

Ref No./ संदर्भ क्रमांक: MCL/HQ/E&T/20/ 873

Dated/ दिनांक: 12.10.2020

NOTICE FOR PRE-NIT MEET

A Pre-NIT (Notice Inviting Tender) Meeting is scheduled to be held in the office of the General Manager (E&T), MCL HQ for e-Procurement of the following works as mentioned below:

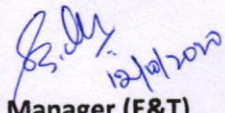
S. No	Description of Work	Estimated Cost of Work (Including GST) (in Rs.)	Date and Time of Pre-NIT Meeting
1.	Supply, installation, testing, commissioning including six year comprehensive AMC after one year warranty of CCTV Surveillance System at All Areas of MCL (including mines & other establishments), All Railway Sidings of MCL, All Regional Stores & CWS of MCL, MCL Bhubaneswar Guest House & Campus, Anand Vihar and Jagruti Vihar Campus of MCL Headquarters, Sambalpur.	39,22,98,746.00	20 th October, 2020 at 11.30 am

The Draft NIT for Pre-NIT Meeting is attached below, and also available at <https://coalindiarenders.nic.in> and on <https://mahanadicoal.in>.

All prospective bidders are requested to go through the Draft NIT including all Terms and Conditions, BoQ, etc., and attend the Pre-NIT Meeting on the date and time specified above through Video Conference. Participation in Pre-NIT Meeting shall not be a pre-requisite for participating in the Final Tender.

The link to access the Video Conference session is: <https://guest.lifesize.com/230037>

For any further clarifications, the prospective bidders may contact the undersigned at:
Office of the General Manager (E&T)
MCL HQ, Jagruti Vihar, Burla - 768020
Email id: hod-ent.mcl@coalindia.in
Ph: +91 (663)2542900


General Manager (E&T)
महाप्रबंधक (इ एवं टी)
MCL - महानदी कोलफील्ड्स लिमिटेड

Copy to / प्रतिलिपि:

1. TS to D(T/Op), MCL
2. General Manager, All Areas, MCL
3. GM (Finance) I/C, MCL HQ, GM (Civil), MCL HQ - with a request to attend the meeting as committee members for answering the Pre-NIT Queries.
4. File No. 25



Ref. No.: MCL/HQ/E&T/20-21/_____

Dated: / /2020

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DRAFT - Notice Inviting Tender
FOR PRE NIT MEETING

1. Tenders are invited on-line under two part system on the website <https://coalindiatenders.nic.in> from the eligible bidders having Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA, for the following work:

Description of work	Location	Estimated Cost of Work (Including GST) (In Rs.)	Earnest Money (In Rs.)	Period of Completion (In Days)
Supply, installation, testing, commissioning including six year comprehensive AMC after one year warranty of CCTV Surveillance System at All Areas of MCL (including mines & other establishments), All Railway Sidings of MCL, All Regional Stores & CWS of MCL, MCL Bhubaneswar Guest House & Campus, Anand Vihar and Jagruti Vihar Campus of MCL Headquarters, Sambalpur.	All Areas of MCL (including mines & other establishments), All Regional Stores & CWS of MCL, MCL Bhubaneswar Guest House & Campus, Anand Vihar and Jagruti Vihar Campus of MCL Headquarters, Sambalpur	39,22,98,746.00	49,03,800.00	1. Supply, installation, testing, trial run and commissioning :180 days 2. Warranty: 365 days 3. CAMC: 2192 days. Total Duration : 2737 days

(i). For Site visit of location of work, the prospective bidder(s) may contact

Sri K S A Selvan, GM(E&T), (Cell No. 9438879987)

Tender inviting authority
Contact Person(s)/Tender Dealing Officer(s)
Sri K S A Selvan, GM(E&T), Contact No. 9438879987(M), L-06632542900
e- Procurement Help desk, MCL, Burla – 0663 – 2542264, 2542695 email : hlp-eproc.mcl@coalindia.in

2. Time Schedule of Tender:

Sl. No	Particulars	Date	Time
a.	Tender e-Publication date	13 / 10 / 2020	11.00 Hours
b.	Document download start date	13 / 10 / 2020	11.00 Hours
c.	Document download end date	19 / 10 / 2020	11.00 Hours
d.	Bid Submission start date	13 / 10 / 2020	11.00 Hours
e.	Bid submission end date	19 / 10 / 2020	11.00 Hours
f.	Start date for seeking Clarification on-line	13 / 10 / 2020	11.00 Hours
g.	Last date for seeking Clarification on-line	19 / 10 / 2020	11.00 Hours
h.	Date of Pre-bid meeting (if any)	N.A.	
i.	Technical Bid (Cover I) opening date	20 / 10 /2020	11.00 Hours
j.	Price Bid (Cover II) opening date	N.A.	

Note: The auto extension of submission of bid shall be applicable as per details mentioned in clause No.14 of NIT.

3. Earnest Money Deposit(EMD):

The bidder will have to make the payment of EMD through ONLINE mode only.

3.1 In Online mode the bidder can make payment of EMD either through **NET-BANKING** from designated Bank(s) or through **NEFT/RTGS** from any scheduled Bank(s).

NET-BANKING: In case of payment through net-banking the money will be immediately transferred to Mahanadi Coalfields Limited's designated Account.

NEFT/RTGS: In case of payment through NEFT/RTGS from any scheduled bank(s), the bidder will have to make payment as per the Challan(s) generated by system on e-Procurement portal. The payment of EMD through NEFT/RTGS mode should be made well ahead of time to ensure that the EMD amount is transferred to Mahanadi Coalfields Limited account before submission of bid.

3.1.1 The Bidder will be allowed to submit his/her/their bid only when the EMD is successfully received in Mahanadi Coalfields Limited's designated account and the information flows from Bank to e-Procurement system.

3.1.2 In online payment of EMD, if the payment is made by the bidder within the last date and time of bid submission but not received by Mahanadi Coalfields Limited within the specified period due to any reason(s) whatsoever then the bid will not be accepted. However, the EMD will be refunded back to the bidder.

3.1.3 Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) will be exempt from the payment of earnest money (applicable only for Services tenders).

In case of exemption of EMD, the scanned copy of document (attested by notary public) in support of exemption will have to be uploaded by the bidder during bid submission. However, this option is to be enabled only in those cases where the exemption of EMD to some bidders is allowed as per NIT.

4. Pre-bid Meeting:

The pre-bid meeting if applicable shall be held in the office of Tender Inviting Authority, on the scheduled date & time, if specified in the NIT. The purpose of the pre-bid meeting is to clarify the

issues and to answer the questions on any matter that may be raised at that stage. Non-attendance at the pre-bid meeting will not be a cause for disqualification of bidder and it shall be presumed that the bidder does not require any clarification. The management shall circulate proceedings of the pre-bid meeting, if held.

5. Clarification of Bid:

The bidder may seek clarification on-line within the specified period. However, the management will clarify as far as possible to the relevant queries.

6. User Portal Agreement:

The bidders have to accept the on-line user portal agreement which contains the acceptance of all the Terms and Conditions of NIT and tender document, undertakings and the e-Procurement system through <https://coalindiatenders.nic.in> in order to become an eligible bidder. This will be a part of the agreement.

7. Eligible Bidders:

The invitation for bid is open to all bidders including an individual, proprietorship firm, partnership firm, company, Joint Venture having eligibility to participate as per eligibility criteria stipulated in clause No.8 of NIT and having Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA.

Note: Joint Venture shall not be allowed for participation in the bid with estimated cost of work put to tender up to Rs. 2.00 (two) crores.

8. Eligibility Criteria:

A. Work Experience:

The Intending bidder must have in its name or proportionate share as a member of Joint Venture/Partnership firm experience of having successfully **completed similar** works, as a prime contractor, during last 7(seven) years ending last day of month previous to the one in which bid applications are invited (i.e. eligibility period) should be any of the following :-

Three similar **completed works** each costing not less than the amount equal to 40% of the estimated cost put to tender.

Or

Two similar **completed works** each costing not less than the amount equal to 50% of the estimated cost put to tender.

Or

One similar **completed work** costing not less than the amount equal to 80% of the estimated cost put to tender.

Experience for those works only shall be considered for evaluation purposes, which match eligibility requirement stipulated above, on or before the last day of month previous to one in which tender has been invited (publication date of NIT). The experience of incomplete/ongoing works as on last date of eligibility period will not be considered for evaluation. If the referred work includes construction as well as maintenance after construction, the experience of such work may be considered as 'acceptable' if the construction part is completed as on the last date of 'eligibility period', even if maintenance work is ongoing, and the certificate issued clearly stipulates the same .

In all the above cases, while considering the value of completed works, the full value of completed work be considered whether or not the date of commencement is within the said

7(seven) years period. The date of completion of work should be during last 7(seven) years ending last day of month previous to the one in which bid applications are invited.

Cost of previous completed works shall be given a simple weightage of 5% per year to bring them at current price level, while evaluating the qualification requirement of the bidder. Such weightage shall be considered after end date of completion. Updating will be considered for full or part of the year (total no. of days / 365) i.e. considering 365 days in a year, till the last day of month previous to one in which bid has been invited.

In case the bidder is not a prime contractor, but a sub-contractor, the bidder's experience as sub-contractor will be taken into account, against suitable document that the contract in support of qualification is a sub-contract in compliance with the provision of such sub-contracts in the original contract awarded to prime contractor. The document may be issued by owner/Govt. department on behalf of the owner.

Joint Venture shall be allowed for participation in the bid with estimated cost above Rs. 2.0 Crores.

The above qualification criteria shall be fulfilled by JV in the following manner:

The qualifying criteria parameter e.g. experience of the individual partners of the J.V will be as deliberated hereinafter towards fulfilment of qualification criteria related to experience.

- a) In case of completion of single work of similar nature costing, not less than the amount equal to 80% of the estimated cost put to tender:-
Any of the JV partner shall have the experience of having completed successfully a single work of similar nature equal to 80% of the estimated cost put to tender.
Or
- b) In case of completion of two works of similar nature each costing not less than the amount equal to 50% of the estimated cost put to tender :-

i) Any one partner can match the above requirement.
Or
ii) At least two partners should each have completed at least one work of similar nature each costing not less than the amount equal to 50% of the estimated cost put to tender.
Or
- c) In case of completion of three works of similar nature, each costing not less than the amount equal 40% of the estimated cost put to tender:-
i) Any one partner can match the above requirement.
Or
ii) Any two partners shall match the above requirement through completion of at least two work by one partner and one work by other partner of similar nature each costing not less than the amount equal 40% of the estimated cost put to tender.
Or
iii) All the three partners shall match the above requirement through completion of at least one work of similar nature each costing not less than the amount equal 40% of the estimated cost put to tender.

However, during fulfilment of any of the above criteria one of the partners, who is the lead partner shall have :-

- i) More than 50 (fifty)% share in J.V.
and

- ii) Experience of having completed successfully a single work of similar nature equal to at least 40% of estimated cost put to tender

The definition of Similar work shall be as follows:

**SUPPLY AND INSTALLATION/ COMMISSIONING OF IP CCTV SYSTEM
OR
SUPPLY, INSTALLATION/ COMMISSIONING AND MAINTENANCE OF IP CCTV SYSTEM**

(NOTE : ONLY SUPPLY OF CCTV IS NOT ACCEPTABLE)

In respect of the above eligibility criteria the bidders are required to furnish the following information on-line:

- i) Description of qualifying experience (similar nature)
- ii) Work order Number /Agreement Number of each experience
- iii) Name & address of Employer/Work Order Issuing authority of each experience
- iv) Percentage (%) share of each experience (in case the experience has been earned by the bidder as a partner in a joint venture firm/partnership firm then the proportionate value of experience in proportion to actual share of bidder in that joint venture firm/ partnership firm will be considered against eligibility else it shall be taken as 100%).
- v) Executed Value of work against each experience
- vi) Start date & end date of each qualifying experience (similar nature)

Note:

- a. In case the bidder is a Joint Venture, work experience as above may be furnished as the work experience of the bidder.
- b. Confirmation in the form of Yes/ No regarding submission of similar work experience as defined in the NIT.

- B. Financial Turnover:** Average annual financial turnover during the last 3 (three) years ending 31st March of the previous financial year should be at least 30% of the estimated cost put to tender. (The "Previous Financial Year" shall be computed with respect to the e-Publication date of NIT). If any bidder does not furnish the turnover value for any financial year out of the last 3 financial years, the turnover for that financial year shall be taken as 'Zero' and the average annual financial turnover shall be calculated accordingly.

Financial turnover shall be given a weightage to bring them at current price level by adding 5% for each completed year (total number of days/365) after the end of respective financial year (i.e. 31st March) till the last day of month previous to one in which e-tender has been invited.

In respect of the above eligibility criteria the bidders are required to furnish the following information on-line :

- i) Annual turnover of each of the last 3 (three) years ending 31st March of the previous financial year.
- ii) Name of the Chartered Accountant issuing the Profit and Loss A/c or the Turnover certificate.
- iii) Membership Number of the Chartered Accountant.
- iv) Date of certificate issued by Chartered Accountant.

Note:

- a. In case the bidder is a Joint Venture, the turnover of the individual partners of the JV will be added together for each financial year and is to be furnished as the turnover of the bidder for that particular financial year. However, the information against Sl.No.(ii) & (iii) above will be given w.r.t. the lead partner of JV only.
- b. In case of JV, if financial turnover of all the partners is not submitted; the JV will not be disqualified and instead the required turnover will be calculated assuming zero value for partner/partners who has/have not submitted the financial turn over certificate.

C. Permanent Account Number(PAN) : The bidder should possess valid Permanent Account Number (PAN) issued by Income Tax department, Govt. of India.

In respect of the above eligibility criteria the bidders are required to furnish the following information on-line :

- i) Confirmation regarding possessing of Permanent Account Number(PAN) issued by Income Tax department, Govt. of India in the form of Yes / No.

Note : In case of JV, PAN card for each Indian partner of JV and Verifiable Tax Residency Certificate of respective country for each foreign partner or JV itself.

D. Goods and Services Tax (Not Applicable for Exempted Services)

The bidder should be either GST Registered Bidder under regular scheme

OR

GST Registered Bidder under composition scheme

OR

GST unregistered Bidder

In respect of the above eligibility criteria the bidder is required to furnish the following information online:

- i) Confirmation in the form of Yes/No regarding possessing of required document as enlisted in NIT with respect to GST status of the bidder.

Note:

- i) In case of JV a Certificate from a practicing Chartered Accountant having membership number with Institute of Chartered Accountants of India confirming the status of JV w.r.to GST in compliance with relevant GST rules or GST Registration Certificate of JV.
- ii) In case the work/service is awarded to a Joint Venture participating in the tender they have to submit PAN, GST registration (as applicable in the tender and for the bidder status) etc. in the name of the Joint Venture after Award of Work/Service before the payment of first running on account bill.
- iii) If turnover of bidder exceeds exemption/threshold limit, the bidder must have GST registration as per GST Act and rules.
- iv) During the execution of the contract if the GST status of the bidder changes, then the payment of GST, if any, to the contractor will be made as per the GST status declared by the bidder during tender stage based on which cost to company has been ascertained or at actuals, whichever is lower.

Scanned copy of documents to be uploaded by bidder(s) in support of information / declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document.

E. Purchase Preference under 'Make in India' Policy for "Local supplier".

Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 04.06.2020, issued by Govt. of India as amended from time to time shall be applicable.

In terms of the above said policy, purchase preference shall be given to Class-I local supplier.

In terms with the above said policy, Class-I local suppliers and Class-II local suppliers shall be eligible to bid.

The definitions of Class-I *Local Supplier*, Class-II local supplier, Non-Local supplier, *Local Content* and Margin of Purchase Preference as per above mentioned Order are as follows:-

- A. 'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under said order.
- B. 'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under said order.
- C. 'Non-Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than or equal to 20% as defined under said order
- D. '*Local Content*' means the amount of value added in India which shall be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.
- E. 'Margin of Purchase Preference' means the maximum extent to which the price quoted by a Class-I local supplier may be above the L1 for the purpose of purchase preference. The margin of purchase preference is 20%.

In respect of the above eligibility criteria the bidder is required to furnish the following information online:

- i) Confirmation in the form of Yes/No regarding possessing of required document indicating percentage of local content as enlisted in NIT.

Note:-

- I. If the estimated value of Procurement is less than Rs. 10 crores, all the Bidders at the time of bidding shall submit either self-certification indicating the percentage of local content in the offered items.
- II. If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.

Scanned copy of documents to be uploaded by bidder(s) in support of information / declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document.

9. Submission of Bid:

- a. (i). In order to submit the Bid, the bidders have to get themselves registered online on the e-Procurement portal of CIL (<https://coalindiatenders.nic.in>) with valid Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA. The online Registration of the Bidders on the portal will be free of cost and one time activity only. The registration

should be in the name of bidder, whereas DSC holder may be either bidder himself or his duly authorized person. The bidder is one whose name will appear as bidder in the e-Procurement Portal.

(ii). The bidders have to accept unconditionally the online user portal agreement which contains the acceptance of all the Terms and Conditions of NIT including General and Special Terms & Conditions, Integrity Pact and other conditions, if any, along with on-line undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the Bidder on-line in order to become an eligible bidder. No conditional bid shall be allowed/accepted.

b. Confirmatory Documents: All the confirmatory documents as enlisted in the NIT in support of online information submitted by the bidder are to be uploaded in Cover-I by the bidder while submitting his/her/their bid.

	Eligibility Criteria	Scanned copy of documents to be uploaded by bidder(s) in support of information/declaration furnished online by the bidder against Eligibility Criteria (CONFIRMATORY DOCUMENTS)
1	2	3
1	Work Experience (Ref. Clause No.8(A) of NIT)	Satisfactory Work Completion Certificate issued by the employer against the experience of similar work containing all the information furnished by bidder on-line. In case of Sub-contractor suitable document as per provision of eligibility, if applicable. Work order, BOQ and/or TDS may be sought during clarification or along with deficient documents as per clause 13(B). (In case of JV, Satisfactory Work Completion Certificate against individual partner(s) including Lead Partner of JV as applicable as per details mentioned in clause No. 8.
2	Financial Turnover (Ref. Clause No.8(B) of NIT)	Financial Turnover certificate having a Unique Document Identification Number (UDIN) with Institute of Chartered Accountants of India for last 3 (three) financial years issued by a Practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India. (In case of JV, turnover certificate for each individual partner of JV)
3	Permanent Account Number (Ref. Clause No.8(C) of NIT)	PAN card issued by Income Tax department, Govt. of India. (In case of JV, PAN card for each Indian partner of JV and Verifiable Tax Residency Certificate of respective country for each foreign partner or JV itself)
4	Goods and Services Tax (GST) Status of Bidder (Not Applicable for Exempted Services) (Ref. Clause No.8(D) of NIT and BOQ)	The following documents depending upon the status w.r.to GST as declared by Bidder in the BOQ sheet: a) Status: <u>GST Registered Bidder under regular scheme</u> Document: GST Registration Certificate (i.e. GST identification Number) issued by appropriate authority of India. b) Status: <u>GST Registered Bidder under composition scheme</u> Document: GST Registration Certificate (i.e. GST identification Number) issued by appropriate authority of India. c) Status: GST unregistered bidder:

		Document: A Certificate from a practicing Chartered Accountant having membership number with Institute of Chartered Accountants of India certifying that the bidder is GST unregistered bidder in compliance with the relevant GST rules of India. [In case of JV a Certificate from a practicing Chartered Accountant having membership number with Institute of Chartered Accountants of India confirming the status of JV w.r.t GST in compliance with relevant GST rules or GST Registration Certificate of JV] Note: <i>i) If turnover of bidder exceeds exemption/threshold limit, the bidder must have GST registration as per GST Act and rules.</i>
5	Legal Status of the bidder	<u>Document(s) covered under any one of the following sub-head(s):</u> 1. Affidavit or any other document to prove proprietorship/Individual status of the bidder. 2. Partnership deed containing name of partners. 3. Memorandum & Article of Association with certificate of incorporation containing name of bidder. 4. Joint Venture agreement as per format in Annexure-IX containing name of partners and lead partner, Power of Attorney to the Lead Partner and share of each partner.
6	Digital Signature Certificate (DSC)	If the bidder himself is the DSC holder bidding on-line then no document is required. However, if the DSC holder is bidding online on behalf of the bidder then the Power of Attorney or any sort of legally acceptable document for the authority to bid on behalf of the bidder.
7	Local supplier status of the Bidder	I. If the estimated value of Procurement is less than Rs. 10 crores, all the Bidders at the time of bidding shall submit self-certification indicating the percentage of local content in the offered items as per format in Annexure-XVII. II. If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.
8	a. Undertaking by Bidder/s on his/her/their Letter Head regarding genuineness of the information furnished by him on-line and authenticity of the scanned copy of documents uploaded by him on-line in support of his eligibility, as per the format given in the bid document at Annexure II. b. In case of partnership firm/Joint Venture, undertaking as per Annexure-XIII, is also to be submitted and signed by all the Partners of the Partnership Firm / Joint Venture(JV) firm. c. Duly signed and witnessed Integrity Pact in the prescribed format Annexure-X if applicable. Note : In case of JV, Integrity Pact shall be signed by all the partners. d. Certificate by Bidder/s on his/her/their Letter Head as per the format given at Annexure-XIV is to be uploaded.	

	<i>(In case of JV, Certificate to be uploaded in the Letter Head of JV)</i>
9	Letter of Bid by Bidder/s on his/her/their Letter Head as per Annexure-I. <i>(In case of JV, Letter of Bid to be uploaded in the Letter Head of JV)</i>
10	Technical Compliance Sheet (Total 9 (nine) nos.) on the letter head of the respective OEM , as per Annexure C of NIT.
Note: Only one file in .pdf format can be uploaded against each eligibility criteria. Any additional/ other relevant documents to support the information/declaration furnished by bidder online against eligibility criteria may also be attached by the bidder in the same file to be uploaded against respective eligibility criteria.	

c. Letter of Bid (LoB): The format of Letter of Bid (as given in the NIT) will be downloaded by the bidder and will be printed on Bidder's letter head and the scanned copy of the same will be uploaded during bid submission in cover-I. This will be the covering letter of the bidder for his submitted bid. The content of the "Letter of Bid" uploaded by the bidder must be the same as per the format downloaded from website and it should not contain any other information, which contradicts the content and spirit of the original format of LoB.

The Letter of bid will be digitally signed by DSC holder submitting bid online and it does not require any physical signature. However, if the Letter of Bid (LoB) bears the physical signature in addition to the digital signature of DSC holder, it will be accepted without questioning the identity of person signing the Letter of Bid.

If there is any change in the contents of Letter of Bid uploaded by bidder as compared to the format of Letter of Bid uploaded by the department with NIT document, then the LoB shall be requested under the head Confirmatory documents and subsequently accepted or rejected as applicable. However inclusion of any additional redundant information by the Bidder in the submitted Letter of Bid(LOB), which does not contradict the content and spirit of original format of LOB uploaded by department will not be a cause of rejection of his/her bid.

d. Price bid: The Price bid containing the Bill of Quantity will be in Excel format and will be downloaded by the bidder and bidder will quote the rates for all items on this Excel file. Prior to quoting the rates in the BOQ file, the bidder will select the appropriate status from the following drop down list given in the BOQ:-

- I. Status: GST Registered Bidder under regular scheme
- II. Status: GST Registered Bidder under composition scheme
- III. Status: GST unregistered bidder

The rates quoted by the bidder will be excluding GST and GST component (to be paid by MCL and/or the bidder) will appear as a separate entity. The component of GST will be taken by the system based on the status of bidder selected by the bidder during bid submission and with the pre-defined business logic given in the BOQ file by the department. This file will be digitally signed and uploaded by the bidder after ascertaining the correctness of facts and figures.

Thereafter, the bidder will upload the same Excel file during bid submission in cover-II. The Price-bid (excluding GST) will be in Item Rate or Percentage Rate or Mixed Rate[combination of Item Rate and Percentage Rate] BOQ format and the bidder will have to quote for all the tendered items. The Price Bid of the tenderers will have no condition. The price bid which is incomplete and not submitted as per instruction given in this document is liable for rejection.

System for decision of L1 bidder

The L1 bidder will be decided based on Overall Quoted Value (i.e. cost to the Company). The system for decision of L1 bidder will be as per following 02(two) cases:-

Case – 1: Supply for which INPUT TAX CREDIT (ITC) is not available to the Company.

For calculation of Overall Bid Value, the GST [CGST, SGST/UTGST, IGST and GST (compensation to state tax)] to be paid by the bidder **or** by MCL taken by the system will be added to decide the L1 i.e. the ranking of the Bidders will be decided based on rates quoted by the bidders plus GST. This value of the bidder will be “the Cost to Company”.

Then share of GST to be deposited by MCL, if any will be deducted from overall bid value to arrive at the Contract value. The Price-bids of the tenderers shall have no condition. The Price Bid which is incomplete and not submitted as per instruction given above is liable for rejection.

Case – 2: Supply for which INPUT TAX CREDIT (ITC) is available to the Company.

For calculation of Overall Bid Value, the GST [CGST, SGST/UTGST, IGST and GST (compensation to state tax)] to be paid by the Bidder **or** by MCL taken by the system will be ignored to decide the L1 i.e. the ranking of the Bidders will be decided based on rates quoted by the bidders excluding GST. This value of the bidder will be “the cost to Company”.

Then share of GST to be paid by bidder shall be added with overall bid value to arrive at the Contract value. The Price-bids of the tenderers shall have no condition. The Price Bid which is incomplete and not submitted as per instruction given above is liable for rejection.

Note: The bidder should select their GST category as per clause no. 8.D of NIT.

10. Bid Submission:

All bids are to be submitted on-line on the website <https://coalindiatenders.nic.in>. No bid shall be accepted off-line unless otherwise specified.

11. System Requirement:

It is the bidder’s responsibility to comply with the system requirement i.e. hardware, software and internet connectivity at bidder’s premises to access the e-tender website. Under any circumstances, MCL shall not be liable to the bidders for any direct/indirect loss or damages incurred by them arising out of incorrect use of the e-tender system or internet connectivity failures.

12. Opening of Technical Bid:

- 12.1** The Technical bid (Cover-I) will be opened one day after the Bid submission end date or next working day whichever is later. Technical bid (Cover-I) will be decrypted and opened online by the “Bid Openers” with their Digital Signature Certificates after the prescheduled date & time of Tender Opening.
- 12.2** The e-Procurement System will evaluate the Technical bids automatically on the basis of relevant data provided by bidder through a form in an objective and structured manner while submitting bid. If the parameter given by bidder in objective and structured manner does not confirm to required eligibility criteria as specified in the tender document then the bid will be auto rejected.
- 12.3** All the documents uploaded by bidder(s) including i.e. Letter of Bid & EMD exemption documents (if any) and the Evaluation sheets generated by the system online shall be downloaded after opening of Technical bid (Cover-I). After decryption and opening of Technical bid (Cover-I) the “technical bid opening summary” will be uploaded on the same day.

13. **Technical Evaluation of Tender:**

- A. After opening of Technical bid, the documents submitted by bidder(s) in cover I as enlisted in the NIT will be downloaded by the Evaluator and shall be put up to the Tender Committee. The Tender Committee will examine the uploaded documents against information/declarations furnished by the bidder(s) online. If it confirms to all of the information/ declarations furnished by the bidder online and does not change the eligibility status of the bidder then the bidder will be considered eligible for opening of price bid.
- B. In case the Tender Committee finds that there is some deficiency in uploaded documents corresponding to the information furnished online or in case corresponding document have not been uploaded by bidder(s) then the same will be specified online by Evaluator clearly indicating the omissions/shortcomings in the uploaded documents and indicating start date and end date allowing 7 days (7 x 24 hours) time for online re-submission by bidder(s). The bidder(s) will get this information on their personalized dashboard under "Upload confirmatory document" link. Additionally, information shall also be sent by system generated email and SMS, but it will be the bidder's responsibility to check the updated status/information on their personalized dash board regularly after opening of bid. No separate communication will be required in this regard. Non-receipt of e- mail and SMS will not be accepted as a reason of non-submission of documents within prescribed time. The bidder(s) will upload the scanned copy of all those specified documents in support of the information/ declarations furnished by them online within the specified period of 7 days. No further clarification shall be sought from Bidder.
- C. It is responsibility of Bidders to upload legible/clearly readable scanned copy of all the required documents as mentioned above.
- D. The tender will be evaluated on the basis of documents uploaded by bidder(s) online. The bidder(s) is/are not required to submit hard copy of any document through offline mode. Any document submitted offline will not be given any cognizance in the evaluation of tender.
- E. In case the bidder(s) submit(s) requisite documents online as per NIT, then the bidder(s) will be considered eligible for opening of Price Bid.
- F. Seeking clarification shall be restricted to confirmation of submitted document/online information only and it should be only for one time for a period of upto 7 days. The clarification shall be taken in online mode in the e- Procurement portal of CIL only.
- G. In case bidder(s) fails to confirm the online submitted information(s)/ declaration(s) by the submitted documents as (B) above, their/his bid shall be rejected; however, if the confirmatory documents do not change eligibility status of the bidder in connection his submitted online information(s)/declaration(s), then his/their bid will be accepted for opening of Price Bid.
- H. After Technical evaluation of tender, "Technical Evaluation Summary" will be uploaded by the evaluator and price bid shall be opened on/after preschedule date and time mentioned in the NIT online in the e- Procurement portal of CIL. However, in case there is any extension of date and time of price bid opening, it shall be notified online and price bid shall be opened online on e-Procurement portal of CIL after rescheduled date and time.
- I. In case none of the bidder(s) complies the technical eligibility criteria as per NIT, then bidder(s) will be rejected online and re-tender (if required) will be done (with the same or different quantity, as per the instant requirement).
- J. **If L1 bidder backs out (i.e. Techno commercially established L1 bidder), the EMD will be forfeited and the bidder will be debarred for minimum one (1) year from participating in tenders in Mahanadi Coalfields Limited.**

Note: In case *If the defaulter L1 bidder is a Joint Venture(JV) firm, penal action against the JV will also be applicable to all the partners of JV.*

K. Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 04.06.2020, issued by Govt. of India as amended from time to time shall be applicable.

In terms of the above said policy, purchase preference shall be given to local suppliers in the following manner :

- I. In the procurement of works which are divisible in nature, the following procedure shall be followed :-
 - i) Among all qualified bids, the lowest bid will be termed as L-1. If L-1 is from a Class-I local supplier, the contract for full quantity will be awarded to L-1 at L-1 price by the Purchaser.
 - ii) If L-1 is not a Class-I local supplier, 50% of the order quantity shall be awarded to L-1. Thereafter, the lowest bidder among the Class-I local suppliers will be invited to match the L-1 price for the remaining 50% quantity subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract for that quantity shall be awarded to such local supplier subject to his matching the L-1 price. In case such lowest eligible Class-I supplier fails to match the L-1 price or accept less than the offer quantity, the next higher Class-I local supplier within the margin of purchase preference shall be invited to match the L-1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local supplier, then such balance quantity may also be ordered on L-1 bidder.
- II. In the procurement of works which are not divisible, and in procurement of services where the bid is evaluated on price alone, the following procedure shall be followed:-
 - i) Among all qualified bids, the lowest bid will be termed as L-1. If L-1 is from a Class-I local supplier, the contract will be awarded to L-1.
 - ii) If L-1 is not from a Class-I local supplier, the lowest bidder among the Class-I local suppliers, will be invited to match the L-1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such Class-I local supplier subject to matching the L-1 price.
 - iii) In case such lowest eligible Class-I local supplier fails to match the L-1 price, the Class-I local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L-1 price and so on and contract shall be awarded accordingly. In case none of the Class-I local suppliers within the margin of purchase preference matches the L-1 price, then the contract may be awarded to the L-1 bidder.

Note: The confirmation from the bidder regarding matching of L1 price may be taken in confirmatory document link of e-Procurement portal by recycling 'Any other document' link.

Verification of local content :

- I. If the estimated value of Procurement is less than Rs. 10 crores, all the Bidders at the time of bidding shall submit either self-certification indicating the percentage of local content in the offered items.
- II. If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.

- III. Mahanadi Coalfields Limited may constitute committees with internal and external experts for independent verification of auditor's / accountant's certificates on random basis and in the case of complaints.
- IV. False declarations will attract banning of business of the bidder for a period up to two year and with process in line with clause 19 of GTC.
- V. A local supplier who has been debarred by any procuring entity for violation of above order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities.

