Water charges will have to be paid (adjusted from the contractor's bill) by the contractor against actual consumption recorded through water meter as per the prevailing rates subject to revision from time to time.

(c) Construction Electric Power:

The Employer will provide source of electric power at one point adjacent to the Contractor's work area. Any further reticulation to the Contractors' individual facilities shall be the Contractor's responsibility and cost.

The **Electricity consumption charges** [as per Port tariff] shall have to be paid by the Contractor immediately, on receipt of the bill from the office of MEE Department, V.O.Chidambaranar Port. All payment on this account should be

updated, otherwise the pending bill amount, along with late payment surcharge, will be recovered from the Contractor's bill(s).

The Employer does not guarantee the continuity of power supply in the event of power failure the contractor shall be required to make its own arrangements for the provision of uninterrupted electric power.

3.4.14 Records to be maintained:

The Contractor shall maintain site account of materials, including the departmental supply, clearly indicating relevant information such as description of the material, source, date of delivery at site, date of consumption at site. The Contractor shall forward a copy of monthly site account of materials to the Engineer in Charge at the end of every month. On completion of the work under the contract, the Contractor shall submit to the Engineer in Charge a copy of the site account of the materials from the date of commencement to date of acceptance. The Contractor shall also maintain hindrance register, site instructions register, complaint register and daily progress register and the EIC shall verify the registers as and when required and sign the same, duly recording his remarks.

3.4.15 Security of the Site:

Unless otherwise stated; authorized persons shall be limited to the Contractor's Personnel and the Employer's Personnel; and to any other personnel notified to the Contractor, by the Employer or the Engineer, as authorized personnel of the Employer's other contractors on the Site.

3.4.16 Contractor's Operations on Site:

The Contractor shall confine his operations to the Site, and to any additional areas, which may be obtained by the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works, which are no longer, required. The Contractor shall clear away and remove, all Contractor's Equipment, surplus material if not handed over to the Employer as per the Contract. Contractor shall leave that part of the Site and the Works in a clean and safe condition. The Contractor shall at all reasonable times allow persons duly authorized by the Employer.

3.5 STAFF AND LABOUR:

3.5.1 Engagement of Staff and Labour:

The Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, accommodation, feeding and transportation. Since time is the essence of this Contract, the requisite number of labour force has to be kept so as to complete work within the completion period as stipulated in the Contract.

3.5.2 Compliances of Regulations etc.:

The Contractor shall, at all times during the continuance of the Contract, so far it may be necessary, comply with all existing enactments including central and state Legislation as well as an applicable Bye-Laws of any local authority regarding labour (Contractor's Personnel), particularly the Minimum Wages Act, Factories Act, Workmen's Compensation Act, Provident Fund and Miscellaneous Provisions Act, Family Pension Fund Act and Employees State Insurance Act, Contract Labour (Regulation and Abolition) Act, Payment of Wages Act, Maternity Benefit Act, National Festival Holiday Act, Shop and Establishment Act, The Apprentice Act and shall keep the Employer indemnified against any action that may be taken against him for the contravention of provisions of the above said enactments by the Contractor. The prices quoted by the Contractor in Bill of Quantities shall be deemed to include all expenses whatsoever the Contractor may be required to incur for the compliance with the provisions of the above said legislation. The Contractor shall make necessary arrangements for the Employer to witness the payments made by the Contractor to his staff and labour and get the certificate from the Employer as required in terms of the regulations.

The Contractor shall cover all its workmen under EPF & ESI irrespective of the no. of workmen engaged in the work. The Contractor shall produce documentary evidence in support of the EPF & ESI coverage to its workers within 30days of induction of contractual worker(s). This will also be applicable to the sub-contractor(s) appointed by the Contractor for the subject work.

The Contractor shall also comply apart from all the relevant labour Laws applicable to the Contractor's Personnel, Laws relating to their employment, health, safety, welfare, and emigration and shall allow them all their legal rights.

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

3.5.3 Rates of Wages and Conditions of Labour:

The Contractor shall pay rates of wages and observe conditions of labour as per the provision of regulations, etc which are not lower than the minimum wages & conditions notified under any Central or State law as applicable to the Employer.

3.5.4 Persons in the Service of Employer:

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer's Personnel.

The Employer shall be at liberty to terminate the Contract if the Contractor himself or any of his partners / employees / staffs or any of his Directors who having held Class-I post with the Employer prior to his retirement has failed to obtain the Employer's specific permission to undertake any outside employment before the expiry of two years from the date of his retirement, in accordance with the regulations.

3.5.5 Facilities for Staff and Labour:

The Contractor shall provide and maintain all necessary facilities as applicable at site for smooth execution of contract. . Port entry permit for the contractor and their staff, materials, vehicles etc. for movement inside the Port area, will be on chargeable basis.

3.5.6 Health and Safety:

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. The Contractor shall maintain records and make Reports concerning health, safety and welfare of persons, and damage to property, as, the Engineer may reasonably require.

Safety Gears, PPEs, Etc.

The Contractor shall be solely responsible, at his own cost to provide all safety gears including PPEs for all labours engaged and he shall also ensure the use of such safety items by his staff & labour at site.

In the event of failure on the part of the Contractor, the Employer shall provide the same and recover the cost thereof from any amount due or which may become due to the Contractor or from any amount lying with them or under their control.

3.5.7 Contractor's Superintendence:

(a) The Contractor shall give or provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or his competent and authorized agent or Representative is to be constantly on the works and shall give his whole time to the superintendence of the same. Such authorized agent or Representative shall receive on behalf of the Contractor directions and instruction from the Engineer or the Engineer's Representative.

(b) *Epidemics:*

In the event of any outbreak of illness or an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

3.5.8 Contractor's Personnel:

The Contractor's Personnel shall be appropriately qualified, skilled, and experienced in their respective trades or occupations wherever require. The Contractor shall employ such skilled, semi-skilled and unskilled labour as is necessary for proper, timely execution of work.

The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

- (a) persists in any misconduct or lack of care,
- (b) carries out duties incompetently or negligently,

(c) fails to conform with any provisions of the Contract, or

(d) persists in any conduct, which is prejudicial to safety, health, or the protection of the environment.

If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

3.5.9 Wage Records:

The Contractor shall maintain records of wages and other remuneration paid to his employees in such forms as may be convenient and to the requirements of the Engineer and conciliation officer, Central Ministry of Labour, Government of India or such other authorised persons appointed by the State Government. The Contractor shall also exhibit the different notices as required under the Minimum Wages Act, 1949, Payment of Wages Act, 1936 and other Acts, Rules and Regulations made there under from time to time.

3.5.10 Accidents:

The Contractor shall within 24 hours of the occurrence of any accident at or about the site or in connection with the execution of the work report such accidents to the Engineer / Engineer's Representative. The Contractor shall also report such accidents to the competent authorities to whom such report is required to be sent as per prevailing law.

3.5.11 Records of Contractor's Personnel and Equipment:

The Contractor shall submit if required, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work.

3.5.12 Disorderly Conduct:

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

3.5.13 Observance By Sub-Contractors:

The Contractor shall be responsible for observance by his Sub-Contractors of the foregoing provisions.

3.5.14 Remedial Action by the Employer:

If as a result of Contractor's failure, negligence, omission, default, or non-observance of any provisions of any laws, the Employer is called upon by any authority to pay or reimburse or required to pay or reimburse any amount, the Employer shall be entitled to deduct the same from any sums of money due or that they become due to the Contractor under this Contract or any other Contract or otherwise recover from the Contractor any sums which the Employer is required or called upon to pay or reimburse on behalf of the Contractor. All registration and statutory inspection fees in respect of his work pursuant to the Contract shall be paid by the Contractor.

3.6 PLANT, MATERIALS AND WORKMANSHIP:

3.6.1 Manner of Execution:

The Contractor shall, at his own costs and expenses, provide all labour, plant & equipment, materials, stores, etc. required for efficiently carrying out and completing the work to the satisfaction of the Employer within the stipulated time period as per Scope of Work and Specifications.

All plant & equipment and materials and workmanship shall be of the respective kinds described in the Contract and in accordance with Engineer's instructions and shall be subjected to such tests specified in the Contract.

3.6.2 Quality Assurance:

The Quality Assurance Plan defines the methodology to be used to ensure quality of goods / services involved in the work. The Contractor shall submit a quality assurance plan (QAP) for acceptance by the Engineer if specified in the Contract. The QAP shall, contain list of the tests and inspections proposed along with standards (IS or other equivalent standards / performance standards where applicable) to be done to ensure quality for goods and services

3.6.3 Inspection:

The Engineer or his designated Representative(s) shall at all reasonable times:

- (a) have full access to Contractor or its sub-contractor(s) / its manufacturer(s) premises / work site where the Plant and Equipment are being manufactured or the facilities are being installed / executed, and
- (b) during production, manufacture, and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of materials.

The Contractor shall give the Employer's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment.

3.6.4 Test

The Contractor shall at its own expense carry out at the place of manufacture and / or on the Site all such tests of the Plant and Equipment and any part of the Work / Facilities as are specified in the Contract or as per approved QAP.

Unless otherwise specified,

- (a) Works where supply of plant & equipment are not included in scope of Contractor, test & inspection shall be done by Engineer or his Representative on quality of workmanship of work.
- (b) The contractor shall submit, if necessary, test guarantee certificates / internal inspection report / manufacturer certificates towards acceptance of plant equipment. Inspection of works at site shall be carried out on the basis of workmanship and performance tests.

(c) Works where supply of plant & equipment are included in scope of Contractor and if such tests are clearly intended by or provided for or inferred from the Contract or Specifications or Bill of Quantities, the test & inspection of all such specified plant & equipment / items shall be carried out at Contractor / sub- contractor(s) / manufacturers' premises as per approved QAP. For rest of the equipment / items, the Contractor shall submit test guarantee certificates/internal inspection report / manufacturer certificates. Tests & Inspection of works at site shall be carried out on the basis of workmanship and performance standards and as per approved QAP.

The Engineer or his designated representative(s) shall be entitled to attend the aforesaid test and / or inspection, provided that the Employer shall bear costs and expenses incurred in connection with such attendance including, but not limited to, all travelling and board and lodging expenses.

Whenever the Contractor is ready to carry out any such test and / or inspection, the Contractor shall give a 7-day advance notice of such test and / or inspection. The Engineer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, shall carry out any such test and / or inspection and thereafter reinstate and make good, all at the Contractor's cost. The Contractor shall provide the Engineer with a certified report of the results of any such test and / or inspection.

If any Plant and Equipment or any part of the Facilities fails to pass any test and/ or inspection, the Contractor shall either rectify or replace such Plant and Equipment or part of the Facilities and shall repeat the test and / or inspection upon giving a notice.

The execution of a test and / or inspection of Plant and Equipment or any part of the Facilities, or the attendance by the Employer or the Engineer, or the issue of any test certificate or waiver certificate shall not relieve the Contractor from any of its responsibilities under the Contract.

Employer's right to inspect, test and, where necessary, reject the Goods after the Goods arrival in Employer premises shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by Employer or its representative prior to the Goods" shipment from the place of origin.

3.6.5 Rejection:

If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract (all such matters being hereinafter, called 'Defects'), the Engineer may reject the Plant, Materials or workmanship by giving notice to the Contractor in writing of the said decision specifying particulars of the defects alleged to exist or to have occurred. The Contractor shall at his own expense and with all efforts would make good the defects so specified.

Further, Employer reserves the right to subject any part / component / equipment for re-test and on written instruction from Employer, the Contractor shall arrange for the re-test and the cost shall be reimbursed by Employer as per actual, only if the test results are

satisfactory. In case of unsatisfactory test results, the part / component / equipment shall be rejected and the Contractor shall be responsible for replacement of the item at his own cost and also bear the cost of the re-test.

3.6.6 Remedial Work:

Notwithstanding

- (a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
- (b) remove and re-execute any previous test or certification, the Engineer may instruct the Contractor to: any other work which is not in accordance with the Contract, and
- (c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c). If the Contractor fails to comply with the instruction, the Employer may take, at the cost and risk of the Contractor, such steps as may in all circumstances be reasonable to make good such defects. The expenditure so incurred by the Employer will be recovered from the amount due to the Contractor. The decision of the Engineer with regard to the amount to be recovered from the Contractor will be final and binding on the Contractor.

3.7 COMMENCEMENT AND DELAYS:

3.7.1 Commencement of Work:

The work shall be commenced within 15 days of issuance of Letter of Acceptance / Work Order. If no notification received from the Contractor regarding commencement date, then 16th date from issuance of Letter of Acceptance / Work Order shall be treated as date of commencement. The Contractor shall proceed with the Works with due expedition and without delay. Commencement of work is subject to compliance all the conditions precedent as mentioned **at Clause No. 2.11 and 2.13 of ITB (Section-I)**. The stipulated deadlines mentioned **at Clause No. 2.11 and 2.13 of ITB (Section-I)** would have to be strictly adhered to unless otherwise extended by Employer.

3.7.2 Time of Completion / Period of Contract:

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion as indicated in Work Order / Letter of Acceptance for the Works or Section (as the case may be), including:

- (a) achieving the passing of the Tests on Completion, and
- (b) Completing all work, which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking over under **Clause 9** [Acceptance]

3.7.3 Time Schedule/ Bar Chart:

If specified in the Contract, The Contractor shall submit a Time Schedule / Bar Chart form within 15 days of issuance of Letter of Acceptance / Work Order.

The Contractor shall submit a bar chart, before signing the agreement, clearly indicating the plan for timely execution of the work. The bar chart must indicate the individual activities and commencement and completion dates of each activity. The bar chart shall be used for monitoring the progress of the work.

Unless the Engineer, within 15 days after receiving bar chart, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the bar chart.

If, at any time, the Engineer gives notice to the Contractor that time schedule fails (to the extent stated) to comply with the Contract or to be inconsistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised time schedule / bar to the Engineer.

3.7.4 Extension of Time for Completion:

The Contractor shall commence the works after being notified for award of work and shall proceed with the same with due expedition and without delay except as may, be expressly sanctioned or ordered by the Engineer or be wholly beyond the Contractor's control. The Contractor shall maintain the rate of progress required as per schedule.

The Contractor shall be entitled subject Contractor's Claims to an extension of the Time for Completion if and to the extent that completion of work *is* or will be delayed by any of the following causes:

- (a) changes ordered by the Employer,
- (b) delay in performance of work caused by orders issued by the Employer.
- (c) delay in providing work fronts or supply of any materials or services which are to be provided by the Employer,
- (d) exceptionally adverse climatic conditions,
- (e) force Majeure
- (f) other reasonable causes

If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer for extension of time before expiry of the period of contract with details of the hindrance(s) on account of which he desires such extension as aforesaid with documentary evidence.

If the progress of work is held up owing to circumstances which, in the opinion of Engineer are beyond the control of the Contractor the Engineer may, at his discretion, grant to the Contractor such extension of time as he considers reasonable for the completion of the work.

The execution of the work during the extended period also shall be only under the conditions and at the rate specified in the contract.

No claim shall be made by the Contractor on the grounds of executing the work beyond the completion period stipulated in the contract.

3.7.5 Liquidated Damage:

Unless otherwise specified, in case of delay in completion of the contract, liquidated damages (for works costing up to Rs. 10 lakh - one (1) percent of the contract value per week and for all other works half percent (0.5%) of the contract value per week of delay subject to a maximum of ten percent (10%) of contract value should be levied. Such liquidated damages will be deducted from

any money due or become due to the contractor. The payment of such damages shall not relieve the contractor of his obligations to complete the work or from any other of his obligations or liabilities under this contract.

3.8 TESTS, IF ANY ON COMPLETION OF ERECTION & INSTALLATION AT EMPLOYER'S SITE:

- (a) On completion of erection / installation of the items under the work / facilities by the Contractor and also when trial runs & final adjustments at the site are completed in accordance with the Contract, the Contractor shall give the Engineer-in-charge notice in writing thereof and before making the tests on completion of 7 days' notice in writing of the date on which he will be ready to make the said tests in accordance with and in the manner prescribed in the specifications.
- (b) If any portion of work falls under the tests to fulfil the Contract conditions, tests of the faulty portion shall, if required by the Engineer-in-charge or by the Contractor, be repeated within a reasonable time upon the same terms and conditions.
- (c) If the Contractor neglects to make the 'Performance test' within the time stipulated, Employer shall nevertheless have the right of using the Installations at the Contractor's risk until the 'Performance test' is successfully carried out.

3.9 ACCEPTANCE:

Upon successful tests under **Clause No.3.8** / upon completion of work under this contract, the Engineer may accept the works and/or services, if defects or shortcomings are not considered essential and, the Contractor agrees to make good the deficiencies in confirmation with this contract. Further, no work shall be treated as accepted before the Contractor clears the site of scraps, unused materials, work shed, equipment and all such materials which were used for execution of the work and not required any more at the work site.

The Engineer may, at the sole discretion of the Employer, may accept part or section work if it is substantially completed.

The Contractor shall submit to the Engineer the "as-built" documents and operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of acceptance until these documents and manuals have been submitted to the Engineer.

As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the Employer shall issue a certificate in which he shall certify the date on which the works have been so completed and have passed the said tests, and the Employer shall be deemed to have taken over the works on the date so certified.

3.10 DEFECT LIABILITY / WARRANTY:

- 3.10.1** The Contractor shall warrant that the work or any part thereof under this contract will comply strictly with the contract or superior to what is defined, shall be first class in every particular case and shall be free from defects. The Contractor shall further warrant that all

materials, equipment, and the supplies furnished by him will be new and fit for their intended purposes.

- 3.10.2** The warranty period shall be for a period of minimum 12 months from date of completion of work, unless otherwise specified in the Scope of Work / Special Condition of Contract.
- 3.10.3** If during the Defect Liability Period any defect be found in materials and workmanship or of the work executed by the Contractor, the Contractor upon being notified, shall promptly, in consultation and agreement with the Employer and at its cost, repair, replace or otherwise make good such defect as well as any damage to the goods & services and materials caused by such defect within a specified time or a mutually agreed time between the Contractor & Employer.
- 3.10.4** If the work or any part thereof cannot be used by reason of such defect and / or making good of such defect, the Defect Liability Period of the work or such part, as the case may be, shall be extended by a period equal to the period during which the work or such part cannot be used by the Employer because of any of the aforesaid reasons. In addition, the Contractor shall also provide an extended warranty for any such replaced or repaired component of the work for the period of minimum 12 months or as it may be stipulated in Contract Technical Specifications. Such obligation shall be in addition to the defect liability specified under **Clause 3.10.2** hereof.
- 3.10.5** If the Contractor, having been notified, fails to remedy the defects in accordance with the contract, the Employer may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.
- 3.10.6** In the event of repeated failure of any component or material or fitting, within the warranty period, it shall be treated as failure on the part of the Contractor and the Contractor shall have to promptly rectify the same at his own cost failing which Employer shall have the right to recover the cost from any other outstanding amount of the Contractor lying with Employer and / or any amount that may become due to the Contractor and the Contractor shall be debarred to participate in any of the tender of Employer in future.

3.11 MEASUREMENT:

Unless otherwise specified:

- (a) measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- (b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

3.12 VARIATIONS:

The variation or additional work must be a necessary part within the scope of the original works and should not completely change the scope/ character and purpose of the original contract. The variation may result in additional or reduced payments to the contractor or there may be no price change at all.

3.12.1 Variation means:

- (a) increase or decrease in the quantity of any work included in the BOQ of the contract.
- (b) omission of any such work (but not if the omitted work is to be carried out by the Employer by another contractor);
- (c) change in the character or quality or kind of any such work.
- (d) change in the levels, lines, position and dimensions of any part of the works.
- (e) additional work of any kind necessary for the completion of the works; and
- (f) change of the specified sequence or timing of construction of any part of the works.

At any time during the execution of the contract, by a written notice to the Contractor (Change Order), variations as specified above may be made in the scope of contract by Representative of Engineer, with due approval of competent authority.

3.12.2 Valuation of Variations:

Variations as specified in **clause 3.12.1** shall not in any way vitiate or invalidate the contract but the cost, if any, arising out of all such changes shall be taken into account in ascertaining the total amount of the contract price. Where the rate is available in the contract and the same is applicable to the additional work, in the opinion of the Engineer, the cost of the additional work shall be determined as per this available rate. But, if the rate for additional work is not available in the contract, the same shall be determined by the Engineer taking into account the market rate and labour cost at the site for similar works and shall be final.

3.12.3 Deviations from the specifications as contained in the contract agreement including the make / model, shall not be accepted. In case of any such deviation, payment shall not be made for that part of the work / item, even if it is meeting the functional requirements and has been accepted by the Employer. The payment for such portion of the work / item can only be released if the contractor makes good the deviations before the expiry of the warranty period so as to meet the specifications of the tender agreement in all respects.

3.12.4 Adjustments for Changes in Legislation:

If during the period of the contract, any statutory regulations or bye-laws, new tax / duty / cess or any other charge is imposed / levied / come into force by the Government / any statutory authority having impact on the payable amount to the Contractor only to the extent of the services to be rendered after commencement of work, then the same would be paid by VOCPA to the contractor at actual on production of relevant proof.

3.13 CONTRACT PRICE AND PAYMENT:

3.13.1 The Contract Price:

The Contract Price as specified in Letter of Acceptance / Work Order shall be for the entire Scope of the work towards execution and completion of the Works and the remedying of any defects. Price Schedule or Bill of Quantity of Contract Price is attached with Letter of Acceptance.

The Contract Price accepted in Indian Rupees shall include all duties, taxes and levies, transportations, incidentals, etc. as may be applicable and prevailing on base date of the Contract i.e. bid opening date but excluding Goods & Service Tax (GST).

3.13.2 Firm Contract Price:

The contract shall be firm, not subject to any escalation except in the event of a change in the scope of work or specification or as otherwise provided in the Contract.

3.13.3 Executed Contract Value:

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations and includes adjustments in accordance with the Contract or such other sums as may be determined in accordance with the terms and conditions of the Contract.

3.13.4 Payment Terms:

Contractor shall submit Tax invoice as per the provision of GST Act and rules. 100% of payment to the Contractor will be made on satisfactory completion of works and will be released within 15 working days from the date of receipt of the complete and correct invoices & relevant documents and unless any objection to such bill is raised by the Employer. Deductions & Recoveries will be made as per conditions of the contract. The quantity given in the Price Schedule / BOQ is only approximate and payment will be made as per actuals.

3.13.5 Taxes & Duties:

The Contractor shall pay all taxes, duties, cess, levies if any, fees and all other dues required to be borne & paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in **Sub-Clause 3.12.4** [Adjustments for Changes in Legislation] on production of documentary evidence by the Contractor;

The Contractor shall bear and pay all the liabilities in respect of non- observance of all legal formalities as per various statutory provisions.

3.13.6 Goods and Service Tax:

3.13.6.1 The GST shall be paid by the Employer at the rates applicable from time to time on submission of bills / invoices as prescribed under GST rules mentioning the full details regarding the Name, Address, GST Registration Number of the bidder along with the description, classification and value of taxable services and GST payable thereon. The GST shall be reimbursed to the Contractor on his making available the GST claimed by him in GSTR against the Port GST number.

3.13.6.2 The GST TDS shall be applicable as per the section 51 of the CGST Act, 2017. [As per CGST Act, 2017] and shall be deducted at such rate as may be specified from the invoice of the Contractor.

3.13.7 Income Tax:

Income tax will be deducted at the rates as applicable from time to time. It is open to the contractor to make an application to the concerned Income Tax Authorities to obtain a certificate from them authorizing the department to deduct income tax at such lower rate or

deduct no tax as may be appropriate to his case. Such certificate will be valid for the period specified therein unless it is cancelled by the Income Tax authorities earlier.

3.13.8 E-payment:

The Bidder should submit the consent in a mandate form for receipt of payment through EFT and provide the details of bank A/c in line with RBI guidelines for the same. These details will include bank name, branch name & address, A/c type, bank A/c no., bank and branch code as appearing on MICR cheque issued by the bank. Further, the Contractor should also submit a certificate from their bank certifying the correctness of all the above-mentioned information in the mandate form. In case of non-payment through EFT or where EFT facility is not available, payment will be released through cheque.

3.13.9 Deduction / Recoveries:

3.13.9.1 Deduction of taxes at source shall be made from the bill of the Contractor in accordance with the prevailing rules& regulations of Employer.

3.13.9.2 While performing under the contract, the damages caused by the Contractor or his/her workmen to any of the Employer's shall be promptly made good by the Contractor at his/her own cost. In case the Contractor fails to repair/replace the damage, the Employer shall have the right to take steps to make good the damages and all the cost on this account shall be recovered from the bills of the Contractor or any money due to the Contractor from this contract or any other contract or any other transaction. In determination of the damage, the opinion of the Engineer shall be conclusive.

3.13.9.3 Any dues arising out of failure on the part of the Contractor to carry out any obligation under the contract shall be deducted from the bills of the Contractor or from any money due to the Contractor from this contract or any other contract including Security Deposit and Performance Security

3.13.10 No Interest on Account of Delayed Payments:

Any claim for interest will not be entertained by the Employer with respect to any payment or balance which may be in their hands owing to any disputes between themselves and the Contractor or with respect to any delay on part of the Employer in making payment.

3.14 BREACH OF CONTRACT, REMEDIES AND TERMINATION:

3.14.1 Breach of Contract:

In the event of unsatisfactory performance or non-compliance with regard to the provisions of the Contract or omission or negligence or default or failure to comply with any of the conditions of contract, a breach of contract is said to have occurred by the Contractor of the terms and conditions of the Contract. In such cases, the Employer will issue notice to the contractor indicating such unsatisfactory performance or non-compliance by the Contractor, for compliance and if the Contractor fails to comply within a period of 15 days or within the time specified in the notice from the date of issue of notice, the Employer reserves the right to terminate the contract following the procedure as stated below:

- (a) Consequent to the failure of the contractor to comply with the notice issued for non-performance / breach of contract, the Employer will issue a notice giving the

contractor 7 days' time asking him to show cause as to why the contract should not be terminated.

- (b) If no reply is received or if the reply received from the contractor within given time is found to be not satisfactory, Port will terminate the contract with immediate effect.

3.14.2 Termination of Contract for Default:

Without prejudice to any other remedy for breach of contract, by written notice of default sent to the Contractor, the Employer may terminate the contract in whole or in part, if:

- (a) the Contractor has seriously or repeatedly breached the contract including:
1. failure to complete the work within the time period(s) specified in the contract, or any extension thereof granted.
 2. substantial suspension of work for more than the specified days without authority from the engineer and failure to proceed with the work within the specified days of receipt of notice from the engineer without any lawful excuse.
 3. failure to obey instructions in relation to his progress or defective work, material or plant.
 4. failure to proceed diligently with the work.
 5. breach of the prohibition against sub-contracting.
 6. abandons the Contractor without reasonable cause.
- (b) the contractor has committed fraud.
- (c) the contractor fails to perform any other obligation under the contract within the period specified in the contract or any extension thereof granted.

In such event,

- (a) the Performance Security and Security Deposit will be forfeited, for the loss or damages suffered by the Port due to the breach of the Contract committed by the Contractor. In addition, the Employer may also black list or suspend or debar the Contractor from participating in future tenders, as the Employer thinks deem fit.
- (b) the Employer will take over the site and to complete the works himself or with another contractor (risk Purchase) and using the contractor's materials, equipment, temporary works. The Contractor shall remain liable to the Employer for any excess cost for such works and risk, if any
- (c) No payment shall be released in favour of the Contractor till all the balance works are completed in all respects. After the balance works are completed, the Employer may consider payment for the items / goods that have been completed / supplied by the Contractor and accepted by the Employer after adjustment of any additional cost that have been incurred for completing the balance works and outstanding dues that due to the Contractor.