L. Procurement from Micro and Small Enterprises (MSEs) (APPLICABLE FOR SERVICE NATURE OF TENDERS)

- i) Subject to meeting terms and conditions stated in the tender document including but not limiting to prequalification criteria, 25% of the work will be awarded to MSE as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) for the tendered work/item. Where the tendered work can be split, MSE quoting a price within a price band of L1 + 15% shall be awarded at least 25% of total tendered work provided they match L1 price. In case the tendered work cannot be split, MSE shall be awarded full work provided their quoted price is within a price band of L1 + 15% and they match the L1 price.
- ii) In case of more than one such MSEs are in the price band of L1 + 15% and matches the L1 price, the work may be shared proportionately if the job can be split. If the job cannot be split, then the opportunity to match the L-1 rate of the tender shall be given first to MSE who has quoted lowest rate among the MSEs and the total job shall be awarded to them after matching the L-1 price of the tender. If the MSE who have quoted lowest rate among the MSEs in the price band of L1 + 15% do not agree to match the rate of L1 of the tender, then the MSE with next higher quoted rate in the price band of L1 + 15% shall be given chance to match the rate of L1 for award of the complete job. This process to be repeated in till work is awarded to MSE or MSE bidders are exhausted.
- iii) Out of the 25% target of annual procurement from micro and small enterprises 3(three) percent shall be earmarked for procurement from micro and small enterprises owned by women. In the event of failure of such MSEs to participate in the tender process or meet the tender requirements and L1 price, 3(three) percent sub-target so earmarked shall be met from other MSEs.
- iv) Out of the 25% target of annual procurement from micro and small enterprises 4(four) percent shall be earmarked for procurement from micro and small enterprises owned by Scheduled Caste & Scheduled Tribe entrepreneurs. In the event of failure of such MSEs to participate in the tender process or meet the tender requirements and L1 price, four percent sub-target so earmarked shall be met from other MSEs.
- v) To qualify for entitlement as SC/ST owned MSE, the SC/ST certificate issued by District Authority must be submitted by the bidder in addition to certificate of registration with anyone of the agencies mentioned in paragraph (I) above. The bidder shall be responsible to furnish necessary documentary evidence for enabling Mahanadi Coalfields Limited to ascertain that the MSE is owned by SC/ST. MSE owned by SC/ST is defined as:
 - In case of proprietary MSE, proprietor(s) shall be SC /ST
 - In case of partnership MSE, The SC/ST partners shall be holding at least 51% shares in the enterprise.
 - In case of Private Limited Companies, at least 51% share shall be held by SC/ST promoters.
 - In case of Public Limited Companies, at least 51% share shall be held by SC/ST entrepreneurs at any given point of time.

vi) Classification of Micro and Small Enterprise are as under:

- a. Micro Enterprise –Enterprise where the investment in plant and machinery or equipment does not exceed one crore Rupees and turnover does not exceed five core rupees.
- b. Small Enterprise- Enterprise where the investment in plant and machinery or equipment does not exceed ten crore Rupees and turnover does not exceed fifty core rupees.

vii) The MSEs should be registered with District Industries Centers (DICs)/ Khadi & Village Industries Commission (KVIC)/ Khadi & Village Industries Board (KVIB)/ Coir Board/ NSIC/ Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small & Medium Enterprises (MoMSME) are eligible for availing benefits under the Public Procurement Policy for Micro and Small Enterprise (MSEs) Order, 2012 as amended from time to time.

viii) The MSEs are required to submit copy of documentary evidence, issued by their registering authority whether they are small enterprise or micro enterprise as per provisions of Public Procurement Policy for Micro and Small Enterprise (MSEs) Order, 2012 with latest guidelines/clarifications provided by MoMSME.

xi) The existing MSE enterprises registered prior to 30th June 2020, shall continue to be valid for a period up to 31.03.2021 only. Mandatorily bidders need to have “Udyam Registration Certificate” after 31.03.2021 for availing benefits under the Public Procurement Policy for Micro and Small Enterprise (MSEs) Order, 2012 as amended from time to time.

x) If MSE Bidder withdraws his offers after last date of bid submission or fails to sign the Agreement or commence the work as per Conditions of Contract then such Bidder shall be banned for a minimum period of 1(One) year in line with provisions of Banning of Business.

14. Auto Extension of Critical Date

If number of bids received online is found to be less than 03(three) on end date of bid submission then the following critical dates of the Tender will be automatically extended initially for a period of 02(two) days ending at 17.00 hrs and if the number of bids still remains less than 03(three) then for another 05(five) days ending at 17.00 hrs:

- Last date of submission of Bid.
- Last date of receipt of EMD.
- Date of Opening of Tender.

If any of the above extended Dates falls on Holiday i.e. a non-working day as defined in the e-Procurement Portal then the same is to be rescheduled to the next working day.

This extension will be also applicable in case of receipt of zero bid.

Notes:

1. The validity period of tender should be decided based on the final end date of submission of bids.
2. The auto extension shall work on the basis of number of bids received only. It may so happen that any of these bids may be eventually rejected during Tender Opening, Technical evaluation or further process of evaluation resulting the total number of valid bids becoming less than 03(three).
3. After two extensions, the tender shall be opened irrespective of available number of bids on the extended date of opening of tender.

15. One Bid per Bidder:

Each Bidder shall submit only one Bid, either individually, or as a partner in a partnership firm or a partner in a Joint Venture or a Public Limited / Private Limited Company. A Bidder who submits or participates in more than one Bid (other than as a sub-contractor or in cases of alternatives that have

been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

16. Refund of EMD:

- a) If EMD is paid by the bidder in online mode (Direct Debit/NEFT/RTGS) then the EMD of rejected bidders will be refunded at any stage directly to the account from where it had been received (except the cases where EMD is to be forfeited).
- b) No claim from the bidders will be entertained for non-receipt of the refund in any account other than the one from where the money is received.
- c) If the refund of EMD is not received by the bidder in the account from which the EMD has been made due to any technical reason then it will be paid through conventional system of e-payment. For this purpose, if required, Tender Inviting Authority will obtain the Mandate Form from the Bidder.
- d) In case the tender is cancelled then EMD of all the participating bidders will be refunded unless it is forfeited by the department.
- e) If the bidder withdraws his/her bid online (i.e. before the end date of submission of tender) then his/her EMD will be refunded automatically after the opening of tender.
- f) At the option of bidder, the EMD of successful bidder (on Award of Contract) will be retained by Mahanadi Coalfields Limited and will be adjusted to Performance Security Deposit.

17. Site Visit:

- 17.1** The bidder, at the Bidder's own responsibilities, cost and risk, is encouraged to visit and examine the Site of Works and its surrounding, approach road, soil condition, investigation report, existing works, if any, connected to the tendered work, drawings connected to the work, if / as available and obtain all information that may be necessary for preparing the Bid and entering into a contract for execution of the works. The cost of visiting the Site shall be at the Bidder's own expense.
- 17.2** It shall be deemed that the Bidder has visited the Site/Area and got fully acquainted with the working conditions and other prevalent conditions and fluctuations thereto whether he/she/they actually visits the Site /Area or not and has taken all the factors into account while quoting his/her/their rates.
- 17.3** The Bidder is expected, before quoting his rate, to go through the requirement of materials/workmanship, specification, requirements and conditions of contract.
- 17.4** The Bidder, in preparing the bid, shall rely on the site investigation report referred to in the bid document (if available), supplemented by any information available to the Bidder.

18. Taxes and Duties:

All duties, taxes (excluding Goods and Services Tax (GST) & GST Compensation Cess (if applicable) only) and other levies, royalty, building and construction workers cess (as applicable in States) payable by the bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. Applicable GST, if any, either payable by bidder or by company under reverse charge mechanism shall be computed by system in BOQ sheet as per predefined logic.

All investments, operating expenses, incidentals, overheads, leads, lifts, carriages, tools and plants etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly, if there is any decrease in such duties, taxes and levies the same shall become recoverable from the contractor. The details of such duties, taxes and other levies along with rates shall be declared by the bidder.

The item wise rate quoted by bidder shall be inclusive of all taxes, duties & levies but excluding GST & GST Compensation Cess, if applicable. The payment of GST and GST Compensation Cess by service availer (i.e. MCL) to bidder/contractor (if GST payable by bidder/contractor) would be made only on the latter submitting a Bill/invoice in accordance with the provision of relevant GST Act and the rules made there under and after online filing of valid return on GST portal. Payment of GST & GST Compensation Cess is responsibility of the service provider/contractor.

Further, any GST credit note required to be issued by the bidder / contractor under the GST provisions should be issued within the time limit prescribed under the GST law.

However, in case bidder/contractor is GST unregistered bidder/dealer or GST registered under composition scheme in compliance with GST rules, the bidder/dealer shall not charge any GST and/or GST Compensation Cess on the bill/invoice. In case of unregistered dealer/bidder, GST, if applicable will be deposited by MCL directly to concerned authorities in terms with GST provisions.

Input tax credit is to be availed by MCL as per rule.

If MCL fails to claim Input Tax Credit(ITC) on eligible Inputs, input services and Capital Goods or the ITC claimed is disallowed due to failure on the part of supplier/vendor of goods and services in incorporating the tax invoice issued to MCL in its relevant returns under GST, payment of CGST & SGST or IGST, GST (Compensation to State) Cess shown in tax invoice to the tax authorities, issue of proper tax invoice or any other reason whatsoever, the applicable taxes & cess paid based on such Tax invoice shall be recovered from the current bills or any other dues of the supplier/vendor along with interest and penalty, if any.

The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document.

The company reserves the right to deduct/ withhold any amount towards taxes, levies, etc. and to deal with such amount in terms of the provisions of the Statute or in terms of the direction of any statutory authority and the company shall only provide with certificate towards such deduction and shall not be responsible for any reason whatsoever.

In case of collection of minor minerals in area (both virgin and non-virgin), acquired by the Company under the Coal Act, the contractor will have to produce a royalty clearance certificate from the District Authorities before full and final payment.

Further, where any damages or compensation becomes payable by either the Company or the bidder / contractor pursuant to any provision of this Agreement, appropriate GST wherever applicable as per the GST provisions in force shall also apply in addition to such damages or compensation.

19. Cost of Bidding:

The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible or liable for those costs.

20. Technical Specifications:

The tenderer shall closely study all specifications in detail, which govern the rates for which he is tendering.

21. Currencies of Bid and Payment:

The unit rates and prices shall be quoted by the Bidder entirely in Indian Rupees only.

22. Handing Over of Site:

On completion of the work all rubbish, debris, brick bats etc. shall be removed by the contractor(s) at his/their own expense and the site cleaned and handed over to the company and he/they shall intimate officially of having completed the work as per contract.

23. Deployment of Manpower and Machineries:

The tenderer(s) will deploy sufficient number and size of equipments/machineries/vehicles and the technical/ supervisory personnel required for execution of the work.

24. Change in Constitution of the Contracting Agency:

Prior approval in writing of the company shall be obtained before any change is made in the constitution of the contracting agency, otherwise it will be treated as a breach of Contract.

25. Canvassing in Tender:

Canvassing in connection with the tenders in any shape or form is strictly prohibited and tenders submitted by such tenderers who resort to canvassing shall be liable for rejection.

26. Letter of Acceptance (LOA)/Work Order/Agreement:

The Bidder, whose Bid has been accepted, will be notified /communicated by the Employer electronically online on the e-procurement portal of CIL prior to expiration of the Bid validity period. The L-1 bidder will get the information regarding award of work on their personalised dash-board on-line. On receipt of Letter of Acceptance (LOA)/Work Order of the tender issued by the Company, the successful tenderer shall execute contract agreement in the company's prescribed form for the due fulfilment of the contract. Failure to enter into the required contract within the specified period in the work order shall entail cancellation of LOA/work order and forfeiture of the Earnest Money. In addition, the department may debar the bidder from participating in future bids for at least **12** months as per Guidelines of Banning of Business.

27. Bid Validity:

The validity period of the tenders shall be **120(One Hundred Twenty)** days from the end date of bid submission. The validity period of tender shall be decided based on the final end date of submission of bids.

In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the bidders to extend the period of validity for a specified additional period. The employer's request and the bidder's responses shall be made in writing. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid.

The tenderer shall not, during the said period or within the period extended by mutual consent, revoke or cancel his tender or alter the tender or any terms/conditions thereof without consent in writing of the company. In case the tenderer violates to abide by this, the Company will be entitled to take action as per clause No.28 (Modification and Withdrawal of Bid) of NIT.

28. Modification and Withdrawal of Bid:

Modification of the submitted bid shall be allowed on-line only before the deadline of submission of tender and the bidder may modify and resubmit the bid on-line as many times as he may wish. Bidders may withdraw their bids online within the end date of bid submission and their EMD will be refunded. However, if the bidder once withdraws his bid, he will not be able to resubmit the bid in that particular tender. For withdrawal of bid after the end date of bid submission, the bidder will have to

make a request in writing to the Tender Inviting Authority. Withdrawal of bid may be allowed till issue of work order/LOA with the following provision of penal action:

- a. If the request of withdrawal is received before online notification for opening of price bid, the EMD will be forfeited and bidder will be debarred for 1 (one) year from participating in tenders in MCL. The Price-bid of remaining bidders will be opened and the tender process shall go on.
- b. If the request of withdrawal is received after online notification for opening of price bid, the EMD will be forfeited and the bidder will be debarred for minimum 1 (one) year from participating in tenders in MCL. The Price-bid of all eligible bidders including this bidder will be opened and action will follow as under:
 - i. If the bidder withdrawing his bid is other than L 1, the tender process shall go on.
 - ii. If the bidder withdrawing his bid is L-1, then re-tender will be done.

Note :

- i). In case of clause (a) & (b) above, a letter will be issued to the bidder by Tender Inviting Authority with the approval of Tender Accepting Authority (When TAA is CMD then with the approval of concerned Director and in case the TAA is above CMD (i.e. FDs/Empowered Committee/Board) then with the approval of CMD. In case TAA is below CMD, then approval of respective TAA is required), stating that the EMD of bidder is forfeited, and this bidder is debarred for 1 (one) year (in case of clause-a) OR minimum one (1) year (in case of clause-b) from participating in tenders in MCL. This letter will be circulated to all Areas of the Subsidiary and the updated list will be maintained by all Tender Inviting Authority/Evaluators.
- ii). Penal action against clause (a) & (b) above will be enforced from the date of issue of such order. The standard operating procedure to handle withdrawal of bid after end date of submission shall be as Clause no 14 of Chapter I.

29. Standard Operating Procedure for Withdrawal of Bid:

I. The Mode of withdrawal: -

A. Online Withdrawal of Bids:

- a. The system of online withdrawal is available on the portal up to end date of bid submission, where any bidder can withdraw his/her bid which will attract no penal action from department side.
- b. The system of online withdrawal beyond end date of bid submission and till award of contract is also available but not fully functional and under development stage. Once it is developed and implemented only online withdrawal shall be considered except for some exceptional cases as mentioned in clause below.

B. Offline Withdrawal of Bids :

- a. A partner of bidder (in case of JV and partnership firms) whose DSC is registered on the e-Procurement portal can access the portal for online withdrawal but when there is a split in the business relationship, the partners whose DSC is not registered on the portal do not have the option of online withdrawal of bid. Hence such partners may opt to use offline method of withdrawal of his/her offer (or express his disassociation from the bidder organization).
- b. Till a fully functional system of online withdrawal of bid (beyond end date of bid submission and till award of contract) is not developed and implemented, offline withdrawal shall also be considered.

II. Acceptance of withdrawal by Tender Committee:

- A. Every case of withdrawal under Clause I-(A) (b) and Clause I-(B) shall be put up to Tender Committee for deliberation and further course of action.
- B. The Tender Committee shall apply its due diligence to decide:
 - a. Whether the request for withdrawal of offer has been received from right source and authentic. For this purpose a letter is to be sent by registered post/speed post to the bidder on the address as given by him in the enrollment page of e-Procurement portal, allowing 10 days' time to confirm the withdrawal. If the bidder does not confirm the withdrawal within the stipulated period then it should be construed that there is no withdrawal of bid. In case the withdrawal/disassociation from the firm (Joint Venture or Partnership firm) has been submitted by any other partner then also the confirmation has to be sought from the bidder and if bidder wants to deny the withdrawal/disassociation from the JV or the partnership firm then the bidder shall be required to furnish a legally acceptable document signed by all the partners of the firm to substantiate his claim.
 - b. Whether the withdrawal is due to the reason other than to support any mala fide intention of any participating bidder such as participating or supporting a cartel formation etc.
 - c. If the mala fide intentions in the withdrawal are apprehended then the tender should be cancelled apart from other penal action as per e-Procurement Manual for works and services of CIL and other guidelines/manuals of CIL.
 - d. If no mala fide intentions in the withdrawal are apprehended then the penal action in line with the prescriptions of the e-Procurement Manual for works and services of CIL will be applicable.
 - e. The Tender Committee may also obtain the opinion of legal department in order to ascertain the legal course of action in case of Clause II-(B)(b) and II-(B)(c) above.

30. Postponement of scheduled date(s):

The Company reserves the right to postpone the date of receipt and opening of tenders or to cancel the tenders without assigning any reason whatsoever.

31. Public Enterprises preference:

The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

32. Contract Agreement Document(s):

This Tender Notice shall be deemed to be part of the Contract Agreement. The "General Terms & Conditions", Additional Terms & Conditions, Special Terms & Conditions (if any), Technical Specifications, drawings (if any) and any other document uploaded on portal as NIT document forms an integral part of this NIT and shall also form a part of the contract agreement as per clause 2 of General Terms and Conditions.

33. Sub-letting of Work:

No subletting of work as a whole by the contractor is permissible. Subletting of work in piece rated jobs is permissible with the prior approval of the department.

The Contract Agreement will specify major items of supply or services for which the contractor proposes to engage sub-contractor/sub-vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit proposals in this regard to the Engineer-in-Charge/Designated Officer-in-charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer-in-Charge/Designated Officer-in-Charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

34. Prohibition of Child Labour engagement:

The contractor/contractual Agencies must not engage any Child Labour during the course of execution of the contract work within the meaning and scope of the Child Labour Prohibition & Regulation Act-1986 and its relevant Act and Rules amended from time to time by the Govt. of India.

35. Implementation of CMPF:

The tenderer shall have to ensure implementation of CMPF, if applicable, in respect of the workers deployed by him as detailed in the tender document.

36. Splitting up of the work:

The Company does not bind itself to accept the lowest tender and reserves the right to reject any or all the tenders without assigning any reasons whatsoever and to split up the work between two or more tenderer(s) or accept the tender in part and not in its entirety.

37. Settlement of Disputes:

Matters relating to any dispute or difference arising out of this tender and subsequent contract Awarded based on this tender, shall be dealt as per Clause No. 16- title-‘Settlement of Disputes’ of the ‘General Terms and Conditions’ of ‘Conditions of Contract’ of the tender document.

38. Integrity Pact :

Bidders are required to submit the Pre-Contract Integrity Pact duly signed & witnessed as per enclosed format, **Annexure-X**, along with the bid Part-I/cover-I. This will be signed by the authorized signatory of the bidder (s) with name, designation and seal of the company. Bidder(s) who do not sign the pact shall be disqualified from participation in the bid process.

Name, address and contact No. of the Independent External Monitor (IEM) nominated for this tender:

<u>S. No.</u>	<u>Name</u>	<u>Address</u>	<u>email Id</u>
1	Shri Sunil Kumar Chourasia, IOFS (Retd.)	Flat 9, Dutt Arcade - II, Civil Lines, (Near Hotel Jacksons) Jabalpur - 482001	iemskc.mcl@coalindia.in
2	Shri Sutanu Behuria, IAS (Retd.)	602 - A, Beverly Park - 1 MG Road, DLF Phase - II Gurgaon - 122009	iemsb.mcl@coalindia.in

39. Restrictions on Procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries:

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority (as per details given in Annexure-XV)
- II. “Bidder” (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain context) means any person or firm or company, including any member of a Joint venture (that is an association of several persons or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated herein before, including any agency, branch or office controlled by such person, participating in a procurement process.
- III. “Bidder from a country which shares a land border with India” means:-
 - a. An entity incorporated, established or registered in such a country; **or**
 - b. A subsidiary of an entity incorporated, established or registered in such a country; **or**
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; **or**

- d. An entity whose beneficial owner is situated in such a country; **or**
- e. An Indian (or other) agent of such an entity; **or**
- f. A natural person who is a citizen of such a country; **or**
- g. A joint venture where any member of the joint venture falls under any of the above.

IV. "The beneficial owner" for the purpose of (III) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.

Explanation-

- a. "Controlling ownership interest" means ownership of, or entitlement to more than Twenty Five Percent of shares or capital or profits of the company;
 - b. "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals.
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the competent Authority.

Note:

1. (a) The intending bidders must submit "Certificate" as per the format given at **Annexure-XIV** in compliance to order no.F.No.6/18/2019-PPD dt 23/7/2020 of Ministry of Finance, Dept of Expenditure, Public Procurement Division with respect to "restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries"

AND

(b) Valid registration from competent authority (if applicable). Registration should be valid at the time of submission of bid and at the time of acceptance of bids.

2. Regarding registration with Competent Authority, **Annexure-XV** may please be referred. Regarding exclusion from restriction, **Annexure-XVI** may please be referred.

Tender Inviting Authority

INSTRUCTIONS TO BIDDERS

1. SCOPE OF BIDDER

1.1 The Coal India Limited / **Subsidiary** (referred to as Employer in these documents) invites bids for the works as mentioned in the Bid Notice. The Bidders should submit Bids for all the works mentioned in the Notice.

1.2 The successful Bidder will be expected to complete the Work(s) by the Intended Completion period specified in the Bid document/Notice.

2. ELIGIBLE BIDDERS

2.1 The Invitation for Bid is open to all Bidders including an individual, proprietorship firm, partnership firm, company registered under Companies Act, or joint ventures. The bidders shall be eligible to participate only if they fulfil the qualifying/eligibility criteria specified in e-Tender Notice and at Clause No.3.

2.2 Joint Venture: Two or three companies/contractors may jointly undertake contract/contracts. Each entity will be jointly and severally responsible for completing the task as per the contract (applicable for bids having estimated cost above Rs.2 Crores).

Joint Venture details :

Name of all partners of a joint venture (not more than 3):

1. Lead partner
2. Partner
3. Partner

Joint Venture must comply the following requirements :

i) Following are the minimum qualification requirements for Joint Venture:

- a) The qualifying criteria parameter e.g. experience of the individual partners of the J.V will be as deliberated under clause 8(A) of e-tender Notice towards fulfilment of qualification criteria related to experience.
- b) The qualifying criteria parameter e.g. financial resources (Turnover) of the individual partners of the J.V. will be added together, for the relevant period, and the total criteria should not be less than as deliberated under clause 8(B) of e-tender Notice towards fulfilment of qualification criteria related to financial turnover.

ii) The formation of joint venture or change in the Joint Venture character/ partners after submission of the bid and any change in the bidding regarding Joint Venture will not be permitted.

iii) The bid, and in case of a successful bid, the agreement, shall be signed so as to legally bind all partners jointly and severally and any bid shall be submitted with a copy of the Joint Venture Agreement providing the joint and several liabilities with respect to the contract.

iv) The pre-qualification of a Joint Venture does not necessarily pre-qualify any of its partners individually or as a partner in any other Joint Venture or association. In case of dissolution of a Joint Venture, each one of the constituent firms may pre-qualify if they meet all the pre-qualification requirements, subject to written approval of the employer.

v) The bid submission must include documentary evidence to the relationship between Joint Venture partners in the form of JV Agreement to legally bind all partners jointly and severally for the

INSTRUCTIONS TO BIDDERS

proposed agreement which should set out the principles for the constitution, operation, responsibilities regarding work and financial arrangements, participation (percentage share in the total) and liabilities (joint and several) in respect of each and all of the firms in the Joint Venture. Such JV Agreement must evidence the commitment of the parties to bid for the facilities applied for (if pre-qualified) and to execute the contract for the facilities if their bid is successful.

vi) One of the partners shall be nominated for being in charge of the contract and shall be designated as Lead Partner. This authorization shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorized signatories of all the partners.

vii) The JV Agreement must provide that the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture and the entire execution of the contract shall be done with active participation of the Lead Partner.

viii) The contract agreement should be signed by each Joint Venture Partners. Subsequent declarations/ letters/ documents shall be signed by lead partner authorised to sign on behalf of joint venture or authorised signatory on behalf of JV.

ix) The bid should be digitally signed by a person authorized by all the partners of the Joint Venture.

x) An entity can be a partner in only one Joint Venture. Bid submitted by Joint Venture including the same entity as partner will be rejected.

xi) The JV agreement may specify the share of each individual partner for the purpose of execution of this contract. This is required to fulfil eligibility and also for the purpose of apportioning the value of the contract to that extent to individual partner for subsequent submission in other bids if he intends to do so for the purpose of the qualification in that Bid.

xii) The earnest money / bids security bank guarantee can be submitted by the Joint Venture / one or more partners of the joint venture.

xiii) The JV agreement must specifically state that it is valid for the project for which bidding is done. If JV breaks up mid-way before award of work and during bid validity period bid will be rejected.

If JV breaks up midway before award of work and during bid validity/after award of work/during pendency of contract, in addition to normal penalties as per provision of bid document, all the partners of the JV shall be debarred from participating in future bids for a minimum period of 12 months.

xiv) JV agreement shall be registered in accordance with law so as to be legally valid and binding on the members before making any payment.

Note: If the work is awarded to Joint Venture firm, they will register the JV agreement in accordance with Registration Act.

xv) JV shall open a Bank Account in the name of JV and all payments due to the JV shall be credited by employer to that account only. To facilitate statutory deductions all statutory documents like PAN/GSTIN, etc. in the name of the Joint Venture shall be submitted by JV before making any payment.

2.3 The bidders shall have Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root certificate of CCA.

INSTRUCTIONS TO BIDDERS

2.4 The bidders have to accept unconditionally the online user portal agreement which contains the acceptance of all the Terms and Conditions of Notice Inviting Tender (NIT) and Instructions to Bidders (ITB), including General and Additional Terms & Conditions, technical specifications, other conditions, if any, along with on-line undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the bidder on-line in order to become an eligible bidder.

2.5 The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

2.6 No sub-letting of the work as a whole by the contractor is permissible. Prior permission is required to be taken from the principle employer for engagement of sub-contractors in part work/piece rated work.

The Contract Agreement will specify major items of supply or services for which the contractor proposes to engage sub-contractor/sub-vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit proposals in this regard to the Engineer-in-Charge/Designated Officer in charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer-in-Charge / Designated Officer in Charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

3. QUALIFICATION OF THE BIDDER

3.1 In the event that pre-qualification of potential bidders has been undertaken, only bids from pre-qualified bidders will be considered for award of contract.

3.2 If the employer has not undertaken pre-qualification of potential bidders, all bidders shall fulfil the eligibility / qualifying criteria as detailed at Cl. No.8 & 9 of e-Tender Notice. Such details shall be submitted as deliberated at e-Tender Notice.

3.3 If the bidder is subsidiary of a company, the experience and resources of the holding company or its other subsidiaries will not be taken into account. However, if the bidder is a holding company, the experience and resources of its wholly owned subsidiaries will be taken into consideration.

3.4 Even though the bidders meet the above eligibility/qualifying criteria, they are subject to be disqualified if they have:

- a. Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements.

Notes:

The documents to be furnished by the bidder to prove that he is satisfying the qualification criteria laid down should all be in the bidder's name except in cases where though the name has changed, owners continued to remain the same and in cases of amalgamation of entities and when a holding company relies on credential of its wholly owned subsidiary.

4. COST OF BIDDING

4.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible or liable for those costs.

INSTRUCTIONS TO BIDDERS

5. CONTENT OF BIDDING DOCUMENTS

5.1 The set of bidding documents comprises the documents listed in the table below as issued online by the Employer and addendum/corrigendum issued in accordance with relevant provision.

- a. Notice Inviting Tender
- b. Instructions to Bidders;
- c. Conditions of Contract;
- d. Scope of work/Bill of Quantities;
- e. Forms of Securities and form of Article of Agreement.
- f. Pre contract Integrity Pact (if applicable)
- g. User portal Agreement
- h. Guidelines of Banning of Business
- i. Other document, if required.

6. CLARIFICATION OF BIDDING DOCUMENTS

6.1 A prospective bidder requiring any interpretation or clarification of bidding document may seek clarification online or during pre-bid meeting (if any). The clarifications may be asked from the next day of e-Publication of NIT. The last date for seeking clarification will be as specified online. The department will clarify as far as possible only relevant queries. The clarifications given by department will be visible to all the bidders intending to participate in bid.

7. AMENDMENT OF BIDDING DOCUMENTS (BE DELETED FOR NORMAL WORKS, APPLICABLE FOR SPECIALISED WORK)

7.1 Before the deadline for submission of Bids, the Employer may modify the bidding documents by issuing addenda.

7.2 Any addendum thus issued shall be a part of the bidding document and shall be displayed in the website. The bidder shall upload the same during bid submission.

7.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer shall extend, as necessary, the deadline for submission of Bids, in accordance with Sub-clause 11.2 below.

7.4 Bidders are requested to look into website for any addendum as specified in the NIT.

8. LANGUAGE OF BID

8.1 All documents relating to the Bid shall be in the English language.

9. BID PRICES

9.1. The bidder shall closely study specification in detail and scope of work which govern the rates for which he is quoting. The Bidders shall offer for the whole Works as described in Sub-Clause 1.1, based on the Bill of Quantities. Based on priced bill of quantities submitted by the Bidder, the Employer reserves the right to allot whole or part of the work at their discretion and no claims, whatsoever, shall be entertained in this regard.

9.2. The price bid containing the bill of quantity will be excel format and will be downloaded by the bidder and he will quote the rates for all items/heads/sub-heads on this excel file as detailed at clause No.9(d) of e-Tender Notice.

INSTRUCTIONS TO BIDDERS

9.3 All duties, taxes (excluding Goods and Services Tax (GST) & GST Compensation Cess (if applicable) only) and other levies, royalty, building and construction workers cess (as applicable in States) payable by the bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. Applicable GST, if any, either payable by bidder or by company under reverse charge mechanism shall be computed by system in BOQ sheet as per predefined logic.

All investments, operating expenses, incidentals, overheads, leads, lifts, carriages, tools and plants etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly, if there is any decrease in such duties, taxes and levies the same shall become recoverable from the contractor. The details of such duties, taxes and other levies along with rates shall be declared by the bidder.

The item wise rate quoted by bidder shall be inclusive of all taxes, duties & levies but excluding GST & GST Compensation Cess, if applicable. The payment of GST and GST Compensation Cess by service availer (i.e. MCL) to bidder/contractor (if GST payable by bidder/contractor) would be made only on the latter submitting a Bill/invoice in accordance with the provision of relevant GST Act and the rules made there under and after online filing of valid return on GST portal. Payment of GST & GST Compensation Cess is responsibility of the service provider/contractor.

Further, any GST credit note required to be issued by the bidder / contractor under the GST provisions should be issued within the time limit prescribed under the GST law.

However, in case bidder/contractor is GST unregistered bidder/dealer or GST registered under composition scheme in compliance with GST rules, the bidder/dealer shall not charge any GST and/or GST Compensation Cess on the bill/invoice. In case of unregistered dealer/bidder, GST, if applicable will be deposited by MCL directly to concerned authorities in terms with GST provisions.

Input tax credit is to be availed by MCL as per rule.

If MCL fails to claim Input Tax Credit(ITC) on eligible Inputs, input services and Capital Goods or the ITC claimed is disallowed due to failure on the part of supplier/vendor of goods and services in incorporating the tax invoice issued to MCL in its relevant returns under GST, payment of CGST & SGST or IGST, GST (Compensation to State) Cess shown in tax invoice to the tax authorities, issue of proper tax invoice or any other reason whatsoever, the applicable taxes & cess paid based on such Tax invoice shall be recovered from the current bills or any other dues of the supplier/vendor along with interest and penalty, if any.

Note:

During the execution of the contract if the GST status of the bidder changes, then the payment of GST, if any, to the contractor will be made as per the GST status declared by the bidder during tender stage based on which cost to company has been ascertained or at actuals, whichever is lower.

INSTRUCTIONS TO BIDDERS

9.4. The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document.

10. BID SECURITY/EARNEST MONEY DEPOSIT

10.1 The bidder shall furnish, as part of his bid, a Bid Security/Earnest Money of the amount as shown in e-tender Notice and in the form as deliberated at Clause 3 of e-tender Notice.

10.2. Any Bid not accompanied by an acceptable Bid Security/EMD shall be summarily rejected by the employer as non-responsive.

The bid security/EMD, of successful bidder may be retained and adjusted with performance security/security deposit, at bidder's option.

10.3 The Bid Security/Earnest Money may be forfeited:

(a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity/extended validity with mutual consent;

OR

(b) in the case of a successful Bidder, if the Bidder fails within the specified time limit to:
(i) sign the Agreement; **OR** (ii) Furnish the required Performance Security/ Security Deposit.

Additionally, the company shall ban such defaulting contractor from participating in future tenders in concerned Subsidiary/CIL HQ for a period of minimum one year from the date of issue of such letter.

In case of JV/Partnership firm, the banning shall also be applicable to all individual partners of JV/Partnership firm.

10.4 The Bid Security/ EMD deposited with the Employer will not carry any interest.

10.5 No claim from the bidders will be entertained for non-receipt of the refund in any account other than the one from where the money is received.

10.6 If the refund of EMD is not received by the bidder in the account from which the EMD has been made due to any technical reason, then it will be paid through conventional system of e-payment. For this purpose, bidder should submit E-Mandate form in format provided by company.

10.7 In case the tender is cancelled then EMD of all the participating bidders will be refunded unless it is forfeited by the department.

10.8 If the bidder withdraws his/her bid online (i.e. before the end date of submission of tender) then his/her EMD will be refunded automatically after the opening of tender.

11. DEADLINE FOR SUBMISSION OF BIDS

11.1. Bids shall be submitted online on the web site <https://coalindiatenders.nic.in> within the date and time specified in the e-Tender Notice.

11.2. The employer may extend the deadline for submission of bids in accordance with provisions of e-Tender Notice/ITB, in which case all rights and obligations of the employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

INSTRUCTIONS TO BIDDERS

12. SIGNING AND SUBMISSION OF BID

12.1 The Letter of bid will be digitally signed by DSC holder submitting bid online and it does not require any physical signature. However, if the Letter of Bid bears the physical signature in addition to the digital signature of DSC holder, it will be accepted without questioning the identity of person signing the bid.

12.2 Submission of bid shall be as detailed at Clause No.9 of e-Tender Notice.

13. Tender Status:

It will be the bidder's responsibility to check the status of their Bid online regularly, after the opening of bid till award of contract. Additionally, information shall also be sent by system generated e-mail and SMS at nodal points (Date of bid opening, Requisition for Clarification on Confirmatory document from L-1 bidder, award of work etc.). No separate communication will be required in this regard. Non-receipt of e-mail and SMS will not be accepted as a reason of non-submission of Confirmatory documents within prescribed time. This will be specifically mentioned in the NIT. The Tender Status will be in public domain and anyone visiting the site can view it by identifying the tender.

14. EVALUATION AND COMPARISON OF BIDS.

14.1 Evaluation and comparison of Bids will be done by System online. This online evaluation will be validated by Mahanadi Coalfields Limited at each stage as deliberated in e-Tender Notice. The bidder shall also comply with system requirement as deliberated in e-Tender Notice. Bid evaluation shall be done after taking into consideration overall quoted price by the bidder and effect of Goods and Service tax (GST), GST Compensation Cess etc. as applicable. L-1 will be decided based on Cost to the Company.

14.2 If the Bid of the successful Bidder is seriously unbalanced in relation to the Company's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the methods and schedule proposed.

After evaluation of the price analysis, the company may require that the amount of the performance security/security deposit is increased at the expense of the successful bidder to a level sufficient to protect the company against financial loss in the event of default on the part of the successful bidder under the contract.

Additional performance security shall be applicable if the bid price is below 15% of the justified price, finalized by the owner. The amount of such additional performance security shall be the difference between 85% of the owner's justified price and quoted price.

Justified price shall be finalized by the owner on the basis of prevalent market rate of materials and labour analysed as per standard analysis of rate of CPWD/ NBO, and shall be binding on the bidder.

Such additional performance security shall be applicable for Item-rate and Percentage-rate Tenders.

Such additional performance security shall be furnished by bidder along with normal performance security as per Cl. No. 4 of GTC.

INSTRUCTIONS TO BIDDERS

Additional performance security (APS) shall be furnished within 21 days of issuance of LOA by the successful bidder.

Failure to submit such additional performance security shall result into cancellation of the contract with forfeiture of earnest money.

Additionally, the company shall ban such defaulting contractor from participating in future tenders in concerned Subsidiary/CIL HQ for a period of minimum 1 (one) year from the date of issue of such letter*. In case of JV/Partnership firm, the banning shall also be applicable to all individual partners of JV/Partnership firm.

15. ABNORMALLY HIGH RATE & ABNORMALLY LOW RATE ITEMS.

PROVISIONS FOR DEALING WITH VARIATIONS IN RESPECT OF ABNORMALLY HIGH RATE AND ABNORMALLY LOW RATE ITEMS.

The abnormally high rate items are those whose quoted rates are more than 20% of the justified rates decided by the owner.

The abnormally low rate items are those whose quoted rates are less than 20% of the justified rates decided by the owner.

In case of Item Rate Tenders, the revision of rates for (i) abnormally high rate items and (ii) abnormally low rate items, shall become operative under the following circumstances: -

For increase in quantity of more than 25% in respect of works executed below plinth level and 10% in respect of works executed above plinth level.

Quantity variation beyond the limit mentioned above shall be dealt by arriving at new rate based on prevalent market rate of materials and labour analyzed as per standard analysis of rate of CPWD/NBO. Payment of extra quantity over the permitted quantity as explained above would be made on the basis of the new analyzed rate.

The variation in quantity of abnormally low rate items for item rate tenders shall not be permitted below 25% for the items below plinth level and below 10% for the items above plinth level of the agreement schedule quantity, but in exceptional cases with written consent of Engineer-in-Charge arising out of technical necessity.

The above provisions shall be applicable for item rate tenders only and not applicable for percentage rate tenders for works based on standard schedule of rates of the company.

For the purpose of operation, the following works shall be treated as works related to foundation, unless otherwise defined in the contract:

- a) For Buildings: All works up to 1.2 meters above ground level or up to floor 1 level whichever is lower.
- b) For abutments, piers and well steining: All works up to 1.2m above the bed level.
- c) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs / tanks and other elevated structures: all works up to 1.2 meters above the ground level.
- d) For reservoirs / tanks (other than overhead reservoirs / tanks): All works up to 1.2 meters above the ground level.
- e) For basement: all works up to 1.2m above ground level or up to floor 1 level whichever is lower.

INSTRUCTIONS TO BIDDERS

f) For Roads, all items of excavation and filling including treatment of sub base.

16. AWARD CRITERIA

16.1 Subject to Clause No.17, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the Bidding documents and who has offered the lowest evaluated acceptable Bid Price, provided that such Bidder has been determined to be:

- a) Eligible in accordance with the provisions of Clause 2; and
- b) Qualified in accordance with the provisions of Clause 3.

17. EMPLOYER'S RIGHT TO ACCEPT ANY BID, NEGOTIATE AND TO REJECT ANY OR ALL BIDS

17.1 Notwithstanding Clause No.16, the Employer reserves the right to accept, negotiate or reject any Bid, and to cancel the bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

18. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT

18.1 The Bidder, whose Bid has been accepted, will be notified /communicated by the Employer electronically online on the e-procurement portal of CIL prior to expiration of the Bid validity period. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called "the Contract Price").

The offline communication of LOA shall not be mandatory.

18.2 The notification of award (LOA/Work Order) will constitute the formation of the Contract.

The works should be completed as per period specified in the NIT from the Date of Commencement as defined in Clause 6.0 of General Terms and Condition.

18.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder, work programme etc. within 30 (thirty) days following the notification of award along with the letter of Acceptance and/or Work Order issued by department.

In case of failure to enter in to agreement within specified period or extended period on the written request of the bidder, if any, the department will take action as prescribed in Guidelines for Banning of Business along with forfeiture of Earnest Money. The bidder will also be banning from participating in re-tender.

No payment for the work shall be made before execution of this agreement.

18.4 In the bidding process, the cause of rejection of Bid of any bidder shall be intimated to non-qualified bidder after the award of the work to the successful one and the Security/ Earnest Money shall be refunded to unsuccessful bidders as per provision of e-Tender Notice.

18.5 The contractor shall enter into and execute contract agreement in the prescribed form on non-judicial stamp paper in accordance with the relevant law of the State/Union of India. The cost of the stamp papers for the contract agreement shall be borne by the contractor. Two sets of contract document/agreements shall be prepared and signed by both the parties. One of the sets shall be stamped "Original" and the other "Duplicate". The duplicate copy will be supplied to the contractor free of cost and the original is to be retained by the company. For additional copy, cost to be

INSTRUCTIONS TO BIDDERS

charged. All additional copies should be certified by the Engineer-in-Charge. The contractor shall keep copy of these documents on the site/place of work in proper manner so that these are available for inspection at all reasonable times by the Engineer-in-charge, his representatives or any other officials authorized by the company for the purpose. The contract document shall not be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents. Until the formal agreement is signed between the Owner and Contractor, LOA/Work Order together with Contract Document, shall constitute the Contract.

19. PERFORMANCE SECURITY/SECURITY DEPOSIT

19.1 Security Deposit shall consist of two parts:

- a. Performance Security to be submitted at award of work and
- b. Retention Money to be recovered from running bills.

The security deposit shall bear no interest.

For details refer Clause No.4 of Conditions of Contract (General Terms and Conditions)

20. EMPLOYMENT OF LABOUR

20.1 Contractors are to employ, to the extent possible (as per policy decision of the company valid from time to time), local project affected people and pay wages not less than the minimum wages as per minimum Wages Act or such other legislations or award of the minimum wage fixed by respective State Govt. or Central Govt. as may be in force.

Payment of Provident Fund for the workmen employed by him for the work as per the Law prevailing under provision of CMPF and allied scheme valid from time to time shall be responsibility of the contractor.

The contractor needs to ensure that the employee has become a member of any of the provident fund as the case may be and the unique membership number of the CMPF or Allied Scheme needs to be submitted to Employer.

In addition to the above, the Contractor shall provide a copy of the updated passbook having entry made in the CMPF or Allied Scheme(s) of Provident fund as the case may be by the competent authority annually /as and when asked. Bidder shall also submit copies of statutory returns.

20.2 The bidder shall also comply with statutory requirements of various acts including CL(R&A) Act.

20.3 The contractor's workmen shall be paid through Bank.

20.4 The contractors shall register themselves on the Contract Labour Payment Management Portal (CLPMP) of CIL within 30 days of issue of work order and will have to enter and update periodically the following details in the portal:

- a. Work Order details
- b. Details of Contractor workers and payment of wages in respect of each Work Order each month.

20.5 All the contract workers shall be covered with the Bio-metric attendance system for payment of wages.

20.6 The bidder shall comply with statutory requirements of various acts including Child Labour (Prohibition & Regulation) Act, 1986 as amended from time to time and all rules, regulations and

INSTRUCTIONS TO BIDDERS

schemes framed thereunder from time to time in addition to other applicable labour laws.

20.7 The bidder shall also follow other guidelines as incorporated at Clause 13 of GTC covered under additional responsibilities of the contractor.

NOTE: In case company decides/ circulates separate wages for underground works / for works within mine premises, the same may be allowed based on appropriate circular. Clause 13(xiv) of GTC shall stand amended to this extent before notification of bid.

21. LEGAL JURISDICTION

Matter relating to any dispute or difference arising out of this bid and subsequent contract awarded based on the bid shall be subject to the jurisdiction of local court only where the subject work is to be executed.

22. e-PAYMENT

22.1 Successful bidder will be required to submit a Mandate Form duly signed by bidder and the Bank Officials for e-Payment.

23 MISCELLANEOUS

23.1 The bidders should fill the bid document properly and carefully. They should avoid quoting absurd rates.

23.2 Throughout the bidding documents, the terms 'bid' and 'tender' and their derivatives are synonymous.

CONDITIONS OF CONTRACT

GENERAL TERMS AND CONDITIONS

1. Definitions

i) The word "**Employer**" or "**Company**" or "**Owner**" wherever occurs in the conditions, means the Coal India Limited / **Subsidiary**, represented at Head Quarters of the Company by the General Manager (E&T) or his authorized representatives or any other officer specially deputed for the purpose who will employ the contractor.

ii) The word "**Principal Employer**" wherever occurs, means the officer nominated by the Company to function on its behalf.

iii) The word "**Contractor/ Contractors**" wherever occurs means the successful bidder /bidders who has/have deposited the necessary Earnest money and has/have been given written intimation about the acceptance of tender and shall include legal representative of such individual or persons composing a firm or a company or the successors and permitted assignees of such individual, firm or Company, as the case may be and any constitutional, or otherwise change of which shall have prior approval of the employer.

iv) "**Site**" means the land and places including any building and erection thereon, over, under, in or through which the Permanent works or Temporary works designed by the Engineer-in-Charge are to be executed and any other lands and places provided by the Employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the site.

v) The term "**Sub-Contractor**" as employed herein, includes those having a direct contract with Contractor either on piece rate, item rate, time rate or any other basis and it includes one who furnishes work to a special design according to the plans or specifications of this work but does not include one who merely supplies materials.

vi) "**Accepting Authority**" shall mean the management of the company and includes an authorized representative of the company or any other person or body of persons empowered on its behalf by the company.

vii) "**Engineer-in-charge**" shall mean the officer nominated by the company in the E&T Engineering cadre/ discipline who is competent to direct supervisors and authorised to be in charge of the works for the purpose of this contract. The Engineer-in-Charge/Designated Officer in Charge, who is of an appropriate seniority, will be responsible for supervising and administering the contract, certifying payments due to the contractor, valuing variations to the contract, awarding extension of time and valuing compensation events. The Engineer-in-Charge/Designated Officer in Charge may further appoint his representatives i.e. another person/Project Manager or any other competent person and notify to the contractor who is directly responsible for supervising the work being executed at the site, on his behalf under their Delegation of Powers of the company. However, overall responsibility, as far as the contract is concerned, will be that of the Engineer-in-Charge/Designated Officer in Charge.

viii) The "**Contract**" shall mean the notice inviting tender, the tender as accepted by the Company, the work order issued to the contractor, and the formal contract agreement executed between the company and the contractor together with the documents referred to therein including general terms and conditions, special conditions, if any, scope of work, frozen terms & conditions/technical parameters/scope of work and revised offer, if any, specifications, drawings, including those to be submitted during progress of work, schedule of quantities with rates and amounts. Until the formal agreement is signed between the Owner and Contractor, LOA/Work Order together with Contract Document, shall constitute the Contract.

CONDITIONS OF CONTRACT

ix) A **"Day"** shall mean a day of 24 hours from midnight to midnight.

x) The **"Work"** shall mean the works required to be executed in accordance with the contract/work order or parts thereof as the case may be and shall include all extra or additional, altered or substituted works or any work of emergent nature, which in the opinion of the Engineer-in-charge, become necessary during the progress of the works to obviate any risk or accident or failure or become necessary for security.

xi) **"Schedule of Rates"** referred to in this conditions shall mean the standard schedule of rates prescribed by the company and the amendments issued from time to time.

xii) **"Contract amount"** shall mean:

a) In the case of turnkey / lump sum contracts the total sum for which tender is accepted by the company.

b) In the case of other types of contracts the total sum arrived at based on the individual rate(s)/percentage rate(s) quoted by the tenderer for the various items shown in the Schedule of Quantities" of the tender document as accepted by the Company with or without any alteration as the case may be.

xiii) **"Written notice"** shall mean a notice or communication in writing and shall be deemed to have been duly served if delivered in person to the individual or to a member of the contractors firm or to an office of the company for whom it is intended, or if delivered at or sent by registered mail/e-mail to the last business address known to him who gives the notice.

xiv) **"The constructional plant"** means all appliances, tools, plants or machinery of whatsoever nature required in or about the execution, completion or maintenance of the works but does not include materials or other things intended to form part of the permanent work.

xv) **"Letter of Acceptance of Tender"** means letter giving intimation to the tenderer that his tender has been accepted in accordance with the provisions contained in that letter.

xvi) **"Department"** means the E&T Engineering Department of Coal India Limited or any of its subsidiary companies/units represented by the appropriate authority.

xvii) **"Act of insolvency"** means as it is designed by Presidency Town Insolvency Act or Provincial Insolvency Act or any act amending such originals.

xviii) The words indicating the singular only also include the plural and vice-versa where the context so requires.

xix) **"Drawings"/"Plans"** shall mean all:

- a) drawings furnished by the owner with the bid document, if any, as a basis for proposals,
- b) working drawings furnished by the Owner after issue of letter of acceptance of the tender to start the work,
- c) subsequent working drawings furnished by the owner in phases during progress of the work, and
- d) drawings, if any, submitted by the contractor as per provision of the contract and duly approved by the owner.

xx) **"Codes"** shall mean the following, including the latest amendments, and/or replacements, if any:

- a) Bureau of Indian Standards relevant to the works under the contract and their specifications.

CONDITIONS OF CONTRACT

- b) Indian Electricity Act and Rules and Regulations made there under.
- c) Indian Mines Act and Rules and Regulations made there under.
- d) Any other Act, rule and regulations applicable for employment of labour, safety provisions, payment of provident fund and compensation, insurance etc.

2. Contract Documents and Miscellaneous Provisions:

The following documents shall constitute the contract documents:

- i) Articles of Agreement.
- ii) Letter of Acceptance of Bid/ Work Order indicating deviation, if any, from the conditions of contract incorporated in the tender document issued to the bidder.
- iii) Notice Inviting Tender and Instructions to Bidders.
- iv) Conditions of Contract including General Terms & Conditions of contract, Additional Terms & Conditions, Special Terms & Conditions, and Commercial Terms & Conditions etc.- as applicable.
- v) Frozen terms & conditions / technical parameters and revised offer, if any.
- vi) Specifications/scope of Work, if any.
- vii) Schedule of quantities (or Bill of Quantities) along with accepted rate.
- viii) Contract drawings and work programme.
- ix) Safety Code etc. forming part of the tender,
- x) Integrity Pact (If applicable).
- xi) Guidelines for Banning of Business.
- xii) Any other document if required.

2.1 The contractor shall enter into and execute contract agreement in the prescribed form. The cost of the stamp papers for the contract agreement shall be borne by the contractor. Two sets of contract document/agreements shall be prepared and signed by both the parties. One of the sets shall be stamped "Original" and the other "Duplicate". The duplicate copy will be supplied to the contractor free of cost and the original is to be retained by the company. For additional copy, cost to be charged.

All additional copies should be certified by the Engineer-in-Charge.

The contractor shall keep copy of these documents on the site/place of work in proper manner so that these are available for inspection at all reasonable times by the Engineer-in-charge, his representatives or any other officials authorized by the company for the purpose.

2.2 The contract document shall not be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

2.3 The local Court, where the subject work is to be executed shall have exclusive jurisdiction in all matter arising under this contract.

2.4 The Contract Agreement will specify major items of supply or services for which the contractor proposes to engage sub-contractor/sub-vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit proposals in this regard to the Engineer-in-Charge / Designated Officer in charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer-in-Charge / Designated Officer in Charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

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2.5 Acceptance of Offer:

“Letter of Acceptance”- is an acceptance of offer by the company. It shall be communicated electronically through e-procurement portal of CIL to the successful bidder and shall make the binding Contract with the Company.

3. Discrepancies in contract documents & Adjustments thereof

The documents forming part of the contract are to be treated as mutually explanatory of one another and in case of discrepancy between schedule of quantity, the specifications and/or drawing, the following order of preference shall be observed;

- a) Description in Bill of Quantities of work.
- b) Particular specification and special conditions, if any
- c) Drawings.
- d) General specifications.
- e) BIS Specifications.

3.1 In the event of varying or conflicting provision in any of the document(s) forming part of the contract, the Accepting Authority's decision/clarification shall hold good with regard to the intention of the document or contract as the case may be.

3.2 Any error in description, quantity or rate in Bill of Quantities or any omission there from, shall not vitiate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the Drawings and Specifications forming part of the particular contract document.

4.00 Security Deposit:

4.1 Security Deposit shall consist of two parts;

- a) Performance Security to be submitted at award of work and
- b) Retention Money to be recovered from running bills.

The security deposit shall bear no interest.

4.2 Performance Security should be 5% of contract amount and should be submitted within 21 days of issuance of LOA by the successful bidder in any of the form given below:

- a Bank Guarantee in the form given in the bid document from any Scheduled bank. The BG issued by outstation bank shall be operative at its local branch at Sambalpur or branch at Sambalpur.
Bank Guarantee against Performance Security shall be applicable if the amount of Performance Security exceeds Rs. 5.0 lakhs.
- Govt. Securities, FDR or any other form of deposit stipulated by the owner and duly pledged in favour of owner.
- Demand Draft drawn in favour of Mahanadi Coalfields Ltd on any Scheduled Bank payable at its Branch at Sambalpur

The Earnest Money/ Bid Security deposited shall be discharged when the Bidder has signed the Agreement and furnished the required Performance Security/ 1st part of security deposit.

The bid security deposited may be adjusted against the Performance security (1st part of security deposit) at bidder's option.

If performance security is provided by the successful bidder in the form of bank guarantee it shall be issued either –

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- (a) at Bidder's option by a Scheduled Bank , or
 (b) by a foreign bank located in India and acceptable to the employer.

The validity of the Bank Guarantee shall be for a period of one year or ninety days beyond the period of contract /extended contract period (if any), whichever is more.

The BG (If performance security is provided by the successful bidder in the form of bank guarantee) issued by issuing bank on behalf of the bidder in favour of " _____," shall be in paper form (Stamp Paper) as well as issued under "Structured Financial Messaging System". Issuing Bank should send the underlying confirmation message in IFN760COV or IFN767COV message type for getting the BG advised through our bank. Also issuing bank should mention "**MCL224951**" in field no. "7037" of IFN760COV or IFN767COV. The message will be sent to the beneficiary bank through SFMS. The details of beneficiary Bank for issue of BG through SFMS Platform is furnished below:-

Name of Bank: _____

Branch: _____

IFSC Code: _____

Account No. _____

Customer ID: _____

Original copy of the Bank Guarantee issued by the Issuing Bank shall be sent by the issuing bank to E&T Engineering Division of Mahanadi Coalfields Limited.

In case the successful bidder fails to submit the Performance Security and Additional Performance Security, if any, within the stipulated time then the award of work shall be cancelled with forfeiture of the bid security/earnest money.

Additionally, the company shall ban such defaulting contractor from participating in future tenders in concerned Subsidiary/CIL HQ for a period of minimum one year from the date of issue of such letter.

In case of JV/Partnership firm, the banning shall also be applicable to all individual partners of JV/Partnership firm.

4.3 5% Performance Security should be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects).

4.4 All running on account bills shall be paid at 95% (ninety-five percent) of work value. The balance 5% shall be treated as retention money and will be second part of security deposit.

Retention Money may be refunded against equivalent Bank Guarantee, on written request of the contractor, on its accumulation to a minimum amount of Rs. 5 lakhs subject to the condition that amount of any Bank Guarantee except last one, shall not be less Rs. 5 lakhs.

However, Bank Guarantee against retention money shall be with suitable validity based on nature of work which shall be 90 days beyond the defect liability period, but in no case less than the period of one year.

Bank Guarantee is to be submitted in the format prescribed by the company. Bank Guarantee shall be irrevocable and will be from Scheduled Banks as elaborated at Clause 4.2.

4.5 Retention Money should be refunded after issue of No Defect Certificate.

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4.6 The Company shall be at liberty to deduct/appropriate from the security deposit such sums as are due and payable by the contractor to the company as may be determined in terms of the contract, and the amount appropriated from the security deposit shall have to be restored by further deduction from the contractors subsequent on account running bills, if any.

4.7 REFUND OF SECURITY DEPOSIT: The refund of security deposit shall be subject to company's right to deduct/ appropriate its due against the contractor under this contract or under any other contract.

On completion of the entire work and issue of defect liability certificate (taking over certificate with a list of defects) by the Engineer-in-charge, one half of the security deposit remaining with the company (Performance Security) shall be refunded as elaborated at Clause 4.3.

The other half (Retention Money) shall be refunded to the contractor after issue of No Defect Certificate by the Engineer-in-Charge on the expiry of Defect Liability Period of six months, subject to the following conditions:

a) Any defect/defects in the work, if detected after issue of defect liability certificate (Taking over certificate with list of defects) is/are rectified to the satisfaction of the Engineer-in-Charge within the said defect liability period of six months or on its due extension till completion of the rectification works as required.

b) In the case of building work or other work of similar nature, the refund shall be made on the expiry of the said six months period or at the end of one full monsoon period i.e. June to September, whichever is later in point of time and any defects such as leakages in roof, effloresces in walls, dampness, defects in drainage etc. should be rectified to the satisfaction of Engineer-in-Charge.

NB: In case of Maintenance contracts, that ends with successful completion of work, where question of Defect Liability Period does not arise (e.g. sweeping / cleaning, horticulture, tank cleaning, jungle cutting, grass cutting, surface dressing etc.), the performance security and retention money (second part of bid security) can be released simultaneously after completion of work and taking over by department.

4.8 Additional performance security: (applicable for item rate as well as percentage rate tenders):

a. Part 1 of the Additional Performance Security Deposit (APSD-Part 1):

Part 1 of the Additional performance security shall be applicable if the bid price for Supply, Installation, Testing and Commissioning (Sum of Item No. 1 to 67 of the BoQ) is below 85% of the justified price of Supply, Installation, Testing and Commissioning, finalized by the owner. The amount of such additional performance security shall be the difference between 85% of the owner's justified price and quoted price, with respect to Supply, Installation, Testing and Commissioning portion (Sum of S. No. 1 to 67 of the BoQ).

b. Part 2 of the Additional Performance Security Deposit (APSD-Part 2):

Part 2 of the Additional performance security shall be applicable if the bid price for Comprehensive Annual Maintenance Contract (Item No. 68 of the BoQ i.e. CAMC) is below 85% of the justified price of Comprehensive Annual Maintenance Contract finalized by the owner. The amount of such additional performance security shall be the difference between 85% of the owner's justified price and quoted price, with respect to Comprehensive Annual Maintenance Contract (Item No. 68 of the BoQ i.e. CAMC).

Justified price shall be finalized by the owner on the basis of prevalent market rate of materials and labour analysed as per standard analysis of rate of CPWD/ NBO, and shall be binding on the bidder.

Additional performance security (APS) shall be furnished within 21 days of issuance of LOA by the successful bidder.

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Failure to submit such additional performance security shall result into cancellation of the contract with forfeiture of earnest money.

Additionally, the company shall ban such defaulting contractor from participating in future tenders in concerned Subsidiary/CIL HQ for a period of minimum one year from the date of issue of such letter*. In case of JV/Partnership firm, the banning shall also be applicable to all individual partners of JV/Partnership firm.

This additional performance security will not carry any interest and shall be released in the following manner:

- i) 30% of Additional performance security will be released after 60% of the total work is completed.
- ii) 50% of Additional performance security will be released after 80% of the total work is completed.
- iii) 100% of Additional performance security will be released after total work is completed.

Additional performance security may be furnished in the shape of BG or any of the forms as applicable for performance security.

The validity of the Bank Guarantee if APS submitted in the form of BG shall be for a period of one year or ninety days beyond the period of contract /extended contract period (if any), whichever is more.

4.9 Refund of Security Deposit regarding Specialized Item of Works (shall be applicable only when relevant item exists in the contract and shall be for 10% of value of such items in the contract or for 10% of value of contract with such specialized items only).

a) For some specialized items of work such as anti-termite treatment, waterproofing work, kiln seasoned and chemically treated wooden shutters, or any other item of work deemed as such 'specialized' by Engineer-in-Charge that are entrusted to specialized firms or contractors who associate specialized agencies, the contractor / firm executing the work should be asked to give a specific guarantee that they shall be responsible for removal of any defects cropping up in these works executed by them during the guarantee period. The form of the guarantee to be executed by the contractors shall be as enclosed.

b) The security (performance security and retention money) deposited / deducted from the bills of the contractors, relevant to the item(s), shall be refunded to him after expiry of Guarantee period. The security amount relevant to the item(s) of work, may be released after 12 months of completion of work against equivalent BG and furnishing Guarantee as at (a) above.

4.10 Refund of security deposit for contracts with supply installation and commissioning of equipment i.e. with Mechanical & Electrical Works (shall be applicable only when relevant item exists in the contract)

For some specialized contracts like Pump house, Intake well etc. there may be Civil works as well as Mechanical and Electrical works. For such works security deposit (performance security and retention money)- deposited / deducted from the bills of the contractors shall be refunded to him after expiry of guarantee period, which will be one year from the date of commissioning of equipment/ completion of work and/or rectification of any defect which may be detected in the individual equipment for the whole system under the contract, whichever is later.

In addition, all types of manufacturers guarantee/warranty wherever applicable are to be issued/

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revalidated in the name of the owner by the contractual agency and will be covered with relevant counter guarantee.

Bank guarantees furnished against Performance Security and Retention Money shall be validated for a period 90 days beyond the guarantee period.

5. Deviations/Variations in Quantities and Pricing.

The quantities given in the "Schedule of Quantities" are based on estimates and are meant to indicate the extent of the work and to provide a uniform basis for tendering and any variation either by addition or omission shall not vitiate the contract.

5.1 The company through its Engineer-in-Charge or his representative shall, without radically changing the original scope and nature of the work, under contract, have power to make any alterations in or additions to or substitution of the original specifications, drawings, designs and instructions that may appear to be necessary or advisable during the progress of the work.

The contractor shall be bound to carry out the work(s) in accordance with the instructions given to him in writing by the Engineer-in-Charge or his representative on behalf of the company. Such altered or additional or substituted work, which shall form part of the original contract, shall be carried out by the contractor on the same terms and conditions in all respects on which they agreed to do the main work and at the same rate/rates as are specified in the contract/ work-order.

5.2 The right is reserved to cancel any items of work included in the contract agreement or portion thereof in any stage of execution if found necessary to the work and such omission shall not be a waiver of any condition of the contract nor invalidate any of the provisions thereof.

5.3 If the additional, altered or substituted work includes any class of work for which rate/rates is/are not specified in the contract/work order, rates for such items shall be determined by the Engineer-in-Charge as follows:

a) In the case of percentage tenders, if the rate for the extra item of work executed is available in the company's approved SOR, it will be paid at the schedule rate plus or minus the accepted percentage as per contract.

However, if the extra item is not available in company's approved SOR, then the rate for such extra item(s) shall be dealt as at (c) below.

b) In case of item rate tenders, the rate for extra item shall be derived from the rate for similar item or near similar item / class of work available in the agreement schedule of work or by analysis of rates as at below and the lower rate out of the above two shall be considered.

In case of composite item rate tenders, where two or more schedule of quantities for similar item description may form part of the contract, the applicable rates shall be taken from the Schedule of Quantities of that particular part in which the deviation is involved, failing that at the lowest applicable rate for the similar item of work in the other schedule of quantities.

For derivation of rates based on analysis, the same shall be done by analysis on prevalent market rate of materials and labour based on standard norms of analysis of rate of C.P.W.D/ N.B.O.

c) In the case of extra item(s) that are completely new, and are in addition to the items contained in the contract, the contractor may within 15 days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis. The Engineer-in-Charge shall determine the rate(s) by analysis based on prevalent market rate of material and labour and on standard norms of analysis of rate of CPWD / NBO.

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d) In case of combined tender with partly item rate for non-schedule items & partly percentage tenders for SOR items, the rate for extra item shall be derived as at (b) & (c) above in case of non-schedule items rates and in case of percentage rates for SOR items the rate for extra item shall be derived as at (a) above.

In case of any difference between the contractor and the Engineer-In Charge as to the fixation of rates, the matter shall be referred to the accepting authority of the company i.e. GM(E&T) of the company or Staff Officer(E&T) for the work awarded at Company Hqrs. level and Area level respectively, whose decision shall be final and binding on the contractor.

5.4 Alteration in the quantities shall not be considered as a change in the condition of the contract nor invalidate any of the provision thereof provided that a deviation estimate / revised estimate/supplementary agreement for the item(s) involved is made. Such approval shall be from appropriate authority.