However, the contractor shall continue to fulfil the contract to the extent not terminated.

3.14.3 Termination of Contract for Insolvency / Bankruptcy / Winding up, etc.:

The Employer shall be entitled to cancel / terminate the Contract before expiry of contract period, if the Contractor is declared as insolvent or bankrupt or is unable to pay its debts or makes a composition with its creditors or if a trustee, liquidator, receiver or administrator is appointed to take over the assets or the business or the undertaking of the Contractor or if a substantial portion of the assets, property, revenues or business of the Contractor is confiscated or expropriated by the Central / State Government or any governmental agency or third party or if the law relating to the sick companies applies to the Contractor or the Contractor is dissolved or wound up or if an order shall be made or an effective resolution is passed for the winding up of the Contractor or the Contractor is reconstituted or the business or operations of the Contractor is closed either due to disputes inter-se amongst its stakeholders or otherwise. Termination shall be affected by giving a written notice to the contractor, without compensation to the contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to Employer.

3.14.4 Termination of Contract for Employer's Failure or Convenience / Foreclosure of the Contract by Port:

After placement of the contract, there may be an unforeseen situation compelling Employer to cancel the contract. In such a case, the Contract may be foreclosed by the Employer by giving 30 (thirty) days advance notice to the Contractor during the subsistence of the contract period without assigning any reasons. In such event, the Performance Security Deposit and Security deposit will be refunded to the Contractor. Also, the Contractor may be suitably compensated on mutually agreed terms for terminating the contract based on value of works executed, value of any materials lying at site, etc., and deducting from it: (i) pending advances; (ii) other recoveries; and (iii) taxes as due.

3.14.5 Discontinuance by the Contractor:

If the contractor is not in a position to continue the contract, the Contractor should give 90 (ninety) days in writing, prior to the proposed date of discontinuance of the contract to the Port. In such case, the Performance Security and the Security Deposit shall be forfeited.

3.15 RISK AND RESPONSIBILITY:

3.15.1 Indemnification:

The Contractor shall defend, indemnify, and keep indemnified and hold the Employer, its officers and employees harmless from any and all claims, demands, injuries, damages, costs, charges, compensation, losses, expenses, proceedings or suits including attorney fees, arising from

- a) Any breach or default in the performance of any obligation on the Contractor's part to be performed under the terms and conditions of this Contract or
- b) any negligence of the Contractor, or any of its agents, or its employees or the person provided for the purpose of this Contractor.
- c) non-fulfilment/ non-adherence/ non-compliance of any statutory provisions which is

as per law the contractor is required to comply with.

The provisions of this section shall survive even after the expiration or termination of this Agreement.

3.15.2 Contractor's Care of the Works:

Care of Works From the commencement to the completion of works the Contractor shall take full responsibility for the care thereof and of all Temporary works and in case any damage, loss or injury shall happen to the works or to any part thereof or to any Temporary works from any cause whatsoever (save and except the Excepted Risks as defined in **clauses 15.3.**) shall at his own cost repair and make good the same so that at completion, the works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the Engineer's instructions. In the event of any such damage, loss, injury happening from any of the Expected Risks the Contractor shall if and to the extent required by the Engineer repair and make good the same as aforesaid at the cost of the Employer.

3.15.3 Excepted Risks:

The "Excepted Risks" are war hostilities (whether war be declared or not) invasion act of foreign enemies, rebellion, revolution, insurrection or military or usurped power civil war or (otherwise than among the Contractor's own employee's) riot, commotion or disorder or use or occupation by the Employer of any portion of the works in respect of which a certificate of completion has been issued or a cause solely due to the Engineer's design of the Works or any such operation of the forces of nature as reasonable foresight and ability on the part of the Contractor could not foresee or responsibility provide against or any such eventuality which are beyond the control of the contractor and the Employer (all of which are herein collectively referred to as "The Excepted Risks").

3.15.4 Patent Rights:

The Contractor shall fully indemnify Employer against any action, claim or demand, costs or expenses arising from or incurred by reason of any infringement or alleged infringements of letters, patents, design, trademark or name, copyright, or other protected rights in respect of any machine, plant, work, materials or things, system or methods of using, fixing working or arrangement used for fixed or supplied by the Contractor in India, or elsewhere.

All payments, or otherwise, shall be deemed to be included by the Contractor in the Prices named in the tender and shall be paid by him to whom they may be payable.

In the event of any claim being made or action brought against Employer in respect of any such matter as aforesaid, the Contractor shall be immediately notified thereof and he shall, with the assistance if he so requires of Employer, but at the sole expense of the Contractor, conduct all negotiations for the settlement of the same or any litigation that may arise there from, provided that the conduct of such negotiations or litigations shall be conditional upon the Contractor giving to Employer such security as shall from time to time, reasonably required by Employer to recover the ascertained or agreed amount as the case may be of any compensation, damages, expenses and cost which might be payable by Trustees in respect of or as result of any negotiation or litigation.

3.15.5 Damage to Property:

The Contractor shall be responsible for making good to the satisfaction of the Port, any loss or damage to any structures and properties within the Port premises if such loss or damage is due to fault and/or the negligence or willful acts or omission of the Contractor, his employees, agents, representatives and/or manpower deployed by the contractor. The contractor shall make good the loss as assessed by the Port.

3.15.6 Accident or Injury to Workmen:

The Employer shall not be liable for any damages or compensation payable at law in respect or in consequence of an accident or injury to any workmen or any other person in the employment of the Contractor and the Contractor shall indemnify and keep indemnified the Port against all such damages and compensation and against such claims, demands, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

3.16 INSURANCE:

- (a) Before commencing of execution of works the contractor shall insure against any damage, loss or injury which may occur to any property including that of the Employer or to any person including any employee of the Employer or arising out of the execution of the works in carrying out of the contract.
- (b) Minimum Amount of Insurance: Such Insurance shall be effected with an insurer for at least the awarded value of the contract and the contractor shall produce to the Engineers representative the policy or policies of insurance and receipts for payment of the current premiums, which is mandatory before admitting any bills for payment by Employer.

3.17 FORCE MAJEURE:

- (a) The term “force majeure” as employed herein shall mean including but not limited to, acts of God, war, revolt, riot, fire, flood and acts and regulations of the Government of India or any of its authorized agencies. In the event of either party being rendered unable by force majeure to perform any obligation required to be performed by them under this agreement, the relative obligation of the affected party by such force majeure shall be suspended for the period during which such cause lasts.
- (b) Upon the occurrence of such cause and upon its termination the party alleging that it has been rendered unable as aforesaid thereby shall notify the other party immediately in writing of the alleged beginning and ending thereof giving full particulars and satisfactory proof and it cannot be claimed ex-post facto. The clause does not excuse a party’s non-performance entirely, but only suspends it for the duration of the Force Majeure.
- (c) The time for performance or relative obligations suspended by the force majeure shall be extended by the period for which the cause lasts or condoned by the Employer without any penalty. If the work is suspended by force majeure conditions lasting for more than 1(one) month, the Port shall have the option of cancelling the

Contract in whole or in part thereof at its own discretion. Any situation of force majeure shall not be payable by the Port under any circumstances. For the period of force majeure, no amount shall be payable to the Contractor.

3.18 DISPUTE RESOLUTION MECHANISM:

3.18.1 Normally, there should not be any scope for dispute between the Employer and Contractor after entering into a mutually agreed valid contract. When dispute/ difference / disagreement / claims of any kind arise, both the Employer and contractor should first try to resolve it amicably by mutual consultation failing which it shall be referred to conciliation & settlement Committee established by the Employer.

3.18.2 Amicable Settlement:

If a dispute of any kind, whatsoever, arises between the Employer and contractor in connection with or arising out of the contract or the execution of the works, whether during the execution of the works or after their completion and whether before or after the repudiation or termination of the contract, including any difference, question or disagreement by either party with any action, in action, opinion, instruction, determination, certificate or valuation of the Engineer; the matter in dispute shall,

- (a) refer to the Chief Mechanical Engineer, V.O. Chidambaranar Port Authority, Tuticorin.
- (b) In case the dispute is not resolved, the same shall be referred to the committee headed by Deputy Chairman and other members to be nominated by Chairman, VOCPT.
- (c) If the dispute remains unresolved, the same shall be referred to the Chairman, VOCPT, whose decision, in this regard, is final and binding on both the parties to the contract.

3.18.3 Conciliation:

In case any dispute is not resolved amicably as provided in **Clause 3.18.1**, the Contractor may agree to refer the matter to conciliation & settlement Committee established by the Employer. The procedure for reconciliation and settlement shall be followed as per the guidelines issued by the Ministry of Ports, Shipping and Waterways (Conciliation and Settlement Guidelines).

3.18.4 Arbitration:

If an amicable settlement is not forthcoming, the Dispute shall be referred to the Society for Affordable Redressal of Disputes - Ports (hereinafter called as SAROD - Ports). The dispute shall be dealt with in terms of Rules of SAROD - Ports. The detailed procedure for conducting Arbitration shall be governed by the Rules of SAROD - Ports and provisions of Arbitration & Conciliation Act, 1996, as amended from time to time. The Dispute shall be governed by Substantive Law of India.

3.19 OTHER CONDITIONS:

3.19.1 Extras:

Any extra expenses incurred in connection to the Works by the Employer in the performance of the Works owing to the neglect or omission on the part of the Contractor, in any of the case mentioned in this Contract shall be deducted from any sum due or which may thereafter become due to the Contract or from any amount lying with them or under their control or he may be called upon to pay the amount of such extra expense to such person or persons as the Employer may appoint to receive the same and in the event of the Contractor failing to make such payment, the said amount shall be recoverable from him in such manner as the Employer may determine.

3.19.2 Use of Ground:

On completion of Works or termination of his contract, he shall clear away all his tools, plant, rubbish, and other materials within a fortnight and handover and peaceful possession of the same to the Employer in a tidy and clean condition.

3.19.3 Use of Completed Portions:

3.19.3.1 Whenever in the opinion of the Employer the work or any part thereof is in a condition suitable for use and in the best interest of the Employer requires the use, the Employer may take possession of the same. The Contractor shall, however, be not relieved of his pending obligations.

3.19.3.2 Prior to the date of final acceptance of the work by the Employer, all necessary repairs or renewals in work or part thereof so used on account of defective materials or workmanship or due to the operation's failure except normal wear & tear shall be at the expenses of the Contractor.

3.19.3.3 Such use shall neither relieve the Contractor or any of his responsibilities under the contract nor act as a waiver by the Employer of the conditions thereof. However, if, in the opinion of the Employer, the use of the work or the part thereof delays the completion of the remainder of the work, the Employer may grant such extensions of time, as it may consider reasonable.

3.19.3.4 The decision of the Employer in the matter shall be final. The Contractor shall not be entitled to claim any compensation on account of such use by the Employer.

3.19.4 Employer's Lien:

Employer shall have a lien on over all or any money that may become due and payable to the Contractor under this Contract or any other Contract or from any amount lying with them or under their control and in respect of any debt or sum that may become due and payable by the Employer to the Contractor either alone or jointly with another or other and either under this Contract or under any other Contracts or transaction of any nature whatsoever between the Employer and the Contractor.

3.19.5 Bribes and Commission:

Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the Contractor or his or their behalf to any officer, servant, representative or agent of the Engineer or to any person on his behalf in relation to the obtaining or to be execution of this or any other contract with the Employer shall in addition to any criminal liability which he

may incur subject the contractor to the cancellation of this and all other contracts with the Employer and also to the payment of any loss or damage resulting from any such cancellation, and the Employer shall be entitled to deduct the amounts so payable from any money otherwise due to the contractor under this or any other contract. Any question or disputes as to the commission of any offence under the present clause shall be settled by the Engineer in such a manner and on such evidence or information as he shall think fit and consider sufficient and his decision shall be final and conclusive.

SECTION IV

SPECIAL CONDITIONS OF CONTRACT

4.1 Joint venture

- 4.1.1 The invitation for bid is also open to Joint Venture (JV) / Consortium meeting the eligibility criteria defined in **Section – I (NIT)**.
- 4.1.2 Members / partners of Joint Venture (JV) / Consortium shall have an equity share of at least 26% (twenty-six per cent), provided that each such member shall, for a period of 2 (two) years from the date of commencement of the contract, hold equity share capital not less than 26% (twenty-six per cent) of the subscribed and paid-up equity.
- 4.1.3 The maximum number of partners/ members in Joint Venture (JV) / Consortium shall be limited to three. All the partners shall be jointly and severally liable for the successful completion of the work.
- 4.1.4 The Joint Venture (JV) / Consortium should fulfil the criteria as specified in Section – I (NIT) collectively.
- 4.1.5 Where the bidder is a “Consortium”, it shall be required to comply with the following requirements:
- (a) Members of the Consortium shall nominate one member as the Lead Member who shall have an equity share holding of at least 26% of the paid up and subscribed equity. The nomination(s) shall be supported by a Power of Attorney, as per the format at **FORM-XIII**, signed by all the other members of the Consortium; Lead Partner / member is responsible for signing Agreement with VOCPA and shall be authorized to incur liabilities and receive instructions for and on behalf of all the partners of joint venture.
 - (b) The Tender / Bid shall contain the information required for each member of the Consortium.
 - (c) The Bidder shall include a brief description of the roles and responsibilities of individual members of the consortium, particularly with reference to technical and financial obligations.
 - (d) An individual (single entity) Bidder participating in the instant tender shall not be a member of any other Consortium participating in the instant tender; further, a member of a particular Consortium shall neither submit any tender individually nor shall be a member of any other Consortium participating in the instant tender.
 - (e) All members of the Consortium shall be liable and responsible jointly and severally for all obligations of VOCPA in relation to the contract throughout the contract period.
- 4.1.6 Successful bidder and Contractor have same meant for all purposes.
- 4.1.7 In Case of JV / Consortium the following forms should be filled in and submitted along with bid document

FORM-XII	Declaration of Power of Attorney
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	FORM-XIII	Declaration Of Power of Attorney for Consortium
	FORM-XIV	Joint Bidding Agreement (JBA)

4.2 BID SECURITY/ EARNEST MONEY DEPOSIT (EMD): (May be read in conjunction with clause no.2.15 of ITB) If the bidder furnished Fixed Deposit Receipt towards EMD, the Fixed Deposit Receipt for the EMD amount shall be taken in favour of FA&CAO, VOC Port Authority Tuticorin with validity not less than 120 days.

4.3 PRICE: (May be read in conjunction with clause no.2.12 of ITB) (a) The price quoted shall be firm and final and F.O.R free delivery at VOC Port premises at Tuticorin including cost of equipment's, and all accessories, installation and commissioning, etc. (b) No price escalation shall be admissible for this contract.

4.4 Commencement of Work: (Superseding Clause No.3.7.1 of GCC)

The work shall commence within 15 days of the issuance of the Letter of Acceptance / Work Order. If no notification received from the Contractor regarding commencement date, then 16th date from issuance of Letter of Acceptance / Work Order shall be treated as date of commencement. The Contractor shall proceed with the Works with due expedition and without delay. Commencement of work is subject to compliance with all the conditions precedent as mentioned at **Clause No. 2.26 and 2.28.1 of ITB (Section-II)**. The stipulated deadlines mentioned at **Clause No. 2.26 and 2.28.1 of ITB (Section-II)** would have to be strictly adhered to unless otherwise extended by Employer.

4.5 Time of completion/period of contract (May be read in conjunction with Clause No.3.7.2 of GCC)

The work shall be executed by the contractor as per the scope of work and technical specifications with relevant standards and updated guidelines issued by Govt of India. Also, the work shall be carried out as directed by Engineer of the contract.

The work shall be completed within **six months** from the date of issue of LOA. The guarantee period of one year shall be commenced from the date of acceptance/ issue of completion certificate by Engineer of the contract after successful commissioning. The Comprehensive Operation and maintenance contract (C O&M) for five years from the date of completion of the work. However, during the guarantee period the contractor shall deploy the manning for the operation and maintenance.

The C O&M shall be extended for further period of two years with mutual consent after successful completion of C O&M for period of five years.

4.6 Time Schedule/ Bar Chart:

The Contractor shall submit the bar chart in accordance with **Clause No.3.7.3 of GCC**.

4.7 Liquidated Damage: (May be read in conjunction with Clause No.3.7.5 of GCC)

If the contractor fails to Supply Installation Testing & Commissioning in all respects within the time specified or within the extended time that may be allowed by the port, the contractor shall pay or

allow the board to deduct a sum equivalent to 0.5% per week or part thereof on the total value of the project cost excluding C O & M cost subject to a maximum of 10% of the total value of the project cost excluding C O & M cost as Liquidated or Ascertained damages and not by way of penalty, for every week or part thereof beyond the said period or extended period as the case may be during which the supply shall remain unfinished. Such damages will be deducted from any money due to the contractor. The payment of such damages shall not relieve the contractor of his obligations to complete the work or from any other of his obligations or liabilities under this contract.

Penalty during Warranty period and CO&M period:

Minimum manpower per day to be engaged during this contract period is as below

Sl. No.	Designation /category	Highly Skilled	Skilled	unskilled	Qty	Shift
1	Shift in charge		1	1	2 Nos.	12 hr shift
2	Maintenance Technician		2	1	3 Nos.	General shift (excluding holiday and Sunday)
3	Supervisor	1			1 No.	General Shift (excluding holiday and Sunday)

During warranty period and CO&M period if the manpower is not available an amount of Rs.500/- per manpower shall be deducted as penalty, in addition to the LD applicable towards shortfall on availability of the system. The contractors shall ensure all the system during warranty period and C O&M period, comprising the cameras, servers, outdoor/indoor video walls, speed monitoring system and under vehicle scanners are working at a minimum availability of 95%. In case of any shortfall due to contractor's account (except approved preventive maintenance duration), the cost of C O&M charges for the shortfall period will not be paid by the Port and additionally 1% of O & M charges for every 1% shortfall period, shall be deducted in the bill or any money due to the contractor, subject to the maximum 10% of particular C O&M period cost.

Inspection, Test & Acceptance: (in conjunction with Clause No. 3.6.3, 3.8 and 3.9)

Third party agency (TPA): The TPA like RITES/IR class/ IDECK (Infrastructure Development Corporation Karnataka) or any Govt agency shall be appointed by the contractor at his cost. The TPA shall provide the following services, but not limited to

1. Reviewing and approval of network architecture, data sheets and documents submitted by the contractor as per the relevant standards, statutory and bid requirements, in co-ordination with VOCPA.
2. Compile all relevant data, reports, and documentation throughout the project.
3. Assistance and review of works, safety, data authentication, and approvals(if any).
4. Preparation of a checklist and comprehensive review plan and Monitoring, Reviewing, inspecting, Validating, Co-ordinating with stakeholders, QC, Ensuring timely completion
5. Co-ordination with stakeholders, executing agency, VOCPA, statutory/regulatory agencies, (if any) etc
6. The TPA while inspecting, shall adhere to the requirements of the relevant standards meant for the execution. While offering its views/recommendations, the standards referred to must be mentioned by the TPA. In case there is no specific standard available, the same may be

clearly mentioned and proper justification in support of recommendation should be recorded in the report. The contractor has to submit one set of the standard documents of relevant standards referred/ mentioned in the contractual document for reference.

7. The TPA shall depute concerned Engineer(s)/Expert (s) continuously/intermittently for smooth execution and quality checking as per project requirements
8. The responsibility of the TPA shall, inter alia, to ensure and certify that the work is being executed as per the relevant standards as given in the approved QAP.
9. On completion, permit the contractor to commission the project. Consultant shall check, validate, the material, works, equipment, procedures and clearances & required approvals and recommend with a detailed report for the acceptance of the Project by VOCPA. TPA shall provide the SOP including preventive, breakdown maintenance and operation during the warranty and Comprehensive Operation and Maintenance (CO & M) period.

Each part of the work includes the following and same will be appraised to Third Party Agency (TPA) and VOCPA with relevant documents, drawings, presentation, etc. Based on the relevant standards and inputs from VOCPA, the TPA shall approve each items with reference to the tender terms, standards applicable, data authentication, objective of Security system etc.

- i. Layout plan
- ii. Design and drawing
- iii. Data sheets
- iv. Electrical, Electronic equipment & Instrumentation and integration with each part.
- v. Interconnection of each part connected with main control room with suitable and required accessories.

After completing installation the contractor shall ensure VAPT test of surveillance network from STQC (Ministry of Electronics & Information Technology) or any other Government Agency from the list of CERT-In empaneled Information Security Auditing Organization for arranging security verification certification. Any deficiency pointed out by the auditing agency shall be attended by the selected contractor without any additional cost to VOCPA.

After the installation/trials are completed satisfactorily at VOCPA premises which alone shall be the proof of acceptance of the materials / equipment, models , etc. If the appearance / performance of the Models/ materials / equipments are not satisfactory, the same are to be readjusted, replaced or changed as per the directions of Engineer and his decision alone shall be final and binding. The representative of successful contractor and TPA representative shall be present during the test, commissioning and acceptance. On successful completion of all the works, VOCPA will issue an completion certificate based on the recommendation of the TPA.

4.8 Defect Liability /Warranty: (Superseding Clause No.3.10)

The contractor guarantee for trouble free working of the equipment for One year from the date of acceptance shall be furnished. For this purpose, one year shall mean twelve calendar months during which this work shall remain in commission and will not include period or periods during which the equipment shall be out of commission due to defective materials, bad workmanship etc., covered by the manufacturer's guarantee.

- 4.9 Hot work during maintenance period is subject to adhering to safety measures prescribed by Fire Section/ Safety office Department.

- 4.10** Contractor's Office: The buildings should not be used for residential purposes. The contractors shall at their own cost and expense shall arrange for watch and ward security at the above location.
- 4.11** No cooking shall be permitted inside the work spot. No alcoholic drinks will be permitted inside the work spot and no personnel with alcoholic influence will be permitted to enter into the work spot. The contractor shall ensure that the personnel employed for this work do not smoke inside the Port area.
- 4.12** Statutory requirement as per Labour Department and Dock Safety Inspectorate as per regulation should be adhered by the Contractor.
- 4.13** All safety precautions shall be strictly adhered to.
- 4.14** The contractor and their employees should be complied with Quality Management (ISO 9001:2015, EMS ISO 14001:2015 and OHASAS 18001:2007) Electricity Act, Dock Safety regulations.
- 4.15** The contractor shall allow his labourers for the government notified national and local festival holiday and such closed holidays for the Port declared by the employer and also have due regard to local religious and social customs in respect of labourers employed by him. However based on the essential requirement, the contractor may deploy the manpower as per applicable rules and norms.
- 4.16** The Contractor shall be responsible for any accident, damage or injury caused to any of his employees during the execution of this work and shall hold the VOCPA blameless in respect thereof and also in respect of any reason whatsoever.
- 4.17** The Contractor shall be solely responsible for reporting to the Port Authority and Police Department immediately of any serious or fatal accidents inside the Harbour premises to any of his employees/workmen engaged by him.
- 4.18** The contractor shall deploy disciplined work force. If any the person (s) noticed for malpractice/ disobedience / noncompliance of work, the contractor is responsible for the misbehavior and the concerned will not be entertained inside VOCPA further. The damage / loss caused shall be rectified by the contractor.
- 4.19** The staff provided by the contractor are in case found to be indulging in any undesirable or unfair activities in the premises of the office, the contractor will solely be responsible for all the consequences apart from the liberty of office to lodge complaints before appropriate authorities.
- 4.20** The contractor shall furnish contact telephone number, Mobile number & contact address of representative of contractor.
- 4.21** Unauthorized person belonging to the contractor are not allowed to enter port premises.
- 4.22** Accidents: Any accidents including death caused to the contractor or workers during course of execution of work or elsewhere will be taken care by the contractor(s) themselves and Port is no way responsible for the same. The port is not responsible for any loss of life or damage or theft of materials. All the materials should be kept in the safe custody of the Contractor.

- 4.23 The contractor shall supply the PPEs (safety helmet, Gloves, shoes, reflecting jackets, diversion boards, etc) to the workers for carrying out maintenance works in safe manner.
- 4.24 The contractor shall pay the monthly salary to the technicians before 7th day of every month.
- 4.25 Any manpower shall apply leave, the contractor is requested to deploy a fresh manpower as required.
- 4.26 The contractor is required to pay bonus as per the Bonus act to the manpower deployed and the same shall be reimbursed at actual by the Port upon submission of proof of payment to the provided manpower.
- 4.27 The contractor shall furnish the valid labour license under contract labour (Regulation and abolition) Act 1970 within 30 days from the date of work order and comply with all necessary required provisions of the above act as amended and rules /orders framed there under from time to time and shall hold valid license throughout the contract period.
- 4.28 The contractor shall be responsible for disputes that may arise between the contractor and the manpower contractor and its amicable solutions.
- 4.29 STAFF: The staff engaged for by the contractor shall be given periodical safety training and periodical medical check-up by the contractor (once in a year) to comply with IDLR requirement. Electrician/Supervisor working in electrical accessories shall be qualified as per the requirement of electricity act.
- 4.30 If any damages happened to the port properties during the contract period, the contractor shall rectify the damage at his cost, failing which the actual charges towards rectification will be re-covered from the contractor along with departmental supervision cost.
- 4.31 **PAYMENT:- (May be read in conjunction with clause no.3.13 of GCC)**

CAPEX (less buyback value)

1. 10% payment on approval of layout plan submitted by contractor.
2. 60 % payment on Delivery of materials. The materials will be checked and certified by TPA as per tender conditions and approved by VOCPA.
3. 20% payment on installation, testing and commissioning of all system.
4. 10% on issuance of completion certificate.

Technical onsite Technician /Engineer -100% payment release on monthly basis for manpower deployed.

C O&M 100% payment release on monthly basis against service report including status of the system.

4.32 **QCBS evaluation criteria :** (May be read in conjunction with clause no.2.8 of ITB)

Sl. No.	Evaluation parameters	Marks for each Criteria	Maximum Marks
1	The bidder shall have No. of years of experience in the field of executing similar work. The bidder shall submit the old, intermittent and recent as a proof of indicating the no. of years of experience in the field. The order date will be considered for the count of year of experience	1 to 10 Years –5 Marks 11 to 20 years - 10 Marks Above 20 years -15 Marks	15
2	No of work orders (CCTV) experience in Major Port/ Railway/Highways/ Defense	1 to 10 work orders- 5 Marks Above 10 work orders – 10 Marks	10
3	Capital CCTV Works carried out in Major Ports	1 to 5 Major ports- 10 Marks Above 5 Major Ports – 20 Marks	20
4	1No. Work order for Under Vehicle Scanning works and 1 No. work order in LED video wall in Govt sector	UVSS – 5 Marks LED video wall work – 5 Marks	10
5	Comprehensive O&M of CCTV in Major Ports	1 to 5 Major Ports -5 Marks Above 5 Major Ports- 10 Marks	10
6	Presentation	Understanding of Scope of Work and Detailed Approach & Methodology, Detailing the planning of surveillance system in VOCPA	15
7	The Bidder is required to provide the live demo of the proposed CCTV cameras (bullet and PTZ) fitted in VOC premise and in presence of CISF	Detailing the features, analytics features of recording backup retrieval and monitoring	20
TOTAL			100
<i>Note: The bids satisfying the prequalification criteria as Mentioned in NIT and scoring Min. Technical score of 50 Marks out of 100 marks will be considered for prequalification and technical responsiveness.</i>			

NB:-

- The bidder shall furnish all the works experience as mentioned above shall be submitted in the work experience format indicating each category with clause No. and certify that these are the only works submitted for prequalification and QCBS. For establishing their experience, the bidders shall produce authentic and valid proof i.e., WO/LOI, agreement and CC and other relevant documents. VOCPA may, at its own discretion, verify the veracity and validity of the work orders and certificates produced by the Bidder.
- The Authority shall select the Bidder through QCBS process.
- Eligibility and pre-qualification of the Bidder will be first examined based on the details

submitted under Technical Bid with respect to eligibility and qualifications criteria prescribed in this NIT.

- After prequalification, Technical score shall be evaluated based on parameters specified in the tender document. Only those Bidders whose Technical Bids are responsive, fulfils the Minimum scores a minimum 50 marks out of 100 in Technical Bid as mentioned above, hereof (the “Qualified Bidders”) shall be entitled to opening of their Financial Bid subject to and in accordance with provisions set out under this TD. Financial Bid will include the total cost required for execution of the Project, and the Bidder quoting the lowest cost will get the maximum financial score of 100. The Bidder should quote a lumpsum price for each item for the implementation of the Project and it shall not be as a percentage of the overall project cost. Financial scores of other Bidders shall be given in proportionately. 70% weightage shall be assigned to technical score and 30% weightage shall be assigned to the financial score.
- Total score shall be calculated as:

$$\text{Total Score} = 70\% \times \text{Technical Score} + 30\% \times \text{Financial Score}$$

Whereas,

$$\text{financial Score} = 100 \times (\text{Lowest Financial Bid} / \text{Financial Bid})$$
- The Project will be awarded to the Bidder with highest Total Score (H1) (hereinafter referred to as “Selected Bidder”). However, Port reserves the right to award the contract.
- Bidders are advised that Selection shall be entirely at the discretion of the Authority. Bidders shall be deemed to have understood and agreed that the Authority shall not be required to provide any explanation or justification in respect of any aspect of the Selection Process or Selection.
- Any information contained in the Proposal shall not in any way be construed as binding on the Authority, its agents, successors or assigns, but shall be binding against the Bidder if the Work is subsequently awarded to it.
- Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the building/monuments (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A Bidder shall be deemed to have full knowledge of the site, whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at their own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
- The Authority does not bind itself to accept the highest score bid or any other bid and reserves to itself the authority to reject any or all the bids received without assigning any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidder shall be summarily rejected.
- **The demonstration and commitments provided by the bidder shall be a part of bid**

document and the bidder shall fulfill the commitments during the execution with the approval.

SECTION-V

TECHNICAL SPECIFICATIONS

BOQ SL.No1. Fixed Dome Camera (5MP)

5 MP AI Engine Based Varifocal Dome camera		
SR NOS.	Parameter	Description
1	Image sensor	1/2.8 type CMOS image sensor, 5 Megapixel
2	Effective Pixels (Resolution)	3072 x 1728
3	Electronic Shutter Speed	1/30 to 1 / 10000 s or better,
4	Minimum illumination	Minimum Color: 0.07 lx, BW : 0.04 lx (30 IRE, F 1.3) or better
5	IR Distance	Distance upto 55 Mtr(180ft), Smart IR
6	Lens	Motorized Varifocal 3 - 9 mm
7	Video Compression	H.265/ H.264,JPEG (MJPEG)
8	Video Streaming	Individually configurable 04 video streams H.265/H264
9	Frame Rate	3072 x 1728 / 2560 x 1440 / 1920 x 1080 / 1280 x 720 / 640 x 360
10	Day/Night	Auto ICR/Color/B/W
11	WDR	Support 130dB
12	Digital Noise reduction	Support
13	Special feature	Digital De-fog
14	Video Motion detection	Upto 4 area
15	ICR	IR-Cut filter with auto switch (ICR)
16	OSD	On / Off support Up to 20 characters
17	White Balance	Auto/Manual
18	BLC and HLC	ON/OFF
19	Privacy Zone	Supports upto 8 zones
20	Network Protocols	HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP,SMTP, DHCP, DNS, DDNS, NTP, SNMP, UPnP, IGMP, ICMP, ARP, IEEE 802.1X,TCP/IP, UDP/IP, HTTP, HTTPS, RTP, FTP, SMTP, DNS, NTP, SNMP, DHCPv6,ONVIF, IPv4,IPv6
21	Ethernet	1 RJ-45 (10M/100M Base-Tx)
22	Privacy Zone	up to 8 zones
23	Motorized Zoom lens ratio	3.1 x Optical
24	Alarm I/O	2 In & 1 Out terminal
25	Alarm Events	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.
26	Compliance	ONVIF Profile S, G,T,M
27	Weatherproof Standard	IP66, IK10,
28	Power Supply	DC12 V, PoE
29	Certifications	CE, FCC, UL
30	Field of View	H: 33° (TELE) - 103° (WIDE)

		V: 19° (TELE) - 55° (WIDE)
31	Audio Compression	Minimum G.711 or better
32	Two-way audio	Required, duplex
33	Input / Output	01 IN & 01 OUT
34	Basic Security	Password protection, HTTPS encryption, 802.1x
35	Advance	FIPS -140-2 Level 3 compliant device, 3 rd party certificate for Secure data communication on network.
36	AI Engine	The Camera shall have built-in AI engine to enable analytical applications on network edge. AI engine in a camera to detect and classify face, human, vehicles and two-wheel motorcycles / bicycles in high precision
37	Analytics Supported	AI engine based intrusion detection, Loitering, Direction detection, Cross line, Non mask Detection, face detection
38	AI People Detection	Extract the characteristics of human face / clothing and classify them into meaningful categories such as gender, age, and clothing color.
39	AI Vehicle Detection	Extract vehicle characteristics and classify them into meaningful categories such as type and color.
40	Application & SDK	The Camera shall enables to install 2 nos. optional analytics applications with including developed by third party companies using this camera's SDK
41	Privacy Guard feature	To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights.
42	AI Occupancy Detection	Detecting the congestion via camera with AI engine enables that information to be used direct visitors in advance or manage staff more efficiently.
43	AI Sound Classification	Detecting suspicious sound like Gunshot, Yell, Vehicle horn, Glass break

BOQ Sl.No.2 Bullet Camera: (5MP)

5 MP AI Engine Based Varifocal Bullet camera		
SR NOS.	Parameter	Description
1	Image sensor	1/2.8 type CMOS image sensor, 5 Megapixel
2	Effective Pixels (Resolution)	3072 x 1728
3	Electronic Shutter Speed	1/30 to 1 / 10000 s or better,
4	Minimum illumination	Minimum Color: 0.06 lx, BW : 0.04 lx (30 IRE, F 1.6) or better
5	IR Distance	Distance upto 150 Mtr(492ft), Smart IR
6	Lens	Varifocal Motorized 4.7 - 47 mm
7	Video Compression	H.265/ H.264,JPEG (MJPEG)
8	Video Streaming	Individually configurable 04 video streams H.265/H264
9	Frame Rate	3072 x 1728 / 2560 x 1440 / 1920 x 1080 / 1280 x 720 / 640 x 360
10	Day/Night	Auto ICR/Color/B/W
11	WDR	Support 130dB
12	Digital Noise reduction	Support
13	Special feature	Digital De-fog
14	Video Motion	Upto 4 area

	detection	
15	ICR	IR-Cut filter with auto switch (ICR)
16	OSD	On / Off support Up to 20 characters
17	White Balance	Auto/Manual
18	BLC and HLC	ON/OFF
19	Privacy Zone	Supports upto 8 zones
20	Network Protocols	HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP,SMTP, DHCP, DNS, DDNS, NTP, SNMP, UPnP, IGMP, ICMP,ARP, IEEE 802.1X,TCP/IP, UDP/IP, HTTP, HTTPS, RTP, FTP, SMTP, DNS, NTP,SNMP, DHCPv6,ONVIF, IPv4,IPv6, MQTT, LLDP
21	Ethernet	1 RJ-45 (10M/100M Base-Tx)
22	Privacy Zone	up to 8 zones
23	Motorized Zoom lens ratio	10 x Optical
24	Alarm I/O	2 In & 1 Out terminal
25	Alarm Events	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.
26	ONVIF Compliance	ONVIF Profile S, G, T,M
27	Weatherproof Standard	IP66, IK10, NEMA 4X
28	Power Supply	DC12 V, PoE+, PoE++
29	Certifications	CE, FCC, UL , NDAA
30	Field of View	H: 6.1° (TELE) - 58° (WIDE) V: 3.4° (TELE) - 34° (WIDE)
31	Audio Compression	Minimum G.711 or better
32	Two-way audio	Required, duplex
33	Input / Output	01 IN & 01 OUT
34	Basic Security	Password protection, HTTPS encryption, 802.1x, NDAA Complied
35	Temperature Support	-40 °C to +60 °C
36	Advance Security	FIPS -140-2 Level 3 compliant device, 3 rd party certificate for Secure data communication on network. Brute Force Protection
37	AI Engine	The Bullet Camera shall have built-in AI engine to enable analytical applications on network edge. AI engine in a camera to detect and classify face, human, vehicles and two-wheel motorcycles / bicycles in high precision
38	Analytics Supported	AI engine based intrusion detection, Loitering, Direction detection, Cross line, Non mask Detection, face detection
39	AI People Detection, AI Face Detection	Extract the characteristics of human face / clothing and classify them into meaningful categories such as gender, age, and clothing color.
40	AI Vehicle Detection	Extract vehicle characteristics and classify them into meaningful categories such as type and color.
41	Application & SDK	The Camera shall enables to install 3 nos. optional analytics applications with including developed by third party companies using this camera's SDK
42	Privacy Guard feature	To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights.
43	AI Occupancy Detection	Detecting the congestion via camera with AI engine enables that information to be used direct visitors in advance or manage staff more efficiently.

43	AI Sound Classification	Detecting suspicious sound like Gunshot, Yell, Vehicle horn, Glass break
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BOQ Sl.No.3 PTZ Camera Minimum 5MP

S. No.	Camera Characteristics	Minimum Specifications
1	Image sensor	1/3"Progressive Scan CCD/CMOS/MOS
2	Lens	The optical zoom of the lens should be minimum 40X and it should necessarily cover the focal length range of 4.5 to 170 mm The lens size should be compatible with the size of Image sensor.
3	Shutter Speed	1/30 s to 1/10,000 s
4	True Day and Night	Automatic with IR cut filter
5	Video Compression	Minimum 4 streams of H.264/H.265 and third stream of MJPEG or H.264 and should be independently configurable.
6	Resolutions and frame rates (H.264)	Minimum 1920X1080/ 2048x1536 @ 25 fps or better
7	Local storage (S.D or Micro SD)	Slot for supporting SD/SDHC/SDXC card of minimum 512 GB
8	Supported Protocol	IPv4 & v6, HTTP, HTTPS, FTP, SMTP, UPnP, SNMP, DDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP
9	ONVIF	Profile S, G, T and M The camera should be listed on ONVIF website.
10	Operating Temp	-40°C to 60°C
11	Operating Humidity	10 to 90 % (Non condensing)
12	Security	IEEE 802.1x, third party approved security certification
13	Network Connectivity	10/100 Base T
14	Wide Dynamic Range	144dB
15.	Privacy Mask	Should be Available
16.	Camera Title	Should be available with min. 16 characters (Alphanumeric).
17.	Day and Night Selection	Automatic switchover from colour mode (day time) to monochrome mode (Night time) when the light falls below a certain threshold level.
18.	Housing	Housing should be of the same make of the camera.
19	Mounting	Should be from the camera OEM only with all mounting accessories as per site requirement suitable for ceiling or wall mounting;
20	Auto back focus	Shall be available
23	Certification	Specific model should be UL listed, FCC and IEC certified. Open network video compliant with APIs and SDKs available in public domain without any additional charge.
24	Field of View	60° to 3° or better
25	Minimum Illumination / Light Sensitivity	Color mode: 0.5 Lux, F1.4 @ 30 IRE Black and white mode: 0.08 Lux, F1.4 @ 30 IRE
26	Power	High Power over Ethernet IEEE 802.3bt compliant. Power consumption 50 Watt
28	Housing	Environmental Protection as per outdoor application IP66 rated, NEMA4X compliant; IK10 Integrated with camera body. Rain wash coating on outdoor dome for better visibility in case of rains.
29	Dehumidification device	In built / integrated dehumidification device should be available

30	Digital Zoom	16x or better
31	Optical Zoom	40 x or better
32	Pan / Tilt Adjustment	360° endless Pan , +/-90° Tilt
33	Image Stabilizer	Image and zoom stabilization
34	Pre-set positions	should be capable of programming & storing the title for various pre-set positions
35	Variable Speed	0° / Sec. to 500° / Sec or better for both Pan and Tilt or better
36	Inbuilt IR LED	Upto 350 Mtr
	AI Auto tracking	Tracking based on Human , Vehicle etc.
37	Edge Analytics in the camera supported	Intruder Detection, Loitering Detection, Direction Detection, Scene Change Detection, Object Detection, Cross Line Detection
	AI Engine	The Dome Camera shall have built-in AI engine to enable analytical applications on network edge. AI engine in a camera to detect and classify face, human, vehicles and two-wheel motorcycles / bicycles in high precision
	Analytics Supported	AI engine based intrusion detection, Loitering, Direction detection, Cross line, Non mask Detection, face detection
	AI People Detection	Extract the characteristics of human face / clothing and classify them into meaningful categories such as gender, age, and clothing color.
	AI Vehicle Detection	Extract vehicle characteristics and classify them into meaningful categories such as type and color.
	Application & SDK	The PTZ Camera shall enables to install 2 nos. optional analytics applications with including developed by third party companies using this camera's SDK
	Privacy Guard Feature	To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights.
	AI Sound Classification	Detecting suspicious sound like Gunshot, Yell, Vehicle horn, Glass break

BOQ Sl. No. 4 PTZ Camera Minimum 4K(8MP)

S. No.	Camera Characteristics	Minimum Specifications
1	Image sensor	1/2.8"Progressive Scan CCD/CMOS/MOS
2	Lens	The optical zoom of the lens should be minimum 30X and it should necessarily cover the focal length range of 4.5 to 135 mm The lens size should be compatible with the size of Image sensor.
3	Shutter Speed	1/10 s to 1/10,000 s
4	True Day and Night	Automatic with IR cut filter
5	Video Compression	Minimum 4 streams of H.264, H.265 and stream of MJPEG or should be independently configurable.
6	Resolutions and frame rates (H.264)	Minimum 3840X2160/ 2560x1440 @ 25 fps or better
7	Local storage (S.D or Micro SD)	Slot for supporting SD/SDHC/SDXC card of minimum 512 GB
8	Supported Protocol	IPv4 & v6, HTTP, HTTPS, FTP, SMTP, UPnP, SNMP, DDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP
9	ONVIF	Profile S, G, T ,M The camera should be listed on ONVIF website.
10	Operating Temp	-30°C to 60°C

11	Operating Humidity	10 to 90 % (Non condensing)
12	Security	IEEE 802.1x, third party approved security certification
13	Network Connectivity	10/100 Base T
14	Wide Dynamic Range	130dB
15.	Privacy Mask	Should be Available
16.	Camera Title	Should be available with min. 16 characters (Alphanumeric).
17.	Day and Night Selection	Automatic switchover from colour mode (day time) to monochrome mode (Night time) when the light falls below a certain threshold level.
18.	Housing	Housing should be of the same make of the camera.
19	Mounting	Should be from the camera OEM only with all mounting accessories as per site requirement suitable for ceiling or wall mounting;
20	Auto back focus	Shall be available
21	Certification	Specific model should be UL listed, FCC and IEC certified. Open network video compliant with APIs and SDKs available in public domain without any additional charge.
22	Field of View	62° to 2.5° or better
23	Minimum Illumination / Light Sensitivity	Color mode: 0.5 Lux, F1.8 @ 30 IRE Black and white mode: 0.1 Lux, F1.8 @ 30 IRE
24	Power	High Power over Ethernet IEEE 802.3bt, POE++ compliant.
25	Housing	Environmental Protection as per outdoor application IP66 rated, NEMA4X compliant; IK10 Integrated with camera body. Rain wash coating on outdoor dome for better visibility in case of rains.
26	Dehumidification device	In built / integrated dehumidification device should be available
27	Digital Zoom	16x or better
28	Optical Zoom	30 x or better
29	Pan / Tilt Adjustment	360° endless Pan , -20° to +90° Tilt
30	Image Stabilizer	Image and zoom stabilization
31	Pre-set positions	should be capable of programming & storing the title for various pre-set positions
32	Variable Speed	0° / Sec. to 500° / Sec or better for both Pan and Tilt or better
33	Inbuilt IR LED	Upto 280 Mtr
34	Cyber Security	FIPS -140-2 Level 3 compliant device, 3rd party certificate for Secure data communication on network.
35	Edge Analytics in the camera supported	Intruder Detection, Loitering Detection, Direction Detection, Scene Change Detection, Object Detection, Cross Line Detection
36	AI Auto tracking	Tracking based on Human , Vehicle etc.
37	Edge Analytics in the camera supported	AI engine based intrusion detection, Loitering, Direction detection, Cross line, Non mask Detection, face detection
38	AI People Detection	Extract the characteristics of human face / clothing and classify them into meaningful categories such as gender, age, and clothing color.
39	AI Vehicle Detection	Extract vehicle characteristics and classify them into meaningful categories such as type and color.
40	Application & SDK	The Camera shall enables to install 2 nos. optional analytics applications with including developed by third party companies using this camera's SDK
41	Privacy Guard feature	To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights.
42	AI Occupancy Detection	Detecting the congestion via camera with AI engine enables that information to be used direct visitors in advance or manage staff more efficiently.

43	AI Sound Classification	Detecting suspicious sound like Gunshot, Yell, Vehicle horn, Glass break
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BOQ Sl.No.6. Video Management Software

	GENERAL PRODUCT REQUIREMENTS-VMS
1	The software used shall be designed for enterprise level use, with an expected use period of 24/7. It shall be the Manufacturer's official software.
2	The software shall incorporate open standards and published protocols and use standardized components.
3	The Video Management System provider shall be defined as the provider of the video management software, and the party responsible for rigorous self-testing of the video management software prior to the release of the software.
	GENERAL SYSTEMS DESCRIPTION
1	The Video Management System shall support both centralized and decentralized configurations as well as hybrid options for architecture. Centralized management shall be available no matter the surveillance architecture.
2	The system shall allow for integration with other security devices and products and be designed to allow for leveraging of those products to improve the user experience of the VMS.
3	The VMS shall not require a central management server.
4	The VMS shall make the user experience seamless to the end user irrespective of the system architecture.
5	The VMS must be capable of each server being able to handle an unlimited number of cameras for recording.
6	The VMS must support Windows Server 2012, 2016 and 2019 for the server side. Client- side software must be available for Windows 7, 8 and 10 Pro, Mac OSX, iOS 6 and above, and Android. The operating system shall have all current and available patches.
7	The VMS must support Web Client on Chrome and Microsoft Edge.
8	The VMS must have Restful API interface for integrating 3 rd party systems.
9	The VMS must have a capability to add new application to Windows client software as a Plug-in. And the Plug-in SDK shall be available in 3 rd party company.
10	The VMS shall include the following without additional license fees:
	a. Client software for Windows.
	b. Client software for Mac OSX.
	c. Client software for iOS 6 and above.
	d. Client software for Android-based platforms.
	e. Client software for Web client.
	f. Video Player.
	g. Access Control Integration.
	h. NVIDIA GPU support.
	i. Failover.
11	The VMS should also provide optional clients or Plug-ins:
	a. Video Wall.
	b. Apple TV Viewing client.
	c. Full Access Control software platform.
	d. Health-Monitor.
	e. LPR application.
	f. Multi-AI (People, Vehicle and Face search etc.) application.

	g. Thermal camera application.
12	The VMS shall not require a separate application for administration and user-based roles. Limitations for non-administrative users shall be handled via permissions.
13	The system shall support running in Virtual Servers for both the server application and client applications.
14	The VMS shall support Backup and Restore.
15	The VMS shall support updating software remotely and allow an administrator to schedule the update.
	VMS Server Software
1	IP Server shall be designed to run on a Windows platform, supporting both Desktop and Server class operating systems including Windows 7, 10 (Pro), 2008 R2, 2012, 2016 and 2019.
2	It shall run as a Window's Service. This service shall run as part of the local service account. This service shall be running as long as the system is booted and has started Windows. It shall not require the user to be logged in.
3	It shall store settings in SQL Express and shall not require a full MS-SQL license.
4	It shall have an option for a 32-bit binary and a true 64-bit binary. In a 64-bit OS, it shall run as a native 64-bit application, not merely a 32-bit application.
5	The service shall connect to the camera and handle streaming to the server. It shall not require each client to connect to individual cameras.
6	This service shall allow the cameras to be placed on one network and the clients on a separate network using a different IP range.
7	The software shall support the ONVIF standard.
8	The software shall support Megapixel virtual cameras within a single camera license.
9	IP Server shall record the video streams from different cameras.
	a. For MPEG-4 based cameras, the video shall be stored in the native codec of the server.
	b. For H.264/H.265 based cameras the video shall be stored in the native codec of the server.
	c. Each camera will have the option to be able to be stored in different locations (i.e. One locally, another on a NAS, a third on a different network share).
	d. Streaming from server to client shall support H.264/H.265.
10	IP Server shall support H.264/H.265, MPEG-4, MJPEG and MXPEG based cameras.
11	IP Server shall support motion detection at the camera and at the software levels.
12	IP Server shall provide graphic examples of what it determines as motion to thick clients if the thick client requests it.
	a. The software shall display the motion detection as an outline around the area moving.
	b. The software shall provide a bar showing the total percentage of change. This bar shall have a slider on it to allow the user to quickly set motion detection.
13	IP Server shall allow for multiple zones to be set within an image that support differing motion detection values within a cameras field of view.
	a. There shall be no limit on the total number of zones allowed, either on a per camera or per server basis.
	b. Zones should allow the ability to ignore motion within an area.
	c. The user shall have the ability to move the zones after the fact.
	d. Motion zones shall be able to be tied into a rules engine to allow the software to use them as triggers for events.
14	IP Server shall support the use of imported maps to show camera placement. The formats for these maps will be JPG, GIF or BMP as determined by the user.
	a. Hovering over a camera on a map shall cause it to be displayed in a window on the side.
	b. When the camera is displayed on the side, the option to review recently recorded video will be available to them.

	c. The user shall be able to embed layouts onto the facility map. Clicking on the layout shall change the display of the client software.
	e. Alarms from DIOs shall be able to be embedded as well.
	f. Audio sources shall also be an option.
	g. Other facility maps shall also be an option to embed. Clicking on a different embedded map shall bring up that map.
	h. Doors from certain access control systems can be imported and displayed. Hovering over the door shall display the last badge used to badge in, a live view of the camera associated with the door. The user from this pop up shall be able to see badge events and alarm events along with the associated video.
15	IP Server shall support reporting to a diagnostic tool:
	a. Number of active cameras.
	b. Active cameras offline.
	c. Version of the server.
	d. Amount of disk space left.
	e. Recording status of the server.
16	IP Server shall support pre-motion and post motion recording.
17	IP Server shall support various layouts. The layouts will allow for blank spaces within the layout.
18	IP Server shall support an unlimited number of users:
	a. Users can be drawn from either an Active Directory server, Novell eDirectory, or entered manually.
	b. There will be two different levels of user (Administrator and User).
	c. Users can be members of a group with settings set for the group. Individual user settings can override the group settings.
	d. Permissions can be set for live viewing, access to recorded video, control of PTZ cameras, access to audio, the ability to export video, custom layouts, facility maps and rules. Permissions can be defined on a per camera basis.
	e. It shall support the option of having the users limited to being signed into a single location.
19	It shall support an optional secondary server with failover capacity.
20	A rules engine shall be included to allow the server to handle more complex tasks.
	a. Triggers will include:
	1. Dry contacts (DIO).
	2. Motion detection of a camera stream.
	3. Video Analytics event of a camera stream
	4. Scheduled events. Events can be scheduled on daily, weekly, or monthly basis. Individual events can be handled as well.
	5. An Alert button for the user interaction in the VI Monitor.
	6. Inputs sent programmatically via appropriate APIs.
	7. Access control events from supported Access Control Vendors.
	8. LPR events.
	9. User login events.
	b. Actions will include:
	1. Logging the event.
	2. Opening or closing a dry contact.
	3. Sending an e-mail with a custom text message tied to the trigger. Multiple texts will be allowed for different triggers.
	4. Sending an e-mail with an AVI/MP4 clip from a selected camera.
	5. Sending an e-mail with a JPG file of a selected event from a camera.

	6. Opening a live window for a user who is viewing.
	7. Move a PTZ to a certain preset location.
	8. Force recording.
	9. Instant Replay.
	10. Message Instruction.
	11. Moving, copying, or deleting of files.
	12. Execute a program or batch file.
	13. Send an ASCII string to a TCP port.
	14. Change the state of the door
	15. within Workspaces and Message Display
	16. Audio alert for a specified Client.
21	A universal RTSP option shall exist for adding cameras if they are not currently supported through native APIs.
22	PTZ functionality within the camera shall be supported.
23	Dewarping of Panoramic cameras shall be supported.
24	IP Server shall only stream video to the clients that requested them.
25	If live video is paused, then IP Server shall stop streaming video to the clients to conserve bandwidth.
26	IP Server shall have support panic button functionality through rules engine.
27	IP Server shall support integration with OPTEX Laser sensor which can detect Vape, Temperature and Gunshot etc. The alarm shall be used as Rule Trigger and be able to make a Rule action.
28	IP Server shall support integration with Network speaker.
29	IP Server shall support Shard DB environment and allow user to login to all managed IP Servers by single IP Server credential input.
30	IP Server shall have a capability to store and search User Audit log such as camera control, configuration update (including camera, map, server rule, user and view), force record, Guard Tour, Live Viewing, login/out, export video clip and playback.
31	The User Audit log shall be able to be exported.
32	IP Server shall have an option to allow user to login from only one client. IP Server shall support HTTPS communication including video streaming with camera.
	Windows Client
1	VMS Client will be a thick client for viewing live and recorded video, along with handling administrative tasks.
2	The software shall not require a client license to operate.
3	Clients shall be able to use Active Directory to authenticate users.
4	Clients shall be able to use Novell E-directory to authenticate users.
5	VMS Client shall have a searchable timeline for multiple events:
	a. Motion.
	b. Access Control.
	c. Rules.
	d. LPR (License Plate Recognition).
	e. VCA (Video Content Analytic).
6	VMS Client shall display the servers it is connected to along with the server's cameras in a tree view on the left-hand side:
	a. The tree view shall allow the user to see the status of the servers that the instance of VMS Client is aware of.
	b. The tree view shall also include access to custom layouts, facility maps and action buttons.

	c. There shall be an option to hide the tree on startup of VMS Client.
	d. The user shall be able search for cameras using a searchable box on the left-hand tree.
7	The thick client shall not be limited in the number of servers it can connect to.
8	Live view shall allow views of 1, 2, 4, 8, 9, 10, 13, 16, 18(wide), 19, 24(wide), 25, 36, 48 and 64 cameras:
	a. Layouts shall be selectable via icon.
	b. Layouts shall not be limited to cameras from a single server.
	c. Users shall be able to get layouts to cycle in the client's workspaces.
	d. Layouts shall be able to be put into groups.
9	If motion is detected on a camera, the software shall have the option to indicate it by highlighting the edge of the live window.
10	Live view shall allow cameras to be dragged and dropped onto the live view from the left-hand tree. Cameras can be duplicated in a view.
11	Users shall be able to invoke a digital zoom by drawing a box.
12	After invoking the digital zoom, VMS Client shall support the use of picture in picture within the zoomed image.
13	Digitally zoomed areas shall be treated as a digital PTZ.
14	PTZ Presets shall be listed in a drop-down menu in the Dynamic Tab.
15	Users shall be able to move the PTZ movements simply by clicking on the image, through onscreen PTZ controls. Zoom functionality can also be controlled via the scroll wheel of the mouse.
16	Live view shall support a full screen mode that hides the UI. User shall be able to start VMS Client in this full screen mode with a setting.
17	Live view shall allow the user to dewarping the video from panoramic lenses and cameras.
18	Right clicking on a camera in live view shall have the following behaviors:
	a. Right-clicking on a camera within live view shall allow the user to be able to review the recently recorded video for that camera.
	b. Right-clicking on a camera within live view shall also allow access to the properties dialog box for that camera.
	c. Allowing access to recorded video.
	d. Right-clicking on the Camera tile shall allow the users to send video or messages to other users or Video wall in the form of a popup window.
19	VMS Client shall have a control panel inside of camera view and allow the below controls:
	a. Save a still image of the live view.
	b. PTZ control.
	c. Display video streaming information on video.
	d. Force recording.
	e. Show bounding box of detected objects such like people, vehicle, and face etc. by resulting video analytics.
20	Up to 16 Recorded video Synchronized playback shall allow for cameras to simply be dragged and dropped into the player.
21	The exporting of video in VMS Client shall have Region of Interest capability within a recorded image. This will enable segregation of image for export.
22	VMS Client shall be able to display logging information such as: changes to the server, lost camera signals, who exported recorded video, when did users log-on/off and other errors. This functionality will be limited to administrative users. The log will be exportable as txt or to the Windows clipboard.
23	VMS Client shall also provide real time status updates for server status and camera status, including the CPU usage, disk usage, bandwidth usage, licensing and number, motion event, edge storage, and names of users who are logged in.