5.5 Payment for such deviated items [additional/ altered / substituted items of work of the agreement schedule] shall be made in the contractors running on account bills, till the revised estimate / deviation estimate regularizing these items are sanctioned by the competent authority of the company, at the provisional rates and shall not exceed:

a) 75% of the rate recommended by the Engineer-in-Charge to the accepting authority of the company i.e. GM(E&T) of the company or SO(E&T) of the Area, if the rate is directly available in the SOR of the company/ if the rate is derived from available rate of BOQ.

b) 50% of the rate recommended by the Engineer-in-Charge to the accepting authority of the company, i.e. GM(E&T) of the company or SO(E&T) of the Area, if it is analysed item rates based on prevalent market rates of materials and labour following CPWD / NBO norms.

Total payment for such extra items of work shall not exceed 10% of work order / agreement value/approved deviation estimate value. Also total payment including extra items of work shall not exceed the work order / agreement / approved deviation estimate value.

5.6 PROVISIONS FOR DEALING WITH VARIATIONS IN RESPECT OF ABNORMALLY HIGH RATE AND ABNORMALLY LOW RATE ITEMS.

The abnormally high rate items are those whose quoted rates are more than 20% of the justified rates decided by the owner.

The abnormally low rate items are those whose quoted rates are less than 20% of the justified rates decided by the owner.

In case of Item Rate Tenders, the revision of rates for (i) abnormally high rate items and (ii) abnormally low rate items, shall become operative under the following circumstances: -

For increase in quantity of more than 25% in respect of works executed below plinth level and 10% in respect of works executed above plinth level.

Quantity variation beyond the limit mentioned above shall be dealt by arriving at new rate based on prevalent market rate of materials and labour analysed as per standard analysis of rate of CPWD/NBO. Payment of extra quantity over the permitted quantity as explained above would be made on the basis of the new analysed rate.

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The variation in quantity of abnormally low rate items for item rate tenders shall not be permitted below 25% for the items below plinth level and below 10% for the items above plinth level of the agreement schedule quantity, but in exceptional cases with written consent of Engineer-in-Charge arising out of technical necessity.

The above provisions shall be applicable for item rate tenders only and not applicable for percentage rate tenders for works based on standard schedule of rates of the company.

For the purpose of operation, the following works shall be treated as works related to foundation, unless otherwise defined in the contract.

- a) For Buildings: All works up to 1.2 metres above ground level or up to floor 1 level whichever is lower.
 - b) For abutments, piers and well steining: All works up to 1.2m above the bed level.
 - c) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs / tanks and other elevated structures: all works up to 1.2 metres above the ground level.
 - d) For reservoirs / tanks (other than overhead reservoirs / tanks): All works up to 1.2 metres above the ground level.
 - e) For basement: all works up to 1.2m above ground level or up to floor 1 level whichever is lower.
- For Roads, all items of excavation and filling including treatment of sub base

5.7 The time of completion of the originally contracted work shall be extended by the company in the event of any deviation resulting in additional cost over the awarded value, if requested by the contractor as follows: -

(i) In the proportion which the additional cost of the altered, additional or substituted work (in value) bears to the original tendered value plus.

(ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

5.8 The company through its Engineer-in-Charge or his representative, on behalf of the company, shall have power to omit any part of the work in case of non-availability of a portion of the site or for any other reason and the contractor shall be bound to carry out the rest of the work in accordance with the instructions given by the Engineer-in-Charge. No claim from the Contractor shall be entertained/ accepted on these grounds.

5.9 In the event of any deviation being ordered which in the opinion of the contractor changes radically the original scope/nature of the contract, the contractor shall under no circumstances suspend the work, either original or altered or substituted, and the dispute/disagreement as to the nature of deviation and the rate/rates to be paid for such deviations shall be resolved separately with the company as per the procedures/ norms laid down hereafter.

6. Time for Completion of Contract, Extension thereof, Defaults and Compensation for Delay

Time is the essence of the contract and as such all works shall be completed within the time stipulated in the contract/ work order. The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor.

Immediately after the contract is concluded i.e. LOA/Work Order is issued, the Engineer-in-Charge and the contractor shall agree upon a detailed time and progress chart prepared based on BAR

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CHART/ PERT CPM techniques on the basis of a construction schedule submitted by the contractor at the time of executing contract showing the order in which the work is proposed to be carried out within the time specified in the LOA /work order.

For the purpose of this detailed time and progress chart, the work shall be deemed to have commenced on the expiry of 10* (ten) days from the issue of Letter of Acceptance of Tender or 7(seven) days after handing over the site of work or handing over reasonable number of working drawings to the contractor or the period of mobilization allowed in the work order for starting the work in special circumstances, whichever is later. However, the Date of Commencement may be decided with mutual consent with the Contractor prior to the date as prescribed above.

* For Specialized Works/ High Value Works (above Rs. 5 crores), the period shall be 30 days.

6.1 If the contractor, without reasonable cause or valid reasons, commits default in commencing the work within the aforesaid time limit, the company shall, without prejudice to any other right or remedy, be at liberty, by giving 15 day's notice in writing to the contractor to commence the work, failing which to forfeit the Earnest Money deposited by him and to rescind the Letter of Acceptance of Tender/Work Order and also to debar the contractor to take part in the future re-tender.

The Company may debar such defaulting Contractors from participating in future Tenders for a minimum period of 12(twelve) months.

Additionally, the company shall ban such defaulting contractor from participating in future tenders in concerned Subsidiary/CIL HQ for a period of minimum one(1) year from the date of issue of such letter. In case of JV/Partnership firm, the debarment shall also be applicable to all individual partners of JV/Partnership firm.

6.2 If the contractor fails to complete the work and clear the site on or before the date of completion or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as compensation (Liquidated Damages):

i) @ half percent ($\frac{1}{2}$ %) of the contract amount/Revised Contract amount whichever is less, per week of delay.

OR

ii) $\frac{1}{2}$ % of the contract-value of group of items/revised completion value of group of items whichever is less, per week of delay, for which a separate period of completion is originally given.

The aggregate of such compensation/ compensations shall not exceed:

i) 10% (ten) percent of the total amount of the contract/ Revised contract amount, whichever is less.

OR

ii) 10% of the contract-value of group of items/ revised completion value of group of items whichever is less, for which a separate period of completion is originally given.

The amount of compensation may be adjusted or set off against any sum payable to the contractor under this or any other contract with the company.

6.2.1 The company, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time of completion, may allow further extension of time at its discretion with or without the levy of L.D. In the event of extension granted being with L.D, the

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company will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half percent of the contract value of the works for each week or part of the week subject to a ceiling as described at Clause 6.2.

6.2.2 The company, if not satisfied that the works can be completed by the contractor, and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.

6.2.3 The company, if not satisfied with the progress of the contract and in the event of failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.

6.2.4 In the event of such termination of the contract as described in clauses 6.2.2 or 6.2.3 or both, the company, shall be entitled to impose penalty/LD as deliberated at Clause 10. Additionally, the contractor shall be debarred from participating in the future tenders for a minimum period of 12 months.

In the event of recovery of any claim towards LD charges, penalty, fee, fine or any other charges from the supplier/vendor, the same will be recovered along with the applicable GST and the amount shall be adjusted with the payment to be made to the supplier/vendor against their bill/invoice or any other dues.

Further Earnest Money/Performance Security forfeited will be inclusive of GST.

6.3 The company may at its sole discretion, waive the payment of compensation on request received from the contractor indicating valid and acceptable reasons if the entire work is completed within the date as specified in the contract/work order or as validly extended date without stipulating any compensation for delay.

6.4 Extension of date of completion: On occurrences of any events causing delay as stated here-under, the contractor shall intimate immediately in writing to the Engineer-in-Charge.

a) Force Majeure:

- i) Natural phenomena like unprecedented flood and draught, earthquakes & epidemics.
- ii) Political upheaval, civil commotion, strikes, lockouts, acts of any Govt. (domestic/foreign) including but not limited to war, proprieties, and quarantine embargoes.

The successful bidder/ contractor will advise in the event of his having to resort to this clause by a registered letter duly certified by the local chamber of commerce or statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition.

In the event of delay due to Force Majeure for more than one month the contract may be terminated at the discretion of the company. Termination under such circumstances will be without any liability on either side.

For delays arising out of Force Majeure, the bidder / contractor will not claim extension in completion date for a period exceeding the period of delay attributable to the clauses of Force Majeure and neither company nor bidder / contractor shall be liable to pay extra cost (like increase in rates, remobilization advance, idle charges for labour and materials etc.) provided it is mutually established that Force majeure conditions did actually exists.

b) Serious loss or damage by fire and abnormally bad weather.

c) Non-availability of stores which are the responsibility of the company to supply as per contract.

d) Non-availability of working drawings in time, which are to be made available by the company as

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per contract during progress of the work.

- e) Delay on the part of the contractors or tradesmen engaged by the company not forming part of the contract, holding up further progress of the work.
- f) Non-availability or breakdown of tools and plant to be made available or made available by the company.
- g) The execution of any modified or additional items of work or excess quantity of work.
- h) Any other causes which, at the sole discretion of the company, is beyond the control of the contractor.

6.4.1 A HINDRANCE REGISTER shall be maintained by both department and the contractor at site to record the various hindrances, as stated above, encountered during the course of execution.

Hindrance register will be signed by both the parties. The contractor may also record his observations in the Hindrance Register. In case the contractor has a different opinion for hindrance and a dispute arises then the matter would be referred to the EIC and or the next higher authority whose decision would be final & binding on the contractor & the decision to be communicated within 15 days.

6.4.2 The contractor shall request the company in writing for extension of time within 15 days of happening of such event causing delay stating also, the period for which extension is required. The company may, considering the genuineness of the request, give a reasonable extension of time for completion of the work. Such extension shall be communicated to the contractor in writing by the company through the Engineer-in-Charge within 1(one) month of the date of receipt of such request.

6.4.3 The opinion of the Engineer-in-charge, whether the grounds shown for the extension of time are or are not reasonable, is final. If the Engineer-in-charge is of the opinion that the grounds shown by the contractor are not reasonable and declines to the grant of extension to time, the contractor cannot challenge the soundness of the opinion.

The opinion of the Engineer-in-charge that the period of extension granted by him is proper or necessary is not, however, final. If the contractor feels that the period of extension granted is inadequate he can appeal to the GM(E&T)/CM(E&T) of the company for consideration on the question whether the period of extension is or is not proper or necessary.

6.4.4 Provisional extension of time may also be granted by the Engineer-in-Charge during the course of execution, on written request for extension of time within 15(fifteen) days of happening of such events as stated above, reserving the company's right to impose/ waive penalty at the time of granting final extension of time as per contract agreement.

6.4.5 When the period fixed for the completion of the contract is about to expire, the question of extension of the contract may be considered at the instance of the Contractor or the Department or of both. The extension will have to be by party's agreement, express or implied.

In case the contractor does not apply for grant of extension of time within 15(fifteen) days of the hindrance occurring in execution of the work and the department wants to continue with the work beyond the stipulated date of completion for reason of the work having been unavoidably hindered, the Engineer-in-charge can grant extension of time even in the absence of application from the contractor.

Such extension of time granted by the Engineer-in-Charge is valid provided the contractor accepts the same either expressly or implied by his actions before and subsequent to the date of completion. Such extension of time shall be without prejudice to Company's right to levy compensation under the relevant clause of the contract.

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The contractor shall however use his best efforts to prevent or make good the delay by putting his endeavours constantly as may be reasonably required of him to the satisfaction of the Engineer-in-Charge.

7. Material Supply & other facilities:

The contractor shall at his own expense, provide all materials required for the work, unless otherwise specified, and the rates quoted by the contractor shall be for finished work inclusive of all materials required for completion of the work as specified in the contract.

*The company may, of its own or at the request of the contractor, supply such materials as may be specified, if available, at rate/rates to be fixed by the Engineer-in-charge.

7.1 For the materials which the company has agreed to supply for the contract, the contractor shall give in writing of his requirements in accordance with the agreed phased programme to the Engineer-in-charge sufficiently in advance. The value of materials so supplied shall be set off or deducted from the payment to be made for the items of work in which such materials have been consumed, or from any sum then due or to become due to the contractor thereafter.

7.2* The company will supply steel both reinforcement and structural and cement at the following rates inclusive of all taxes. The contractor shall bear all the cost for transportation; handling and storage from the issuing store of the company to contractor's work site store.

- i) Reinforcement Steel *:-
 - a) M.S.Round : Rs.
 - b) Tor Steel : Rs.
 - c) Structural Steel : Rs.
- ii) Cement * : Rs.

[* delete whichever is not applicable]

7.3 If the steel is issued by the department, the wastage of steel shall be the barest minimum. The wastage allowed from theoretical quantity will be upto a maximum of 5% to cover the wastage due to cutting into pieces, bending and other factors. No cut pieces or scrap less than 2 mtr. in length will be taken by the department. Efforts should be made to use the cut pieces of 2 mtr. or above length as far as possible.

If the wastage of steel is more than the permissible variation mentioned above the cost of excess wastage made by the contractor shall be recovered at double the issue rates indicated above, or 115% of prevailing market rate along with GST and any other Tax applicable during the period of work, whichever is more.

No allowances shall be entertained on account of Rolling Margin for the steel either issued by the department or procured by the contractor.

7.4 If the cement is issued by the department, the variation of 5% will be permitted over the theoretical consumption of cement for value of work upto Rs.10.00 lakhs and 3% for value of work above Rs.10.00 lakhs. In the event of cement consumed is more/less than specified above, the recovery for the quantity of cement consumed in excess or less than the specified quantity shall be made at double the issue rate or 115% of prevailing market rate along with GST and any other Tax applicable during the period of work, whichever is more.

7.5 In case the department is not able to supply cement/steel as per the provisions of the contract, the Engineer-in-Charge may allow, with the approval of GM/HOD(E&T) of the company, the contractor in writing for procurement of cement/ steel from the approved sources and the extra on this account including transport charges, if any, over the issue rate shall be reimbursed to the contractor on production of authentic documents. Transportation of cement/ steel from the place of purchase to the site of work and proper storage of cement/steel at site shall be contractor's

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responsibility. He should maintain proper account of cement/steel issued/procured by him and should allow inspection of his go down and his cement/steel account by the concerned Engineer-in-charge or any other authorized officers of the company. Contractor should draw materials from the company on the basis of actual requirement as assessed by the Engineer-in-Charge on "as and when required" basis.

7.6 Recovery of cost of materials issued on sale A/c will be made as per actual consumption basis but the Engineer-in-Charge will have the discretion for making full recovery while processing a particular bill or asking for the return of the balance materials if the work is not progressing satisfactorily.

The contractor shall keep accurate record of materials issued by the company, maintain proper account for the materials received and consumed in the work and shall be open to check by the Engineer-in-Charge or his authorized representative. The contractor shall ensure that such materials are consumed for the contract works only and the Register for the aforesaid account shall be signed both by the representatives of Engineer In Charge and the contractor.

7.7 All materials, tools and plants brought to site by the contractor including the materials supplied by the company shall be deemed to be held in lien by the company and the contractor shall not have the right to remove the same from the site, without the written permission of the Engineer-in-Charge. The company shall not however be liable for any loss, theft or damage due to fire or other cause during this period of lien, the responsibility for which shall lie entirely on the contractor.

7.8 The contractor shall bear the cost of loading, transportation to site, unloading, storing under cover as required etc. as may be necessary for the use and keeping the materials in good condition.

7.9 Any surplus materials issued by the company, remaining after completion or termination of the contract, shall be returned by the contractor at his cost to the place of issue and the Engineer-in-Charge shall accept the same at the rate not exceeding the rate at which these were originally issued taking into consideration the deterioration or damage, if any, that may have been caused during the custody of the contractor. In the event, the contractor fails to return the surplus materials out of those supplied by the company, the Engineer-in-Charge may, in addition to any other liability which the contractor would incur in this regard, by giving notice in writing require the contractor to pay the amount at double the issue rate for such unreturned surplus materials or 115% of the prevailing market rate along with GST and any other tax applicable during the period of work, whichever is more.

7.10 On completion or on termination of the contract and on complete recovery of secured advance paid by the company, if any, in respect of materials brought to site, the contractor with due permission of the Engineer-in-Charge shall be entitled to remove at his expenses all surplus materials originally supplied by him and upon such removal, the same shall become the property of the contractor.

7.11 All charges on account of GST or any other applicable taxes, duties or levies on materials obtained for the works from any source (excluding materials supplied by the company) shall be borne by the contractor. This clause may be read in conjunction with 13(ix) of condition of contract.

7.12 The contractor shall arrange necessary electricity at his own cost for the installation/ fabrication part of the work and his own establishment. However, if available and feasible the company may arrange electricity for installation/ fabrication and his own establishment at one point near the work site and necessary recovery of cost of energy consumed for installation/ fabrication and his own establishment will be made at rates prescribed by the company from time to time. Energy meter for this purpose shall be provided by the contractor.

For testing, trial run, commissioning and operation of the system, electricity will be provided free of

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cost by MCL

7.13 The contractor shall arrange necessary water for the work and his own establishment and nothing extra will be paid for the same. Such water used by the contractor shall be fit for construction purposes. However, if available and feasible the company may arrange water, at the written request of the contractor, to the extent possible, at one point near the work site for which recovery @ 1% of the contract value of work done will be made from the contractor's bills. The contractor shall make his own arrangement of water connection and laying of pipe lines from main source of supply. Department do not guarantee to maintain uninterrupted supply of water. No claim of damage or refund of water charges will be entertained on account of such break down.

7.14 Explosives, detonators and other inflammable materials shall not be used in the execution of the work at site by the contractor without prior written permission of the Engineer-in-Charge. Transportation and storage of such materials shall be done in specified manner in accordance with the law in force. The contractor shall also obtain license under such laws for, transportation, storage, use and all other operations, connected with the handling of the same.

8. Quality Assurance - Materials and Workmanship

The contractor shall carry out and complete the work in every respect in accordance with the contract and shall ensure that the work conforms strictly to the drawings, specifications, (as enclosed or in absence of enclosed specifications current CPWD/BIS specifications) instructions of the Engineer-in-Charge. The Engineer-in-Charge may issue, from time to time, further drawings, detailed instructions/ directions in writing to the contractor. All such drawings, instructions/directions shall be consistent with the contract documents and should be reasonably inferable there from, along with clarifications/ explanations thereof, if necessary. However, the contractor will be solely responsible for design and erection of all temporary structures required in connection with the work.

8.1 For Quality Assurances of all the Civil Engineering Works the norms/ guidelines laid down by the company herein and elsewhere will form part of the contract for the purpose of quality of works.

8.2 The contractor shall be responsible for correct and complete execution of the work in a workman like manner with the materials as per specification which shall be subject to the approval of the company. All work under execution in pursuance of the contract shall be open to inspection and supervision by the Engineer-in-Charge or by his authorized representative or any other official of higher rank or any other person authorized by the company on his behalf & the contractor shall allow the same.

8.3 All materials to be provided by the contractor shall be in conformity with the specifications/schedule of work as per the contract and the contractor shall furnish proof, if so required by the Engineer-in-Charge to his satisfaction that the materials do so comply.

8.4 The contractor shall immediately after the award of work draw up a schedule giving dates for submission of samples as required or necessary as per the specification for approval of Engineer-in-Charge who shall approve, if found acceptable, promptly so that there is no delay in the progress of the work of the contractor or of the work of any of the sub-contractor.

On receipt of samples as per schedule, the Engineer-in-Charge shall arrange to examine/test with reasonable promptness ensuring conformity of the samples with the required specification and complying with the requirements as per contract documents keeping in view that the work shall be in accordance with the samples approved by him. The contractor shall be bound to furnish fresh sample, if disapproved by the Engineer-in-Charge, for his approval. The contractor shall not start bringing materials at the site unless the respective samples are approved. Materials conforming to approved samples shall only be brought to site. However, Engineer-in-Charge's approval for any

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sample, design / drawings (permanent/temporary structures) shall not alter contractor's full responsibility whatsoever for the performance and safety of the executed job.

Samples are to be supplied by the contractor at his own cost. The cost involved in tests shall be borne by the contractor. If any test is ordered by the Engineer-in-Charge which is to be carried out by any independent person or agency at any place other than the site even then the cost of materials and testing charge etc. shall be borne by the contractor. If the test shows that the materials are not in accordance with the specifications, the said materials shall not be used in the work and removed from the site at contractors' cost.

8.5 The company, through the Engineer-in-Charge, shall have full powers to reject any materials or work due to a defect therein for not conforming to the required specification, or for materials not being of the required quality and standard or for reasons of poor workmanship or for not being in accordance with the sample approved by him. The contractor shall forthwith remedy the defect/replace the materials at his expense and no further work shall be done pending such rectification/replacement of materials, if so instructed by the Engineer-in-Charge.

In case of default on the part of the contractor, the Engineer-in-Charge shall be at liberty to procure the proper materials for replacement and/or to carry out the rectifications in any manner considered advisable under the circumstances and the entire cost & delay for such procurement/rectification shall be borne by the contractor.

8.6 The Engineer-in-Charge shall be entitled to have tests carried out for any materials, according to the standard practice followed for such tests, other than those for which satisfactory proof has already been furnished by the contractor who shall provide at his expense all facilities which the Engineer-in-Charge may require for the purpose. All such expenses born by the contractor are not to be paid separately by the employer and shall be assumed covered in accepted prices.

The cost of any other tests, if so required by the Engineer-in-Charge, shall be borne by the company. However, if the test shows the workmanship or materials not to be in accordance with the provision of the contract or the instruction of Engineer-in-Charge the cost shall be borne by the contractor.

8.7 Access to the works: The Engineer-in-charge and any person authorized by the company shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles are being obtained for the works and the contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

8.8 Inspection of works: i) No work shall be covered up or put out of view without the approval of the Engineer-in-charge or the Engineer-in-charge's representative or any other officer nominated by the company for the purpose and the contractor shall afford full opportunity for the EIC or EIC's representative or any other officer nominated by the company for the purpose to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The contractor shall give due notice to the Engineer-in-charge's representative whenever any such work or foundations is ready or about to be ready for examination and the Engineer-in-charge's representative shall, without unreasonable delay, unless he considers it unnecessary and advises the contractor accordingly, attend for the purpose of examining and measuring such work or foundations.

ii) The contractor shall uncover any part or parts of the works or making openings in or through the same as the Engineer-in-Charge may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of Engineer-in-charge.

If any such part or parts have been covered up or put out of view after compliance with the requirement of sub-clause above and are found to be executed in accordance with the contract, the expenses of uncovering, making openings in or through and making good the same shall be borne by the Employer, but in any other cases all costs shall be borne by the contractor.

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8.9 Removal of Improper Work and Materials:

i) The Engineer-in-charge shall during the progress of the works have power to order in writing from time to time:

a) The removal from the site, of any materials which in the opinion of Engineer-in-charge, are not in accordance with the contract/ work order/ approved sample.

b) The substitution with proper and suitable materials.

c) The removal and proper re-execution, notwithstanding any previous test thereof or interim payment there from, of any work which in respect of materials or workmanship is not in accordance with the contract.

ii) In case of default on the part of the contractor in carrying out such order, the Engineer-in -charge shall be entitled to employ and pay other agency to carry out the same and all expenses consequent thereon shall be recoverable from the contractor or may be deducted from any amount due or which may become due to the contractor.

8.10 Devaluation of Work: In lieu of rejecting work done or materials supplied not in conformity with the contract/work order/approved samples, the Engineer-in-charge or any other officer nominated by the company for the purpose may allow such work or materials to remain, provided the Engineer-in-Charge/ the officer nominated by the company is satisfied with the quality of any materials, or the strength and structural safety of the work, and in that case shall make such deduction for the difference in value, as in his opinion may be reasonable.

8.11 Final Inspection of Work: The Engineer-in-charge and any other officer nominated by the company for the purpose shall make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the contractor that the work is completed and ready for acceptance. If the work is not acceptable to the Engineer-in-charge at the time of such inspection, he shall inform the contractor in writing as to the particular defects to be remedied before final acceptance can be made.

8.12 Defects appearing after acceptance: Any defects which may appear within the defect liability period and arising, in the opinion of the Engineer-in-charge, from lack of conformance with the drawings and specifications, shall, if so required by the Engineer-in-charge in writing, be remedied by the contractor at his own cost within the time stipulated by the Engineer-in-charge. If the contractor fails to comply, the Engineer-in-charge may employ other persons to remedy the defects and recover the cost thereof from the dues of the contractor.

8.13 Site Order Book: A Site Order Book is a Register duly certified by the Engineer-in-charge regarding number of pages it contains, each page being numbered, name of work, name of contractor, reference of contract/ work order and the aforesaid certificate should be recorded on its first page.

Site Order Books shall be maintained on the sites of works and should never be removed there from under any circumstances. It shall be the property of the company. The Engineer-in-Charge or his authorized representative shall duly record his observations regarding any work which needs action on the part of the contractor like, improvement in the quality of work, failure to adhere to the scheduled programme etc. as per contract/work order. The contractor shall promptly sign the site

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order book and note the orders given therein by the EIC or his representative and comply with them. The compliance shall be reported by the contractor in writing to EIC in time so that it can be checked.

The Site Order Book will be consulted by the Engineer-in-Charge at the time of making both running on account and final bills of the contractor. A certificate to this effect should be given in the Measurement books by the Engineer-in-Charge or his representative.

8.14 Samples and Testing of Materials: All the materials to be procured by the contractor and to be used in work shall be approved by the Engineer-in-Charge in advance, and shall pass the tests and analysis required by him, which will be as specified in the specifications of the items concerned and or as specified by BIS or the IRC / MORTH standard specifications acceptable to the Engineer-in-Charge. The method of sampling and testing shall be as per the relevant BIS, IRC/ MORTH and other relevant standards and practices. Minor minerals like sand, stone chips etc. shall be conforming to relevant BIS standards. All bought out items including Cement and Steel shall be procured from such manufacturers who hold valid license conforming to relevant BIS standards for manufacturing of such items.

8.15 Storage of Materials: Materials shall be so stored as to ensure the preservation of the quality and fitness for the work. When considered necessary by the Engineer-in-charge, they shall be placed on wooden platforms or other hard, clean surfaces and not directly on the ground.

Materials shall be placed under cover when so directed and the contractor shall erect and maintain at his own cost temporary weather-proof sheds at the work site for the purpose. Stored materials shall be so located as to facilitate prompt inspection. All stored materials shall be inspected at the time of use in the work, even though they may have been inspected and approved before being placed in storage or during storage.

8.16 Defective Materials: All materials not conforming to the requirements of the specifications shall be considered as defective, and all such materials, whether in place or not shall be rejected. They shall be removed immediately by the contractor at his expenses and replaced with acceptable material.

No rejected material, the defects of which have been subsequently corrected, shall be used on the work until approval in writing has been given by the Engineer-in-Charge. Upon failure on the part of the contractor to comply with any instruction of the Engineer-in-charge made under the provisions of this article within the time stipulated by the Engineer-in-charge, the Engineer-in-charge shall have authority to remove and replace defective material and recover the cost of removal and replacement from the contractor.

Further all such defective material lying at site not removed and replaced within 30 days after issue of notice by the Engineer-in-charge, if the Engineer-in-charge so decides shall dispose of such material in any manner without any further written notice to the contractor.

9. Measurement and Payments

Except where any general or detailed description of the work in the Bill of Quantities or specifications of the contract/ work order provides otherwise, measurement of work done shall be taken in accordance with the relevant standard method of measurement published by the Bureau of Indian Standards (BIS) and if not covered by the above, other relevant Standards/practices shall be followed as per instructions of the Engineer-in-Charge.

9.1 All items of work carried out by the contractor in accordance with the provision of the contract having a financial value shall be entered in the Measurement Book as prescribed by the company so

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that a complete record of the measurements is available for all the works executed under the contract and the value of the work executed can be ascertained and determined there from. Measurements of completed work / portion of completed work shall be recorded only in the Measurement Books.

9.2 Measurement shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative.

9.3 Before taking measurements of any work, the Engineer-in-Charge or the person deputed by him for the purpose shall intimate the contractor to attend or to send his representative to attend the measurement. Every measurement thus taken shall be signed and dated by both the parties on the site on completion of the measurement. If the contractor objects to any measurements, a note to that effect shall be made in the Measurement Book / Log Book and signed and dated by both the parties.

9.4 The measurement of the portion of work/items of work objected to, shall be re-measured by the Engineer-in-Charge himself or the authority nominated by the company for the purpose in the presence of the contractor or his authorized representative and recorded in the M.B. which shall be signed and dated by both the parties. Measurements so recorded shall be final and binding upon the contractor and no claim whatsoever shall thereafter be entertained.

In case the contractor or his authorized representative does not attend to the joint measurements at the prefixed date and time after due notice, the measurements taken by the Engineer-in-Charge or his representative shall be final and binding on the contractor.

Measurement of the extra items of work or excess quantities of work duly authorized in writing by the Engineer-in-Charge shall also be taken and recorded in the M.B. based on the existing items in the SOR of the company and if such items do not exist in the company's SOR, the description of the work shall be as per actual execution. Payment for such extra items will be based on the rates to be derived as described in the relevant clauses of the contract/ work-order.

9.5 No work shall be covered up or put out of view without the approval by the Engineer-in-Charge and recording of measurements and check measurement thereof duly accepted by the contractor. The contractor shall provide full opportunity to the Engineer-in-Charge or his representative to examine and measure all works to be covered up and to examine the foundations before covering up.

The contractor shall also give notice to Engineer-in-Charge whenever such works or foundations are ready for examination and the Engineer-in-Charge shall without unreasonable delay arrange to inspect and to record the measurements, if the work is acceptable and advise the contractor regarding covering of such works or foundations.

9.6 In case of items which are claimed by the contractor but are not admissible according to the department, measurements of such items, will be taken for record purposes only and without prejudice so that in case it is subsequently decided by the department to admit the contractor's claims, there should be no difficulty in determining the quantities of such work. A suitable remark should, however, be made against such measurements to guard against payment in the ordinary way.

9.7 Payments: The running on account payments may be made as under, or at intervals stipulated in the work order/ contract agreement.

a. For Supply, Installation, Testing and Commissioning:

Payment for 80% of the total value of the work executed at a particular Area (including all Projects

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under the Area) will be made after Supply, Installation, Testing and successful trial run of the complete system and issue of System Acceptance Certificate by the concerned Engineer-in-charge/ Site in-charge of the complete system for that particular Area.

Balance 20% payment will be made after successful commissioning & acceptance by the concerned engineer-in-charge/ site in-charge, subject to Supply, Installation, Testing, Trial run and commissioning, of the complete system at all the Areas as mentioned in the work order and issue of a combined (for all the Areas) final Installation & Commissioning certificate by the GM(E&T), MCL HQ.

b. For Comprehensive Annual Maintenance Contract:

The Payment against CAMC will be made on quarterly basis after successful completion of the quarter, after deduction of Penalty and other dues as per the GTC and Special Terms and Conditions of the NIT.

9.7.01 Running on account bill/bills for the work executed/ materials supplied in accordance with the work order/ contract shall be prepared on the basis of detailed measurements recorded as described herein before and processed for payments.

9.7.02 Payment of on account bill shall be made on the Engineer-in-Charge's certifying the sum to which the contractor is considered entitled by way of interim payment for the following :

- a) The work executed as covered by the bill/bills after deducting the amount already paid, the security deposit and such other amounts as may be deductible or recoverable in terms of the work order/ contract.
- b) (i) Payment for excess quantity of work done with the written instructions of the Engineer-in-Charge for items already appearing in the bill of quantities of work with approved rates, will be made along with the on account bills only up to 10% of the quantity provided in the agreement subject to overall value of work not exceeding the agreement value.

(ii) The GM(E&T) of the company and / or the Staff Officer(E&T) of the Area may authorize interim payment for excess work done up to 20 % of the quantity of work provided in the Bill of Quantity of the work awarded from Company level and Area level respectively subject to overall value of work done does not exceed the contract value. This however, shall not be applicable for High Value Items.
- c) Extra items of work executed will be paid on specific written authorization of GM(E&T) of the company or Staff Officer (E&T) of the Area provided that the value of such extra items of work when added together is not more than 10% of the contract value and the total gross payment including excess quantity does not exceed the contract value.

Balance amount on account of excess quantity and extra items of work executed shall be paid after the deviation estimate / revised estimate regularizing the extra items and excess quantities of work is sanctioned by the competent authority of the company with the concurrence of the Finance Department of the company.
- d) On the Engineer-in-Charge's certificate of completion in respect of the work covered by the contract/final measurements of the work certified by the Engineer In Charge or his representative.