24	The system shall support an Alarm Log to make it easier to find DIO based events.
25	The software shall support the ability to open a live window that can be moved around. This window will be able to access the view of any camera or layout the user has access to.
26	VMS Client shall support multiple screen user environments for dynamic user interface.
27	The user shall be able to enable or disable the following settings:
	a. Server name in the live view.
	b. Camera Name in the live view.
	c. Audio notification on motion.
	d. Forcing aspect ratio.
	e. Use Direct Show for display.
	f. Double clicking to change the server layout.
	g. Double clicking expands the camera.
	h. Allowing multiple live windows.
	i. Block live windows from popping up.
	j. Live window always on top.
	k. The speed in which layouts cycle.
	l. Hiding left tree on start up.
	m. Launching Facility maps on start up.
	n. Auto login.
	o. Select Startup View.
28	Users shall be able to access a graphic representation of what the server's motion detection settings are picking up through the timeline. Analytics and bookmark also can be display in a timeline.
29	Users shall be able to configure user settings as well as layout settings from within the thick client.
30	VMS Client shall allow users to send video to other users who is using VMS Client, allowing for remote live pop ups of video of important events.
31	VMS Client shall allow users to send video or video view to Video Wall application.
32	VMS Client shall support Layout touring. Selecting a layout will cycle through a list of cameras.
33	VMS Client shall allow Region of Interest searches (a.k.a. Smart Search functionality).
34	VMS Client shall have a capable to install Plug-in and open the Plug-in form in workspace.
	WEB CLIENT
1	The Web Client shall support Chrome, and Microsoft Edge browsers.
2	The Web Client shall not be limited to only Windows platforms.
3	The Web Client shall not require a license for basic features.
4	The Web Client shall allow user to login single server or multiple servers.
5	The Web Client shall allow to be used by Active Directory users and group users.
6	The Web Client shall be able to display compressed streaming which are MJPEG, H.264 and H.265 without server-side decoding or Active X.
7	Web Client users shall be able to access recorded video.
8	The Web Client shall be able to highlight days on the calendar if there is a recorded video.
9	Web Client users shall be able to download recorded video from the system.
10	Web Client users shall be able to use the motion log or timeline to find recorded video.
11	The Web Client shall support the use of facility maps, and allow to show Live and Playback from a camera icon on the facility map.
12	Web Client users shall be able to see live video in hover when mouse over a camera icon on the facility map.

13	Web Client users shall be able to zoom in and out the facility map.
14	The Web Client shall use IIS as its web server.
	iOS Mobile Application
1	The iPhone/iPad application shall not require a license to operate.
2	The App shall have access to live and recorded video.
3	PTZ functionality shall be available in the App.
4	Facility map functionality shall be available.
5	Snapshots shall be able to be e-mailed from the App.
6	The app shall provide optional access control functionality.
7	The app shall provide multi-camera views
8	The app shall stream H.264, H.265, and JPEG video.
	ANDROID MOBILE APPLICATION
1	The Android application shall not require a license to operate.
2	The App shall have access to live cameras.
3	PTZ functionality shall be available in the App.
4	The App shall have access to recorded video.
5	Facility map functionality be available.
6	The app shall provide optional access control functionality.
7	The app shall stream H.264 and JPEG video.
	Mac Client
1	The app shall not require a license.
2	The app shall have available live and recorded video.
3	The app shall stream H.264, H.265, and JPEG video.
4	The app shall include PTZ functionality.
5	The app shall create snapshots.
6	The app shall include access control functionality.
7	The app shall include available facility maps.
8	The app shall include audio support for live and recorded video.
9	The app shall dewarp fish-eye cameras (quad mode, single quadrant mode, single and double panorama modes).
10	The app shall include a timeline.
11	The app shall include video clipping.
12	The app shall include synchronized playback.
13	The app shall allow users to create desktop views and save them as default start-up content.
14	The app shall allow users to create and view bookmarks.
	Video Analytics Application (AI-INTEGRATED System)
1	The VMS shall provide an Integrated-AI System solution that supports cutting edge intelligent search with the combination of camera and deep learning technology.
2	The Integrated-AI System shall be designed to run on a Windows platform, supporting both Desktop and Server class operating systems including Windows 10 (Pro), 2016 and 2019.
3	It shall store settings in SQL Server 2014/2016 Express/Standard Edition.
4	The Integrated-AI System shall store the best shot images and metadata captured by the network cameras.
5	The Integrated-AI System shall collate metadata with the watch list registered in the client software and issues an alarm when a match is found.
6	The type of analytics supported by the software including live events and search past events with specified conditions by using search filter:

	a. AI Face Detection and Recognition (Detects faces with high precision even in low-light, backlit, and mask-wearing environments and matches with database and generate alarms)
	b. AI People Detection (Extract the characteristics of human face / clothing and classify them into meaningful categories such as gender, age, and clothing color).
	c. AI Vehicle detection (Extract vehicle characteristics and classify them into meaningful categories such as type and color).
	d. AI-Analytics (Intruder/Loitering/Cross line/Direction/Non Mask Detection/ Occupancy Detection).
	e. AI Sound Classification (Detecting suspicious sounds like Gunshot/Yell/Vehicle horn/Glass break).
	f. AI-Privacy Guard Feature- To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights
	g. AI People/ Vehicle counting – To count the number of people or vehicle passing through a virtual line.
	h. AI Occupancy Detection- It counts the number of people in a specified area and issues an alarm when the number exceeds a specified threshold.
	i. AI Scene Change Detection- It can define/learn the normal scene for each camera and output an alarm when it is determined to be abnormal.
7	The Integrated-AI System shall provide mobile alerts solution.
8	The Mobile application shall allow users to search an interested person or vehicle by filtering cameras and object appearance.
9	The mobile application shall receive a notification for each alarm.
10	The mobile application shall allow user to show a camera location on map.
11	The mobile application shall allow user to show live & playback for camera that had an event.

BOQ Sl.No.7. Servers required for Video Management, Recording, and Analytics & Storage

1	<u>Main server</u>
	Server configuration 2x12C,24T (Total-24C,48T), Intel Xeon Processor, 2.4GHz, or better 64 GB. 64 GB RAM (GB)
	2x 480GB Enterprise SSD, RAID1 for OS, Windows Server-2019/2022
	2x1GbE and 2x10GbE or better
2	<u>Failover server</u>
	2x16C,32T (Total-16C,32T), Intel Xeon Processor, 2.8GHz, or better
	128Gb RAM
	2x Nvidia RTX-4000(ADA-20GB)
	2x 2TB Enterprise SSD, RAID1 for OS + 8TB HDD for anpr & frs metadata, snapshots, DB
	Ubuntu v20.04; 2x1GbE

BOQ Sl.No.9. SAN Storage

SAN STORAGE		
Sl. No.	Item	Minimum Required Parameters
1	Processor	Intel® Xeon® D1712TR, 4-Core Processor
2	Form Factor/Mounting	12U, 19" Rack Mounted
3	No. of Controllers per appliance	Minimum 2 nos., Active-Active, Multi- path Redundant
4	Default Port per Controller	4*10G SFP+, compatible with Storage and Server, 1* 1G RJ45 Port for management
5	Supported Network Protocols	Block

6	Drive Support and Type	3.5" /2.5" Drives (Up to 22TB per drive) in Controller Unit Disk Enclosure should also have SAS 12 Gbps Backend connectivity, scalable to 450+ Drive (Bidder should be supply HDD along with NAS)
7	Cache/Memory	64 GB per Controller
8	Storage Capacity	3744TB(Raw) capacity.
9	Service Port per Controller	1 x Service/UPS Port, 1x console Port
10	File System	64bit embedded Linux
11	Supported OS	Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016, 2019 SLES 10, 11, 12, 15 RHEL 5, 6, 7, 8 CentOS 6, 7, 8 Solaris 10, 11 FreeBSD 9, 10, 11, 12 Mac OS X 10.11 or later
12	Power Supply	Redundant, 850W Platinum Grade Efficient, 80 Plus Power Supply
13	RAID configuration	RAID level 0,1,0+1,3,5,6,10,30,50, 60, and N-way mirror RAID EE level 5EE, 6EE, 50EE, and 60EE
14	Hot Spare Disk	It shall support hot spare disk.
15	General Features	Should support data migration to healthy drive if find un- healthy disk member in array before the disk drive fails. Should support remapping of bad sector of disk and SMART error handling Should support Asynchronous & scheduled Backup and Cloning of Share & Volume for data backup and recovery QoS Should support Auto Tiering if different types of Disks available Advanced disk awareness RESTful API support Tool for monitor and analyze the activity of SSDs Tool for SSD endurance optimization Tool for generates performance and capacity analytics Tool for authorizations of user's responsibility Auto disk spin-down
16	Cache Protection	Cache-to-Flash memory protection M.2 flash module Power module: Super Capacitor
17	Disks Design	The Disks should be Data Centre Grade, 7.2K RPM
18	Disk Features	Online disk roaming, SED & ISE drive support
19	Storage Design	Thin Provisioning (QThin) with space reclamation

BOQ Sl.No.18. 10KVA FM UPS 1p1p UPS with SNMP Card with battery Rack

Technical Specifications for Online UPS		
Sl. No	Requirement	Specification
1	Capacity	10 kVA / 8000 W
2	Technology	True Online Double Conversion Technology UPS system with IGBT based Rectifier / Inverter
	Input Parameters:	
3	Voltage	230 VAC, 1 Phase 3 Wire
4	Voltage Range	176V to 300 VAC @ full load, 110V to 300V AC Single Phase based on 50% Load Level
5	Frequency	50 Hz/ 60Hz +/- 8% Auto Sensing
6	Power Factor at rated load	>=0.99 at full load
7	Current Harmonic Distortion	Less than 10%
	Output Parameters:	
8	Voltage	220/230/240 VAC +/- 1%, 1 Phase
9	Frequency	50 Hz +/- 0.25 Hz (in Battery Mode) +/- 8% (in Sync)
10	THD v	< 3 % for Linear Load ; < 5 % for Non Linear Load
11	Overload rating	Mains Mode: 105 % to 110 % for 30 min ; 111 % to 130% for 5 min ; 131 to 150 % for 10 sec Battery Mode: 105 % to 110 % for 3 min ; 111 % to 130% for 30 sec ; 131 to 150 % for 3 sec
12	Output wave form	Pure sine wave
13	Crest Factor	3:1
14	Overall Efficiency	upto 92%
	Battery Parameters:	
15	Battery Type	Spill proof, Sealed Lead Acid Maintenance Free Batteries Proposed supply of batteries should be of latest batch not older by 3 months as on date of supply.
16	DC Voltage	192-240 VDC
17	Backup Time	60 Mnts Backup on Rated load (12000 VAH)
18	Battery Rack & Connectors	Powder coated battery rack / stand to be provided
19	Charger	Constant Current & Constant Voltage
20	Charging Capacity	10 % of the Battery AH Capacity
	Other Features:	
21	LCD Display	Metering : Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Level, Battery Voltage, Battery Level Indication : Online, Eco, Battery Mode, Bypass Mode, Over Load, DC Low, Charger Failure, Over Temperature, Short Circuit, Battery Fault
22	Protection	Input High/Low, Over Load, Short Circuit, Over Temperature, Battery Over Charge, Surge Protection
23	Audible Alarm	Battery Mode, Low Battery, Fault, Over Load, Bypass Mode
24	Cold Start	Required

25	Auto Restart	Required
26	Generator Compatibility	Required
27	I/O Connections	Terminal Block
28	Communication Port	RS 232, USB, SNMP (Optional)
29	Operating Noise Level	<55 dB
30	Operating Temperature	0 to 50 Deg C
31	Humidity	upto 95 % RH Non Condensing
32	Altitude	< 1000 meters
33	Ingress Protection (IP)	IP 20
	Test Report / Certificate	
34	Certificate 1	CE for Safety (EN IEC 62040-1) and EMI / EMC (EN IEC 62040-2, IEC 61000-2-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8), Performance IEC 62040-3, Environment Test Report as per IS 9000 for Damp / Dry / Cold Test.
35	Certificate 2	BIS : IS 16242 Part 1 : 2014, RoHS,PEP
36	Certificate 3	ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

BOQ Sl. No. 30. Core/Distribution switch

	24 x10G SFP+ Port, 4xQSFP28 Port
	Short Description
	Min 24 x10G SFP+ Port, 4xQSFP28 Port. Should have RPS and hot swappable PSU option from day 1. Should support 10 Gbps Copper module on SFP+ port for flexibility to utilize .switching capacity of 1.2 Tbps, forwarding performance 960 Mpps, should have non-blocking architecture, 64K MAC address. Should have Static Routing, RIP, VRRP, OSPF ,BGP,BGP4+ EIGRP, VxLAN, PIM-SM,PIM-DM ,OSPFv3 ,BGP 4+,VRF from day 1,Should support ISSU from day 1 ,Should support stacking with min 4 members in a stack, Neighbour discovery, system logging, Telnet, SSH, SNMP, Network Time Protocol (NTP), IPv6 features from day 1 , MTBF Min 198000 Hr.
Sl. No.	Detailed Minimum Technical Specifications
A	Solution Requirement
	The Switch should support non-blocking Layer 2 switching and Layer 3 routing
	These switches should support stacking/VC /Equivalent technology for min 8 Members
B	Hardware and Interface Requirement
	Minimum 24 x10G SFP+ Port, 4xQSFP28 Port. Should have RPS and hot swappable PSU option from day 1. Should support 10 Gbps Copper module on SFP+ port for flexibility to utilize .switching capacity of 1.2Tbps, forwarding performance 960 Mpps Should support 10 Gbps Copper module on SFP+ port for flexibility to utilize. Should have RPS and hot swappable PSU option from day 1. Fiber module should be from the same make. should Come with stacking/VSS or equivalent accessories for min 400 Gbps between 2x switches.
	The Switch should have non-blocking architecture
	1.2 Tbps or higher Backplane capacity and minimum 960 Mpps of forwarding rate
	Should support non-blocking hardware architecture
	All interfaces should provide wire speed forwarding for both Fiber and copper modules

	Support for at least 4000 VLANs & 32K MAC address, Min 16K IPv4 routes , Min 4K Multicast routes .
C	Layer2 & Layer 3 Features
	It should support IGMP snooping v1, v2 & v3
	It should have Static Routing, RIP, VRRP, OSPF, BGP,BGP4+ EIGRP, VxLAN, PIM-SM, PIM-DM, OSPFv3, BGP 4+, VRF from day 1
	Switch should support Jumbo Frame
	Dynamic Host Configuration Protocol (DHCP) snooping
	Switch should support LLDP capabilities
	Should support Port Isolation, Port binding against IP and MAC, should have technology like Sticky MAC feature for traffic utilization, DHCP Snooping, Option 82,
	Should have mechanism for DDoS attack prevention, SYN flood protection, MD5, SHA-256
	Should support Secure Shell (SSH) Protocol and Simple Network Management Protocol Version 3 (SNMPv3).
	Should support less than 50 Millisecond convergence for ring based on G.8032/Equivalent, Support for ISSU, MPLS
	Switch needs to have console port for administration & management
	Management using CLI, GUI using Web interface should be supported
	FTP/TFTP for upgrading the operating System
	IEEE 802.1x, Radius support
	IEEE 802.1D Spanning-Tree Protocol, UDLD
	IEEE 802.1p class-of-service (Cos) prioritization, DSCP, TOS
	IEEE 802.1Q VLAN, QinQ
	IEEE 802.3u 100BASE-TX specification
D	Manageability
	Switch should be able to support management via CLI, Web interface, All switches & wireless component and switch should have same operating system. Same access points and switches should have option to be managed by cloud infrastructure without replacing the hardware in future.
	ZTP (Zero touch Provisioning), NTP, RSPAN, DHCP Server, DHCP Relay, 802.3ah, 802.1ag, sflow/Netflow
	Switch should be manageable through both IPv4 & IPv6. IPV4/ipV6 Dual Stack, ISATAP Tunnel
	Operating temperature 0-50 Degree C
E	Safety & Compliance
	RoHS, CE, FCC

BOQ Sl.No.31. POE Switches 24 Port

	24 port 10/100/1000 T PoE+ with 4x10G uplink ports
	Short Description
	Supply, Installation, Testing & Commissioning of 24x 1G and 4 x 1/10GSFP+ ports with min 370 Watt PoE/PoE+ power budget, Should have AC and DC PSU arrangement for power source resiliency . Should support 10 Gbps Copper module on SFP+ port for flexibility to utilize. Switching capacity of 128Gbps, forwarding performance 95Mpps, should have non-blocking architecture, 16K MAC address. Should have Static Routing, RIP, VRRP, OSPF, OSPFv3 from day 1, Should support ISSU from day 1, Should support stacking with min 12 members in a stack, Neighbour discovery, system logging, Telnet, SSH, SNMP, Network Time Protocol (NTP), IPv6 features from day 1, MTBF Min 198000 Hrs. which should be provide as per given technical specification.
Sl. No.	Detailed Minimum Technical Specifications
A	Solution Requirement

	The Switch should support non-blocking Layer 2 switching and Layer 3 routing
	These switches should support stacking/VC /Equivalent technology for min 12Members
B	Hardware and Interface Requirement
	Minimum 24 x 1G and 4x 1/10GSFP+ ports with min 370 Watt PoE/PoE+ power budget, Should support 10 Gbps Copper module on SFP+ port for flexibility to utilize. Fiber module should be from the same make. Should come with stacking accessories.
	The Switch should have non-blocking architecture
	128 Gbps or higher Backplane capacity and minimum 95 Mpps of forwarding rate
	Should support non-blocking hardware architecture
	All interfaces should provide wire speed forwarding for both Fiber and copper modules
	Support for at least 4000 VLANs & 16K MAC address
C	Layer2 & Layer 3 Features
	It should support IGMP snooping v1, v2 & v3
	It should have Static Routing, RIP, VRRP, OSPF, OSPFv3, from day 1
	Switch should support Jumbo Frame
	Dynamic Host Configuration Protocol (DHCP) snooping
	Switch should support LLDP capabilities
	Should support Port Isolation, Port binding against IP and MAC, should have technology like Sticky MAC feature for traffic utilization, DHCP Snooping, Option 82,
	Should have mechanism from DDoS attack prevention, SYN flood protection, MD5, SHA-256
	Should support Secure Shell (SSH) Protocol and Simple Network Management Protocol Version 3 (SNMPv3).
	Should support less than 50 Millisecond convergence for ring based on G.8032/Equivalent, Support for ISSU, MPLS
	Switch needs to have console port for administration & management
	Management using CLI, GUI using Web interface should be supported
	FTP/TFTP for upgrading the operating System
	IEEE 802.1x, Radius support
	IEEE 802.1D Spanning-Tree Protocol, UDLD
	IEEE 802.1p class-of-service (Cos) prioritization, DSCP, TOS
	IEEE 802.1Q VLAN, QinQ
	IEEE 802.3u 100BASE-TX specification
D	Manageability
	Switch should be able to support management via CLI, Web interface, all switches & wireless components and switch should have same operating system. Same access points and switches should have option to be managed by cloud infrastructure without replacing the hardware in future. The same device could be managed by cloud without changing the hardware if required.
	ZTP (Zero touch Provisioning), NTP, RSPAN, DHCP Server, DHCP Relay, 802.3ah, 802.1ag, sflow/NetFlow
	Switch should be manageable through both IPv4 & IPv6. IPv4/IPv6 Dual Stack, ISATAP Tunnel
	Operating temperature 0-50 Degree C
E	Safety & Compliance
	RoHS, CE, FCC

BOQ Sl.No.32. Firewall

	Firewall Specification
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Hardware	2 GE Combo, 10 GE RJ45, Supports 1 sets of Bypass 1 USB, Throughout 4 Gbps, Concurrency 2 Million, Built-in 220VAC PSU, 1 Console port, 1 MGMT port , Trans Flash. Firewall should of the same OEM of switch. Should have same operating system platform of switch and router .
VPN	Standard IPSec VPN protocols and deployment methods Policy-based and route-based IPsec VPN CA centers and X.509 format certificates VPN Track SSL VPN tunnel mode GRE VPN Security protection and bandwidth management under VPN tunnels
Virus attack Protection	Virus filtering based on HTTP, FTP, SMTP, POP3, IMAP protocols Blocking specific file types from passing through Virus scanning for up to 20 layers of compressed files Manual and automatic updates of the virus database Malicious URL filtering
Intrusion	Automatic protocol recognition Over 3000 predefined attack signatures Automatic and manual updates of the signature database Provides security protection against worms, Trojan backdoors, phishing, and other threats
Internet behavior management	Control over logging in and messaging in IM software Control over software such as P2P and streaming media Control over online gaming Control over stock market information and trading activities Control over sending and receiving emails, including attachment size filtering URL category filtering
User Management	Local user authentication for the firewall Standard third-party user authentication such as Radius, LDAP SMS gateway Web user authentication Online user monitoring and timeout management Centralized user policy management
System Management	System administrators and read-only administrators Administrator privacy check and timeout management Manual system time setting and NTP synchronization Dual system configuration file backup Manual system file upgrades SNMPv1/v2/v3 Hot standby in active-standby and active-active modes Interface status synchronization and status detection System diagnostics via PING, TRACERT, TCPSYN methods Periodic collection of system information

Network function & security	<p>Octuple policies based on user, application, source and destination interfaces, source and destination IP, service, and time</p> <p>Object-oriented addressing, services, scheduling, applications, and user resources</p> <p>Policy-based persistent connections</p> <p>Policy hit counts statistics and reset</p> <p>Policy priority adjustment</p> <p>IPv6 security policies</p> <p>Session statistics, monitoring, temporary blocking, and global session restrictions.</p> <p>three working modes: Transparent, routing, and hybrid, as well as link aggregation</p> <p>Source NAT, Destination NAT, Port NAT, and Static NAT</p> <p>VLAN and VRF</p> <p>WLAN and 3G wireless access</p> <p>DHCP server and DHCP Relay, DNS server, and static DNS</p> <p>Static routing, PBR, ISP routing, and source interface routing</p> <p>Application-based routing</p> <p>Dynamic routing protocols such as OSPF, RIP, and OSPFv3</p> <p>Route detection function</p> <p>IPv6 static routing, route advertisements, and tunnel translation</p>
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BOQ SL.No.56. Cat6A U/UTP LSZH Cable

S. No.	Technical Parameters
1	Cat 6A, 23 AWG Bare Copper Solid Conductor U/UTP Unshielded LSZH Jacket, ANSI/TIA 568 C.2 Category 6A, Cable shall not have any kind of Non Metallic Barrier Tape or Metallic Shield inside
2	Suitable for 10GBASE-T with Min. 500Mhz of Bandwidth
3	4 Twisted Pair alongside PE / PVC Cross Separator
4	Conductor: 23AWG Solid Annealed Bare Copper
5	Conductor Diameter: 0.57 $\pm$ 0.03mm
6	Insulation: High Density Polyethylene, Diameter 1.08 $\pm$ 0.05mm
7	Jacket: LSZH complying to IEC 60332-1 Flame Rating, IEC 60754-1/2 for Halogen Acid Test, IEC 61034-2 for Smoke Density Test and certified from NABL accredited & iLAC-MRA certified LAB
8	Nominal Jacket Thickness : Min. 0.80mm
9	Cable Outer Diameter: 7.2 $\pm$ 0.5 mm
10	Operating Temperature: -20°C to +75°C
11	CPR Euro class : Class Eçà
12	IEEE 802.3bt Type 1, Type 2, Type 3, Type 4 PoE Complied
13	Cable shall not have any kind of Non Metallic Barrier Tape or Metallic Shield inside
14	Flame Rating : IEC 60332-1
15	Temperature Index & Oxygen Index should meet ASTM D 2863
16	Bend Radius: 8 X Cable Diameter (Min.) or Better
17	Conductor Resistance : $\leq$ 7.5 Ω /100m
18	Resistance Unbalance : 5% Max
19	Mutual Capacitance : $\leq$ 5.6nF/100m
20	Propagation Velocity : 69% (nominal)
21	Dielectric Strength: DC 1500 V /Min.

22	Min. Elongation at Break of Insulation : 300%
23	Min. Jacket Tensile Strength : 10 N/mm ² (Mpa)
24	RoHS Complied

BOQ Sl.No.48. Line Interactive UPS

Technical Specifications for Online UPS		
Sl. No	Requirement	Specification
1	Nominal Output Power (VA)	1000 VA
2	Active Output Power (W)	800 W
3	Technology	On-line, double conversion, VFI-SS-111
4	Waveform	Sinusoidal
5	Display	LCD Display
7	Input voltage	230 VAC
8	Input frequency range	40-70 Hz
9	Input voltage range	160 V - 300 VAC @ 100% load
10		110 V - 300 VAC @ 60% load
11	THD of input current	< 10% at full linear load and normal voltage and thd
12	Input Power factor	≥ 0.90 (with full linear load)
13	Input Connection	Power cord as per IS 1293
14	Output characteristics	
15	Outlets	3 x India Type 6 Amps
16	Output voltage	230 VAC (adjustable to 220/230/240 VAC) ± 1%
17	Output frequency at Battery Mode	50 Hz ± 0.25 Hz or 60Hz ± 0.3 Hz
18	Frequency synchronization	47 ~ 53 Hz or 57 ~ 63 Hz (Synchronized Range)
19	Crest factor	3 : 1
20	THD of output voltage	< 3% at full linear load
21		< 6% at full non-linear load
22	AC-AC Efficiency*	> 86%
23	ECO mode	Up to 97%
24	Converter mode	Available
25	Configurable bypass	Available
26	Overload capacity in < 35degC @ Mains Mode	105 - 110% 10 mins, 111 - 130% 1 mins, >130% 3sec
27	Overload capacity in < 35degC @ Battery Mode	105 - 110% 10 mins, 111 - 130% 1 mins, >130% 3sec
28	Batteries and battery charger characteristics	
29	Number of batteries	2
30	Battery capacity	7AH / 9AH
31	Rated Battery Voltage	24 Vdc
32	Battery Charging Current	1A
33	Communication and management	
34	Communications ports	RS232 and USB
35	Connector for network interface	Optional -SNMP/MODBUS/Dry Contacts
36	Mechanical characteristics	

37	Dimensions for IB (W x H x D) in mm	145 x 282 x 220
38	Net weight in kg	9.8
39	Environmental conditions	
40	Operating temperature	0 °C to +40 °C
41	Protection index	IP 20
42	Relative humidity (%)	20% to 90% (non-condensing)
43	Storage temperature	-10 °C to +40 °C
44	Noise level at 1 m (dBA)	< 50 dBA
45	Reference directive and standards	
46	Safety	IEC / EN 62040-1 & IS 16242:2014
47	EMC	IEC / EN 62040-2
48	Performance	IEC 62040-3

BOQ Sl.No.49. SC-to-SC fiber patch cord

S. No.	Technical Parameters
1	Fiber Patch Cord, LC - SC, Spiral Steel Armored, 9/125µm OS2 Single mode Round Cord (4.0 +/- 0.2mm), Duplex
2	Spiral Steel Armor (<= 1.8mm Diameter) , Aramid Yarn, Tight Buffer Fiber
3	Connectors : The optical fiber patch leads shall comprise of Single mode 9/125µm fiber G652.D
4	Connector Insertion loss <= 0.4 dB
5	Return Loss >= 50 for UPC and >= 55 for APC
6	Jacket Material: LSZH complying to IEC 61034-1, IEC-60332-1, IEC-60754-1
7	Length : 3 Meter
8	Attenuation: 1310/1550 : 0.35/0.22 dB/KM
9	Operating Temperature: -20°C to +70°C
10	Repeatability: <= 0.2DB 10 Times Mating Cycles
11	Tensile Strength : 750N
12	Crush Resistance : 1000N/100mm
13	RoHS Complied, Meets ANSI/TIA 568.3-D

BOQ Sl.No.50. LC to SC fiber patch cord

S. No.	Technical Parameters
1	Fiber Patch Cord, LC - SC, Spiral Steel Armored, 9/125µm OS2 Single mode Round Cord (4.0 +/- 0.2mm), Duplex
2	Spiral Steel Armor (<= 1.8mm Diameter) , Aramid Yarn, Tight Buffer Fiber
3	Connectors : The optical fiber patch leads shall comprise of Single mode 9/125µm fiber G652.D
4	Connector Insertion loss <= 0.4 dB
5	Return Loss >= 50 for UPC and >= 55 for APC
6	Jacket Material: LSZH complying to IEC 61034-1, IEC-60332-1, IEC-60754-1
7	Length : 3 Meter
8	Attenuation: 1310/1550 : 0.35/0.22 dB/KM
9	Operating Temperature: -20°C to +70°C
10	Repeatability: <= 0.2DB 10 Times Mating Cycles
11	Tensile Strength : 750N
12	Crush Resistance : 1000N/100mm
13	RoHS Complied, Meets ANSI/TIA 568.3-D

BOQ Sl.No.51 Industrial Grade switch

Sr. No	4 Port Industrial Grade switch PoE+
1	4x10/100/1000 Base T PoE + Ports , 2x 1000 Base SFP ports , Min 12 Gbps Switching speed ,Min 9 Mpps forwarding rate
2	Min 120-watt POE/PoE+ power budget, Min MTBF 780000 Hrs. or better
3	Dual Power input, Jumbo Frame support , All switches should be of same operating system and make along with same make fiber module .
4	4K VLAN entries, GVRP, QinQ, Private VLAN, IEEE 802.1Q VLAN tagging, Voice VLAN
5	MVR, IGMP Snooping, IGMP Fast Leave, Multicast group policy and multicast number limit
6	Web-GUI, HTTP/HTTPS, Zero touch configuration (ZTP),Upload and download files through TFTP/FTP, Syslog, MON
7	ICMPv6, DHCPv6, ACLv6, IPv6 Telnet
8	Ethernet OAM, ISSU,VRRP, G.8032, Should have dual Home /Multiple ring protection and less than 5 Millisecond node healing/restoration for critical applications .
9	802.1D (STP), 802.1W (RSTP), 802.1S (MSTP), BPDU protection, root protection and ring protection.
10	CE, FCC, IP40, Operating temperature -40 Degree C to 75- Degree C .
11	802.1P,DSACP, Traffic Shaping, Multiple queuing , IP ACL, Traffic supervision,Pv4 ACL, IPv6 ACL, ACL based on VLAN
12	L2/L3/ L4-based ACL,DHCP scooping, DHCP option82,IEEE 802.1x authentication, Radius and TACACS+
13	DHCP Server, DHCP Client, DHCP Relay, DHCP Snooping,
14	CE, FCC, IP40, Operating temperature -40 Degree C to 75- Degree C,6KV lightening protection . Fiber module should be from the same OEM for seamless integartion. All switches(Industrial grade and commercial grade switches should have same operating system for ease of maintenance)

BOQ Sl.No.53. NMS Device

Technical specifications of Network management software	
Sl. No.	Detailed specification for Network Management software
1	Should support 500 devices from day 1 and can be scalable to Min 8 K devices in future.
2	Same platform could be achieved in cloud infrastructure as well as and when required by taking subscriptions.
3	Should have dashboard to present summery report.
4	Should be real time-based monitoring system
5	Should have device system log. NMS should be capable of storing purchase Information's Cost, Order, Date etc. information while it identify each unique piece of hardware so that to know which specific device it is.
6	Should have alarm with different sound and email notifications. Should have alert notification based on any service contract expiry threshold based on requirement. Should have option for QR code database. For asset management, vendor could offer a separate software with hardware.
7	Should have fault maintenance level alert customization based on different colour and sound.

8	Role Based user management. Windows & Linux both platforms supported.
9	Auto scheduling task like back, firmware upgradation etc. The NMS should be of the same Make as Switch, Fiber modules.
10	<p>NMS Specification</p> <p>Should support 150 devices from day 1 and can be scalable to Min 6 K devices in future. Same platform could be achieved in cloud infrastructure as well as and when required by taking subscriptions.</p> <p>Should have dashboard to present summery report.</p> <p>Should be real time-based monitoring system</p> <p>Should have device system log. NMS should be capable of storing purchase Information's Cost, Order, Date etc. information while it identify each unique piece of hardware so that to know which specific device it is.</p> <p>Should have alarm with different sound and email notifications. Should have alert notification based on any service contract expiry threshold based on requirement. Should have option for QR code database. For asset management, vendor could offer a separate software with hardware.</p> <p>Should have fault maintenance level alert customization based on different colour and sound.</p> <p>Assignment and Relationships: Where each software is installed, license qty, component relations, contract relations to software/hardware/invoices</p> <p>Role Based user management. Windows & Linux both platforms supported. Tags: Multiple tags for items and software. You may use tags for grouping according to usage, budget, owner, importance, etc.</p> <p>Auto scheduling task like back, firmware upgradation etc. The NMS should be of the same Make as Switch, Fiber modules. The NMS solution should be proposed of the same Active (Switches, Firewall)make or else needs to be submitted with interoperability test report for offered OEM with respective OEM letterhead as signed document from OEM along with compliance.</p>

BOQ Sl.No.54. Radio Devices with receiver

Sl. No.	Parameter	Specification
1	Channel Width MHz	20 40 80
2	Proprietary Physical Layer	Air Interface on top of 802.11ac Wave 2 technology (2x2 MIMO/OFDM)
3	Channel Spacing	Configurable in 5 MHz increments
4	Frequency Range	Wide Band Operation 4910 - 5970 MHz (Note: Allowable frequencies and bands are dictated by individual country regulations.)
5	MAC Layer	Proprietary
6	Ethernet Interfaced	10/100/1000 BaseT, Compatible with PoE & Standard PoE pinouts
7	Protocols Used	IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, SNMPv2c, NTP, STP, IGMP, SSH
8	Network Management	IPv4/IPv6, HTTPs, SNMPv2c, SSH, NMS
9	VLAN	802.1Q with 802.1p priority
10	ARQ	Yes
11	Nominal Receive Sensitivity (w/FEC) @20 MHz Channel	MCS 0 = -87 dBm to MCS 8 (256 QAM-3/4) = -63 dBm (per chain)
12	Nominal Receive Sensitivity (w/FEC) @40 MHz Channel	MCS 0 = -85 dBm to MCS 9 (256 QAM-5/6) = -59 dBm (per chain)
13	Nominal Receive Sensitivity (w/FEC) @80 MHz Channel	MCS 0 = -82 dBm to MCS 9 (256 QAM-5/6) = -56 dBm (per chain)
14	Modulation Levels (Adaptive)	MCS 0 (BPSK) to MCS 9 (256 QAM-5/6)

15	Transmit Power Range	0 to +27 dBm (combined, to regional EIRP limit) (1 dB interval)
16	QoS (Quality of Service)	Three level priority (Voice, High, Low) with packet classification by DSCP, COS, VLAN ID, IP & MAC Address, Broadcast, Multicast and Station Priority, MIR/CIR support
17	Surge Suppression	1 Joule Integrated
18	Environmental	IP55
19	Temperature	-30°C to 60°C (-22°F to 140°F)
20	Weight	2.4 kg (5.3 lb) Includes mounting bracket
21	Wind Survival	180 km/hour (112 mi/hour)
22	Dimensions	47 x 31 cm with mounting bracket attached
23	Pole Diameter	2.5 - 3 in (6.4 - 7.6 cm) with included clamp
24	Power	12 W
25	Input Voltage	30 V
26	Encryption	128-bit AES (CCMP mode)
27	FCC Regulatory Part #	Should be Certified
28	ETSI Regulatory Part #	Should be Certified
29	CE	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)
30	Antenna Gain	25 dBi

BOQ Sl.No.57. Core Outdoor Armored Single mode G652.D & G657A1 Fiber Cable

S. No.	Technical Parameters
1	Armored 12 Core Single mode (OS2) 9/125 Fiber Cable, ITU G.652.D, G.657A1, Outdoor ECCS Armored Fiber Cable with PBT Loose Tube Filled With Thixotropic Jelly, Uni-Tube, Glass Yarn, Water Swellable Tape Under Armor, UV-HDPE Jacket
2	Application : The fiber cable should have Bend insensitive features to be installed in Outdoor, Duct, Trenches & Underground application.
3	Features : The fiber cable should have excellent features of Tensile, Crush, Water Prevention with Jelly & Moisture Barrier Tape
4	Cable Construction
5	Uni-tube (Central Loose Tube) with color coded fibers as per EIA/TIA 598
6	Loose Tube : PBT Loose Tube filled with Thixotropic Jelly
7	Loose Tube Diameter : 2.5mm Nominal
8	Armoring : Corrugated ECCS Tape Armoring (0.155 mm Nominal thickness)
9	Outer Sheath : UV Resistance HDPE
10	Moisture Barrer : Water Blocking Tape Under Armor
11	Strength Member over Central Tube : Glass Yarns
12	Physical / Mechanical Characteristics
13	Outer Diameter : 8.5 +/- 1.0 mm
14	Nominal Jacket Thickness : 1.5 mm
15	Tensile Strength : >= 2220 Newton (IEC 60794-1-2-E1)
16	Bending Radius : <= 20*OD (IEC 60794-1-2-E11) (OD=Cable Outer Diameter)
17	Crush Resistance : >= 2200 Newton/100mm (IEC 60794-1-2-E3)
18	Water Penetration : Meets IEC 60974-1-2 (24 Hr, 3Meter Sample, 1Meter Height)
19	Weight : <= 85 Kg/km
20	Environmental Characteristics
21	Operating Temperature : IEC 60794-1-2-F1 @ -30°C to +70°C
22	Storage Temperature : IEC 60794-1-2-F1 @ -10°C to +60°C
23	Installation Temperature : IEC 60794-1-2-F1 @ -30°C to +70°C

24	Safety : ROHS to be mentioned in data sheet
25	Optical Characteristics
26	Fiber Type : SM (9/125) OS2 as per G.657 A1
27	Max. Attenuation : 0.36 dB/km @ 1310nm , 0.23 dB/km @ 1550nm
28	Mode Field Diameter @ 1310nm : 8.8 +/- 0.4 μ m
29	Dispersion : ≤ 3.5 ps/nm.km & ≤ 17.5 ps/nm.km
30	Fiber cut of Wavelength : ≤ 1320
31	Cable Cut of Wavelength : ≤ 1260
32	Zero Dispersion Wavelength : 1300-1324 nm
33	Zero Dispersion Slope : ≤ 0.090 ps/nm ² .km
34	Coating Diameter : 250 $\pm$ 15 μ m
35	Cladding Diameter : 125 $\pm$ 0.7 μ m
36	Fiber Curl : ≥ 4 m radius curve
37	Cladding Non-Circularity : $\leq 1\%$
38	Mode Field Concentricity error : ≤ 0.8 μ m
39	Coating/Cladding Concentricity Error : ≤ 12 μ m
40	Packaging : Wooden Spool of Min. 2KM roll

BOQ Sl.No.58 Core Outdoor Armored Single mode G652.D & G657A1 Fiber Cable

S. No.	Technical Parameters
1	Armored 24 Core Singlemode (OS2) 9/125 Fiber Cable, ITU G.652.D, G.657A1, Outdoor ECCS Armored Fiber Cable with PBT Loose Tube Filled With Thixotropic Jelly, Uni-Tube, Glass Yarn, Water Swellable Tape Under Armor, UV-HDPE Jacket
2	Application : The fiber cable should have Bend insensitive features to be installed in Outdoor, Duct, Trenches & Underground application.
3	Features : The fiber cable should have excellent features of Tensile, Crush, Water Prevention with Jelly & Moisture Barrier Tape
4	Cable Construction
5	Uni-tube (Central Loose Tube) with color coded fibers as per EIA/TIA 598
6	Loose Tube : PBT Loose Tube filled with Thixotropic Jelly
7	Loose Tube Diameter : 2.5mm Nominal
8	Armoring : Corrugated ECCS Tape Armoring (0.155 mm Nominal thickness)
9	Outer Sheath : UV Resistance HDPE
10	Moisture Barrer : Water Blocking Tape Under Armor
11	Strength Member over Central Tube : Glass Yarns
12	Physical / Mechanical Characteristics
13	Outer Diameter : 9.0 +/- 1.0 mm
14	Nominal Jacket Thickness : 1.5 mm
15	Tensile Strength : ≥ 2220 Newton (IEC 60794-1-2-E1)
16	Bending Radius : $\leq 20 \times OD$ (IEC 60794-1-2-E11) (OD=Cable Outer Diameter)
17	Crush Resistance : ≥ 2200 Newton/100mm (IEC 60794-1-2-E3)
18	Water Penetration : Meets IEC 60974-1-2 (24 Hr, 3Meter Sample, 1Meter Height)
19	Weight : ≤ 95 Kg/km
20	Environmental Characteristics
21	Operating Temperature : IEC 60794-1-2-F1 @ -30°C to +70°C
22	Storage Temperature : IEC 60794-1-2-F1 @ -10°C to +60°C
23	Installation Temperature : IEC 60794-1-2-F1 @ -30°C to +70°C
24	Safety : ROHS to be mentioned in data sheet
25	Optical Characteristics
26	Fiber Type : SM (9/125) OS2 as per G.657 A1
27	Max. Attenuation : 0.36/km dB @ 1310nm , 0.23 dB/km @ 1550nm
28	Mode Field Diameter @ 1310nm : 8.8 +/- 0.4 μ m

29	Dispersion : ≤ 3.5 ps/nm.km & ≤ 17.5 ps/nm.km
30	Fiber cut of Wavelength : ≤ 1320
31	Cable Cut of Wavelength : ≤ 1260
32	Zero Dispersion Wavelength : 1300-1324 nm
33	Zero Dispersion Slope : ≤ 0.090 ps/nm ² .km
34	Coating Diameter : 250 ± 15 μ m
35	Cladding Diameter : 125 ± 0.7 μ m
36	Fiber Curl : ≥ 4 m radius curve
37	Cladding Non-Circularity : $\leq 1\%$
38	Mode Field Concentricity error : ≤ 0.8 μ m
39	Coating/Cladding Concentricity Error : ≤ 12 μ m
40	Packaging : Wooden Spool of Min. 2KM roll

Refer Annexure D for Outdoor LED video wall BOQ Sl.No.20,22 &24,
Annexure E Indoor LED video wall BOQ Sl.No.26,
Annexure F- Under Vehicle Scanner BOQ Sl.No.71 and
Annexure G Speed Monitoring camera BOQ Sl.No.72

NB:

The Technical specification mentioned in the Tender for the proposed items are of minimum requirement, the bidder can offer their technical specification with higher side/ better also. Obsolete or near end of sale products will not be accepted. The proposed system shall be integrated with Port's Digital twin system and the contractor shall provide the necessary accessories, software, support, etc. The technical specifications is specified in BOQ and all the material used should conform to relevant I.S specification with ISI mark. All nuts, bolts, screws etc., used for the works will be galvanized/cadmium plated.

- a) Earthing: Surge Protection Device (SPD) arrangement to protect IT infrastructure i.e. switches, server, storage, etc. system Further, this proposed SPD arrangement should be connected with earthing system of Port. Maintenance Free Earthing – Earthing should be as per RDSO Specification No. RDSO/SPN/197 (Version-1.0) or latest.

1. The equipment and material for this turnkey work with associate system (typical) shall include all requirements including development of site, all arrangements such as Civil works, structural works, Mechanical works, Electrical, wiring, lighting, Electronic equipment's, testing equipment's, instrumentation, etc as per the scope of work, technical specifications, terms and conditions of the contract.
2. If any other materials required excess/ new/ additional for the successful completion of the project shall be arranged by contractor without any price implication to VOCPA. Bill of

Materials and Billing Schedule as per Bidder's design during the time of bidding which shall be finalized after issuance of Work Order.

3. It may be noted that the detailed scope & specifications of each and every component of individual system/equipment may not be possible. Hence bidder is totally responsible for the Concept, detailed design, engineering, supply all the materials and commissioning the complete system to the satisfaction of the VOCPA.
4. All the accessories, spares, items, electrical works, lighting, electronic equipment's, instrumentation, miscellaneous items etc., shall be supplied, installed and commissioned as per site requirement.
5. All electrical equipment like cables, switch, MCB, ELCB, RCCB, extenders, lights, sensors etc, installed shall be having relevant IS standards BIS certifications. Electrical wiring works to be carried out by Electrical licensed holder approved by Govt. Necessary earthing for all the electrical terminations arising in this work at pillar box/ pole/ CCTV control room etc., to be provided as per relevant IS standards.

SECTION -VI

SCOPE OF WORK

V.O.Chidambaranar Port is located strategically close to the East-West International sea routes on the South Eastern coast of India at latitude 8o 45'N and longitude 78o 13'E. Located in the Gulf of Mannar, with Sri Lanka on the South East and the large land mass of India on the West, V.O.Chidambaranar Port is well sheltered from the fury of storms and cyclonic winds. The port is operational round the clock all through the year.

The Port consists of two operational areas– Zone-A and Zone-B. The Port plans to install CCTV cameras, Speed Monitoring, Under Vehicle Scanner, Outdoor Video wall. The scope of work includes Supply, Installation, Testing, Commissioning, operation and maintenance of IP based Video Surveillance System, Speed Monitoring, Under Vehicle Scanner, Outdoor Video wall at VOCPA.

To implement Video Surveillance Solution (VSS), a scalable network architecture implemented which will cover all locations in VOCPA. This network will work as a platform for implementation of Video Management, Video Recording, Video Analytics etc., This network architecture must have features like port security, DHCP snooping, Dynamic ARP inspection, IP Source guard, BPDU Guard and Spanning tree root guard. These features will enable networks to implement first level of network security at these switches as a protection from sniffing and reconnaissance attacks. The proposed system shall be integrated with Port's Digital Twin system with all required accessories and softwares. In addition to robust, secure and scalable network architecture, it must eliminate any unauthorized misuse of recorded video or video clips of Video Surveillance System.

The detailed scope of work is as below,

1. Supply of complete hardware components for the proposed solution (cameras, servers, storage systems, PC workstations, manageable switches etc.) including AMC and Warranty
2. Supply, laying and fixing of pole in foundation, outdoor distribution box, electrical wiring including earthing and network cabling including OFC.
3. Supply of all software/licenses for the solution including peripheral applications, middleware, environmental software or any other related software/licenses as required in the proposed solution.
4. Seamless integration of the server(s), cameras, network devices, storage hardware and software.
5. Preparation of Digital Network topology of VSS showing make, model, IP address, connectivity etc The recording of the video feeds from CCTV cameras will be stored in for 90 days for playback, post event analysis and for investigation purposes. Important videos to be stored for longer duration at Data Centre (as per VOCPA requirement)

6. The new CCTV cameras shall be installed in the locations as directed by the Engineer in charge with the required accessories for transfer of Video. The care to taken in such a way that the installed cameras are free from vehicle movements or hindrance to pedestrians.
7. The contractor is required to supply the EMS tool including all hardware and software in a centralized set-up in DC and DR configuration.
8. The Video Surveillance System shall be based on non-proprietary open architecture where the Video Management Software, Video Recording Software and AI based Video Analytics Software can work and integrate with any make of IT hardware like Server, Storage, Workstation, Network Video Recorder and Switches etc.
9. VMS Application should be based on the open software platform and industry standards, a system that can connect and integrate with other VMS Applications using Software Development Kit (SDK) which offers easy to use Application Programming Interface (API) and support most commonly used programming languages. VMS applications should have open standard architecture (no proprietary database) and interoperability with other VMS applications to meet the desired functional requirement of the project.
10. Edge Storage Recording: In case of any failure or interruption of network, the Camera shall automatically start recording on Edge Storage Memory Card at resolution and frames per second as required and when the network recovers, the Video data shall automatically be transferred to the Server/External Storage Device/NVR without any impact on the system operations.
11. The security of information/feed data available on the edge storage device in all types of Cameras needs to be suitably protected to prevent unauthorized access.
12. The entire communication from cameras to recording servers shall be over SSL/TLS protocol and any additional license required for its implementation shall be supplied by the bidder.
13. Supply of ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites. The contractor shall make necessary arrangements for tapping power supply for the servers, racks, cameras, switches, etc as per site requirement with the concurrence of VOCPA.
14. For effective operations and management of IT Operations, an industry standard Enterprise Management System (EMS) has been provisioned for monitoring of VSS Equipment (Cameras, Switches, Server, Storage, PC Workstations and UPS etc.). Given the expanse and scope of the project to operate, configure, monitor & maintain IP based Video Surveillance System (VSS) of VOCPA, EMS becomes very critical for IT Operations and

SLA Measurement.

15. Design and commissioning of an industry standard Enterprise Management System (EMS) for monitoring of all the assets of VMS System (including all IP devices of VSS System like Cameras, Storage, Servers, Switches, UPS etc.) are required to be monitored. EMS System to be deployed at one Data Center as a DC with the redundant infrastructure configured in other Data Center as a DR, in case of failover. There will be continuous data replication & synchronization from DC to DR site on daily basis to prevent a loss of configuration changes in the event of losing the production instance. Daily report of status of IP camera(working/non working), storage data available, events for non storage of videos for particular camera etc to be generated in pdf/excel format
- i) The EMS Solution (Hardware & Software) shall provide monitoring of 1000 network IP devices from day 1 with future scalability without major architectural changes. Whenever required, the additional device licenses can be procured & added respectively.
 - ii) Solution shall be open, distributed, scalable, and multi-platform and open to third party integration. Consolidate IT event management activities into a single operations bridge/dashboard that allows NOC operator quickly identify the cause of the IT incident, reduces duplication of effort and decreases the time it takes to rectify IT issues. Consolidated dashboard of the proposed EMS solution shall be the manager of managers window and capable of receiving events/alerts from multiple monitoring systems including system, network, storage, hardware, and application.
 - iii) Consolidated Dashboard Tool should provide superior view of infrastructure health across system, networks, IT infrastructure and end-user into a consolidated, central console.
 - iv) Service Level Reporter- Reports should be accessible via web browser, Reports can be scheduled to publish automatically or they can be produced on demand. Reports can be published in HTML, PDF, Microsoft Word, and Microsoft Excel formats. Tool should allow to configure downtime for Configuration Items and view the configured downtime in the reports.
 - v) Network Automation-Should be able to generate a graphical representation of your network. Identify which devices are inactive or out of compliance. Detecting noncompliance, issuing alerts. The ability to compare configurations is invaluable;
16. system changes must be logged. In real time, detect configuration and asset information changes made across a multi-vendor device network, regardless of how each change is made

and also support configuration deployment/rollback and configuration templates. Recording every access to a device including not only scripted and automated access, but a full keystroke log. Who made what change, the reason for the change and associated ticket number must be captured. Manage dual-stack and pure IPv6 environments. Manage SNMPv3 configurations and communicate over SNMPv3. Manage device access and authorization through a centralized control model that is integrated with your standard workflow and approval processes. The system must support heavily NAT environment and environments, where network devices may have the same IP address. The system must provide an automated method to configure devices for real-time change detection via syslog (either direct syslog or syslog via a relay).

17. Some of the critical aspects that need to be considered for operations of IT setup are
 - a) Centralized and Integrated Dashboard View
 - b) Centralized and Customizable Service Level Reporting
 - c) Server Change, Provisioning & Configuration
 - d) Network Automation
 - e) Service Management (Helpdesk) & SLA Management
 - f) Centralized IT Asset Inventory discovery & tracking
 - g) Server Monitoring
 - h) Network Fault & Performance Management
 - i) Penalty Monitoring and Management
18. All the assets of VMS System (including all IP devices of VSS System like Cameras, Storage, Servers, Switches, Routers, UPS etc.) are required to be monitored. EMS System to be deployed at one Data Center as a DC with the redundant infrastructure configured in other Data Center as a DR, in case of failover. There will be a continuous data replication & synchronization from DC to DR site on daily basis to prevent a loss of configuration changes in the event of losing the production instance.
19. The EMS solution deployed in DC will act as a manager of manager, where all the events from cameras, storages, servers, networks (switches, routers etc.) and UPS solutions would be aggregated. It provides the advanced level of correlation like the event de-duplication, filtering, enrichment etc. to find out the most casual event in the network. The dashboard can be personalized by individual users based on their roles for web based access, as per their role & responsibilities.
20. This network architecture must have loop avoiding feature like MSTP/RSTP to implement dual homing/redundancy successfully.