9.7.03 The measurements shall be entered in the M.B for the work done up to the date of

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completion and evaluated based on the approved rates for the items in the contract agreement/sanctioned revised estimate. In case of extra items of work, the rates shall be derived as stated in the relevant clause of the contract.

The payments shall be released against the final bill subject to all deductions which may be made on account of materials supplied, water supply for construction, supply of electricity and any other dues payable by the contractor to the company, and further subject to the contractor having given to the Engineer-in-Charge a no claim certificate.

The contractor shall indemnify the company against proof of depositing royalty on account of minor minerals used in the work before the final bill is processed for payments. The final payment to be made will also be subject to Clause-4.6 & 4.7 of the General Terms & Conditions of the contract.

9.7.04 Any certificate given by the Engineer-in-Charge for the purpose of payment of interim bill/bills shall not of itself be conclusive evidence that any work/materials to which it relates is/are in accordance with the contract and may be modified or corrected by the Engineer-in-Charge by any subsequent certificate or by the final certificate.

9.7.05 The company reserve the right to recover/enforce recovery of any overpayments detected after the payment as a result of post payment audit or technical examination or by any other means, notwithstanding the fact that the amount of disputed claims, if any, of the contractor exceeds the amount of such overpayment and irrespective of the facts whether such disputed claims of the contractor are the subject matter of arbitration or not.

The amount of such overpayments shall be recovered from subsequent bills under the contract, failing that from contractor's claim under any other contract with the company or from the contractor's security deposit or the contractor shall pay the amount of over payment on demand. In case of contractor's non-payment on such demand, the same should be realised from the contractor's dues, if any, with Coal India Limited or any of its subsidiaries.

9.7.06 The contractors are required to execute all works satisfactorily and according to the specifications laid down in the contract/ work order. If certain items of work, executed by the contractor, are below specifications, the contractor should re-do them according to the specifications and instructions of EIC and if the contractor fails to rectify the defect within the time and in the manner specified by the EIC, the work shall be got re-done or rectified by the department at the risk and cost of the contractor. Engineer-in-Charge may accept such work of below specifications provided the department is satisfied with the quality of such works and the strength/ structural safety of such works. In that case Engineer-in-Charge shall make such deductions for the difference in value, as in his opinion is reasonable and is approved by the accepting authority of the company i.e. GM/HoD(E&T) of the company in this case or any other officer nominated by GM/HoD(E&T) for the purpose.

9.7.07 Payment Stage: The payment stage involved will be as under,

A. For MCL Areas:

- i. Signature of Asst. Foreman (E&T)/ Foreman (E&T)/ Foreman Incharge (E&T) in MB.
- ii. Signature of Area E&T Engineer with appropriate check measurements in MB.

Note: Wherever Asst. Foreman(E&T)/ Foreman(E&T)/ Foreman Incharge (E&T) are not available, the Signature of Area E&T Engineer in the MBs shall be final.

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B. For MCL Bhubaneswar Office:

- i. Signature of E&M Engineer with appropriate check measurements in the MB.

C. For MCL HQ:

- i. Signature of Asst. Foreman (E&T)/ Foreman (E&T)/ Foreman In-charge (E&T) in MB.
- ii. Signature of Asst. Manager (E&T)/ Dy. Manager (E&T)/ Sr. Manager (E&T) with appropriate check measurements in MB's.
- iii. Signature of Engineer-in-Charge as per definition as at clause 1(vii) of the General Terms and Conditions, as a token of acceptance for payment of the bill. The EIC may sign in the abstract of the bill in the MB & the bill form.

(In case of non-availability of personnel as at A, B or C above, company may authorize suitable personnel for the works outlined at A, B or C. Further for check measurement also company may authorize Executives based on availability.)

9.7.08 Secured Advance: Secured advance can be paid for items of materials required for execution of the work and covered under categories A & B and supplied by the contractor at work site, supported by necessary vouchers, challans, test certificates etc. after execution of indemnity bond as per prescribed Form of the company on non-judicial stamp paper of prescribed value.

This advance shall be recovered in four equal installments or as per consumption whichever is higher. Engineer-in-Charge shall recover at his discretion all or any part of secured advance paid, if in his opinion the work is not progressing satisfactorily or the security of these materials at site is not adequately taken care of by the contractor. Secured advance shall be payable for contracts of value above Rs.50.00 lakhs only.

Secured advance for structural steel sections, reinforcement steel and cement, collected at site, will be paid upto 75% of the corresponding stock yard prices of SAIL for the corresponding steel items and Govt. approved/ D.G.S.D. prices for cement, if the same exist.

In case of non-availability of Govt. approved prices of cement & steel and for the materials falling under Category - A and B the secured advance will be paid at the basic rate available in the approved schedule of rates of the company plus or minus the overall percentage on which the work was awarded, provided such rate is not more than 60% of the quoted rate of the contractor for the actual work.

At any point of time the outstanding recoverable secured advance shall not be more than 10% of the contract value.

Items against which secured advance can be granted:

Category-A

Civil:

1. Bricks.
2. Stone and brick aggregate.
3. Stones.
4. Finished products of brass, iron and steel such as doors & windows frames, wire mesh, gate, GI Sheets.
5. Pre-cast R.C.C. products such as pipes, jali, water storage tanks etc.
6. Doors & Window fittings.
7. Pipes and sanitary fittings of CI, SCI & HCl.

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Electrical :

1. Steel conduits
2. G.I. Pipes
3. I.C. Boards
4. Switchgears (Air circuit breakers and Air break switches)
5. C.I. Boxes.
6. A.C.S.R. Conductors
7. A.C. Plant & Machinery
8. Pumps
9. Generating sets (without oil)

Items against which secured advance can be granted:

Category- B

Civil:

1. Glazed tiles, terrazzo tiles and similar articles.
2. Marble slabs.
3. Asbestos cements products.
4. Finished timber products such as doors, windows, flush doors, particle boards (subject to mandatory test being satisfactory) etc.
5. Bitumen in sealed drums.
6. Bitumen felt.
7. Polythene pipes and fittings and tanks.
8. Sanitary fittings and pipes of S.W., porcelain and chinaware materials
9. Laminated / Safety, one way vision, and bullet proof glasses.
10. Chemical required for anti-termite treatment (in sealed drums).
11. Paints, varnishes, distempers, pigment, spirits etc.

Electrical:

1. Transformers
2. Oil-filled switch gears.
3. L.T. & H.T. Cables
4. Fans
5. Storage and Dry Batteries
6. Insulation tapes.
7. Epoxy cable compounds.
8. Electric light fittings.
9. Wooden battens, casing & capping and wooden boards.
10. Flexible wires.
11. PVC materials.
12. Oil and lubricants.
13. Rubber materials.
14. Glass wool, thermocole & other insulating materials.
15. Porcelain H.T. and L.T. insulators.

In addition to indemnity bond, for materials listed under Category-B, the contractor shall be required to provide necessary insurance cover of equivalent value of materials.

Items against which no secured advance shall be granted:

Civil:

1. Glass products other than those indicated in Category-B.
2. Sand and moorum
3. Chemical compounds other than those indicated in Category-B.

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Electrical:

1. Glass gloves and shades
2. Bulbs and tubes
3. Petrol and diesel
4. Freon and other refrigeration gases.

9.8 Income tax deduction @ 2% (Two percent) of the gross value (excluding GST) of each bill or at the rate as amended from time to time, shall be made unless exempted by the competent authority of the Income Tax Department. Further, TDS under GST will be deducted at applicable rates as per the provisions of GST Act wherever applicable.

Building and Construction Workers Cess (as applicable in States) shall be payable by the contractor. If, however, the company is asked to make deduction from the contractor's bills, the same shall be done and a certificate to this effect shall be issued to the contractor for dealing with the State Govt. and the company does not take any responsibility to do anything further in this regard.

9.9 No interest shall be payable on the amounts withheld, under the terms of the Contract Agreement/Work-order.

10. Termination, Cancellation, Suspension and Foreclosure of Contract

The company shall, in addition to other remedial steps to be taken as provided in the conditions of contract be entitled to cancel the contract in full or in part, and whether the date of completion has or has not elapsed, by notice in writing if the contractor: -

a) makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the Engineer-in-Charge, then on the expiry of the period as specified in the notice

Or

b) commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the Engineer-in-Charge, then on the expiry of the period as may be specified by the Engineer-in-Charge in a notice in writing.

Or

c) obtains a contract with the company as a result of ring tendering or other non-bonafide methods of competitive tendering

Or

d) shall offer or give or agree to give any person in the service of the company or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for his company.

Or

e) fails to complete the work or items of work with individual dates of completion, on or before the date/dates of completion or as extended by the company, then on the expiry of the period as may be specified by the Engineer-in-Charge in a notice in writing.

Or

f) transfers, sublets, assigns the entire work or any portion thereof without the prior approval in writing from the Engineer-in-Charge. The Engineer-in-Charge may by giving a written notice, cancel the whole contract or portion of it in default.

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10.1 The contract shall also stand terminated under any of the following circumstances:

- a) If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of Insolvency Act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any Insolvency Act.
- b) In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the contractors company or by an order of court, not being a voluntary liquidation proceedings for the purpose of amalgamation or reorganization, or a receiver or manager is appointed by the court on the application by the debenture holders of the contractor's company, if any.
- c) If the contractor shall suffer an execution being levied on his/their goods, estates and allow it to be continued for a period of 21 (twenty-one) days.
- d) On the death of the contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the company is not satisfied that the legal representative of the deceased proprietor or the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the company in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

10.2 On cancellation of the contract or on termination of the contract, the Engineer-in-charge shall have powers:

- a. To take possession of the site, any materials, constructional plant, equipment, stores etc. thereon and carry out balance work through any means or through any other agency.
- b. To give the contractor or his representative of the work 7 (seven) days notice in writing for taking final measurement for the works executed till the date of cancellation or termination of the contract. The Engineer-in-Charge shall fix the time for taking such final measurement and intimate the contractor in writing. The final measurement shall be carried out at the said appointed time notwithstanding whether the contractor is present or not. Any claim as regards measurement which the contractor is to make shall be made in writing within 7 (seven) days of taking final measurement by Engineer-In-charge as aforesaid and if no such claim is received, the contractor shall be deemed to have waived all claims regarding above measurements and any claim made thereafter shall not be entertained.
- c. After giving notice to the contractor to measure up the work of the contractor and to take such whole or the balance or part thereof, as shall be unexecuted out of his hands and to give it to another contractor or take up departmentally, to complete the work. The contractor whose contract is terminated shall not be allowed to participate in future bidding for period of minimum twelve months.

In such an event, the contractor shall be liable for loss/damage suffered by the employer because of action under this clause and to compensate for this loss or damage, the employer shall be entitled to recover higher of the following:

- i) Forfeiture of security deposit comprising of performance guarantee and retention money and additional performance security, if any, at the disposal of the employer.

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Or

ii) 20% of value of incomplete work. The value of the incomplete work shall be calculated for the items and quantities remaining incomplete (as per provision of agreement) at the agreement rates including price variation as applicable on the date, when notice in writing for termination of work was issued to the contractor.

The amount to be recovered from the contractor as determined above, shall, without prejudice to any other right or remedy available to the employer as per law or as per agreement, will be recovered from any money due to the contractor on any account or under any other contract and in the event of any shortfall, the contractor shall be liable to pay the same within 30 days. In case of failure to pay the same the amount shall be debt payable.

In the event of above course being adopted by the Engineer-in-charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased materials, equipment or entered into agreement or made advances on any account or with a view to the execution of work or performance of the contract. And in case action is taken under any of provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum for any work thereof or actually performed under this contract unless and until the engineer-in-charge has certified in writing the performance of such work and value payable in respect thereof and he shall only be entitled to be paid the value so certified.

The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor as stated in 10.1(d).

10.3 Suspension of Work:

Suspension of work – The Company shall have power to suspend the work. The contractor shall on receipt of the order in writing of Engineer-in -charge (whose decision shall be final and binding on the contractor), suspend the progress of work or any part thereof for such time in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage, or endanger the safety thereof for any of the following reasons:

- a) on account of any default on the part of the contractor, or
- b) for proper execution of the works, or part thereof, for reasons other than the default of the contractor or,
- c) for safety of the works, or part thereof.

The contractor shall, during such suspension properly protect and ensure the works to the extent necessary and carry out the instruction of the Engineer-in-charge. If the suspension is ordered for reasons (b) & (c), the contractor shall be entitled to an extension of time equal to the period of every such suspension plus 25%. This shall also be applicable for completion of the item or group of items of the work for which a separate period of completion as specified in the contract and of which the suspended work forms a part.

The contractor shall carry out the instructions given in this respect by the Engineer-In Charge & if such suspension exceeds 45 (forty-five) days, the contractor will be compensated on mutually agreed terms.

10.4 Foreclosure of contract:

If at any time after acceptance of the tender the company decides to abandon or reduce the scope of

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work for any reason whatsoever the company, through its Engineer-in-Charge, shall give notice in writing to that effect to the contractor and contractor shall act accordingly in the matter. In the event of abandonment, the contractor shall have no claim to any payment of compensation or otherwise whatsoever, other than those mentioned below: -

- a) to pay reasonable amount assessed and certified by the Engineer-in-Charge of the expenditure incurred, if any, by the contractor on preliminary works at site e.g. temporary access roads, temporary construction for labour and staff quarters, office accommodation, storage of materials, water storage tanks and water supply for the work including supply to labour/ staff quarters, office etc.
- b) to pay the contractor at the contract rates full amount for works executed and measured at site up to the date of such abandonment.
- c) to pay for the materials brought to site or to be delivered at site, which the contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the company should be in good condition and the company may allow at its discretion the contractor to retain the materials in full or in part if so desired by him and to be transported by the contractor from site to his place at his own cost with due permission of the EIC.
- d) to take back the materials issued by the company but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issue price less allowance for any deterioration or damage caused while in custody of the contractor.
- e) to pay for the transportation of tools and plants of the contractor from site to contractor's place or to any other destination, whichever is less.

10.4.01 The contractor shall, if required by the Engineer-in-Charge, furnish to him books of accounts, papers, relevant documents as may be necessary to enable the Engineer-in-Charge to assess the amounts payable in terms of clauses 10.4 (a) (c) & (e) of the contract. The contractor shall not have any claim for compensation for abandonment of the work, other than those as specified above.

11. Carrying out Part Work at Risk & Cost of Contractor.

If the progress of the work or of any portion of the work is unsatisfactory, the Engineer-in-Charge, after giving the contractor 15 days' notice in writing, without cancelling or terminating the contract, shall be entitled to employ another Agency for executing the job or to carry out the work departmentally or contractually through tendering / limited tendering process, either wholly or partly, debiting the contractor with cost involved in engaging another Agency or with the cost of labour and the prices of materials, as the case may be. The certificate to be issued by the Engineer-in-Charge for the cost of the work so done shall be final and conclusive and the extra cost, if any, shall be borne by the contractor. However, when this clause is invoked, penalty will not be applicable other than on account of delayed completion.

The value of the work taken away shall be calculated for the items and quantities taken away at the agreement rates including price variation as applicable on the date, when notice in writing for taking away part work was issued to the contractor. The contractor, from whom part work is being taken out, shall not be allowed to participate in the tendering process if any.

If the expenses incurred by the department is less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

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In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

12. Completion Certificate / Defect Liability Certificate

Except in cases where the contract provides for "Performance Test" before issue of Defect Liability certificate, in which case the issue of Defect Liability certificate shall be in accordance with the procedure specified therein, the contractor shall give notice of completion of work, as soon as the work is completed, to the Engineer-in-Charge. The Engineer-in-Charge and or any other Officer, nominated for the purpose by the company, shall within 30 (thirty) days from the receipt thereof, inspect the work and ascertain the defects/deficiencies, if any, to be rectified by the contractor as also the items, if any, for which payment shall be made at reduced rate.

If the defects, according to the Engineer-in-Charge are of a major nature and the rectification of which is necessary for the satisfactory performance of the contract, he shall intimate in writing the defects and instruct the contractor to rectify the defects/remove deficiencies within the period and in the manner to be specified therein. In such cases Defect Liability Certificate will be issued by the EIC after the above rectifications are carried out/ deficiencies are removed by the contractor to the satisfaction of EIC.

In the event there are no defects or the defects/ deficiencies are of a minor nature and the Engineer-in-Charge is satisfied that the contractor has already made arrangements for rectification, or in the event of contractor's failure to rectify the defects for any reason whatsoever, the defects can be rectified by the company departmentally or by other means and the 50% of the security deposit of the contractor shall be sufficient to cover the cost thereof, he shall issue the Defect Liability Certificate (Taking Over Certificate with list of defects) indicating the date of completion of the work, defects to be rectified, if any, and the items, if any, for which payment shall be made at reduced rate indicating reasons there for and with necessary instructions to the contractor to clear the site/place of work or all debris/ waste materials, scaffoldings, sheds, surplus materials etc. making it clean.

12.1 In cases where separate period of completion for certain items or groups of items are specified in the contract, separate Defect Liability certificate for such items or groups of items may be issued by the Engineer-in-Charge after completion of such items on receipt of notice from the contractor only in the event the work is completed satisfactorily in every respect.

Refund of security deposit and payment of final bill shall, however, be made on completion of the entire contract work, but not on completion of such items of work.

12.2 Before the date fixed for completion of work, the work as well as the site of work are to be made clean after removal of rubbish, scaffolding, surplus materials, temporary structures etc.

12.3 In case of contractor's failure to clear the site, the EIC shall have right to get the work done. The cost thereof shall be recovered from the final bill of the contractor.

10. Additional Responsibilities of the Contractor(s)

The cost on account of the "Additional Responsibilities of the Contractors" under this clause is deemed to be included in the tendered rates.

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i) The company reserves the rights to let other contractors also work in connection with the Project and the contractor/contractors shall co-operate in the works for the introduction and stores and materials and execution of his/their works.

ii) The contractor/contractors shall keep on the work site during the progress a competent and experienced Resident Engineer exclusively for the work and necessary assistants who shall represent the contractor(s). The contractor shall employ, on the site in connection with the execution and maintenance of the work, technical and managerial staff as mentioned below.

Sl.No.	Value of Work	Manpower Requirement
1.	More than 10 Crores	One Resident Engineer (Degree Holder), One Engineer (Degree Holder), Two Engineers (Diploma Holder)
2.	5 Crores to 10 Crores	One Resident Engineer (Degree Holder), Two Engineers (Diploma Holder)
3.	2 Crores to 5 Crores	One Resident Engineer (Diploma Holder), One Engineer (Diploma Holder)
4.	50 lakhs to 2 crores	One Resident Engineer (Graduate/ Diploma Holder)

For works below Rs. 50 lakhs, the deployment of manpower shall be as assessed by Engineer.

The contractor shall intimate the Engineer-in-Charge in writing the names, qualifications, experience and full postal address of each and every technical personnel employed at site by him.

The contractor(s) shall not be allowed to execute the work unless he/they engage the required technical staff as assessed by Engineer-in-charge or as specifically mentioned in the bid. The delay on this account, if any, shall be the contractor's responsibility.

Important instructions shall be confirmed to the contractor(s) in writing. If the contractor/contractors in course of the works finds/find any discrepancy between the drawing, forming part of the contract documents and the physical conditions of the locality or any errors or omissions in drawings except those prepared by himself / themselves and not approved by the Engineer-in-Charge. It shall be his/their duty to immediately inform the Engineer-in-Charge in writing and the Engineer-in-Charge shall verify the same. Any work done after such discovery and without intimation as indicated above will be done at the risk of the contractor/contractors.

iii) The contractor / contractors shall employ only competent, skilful and orderly men to do the work. The Engineer-in-Charge shall have the right to ask the contractor/ contractors to remove from the work site any men of the contractor/contractors who in his opinion is undesirable and the contractor/contractors will have to remove him within 3 (three) hours of such orders.

The contractor shall employ apprentices in the execution of the contract work as required under Apprentices Act.

The contractor shall further be responsible for making arrangements at his own cost, or accommodation and social needs of the staff and workers under his employment.

iv) Precautions shall be exercised at all times by the contractor(s) for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by the contractor(s). In case of accidents, the contractor(s) shall be responsible for compliance with all the requirements imposed by the Workmen's Compensation Act or any other similar laws in force and the contractor shall indemnify the company against any claim on this account.

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All scaffoldings, ladders and such other structures which the workmen are likely to use shall be examined by the Engineer-in-Charge or his authorized representative whenever they want and the structure must be strong, durable, and safe and of such design as required by Engineer-in-Charge.

In no case any structure condemned by the Engineer-in-Charge or his authorized representatives shall be kept on the work and such structure must be pulled down within three hours of such condemnation and any certificate or instructions, however, shall in no way absolve the contractor/contractors from his/their responsibility, as an employer, as the company shall in no way be responsible for any claim.

The contractor / contractors shall at all times exercises reasonable precautions for the safety of employees in the performance of his/their contract and shall comply with all applicable provisions of the safety laws drawn up by the State Govt. or Central Govt. or Municipalities and other authorities in India. The contractor/contractors shall comply with the provision of the safety hand book as approved and amended from time to time by the Government of India.

v) The contractor / contractors shall familiarize themselves with and be governed by all laws and rules of India and Local statutes and orders and regulations applicable to his/ their work.

vi) The contractor shall maintain all records as per the provision made in the various statutes including Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour (Regulation & Abolition) Central Rules, 1971, Minimum Wages Act, Workmen Compensation Act etc. and latest amendment thereof. Such records maintained by the contractor shall be opened for inspection by the Engineer-in-Charge or by the nominated representative of the Principal Employer.

vii) The contractor/ contractors shall provide facilities for the sanitary necessities of all persons employed on the work shall be constructed and maintained in the number, manner and place approved or ordered by the Engineer-in-Charge. The contractor/ contractors shall vigorously prohibit committing of nuisance at any other place. Cost of all works under this item shall be covered by the contractor/contractor's tendered rates.

viii) The contractor/contractors shall furnish to the Engineer-in-Charge or his authorized representative with work reports from time to time regarding the contractor / contractors organization and the progress made by him / them in the execution of the work as per the contract.

ix) All duties, taxes (excluding Goods and Services Tax (GST) & GST Compensation Cess (if applicable) only) and other levies, royalty, building and construction workers cess (as applicable in States) payable by the bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. Applicable GST, if any, either payable by bidder or by company under reverse change mechanism shall be computed by system in BOQ sheet as per predefined logic.

All investments, operating expenses, incidentals, overheads, leads, lifts, carriages, tools and plants etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly, if there is any decrease in such duties, taxes and levies the same shall become recoverable from the contractor. The details of such duties, taxes and other levies along with rates shall be declared by the bidder.

The item wise rate quoted by bidder shall be inclusive of all taxes, duties & levies but excluding GST & GST Compensation Cess, if applicable. The payment of GST and GST Compensation Cess by service availer (i.e. Mahanadi Coalfields Limited) to bidder/contractor (if GST payable by bidder/contractor) would be made only on the latter submitting a Bill/invoice in accordance with the provision of relevant GST Act and the rules made there under and after online filing of valid return

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on GST portal. Payment of GST & GST Compensation Cess is responsibility of the service provider/contractor.

Further, any GST credit note required to be issued by the bidder / contractor under the GST provisions should be issued within the time limit prescribed under the GST law.

However, in case bidder/contractor is GST unregistered bidder/dealer or GST registered under composition scheme in compliance with GST rules, the bidder/dealer shall not charge any GST and/or GST Compensation Cess on the bill/invoice. In case of unregistered dealer/bidder, GST, if applicable will be deposited by Mahanadi Coalfields Limited directly to concerned authorities in terms with GST provisions.

Input tax credit is to be availed by Mahanadi Coalfields Limited as per rule.

If Mahanadi Coalfields Limited fails to claim Input Tax Credit(ITC) on eligible Inputs, input services and Capital Goods or the ITC claimed is disallowed due to failure on the part of supplier/vendor of goods and services in incorporating the tax invoice issued to Mahanadi Coalfields Limited in its relevant returns under GST, payment of CGST & SGST or IGST, GST (Compensation to State) Cess shown in tax invoice to the tax authorities, issue of proper tax invoice or any other reason whatsoever, the applicable taxes & cess paid based on such Tax invoice shall be recovered from the current bills or any other dues of the supplier/vendor along with interest and penalty, if any.

The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document.

The company reserves the right to deduct/ withhold any amount towards taxes, levies, etc. and to deal with such amount in terms of the provisions of the Statute or in terms of the direction of any statutory authority and the company shall only provide with certificate towards such deduction and shall not be responsible for any reason whatsoever.

In case of collection of minor minerals in area (both virgin and non-virgin), acquired by the Company under the Coal Act, the contractor will have to produce a royalty clearance certificate from the District Authorities before full and final payment.

Further, where any damages or compensation becomes payable by either the Company or the bidder / contractor pursuant to any provision of this Agreement, appropriate GST wherever applicable as per the GST provisions in force shall also apply in addition to such damages or compensation.

Note: During the execution of the contract if the GST status of the bidder changes, then the payment of GST, if any, to the contractor will be made as per the GST status declared by the bidder during tender stage based on which cost to company has been ascertained or at actuals, whichever is lower.

x) The contractor / contractors shall make his / their own arrangement for all materials, tools, staff and labourer required for the contract, which shall include cost of lead, lift, loading, unloading, railway freight, recruiting expenses and any other charges for the completion of the work to entire satisfaction of the company.

xi) The contractor / contractors shall make their own arrangement for carriage of all materials to the work site at his/their own cost.

xii) The work shall not be sublet to any other party, unless approved by Engineer-in-Charge, in writing. Prior permission is required to be taken from the owner for engagement of sub-contractor in part work/piece rated work.

xiii) a) No fruit trees or valuable plants or trees with trunk diameter exceeding 150mm shall be pulled, destroyed or damaged by the contractor/contractors or any of his/their employees without the prior permission of the company, failing which the cost of such trees or plants shall be deducted from the contractor/contractors dues at the rate to be decided by the company. The rates quoted are supposed to include clearance of shrubs and jungles and removal of such trees up to 150 mm dia., as will be permitted by the Engineer-in-Charge in writing.

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b) Anything of historical or other interest or of significant value unexpectedly discovered on the site is the property of the employer. The Contractor is to notify the Nodal Officer or his nominee of such discoveries and carry out the Nodal Officer or his nominee's instructions for dealing with him.

xiv) The contractor / contractors shall not pay less than the minimum wages to the labourer engaged by him/them as per Minimum Wages Act or such other legislation or award of the minimum wage fixed by the respective State Govt. or Central Govt. as may be in force. The contractor / contractors shall make necessary payments of the provident fund for the workmen employed by him for the work as per the laws prevailing under provisions of CMPF and allied scheme and Miscellaneous Provisions Act, 1948 or Employees Provident Fund and Miscellaneous Provisions Act 1952 as the case may be.

xv) All accounts shall be maintained properly and the company shall have the right of access and inspection of all such books of accounts etc., relating to payment of labourer in online mode including payment of provident fund considered necessary.

xvi) The contractor shall in additions to any indemnity provided by the relevant clauses of the agreement or by law, indemnify and keep indemnified for the following:

a) The company or any agent or employee of the company against any action, claim or proceeding relating to infringement or use of any patent or design right and shall pay any royalties or other charges which may be payable in respect of any article or material included in the contract.

However, the amount so paid shall be reimbursed by the company in the event such infringement has taken place in complying with the specific directions issued by the company or the use of such article or material was the result of any drawing and/or specifications issued by the company after submission of tender by the contractor. The contractor must notify immediately after any claim being made or any action brought against the company, or any agent or employee of company in respect of any such matter.

b) The company against all claims, damages or compensation under the provisions of payment of Wages Act, 1938, Minimum Wages Act, 1948, Employer's Liability Act, 1938, The Workmen's Compensation Act, 1923, Industrial Dispute Act, 1947, Mines Act as applicable, Employees State Insurance Act 1948 and Maternity Benefit Act, 1961, Acts regulating P.F. or any modification thereof or any other law relating thereto and rules made there under from time to time, as may be applicable to the contract which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and also against costs, charges and expenses of any suit, action or proceedings arising out of any accident or injury.

c) The company against all losses and claims for injuries or damages to any third party or to any property belonging to any third party which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and against all claims/demands proceedings/damages, cost charges and expenses whatsoever in respect of or in relation thereto.

xvii) The contractor is under obligation to hand over to the company the vacant possession of the completed building structures failing which the Engineer-in-Charge can impose a levy upon the contractor up to 5% of the total contract value for the delay in handing over the vacant possession of the completed works after giving a 15 (fifteen) days' notice to the contractor.

xviii) **Insurance** – The contractor shall take full responsibility to take all precautions to prevent loss or damage to the works or part thereof for any reasons whatsoever (except for reasons which are beyond control of the contractor or act of God, e.g. flood, riots, war, earthquake, etc.) and shall at his own cost repair and make good the loss/damage to the work so that on completion, the work shall be in good order and condition and in conformity with the requirements of the contract and

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instructions of the Engineer-in-charge.

The contractor/contractors shall take following insurance policies during the full contract period at his own cost:

a). In the case of construction works, without limiting the obligations and responsibilities under the contract, the contractor shall take insurance policy for the works and for all materials at site so that the value of the works executed and the materials at site up to date are sufficiently covered against risk of loss/damage to the extent as permissible under the law of insurance. The contractor shall arrange insurance in joint names of the company and the contractor. All premiums and other insurance charges of the said insurance policy shall be borne by the contractor.

The terms of the insurance policy shall be such that all insurance claims and compensations payable by the insurers, shall be paid to the Employer and the same shall be released to the contractor in instalments as may be certified by the Engineer-in-charge for the purpose of rebuilding or replacement or repair of the works and/or goods destroyed or damaged for which payment was received from the insurers. Policies and certificates for insurance shall be delivered by the contractor to the EIC for his approval before the starting date. Alterations to the terms of insurance shall not be made without the approval of EIC.

b). Where any company building or part thereof is used, rented or leased by the contractor for the purpose of storing or using materials of combustible nature, the contractor shall take separate insurance policy for the entire building and the policy shall be deposited with the company.

c) The contractor shall at all times during the tenure of the contract indemnify the company against all claims, damages or compensation under the provision of the Workmen's Compensation Act and shall take insurance policy covering all risk, claims, damages, or compensation payable under the Workmen's Compensation Act or under any other law relating thereto.

d) The contractor shall ensure that the insurance policy/ policies is/are kept alive till full expiry of the contract by timely payment of premiums and it/they shall not be cancelled without the approval of the company and a provision is made to this effect in all policies, and similar insurance policies are also taken by his sub-contractors if any. The cost of premium shall be borne by the contractor and it shall be deemed to have been included in the tendered rate.

e) In the event of contractor's failure to effect or to keep in force the insurance referred to above or any other insurance which the contractor is required to effect under the terms of the contract, the company may effect and keep in force any such insurance and pay such premium/premiums as may be necessary for that purpose from time to time and recover the amount thus paid from any moneys due to the contractor.

THE CLAUSE 13(xviii) SHALL BE APPLICABLE FOR WORKS OF ESTIMATED VALUE OF OVER Rs. 50 LAKHS.

xix) Setting Out: The contractor shall be responsible for the contract and proper setting out of the works and correctness of the position, reduced levels, dimensions and alignment of all parts of the work including marking out the correct lay out in reference to the permanent bench mark and reference points. Only one permanent bench mark and basic reference lines shall be marked and shown to the contractor as basic data.

The contractor shall have all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of work any error is detected in respect of the position, levels, dimensions or alignment of any part of the work, the contractor on being required to do so by the Engineer-in-Charge or his representative shall at the expenses of the contractor rectify such errors to

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the satisfaction of Engineer-in-Charge unless such error is due to incorrect data supplied by the Engineer-in-Charge.

xx) On receipt of Letter of Acceptance of Tender / Work Order the contractor shall forthwith Register and obtain License from the competent authority under the Contract Labour (Regulation & Abolition) Act 1970, the Contract Labour (Regulation & Abolition) Central Rules, 1971 and submit certified copies of the same to the Engineer-in-Charge and the Principal Employer.

xxi) Deleted.

xxii) The contractor shall, in connection with works, provide and maintain, at his own cost, all lights, security guards, fencing when and where necessary as required by the Engineer-in-Charge for the purpose of protection of the works, materials at site, safety of workmen and convenience of the public.

xxiii) All materials (e.g. stone, moorum and other materials) obtained in the course of execution of the work during excavation and dismantling etc. shall be the property of the company and the same may be issued to the contractors, if required for use in the works at the rates to be fixed by the Engineer-in-Charge.

xxiv) Unless otherwise specifically provided for, dewatering of excavation pits, working areas etc. shall be the contractor's responsibility and is to be carried out at his own cost as per instructions of EIC. The rates quoted by the contractor shall be deemed to include the dewatering costs.

xxv) Approval by the Nodal Officer/Engineer-in-Charge or his nominee: The contractor shall submit specifications and drawings showing the proposed temporary work to the Nodal Officer/Engineer-in-Charge or his nominee, who is to approve them if they comply with the specifications and drawings.