21. IP Video Surveillance System is traffic hungry and delay sensitive service. To ensure proper functioning of this project, network architecture must have features like Multicast VLAN Registration, IP SLA, Auto-QoS, Auto Ports configuration to detect end device type connected to port and configuring QoS automatically on basis of device. Network should have IPv4 and IPv6 port and time based access list with time ranges.
22. Interconnecting cables like CAT6/OFC/power cables wiring for the exchange / racks and intercoms as per site requirements to be done by the contractor. Necessary suitable clamps, elbows, screws and accessories involved in wiring work is in the scope of contractor.
23. Maintaining earth resistance less than 1 Ω for maintenance free earthings during complete project duration including AMC.
24. Developing Mobile App for viewing CCTV Videos and other applications in Android and uploading in play store. The sufficient hardware requirement for the seamless streaming of the video through app to be provided. Six Nos. of Wifi Access points with wifi controller shall be supplied by the contractor including necessary firewall licenses. Wifi Access points to be installed in Port administration building. The App shall be working with local wifi units installed in Port administrative building. Based on the bandwidth requirement calculation required for the app the internet connectivity shall be provided by VOCPA. The wifi controllers should be scalable as licenses are purchased and deployed and ready from day one to support 100 AP's without additional hardware / software. The controllers should support minimum 30 users/devices The controllers should be compliant to latest wireless standards of 802.11ax and should also support 802.11 a/b/g/n/ac versions The controllers should be SNMP enabled. The controllers shall be manageable by CLI using SSH protocol and HTTPS based GUI and should be SNMPv2/v3 enabled from day one. wifi Access Point radio should be minimum 2x2:2 (2.4GHz) 4x4:4 (5GHz). The AP should have Dual Radio 802.11ax access point with OFDMA and Multi-User MIMO (MU-MIMO) Access point should support 802.3af/at POE standard. Scope of work for mobile app development. Necessary android app using open source software for viewing the ship movement to be developed as directed by the Engineer in charge and handed over to Port.
 - a) Log in id with password to be created for users not less than 30 Nos.
 - b) In which hierarchy to be maintained for certain users not less than 12 as super administrator to rotate cameras, zoom etc and without any time restriction for viewing.
 - c) Other 20 users only viewing option for maximum 15minutes after time out re login.
 - d) There shall provision to block user/ create new log in the software after request

from Port.

- e) No log in to be provided by the contractor without the approval of Port.
 - f) The contractor shall carry out rectification of the software related errors w.e.f date of completion of work for a period of one year.
 - g) Any update/ back up of the software is in the scope of contractor.
 - h) The contractor shall handover all necessary source code of the developed mobile app with password, details of platform & language used for development, subscription details of domain name and its validity.
25. The pole-mounted outdoor LED video wall at Zone-B, Green Gate and Check Post-1. The contractor shall submit the structural design of the supporting structure and its foundation drawing and carry out the erection as directed by the EIG. Mounting structure and the frame shall be adequately designed for the harsh environment conditions and all weather tropical conditions. Structure with the pole(s) and the frame shall be able to withstand heavy wind load. All metal parts shall be made of non-corroding materials or adequately protected against corrosion by galvanization. The contractor shall provide the design detail of the module units, placement, control unit, LED media player, power protection devices and all the interconnecting equipment's in each video wall. Drawing/ outline of the video wall and the total power consumption details shall be submitted. The details of the PC, Content Management Software and its license validity details to be submitted before placement of order. Detailed survey for the taking of the power supply to the video wall to be carried out and the list of power protection devices with the distribution panel to be installed by the contractor. The contractor shall carry out the electrical works by authorized electrical license holder. LAN connectivity port is located at a distance of 100-300mtr in each location from the display board. A CAT6 armoured cable or suitable OFC cable with a termination kit, LAN switch, box, etc of suitable length shall also be supplied by the contractor for connecting display board to LAN. The Contractor shall Supply, Install and Configure all the necessary software's including System and Application software's required for the smooth functioning of the Video Walls. Programming software shall have content creation, content management and scheduling facilities or better facility. Screen saver feature shall be available in the system with the option to vary pre-set time. Timer shall be provided for setting of power-on and power-off schedule of display board with proper access. All approval of the display and its associated software, the contractor shall supply and install in the respective locations as directed by the EIG. The contractor shall develop necessary API to host the website of VOCPA or any http link to display in the video wall. The contractor after installation of video wall with all necessary accessories and after its internal inspection shall call the EIC/ his representative for acceptance of the work as per terms and conditions of the contract. The Contractor shall test and commission the LED Display Board and give training to VOCPA officials about the functioning of LED Display Board. The Contractor should directly provide the service support for this project during the commissioning of the Outdoor Video Walls and warranty period. Purpose of LED Video Wall: To display the Port news, events, measures, infrastructure details, upcoming developments, trade news, etc. Suitable API/interface to be developed to extract the

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- information such as vessels, cargo positions, etc., from the VOC Port website as per cyber security norms, if required.
26. The Speed Monitoring system shall be installed in two locations at VOCPA. The speed of the incoming and outgoing vehicles shall be recorded and displayed at intervals to inform the driver of the vehicle speed.
 27. Supply & Installation of Surface Mounted Under Vehicle Scanning System, to enable inspection of any vehicle's underside through a composite image of the vehicle place being a high lightning zone. Proper lightning arrest mechanism should be put in place, so as to avoid any damage due to lightning. After proper installation and commissioning, the contractor must provide adequate training to VOCPA as well as CISF personnel for proper operation of the system. The overall system wiring including civil works such as all digging as well as cabling work will have to be done by the contractor. However, VOCPA will be providing power points at nearest location as per the availability.
 28. As per site condition and in case the duct with cables to be laid crossing the road, on obtaining permission from Port the road may be cut and duct with cables to be inserted in GI pipe and laid. Necessary finishing with concrete to the road level to be made.
 29. As the work involves locations which are busy with public transport it is the duty of the contractor not to hinder movements of public transport. Adequate illuminated warning lights and Caution Danger Text Barricade Tape (White and Red) shall be placed in proper sites to ensure safety of pedestrians and the vehicular traffic. During the work in the link road a flagman with a red flag shall be posted to warn the public and the approaching trucks and to guide them in proper direction.
 30. Any other works which is required for the completion and commissioning and which is not described in the above scope of work shall be in the scope of Contractor.
 31. The work shall be executed as per the terms and conditions of the contract agreement.
 32. The selected bidder after issue of work order will start roll-out of the VSS project as per the scope of Work. After completing installation the bidder shall ensure VAPT test of VSS network from STQC (Ministry of Electronics & Information Technology) or any other Government Agency from the list of CERT-In empaneled Information Security Auditing Organization for arranging security verification certification. Any deficiency pointed out by the auditing agency shall be attended by the selected bidder without any additional cost to VOCPA.
 33. To demonstrate the functioning of all the modules of software and features of hardware component as and when required by VOCPA. Software licenses to be purchased in the name of VOC Port and details of its validity to be given. Warranty certificates of the equipment issued by the OEM to be submitted on completion of the work.
 34. The contractor after installation of surveillance system with all necessary accessories and after its internal inspection shall call the EIC/ his representative for acceptance of the work as per terms and conditions of the contract.
 35. All technical and operating manuals for surveillance system shall be submitted in hard copy

-six (6) sets and in soft copy (preferably through e-mail)

36. **Acceptance of work:** On completion of the activities in the above clauses i.e BOQ item 1 to 74 shall be accepted by Port and the payment shall be made for work completed.
37. **Warranty period:** One Year. From the date of acceptance of work, the warranty period commence, The manpower of BOQ Sl.No.75 shall be deputed for the maintenance of entire work carried out by the contractor. All service-related issues must be resolved within 24 hours. The Contractor shall be responsible for maintenance and repair of the system during the warranty period, free of charge (parts) including the repair of workmanship defects. Payment shall be made as per the manpower deployed.
38. **CAMC period:**
The period of Comprehensive AMC is for four years after warranty period of one year from the date of acceptance. The contractor during comprehensive AMC including warranty period shall do preventive and breakdown maintenance as per the SOP prepared by OEM/contractor and vetted by VOCPA. All the spares and consumables are under the scope of the contractor. Periodic painting of the structures to avoid corrosion. The Contractor shall carry out preventive maintenance during the comprehensive maintenance period of the system periodically.
39. **Scope for Comprehensive AMC as under:**
 - a) Comprehensive AMC means the entire surveillance, speed monitoring, UVSS, video wall and the accessories supplied by the contractor shall be maintained by the same at VOCPA premises with supply of all spares and consumables. The scope of AMC includes existing CCTV network and its equipments, etc.
 - b) All spares including battery for UPS and power backup facility for is in the scope of contractor.
 - c) Before commencing the AMC the contractor shall furnish the details spares, consumables, periodical, preventive, breakdown maintenance schedule charts.
 - d) All activities mentioned in the periodical/ preventive maintenance schedule to be adhered and carried out in the time frame in the presence of Engineer In charge.
 - e) Minor faults in CCTV, video wall, network switch, server, monitors, wireless etc., should be attended at its location and in the case of any critical faults, the accessories /instruments/ electronic/mechanical parts shall be taken into tenderer custody for repair works, only after replacing with the same type in the presence of officials of VOCPA.
 - f) The manpower engaged in the contract shall attend maintenance works like cleaning the glass of camera with necessary Cleaning Fluid and microfiber cloth, replacing of jack, cat 6 cable, POE adapters etc., and checking daily working the existing CCTV cameras in Port.
 - g) Any tools, machineries required during the maintenance period will be under contractor scope.

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- h) Cleaning all installations, and racks installed in the work using a vacuum cleaner monthly once.
 - i) Onsite Comprehensive Annual Maintenance Contract (AMC) of all the equipment's commissioned in the work The contractor has to ensure uninterrupted recording of CCTV surveillance system, working of surveillance, speed monitoring, UVSS, video wall.
 - j) In case of release of new version of operating system, application, firmware, bug fix patches etc. for the supplied equipment should be patched / upgraded for stability and security of the system by the contractor / OEM team. The contractor / OEM support team should advise and support this activity during the warranty period. The ordered application software / equipment / device shall be upgraded to new versions and new releases during the warranty period.
- 40. Handing over on completion.** After completion of the O & M period the entire work shall be handed over to Port in operational condition. During handing over any rectification works found by Port, to be carried out by the contractor. A detailed list of the equipment installed to be submitted. A handing over a training on operation to be arranged. Manual for the trouble shooting of the equipment's to be provided.

SECTION VII

SAFETY NORMS & EMS REQUIREMENTS

7.1 SAFETY CLAUSE:

- 7.1.1 The contractor should take all precautionary measures in order to ensure the protection of his own personnel moving about or working on the VOCPA premises and should conform to the rules and regulations of the VOCPA.
- 7.1.2 The Contractor should abide by all VOCPA regulations in force from time to time and ensure that the same are followed by his representatives, agents or sub- contractors, or workmen.
- 7.1.3 The contractor should ensure that unauthorized, careless, or inadvertent operation of installed equipment which may result in an accident to staff and/or damage to equipment, does not occur.

7.2 EMS REQUIREMENTS:

- 7.2.1 The contractor shall ensure that all his workmen wear PPEs commensurate with the severity of work.
- 7.2.2 The contractor shall ensure industrial safety methods in executing his work at VOCPA.
- 7.2.3 The contractor shall ensure that all wastes generated by his activities/work are moved to the respective dumpsites or taken for re-cycling at VOCPA.
- 7.2.4 The contractor has to give prior information on whether any hazardous chemical is used in his work and if so, the operational control to be exercised.
- 7.2.5 The contractor has to ensure that all his material handling equipment / transport Vehicles are emission tested.
- 7.2.6 The contractor has to ensure that his activities are in tune with the VOCPA EMS Policy (to be incorporated as part of the Contract)
- 7.2.7 The contractor's staff must be aware of the contents of MSDS in respect of chemicals / materials (if any).
- 7.2.8 The contractors' staff shall be competent to operate emergency appliances like fire extinguishers.

7.3 Hazardous Substances and Hazardous Site Conditions

- 7.3.1 Contractor shall not, nor shall it permit any other Person to bring any Hazardous Substances on the Site, other than Hazardous Substances to be used by Contractor or any Subcontractor in a manner that:
 - 7.3.1.1 does not violate any Applicable Laws, or Permits; and
 - 7.3.1.2 is consistent in quantity and with Good Solar Industry Practices for operating and maintaining solar energy conversion plants, such as motor fuels, solvents and lubricants (collectively, "Permissible Materials").
- 7.3.2 Contractor shall bear all responsibility and liability for:
 - a) any Hazardous Substances that are not Permissible Materials belonging to the Contractor or present on site; or
 - b) the handling of, or failure to handle, Permissible Materials in violation of Applicable Laws or otherwise in any manner that constitutes negligence or willful misconduct by Contractor or any

Subcontractor.

- c) Contractor shall use Hazardous Substances in performance of the Services in accordance with the Performance Standards, Applicable Laws and Good Solar Industry Practices and shall not:
- d) utilize, or permit or cause any Subcontractor to utilize, on the Site such Hazardous Substances as are prohibited under Applicable Law from being used in India; or
- e) import or use at the Site such Hazardous Substances as are prohibited under Applicable Law

NB: The section may be read in conjunction with related clauses of General Condition of Contract, Special Condition of Contract and Scope of Work.

SECTION VIII

ANNEXURES AND FORMS

ANNEXURE A

QUALIFICATION AND RESPONSIVENESS INFORMATION: LIST OF DOCUMENTS TO BE ENCLOSED

All bidders shall include the following information with their bids by scanning the relevant documents after being filled, signed with seal and serially numbered by the Bidder. The above shall be uploaded using their user-id and password in the E-tender portal on or before the last date of submission of tender mentioned in the NIT towards Cover A – Techno-commercial bid.

PART I (COVER A) – TECHNO-COMMERCIAL BID

Sl. No	Qualification Documents to be uploaded	Uploaded Page Ref No.
1	Form I – Bid cover letter (as per Section II, clause 2.16.2.(i))	
2	<p>Form II – Transaction details for remittance of Earnest Money Deposit (as per Section II, clause 2.16.2.(ii))</p> <p>Scanned copy of system generated proof towards successful payment of EMD in case of payment through online payment gateway mode in CPP e-tender web Portal OR scanned copy of proof towards successful payment of EMD in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks along with filled in Form-IIA OR valid Certificates by MSEs for claiming exemption along with filled in Form-IIB</p>	
3	<p>Form III – Financial capability (as per clause 2.16.2.(iii))</p> <p>Scanned copy of Profit & Loss statements for the last 3(three) years ending 31st March of the previous financial year duly certified by the Chartered Accountant in support of meeting Financial Capability</p>	
4	Form IV Similar Work Experience [as per Section II, clause 2.16.2.(iv)]	

	Scanned copies of work order(s) along with BOQ & respective satisfactory completion(s) / performance certificate(s) certificates in support of meeting Similar Work Experience	
5	<p>Form IV A – Details of TDS certificate (if applicable) (as per Section II, clause (as per Section II, clause 2.16.2.(iv))</p> <p>In case of experience other than Central / State Government / Autonomous bodies / PSEs / PSUs / Public Limited Companies, the bidder has to submit scanned copies of TDS certificate</p>	
6	Scanned copies of (i) EPF registration certificate; (ii) ESI; (iii) Permanent Account Number [PAN]; (iv) Income Tax Return of preceding three years; and (v) GST Registration Certificate (as per Section II, clause 2.16.2.(v))	
7	Form V – Declaration of Authorised Representative (as per Section II, clause 2.16.2.(vi))	
8	Form VI – Schedule of No Deviation (as per Section II, clause 2.16.2.(vii))	
9	Form VII Declaration by the Bidder (as per Section II, clause 2.16.2.(viii))	
10	Form VIII – Bank Mandate Form (as per Section II, clause 2.16.2.(ix))	
11	Form IX -Tender Acceptance letter (as per Section II, clause 2.16.2.(x))	
12	Duly filled in Form-X – “Local Content declaration & Self Certification” [wherever applicable if specifically asked for in bid document] (as per Section II, clause 2.16.2.(xii))	
13	Form- XI - Integrity pact (as per Section II, clause 2.16.2.(xi))	
14	Details of Technical Manpower to be deployed for execution of work [wherever applicable if specifically asked for in bid document] (as per Section II, clause 2.16.2.(xiii))	Not applicable
15	Scanned copy of valid license "ESB/" ESA"/"EA" grade issued by the Licensing Board [wherever applicable if specifically asked for in bid document] (as per Section II, clause 2.16.2.(xiv))	Not applicable

16	The bidder shall submit the Technical details and Bouchers of the proposed in this work along with technical bids along with necessary certifications as per the technical requirement.	
17	Undertaking to supply STQC certified CCTV cameras from OEM	
18	FORM-XII - Declaration of Power of Attorney	
19	FORM- XIV - “Evidence towards site visit”	
20	Total number of the pages uploaded by the bidder (mention the page no. starting from to end)	
	1. Starting page no.	
	2. Ending page no.	
	3. Total number of pages	

(Fill the page numbers where the documents have been uploaded in the table provided above)

(Signature of Authorized Person)

Place: Name

Date: Designation

Business Address:
.....

Seal

FORM I

(To be in the Firm's letter head)

Date:.....

BID COVER LETTER

1. Registered Business Name :
2. Registered Business Address :
3. Name, Designation & address of the Contact Person to whom all references shall be made regarding this tender :
4. Telephone / Mobile No. :
5. Fax :
6. E-Mail :

To

The Chief Mechanical Engineer,
Mechanical & Electrical Engineering Department,
V.O.Chidambaranar Port Authority,
Tuticorin – 628 004.

Sir,

1. We hereby apply to be qualified for the tender invited by the V.O.Chidambaranar Port Authority, Tuticorin as a bidder for the work “_____”
2. We hereby give our consent to the Port or its authorized Representative(s) to conduct any investigations to verify the statements, documents and information submitted and to clarify the financial and technical aspects of this application. For this, we hereby authorize (any Public Official, Engineer, Bank, Depository, Manufacturer, Distributor, etc.) or any other person or firm to furnish pertinent information deemed necessary and requested by the Port to verify statements and information provided in this application or regarding our competence and standing.
3. We the undersigned have read and examined in detail the Bid document in respect of work intended and do hereby express our interest to execute the intended work.
4. We certify that goods & services offered shall be of best quality and the manpower who shall be deployed for the work are competent enough and have necessary qualifications for taking up this assignment.
5. The names and positions of persons who may be contacted for further information, if required, are as follows
 - a) For Technical: Shri/Smt (Name, position, Address, contact number and email id)

-
- b) For Financial: Shri/Smt (Name, position, Address, contact number and email id)
- c) For Personnel: Shri/Smt (Name, position, Address, contact number and email id)
6. We declare that the statements made and the information provided in the application are complete, true and correct in every detail.
7. We understand that V.O.Chidambaranar Port Authority reserves the right to reject any application without assigning any reasons.

Thanking you,

Yours faithfully,

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM IIA

(To be in the Firm's letter head)

Date:.....

Transaction details for remittance of Earnest Money Deposit (EMD)

The bidder shall upload system generated proof towards successful payment of EMD along with following filled in form in the bid document as follows

Sl.No	Beneficiary reference No.	Date of Payment	Amount (in INR)	Uploaded page No. reference
1				

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM IIB

(To be in the Firm's letter head)

Date:.....

Exemption of EMD by the Micro and Small Enterprises (MSEs)

The bidder shall upload the requisite certificate of registration under **MSEs** along with following filled in form in the bid document as follows

Sl. No	Name of Enterprise	Udyam Registration Number	Enterprise type	Uploaded page No. reference
1				

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM III

(To be in the Firm's letter head)

Date:.....

FINANCIAL CAPABILITY

The details of Summary of Annual Turnover of the Bidder on the basis of the Audited Balance Sheet for the last three financial years shall be given as under

<i>Sl.No.</i>	<i>Financial year</i>	<i>Total Turnover</i>	<i>Uploaded page no. reference</i>
01	Year 20.... –	Rs.....	
02	Year 20.... –	Rs.....	
03	Year 20..... –	Rs.....	

Note: The Profit & Loss statement and Balance sheet to be uploaded shall be duly certified by the Chartered Accountant.

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM IV

(To be in the Firm's letter head)

Date:.....

SIMILAR WORK EXPERIENCE

The Bidders experience in similar work carried out each in any Central / State Government / Autonomous bodies / PSEs/PSUs / Nationalised Banks / Public Limited or Private Limited Companies, etc., for evaluating the Eligibility Criteria for pre-qualification to be provided using the format as below:

Details of Similar Work Experience

Sl. No	Name of work	Value of work executed (in Rs.)	Work order reference No.	Contract period		Date of completion certificate	Name and address of the Client	Uploaded page no. reference
				Commencement	completion			
1								
2								
3								

Note:

1. The copies of the documents containing above information like work order and completion certificate have to be uploaded duly self-attested.
2. In case of experience other than Central / State Government / Autonomous bodies / PSEs/PSUs/ Public Limited Companies, the bidder has to submit TDS certificate for the past experience to be uploaded, as provided in **Form IV (B)**, only then the experience will be considered.

Yours faithfully,

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM IV(A)

(To be in the Firm's letter head)

Date:.....

DETAILS OF TDS CERTIFICATE

In case of experience other than Central / State Government / Autonomous bodies / PSEs/PSUs/ Nationalized Banks / Public Limited Companies, the bidder has to provide the details of the TDS certificate in the form provided below and shall submit TDS certificate for the past experience to be uploaded, only then the experience will be considered.

Sl. No	Name of work	Value of work executed (in Rs.)	Work order reference No.	TDS Certificate		Name and address of the Client	Uploaded page no. reference
				No.	Amount		
1							

(Signature of Authorized Person)

Place:

Name

Date:

Designation

Business Address:

.....

Seal

FORM V

DECLARATION OF AUTHORISED REPRESENTATIVE

(To be provided in non-judicial stamp paper with denomination not to be lesser than Rs.100/-)

(Separate Forms to be submitted for each Signatory with details of Proprietor or Partner or Managing Director)

I/We, (Name) being the (Partners/Karta/Managing Directors and whole time Director/Members of Managing Committee of Associations/Board of Trustees etc.) of (Name of the Bidder), hereby solemnly affirm and declare that the (Authorised Signatory) is hereby authorized, vide resolution No. (Resolution Number) dated (Resolution Date) (copy submitted herewith), to act as an authorized signatory for the business (Name of the Bidder) for which submission of bid is being filed under the tender. All his actions in relation to this tender will be binding on me/us.

Signature of the person competent to sign

Name:

Description:

Name of the Business Entity:

Acceptance as an Authorized Signatory

I (Authorised Signatory) hereby solemnly accord my acceptance to act as authorized signatory for the above referred business and all my acts shall be binding on the business.

Signature of Authorised Signatory

Name:

Description:

Place:

Date:

Note:

1. For the purpose of this tender and the Agreement, the tender, forms, Agreement and other documents shall be signed only by the persons, who are themselves in a position to undertake the work and possessing all other resources required for the purpose. The tender shall contain the name, residence and place of business of the person or persons submitting the tender and shall be signed by the Bidder with his usual authorized representatives followed by the name and Description of

the person signing the document along with a copy of the partnership deed. A copy of the constitution of the firm with the names and addresses of all the partners shall be furnished.

2. Tender by a corporation shall be signed in the name of the corporation by a duly authorized representative, and a power of attorney in that behalf shall accompany the tender. In the case of company, a copy of the Memorandum and Articles of Association shall be furnished.
3. Tenders may be submitted by agents on behalf of their principals, but in such cases the Board reserves the right to enter into contract with the principals, Director, with the principals and agents jointly as deemed appropriate.

FORM VI

SCHEDULE OF NO DEVIATION

This is with reference to Tender No....., for
“.....”

I/We, (Name of the Bidder / Authorised Representative of the Bidder) of
M/s..... (Name of the organisation), hereby certify that there is no deviation from the
Tender conditions either technical or commercial or tender enquiry and I/We am/are agreeing to all the
terms and conditions mentioned and comprised in relation to the above-mentioned Tender.

Yours faithfully,

(Signature of Authorized Person)

Place:

Name

Date:

Description

Business Address:

.....

Seal

Witness with signature

1) Name & Address

2) Name & Address

.....

.....

.....

.....

.....

.....

FORM VII

DECLARATION BY THE BIDDER

(To be provided in 100 Rs Stamp Paper)

To, The Head of the Department.

I/We M/s. represented by its Proprietor / Managing Partner / Managing Director having its Registered Office at and do declare that I/We have carefully read all the conditions of tender with NIT No....., dated, Basis In(Name Of The Department) Department At V.O.Chidambaranar Port Authority for a period of -----,(including extension if any), if needed and accepts all conditions of the tender including amendments/corrigendum subsequently issued by the tender inviting authority, if any. Further I/we confirm our eligibility for this tender and quoted as per the tender condition and Governing laws of India, in case of typographical error found in submitted documents/affidavits/declarations, in this case we accept all the Terms and conditions of bid documents and hereby confirm as under.

1. I/We have not made any counter conditions stipulation and conditions and I/We agree that in the event of any such counter conditions my/our tender will be summarily rejected and such offer will not be evaluated and considered at all by you.
2. I/We do hereby declare that we have not been blacklisted/ debarred by any Central / State Government / Autonomous bodies / PSEs/PSUs / Nationalised Banks / Public Limited or Private Limited Companies, etc., from taking part in the tendering process.
3. I/We have not made any payment or illegal gratification to any person/authority connected with the tendering process so as to influence the tendering process and have not committed any offence under the Prevention of Corruption Act in connection with the tender.
4. I/We hereby declare that, all information furnished by me/us with this tender is true to best of my/our knowledge, belief and in case, if it is found that, the information furnished is not true or partially true or incorrect, I/We agree that my/our tender shall be summarily rejected without prejudice to the right of the board of Trustees of Port of V.O.Chidambaranar Port Authority to take further action in to the matter.

Witness's

Signature: _____

Name: _____

Address: _____

Tel. No: _____

Mobile no.: _____

Date: _____

Bidder's

Signature: _____

Name: _____

Address: _____

Tel. No: _____

Mobile No: _____

Date: _____

FORM VIII

BANK MANDATE FORM

1. Name of the company :
2. Status :
3. Bank Name, Address & Branch :
4. IFSC Code :
5. MICR Code :
6. Branch Code :
7. Name of the Authorised Person :
8. Signature of the authorised person
as per Bank :
9. E-Mail ID of Authorised Person :
10. Contact No. Landline/Mobile :

Copy of cancelled cheque may be enclosed if Bank signature not obtained.

Name & Seal of the Bank with
Date

FORM IX

TENDER ACCEPTANCE LETTER

(To be printed on company letterhead and filled, signed, and uploaded)

To

The Chief Mechanical Engineer
V.O. Chidambaranar Port Authority
Tuticorin-4

Sir,

Subject: "-----"

Tender reference No. -----

1. I/We have downloaded/obtained the tender document(s) for the above-mentioned tender/work from the website, namely <https://etenders.gov.in/eprocure/app>, as per your advertisement given in the above-mentioned website(s).
2. I/We hereby certify that I/We have read the entire terms and conditions of the tender documents from **Page No. to** (including all documents like annexure(s), schedules(s), etc., which form part of the contract agreement and I /we shall abide hereby and agree the terms /conditions /clauses contained therein.
3. The corrigendum(s) issued from time to time by V.O.Chidambaranar Port Authority for the above subject work has also been taken into consideration while submitting this acceptance letter.
4. I/We hereby unconditionally accept the tender conditions of above-mentioned tender document(s)/ corrigendum (s) in its totality /entirety.
5. I/We do hereby declare that our firms have not been blacklisted/ debarred by any Govt. Department/ Public sector undertaking.
6. I / We certify that all information furnished by me/ us is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then V.O.Chidambaranar Port Authority shall without giving any notice or reason therefore, summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full earnest money deposit absolutely

Yours faithfully,

(Signature of the bidder with official seal)

Note: If the firm has been blacklisted or debarred or banned or delisted by any Government or Quasi-Government Agencies or Public Sector Undertaking in India, then the same should be declared properly after modifying the sentence, suitably.