The contractor shall be responsible for design of Temporary Works.

The Nodal Officer/Engineer-in-charge or his nominee's approval shall not alter the contractor's responsibility for design of the Temporary Works.

xxvi) The contractor shall directly pay the ex-gratia amount of Rs.15.00 (Fifteen) lakhs to the eligible dependent family members of the deceased contractor's worker, who died in mine accident as certified by DGMS, to whom the statutory benefits under Employee Compensation Act, Provident Fund etc. have been paid, as per the terms of contract or through Insurance Company by availing Group Personal Accident Insurance Policy for all its workers before commencement of the contract, which shall be renewed periodically to cover the entire duration of the contract. No reimbursement shall be made on this account by Mahanadi Coalfields Limited.

In order to comply with the above provisions, contractor shall immediately on receipt of letter of acceptance/work order shall obtain group personal accident insurance in respect of all the workmen engaged in mining activities for payment of Rs.15.00(fifteen) lakhs in case of death in mine accident. A proof to such effect shall be produced to the satisfaction of the management before commencement of the work. However, the responsibility of payment of special relief/ex-gratia amount shall lie exclusively with the Contractor.

If the contractor fails to disburse the special Relief/Ex-gratia within the due date, the subsidiary concerned may make payment to the eligible dependent as mentioned herein above. However, such amount shall be recovered from the Contractor from his dues either in the same and/or other subsidiaries of CIL".

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14. Defects Liability Period:

In addition to the defect/s to be rectified by the contractor as per terms of the contract/ work order, the contractor shall be responsible to make good and remedy at his own expense the defect/s mentioned hereunder within such period as may be stipulated by the Engineer-in-Charge in writing:

a) Any defect/defects in the work detected by the Engineer-in-Charge within a period of 6 (six) months from the date of issue of Defect Liability certificate / completion certificate.

b) In the case of building works or other works of similar nature any defect in the work detected by the Engineer-in-Charge within a period of 6 (six) months from the date of issue of Defect Liability certificate/ completion certificate or before the expiry of one full monsoon period i.e. June to September whichever is later in point of time.

14.1 A programme shall be drawn by the contractor and the Engineer-in-Charge for carrying out the defects by the contractor detected within the defect liability period and if the contractor fails to adhere to this programme, the Engineer-in-Charge shall be at liberty to procure proper materials and carry out the rectifications in any manner considered advisable under the circumstances and the cost of such procurement of materials and rectification work shall be chargeable to the contractor and recoverable from any of the pending dues of the contractors.

The defect liability period can be extended by the company on getting request from the contractor only for valid reasons.

There will be no defect liability period for works like Grass Cutting, Jungle Cutting, Surface Dressing & any other work of similar nature to be decided by the Engineer-in-Charge.

15. Operating and Maintenance Manual:

If "as built" drawings and/or Operating and Maintenance Manual are required the contractor shall supply them by the dates as per instruction of the Engineer-in-charge.

If the contractor does not supply the drawings and/or Manual by the dates as stated above, or they do not receive the Nodal Officer or his nominee's approval, the Nodal Officer or his nominee shall withhold the amount as stated in the agreement.

16. Settlement of Disputes.

It is incumbent upon the contractor to avoid litigation and disputes during the course of execution. However, if such disputes take place between the contractor and the department, effort shall be made first to settle the disputes at the company level.

The contractor should make request in writing to the Engineer-in-charge for settlement of such disputes/claims within 30 (thirty) days of arising of the cause of dispute/ claim failing which no disputes/ claims of the contractor shall be entertained by the company.

Effort shall be made to resolve the dispute in two stages

In first stage dispute shall be referred to Area GM or GM/HoD(E&T). If difference still persist the dispute shall be referred to a committee constituted by the owner. The committee shall have one member of the rank of Director of the company who shall be chairman of the committee.

If differences still persist, the settlement of the dispute shall be resolved in the following manner:

Disputes relating to the commercial contracts with Central Public Sector Enterprises / Govt.

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Departments (except Railways, Income Tax, Customs & excise duties)/ State Public Sector Enterprises shall be referred by either party for Arbitration to the PMA (Permanent Machinery of Arbitration) in the department of Public Enterprises.

In case of parties other than Govt. Agencies, the redressal of the dispute may be sought through Arbitration (THE ARBITRATION AND CONCILIATION ACT, 1996 as amended by AMENDMENT ACT of 2015).

16A. Settlement of Disputes through Arbitration

If the parties fail to resolve the disputes/differences by in house mechanism, then, depending on the position of the case, either the employer/owner or the contractor shall give notice to other party to refer the matter to arbitration instead of directly approaching Court. The contractor shall, however, be entitled to invoke arbitration clause only after exhausting the remedy available under the clause 16.

In case of parties other than Govt. agencies, the redressal of disputes/differences shall be sought through Sole Arbitration as under.

Sole Arbitration:

In the event of any question, dispute or difference arising under these terms & conditions or any condition contained in this contract or interpretation of the terms of, or in connection with this Contract (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of a person, appointed to be the arbitrator by the Competent Authority of CIL / CMD of Subsidiary Company (as the case may be). The award of the arbitrator shall be final and binding on the parties of this Contract.

(a) In the event of the Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason, or his/her award being set aside by the court for any reason, it shall be lawful for the Competent Authority of CIL / CMD of Subsidiary Company (as the case may be) to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.

(b) It is further a term of this contract that no person other than the person appointed by the Competent Authority of CIL / CMD of Subsidiary Company (as the case may be) as aforesaid should act as arbitrator and that, if for any reason that is not possible, the matter is not to be referred to Arbitration at all.

Subject as aforesaid, Arbitration and Conciliation Act, 1996 as amended by Amendment Act of 2015, and the rules thereunder and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this clause.

The venue of arbitration shall be the place from which the contract is issued.

Applicable Law: The contracts shall be interpreted in accordance with the laws of the Union of India.

Contracts with Partnership firm/ Joint Venture:

The Partnership firm /Joint Venture is required to submit written consent of all the partners to above arbitration clause at the time of submission of bid.

17. E-way Bill:

The e-way bill required in connection with supply of goods or services, if any, shall be arranged by the supplier/vendor. However, the e-way bill will be arranged by Mahanadi Coalfields Limited if the supplier/vendor is unregistered one or if provisions of the relevant Act and the rules made there under specifically states that the e-way bill is required to be issued by recipient of goods.

18. In the event of recovery of any claim towards LD charges, penalty, fee, fine or any other charges (Except EMD) from the supplier/vendor, the same will be recovered with the applicable GST and the amount shall be adjusted with the payment to be made to the supplier/vendor against their bill/invoice or any other dues.

19. Guidelines for Banning of Business

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CIL and its Subsidiary Companies shall follow the following guidelines for effecting 'Banning of Business' with a contracting entity in respect of Works and Services Contracts.

1. Observance of Principle of Natural Justice before banning the business dealings with any contracting entity.
2. The contracting entity may be banned in the following circumstances :-
 - i) If bidder backs out after notification of opening of price bid and if that bidder is found to be L-1.
 - ii) If L-1 bidder fails to submit PSD and APSD, if any and/or fails to execute the contract within stipulated period.
 - iii) If L-1 bidder fails to start the work on scheduled time.
 - iv) In case of failure to execute the work as per mutually agreed work schedule.
 - v) Continued and repeated failure to meet contractual Obligations:
 - a. In case of partial failure on performance, agency shall be banned from future participation in tenders keeping his present contract alive.
 - b. On termination of contract.
 - vi) Willful suppression of facts or furnishing or wrong information or manipulated or forged documents by the Agency or using any other illegal/unfair means.
 - vii) Formation of price cartels with other contractors with a view to artificially hiking the price.
 - viii) The contractor fails to maintain/repair/redo the work up to the expiry of performance guarantee period, when it is specifically brought to his notice.
 - ix) Contractor fails to use Mobilisation advance given to him for the purpose it was intended.
 - x) Contractor fails to renew the securities deposited to the department.
 - xi) The contractor fails to rectify any lapse(s) in quality of the work done within defect liability period.
 - xii) Transgression of any clause(s) relating to Contractor's obligation defined in the Integrity Pact wherever such Pact exists.
 - xiii) Any other breach of Contract or misdeed which may cause financial loss or commercial disadvantage to the Company.
3. Such 'Banning of Business', if and when effected, shall be with prospective effect only. The effect of 'Banning of Business' shall be for future tenders from the date of issue of such Order. However, if any contracting entity is banned after online notification of opening of Price Bid, such a ban will not be effective for that work.
4. The banning shall be for a minimum period of one year and shall be effective for the concerned Subsidiary for the tenders invited at Subsidiary level. Similarly, in case of tenders of CIL HQ, banning shall be for CIL HQ. However, if such 'Banning of Business' has to be made effective for entire CIL and its Subsidiaries then approval of Chairman, CIL shall be required.
5. Once a contracting entity is banned, it shall be extended to the constituents of that entity, all partners in case of Joint Venture, all the partners in case of Partnership Firm, owner/proprietor in case of Proprietorship Firm and all the Directors in case of Limited Company. If such banned owner/Proprietor/ Partner/Director make/form different Firms/entity and attempts to participate in tenders, the same will not be entertained during the currency of such banning.
6. The above 'Banning of Business' shall be in addition to other penal provisions of NIT/Contract document.
7. **Approving Authority:** The 'Banning of Business' of a contracting entity shall be done with the approval of the Competent Authority as per the details below:

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- a) In case the Accepting Authority of the work is Board or Empowered Committee or FDs or CMD of Mahanadi Coalfields Limited Company, then the Competent Authority for banning shall be CMD of Mahanadi Coalfields Limited Company.
- b) In case the Accepting Authority of the work is up to the level of Director of Mahanadi Coalfields Limited Company, then the Competent Authority for banning shall be Director of Mahanadi Coalfields Limited Company.
- 8. Appellate Authority shall be one Rank higher than the Competent Authority meant for 'Banning of Business'. In case the banning is done with the approval of CMD of the Subsidiary Company then Chairman, CIL shall be the Appellate authority.
- 9. Any change on the above may be done with approval of FDs of CIL.
- 10. All the orders of banning or orders passed in appeal shall be marked to GM(CMC) / Civil / concerned HODs of Mahanadi Coalfields Limited Company. Further, all such orders will be uploaded in Coal India site as well website of the Subsidiary Company.
- 11. Efforts shall be made by the concerned Department so that such order is linked to e-tender portal of Coal India Limited.
- 20. The contractor shall submit valid electrical license either in his name or of his authorized representative/supervisor [under whose supervision electrification work (internal and/or external) will be executed] issued by Electrical Licensing Board / Authority of the Indian State / UT, in accordance with Indian Electricity Rule before execution of electrical works, if any.

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ADDITIONAL TERMS AND CONDITIONS

The following additional terms and conditions are also acceptable to the company. The tenderers are requested not to quote any further additional conditions in the tender.

1. Mobilization Advance

- i) No mobilization advance is payable for works whose estimated value is less than Rs.100.00 lakhs.
- ii) In the case of turnkey work whose estimated value is more than Rs.100 lakhs a maximum of 10 % of the total contract value of work will be paid as mobilization advance subject to submission of Bank Guarantee equal to 110% of the advance amount. The mobilization advance shall be paid in two installments.
- iii) In case of other civil works valued more than Rs.100 lakhs mobilization advance will be paid upto 5% of the contract value subject to submission of Bank Guarantee equal to 110% of the advance amount. The mobilization advance shall be paid in two installments.
- iv) Interest on mobilisation advance will be charged at the rate of CIL's borrowing rate under cash credit arrangement as on date of disbursement and to be compounded quarterly.
- v) The mobilization advance shall be recovered from the bills of the contractor from the 2nd running account bill onwards @ 20% of the advance amount paid. However, the full amount of mobilization advance with interest will be recovered maximum within scheduled date of completion as per agreement.
- vi) The value of Bank Guarantee may be reduced to the extent such advance is recovered by the company subject to the conditions that the value of Bank Guarantee amount at any time is more than the recoverable outstanding advance. Bank Guarantee shall be irrevocable and from a Scheduled- Bank acceptable to the Company.
- vii) Part Bank Guarantee" (BGs) against the Mobilization Advance shall be taken in as many numbers as the proposed recovery instalments and shall be equivalent to 110% of the amount of each instalment.
- viii) In case of "Machinery and Equipment advance", insurance and hypothecation to the employer shall be ensured.
- ix) Mobilization advance will be given in instalments and subsequent instalments will be released after getting satisfactory utilization Certificate from the contractor for the earlier instalments.

2. ~~Application of Price Variation Clause.~~

~~If the prices of materials (not being the materials supplied at fixed issue rates by the company) and wages of labour required for execution of the work increase or decrease, the contractor shall be compensated for such increase or recoveries will be made from the bills for such decrease as per provisions detailed hereafter:~~

- ~~a) The amount of the contract shall accordingly be varied subject to the condition that such compensation for escalation/ de-escalation in price shall be available only for the work done during the stipulated period of the contract including such period for which the contract is validly extended under the provisions of the contract without any penal action. The~~

Price Variation Clause shall not be applicable for works for which stipulated period of completion is six months or less.

- b) ~~The base date for working out such escalation/de-escalation shall be the last date on which the bids (inclusive of price part) or revised price bids (inclusive of revised offer) were stipulated to be received.~~
- c) ~~The compensation for escalation or recoveries to be made shall be worked out at quarterly intervals and shall be with respect to the cost of work done during the previous three months. The first such payment will be made at the end of three months after the month (excluding) in which the tender was accepted and thereafter at three months' interval.~~
- d) ~~Job specific modification in the formulae of price variation given in the following para(s) can be done with the approval of the CMD of the company~~

2.1 ~~Escalation/ De-escalation for Labour:~~ The amount paid to the contractor for the work done shall be adjusted for increase or decrease in the cost of labour and the cost shall be calculated quarterly in accordance with the following formula :

$$VL = W \times \frac{A}{100} \times \frac{L - L_0}{L_0}$$

Where :

VL = ~~Variation in labour cost i.e., increase or decrease in the amount in rupees to be paid or recovered.~~

W = ~~Value of work done during the period under reckoning to which the escalation/de-escalation relates as indicated in clause 2.4 of the Additional Terms & Conditions of the contract.~~

A = ~~Component of labour expressed as percentage of the total value of the work adopted from the Table 1.~~

L₀ = ~~Minimum wages for unskilled workers payable as per the Minimum Wages Act / Rules of the State or Central Govt., whichever is more, applicable to the place of work as on the last date stipulated for receipt of the bids (inclusive of price part) or revised price bids whichever is later.~~

L = ~~Revised minimum wages of unskilled worker corresponding to L₀ during the period to which the escalation/de-escalation relates.~~

2.2 ~~Escalation /De-escalation on Materials:~~ The amount to be paid to the contractor for the work done will be adjusted for increase or decrease in the cost of materials and the cost shall be calculated quarterly in accordance with the following formula :

$$Vm = W \times \frac{B}{100} \times \frac{M - M_0}{M_0}$$

Where :

~~V_m = Variation in the material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.~~

~~W = Cost of work done during the period under reckoning to which the escalation / de-escalation relates as indicated in clause 2.4 of the Additional Terms & Conditions of the contract.~~

~~B = Component of material expressed as percentage of the total value of the work adopted from the Table 1.~~

~~M = Average All India Wholesale Price Index for all commodities for the period to which escalation/de-escalation relates as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India.~~

~~M₀ = All India Wholesale Price Index for all commodities as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India, relating to the last date on which the bids (inclusive of price part) or revised price bids whichever is later were stipulated to be received.~~

2.3 Escalation/ De-escalation on POL : The amount to be paid to the contractor for the work done shall be adjusted for the increase or decrease in the cost of POL and the cost shall be calculated quarterly in accordance with the formula given below :

$$V_f = W \times \frac{C}{100} \times \frac{F - F_0}{F_0}$$

Where :

~~V_f = Variation in the cost of fuel, oil and lubricants increase or decrease in the rupees to be paid or recovered.~~

~~W = Value of work done during the period under reckoning to which the escalation/ de-escalation relates as indicated in clause 2.4 of the Additional terms & Conditions of the contract.~~

~~C = Component of POL expressed as percentage of the total cost of the work taken from Table 1.~~

~~F = Average Index Number for wholesale price for the group of 'Fuel, Power, Light & Lubricants' as published by the Economic Adviser, Ministry of Industry, Govt. of India for the period to which the escalation/de-escalation relates.~~

~~F₀ = Index number of wholesale price for the group, Fuel, Power, light & lubricants as published by the Economic Adviser, Ministry of Industry, Govt. of India prevalent on the last date of receipt of bids (inclusive of Price Part) or revised price bids whichever is later.~~

2.4 While calculating the value of "W" the following may be noted : The cost on which the escalation will be payable shall be reckoned as 85 % of the cost of work as per the bills to which escalation relates, and from this amount the value of materials supplied or services rendered at the prescribed charges under the relevant provisions of the contract, and proposed to be recovered in the particular bill, shall be deducted before the amount of compensation for esca-

tion or de-escalation is worked out. In the case of materials brought to site for which any secured advance is included in the bill, the full value of such materials as assessed by the Engineer in Charge (and not the reduced amount for which secured advance has been paid) shall be included in the cost of work done for operation of this clause. Similarly, when such materials are incorporated in the work and the secured advance is deducted from the bill, the full assessed value of the materials originally considered for operation of this clause should be deducted from the cost of the work shown in the bill, running or final. Further the cost of work shall not include any work for which payment is made at prevailing market rates.

2.5 In the event the price of materials and/ or wages of labour required for execution of the work decreases, there shall be downward adjustment of the cost of work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formulae herein before stated under this clause shall mutatis/mutandis apply. No such adjustment for the increase / decrease in material price and/ or wages of labour before mentioned would be made in case of contracts in which the stipulated period of completion of the work is six (6) months or less.

2.6 Application of Price Variation Clause during extended period of Contracts.

The Price Variation Clause as stated above will be applied for extended time frame of a contract by following the principle stated as under:

- i) Normally, if and when it is understood that a contract is not going to be completed within the scheduled time period, the contract is kept operative by extending the time of completion provisionally. During this provisional extended period the operation of the Price Variation Clause will remain suspended.
- ii) If and when it is decided at the end of the successful completion of the work that the delay was due to causes not attributable to the contractor, then the Price Variation Clause will be revived and applied as if the scheduled date of completion has been shifted to the approved extended date.
- iii) If it is decided at the end of successful completion of the work that the delay was due to the fault of the contractor then the Price Variation Clause will not be revived for the purpose of escalation but shall be revived and applied for the purpose of de-escalation and no further payment will be made to the contractor on account of any escalation during this period but recovery shall be made for de-escalation, if any. Additionally, the Clause related to Compensation for delay will be applied.
- iv) If it is decided at the end of successful completion of work, the delay was partly due to the fault of the contractor and partly due to the fault of the employer and thereby Liquidated Damages (LD)/compensation due to delay is imposed then price variation clause for the purpose of escalation shall not be revived for this extended period, but shall be revived and applied for the purpose of de-escalation.

No payment will be made by applying "FROZEN INDICES "under any circumstances.

Value of A, B & C in the escalation formula in the additional terms & conditions for Civil Works :-

Sl	Particulars	A% (Labour Component)	B% (Material Component)	C% (POL Component)	Remarks
1	For building works	25	75	Nil	
2	For Road works	15	80	05	
3	For external sewerage, External water supply, and external electrification	10	90	Nil	
4	For external water supply, external sanitary and external electrification (through labour rate contract)	75	25	Nil	
5	For steel structural works	15	85	Nil	
6	For steel structural works with Deptt. free supply of rolled steel sections (through labour rate contract)	75	25	Nil	
7	For Coal Handling Plant Civil Works	25	75	Nil	
8	For under ground civil works such as Incline Drivage, Shaft Sinking etc.	35	65	Nil.	
9	For only labour oriented works of maintenance nature.	100	Nil	Nil	

For all other works not listed above, the component of labour, material and POL of the total cost of work shall be as specifically indicated in the tender document.

SPECIAL TERMS AND CONDITIONS OF CONTRACT

1. NAME OF WORK:

Supply, installation, Trial Run, testing, commissioning including six year comprehensive AMC after one year warranty of CCTV Surveillance System at All Areas of MCL (including mines & other establishments), All Railway Sidings of MCL, All Regional Stores & CWS of MCL, MCL Bhubaneswar Guest House & Campus, Anand Vihar and Jagruti Vihar Campus of MCL Headquarters, Sambalpur.

2. OBJECTIVE OF THE SYSTEM:

- a) The IP Network based CCTV Surveillance System at MCL is being created to effectively monitor all the critical, vulnerable and other areas of interest at multiple viewing stations and control rooms distributed throughout MCL.
- b) The CCTV Network is to be created for each Project/ Mine Unit, Area Unit of Production Area, MCL Bhubaneswar Guest House and Office, and Corporate Headquarters Campus of MCL, and there shall be control room(s) in each Project Office, Area Office, MCL Bhubaneswar Office as well as at MCL Headquarter, Sambalpur. The Area wise list of locations and the equipment to be installed at those locations are given in Annexure – A. There are additional viewing points in many units, which shall house Workstations and Displays as per the details given in Annexure-A.

The details of Units in each area are as under:

COMPANY	AREA	UNIT
MCL	MCL HEADQUARTERS	JAGRUTI VIHAR
		ANAND VIHAR
	JAGANNATH AREA	JAGANNATH GM UNIT
		JAGANNATH OCP
		BHUBANESWARI OCP
		ANANTA OCP
	BHARATPUR AREA	BHARATPUR GM UNIT
		BHARATPUR OCP
	LINGARAJ AREA	LINGARAJ GM UNIT
		LINGARAJ OCP
	HINGULA AREA	HINGULA GM UNIT
		HINGULA OCP
		BALARAM OCP
	KANIHA AREA	KANIHA OCP
	TALCHER AREA	TALCHER GM UNIT
		TALCHER UG
		NANDIRA UG
	IB VALLEY AREA	IB VALLEY GM UNIT

		SAMALESWARI OCP
		LAJKURA OCP
	LAKHANPUR AREA	LAKHANPUR GM UNIT
		LAKHANPUR OCP
		BELPAHAR OCP
	BASUNDHARA AREA	BASUNDHARA GM UNIT
		BASUNDHARA (W) OCP
		KULDA OCP
		GARJANBAHAL OCP
	ORIENT AREA	ORIENT GM UNIT
		RAMPUR SUB AREA
		ORIENT SUB AREA
	MCL BHUBANESWAR	MCL OFFICE & G.H. BHUBANESWAR

c) The viewing access of the system should be configured as under:

- i. The Viewing Station installed in a section of the project should have access to the cameras installed within that section.
- ii. The Control Room/ Viewing Station in Project Office should have access to all the cameras installed in the project including the cameras installed in various sections of the project.
- iii. The Control Room/ Viewing Station in Area Office should have access to all the cameras installed in the Area Unit as well as the cameras installed in the Projects under the Area.
- iv. The Control Room/ Viewing Station in MCL Bhubaneswar Guest House should have access to all cameras installed in MCL Bhubaneswar Office, Campus and Guest House.
- v. The Control Room/ Viewing Station in MCL HQ should have access to all the cameras installed in MCL HQ, Areas, Projects and MCL Bhubaneswar Office and Guest House.

d) BANDWIDTH:

- i. There should be no bandwidth limitations for camera streaming/ recording upto the local control room & recording locations within the Project Unit, Area Unit, MCL Bhubaneswar or MCL Headquarters, Sambalpur.
- ii. From Project Office to Area Office, LAN/ WAN or MPLS Bandwidth shall be provided by MCL. The system should be suitable configured to be accessible over this network. For the cameras installed in Projects, the monitoring at Area Office shall be done keeping in view the bandwidth limits.
- iii. From Area Office or MCL Bhubaneswar to MCL HQ, LAN/ WAN or MPLS Bandwidth shall be provided by MCL. The system should be suitable configured to be accessible over this network. For the cameras installed in Areas, the monitoring at MCL HQ shall be done keeping in view the bandwidth limits.

e) IP Address Range over which the entire CCTV Network should be configured, shall be provided by MCL.

f) STORAGE:

- i. The System should be able to record the video stream of all cameras in Full HD (1080p 15fps) Resolution for a minimum period of 1 month in the NVR/ NAS.
- ii. For 10% of the cameras in each Unit, the system should be capable of recording the footage in Full HD (1080p 15fps) Resolution for a minimum period of 1 year. These 10% cameras shall be identified and communicated to the successful bidder by MCL in respective units. If the 10% value of the cameras installed in a unit comes out to be in fraction, then the next higher whole number of cameras shall be considered for 1 year storage.
- iii. Necessary NVR and NAS at each site have been incorporated in the BoQ for this purpose. However, if the storage turns out to be insufficient to meet the above requirement, the successful bidder shall provide additional storage devices to MCL to meet the above storage requirements without any additional cost to MCL.
- iv. Wherever required, MCL may ask for ANPR feature to be used in the NVR. The NVR should recognize the number plates of vehicles with accuracy rate greater than 90%, subject to visibility of the number plates, and save the results along with the image in the NVR.

MCL has considered all equipment in the BoQ for fulfillment of objectives of the system. However, if any items/ equipment/ system are required in addition to BoQ for fulfillment of the aforementioned objectives, the same should be supplied, installed and maintained by the successful bidder without any additional cost to MCL.

3. The Camera Surveillance Network will be installed in Multiple Locations (Office, Mines, Other Establishments, etc.) in each unit of MCL Areas. Number of cameras to be installed at different sites of each area is indicated in the Annexure – A attached.

The Area Wise Details of the proposed cameras are as under:

S. No	AREA	NO. OF CAMERAS
1	MCL HEADQUARTERS, SAMBALPUR	176
2	JAGANNATH AREA	257
3	BHARATPUR AREA	286
4	LINGARAJ AREA	329
5	HINGULA AREA	273
6	KANIHA AREA	96
7	TALCHER AREA	83
8	IB VALLEY AREA	234
9	LAKHANPUR AREA	292
10	BASUNDHARA AREA	276
11	ORIENT AREA	62
12	MCL BHUBANESWAR	61
SUB-TOTAL		2425

In addition to the above, additional 1 Nos. PTZ Cameras shall be installed at each Siding (Total 22 Nos. Sidings) and Additional 2 Nos. Bullet Cameras shall be installed in each Regional Stores and Central Workshops (Total 09 Nos. Regional Stores and 02 Nos. Central Workshops) of MCL, as detailed in Annexure – A.

S. No	LOCATIONS	NO. OF CAMERAS
13	Additional PTZ Cameras to be installed in all Sidings	22
14	Additional Bullet Cameras to be installed in all Regional Stores &	22
GRAND TOTAL (=2425 + S.No. 13 + S.No. 14)		2469

Therefore, the total number of cameras to be supplied, installed, commissioned and maintained under this Contract shall be **2469**, along with other equipment as detailed in Annexure-A.

4. Technical Specifications of all Items are given in Annexure B.
5. However, any additional item, accessories and related jobs necessary for completion of the installation as per scope of work, will be presumed as included even if not specifically mentioned in BOQ/NIT, and the successful bidder will provide them without any extra cost.
6. All the cameras are to be networked in a LAN with switches, radios, etc. at identified places. The locations of all equipment and infrastructure are indicated in Annexure- A attached. However, during installation, these locations may be changed in consultation with Engineer-In-Charge of MCL of the respective site to ensure a better technical solution, subject to feasibility.
7. All the Cameras, Switches, Server, NAS, Displays, UPSs should be in the product line of the respective OEM/developer and should not be obsolete, discontinued, end of sale, end of life or stoppage of service support for the product before the last date of submission of the bid.
8. All Items/ Subsystems (e.g. Camera, NVR, LAN/Network Switch, NAS, Radios, Server, Display, UPS, Battery etc.) should be supplied with suitable accessories including required cords for Power Supply and Network Connection, Fixing/ Placement arrangement etc. as applicable, even if the same are not specifically mentioned in BOQ/Technical Specifications.
9. The entire IP CCTV system should be equipped for viewing the live video feed from central/ remote locations through internet cloud as well as through LAN/ WAN network of MCL. For this, there should be provision of connecting multiple networks in the NVR and Servers. The internet bandwidth for the NVR to be viewed over internet shall be provided by MCL. The NVRs and Servers should be suitably configured to be viewable over Internet as well as Private Network of MCL. For viewing the cameras over internet in Smartphones, a Mobile Application (Android and iOS Compatible) should also be available in the respective Application Libraries of the Mobile OS.
10. The entire CCTV Surveillance Network should be Secure from Cyber Threats with proper cyber security using Anti-Virus at the NVR/ Video Management Server level or through a

separate firewall at each Unit of MCL, where the CCTV Network is connected to the internet or to the Private Network of MCL.

11. For ensuring lesser complications in supply, installation and maintenance of the system, the following group of Sub-Items should be from the same Manufacturer:

S. No	Group Name	Sub Items No. (As per Anx.- A)	Name of Sub-Item (As per Annexure A)
1	Group 1	1	2 MP IP Camera, Dome Type, min. 30 m IR
		2	2 MP IP Camera, Bullet Type, min. 50 m IR
		3	2MP IP Camera, PTZ Type, min. 150 m IR
		4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded
		5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded
		6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded
		7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded
		8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded
		9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded
2	Group 2	12	Network Attached Storage (NAS) - 192 TB
		13	Network Attached Storage (NAS) - 120 TB
		14	Network Attached Storage (NAS) - 48TB
3	Group 3	15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port
		16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports
		17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports
		18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports
4	Group 4	21	75 inch LED Displays
		22	55 inch LED Displays
5	Group 5	23	24 inch LED Displays
		24	Desktop Workstation for surveillance monitoring
		25	Laptop - min. i7 processor & 8 GB RAM
6	Group 6	26	Point to Point Radios
		27	Point to Multi Point Radios
7	Group 7	28	UPS (1kVA) with 2 hours battery backup
		29	UPS (2kVA) with 2 hours battery backup
		30	UPS (3 kVA) with 2 hours battery backup
		31	UPS (5 kVA) with 2 hours battery backup
		32	UPS (650 VA) with 15 mins backup

To further clarify,

All the Sub Items in Group-1 should be from one Manufacturer (say Manufacturer-1),
 All the Sub Items in Group-2 should be from one Manufacturer (say Manufacturer-2),
 All the Sub Items in Group-3 should be from one Manufacturer (say Manufacturer-3),
 All the Sub Items in Group-4 should be from one Manufacturer (say Manufacturer-4),
 All the Sub Items in Group-5 should be from one Manufacturer (say Manufacturer-5),

All the Sub Items in Group-6 should be from one Manufacturer (say Manufacturer-6),
All the Sub Items in Group-7 should be from one Manufacturer (say Manufacturer-7).

However, Manufacturer-1, Manufacturer-2, Manufacturer-3, Manufacturer-4, Manufacturer-5, Manufacturer-6 and Manufacturer-7 can be seven separate Manufacturers.