FORM X

Local content Declaration & Self Certification as per the Government of India Order towards Public Procurement (preference to Make in India) vide Letter No. P-45021/2/2017-PP(BE-II), (revised) Dated.16.9.2020)

(To be provided on Rs.100/- non-judicial stamp paper)

I _____ (Name of the Person(s), S/o _____ at _____ (Address), working as _____ (Designation and name of the firm/Company/ partnership/ Joint venture), and I have been authorized to sign the Declaration / Self- Certification on behalf of firm / Company/partnership/ Joint venture do hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the policy of Government towards Public Procurement (preference to Make in India) vide Letter No. P- 45021/2/2017-PP(BE-II), (revised) Dated.16.9.2020. That the information furnished hereinafter is correct to be of my knowledge and belief and I undertake to produce relevant records before the procuring entity or any

authority so nominated for the purpose of assessing the Local Content. That the local content for all inputs which constitute the said equipment has been verified by me and I am responsible for the correctness of the claims made therein. That in the event of the domestic value addition of the product mentioned herein is found to be incorrect and not meeting the prescribed value addition norms based on the assessment of an authority so nominated for the purpose of assessing the Local Content, action will be taken against me as per the notification P-45021/2/2017-PP(BE-II), (revised) Dated.16.9.2020.

I agree to maintain the following information in the company's record for a period of 8 years and shall make this available for verification to my statutory authority. The Details of the location(s) at which the local value addition is made

- i. Name and details of the Domestic manufacture
- ii. Date on which this certificate is issued
- iii. Product for which the certificate is produced
- iv. Percentage of local content. (% to be mentioned)

Signed by me at _____ on _____

Authorized signatory

(Name of the Firm entity)

Note: Required particulars are to be filled properly for acceptance.

FORM XI
INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on ____ day of the ____ (month and year) between, on one hand, the President of India, acting through Shri ____, [designation of the officer], V.O.Chidambaranar Port Authority, Government of India (hereinafter called the "PORT", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/S ____ represented by Shri ____, (hereinafter called the "BIDDER/Seller" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the PORT proposes to execute the work "_____" and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a natural person, private entity, or any combination of them, constituted in accordance with the relevant law in the matter and the PORT is a Ministry of the Government of India performing its functions on behalf of the President of India.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence / prejudiced dealings prior to, during and subsequent to the currency of the contract entered into with a view to:

Enabling the PORT to obtain the desired said work at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the PORT will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the PORT

- 1.1 The PORT undertakes that no official of the PORT, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organisation or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.
- 1.2 The PORT will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
- 1.3 All the officials of the PORT will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the PORT with full and verifiable facts and the same is prima facie found to be correct by the PORT, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the PORT and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the PORT the proceedings under the contract would not be stalled.

Commitments of BIDDERS

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:
 - 3.1 The Bidder will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Port, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation,

contracting and implementation of the Contract.

- 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the PORT or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.
- 3.3 BIDDERS shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
- 3.4 BIDDERS shall disclose the payments to be made by them to agents/ brokers or any other intermediary, in connection with this bid/contract.
- 3.5 The BIDDER further confirms and declares to the PORT that the BIDDER is the original manufacturer / integrator / authorized government sponsored export entity of the stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the PORT or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the PORT or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8. The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9 The BIDDER shall not use improperly, for purposes of competition or personal gain, or

pass on to others, any information provided by the PORT as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.

- 3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the BIDDER or any employee of the BIDDER or any person acting on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the PORT, or alternatively, if any relative of an officer of the PORT has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filing of tender.

The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act, 1956.

- 3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the PORT.
- 3.14 A Person signing Integrity pact (IP) shall not approach the Courts while representing the matters to IEMs and he/she will await their decision in the matter.
- 3.15 In case of Joint Venture, all the partners of the joint venture should sign the Integrity pact. In case of sub-contracting, the principal contractor shall take responsibility of the adoption of IP by the sub-contractor and shall take responsibility of the adoption of the IP by the sub-contractor. It is to be ensured that all sub-contractors also sign the IP. In case of sub-contractors, the IP will be a tri-partite arrangement to be signed by the Organization, the contractor, and the sub-contractor.

4. Previous Transgression

- 4.1. The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.
- 4.2. The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be

disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Bid Security

- 5.1. While submitting commercial bid, the tenderer shall furnish a Bid Security of Rs. _____ (Rupees _____ only) in accordance with the provisions of this RFP. The Bidder has the option to provide the Bid Security either as a Demand Draft or in the form of a Bank Guarantee acceptable to the Authority, as per format at Appendix-II.
- 5.2. The Bid Security / Performance Security shall be valid upto a period of five years or the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the PORT, including warranty period, whichever is later.
- 5.3. In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the PORT to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 5.4. No interest shall be payable by the PORT to the BIDDER on Bid Security / Performance Security for the period of its currency.

6. Sanctions for Violations

- 6.1. Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the PORT to take all or any one of the following actions, wherever required:
 - (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
 - (ii) The Bid Security (in pre-contract stage) and / or Security Deposit/Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the PORT and the PORT shall not be required to assign any reason therefore.
 - (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
 - (iv) To recover all sums already paid by the PORT, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank

of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the PORT in connection with any other contract for any other stores, such outstanding payment could also be utilised to recover the aforesaid sum and interest.

(v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the PORT, along with interest.

(vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the PORT resulting from such cancellation/rescission and the PORT shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.

(vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the PORT.

(viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.

(ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the PORT with the BIDDER, the same shall not be opened.

(x) Forfeiture of Performance Bond in case of a decision by the PORT to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.2. The PORT will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal Code, 1860, or Prevention of Corruption Act, 1988, or any other statute enacted for prevention of corruption.

6.3. The decision of the PORT to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent Monitor(s) appointed for the purposes of this Pact.

7. **Fall Clause**

7.1. The BIDDER undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any

other Ministry / Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub system was supplied by the BIDDER to any other Ministry/Department of the Government of India or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the PORT, if the contract has already been concluded.

8. Independent Monitors

8.1. The PORT has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission. The Independent External Monitors appointed by Port are as follows:

1. Shri Trivikram Nath Tiwari, ILS Rtd,
301-B, Block - 3B, HIG DDA Flats,
Rani Jhansi Road, DDA complex,
Moti Khan,
New Delhi-110055
Phone No.9871788277
e-mail i.d -trivikramnt@yahoo.co.in

2. Shri. Hernanpriti Singh,
12, Belevadre Road,
Alipore, Kolkata-700027
hermanpriti@gmail.com

8.2. The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

8.3. The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

8.4. Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.

8.5. As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the PORT.

8.6. The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the PORT including that provided by the BIDDER. The BIDDER

will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.

- 8.7. The PORT will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.
- 8.8. The Monitor will submit a written report to the designated Authority of the Port / Secretary, in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the PORT / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

9. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the PORT or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

10. Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the PORT

11. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

12. Validity

- 12.1. The validity of this Integrity Pact shall be from the date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the PORT and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.
- 12.2. Should one or several provisions of this Pact turn out to be invalid, the remainder of

this pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

13. The parties hereby sign this Integrity Pact at _____ on ____

PORT

BIDDER

Name of the Officer.

CHIEF EXECUTIVE OFFICER

Designation

V.O.Chidambaranar Port Authority

Tuticorin

Witness

Witness

1. _____

1. _____

FORM XII

DECLARATION OF POWER OF ATTORNEY

(To be executed before Notary Public on a Non-Judicial Stamp Paper of at least Rs 100)

Dated: _____

POWER OF ATTORNEY

To whomsoever it may concern

Mr. _____ [Name of the Person(s)], residing at _____ [Address of the person(s)], acting as _____ (Designation of the person and name of the firm), and whose signature is attested below, is hereby authorized on behalf of _____ [Name of the Bidder (in case of a consortium, name of the lead member)] to sign the tender [(Tender No.and (Tender subject- “.....”)] and submit the same and is hereby further authorized to provide relevant information/ document and respond to the enquiry's etc. as may be required by V.O Chidambaranar Port Authority (VOCPA) in respect of the tender.

And I/ we hereby agree that all acts, deeds and things lawfully done by our said attorney shall be construed as acts, deeds and things done by us and I/ we undertake to ratify and confirm all and whatsoever that my / our said attorney shall lawfully do or cause to be done for me / us by virtue of the power hereby given.

(Attested signature of Mr. _____)

For _____ (Name of the Bidder / Consortium Members with Seal)

Note –

(In case of Consortium, representative of all members must sign)

FORM XIII

DECLARATION of POWER OF ATTORNEY FOR LEAD MEMBER OF CONSORTIUM

(To be executed before Notary Public on a Non-Judicial Stamp Paper of at least Rs 100)

POWER OF ATTORNEY

Whereas V.O Chidambaranar Port Authority, Thoothukudi (“the Authority”) has invited tenders from interested parties for “.....” (Tender No.....).

Whereas,, And (collectively the “Consortium”) being members of the Consortium are interested in bidding for the Tender in accordance with the terms and conditions of the Tender Document and other connected documents in respect of the said tender, and

Whereas it is necessary under the Tender Document for the members of the Consortium to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium’s bid for the Tender and its execution.

NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS

We, M/s. having our registered office at,
M/s.....

having our registered office at, M/s. having our registered office at

....., and M/s. having our registered office at, [the respective

names and addresses of the registered office] (hereinafter collectively referred to as the “Principals”) do hereby designate, nominate, constitute, appoint and authorize M/s. having its registered office at....., being one of the members of the Consortium, as the Lead Member and true and lawful

attorney of the Consortium (hereinafter referred to as the “Attorney”). We hereby irrevocably authorize the Attorney to conduct all business for and on behalf of the Consortium and any one of us during the bidding process and, in the event the Consortium is awarded the Contract, during the execution of the contract, and in this regard, to do on our behalf and on behalf of the Consortium, all or any of such acts, deeds or things as are necessary or required or incidental to the pre-qualification of the Consortium and submission of its bid(s) for the tender, including but not limited to signing and submission of all applications, bids and other documents and writings, participate in Pre Bid and other conferences/meetings, respond to queries, submit information/ documents, sign and execute contracts and undertakings consequent to acceptance of bid(s) of the Consortium and generally to represent the Consortium in all its dealings with the Authority, and/or any other Government Agency or any person, in all matters in connection with or relating to or arising out of the Consortium’s bid(s) for the tender and/or upon award thereof till the Agreement is entered into with the Authority.

AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise

of the powers hereby conferred shall and shall always be deemed to have been done by us / Consortium.

IN WITNESS HEREOF WE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY
OF20**

For(Name & Title)

For(Name & Title)

For(Name & Title)

Witnesses:

1.

2.

.....

(To be executed by all the members of the Consortium)

FORM XIV

Evidence towards site visit

I, Shri _____ authorized representative of M/s..... (authorization letter issued by the firm with my specimen signature and passport size photo and Aadhaar card are enclosed) have visited the site on with VOCPA representative Shri_____, (Designation)_____ for the work of “Supply, installation, testing and commissioning of CCTV cameras, Under vehicle scanner, outdoor LED video wall display & allied systems including CAMC for a period of four years after one year guarantee period ” at VOC Port’ and inspected the site and other issues related to tender to my satisfaction.

Seal, Name and Signature of the bidder	Name, designation and signature of..... representative who assisted bidder during site visit	Seal, name and signature of Engineer In Charge / MEE Department

ANNEXURE B

CONTRACT AGREEMENT FORM

This AGREEMENT is made on this day ofMonth of..... Two Thousand
(..... 20....) between

The Board of V.O. Chidambaranar Port Authority, a body corporate under Major Port Authority Act, 2021, having its office at administrative building, V.O. Chidambaranar Port, Tuticorin – 628 004 (herein after referred to as the 'Board' which expression shall unless excluded by or repugnant to the subject or context be deemed to include the successor in office) of the one part.

And

M/s....., (a partnership firm / proprietorship firm / company registered under the laws of India) having its place of business at
(Hereinafter referred to as 'Contractor' which expression shall, unless excluded by, or repugnant to the context be deemed to include his heirs, executors, administrators, representatives and assigns or his successors in office) of the other part

WHEREAS the Board of V.O.Chidambaranar Port Authority, Tuticorin is desirous of the executing the “_____”

WHEREAS the Contractor has offered to execute, complete and maintain such works till handing over the Board and whereas the Board has accepted the tender of the Contractor for an amount of Rs._____ (Rupees _____) only and

WHEREAS the Contractor has furnished a sum of Rs._____/ - (Rupees _____ only) as Earnest Money Deposit (EMD) at the time of tendering, which will be adjusted against Security deposit as stipulated in **Clause No.2.13.5** of the **Section II** of the bid document and the Security deposit will be collected by deductions from the monthly running bills, at the rates mentioned therein for the due fulfilment of all the conditions of the Contract.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this agreement words and the expressions shall have the same meanings as are respectively assigned to them in the conditions of the contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement viz.
 - (a) Notice inviting tender
 - (b) The original Tender Document
 - (c) Bid document uploaded by the Bidder
 - (d) Letter of Acceptance

(e) Any correspondences and documents exchanged between the Contractor & Board in connection with tender/Contract.

3. The Contractor hereby covenants with the Board to execute, complete and maintain the work till handing over the Board in all respects in in conformity and in all respects with the provisions of this Agreement.
4. The Board hereby covenants to pay the Contractor in consideration of such execution, completion, and maintenance of the work for the “Contract Price” at the time and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties here into have set their hands and seals the day and year first written.

The common seal of the Board of V.O. Chidambaranar Port Authority was here into affixed and
The thereof, has set his
Hand in the presence of

V.O. Chidambaranar Port Authority

Signed and sealed by

The Contractor in the presence of

Witness with signature

1) Name & Address

2) Name & Address

.....

.....

.....

.....

.....

.....

ANNEXURE C

FORM OF BANK GUARANTEE

(For Performance Security)

In consideration of the Chairman representing the Board of V.O.Chidambaranar Port (hereinafter called "The Port") having agreed to exempt (hereinafter called "said contractors") from the demand, under the terms and conditions of the contract awarded in No dated made between and for (hereinafter called "said Agreement") of Performance security for the due fulfillment by the said contractor(s) of the terms and conditions contained in the said Agreement, on the production of Bank Guarantee for Rs. _____ (Rupees.....only).

We* (hereinafter referred to as the Bank) at the request of the contractor(s) do hereby undertake to pay to the Port an amount not exceeding Rs. _____ against any loss or damage caused to or suffered or would be caused to or suffered by the Port by reason of any breach by the said contractor (s) of any of the terms and conditions contained in the said Agreement.

We* do hereby undertake to pay the amounts due payable under this Guarantee without any demur, merely on demand from the Port stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Port by reason of any breach by the said contractor(s) of any of the terms and conditions contained in the said Agreement or by reason of the contractor(s) failure by performing the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs.

We undertake to pay to the Port any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceedings before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under, and the Contractor(s) shall have no claim against us for making such payment.

We* further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Port under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the Engineering Department, V.O.Chidambaranar Port Authority certified that the terms and condition of the said Agreement had been fully and properly carried out by the said contractor's and accordingly discharges this Guarantee. Unless a demand or claim under this Guarantee is made on us in writing within three months from the date of expiry of the validity of the Guarantee period, we shall be discharged from all liability under this Guarantee thereafter provided further that the Bank shall at the request of the Port but at the cost of Contractor(s) renew or extend this Guarantee for such further period or periods as the Port may require.

We * further agree the Port, that the Port shall have the fullest liberty without consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement to extend the time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Port against the said Contractor(s) or for any

Forbearance, act or omission on the part of the Port or any indulgence by the Port to the said Contractor(s) or by any such matter or thing whatsoever which under the Law relating to sureties would but for this provision, have

the effect of so relieving us.

This Guarantee will not be discharged due to the charge in the constitution of the Bank or the Contractor(s)

We* lastly undertaken Otto revoke this Guarantee during its currency except with the previous consent of the Port in writing. (Validity/Period should be noted)

This guarantee is valid upto (period) Dated the.....day of 20__for.....**

Indicate here the name of the Bank Indicate here the period or date.

Annexure D -Outdoor Video Wall BOQ Sl.No.20,22 & 24

A. P4 outdoor LED Video Wall

- a. Display size (Height x Width) :11.5 X 18 ft (16:9 ratio)
- b. LED Screen Area :~208 Sq ft
- c. Ingress Protection : IP65
- d. Pixel pitch : P4
- e. P4 module size :320 mm x 160 mm or better
- f. Frame rate :≥60Hz.
- g. Refresh rate :≥3840 Hz.
- h. Brightness : ≥5000 nits or better, Bidder/OEM/OEM subsidiary in India TPA/lab shall have a minimum a luminance meter (which can provide direct brightness reading in cd/m²) testing instrument for brightness measurement of offered LED screen. (Please note- Illuminance meters are not acceptable as they are not for measuring emitted light). The testing of brightness level is under the scope of bidders.
- i. Contrast Ratio : 5000:1
- j. Connectivity : Gigabit LAN Port, Wi-Fi, 5G Data Card, ADSL, HDMI, Cloud database, VGA Port support dual disc play, Mobile app, RSS feeds, etc.,
- k. Earthing :As per recommendation of the manufacturer.
- l. Power protection ELCB/RCCB : As per recommendation of the manufacturer.
- m. Certification : CE-EMC, CE-LVD, FCC, BIS
- n. LED display modules/ cabinets shall be of lightweight, high-strength aluminum construction with a heat-resistant design that withstands harsh weather conditions and extreme temperatures.
- o. The modules/ cabinets shall be fixed on powder coated MS chassis/ frames to avoid corrosion.
- p. The LED display shall be capable of displaying messages composed of any combination of alphanumeric text, punctuation symbols, graphic images, videos, etc.
- q. LED Screen should play any kind of aspect ratio preferably 16:9 but image should not be cropped leaving a blank line at top. The display shall be configurable for split screens and fit to screen and other basic features.
- r. The Display Boards provided should work on all weather conditions. The Display

Annexure D -Outdoor Video Wall BOQ SI.No.20,22 & 24

Boards should have Audio and access to storage like pen drive/pocket HDD or other device compatible.

- s. The complete display on the structure shall be covered with ACP panels for best protection against all environmental conditions and hazards. It shall have an aesthetic appearance.

Preferred make: LG, Sony, Daktronics, Samsung, Delta or equivalent make having manufacturing facility in India or registered in India.

B. Pole for the LED Video Wall

- a. Monopole : 4mtr height from ground level at Check Post-1 and Green gate
- b. Double pole : 4mtr height from ground level at Zone B area
- c. Material : MS
- d. Structure to be painted with Epoxy Paint
- e. Foundation with minimum grade of concrete M25, reinforcing steel of min Fe500

C. PC with Content Management Software

- a. Processor : Intel I9. Preloaded Windows 11 professional, 16 GB RAM with 1 TB, Antivirus preinstalled
- b. Monitor : 24 inch
- c. Key board and mouse : Yes
- d. UPS : Yes, 500VA/600VA offline UPS for PC,
I. backup 15 minutes
- e. Connectivity : LAN and Wifi
- f. The LED Screens should be able to manage content individually with centralized control and remote management with auto play list, content log, monitor network, display view, transition time, transcoding, security, agnostic to players and display device, network agnostic, content inventory, multipurpose player, interactive mode, video wall mode, audio output, intrusion prevention control.

ANNEXURE E - Video wall, controller, software with stand frames etc at Network operation center

BOQ SI.No.26.Video wall, controller, and software with stand frames

SI. No	Description	
1	Supply Installation and Commissioning of Active LED Wall with SMD 3in1 1.56 mm or less Pixel Pitch as per following technical specifications complete in all respect, Size: Width 4.8m x 1.69 m or more, Aluminum Cabinet with Max depth of 72mm, Calibrated brightness of 600 nits or more, Viewing angle of 160 H X 150 V, Contrast ratio of 5000 :1 or more, Collor depth of 14 bit or more with HDR 10 / HDR 10 Pro, with IP50 dust protection. Same OEM LED UHD LED controller to be supplied.	
	Approved Make LED	
		Screen Size
		Width 15.74 feet / 4.8m or more Height 5.5feet / 1.69 m or more
	Physical Parameters	Total Resolution of Screen
		3072 X 1080 or more
		Cabinet Size
		600mm x 337.5mm
		Pitch
		1.56 mm or less
		Pixel Configuration
		3 in 1 SMD
		Weight per Cabinet
		7 Kg or less
	Optical Specifications	Physical Pixel Density (pixels/m ²)
		409600 or more
		Flatness of Unit Case (mm)
		±0.5 or less
		Cabinet Depth
		72mm or less
		Unit Case material
		Die casting Aluminium or Die Casting Magnesium
		Service access
		Front
		Minimum Brightness (After Calibration)
		600 cd/m2 or more
		Color Temperature
		3200 - 9300 or better
		Visual Viewing Angle (Horizontal)
		160 or more
		Visual Viewing Angle (Vertical)
		150 or more
		Brightness Uniformity
		97% or more
		Color Uniformity
		±0.003CxCy
		Contrast Ratio
		5000 or more
	Operation Specifications	Processing Depth (bit)
		14 or more
		Power Consumption (W/m ² , Max.)
		600 or less
		Power Supply (V)
		100 to 240
		Frame Rate (Hz)
		50 or more
		Refresh Rate (Hz)
		3840 or more
		Lifetime
		100000 hr or more
		Operating Temperature
		0° to +40°
		Operating Humidity
		10~80%RH
		IP rating Front
		IP50

ANNEXURE E - Video wall, controller, software with stand frames etc at Network operation center

		IP rating Rear	IP50
2	LED Controller of same Make as LED Screen with Original OEM Software for Configuration		HDMI HDCP 2.2 ,DP & OPS Slot with inbuilt Windows OS based PC & same OEM Control Screen software to full screen/ split the screen upto 8 parts including PIP mode.
		Inputs	
		Controller of Same Make as LED Screen	Yes
		Resolution Supported	3840x2160 @ 60HZ or better
		Output Pixel	8.2 Million or more
		Control Ports	RS232C Loop and LAN
		LAN Output	Minimum 16 or more
		Temperature Sensor	Yes
		Chrome Adjustment	Yes
		Quality & Security Standards/ Test Reports of Quoted Controller Model	IEC 62368-1:2018 UL 60950-1:2007
		Original LED Configuration Software of LED Screen OEM	Yes
		Brightness Adjustment	Yes
		Scaling	Yes
		HDR 10 + / HDR 10 Pro	Yes
		Operating System	Yes
		Remote Control	Yes remote for East Usage
		Signal/ Power Redundancy Support	Yes
3	Digital Signage Software of Same Brand as LED Controller and LED Cabinet, Compliance to Security Standards to be Confirmed	Secure Platform with Maximum Protection to Prevent Hacking or Unauthorized Access	Yes
		Operating System Platform Security	Sandboxing -Jailer MD5/AES decryption API Application encryption
		Network Security & Security testing and Certification	Https (TLS v1.2 and above) Proxy and exception domain Port Control
			Internal security testing TTA certification UL2900 certification for Security Manager (ANSI, FDA standard)

ANNEXURE E - Video wall, controller, software with stand frames etc at Network operation center

	on OEM Letterhead		Able to check file integrity so that downloaded file is not crashed, corrupted or manipulated
			Able to use encrypted contents for security
			Supports Application Encryption To prevent hooking application and source code
		Designing Content & Scheduling Content Screen Wise over Network	
		Capability to Divide Screen into Multiple Zones and Play Different Images., Video, URL, HDMI input etc. in Zones	
4	Media player of same Make as LED Screen	Media Player to Divide Screen into Multiple Parts. Multi-Screen with PBP (Picture-By-Picture)/PIP (Picture-In-Picture). Multi-screen in a single display with upto 4 input sources. Supports playing both main screen and sub screen at the same time with various layouts, Automatic URL/website play on startup	
		Inbuilt Operating System, Internal Memory 16GB, Wi-Fi Built-in, Local Key Operation, Temperature Sensor Inbuilt, Inbuilt Wireless Screen Sharing from Android & Windows OS, Customizable No Signal Image, Backup Feature to Move from One input to other incase of Failure	
		Inputs HDMI x 2, DP , USB x 2 or more, Output: HDMI(4K), DP(4K), Control Ports: RS232C in/out, RJ45 in, IR In	
		IR Remote Controller for easy Operations.	
OEM Eligibility		OEM Brand should have active business in India from last 10 years (Incorporation Certificate Required)	
		OEM Brand should have valid PF & GST registration certificate in India.	
		OEM Brand should have valid certificates ISO9001, ISO14001, ISO45001 for India	
		OEM Brand should have Local GSTN registration.	
		OEM Brand should have Local Branch office, Service Branch & warehouse to maintain spares/Stand by units to provide fast and smooth service from 5 years in the State.	
		OEM Brand should have minimum turnover of 500 Cr in last 3 financial years in India (BL/CA Certify letter required) 2019/2020/2021 (Per year)	

ANNEXURE E - Video wall, controller, software with stand frames etc at Network operation center

		OEM Brand should have experience of supply Minimum 10 LED Screens in any Government department in last Two financial years Direct or through Partner , (Po/Supply order/Agreement/ Similar Document is required)
		LED OEM should have direct registered office and Direct Service Centre in state from Last 10 years with toll free Number for Call logging & with LED chip repair Centre.
Controller/Processor Specs		
Sr. No	Attributes	Specifications
1	Architecture	Server Based architecture 4U
2	Operating System	Windows 10 Pro or higher -64 bit
3	RAM	32 GB
4	SSD	950 GB or higher x2 Hot Swapable
5	RAID	RAID 1
6	Chip	Xeon Processor
7	Power Supply	Maximum Power Consumption 550W ; Dual Redundant Power Supply
8	Output	12 FHD Out
9	Inputs	4 HDMI Inputs (FHD) + 4 URL Sources
10	PCle	Should have at least 5 PCle x16 physical slots or higher
11	Chassis	19" rack mount industrial chassis with front Lock
12	Unix/Linux Emulation	Should be possible to display images from Unix/Linux workstation
13	Wall Management Software	Software to be provided to manage the layout on the display
WALL MANAGEMENT SOFTWARE		
14	Scaling and display	Software enable user to display, multiple sources up to any size and anywhere on the display wall. (Pixel to Pixel)
15	RS232, TCP/IP	RS232 & TCP/IP support should be available for other interfaces
16	Remote Control	Controller can be controlled by Remote PC through LAN with MAC OS / OSX and WINDOWS

ANNEXURE E - Video wall, controller, software with stand frames etc at Network operation center

17	Auto Source Detection	Software should support for auto source detection
18	Layout Management	Should support for Video, RGB, DVI, ,Internet Explorer, Google Chrome, Desktop Application and Remote Desktop Monitoring Layouts
19	Scenarios	Software should be able to Save and Load desktop layouts from Local or remote machines
20	Layout Scheduler	All the Layouts can be scheduled as per user convenience
21		Software should support auto launch of Layouts according to specified time event by user
22	Launch Application	Software should be able to Support
23	User friendly	Software should be user friendly
24	WEB UI	Software should support Web Based UI; can be opened for layout control & Create New Layout on windows,android,MAC OS
25	Zoning	Logical Division of Wall with ability to create layouts for specified logical zone without interface with another zone
26	Multiple Video Wall	Software should be capable to control multiple video wall from same software
27	Licensing	Software based licensing with lifetime license on same hardware
28	Upgradability	Complete System should be capable to add Inputs/Outputs in future
29	Source Type Supported	Hardware Inputs, Google Chrome,IE,Screen Scrapping,HTML5,RSSFEED,TICKER,RTP,RTSP,H.264/Video/Images
30	Certification / Compliance	BIS , ROHS , CE

BOQ Sl.no.71**‘UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS)’**

Sl. No.	
A	SPECIFICATIONS OF UVSS
1	The UVSS unit should be surface mounted to avoid any kind of water logging or maintenance issue. The UVSS should be able to capture a very high resolution and complete composite under body image of any vehicle passing over it is using Dual high-resolution Area-Scan GigE IP camera without requiring the vehicle to stop.
2	The UVSS should be able to handle vehicle moving at different speeds ranging from 0-20km/hr while the composite image captured by the system should be automatically and dynamically adjusted according to the speed of the vehicle using multiple loop-based sensors/ IR sensors.
3	The composite imaging camera should be a high quality, Color Area Scan, Gig E type, with minimum resolution of 1920 x 1200 or above. The minimum specification of this Area-Scan camera shall be: <ul style="list-style-type: none"> a) Camera type: Gigabit Ethernet Progressive Area-Scan Color Camera b) Sensor: 1/3” CCD/CMOS c) Horizontal/ Vertical resolution 1920 x 1200 Pixels or better. d) Frame rate; minimum 30 FPS at full resolution. e) Camera Certification CE, FCC, with 30 FPS. f) IP 68 rated Suitable Camera Casing (Tested and Certified by CPRI - Central Power Research Institute, Bangalore).
4	The UVSS should be capable of producing a clear and undistorted image of the vehicle’s underside, even when a vehicle has completely stopped over the UVSS unit, i.e. it must be able to create a seamless and perfect composite image of the underside irrespective of the vehicle stopping or moving in a non-uniform manner over the scanner.
5	The UVSS must have a feature to magnify the composite images (current and past), in order to facilitate a closer view of any part of the composite image.
6	The underside illumination must be adequate and obtained through any state-of-the-art, long-life LED lighting, modules. It should not use Halogen or CFL-Type lighting elements for illumination of the underside.
7	The UVSS should be able to dynamically and automatically adjust the brightness and contrast of the composite image, so as to ensure good quality images, irrespective of the different external lighting conditions.
8	The UVSS should also provide a feature to capture the image of the driver, captured through a suitable driver view camera.
9	The UVSS should give a real-time output of all the data simultaneously, i.e. the composite image, driver photos, vehicle front image and license Plate display & all should be displayed on the monitor almost instantaneously.
10	The UVSS must have a built-in on board diagnostics and status software capability to see the real time health of equipment like Driver Camera, LPR Camera, UVSS Camera, Controller, LOOPS, etc to facilitate any distant software support to be offered offline. This feature will be checked physically during technical evaluation of UVSS demo for the technical evaluation.
10 a	The UVSS must have an Integrated Video Management software for the storage and playback of each and every valid transaction in video mode also including underbelly image, ALPR and driver image in all separate folder of each camera for future reference and security trail / audit. This feature will be checked physically during technical evaluation of UVSS demo for the technical evaluation.
11	The UVSS applications and operating software should be based on Windows platform, it must have a user-friendly GUI with provision for multiple users logging of events and search facility.