12. The OEM of Cameras and NVR (Same OEM for all cameras and NVR i.e. S. No 1 to 9 of the BoQ), shall confirm that they shall provide necessary spares, hardware, software and support services as required to the bidder during warranty period (one year from the date of commissioning of the entire system) and subsequent six years Comprehensive Annual Maintenance Contract Period. The OEM shall also confirm that the models offered comply with the technical specifications for the respective items as per NIT. For this, the bidder shall submit duly signed and self certified copy of "Technical Compliance Sheet" as per the format given in Annexure-C enclosed.
13. The successful bidder has to ensure that ANPR/ ALPR (Automatic Number/ License Plate Recognition) as well as other Analytics, as per the TPS of NVR and Video Management Software, are available for use as and when required. The NVR should recognize the number plates of vehicles with accuracy rate greater than 90%, subject to visibility of the number plates, of vehicles going through the Area of Interest defined by MCL, if any, covered with the CCTV Cameras. The ANPR/ ALPR results should be saved in the NVR and should be accessible as a report within the NVR. This feature should also be accessible over remote connection to the NVR.
14. All Fiber Cores (used/Spare), are to be duly terminated on the Fiber patch panels, and all required accessories like adaptors, couplers etc. required to achieve this should be supplied. In case additional pigtailed are required for such termination; they have to be supplied by the successful bidder free of cost to MCL. Wherever additional CAT-6 or OFC Patch Cords are required for connecting the Switch to LIU, or connecting the switch to CAT-6 Patch Panel, the same has to be provided by the Successful bidder without any additional cost to MCL.
15. All Items installed Outdoor should be sufficiently robust and should be suitably corrosion resistant, Weather tolerant and vandal resistant, even if not specifically mentioned in the TPS.
16. All moving Items should be of high quality with high longevity, smooth operation, very low wear and tear, temperature controlled, no noise, and manufactured for continuous operation, wherever applicable.
17. Placement for all outdoor/indoor equipment should be done to ensure reasonably good protection.
18. Aesthetics, proper finishing, Maintainability and Longevity aspects are of vital importance and should be duly taken care of by the Successful bidder during installation.
19. Any facility/feature of any supplied item which are offered by the respective OEM/Developer without any additional cost, will have to be made available to MCL without any additional cost, even if the same is not mentioned in NIT.

20. Cable Laying:

- a) HDPE pipes should be joined with proper couplers which, and any other associated accessory required for the purpose should be supplied with the cables. The ends of HDPE pipes also should be properly sealed. The installation/maintenance of HDPE pipes should be done using proper tools.
- b) Where due to Technical reason or, so, depth of Cable laying is required to be low, the installation charges will be proportionately reduced with 70% weightage (e.g. at 60% depth the rate of installation charge will be reduced by 28% (40*70)).
- c) Where due to Technical reason or, the depth of Cable laying is not achievable or achieved, the same is to be brought to the notice of the concerned Project Engineer-In - Charge/Site in-charge at the respective sites & his/ her consent be taken. This aspect is to be mentioned in the final installation drawings to be submitted by the successful bidder after completion of the installation work, where locations with insufficient depth are to be marked/ indicated.
- d) Suitable Joint Boxes should be placed where through/branching of such cable is necessary. Such Joint boxes should be suitably rugged and safely placed.
- e) Proper filling and dressing of the surface must be ensured for underground cable laying. Clearly visible G.I./ Cement concrete Cable Markers should be placed and suitably fixed along the underground Cable route at an approx. distance of 100m or less.
- f) Proper documentation should be prepared for Cable layout indicating detailed layout of cables installed underground, mentioning their location/distance with reference to nearby fixed structures or walls, approximately at every 20 mtrs/ turnings etc. for easily locating the buried cables afterwards.

21. Wiring/cabling standard: All wiring/cabling/ terminations/ patches must follow EIA/TIA standards wherever applicable. All Cabling should have proper non-perishable identification at the terminals for easy tracing. Proper documentation with diagram should be made for all wiring/cabling/terminations. All indoor wirings/Cablings should be properly secured, duly terminated, easily maintainable and aesthetically sound.

22. The successful bidder will ensure proper survey for erection of poles, masts, etc.

23. Placement/Fittings etc.: All Equipments installed should be properly placed which should be secure, aesthetic, convenient for maintenance, healthy from operational and fault liability point of view and follows standards (Industry and/or recognized authority) wherever applicable. It will include placement of all switches in suitable Racks, Fitting of Cameras on wall/ceiling/corners/Poles/Brackets etc., other hardware including Power Supplies in suitable racks/enclosures/stands etc. Suitable enclosures, if any needed beyond BoQ, as per site requirement will have to be provided by the bidder without any additional cost to MCL.

24. Any License, Clearance etc. required for any sub-system or the Complete System, will be the responsibility of the successful bidder. However, MCL will assist in signing the Forms etc. required to be filled up for the purpose, if any, and pay for any statutory/royalty payment to government authority. Normally all licenses/clearance should be for life time. Where any such License/clearance is time bound, the period of License/Clearance should be for a minimum period of seven Years from the date of installation & commissioning.

25. The Successful bidder will be fully responsible for the quality of the items supplied, quality of Workmanship, Aesthetics, quality of Integration of various components of the System, user-friendliness of the System, maintainability of the System and ensuring satisfactory achievement of the objectives of the System as explained in various clauses here and the Scope of Work.
26. Power Supply:
- a) Unregulated Power Supply (nominal 230 +/- 10% V AC), will be provided by MCL at/near Viewing Points, Server room, Switches and any other place required for the installation. However, the successful bidder will arrange for any additional power wiring/distribution, and also for regulation/stabilization of voltage required. All such works must be technically and aesthetically sound and standard based, wherever applicable.
 - b) The successful bidder will ensure that protections provided in the equipment work properly in case of any abnormal electrical condition. MCL will make best efforts to ensure a healthy power supply, however in case of any damage to the equipment due to abnormal power supply or any other electrical disturbance, the damage has to be rectified by the vendor without any additional cost to MCL.
 - c) The bidder will ensure to provide necessary protection system/ module for the entire CCTV system from lightning, even if not mentioned in the BOQ. In addition to the material as provided in the BOQ, the vendor is free to add additional equipment or protection system to strengthen the protection system at his own cost.
 - d) Any damage caused to the equipment/system due to lightning and/or abnormal power supply has to be rectified/repared by the bidder without any extra cost to MCL during warranty and CAMC period.
27. Earthing: Lightning Arresters, Chemical Earthing, including Earth Pit Digging have been provided in the BoQ, wherever felt necessary. However, wherever felt necessary by the successful bidder, additional earthing may be provided, without any additional cost to MCL.
28. The successful bidder will arrange for all tools/tackles, testing instruments, software etc, required for installation and testing of the system.
29. The successful bidder will be fully responsible for safety of its personnel engaged in installation work. He will ensure that he and his personnel abide by the provisions of all relevant acts applicable, relating to the work. He will also ensure that he abides by all the rules and regulations of central and state governments and any local authority while executing the work. MCL will have the right to call for any documentation in this regard, instruct the successful bidder and take any action as deemed fit, in case of deficiency. The Successful bidder will be solely responsible for all liabilities in these regard. The successful bidder will indemnify MCL from any consequences caused due to his failure in this regard and will be solely responsible to bear them.
30. The System should be fully ready in all respects for the total cameras supplied at a particular site.
31. All materials incl. Softwares should be supplied with associated accessories. Self attested Certificates/ Listing Proof and/ or Product Marking as per Tech. Spec. should be submitted/ available with Supply for Major Items.

32. Pre-Commissioning Inspection and Test (Part of Installation Program): On installation, the System and its Components will be jointly (in presence of both the successful bidder and MCL representatives) tested as follows: -

- a) All equipments and installations will be individually inspected physically.
- b) Individual active equipment will be tested with Power. Passive items also will be tested wherever feasible.
- c) Different Sub-Systems will be tested wherever feasible.
- d) Then, the system will be tested in integrated manner.
- e) The parameters of testing will be jointly decided keeping in view the technical specifications, scope of work and Special Terms & Conditions, and BoQ.
- f) On acceptance of the test results by Engineer-in-charge as satisfactory, trial run will start.
- g) Trial run will be started only after acceptance of the test result by Engineer-in-charge

33. Trial Run and System Acceptance:

- a) After testing of the system, the system will be put under trial run. Trial run of the system will be for a minimum period of 14 days.
- b) The duration of trial operation of the complete equipment shall be fourteen (14) days out of which at least seventy two (72) hours shall be continuous operation on full load or any other duration as may be agreed to, between the engineer and the contractor. The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specified operating characteristics, for the period of trial operation.
- c) For the period of trial operation, the time of operation with any load shall be counted. Minor interruptions not exceeding four (4) hours at a time, caused during the continuous operation shall not affect the total duration of trial operation. However, if in the opinion of the engineer, the interruption is long, the trial operation shall be prolonged for the period of interruption.
- d) On successful trial run and acceptance of the same by Engineer-in-charge, the system of the Unit will be taken as commissioned and the Engineer-in-Charge of the Area will issue a System Acceptance Certificate for the particular Unit (including the Additional Cameras to be installed in the Sidings and Regional Stores under the Unit). On issue of System Acceptance Certificate of all Units under the Area, the System Acceptance Certificate for the particular Area shall be issued by the Engineer-in-Charge of the Area.
- e) For Central Workshop Talcher and Central Workshop Ib-Valley, a separate System Acceptance Certificate shall be issued by the Engineer In-Charge of Bharatpur and Lakhanpur Area respectively after following the procedures above.
- f) On the basis of system acceptance certificate issued by the site engineers/ site in charge of each of the Area, a combined final installation certificate shall be issued by the GM(E&T), MCL HQ. Warranty of the complete system, for all the twelve areas (as per details in point. No. 3 above), will be considered from the date of successful commissioning of the last Area.
- g) The Final Installation and Commissioning certificate will be issued only after successful trial run & commissioning of all the Areas & no Final Installation Certificate for individual Areas will be issued.
- h) During the period between the date of acceptance of the system at a particular Area, and start date of the warranty for the entire system, the system will maintained in all

respects, including those detailed in the CAMC, by the successful bidder at their own cost.

34. Acceptance of the System by MCL will not absolve the Successful bidder from all of his liabilities. In addition to whatever has been stated in NIT, the Successful bidder will be liable for any deficiency in the System traceable to be due to deficiency on the part of the Successful bidder in Supply/Execution or any other aspect, during seven years from the date of acceptance of the System.

35. Handover of Documentation: -

On commissioning of the system, the successful bidder will hand-over two hard copies of the following documents, wherever relevant, along with their soft copies in pdf or any other format acceptable by MCL, to the GM(E&T), MCL or his authorized representative:

- i. Detailed schematic Network diagram of the complete installation.
- ii. Detailed diagram of all sub-systems of the Network.
- iii. Detailed Cable/Wire Network as installed.
- iv. All configuration details including different related lists.
- v. Any license/ permission or related documents.
- vi. Test results.
- vii. Any operation and/or maintenance procedures etc. (along with soft copy in pdf format).
- viii. List of Equipments supplied/installed and other items used (e.g. Wires/Cables), Softwares, Portable Equipments and Spares. The list must include Make, Model, Brand, Version, Sl. No. etc., as applicable.
- ix. Site-wise list of Equipments, Softwares etc.
- x. Item-wise List of Manuals, CDs etc.
- xi. Any other relevant document/Information as required as per the NIT, or, as may be required for operation/maintenance of the system or, otherwise, relating to individual Item/ the System.

All the Documents should bear the reference NIT and Supply Order/ Contract Number of MCL, have a Heading, duly numbered with successful bidder's ref. No., and signed with seal by the authorized representative of the Successful bidder. However any Original Document like License, may be submitted with forwarding letter only from the Successful bidder. All the documents to be submitted to MCL within 30 days of Commissioning of the System.

MCL will have the right to call for any further documents/clarification from the Successful bidder on Products supplied at any stage. The Successful bidder has to submit such documents within required time of receipt of such communication.

36. Training:

The Successful bidder will provide onsite training to operational/Technical Personnel of MCL of the respective Areas, (deputed by the concerned engineer-in charge) and also users during/ on installation and maintenance of the System. In addition, the Party will also arrange a training for up to 20 Technical personnel (in batches) of MCL on the Camera, switches & server/ NAS at Developer/OEM/OEM authorized centre/ premises, free of cost, if desired by MCL.

The duration of such training will be for a minimum of six days, and the course content should cover operation/ configuration / maintenance of camera, Video Management System, NAS/server, networking switches.

However the same may be decided in consultation with GM(E&T), MCL. The cost of training has to be borne by the bidder, however TA/DA cost and accommodation of MCL personnel will be borne by MCL.

37. Warranty Period:

The system shall be under warranty for a period of 1 year from the date of Commissioning of the complete system, as detailed in Clause No. 33.f above. During the warranty period, the successful bidder shall maintain the system in all respects, including those mentioned in CAMC, at their own cost.

38. Deployment of Service Personnel:

During warranty and CAMC period, Service Personnel will be deployed in Areas of MCL by the successful bidder. The Area wise number of Service Personnel to be deployed by the successful bidder are given in the table below.

During the warranty and CAMC period, MCL has the right to change the deployment of Service Personnel between Areas with 15 days notice. The successful bidder, at their own cost, can add the number of Service Personnel at any Area of MCL if deemed fit. The Service Personnel posted should look after all the installation sites as required .The Service personnel should be well trained and must be equipped with all required spares, software and testing instruments etc. while attending the System.

S. No	Name of Area	No. of Service Personnel to be deployed by Successful Bidder
1	MCL HEADQUARTERS, SAMBALPUR	2
2	JAGANNATH	4
3	BHARATPUR	2
4	LINGARAJ	2
5	HINGULA	3
6	KANIHA	1
7	TALCHER	1
8	IB VALLEY	3
9	LAKHANPUR	3
10	BASUNDHARA	4
11	ORIENT	2
12	MCL OFFICE & G.H., BHUBANESWAR	1
TOTAL		28

MCL will have the right to ask for change of maintenance personnel in case he is found to be in-effective technically, not of desirable attitude/ behaviour or for any other reason, and the successful bidder will comply the same at the earliest and not later than 60 days.

The successful bidder shall arrange for the verification of character and antecedents of the deployed Service Personnel by the local police authorities at their own cost, and give an undertaking to MCL in this regard, along with relevant documents, if any. The details including Name, Address, Mobile No. and email Address of the Service representative should be intimated to MCL.

39. COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC):

- a) During CAMC, the supplier will ensure that the System will be physically checked and standard Tests are done at least once in a month, and any fault noticed/ contemplated should be attended to. The list of standard tests and their periodicity will be prepared by the successful bidder and submit to Engineer -in- charge/ Site In Charge of MCL. The Engineer -in- charge/ Site-In-Charge of MCL will have the authority to include any other test(s) and/ or change the periodicity of any/all tests, at any time. This will be part of preventive maintenance.
- b) Deployment of Service Personnel: As detailed in Clause No. 38 above.
- c) The System should also be attended to on reporting of any fault within 24 hours of reporting over Telephone/E-mail/FAX/Letter/text messages etc. to its representative.
- d) During CAMC and warranty period, if any equipment is to be taken outside the premises of MCL, the successful bidder should replace the existing equipment with a spare working equipment of the same or higher specifications and configure it to work in the network seamlessly, so that there should not be less number of equipment or equipment of lesser specifications installed than the equipment ordered, installed and commissioned at any point during the warranty and CAMC period.
- e) Scope of CAMC will include maintenance of all the equipments supplied and installed, software, Installation items e.g. Wiring/ Cabling/ Masts/ Earthing etc. relating to this Supply Order/ Contract, and their integration. Change in configuration/Use of Spare Item/s, if any, etc., will be decided by MCL time to time which should be carried out by the maintenance personnel of the Successful bidder. Supply & fixing of spares/ modules/ softwares or any other items as required for rectification of the breakdowns will be under the scope of the CAMC and will be provided by the CAMC holder without any additional cost to MCL. This also includes any change in configuration/ modification required to integrate/ connect this system with any other system/ network as desired by MCL.
- f) The Scope of CAMC will also include splicing of the installed / laid Optical Fiber Cable (OFC), wherever cut / damaged due to reasons other than poor workmanship of laying. However, excavation work for extracting (if the OFC is laid underground) cable for splicing, as well as providing the Fiber Joint Box, as well as additional OFC, if required, for splicing the cable shall be the responsibility of MCL. However, if the splicing is required due to defect in workmanship in previous splicing, ingress in joint box, etc., the responsibility of excavation and provision of OFC and Joint Box required for splicing shall be the responsibility of the successful bidder.
- g) The Service personnel should be well trained and must be equipped with all required spares and software(s), as well as testing instruments like Laptop, OTDR, Splicing Machine, etc. while attending the System.

- h) Essential spares should be available with the Service Personnel at site for quick rectification of the faults.
- i) Arrangement of regular cleaning of all Cameras, Switches, Racks, UPS, Batteries, NVRs, Servers, NAS, Displays, etc has to be done by the successful bidder in all locations, and all equipment supplied and installed should always be clean, aesthetic and presentable.
- j) All Masts & Brackets should be painted with quality weather-resistant paint every alternate year.
- k) However additional Cable Laying/ Wiring will not be part of maintenance work under CAMC.
- l) Monthly report of CAMC works done to be submitted to Engineer -in- charge/ Site In Charge by the Successful bidder. Engineer -in- charge/ Site In Charge may ask for additional reports, if required, which should be complied with.
- m) A camera will be considered as break down if the video footage from the camera cannot be viewed in the control room or recorded in the NVR/ NAS. The System will be considered under Major breakdown if more than 10% Cameras at the particular site are under break down. Any such fault and faults affecting the common features of the System will also be considered as major fault.
- n) All Major faults must be attended and rectified within 24 hrs. of reporting. For major faults rectified within 24 hours of reporting the same, no deduction of CAMC charges will be applicable. Major faults if not rectified within 24 hours of reporting the same, the deduction of CAMC charges will be done, for the complete period of breakdown, as mentioned below:

A = CAMC value per camera per annum
= Total CAMC value for all sites per annum ÷ Total no. of cameras.

B = CAMC value of a particular site per annum
= Total No. cameras at the particular site X A

C = CAMC value of a particular site per day
= B ÷ 365

Break down days: No. of Breakdown hours ÷ 24.
(For 12 hour or more, break down period will taken as one complete day)

D = CAMC value per camera per day
= A ÷ 365

Deduction for major breakdown:

P1 = For initial 24 hour period = C X no. of break down days

P2 = For period beyond 24 hours = C + Additional penalty of 10% of C = (C X 1.1) per day

Total deduction for major breakdown = P1 + P2

- o) All other faults should be attended to and rectified within 48 hours of reporting. If rectified within 48 hours of reporting no deduction of CAMC charges will be applicable.

If not rectified within 48 hours of reporting, deduction of CAMC charges will be done, for the complete period of breakdown, as mentioned below:

Deduction for minor breakdown:

Deduction for minor breakdown per camera = D X No of breakdown days

- p) Unsatisfactory Performance of CAMC: In case the monthly availability of all the cameras installed, falls below 70% for consecutive three months, the performance of CAMC will be treated as unsatisfactory. In case of unsatisfactory performance of the CAMC, MCL may get the work done through any other agency at the risk & cost of the bidder or cancel the CAMC contract or other action against the party, as deemed fit by MCL, as per rule. For this purpose monthly availability of the cameras will be calculated as follows :

$$\% \text{ Availability} = \left\{ \frac{N \times D - (d1 + d2 + d3 + \dots + dN)}{N \times D} \times 100 \right\}$$

Where

N= Total No of cameras installed at all the sites in MCL.

D= Total No of days in a month.

d1= no of breakdown days of camera 1 in a month.

d2= no of breakdown days of camera 2 in a month.

d3= no of breakdown days of camera 3 in a month.

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dN= no of breakdown days of camera N in a month.

- q) Penalty for non-availability of deployed Service Personnel:
MCL shall keep a record of the availability of deployed Service Personnel at each location. Weekly rest can be availed by each Service Personnel. The day of the weekly rest will be decided by the Engineer-In-Charge of the Area. If the availability of Service Personnel goes below 6 days per week, a penalty amounting to Rs. 1000 per day of absence per Service Personnel will be deducted from the CAMC dues. If the total amount is unrecoverable from the CAMC dues, MCL may recover the amount from the Performance Bank Guarantee or any other dues of the successful bidder.
- r) MCL will have the right to extend the Network with additional Cameras at any point of time. The Successful bidder will provide maintenance services required considering such changes with proportionate increase (camera wise) of charges.
- s) The bidder will renew and update all Software licenses (antivirus, camera licenses, any other license) installed in the CCTV system, during the entire tenure of the CAMC period.
- t) At the end of the CAMC period the vendor will hand over the system in full working order.
- u) The successful bidder will be solely responsible for the safety of the maintenance personnel engaged for the purpose. The successful bidder will also ensure that all

relevant Acts and rules applicable including Minimum Wages Act, Workmen's Compensation Act and PF Payment to the Workers engaged are complied with. The successful bidder will also ensure that all rules & regulations of the Central government, State government and Local authority in this connection are followed. The successful bidder will indemnify MCL from any obligation/ consequences arising out of any lapses in respect of the above and will bear the sole responsibility for the same. MCL will have the right to call for any documentation in this regard from the successful bidder, and take any action as deemed fit in-case of no/unreasonable response or, any deficiency from the contractor.

40. Submission of Invoices:

a) For Supply, Installation and Commissioning:

The invoice for supply, installation and commissioning of the system at a particular Area shall be submitted by the successful bidder after issue of System Acceptance Certificate for the particular Area by the Engineer-in-Charge of the Area. This invoice shall be submitted to the Engineer-in-Charge of the Area. After acceptance of the invoice and necessary deductions, the Engineer-in-Charge of the Area will forward the same to GM (E&T), MCL HQ for further processing and payment.

b) For CAMC:

The invoice for CAMC of the complete system shall be submitted by the party to GM (E&T), MCL HQ after end of each quarter of service during CAMC Period.

41. Payment Authority: General Manager (Finance), MCL HQ

SAFETY CODE

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1 ($\frac{1}{4}$ horizontal and 1 vertical).
2. Scaffolding of staging more than 3.6 m (12ft). above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm (3ft) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
3. Working platforms, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 m (12ft) above ground level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90 cm (3ft).
5. Safety means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 20 cm (11 $\frac{1}{2}$ ") for ladder upto and including 3 m (10ft) in length. For longer ladders, this width should be increased at least $\frac{1}{4}$ " for additional 30 cm (1ft.) of length. Uniform step spacing of not more than 30 cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit; action or proceedings to any such person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. Excavation and Trenching: All trenches 1.2 m (4ft) or more in depth, shall at all times be supplied with at least one ladder for each 30 m. (100 ft.) in length or fraction thereof. Ladder shall extend from bottom of the trench to at least 90 cm (3ft) above the surface of the ground. The side of the trenches which are 1.5 m (5ft) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m (5ft) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.
7. Demolition: before any demolition work is commenced and also during the progress of the work,
 - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - b) No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.

- c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned: - The following safety equipment shall invariably be provided.
- i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - ii) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes, shall be provided with protective goggles.
 - iii) Those engaged in welding works shall be provided with welder's protective eye-shields.
 - iv) Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - v) When workers are employed in sewers and manholes, which are in active use, the contractors shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measures are adhered to: -
 - a) Entry for workers into the line shall not be allowed except under supervision of the Engineering Assistant or any other higher officer.
 - b) At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.
 - c) Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.
 - d) Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.
 - e) Safety belt with rope should be provided to the workers. While working inside the manholes, such rope should be handled by two men standing outside to enable him to be pulled out during emergency.
 - f) The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
 - g) No smoking or open flames shall be allowed near the blocked manhole being cleaned.
 - h) The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.

- i) Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.
- j) Gas masks with Oxygen Cylinder should be kept at site for use in emergency.
- k) Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non-sparking gas engines also could be used but they should be placed at least 2 meters away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.
- l) The workers engaged for cleaning the manholes / sewers should be properly trained before allowing to work in the manhole.
- m) The workers shall be provided with Gumboots or non-sparking shoes bump helmets and gloves non-sparking tools safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.
- n) Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.
- o) If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.
- p) The extents to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.
- vi) The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precaution should be taken: -
 - a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
 - b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.
 - c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.
 - d) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.
 - e) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.
 - f) Overall shall be worn by working painters during the whole of working period.
 - g) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.

9. When the work is done near any place where there is risk of drowning, all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.
10. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions: -
 - i) (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.
 - (b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
 - ii) Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.
 - iii) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
 - iv) In case of departmental machines, the safe working load shall be notified by the Electrical Engineer-in-Charge. As regards contractor's machines the contractors shall notify the safe working load of the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Electrical Engineer concerned.
12. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.
14. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
15. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-Charge of the department or their representatives.
16. Notwithstanding the above clauses from (1) to (15), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

TECHNICAL SPECIFICATIONS

Technical Specifications to be followed:

Civil Engineering Works

Latest CPWD specification shall be adopted. Presently CPWD specifications 2019 Vol. I & II is in vogue which may be followed. These specifications cover all type of Building Works. The specifications are available as a printed document issued by CPWD and also in soft copy PDF format in CPWD website.

Electrical Engineering Works

Latest CPWD specification shall be adopted. Presently the following are in vogue:

Part No.	Description	Year Of Issue
I	Internal	2013
III	Lifts And Escalators	2003
V	Wet Riser And Sprinklers System	2006
VI	Heating, Ventilation And Air Conditioning Works	2017

***Roads And Bridges**

Standard specifications issued by ministry of surface transport may be followed. Presently MORTH Specifications on roads and bridges 2013 is available. These specifications cover exhaustively various roads and bridge works. (Applicable for important and major roads.)

*Delete if not applicable

e-Tender Portal User Agreement

In order to create a user account and use the e-Tender portal you must read and accept this e-Tender portal User Agreement.

A. UNDERTAKINGS TO BE FURNISHED ONLINE BY THE BIDDER

I DO HEREBY UNDERTAKE

1. That all the information being submitted by me/us is genuine, authentic, true and valid on the date of submission of tender and if any information is found to be false at any stage of tendering or contract period, I/We will be liable to the following penal actions apart from other penal actions prescribed elsewhere in the tender document.
 - a. Cancellation of my/our bid/contract (as the case may be)
 - b. Forfeiture of EMD
 - c. Punitive action as per tender document
2. That I/we accept all terms and condition of NIT, including General Terms and Condition and Special/Additional Terms and Condition as stated there in the tender document as available on the website.
3. That I/we accept the Integrity Pact as given in the tender document (if applicable).
4. That I/we, am/are giving my/our consent for e-payment and submitting/ shall submit the mandate form for e-Payment in the format as prescribed in the document in case, the work is awarded to us.
5. That I/we do authorize Mahanadi Coalfields Limited for seeking information/clarification from my Bankers having reference in this bid.
6. That I/we will upload original/certified photo/scanned of all the relevant documents as prescribed in the tender document in support of the information and data furnished by me/us online.
7. I/We confirm that I/We have not been banned or de-listed by any Govt. or Quasi Govt. agencies or PSUs. In case We are banned or delisted this information shall be specifically informed to the tender issuing authority.
8. That I/We accept all the undertakings as specified elsewhere in the tender document.
9. That this online agreement will be a part of my bid and if the work is awarded to me/us, this will be a part of our agreement with Mahanadi Coalfields Limited Company.

B. TERMS AND CONDITIONS OF E-TENDER SERVICES AGREEMENT

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YOU MAY NOT MODIFY, COPY, REPRODUCE, REPUBLISH, UPLOAD, POST, TRANSMIT, OR DISTRIBUTE, IN ANY MANNER, THE MATERIAL ON THE SITE, INCLUDING TEXT, GRAPHICS, CODE AND/OR SOFTWARE.

You may print and download portions of material from the different areas of the website solely for your own non-commercial use provided that you agree that you shall not change or delete any copyright or proprietary materials from the site.

www.coalindiatenders.nic.in is an e-procurement portal of Coal India Limited/its Subsidiary.

THIS E-TENDER PORTAL AND RELATED SERVICES SUBJECT TO YOUR COMPLIANCE WITH THE USER'S TERMS AND CONDITIONS SET FORTH BELOW:

PLEASE READ THE FOLLOWING INFORMATION CAREFULLY. YOU MAY NOT COMPLETE YOUR REGISTRATION AND USE THE E-TENDER PORTAL WITHOUT AGREEING TO COMPLY WITH ALL OF THE TERMS AND CONDITIONS SET FORTH BELOW.

BY REGISTERING THE USER NAME AND PASSWORD, YOU AGREE TO ABIDE BY ALL THE TERMS AND CONDITIONS SET FORTH BELOW:

Bidder Registration, Password and Security:

Upon successful completion of Registration online, User ID and Password will be registered. You can login, only by giving valid User ID and Password and then signing with your valid Digital Signature Certificate.

The Online registration/enrolment of bidder on the portal should be done in the name of the bidder. The person whose DSC is attached to the Registered Bidder should be either the bidder himself Or, duly authorized by the Bidder.

User ID and password are strictly personal to each Authorised User and non-transferable. The User shall ensure that its Authorised Users do not divulge or disclose their user ID or password to third parties. In the event that the Authorised User comes to know that the User ID/Password has been/ might have been divulged, disclosed or discovered by any third party, user or its authorized user shall immediately modify the password using "Change Password" option. Mahanadi Coalfields Limited will have no responsibility or obligation in this regard.

At the time of enrolment in the e-Tendering portal of CIL/its Subsidiaries, the Bidders should ensure that the status of DSC is active on this site. The activation of newly issued DSC may take 24 hrs or more. Hence Bidders who are obtaining new DSC should register at least 24 hrs before the submission of Bid.

By registering in this portal, you forthwith assume the responsibility for maintaining the confidentiality of the Password and account, and for all activities that occur under your Password or Account. You also agree to (a). immediately notify by e-mail to Application Administrator/Nodal officer, of any unauthorized use of your Password or Account or any other breach of security, and (b) ensure that you log-out from your account at the end of each session. CIL/its Subsidiaries shall not be liable for any loss or damage caused to you due to your failure to comply with the foregoing.

Registered user can modify or update some of the information in their profile as and when required at their own discretion. However, some information such as "User ID" are protected against changes by Bidder after enrolment and some other information such as "Bidder Name" etc. are protected against changes by Bidder after bid submission.

Modification of software:

With consent of Project Advisory Committee, e-procurement of CIL, the Administrator of e-Tender portal, reserves the right to modify, add, delete and/or change the contents, classification and presentation of the information on the market place at any time as it may in its absolute discretion find to be expedient and without giving any notice. It is the users responsibility to refer to the terms and/or any change or addition to the same while accessing the site.

Coal India Limited reserves right to interrupt/suspend the availability of the e-Tender system without

any notice to the users.

System Requirements:

It is the user's responsibility to comply with the system requirements: hardware, software, Internet connectivity at user premises to access the eTender portal as mentioned in the home page in the link "Resources Required".

Under any circumstances, CIL shall not be liable to the Users for any direct/indirect loss incurred by them or damages caused to them arising out of the following:

- (a). Incorrect use of the e-Tender System, or;
- (b). Internet Connectivity failures in respect of the equipment used by the Users or by the Internet Service Providers, or;
- (c). Inability of the Bidder to submit their bid due to any DSC related problems, hardware, software or any other factor which are personal/ special/local to the Bidder.

Contents of Tender Information:

Tenders shall be published by the authorized Tender Inviting Authorities of the respective Tendering entities of Mahanadi Coalfields Limited. In case of any clarifications arising out of the tenders, the users have to contact the respective Tender Inviting Authority.

Bid Submission Acknowledgement:

The User should complete all the processes and steps required for Bid submission. The successful Bid submission can be ascertained once acknowledgement is given by the system through Bid Submission number i.e. Bid ID, after completion of all the processes and steps. Coal India Limited is not responsible for incomplete bid submission by users. Users may also note that the incomplete bids will not be saved by the system and so the same will not be available to the Tender Inviting Authority for processing.

The acknowledgment is the only confirmation of submission of bid, which the bidder can show as a proof of participating in the tender. Other than this acknowledgement, no proof will be considered as a confirmation to the submission of a bid. If the bidder fails to produce this acknowledgement required for verification in case of dispute, his claim for submission of bid may not be considered.

Upload files:

The bidders have to ensure that the files being uploaded by them are free from all kinds of viruses and contain only the relevant information as stated by the Tender Inviting Authorities for the particular tender. It is not obligatory on the part of Mahanadi Coalfields Limited to read each and every document uploaded by the Bidder. If any bidder/Company has uploaded/attached irrelevant data, bogus or fabricated certificates towards his qualification requirements to the respective tender then their User account will be liable for termination permanently or temporarily by Mahanadi Coalfields Limited without any prior notice.

User Conduct:

You agree that all information, data, text, software, photographs, graphics, messages or other materials ("Content"), whether publicly posted or privately transmitted, are the sole responsibility of the person from which such Content is originated. This means that you are entirely responsible for all Content that you upload, post, email or otherwise transmit via the e-Tender portal.

Mahanadi Coalfields Limited does not control the Content posted via the e-Tender portal and, as such, does not guarantee the accuracy, integrity or quality of such Content. Hence under no circumstances, Mahanadi Coalfields Limited is liable in any manner for any Content, including, but not limited to, for any errors or omissions in any Content, or for any loss or damage of any kind incurred as a result of the use of any Content posted, e-mailed or otherwise transmitted via the Site.