BOQ Sl.no.71**‘UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS)’**

12	The UVSS system must have a facility for backup of all transactions to any usual backup/ storage media and also should be able to print out reports.
13	The UVSS camera should be enclosed in a suitable all-weather-proof housing of IP 68 rated suitable for main UVSS Camera, UVSS Camera enclosure should be properly tested and certified by Government agency CPRI - Central Power Research Institute, Bangalore).
14	The Operating System should be user friendly Windows based.
15	The overall Installed surface mounted UVSS unit should be properly designed, and its structure should be able to withstand a total vehicle load of up to 20 tons at any given point over the structure, more particularly at the center of the unit, so as not to suffer any accident physical damage to the unit and components. A suitable cleaning system should be provided for the cleaning of dust and sand. The installed unit should have automatic trigger and timer based air blowing system for the cleaning of UVSS on a regular interval.
15 a	Humidity – up to 95%non-condensing
16	The front end of the software should be designed on Microsoft .NET technology.
17	The back end database should be on latest version of SQL server.
18	The UVSS should have open protocol as an option for integration with other security systems and also networking for any remote monitoring requirements.
19	The end of the day report should export the driver and the number plate image directly to a Microsoft Excel sheet, PDF and other protected format (to protect reports from tampering) for future use or reference.
20	The UVSS should also provide a feature to capture the image of the driver for all RHS driven vehicles, captures through a suitable driver view camera.
21	The UVSS must have a feature to magnify the composite images (current and past), so as to facilitate a closer and zoom-up view of it.
22	Minimum Specifications of Driver Image Camera:
	a) Sensor type shall be CCD/ CMOS.
	b) Pixel rate: Minimum 2MP or better.
	c) Video format shall be NTSC/ PAL.
	d) Resolution shall be 520 TV lines or better.
	e) Power supply: 12V DC.
	f) Camera and light enclosure shall be minimum IP 66 rated.
	g) Effective Range: 3 mts
23	The Processing Unit should have:
	a) 16 GB RAM or better
	b) 1 TB HDD or better
	c) Latest Intel Core i7 processor or better
	d) Minimum 22” Display Monitor, Keyboard, Mouse.
	e) Software for full functioning of the system.
24	Sensor unit shall have inductive loop sensor.
25	Suitable Lighting Unit should be LED 220V AC.
26	Operating temperature: for normal location (-) 0°C to (+)55°C
27	IP 66 or better.
B	SPECIFICATIONS FOR AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS):

BOQ Sl.no.71**‘UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS)’**

1	The system should automatically detect a four-wheeler approaching the installed location by means of inductive loops.		
2	On detection of vehicle approach, the system would activate the license plate video capture cameras.		
3	The system shall automatically detect the license plate in the captured video feed in real-time.		
4	The system shall perform OCR (Optical Character Recognition) of the license plate characters (English alpha-numeric characters in standard fonts).		
5	The system shall store JPEG image of vehicle and license plate and enter the license plate number into SQL Server or any other user specified database along with date timestamp and site location details.		
6	System should be able to detect and recognize the English alpha numeric License plate in all standard fonts and formats of all four wheelers including Cars, HCV, LCV.		
7	The system processing should be real time i.e. instant recognition of license number plates.		
8	The system should be able to process and read number plates of vehicles with speed even up to 40 km/hr.		
9	The system should be able to store video clip of the vehicle approaching the UVSS unit.		
10	The system should have option to input certain license plates according to category like “Wanted”, “Suspicious”, “Stolen”, “Expired” etc. by authorized personnel. On successful recognition of the number plate, system should be able to generate automatic alarm to alert the control room for vehicles which have been marked as “Wanted”, “Suspicious”, “Stolen”, “Expired”. System should have provision/ expansion option to add more categories for future need.		
	If license plate number captured is incorrect due deformed license plate or so, operator should be able to edit/correct the license plate number manually on the GUI after cross checking the overview image or physical Inspection of license plate		
11	System shall have option to be integrated with other access control hardware/ software on site.		
12	The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigations.		
13	The system should be able to generate suitable MIS reports that will provide meaningful data to concerned authorities and facilitate optimum utilization of resources. These reports shall include:		
13 a	Report of vehicle flow at each of the installed locations for Last Day, Last Week and Last Month.		
13 b	Report of vehicle in the detected categories at each of the installed locations for Last Day, Last Week and Last Month.		
13c	Report of vehicle status change in different vehicle Categories.		
14	The system shall have option to save custom reports for subsequent use.		
15	The system shall have option to export report being viewed to common format for use outside of the ALPRS or exporting into other systems.		
16	The system should provide advance and smart searching facility of license plates from the database. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2 character distance).		
17	The system should have option to add new category by authorized personnel.		
18	The system should have option to update vehicle status in specific category by authorized personnel e.g. on retrieval of stolen vehicle, system entry should be Changed from “Stolen” to “Retrieved”.		
19	System should provide an option for advance users to tune the system parameters.		
20	System should have an option to configure site location and data management settings.		
21	The system should work in both day and night conditions with good accuracy.		
22	The hardware specification for the ALPRS should be a minimum of below:		
	Camera	Interface	IP
		Format	HDTV 1080 or better

BOQ Sl.no.71

**‘UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED
LICENSE PLATE RECOGNITION SYSTEM (ALPRS)**

		Resolution	Minimum 2 Megapixel or better
		Shutter speed	1/ 50 to 1/ 10000 or better
		Operating Temperature (°C)	For Normal location (-) 0°C to (+) 55°C
			For High altitude (-) 20°C to (+) 55°C
		Frame Rate	25/ 30 FPS
		Effective Range	5 Mtr or above
	Lens	Varifocal	5-50 mm
		Electronic IRIS control	DC Type
		Mount	C/ CS ”
		Image Format	1”/4
			1”/3
			1”/2
	IR Illuminator	Wavelength	850 nm (Semi Covert)
		IR Illuminator Range	10-15 m
		Environment Protection	IP 65/ IP 66
	Filters	IR Filter	
	Camera Housing	Environment Protection Housing	IP 65/ IP 66
	Processing Unit	Processor	Latest Intel Core i7 Processor
		RAM	8GB
		Hard Disk capacity	2 TB
		Display Monitor	22 Flat LED Monitor
	Speed Limit		40 km/hr
	Installation and Mounting		Pole Mounted
	Integration	Capable of integration with the overall architecture of Surveillance and Access control System.	
23	Power Supply	The complete system shall operate on 230 V AC $\pm$ 10% suitable UPS to meet the power requirement with backup of up to 1 hour should be provided.	

Technical Specifications for speed Monitoring camera BOQ Sl.no.72**ANPR camera**

Sl. No.	General Specification	Technical Specification
	Camera	
1	Sensor	1/2.7", 5.0 megapixel, progressive scan, CMOS
2	Min. Illumination	Colour:0.001 lux (F1.6, AGC ON) 0 lux with IR
3	Day/Night	IR-cut filter with auto switch (ICR)
4	Shutter	Auto/Manual, 1 ~ 1/100000s
5	WDR	120dB
6	S/N	>56dB
7	Lens	
8	Lens type	5~60mm@F1.6, AF automatic focusing and motorized zoom lens
9	Iris	DC-iris
10	Field of View (H)	59.99°~5.73°
11	Field of View (V)	35.03°~3.39°
12	Field of View (D)	67.01°~6.61°
13	Illuminator	
14	IR Range	Up to 100m (328.1 ft) IR range
15	Wavelength	850nm
16	IR On/Off Control	Auto/Manual
17	Video	
18	Video Compression	Ultra 265, H.265, H.264, MJPEG
19	Frame Rate	Main Stream: 5MP (2880*1620),Max 30fps; Sub Stream: 1080P (1920*1080), Max 30fps; Third Stream: D1 (720*576), Max 30fps
20	Video Bit Rate	128 Kbps~16 Mbps
21	U-code	Support
22	ROI	Up to 8 areas
23	Video stream	Triple streams
24	OSD	Up to 8 OSDs
25	Privacy Mask	Up to 4 areas per scene
26	Image	
27	White Balance	Auto/Outdoor/Fine Tune/Sodium Lamp/Locked/Auto2
28	Digital noise reduction	2D/3D DNR
29	Smart IR	Support
30	Flip	Normal/Flip Vertical/Flip Horizontal/180°/90°Clockwise/90°Anti-clockwise

Technical Specifications for speed Monitoring camera BOQ Sl.no.72

31	HLC	Support
32	BLC	Support
33	Defog	Digital Defog
34	Intelligent	
35	Smart intrusion prevention	Support false alarm filtering: Cross Line detection, Intrusion detection, Enter Area detection, Leave Area detection
36	Statistical Analysis	People counting, support people flow counting and crowd density monitoring
37	Events	
38	Basic Detection	Motion detection, Audio detection, Tampering alarm
39	Exception Detection & Statistics	Object left behind, Object removed
40	General Function	Watermark, IP Address Filtering, Alarm input, Alarm output, Access Policy, ARP Protection, RTSP Authentication, User Authentication
41	Audio	
42	Audio Compression	G.711U, G.711A
43	Audio Bitrate	128Kbps
44	Two-way Audio	Support
45	Suppression	Support
46	Sampling Rate	8KHz,16KHz
47	Storage	
48	Edge Storage	Micro SD, up to 256 GB
49	Network Storage	ANR,NAS(NFS)
50	Network	
51	Protocols	IPv4, IPv6, IGMP, ICMP, ARP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, QoS, RTMP, SSL/TLS
52	Compatible Integration	ONVIF (Profile S, Profile G, Profile T), API, SDK
53	User/Host	Up to 32 users. 3 user levels: administrator, operator and common user
54	Security	Password protection, strong password, HTTPS encryption, Export operation logs, basic and digest authentication for RTSP, digest authentication for HTTP, TLS 1.2, WSSE and digest authentication for ONVIF
55	Client	EZStation EZLive EZView
56	Web Browser	Plug-in required live view: IE 10 and above, Chrome 45 and above, Firefox 52 and above, Edge 79 and above

Technical Specifications for speed Monitoring camera BOQ Sl.no.72

57		Plug-in free live view: Chrome 57.0+, Firefox 58.0+, Edge 16+, Safari 11+
58	Interface	
59	Audio I/O	1/1
60	Alarm I/O	2/1
61	Serial Port	1 RS485
62	Built-in Heater	Support
63	Network	1 * RJ45 10M/100M Base-TX Ethernet
64	Video Output	1 BNC
65	Certification	
66	EMC	CE-EMC (EN 55032: 2015+A1:2020,EN 61000-3-3: 2013+A1: 2019,EN IEC 61000-3-2: 2019+A1: 2021,EN 55035: 2017+A11:2020) FCC (FCC CFR 47 part15, Subpart B, ANSI C63.4-2014)
67	Safety	CE LVD (EN 62368-1:2014+A11:2017) CB (IEC 62368-1:2014) UL (UL 62368-1, 2nd Ed., Issue Date: 2014-12-01)
68	Environment	CE-RoHS (2011/65/EU;(EU)2015/863); WEEE (2012/19/EU)
69	Protection	IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)
70		IK10 (IEC 62262:2002)
71	General	
72	Power	DC12V(±25%) , PoE+ (IEEE 802.3at)
73		Power consumption: Max 13W
74	Power Interface	Ø 5.5mm coaxial power plug
75	Dimensions (L x W x H)	354 x 105 x 98mm (13.9" x 4.1" x 3.9")
76	Weight	1.93kg(4.25lb)
77	Working Environment	-40°C~60°C(-40°F ~ 140°F), Humidity: ≤95% RH (non-condensing)
78	Storage Environment	-40°C~70°C(-40°F ~ 158°F), Humidity: ≤95% RH (non-condensing)
79	Surge protection	6KV
80	Reset button	Support
81	Heater	Support

IR for Night Vision illuminance

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#	Parameter	Description
1	Wavelength	The illuminator shall operate at a wavelength of 850 nm.
2	Max Distance	The effective illumination distance shall be up to 100 meters.
3	Beam Angle	The standard package shall include lenses with beam angles of 10°×10°, 20°×10°, and 35°×10°.
4	Input	The illuminator shall support a power input of 12V or 24V AC/DC.
5	Power Consumption	The device shall consume a maximum of 37W.
6	Number of LEDs	The unit shall contain a total of 72 LEDs.
7	Trigger Input	The trigger input shall support TTL signals ranging from 3.3V to 24V DC.
8	12V DC Power Output	The device shall provide a 12V DC output rated at 1A.
9	Typical Pulse Width	The typical pulse width shall be 1 millisecond.
10	Control / Communication	The illuminator shall support Ethernet-based control or communication.
11	Beam Shape	The beam shape shall be elliptical with HRT (High Reflection Technology).
12	IP Rating	The enclosure shall conform to IP66 rating for protection against dust and water.
13	Temperature Range	The operating temperature range shall be from -50°C to +50°C.
14	Bracketry	The product shall include a U-shaped mounting bracket.

No.	Requirement Title	Description (The System Shall be Ai enabled)
1	Core Search Capability	The system shall support text-based querying across large datasets.
		The system shall utilize deep learning models to identify textual, visual, and attribute-based information.
2	Multi-lingual Text Detection	The system shall recognize text in English, Hindi, and Marathi in real time.
		The system shall support expansion to additional languages through language packs.
3	Brand & Logo Recognition	The system shall detect and classify brand logos (e.g., Puma) within images or video frames.
		The system shall identify textual and graphical brand names and generate relevant metadata for each detection.

Technical Specifications for speed Monitoring camera BOQ Sl.no.72

4	Attribute-Based Search	The system shall identify specific attributes such as color, accessories, or suspicious objects.
		The system shall use computer vision classifiers to tag objects and descriptors.
5	Automatic Summaries	The system shall generate concise summaries or metadata for detected elements (text, logos, attributes, etc.).
		The system shall display summaries for quick visual scanning and decision-making.
6	Real-Time Performance	The system shall ensure search query response time is less than 300 ms on large datasets.
		The system shall dynamically update search results as new data is ingested.
7	Architecture & Integration	The system shall be deployable on-premises or in secure cloud/containerized environments.
		The system shall provide REST APIs for integration with external data pipelines.
		The system shall support modular design for language/model plug-ins.
8	Security & Privacy	The system shall implement role-based access control and audit logs.
		The system shall encrypt data at rest and in transit using AES-256 and TLS/HTTPS.
		The system shall adhere to regional and international data protection laws and guidelines.
9	Scalability & High Availability	The system shall support horizontal scaling to handle large ingestion or multi-camera feeds.
		The system shall provide clustering and failover capabilities for uninterrupted operations.
10	Analytics & Reporting	The system shall provide user-friendly dashboards for trends, object detections, and brand recognition.
		The system shall generate exportable reports in formats such as PDF and CSV.

CPU for ANPR

#	Parameter	Description
1	CPU	The system shall be equipped with a 6-core Arm Cortex-A78AE v8.2 64-bit CPU.
2	GPU	The system shall include a 512-core NVIDIA Ampere architecture GPU with 1024-core processing capability.
3	RAM	The system shall be equipped with 4GB LPDDR5 memory.
4	Power Consumption	The system's power consumption shall not exceed 10W.
5	AI Performance	The system shall deliver AI performance of 20 TOPS (Tera Operations Per Second).

Technical Specifications for speed Monitoring camera BOQ Sl.no.72

6	Video Encode	The system shall support 1080p30 video encoding using 1–2 CPU cores.
7	Video Decode	The system shall support video decoding of 1x 4K60 (H.265), 2x 4K30 (H.265), 5x 1080p60 (H.265), and 11x 1080p30 (H.265).
8	Networking	The system shall support Gigabit Ethernet connectivity.
9	Display Output	The system shall support video output via HDMI 2.0.
10	USB	The system shall include 2x USB 3.0 ports and 1x USB 2.0 Micro-AB port.
11	Storage Support	The system shall support NVMe SSD storage via an M.2 Key M interface.
12	Power Supply	The system shall support a 12V input power supply.
13	Cooling Support	The system shall provide active cooling through a fan header.
14	Display Info	The system shall feature a 1.3-inch OLED display for information, showing the following details: Device IP, Internet status (connected/disconnected), software status (running), storage percentage, camera connectivity status, device temperature, and device name.

Radar for accuracy speed

#	Parameter	Description
1	Operating Frequency	The radar must operate in the frequency range of 24.05 to 24.25 GHz.
2	Bandwidth	The radar must support a bandwidth of 200 MHz.
3	Output Power	The output power must be < 20dBm PK and < 108dBμV/m AVG, with EIRP AVG < 12.7 dBm.
4	Minimum Detection Range	The radar must detect objects from a minimum range of 5 meters (16.4 feet).
5	Maximum Detection Range	The radar must detect vehicles up to 300 meters
6	Range Accuracy	The radar must provide a range accuracy of 0.47 meters (1.5 feet).
7	Lane Separation Detection	The radar must support lane separation detection up to 220 meters (approaching)
8	Speed Resolution	The radar must offer radial speed resolution of 0.46 km/h (0.29 mph).
9	Speed Range	The radar must detect speeds in the range of -233 km/h to +144.8 km/h.
10	Speed Accuracy	The radar must have speed accuracy of 0.23 km/h (0.14 mph).
11	Field of View - Azimuth	The radar must have an azimuth field of view of 110°.
12	Field of View - Elevation	The radar must have an elevation field of view of 30°.

Technical Specifications for speed Monitoring camera BOQ Sl.no.72

13	Angular Accuracy - Azimuth	The azimuth angular accuracy must be 0.5°.
14	Update Rate	The radar update rate must be less than 60 ms.
15	Processing Latency	The radar must have a processing latency of 1 cycle.
16	Initialization Time	The radar must initialize in less than 52 seconds (DHCP) or less than 49 seconds (Static IP).
17	Configuration A	The radar must support configuration with external power supply, Ethernet 1Gbit/s, and RS485 full duplex.
18	Configuration B	The radar must support PoE, Ethernet 1Gbit/s, and RS485 full duplex in configuration B.
19	Connectors	The radar must use M12 industrial-grade connectors.
20	Operating Voltage	The radar must operate within 24V to 48V DC ±5%.
21	Supply Current	The radar current consumption must be less than 0.75 A.
22	Power Consumption (Ext. Supply)	The radar must consume less than 18W when using an external power supply.
23	Power Consumption (PoE)	The radar must consume 20W when powered using PoE.
24	Operating Temperature	The radar must operate in the temperature range of -40°C to +80°C.
26	Protection Class	The radar must comply with protection class IP67.
29	Mounting	The radar must support mounting via VESA MIS-D 75 with 1.25Nm torque.
30	Max Monitorable Lanes	The radar must support monitoring of up to 16 lanes.
31	Max Detection Zones (Loops)	The radar must support up to 64 detection zones.
32	Max Ignore Zones	The radar must support up to 10 ignore zones.
33	Max Detectable Objects	The radar must detect up to 128 objects simultaneously.
34	Max Target Tracking	The radar must be capable of tracking up to 512 targets.

Software VMS

#	Parameter	Description
1	Accuracy	The system shall provide a detection rate of more than 99.9%.
		The system shall provide an overall recognition accuracy of 99%.
		The system shall achieve a minimum of 96% recognition accuracy for two-wheelers.
		The system shall achieve a minimum of 99% recognition accuracy for four-wheelers.
2	Recognition Speed	The system shall recognize number plates within 40 milliseconds.
3	Number Plate Recognition	The system shall support recognition of High Security Registration Plates (HSRP).

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		The system shall support recognition of Bharat Series and non-HSRP number plates.
		The system shall support recognition of number plates on two-wheeler vehicles.
		The system shall support detection & recognition of green and red number plates.
		The system shall support detection & recognition of hand-painted number plates.
		The system shall support detection & recognition of single-lined number plates.
		The system shall support detection & recognition of two-lined number plates.
		The system shall support detection & recognition of three-lined number plates.
5	Vehicle Color Type	The system shall detect and classify vehicle colors including white, black, yellow, blue, green, red, silver/gray, and brown.
6	Plate Type Detection	The system should detect and classify number plates into HSRP and non HSRP.
7	Make Detection	The system shall detect more than 35 global car brands.
		The system shall support detection of Indian car makes.
8	Violation Detection	The system shall detect over speeding violations.
		The system shall detect violations involving no seat belt usage.
		The system shall detect violations involving no helmet usage for Rider.
		The system shall detect violations involving no helmet usage for Pillion.
		The system shall detect triple riding on two-wheelers.
		The system shall detect lane discipline violations (wrong lane usage).
		The system shall detect vehicles parked in no-parking areas.
		The system shall detect banned vehicles which are configurable in the settings dashboard.
9	System Email Alert	The system shall send automated email alerts with detailed violation and event information.
10	Detection Speed	The system shall support detection of vehicles moving at speeds up to 220 km/h.
13	Cloud Storage Support	The system shall support integration with cloud storage for data, images, and event logs.
14	Live View	The system shall support real-time live video view from the camera feed.

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#	Integrated Traffic management Solution Parameters
1	System should detect over-speeding through vision-based speed analysis for all vehicle types.
2	System should detect no helmet violations for two-wheelers.
3	System should detect triple riding violations on two-wheelers.
4	System should detect seatbelt violations for both driver and co-passenger.
5	System should recognize standard, non-standard, fancy, green, red, and Bharat series number plates.
6	System should classify number plates into High Security Registration Plates (HSRP) and non-HSRP.
7	System should detect vehicle make and model, including Indian brands.
8	System should classify vehicles into 9 types (Car, Bike, Auto Rickshaw, Bus, LCV, LGV, Mini LCV, Truck, Goods Auto).
9	System should classify number plates into Commercial, Private, and Electric.
10	System should detect vehicle color into 12 classes (Gray, Red, White, Beige, Black, Silver, Green, Blue, Orange, Brown, Maroon, Yellow).
11	System should capture a minimum of two images for each violation.
12	System should function effectively under all weather conditions and lighting conditions.
13	Evidence images should include Log No, Equipment ID, Location ID, GPS Coordinates, Unique Violation ID, Registration Plate, Violation Type, Timestamp.
14	System UI should allow operations such as zoom, cut, copy, and save.
15	System UI should allow manual modification of vehicle number plates with audit logs.
16	Centralized monitoring station should consolidate logs from all deployed systems.
17	Centralized monitoring station should provide a real-time uptime and system health dashboard.
18	System should integrate with eChallan from NIC for automatic challan issuance.
19	System should allow checking of vehicle-related documents (RC, insurance, pollution certificate, etc.).
20	System should allow creating a custom list of vehicles such as blacklisted or stolen vehicles.
21	System should generate violation reports including absolute numbers, percentage breakdowns, revenue contribution, classification by vehicle type, location, date, and violation type.
22	System should generate server and storage utilization reports including uptime and downtime analytics.
23	AI Search should generate a descriptive summary of the captured image including vehicle branding, condition, and unique features.
24	AI Search should highlight distinguishing features such as stickers, logos, and decals.
25	AI Search should enhance insight by summarizing key image details beyond visual appearance.
26	System should be fully encrypted and secure against unauthorized access.
27	System should support API-based integration with third-party government databases.
28	Bidder must provide a VAPT certificate from a CERT-In registered organization.
29	Bidder must submit a vision-based speed detection certificate from NATRAX up to a minimum of 150 kmph.

Technical Specifications for speed Monitoring camera BOQ Sl.no.72**Tentative list of speed monitoring in one location**

A VSDS	
1	5MP bullet camera 12x
1	VSDS License: '- ANPR Recognition Accuracy for the four wheelers- 99% & Two wheelers- 95%. Provides the same accuracy for: (Bharat Series, EV Plate, Non-Standard, Handwritten Plate). '- Enforcement Detection Feature Over speeding Vehicles with the adjustable speed limit.
2	LPU '- Compact edge computing device. Supports up to 2 Cameras. - Status display (Displays IP, Temperature, Storage, connectivity)
3	4D Doppler Radar - NATRAX Certified '- 4D Doppler radar with a range of 300 meters for speed detection. - Tracks upto 128 vehicles simultaneously. - Certified by NATRAX for speed detection upto 220 kmph.
4	Speed Display 'Board Size- 750mmX750mm Display Size- 640mmX480mm P10, EN12966 Compliance, BIS, True Color
5	Pulse IR Illuminator
B EdgeTrack	
1	EdgeTrack Centralised Portal: On-Prem centralized portal for VSDS devices, offering real-time alerts, incident detection, enforcement tracking, and analytics with Server.
2	Centralised Server
3	Enforcement License
C AI	
1	AI Search Server
2	AI Search: AI Search is a feature that analyzes images and generates structured summaries. It identifies key details such as vehicle branding, condition, unique features, and markings, providing focused data for inspection or analysis.
C Gantry	
1	Gantry - M Type - Foundation and Transport