Amendments to a tender published:

You agree that the Mahanadi Coalfields Limited companies reserves the right to re-tender /cancel a tender or extend the closing date or amend the details of tender at any time by publishing corrigendum as applicable.

Special Admonitions for International Use:

Recognizing the global nature of the Internet, you agree to comply with all local rules regarding online content and acceptable Content. Specifically, you agree to comply with all applicable laws regarding the transmission of technical data to and from India or the country in which you reside.

Links:

The Site may provide, links to other World Wide Web sites or resources. Because Mahanadi Coalfields Limited has no control over such sites and resources, you acknowledge and agree that the Mahanadi Coalfields Limited is not responsible for the availability of such external sites or resources, and does not endorse and is not responsible or liable for any Content, advertising, products, or other materials on or available from such sites or resources.

You further acknowledge and agree that the Mahanadi Coalfields Limited shall not be responsible or liable, directly or indirectly, for any damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such Content, Goods or Services available on or through any such site or resources.

Miscellaneous:

This Agreement shall all be governed and construed in accordance with the laws of India & applicable to agreements made and to be performed in India. The e-Tender portal's failure to insist upon or enforce strict performance of any provision of this Agreement shall not be construed as a waiver of any provision or right. Neither the course of conduct between the parties nor trade practice shall act to modify any provision of this Agreement. Mahanadi Coalfields Limited may assign its rights and duties under this Agreement to any party at any time without notice to you. Any rights not expressly granted herein are reserved.

Governing Law:

Terms shall be governed by, and construed in accordance with, Indian law. The parties agree that the principal civil court of the place where the registered office of Coal India/Subsidiary Company is situated shall have non-exclusive jurisdiction to entertain any dispute with Coal India/Subsidiary company. In case of dispute being with a regional Institute of CMPDIL, the principal Civil Court where the said regional Institute is situated shall be place of suing.

Mahanadi Coalfields Limited reserves the right to initiate any legal action against those bidders violating all or any of the above-mentioned terms & conditions of e-Tender services agreement.

Modification of terms of Agreement:

CIL/its Subsidiaries reserves the right to add to or change/modify the terms of this Agreement. Changes could be made by us after the first posting to the Site and you will be deemed to have accepted any change if you continue to access the Site after that time. CIL/its Subsidiaries reserves the right to modify, suspend/cancel, or discontinue any or all services/ make modifications and alterations in any or all of the content, at any time without prior notice.

Policy and Security:**General Policy:**

CIL/its Subsidiaries is committed to protecting the privacy of our e-Tender site visitors. Mahanadi Coalfields Limited does not collect any personal or business information unless you provide it to us voluntarily when conducting an online enrolment, bid submission etc. or any other transaction on the Site.

Information Collected:

When you choose to provide personal or business information to us to conduct an online transaction, we use it only for the purpose of conducting the specific online transaction that you requested. The information is also used for the purpose of vendor searches. For each online transaction, we require only a minimum amount of personal and business information required to process your transaction.

When you visit our portal to browse, read pages, or download information, we automatically collect and store only the following information:

The Internet domain and IP address from which you access our portal;

The date and time you access our portal;

The pages you visit

This information would help us to make our site more useful to visitors and to learn about the number of visitors to our site and the types of technology our visitors use.

We do not give, share, sell or transfer any personal information to a third party unless required to do so by law. If you do not want any personal or business information to be collected, please do not submit it to us; however, without this required information we will be unable to process your online bid submission or any other online transaction. Review, update and correction of any personal or business information can be done directly on the Site.

Use of Cookies:

When you choose to enter into an online transaction, we use cookies to save the information that you input while progressing through the transaction. A cookie is a very small amount of data that is sent from our server to your computer's hard drive. By enabling this feature, the cookie will remember the data entered by you and next time when you visit this site, the data stored in the cookie will be available in future.

Security:

The Site has security measures in place to protect against the loss, misuse and alteration of information under our control.

eMail/ SMS Notifications:

The GePNIC eProcurement Server has functionality of automatically sending eMail / SMS alerts at various events as per the bidders preference. There is no manual intervention while sending these pre-defined eMail / SMS alerts. All events for which eMails / SMS being sent is also available to users on the Dash Board / the user login of the Bidder. Although all efforts will be made to ensure timely delivery of eMail / SMS, due to dependency in various other external factors, the delivery of eMail / SMS may not be assured and bidders are requested to check the portal on a periodic basis for any such events. Non receipt of eMail / SMS cannot be quoted as a reason for failure of service as this is an added facility being provided to users.

ANNEXURES

Annexure-I

FORMAT FOR LETTER OF BID

(To be uploaded by the Bidder on his Letter Head during submission of bid online)

To,
The Tender Committee
Mahanadi Coalfields Limited

Sub.:	Bid for the work "Supply, Installation, Testing, Trial Run and Commissioning with Six Years Comprehensive AMC after One Year Warranty period of an IP Network based CCTV Surveillance System at multiple locations of Projects, Areas, Bhubaneswar Office and Headquarters of Mahanadi Coalfields Limited, as per given Technical specifications, Special Terms and Conditions, and other Terms & Conditions of the NIT."
Ref.:	1. NIT No. MCL/HQ/E&T/e-Tender/20-21/ Dated: / /20____. 2. Tender Id No. 2020_MCL_XXXXX_1

Dear Sir,

This has reference to above referred bid. I/we have read and examined the conditions of contract, Scope of Work, technical specifications, BOQ and other documents carefully.

I /We am/are pleased to submit our bid for the above work. I/We hereby unconditionally accept the bid conditions and bid documents in its entirety for the above work and agree to abide by and fulfil all terms and conditions and specifications as contained in the bid document.

I/we here by submit all the documents as required to meet the eligibility criteria as per provision of the bid notice/document.

I/We hereby confirm that this bid complies with the Bid validity, Bid security and other documents as required by the Bidding documents.

If any information furnished by me/us towards eligibility criteria of this bid is found to be incorrect at any time, penal action as deemed fit may be taken against me/us for which I/We shall have no claim against **Mahanadi Coalfields Limited**.

Until a formal agreement is prepared and executed, this bid and your subsequent Letter of Acceptance/Work Order shall constitute a binding contract between us and **Mahanadi Coalfields Limited**.

Should this bid be accepted, we agree to furnish Performance Security within **stipulated date** and commence the work within **stipulated date**. In case of our failure to abide by the said provision, **Mahanadi Coalfields Limited** shall, without prejudice to any other right or remedy, be at liberty to cancel the letter of acceptance/ **work order** /award and to forfeit the Earnest Money and also debar us from participating in future tenders for a minimum period of 12(twelve) months.

PROFORMA FOR UNDERTAKING

(To be uploaded by the Bidder on his Letter Head during submission of bid online)

I / We, ..., Proprietor/Partner/Legal Attorney/Director/ Accredited Representative of M/S., solemnly declare that:

1. I/We am/are submitting Bid for the work.....against Bid Notice No. Dated..... and I/we offer to execute the work in accordance with all the terms, conditions and provisions of the bid.
2. Myself/Our Partners/Directors don't has/have any relative as employee of **Mahanadi Coalfields Limited**.
3. All information furnished by us in respect of fulfilment of eligibility criteria and qualification information of this Bid is complete, correct and true.
4. All copy of documents, credentials and documents submitted along with this Bid are genuine, authentic, true and valid.
5. I/ We hereby authorize department to seek references / clarifications from our Bankers.
6. We hereby undertake that we shall register and obtain license from the competent authority under the contract labour (Regulation & Abolition Act) as relevant, if applicable.
7. *I/We hereby confirm that we have registration with CMPF Authorities. We shall make necessary payments as required under law.

Or

*I/We hereby undertake that we shall take appropriate steps for registration as relevant under CMPF authorities, if applicable. We shall make necessary payments as required under law.

*** Delete whichever is not applicable.**

8. ** I/We have not been banned or delisted by any Govt., or Quasi Govt. Agencies or PSUs.

Or

**I / We have been banned by the organization named " _____ " for a period of..... year/s, effective from to.....

**** Delete whichever is not applicable.**

9. I/We have not been debarred by any procuring entity for violation of Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 04.06.2020, issued by Govt. of India as amended from time to time (not applicable for works with estimated value put to tender less than 5 lakh).
10. If any information and document submitted is found to be false/ incorrect at any time, department may cancel my/our Bid and action as deemed fit may be taken against me/us, including termination of the contract, forfeiture of all dues including Earnest Money and banning of our firm and all partners of the firm etc.

MANDATE FORM FOR ELECTRONIC FUND TRANSFER / INTERNET BANKING PAYMENT.

1. Name of the Bidder :

2. Address of the Bidder :

.....

City..... Pin Code.....

E-mail Id

Permanent Account Number

3. Particulars of Bank:

Bank Name		Branch Name	
Branch Place		Branch City	
Pin Code		Branch Code	
MICR No.			
(Digital Code number appearing on the MICR Band of the cheque supplied by the Bank. Please attach Xerox copy of a cheque of your Bank for ensuring accuracy of the Bank Name, Branch Name and Code Number.			
RTGS CODE			
Account Type	Savings	Current	Cash Credit
Account Number(as appearing in the Cheque Book.			

4. Date from which the mandate should be effective.

I hereby declare that the particulars given above are correct and complete. If any transaction is delayed or not effected for reasons of incomplete or incorrect information. I shall not hold Company responsible. I also undertake to advise any change in the particulars of my account to facilitate updation of records for purpose of credit of amount through SBI Net / RTGS transfer/NEFT. I agree to discharge responsibility expected of me as a participant under the scheme. Any bank charges levied by the bank for such e-transfer shall be borne by us.

Place :

Date :

Signature of the Party / Authorised Signatory

Certified that particulars furnished above are correct as per our records.

Banker's Stamp

Date :

Signature of the Authorised official from the Bank)

**SPECIMEN OF LETTER BY THE ENGINEER-IN-CHARGE TO CONTRACTOR
FOR PROVISIONAL REDUCTION IN RATE FOR SUBSTANDARD WORK.**

REGISTERED POST/A.D.

No.

date.....

To

M/S.....

.....

Dear Sir(s),

Subject: (Complete name of work) Agreement No

1) The..... (Name of the Company) considers that the items of work (specified in the statement appended herewith) relating to the work of undertaken by you in terms of the above agreement have not been executed in accordance with the prescribed specifications and/ or in a workman like manner and, therefore, cannot be accepted in terms of the above said agreement for payment at the rates specified in the agreement.

2) The (Name of the Company) is willing to consider acceptance of the same should you agree to receive payment at rates suitably reduced taking in consideration of substandard nature of the said items of work. The Area Engineer of this work will determine as to what suitable reductions in the rates should be made from the agreed rates for the said items. His decision shall be final. Pending such decision of the Area Engineer, however, the payment for the said items of work will be made at the provisional rates indicated against each item.

3) If you agree to the aforesaid conditions for acceptance of payment for the said items of work, you may please return the enclosed form duly executed by you.

4) If no reply is received from you within three weeks of the date of issue of the letter, it shall be presumed that the offer is not acceptable to you. In the said event, the offer shall stand withdrawn without prejudice to the rights and remedies of the (Name of the Company) in terms of the contract.

Enclo: Proforma for Acceptance (Appdx.22)

Yours faithfully,

Engineer-in-Charge
For and on behalf of
(Name of the Company)

**SPECIMEN OF LETTER OF CONTRACTOR'S ACCEPTANCE OF PROVISIONAL REDUCTION OF RATE FOR
SUBSTANDARD WORK.**

No.

Date:

To

.....

Sir,

Subject: Supply, Installation, Testing, Trial Run and Commissioning with Six Years Comprehensive AMC after One Year Warranty period of an IP Network based CCTV Surveillance System at multiple locations of Projects, Areas, Bhubaneswar Office and Headquarters of Mahanadi Coalfields Limited, as per given Technical specifications, Special Terms and Conditions, and other Terms & Conditions of the NIT.

Reference: Your letter No.....

I/We have carefully read the terms and conditions offered in your letter dated.....and they are acceptable to me/us.

Pending the decision of the Area Engineer of the final rates of payment against the items of work specified in the statement attached to your above letter which will be final and binding,. I/We agree to the same being paid at the provisional rates indicated against each of the said item of work for the above work as mentioned in your statement.

Yours faithfully,

Contractor(s).

**PROFORMA OF BANK GUARANTEE INLIEU OF
BID SECURITY/EARNEST MONEY**

N.A.

**PROFORMA OF BANK GUARANTEE FOR PERFORMANCE
SECURITY**

To

.....
.....

Re: Bank Guarantee in respect of Contract No....., Dated.....
Between (Name of the company) and (Name of the Contractor)

WHEREAS

..... (Name and address of the Contractor) (herein after called "the Contractor") has entered into a contract made as per letter of acceptance.....dated.....(herein after called the said contract) with (name of the Company) (hereinafter called "the Company") to execute (name of the contract and brief description of work) on the terms and conditions contained in the said contract.

It has been agreed that the Contractor shall furnish a Performance Security in the shape of Bank Guarantee from a Schedule bank for a sum of Rs..... as security for due compliance and performance of the terms and conditions of the said contract.

We..... (name of the Bank) having its branch/Office at..... have, at the request of the Contractor, agreed to furnish this bank Guarantee by way of performance Security.

NOW, THEREFORE, we the..... Bank (herein after called The Bank) hereby, unconditionally and irrevocably, guarantees and affirms as follows:

The Bank do hereby irrevocably guarantees and unconditionally agree with the Company that if the contractor shall in any way fail to observe or perform the terms and conditions of the said contract or shall commit any breach of its obligation there under, the Bank shall on its mere first written demand, and without any objection, demur and without any reference to the contractor, pay to the company the said sum of or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the sum, or failing on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the company and as regards the amount payable by the Bank under this Guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the company and the Contractor regarding the claim.

The Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contract which is likely to be day of but if the period of Contract is extended either pursuant to the provisions in the said contract or by mutual agreement between the contractor and the company, the Bank shall renew the period of the Bank Guarantee failing which it shall pay to the company the said sum of or such lesser amount of the said sum of as may be due to the company and as the company may demand.

This Guarantee shall remain in force until the dues of the company in respect of the said sum of and interest are fully satisfied and the Company certifies that the Contract has been fully carried out by the Contractor and discharged the guarantee.

The Bank further agrees with the company that the company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of the said contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forebear to enforce any of the terms and conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or

extension being granted to the Contractor or to any forbearance, act or omissions on the part of the company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above, the Bank shall pay to the company the said sum of or such lesser sum as may then be deemed to the Company and as the Company may require.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs..... The guarantee shall remain in force till the day*..... of*..... and unless the guarantee is renewed or claim is preferred against the bank on or before the said date all rights of the Company under this guarantee shall cease and the Bank shall be relieved and discharged from all liabilities hereunder except as provided in the preceding Clause.

* The date of guarantee shall cover a period of minimum one year or 90 days beyond the date of completion whichever is more.

Any notice by way of request, demand or otherwise hereunder maybe sent by post/e-mail/Fax addressed to the bank branch/operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank has under its constitution power to give this Guarantee and Sri..... who has signed it on behalf of the Bank has authority to do so.

Signed and sealed this.....day of.....at.....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code number)

(address)

"The Bank Guarantee as referred above shall be operative at our branch at..... payable at.....

(NIT shall specify town/city of the operative Branch. Bank Guarantee shall specify name of the branch with address of the specified town/city)"

NOTE:- The department shall ensure extension of guarantee period in case of extension of time.

**PROFORMA OF BANK GUARANTEE FOR MOBILISATION/
LUMP -SUM ADVANCE.**

M/s. Coal India Limited (with address)

Or

.....

(Name of the Subsidiary Company with address).

Dear Sir,

In consideration of Coal India Limited/Subsidiary Company having its Registered Office at (hereinafter called "the Company" which expression shall unless repugnant to the subject or context includes its successors and assigns) having agreed under the terms and conditions of the Contract No..... dated..... Entered into between Coal India Limited/Subsidiary Company and M/s having its Registered Office at (hereinafter called "the Contractor" to make mobilisation advance/lump-sum advance to the tune of Rs..... subject to submission of the Bank Guarantee for equal amount from any Nationalised/ Schedule Bank , We Bank (hereinafter referred to as the said Bank) having its Registered Office at do hereby undertake and agree to pay the Company to the extent of Rs..... on demand stating that the amount claimed by the Company is due and payable by the contractor for the reasons of non-refund and or non-recovery of the amount with interest thereon and to unconditionally pay the amount claimed by the company on such demand without any demur to the extent aforesaid.

2. We, ... Bank agree that the Company shall be the sole judge as to whether the said Contractor has failed/neglected in refunding the amount advanced by the Company and/or extent of loss and damages caused to or suffered by the Company on account of the amount advanced not being recovered in full and non-utilisation of the said advanced amount or part thereof for the purpose of performance of the contract and interest payable thereon and the decision of the company in this behalf shall be final and binding on us.

3) We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect upto and any claim received after the said date shall in no case bind the Bank.

4) The Company shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee or indemnity from time to time vary any of the terms and conditions of the said contract or to extend the time of performance by the said contractor or to postpone any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or to forbear from enforcing any of the terms and conditions governing the said contract or securities available to the company and the said Bank shall not be released from its liability under these presents.

5. Notwithstanding anything contained herein the liability of the said Bank under this Guarantee is restricted to Rs..... and this Guarantee shall come into force from the date hereof and shall remain in full force and effect till unless the written demand or claim under this Guarantee is made by the Company with us on or before all rights of the Company under this Guarantee shall cease to have any effect and we shall be relieved and discharged our liabilities hereunder.

6. We, the said Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the company in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

7. This guarantee issued by Sri..... who is authorized by the Bank.

Under jurisdiction of court only.

PROFORMA OF JOINT VENTURE AGREEMENT

(On Non-Judicial Stamp paper of appropriate value as per provision of the Stamp Act applicable in the concerned state)

This Joint Venture agreement is made on this day of.....

AMONGST/BETWEEN

M/s....., having its registered Office at

Represented by Shri.....(Name and Designation) of M/s.....Who has power of Attorney to enter into Joint Venture with.....and Sign all documents/ agreements on behalf of M/s..... (hereinafter referred to as"")

AND

M/s....., having its registered Office at

Represented by Shri.....(Name and Designation) of M/s.....who has power of Attorney to enter into Joint Venture with.....and Sign all documents/agreements on behalf of M/s..... (hereinafter referred to as"").

AND

M/s....., having its registered Office at

Represented by Shri.....(Name and Designation) of M/s.....who has power of Attorney to enter into Joint Venture with.....and Sign all documents/agreements on behalf of M/s..... (hereinafter referred to as"").

The expressions M/s and M/s.....and M/s shall, wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "Joint Venture /Parties" and individually as "Joint Venture Partner/Party".

WHEREAS M/s.....and M/s.....agreed to form a Joint Venture in order to join their forces to obtain best results from the combinations of their individual resources of technical and management skill, finance and equipment for the benefit of the project and in order to submit the Bid for the work of "

..... (Hereinafter referred to as "Project") under.....(Name of Company(hereinafter referred to as "the principle Employer").

The Parties hereby enter into this Joint Venture Agreement (hereinafter referred to as "Joint Venture agreement") to jointly prepare and submit the Bid for the Project and in the event of securing the Project from the Employer, to execute the Project in accordance with the Contract terms and conditions, to the satisfaction of the Principal Employer.

NOW THEREFORE, the parties, in consideration of the mutual premises contained herein, agree as follows:

1) FORMATION AND TERMINATION OF THE JOINT VENTURE.

The parties under this Agreement have decided to form a Joint Venture to submit the Bid for the above Project and execute the Contract with the Principal Employer for the Project, if qualified and awarded.

a) The name and style of the Joint Venture shall be "....." (hereinafter called the "Joint Venture ")

b) The Head Office of the Joint Venture shall be located at..... and the site office will be located at the site of the Project. All communication regarding the project will be made to..... Telephone Nos.....

- c) Neither of the parties of the Joint Venture shall be allowed to sign, pledge, sell or otherwise dispose all or part of its respective interests in the Joint Venture to any party including the existing partner of the Joint Venture.
- d) The terms of the Joint Venture shall begin as on the date first set forth above and shall terminate on the earliest of the following dates.
 - i) The Joint Venture fails to obtain qualification from the Employer.
 - ii) The Contract for the Project is not awarded to the Joint Venture.
 - iii) The Employer cancels the Project.
 - iv) The Project is completed including defects liability period to the satisfaction of the Employer and all the parties complete any and all duties, liabilities and responsibilities under or in connection with the Contract and the Joint Venture agreement.

2) **LEAD PARTNER.**

M/s..... shall be the Lead Partner of the Joint Venture and is In-charge for performing the contract management. M/s..... shall be attorney of the parties duly authorized to incur liabilities and receive instructions for and on behalf of any and all partners in the Joint Venture and also all the partners of the Joint Venture shall be jointly and severally liable during the bidding process and for the execution of the contract as per contract terms with the employer in accordance with the power of attorney annexed. All Joint Venture partners M/s.....; M/s..... & M/s..... nominate and authorize Shri..... (name and designation) of M/s..... to sign all letters, correspondence, papers & certificates and to submit the Pre-qualification Application / Bid documents for and on behalf of the Joint Venture.

3) **REPRESENTATIVE OF THE PARTNERS OF THE JOINT VENTURE.**

Each constituent party of the Joint Venture appoints the following personnel as the representative of the relevant party with full power of attorney from the Board of Directors of the concerned company, or from the partners of the entity, or from the proprietor.

<u>JV Partner</u>	<u>Name</u>	<u>Position in the respective Company</u>

M/s.....		

M/s.....		

M/s		

4) **PARTICIPATION SHARE & WORK RESPONSIBILITIES.**

4.1 The parties agree that their respective participation share (hereinafter called 'Participation Share') in the Joint Venture shall be as follows:

M/s..... :% (.....per cent)

M/s..... :% (.....per cent) and

M/s..... :% (.....per cent)

4.2 The Parties shall share the rights and obligations, risk, cost and expenses, working capitals, profits or losses or others arising out of or in relation to execution of the Project in proportion to their share of participation in the Joint Venture except as otherwise agreed.

4.3 The parties shall jointly execute the works under the Project as an integrated entity and allocate responsibilities as regards division of work between themselves by organizing the adequate resources for successful completion of the Project. However all parties shall remain jointly and severally responsible for the satisfactory execution of the Project in accordance with the Contract terms and conditions.

5) **JOINT AND SEVERAL LIABILITIES.**

All partner of Joint Venture shall be liable jointly and severally during the Pre-qualification and Bidding process; and in the event the contract is awarded, during the execution of the Contract, in accordance with Contract terms.

6) WORKING CAPITAL

Each party shall contribute working capital for equipment, labour and material or any expenses incurred for execution of the Project or any other investment required in connection with the execution of the project proportionate to the participation ratio.

7) BID SECURITY:

Bid Security, Performance Security and other securities shall be paid by the Joint Venture except as otherwise agreed.

8) PERSONNEL & EQUIPMENT

Team of Managers / Engineers of all the partners of the Joint Venture will form part of the core management structure and assist in execution of the project. The list of Personnel and equipment proposed to be engaged for the project by each Party will be decided by the management committee.

9) NON PERFORMANCE OF RESPONSIBILITY BY ANY PARTY OF JOINT VENTURE .

- a) As between themselves, each Party shall be fully responsible for the fulfilment of all obligations arising out of its scope of the work for the Project to be clarified subject to the Agreement between the Parties and shall hold harmless and indemnified against any damage arising from its default or non-fulfilment of such obligations.
- b) If any Party fails to perform its obligations described in this Agreement during the execution of the Project and to cure such breach within the period designated by the non-defaulting party, then the other party shall have the right to take up work, the interest and responsibilities of the defaulting party at the cost of the defaulting party.
- c) Stepping into the shoes of the existing partner of Joint Venture with all the liabilities of the existing partner from the beginning of the contract with the prior approval on Northern Company.
- d) Notwithstanding demarcation or allotment of work of between/amongst Joint Venture partners, Joint Venture shall be liable for non-performance of the whole contract irrespective of their demarcation or share of work.
- e) In case bid being accepted by Company, the payments under the contract shall only be made to the Joint Venture and not to the individual partners.

10) BANK A/C.

Separate Bank A/c. shall be opened in the name of the Joint Venture in a scheduled or Nationalized Bank in India as per mutual Agreement and all payments due to the Joint Venture shall be received only in that account, which shall be operated jointly by the representative of the Parties hereto. The financial obligations of the Joint Venture shall be discharged through the said Joint Venture Bank Account only and also all the payments received or paid by company to the Joint Venture shall be through that account alone.

11) LIMIT OF JOINT VENTURE ACTIVITIES.

The Joint Venture activities are limited to the bidding and in case of award, to the performance of the Contract for the Project according to the conditions of the Contract with the Employer.

12) TAXES.

Each Party shall be responsible for its own taxes, duties and other levies to be imposed on each party in connection with the Project. The taxes, duties and other levies imposed on the Joint Venture in connection with the Project shall be paid from the account of the Joint Venture.

13) EXCLUSIVITY

The Parties hereto agree and undertake that they shall not directly or indirectly either individually or with other party or parties take part in the Bid for the said Project. Each Party further guarantee to the other party hereto that this undertaking shall also apply to its subsidiaries and companies under its direct or indirect control.

14) MISCELLANEOUS:

- a. Neither party of the Joint Venture shall assign, pledge, sell or otherwise dispose all or part of its respective interests in the Joint Venture to all third party without the Agreement of the other party in writing.
- b. Subject to the above clause, the terms and conditions of this agreement shall be binding upon the parties, the Directors, Officers, Employees, Successors, Assigns and Representatives.

15) APPLICABLE LAW

This agreement shall be interpreted under laws and regulations of India.

IN WITNESS Whereof the Parties hereto have hereunder set their respective hands and seals the day, month, year first above written.

For

For.....

Signature _____
(Name & Address)

Signature _____
(Name & Address)

(Official Seal)

(Official Seal)

Place

Place.....

Date

Date

Witness
Signature

Witness
Signature

(Name & Address)

(Name & Address)

PRE CONTRACT INTEGRITY PACT**General**

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on.....day of the month of 20..., between, on one hand, Coal India Limited/Subsidiary Cos. acting through Shri, Designation of the officer, (hereinafter called the “BUYER / Principal”, 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....., Chief Executive Officer (hereinafter called the “BIDDER/Seller/Contractor” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure(Name of the Stores/Equipment/Item) and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Central Public Sector Unit.

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 to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment 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 BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

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

Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

a. No employee of the Principal, personally or through family members, will in connection with the tender for , or the execution of a contract, demand ; take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

(1) The Bidder(s) / Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commit themselves to observe the following principles during participation in the tender process and during the contract execution.

a. The Bidder(s) / Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The Bidder(s) / Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non- submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.

c. The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/ PC Act; further the Bidder(s) / Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s) / Contractor(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly the Bidder(s) /Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/ representative have to be in Indian Rupees only.

e. The Bidder(s) / Contractor(s) will, when presenting their bid, disclose any and all payments made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

f. Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

(2) The Bidder(s) / Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder, before contract award, has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

(1) If the Bidder / Contractor / Supplier has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is also entitled to exclude the Bidder / Contractor / Supplier from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case. In particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

(2) A transgression is considered to have occurred if the Principal, after due consideration of available facts and evidences within his / her knowledge concludes that there is a reasonable ground to suspect violation of any commitment listed under Section 2 i.e “ Commitments of Bidder(s) / Contractor(s).

(3) The Bidder accepts and undertakes to respect and uphold the Principal’s absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

(4) If the Bidder / Contractor / Supplier can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.”

Section 4 - Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 - Previous transgression

(1) The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business".

Section 6 - Equal treatment of all Bidders / Contractors / Subcontractors

(1) In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violating Bidder(s) / Contractor(s) / Subcontractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

(1) The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his/her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him / her to treat the information and documents of the Bidders/Contractors as confidential.

He/ she reports to the Chairman, Coal India Limited / CMD, Subsidiary Companies

(3) The Bidder(s) / Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/ her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.

(4) The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) / Sub-contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information ' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Chairman, Coal India Limited / CMD, Subsidiary Companies and recuse himself / herself from that case.

(5) The Principal 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 Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(6) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/ she will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(7) The Monitor will submit a written report to the Chairman, Coal India Limited / CMD, Subsidiary Companies within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(8) If the Monitor has reported to the Chairman, Coal India Limited / CMD, Subsidiary Companies, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Chairman, Coal India Limited / CMD, Subsidiary Companies has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman Coal India Limited / CMD, Subsidiary Companies.

Section 10 - Other provisions

(1) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(2) If the Contractor is a partnership or a Joint Venture, this agreement must be signed by all partners or JV members.

(3) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(4) Issues like Warranty / Guarantee etc. shall be outside the purview of IEMs.

(5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.

Section 11- Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER 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.

Section 12- Law and Place of Jurisdiction

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

Section 13 - 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.

(For & On behalf of the Principal)

(For & On behalf of Bidder/ Contractor)

(Office Seal)

(Office Seal)

Place -----

Date -----

Witness 1:

(Name & Address)

Witness 2:
(Name & Address)

Note:

1. This will be signed by the authorized signatory of the bidder (s) with name, designation and seal of the company.
2. If the Contractor is a partnership or a Joint Venture, this agreement must be signed by all partners or JV members.

PROFORMA FOR EXECUTION OF AGREEMENT**STAMP PAPER****(of appropriate value as per Stamp Act)**

This agreement is made on day of between **Mahanadi Coalfields Limited** **(A Subsidiary of Coal India Limited) (Name of Company)** having its registered office at **Sambalpur (Odisha)** (hereinafter called the 'COMPANY' which expression shall, unless repugnant to the subject or context, include its successors and assignees) of the one part and (Name of the Contractor) carrying on business as a (partnership/ proprietorship/ Ltd. Co. etc.) firm under the name and style (hereinafter called the 'said Contractor' which expression shall, unless the context requires otherwise include them and their respective heirs, executors, administrators and legal representatives) of the other part.

Whereas the Company invited tenders for the work of "....." and whereas the said Contractor/ Firm submitted tender for the said work and deposited a sum of Rs..... as Earnest Money and whereas the tender of the said contract has been accepted by the Company for execution of the said work.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1) In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the tender papers hereinafter referred to.
- 2) The following documents which are annexed to this agreement should be deemed to form and be read and construed as part of this agreement viz.

- i) Annexure-A Tender Notice (Page .. to ..)
- ii) Schedule –A General Terms & Conditions, Special Conditions and General Technical Specification (Page to ...) and Safety Code.
- iii) Schedule-B The probable Quantities and Amount (Page ... to ...)
- iv) Schedule-C Negotiation letters –
- iv) Schedule-D Letter of Acceptance/Work Order (Page .. to ..)
- v) Schedule-E Drawings (Page .. to ..)

- 3) In consideration for the payment of the sum of Rs.....(W/O Value; both in words and figures) or such other sum as may be arrived at under the clause of the specification relating to Payment by items measurements at unit prices by the Company, the said Contractor shall, subject to the terms & condition contained herein execute and complete the work as described and to the extent of probable quantities as indicated in Schedule B with such variations by way of alteration, addition to or reduction from the said works.

4) The company has received a sum of Rs..... towards Performance Security Deposit (1st part of Security Deposit) in the form of Demand Draft / Certified Cheque/ B.G./ *other form (details to be furnished)* .

5) The said contractor hereby covenants with the company that the company shall deduct at 5% of R/A Bills as Retention Money (2nd part of security deposit) as per the terms & condition of the tender/ contract.

IN WITNESS WHEREOF THE parties herein have set their hands and seals the date and year above written.

1 Partner. Signature

2 Partner Signature

On behalf of M/S.....
The Contractor, as one of the constituted attorney,
In the presence of –

1. Name _____ Signature

Address :

Occupation :

Signed by Sri on behalf of Signature
(Name of Company) in presence of -

a) Name : Signature

b) Address: .

To be submitted by Bidder on Non-Judicial Stamp Paper of Rs. 10/- duly attested by Notary Public.

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS.

The agreement made this day of Two thousand and between..... (Hereinafter called Guarantor of the one part) and Limited (hereinafter called the Owner of the other part).

WHEREAS this agreement is supplementary to a contract (hereinafter called the contract), dated and made between the GUARANTOR OF THE ONE part and the Limited of the other part, whereby the contractor, inter-alia, undertook to render the buildings and structures in the said contract recited completely water and leak proof.

AND WHEREAS the Guarantor agreed to give a guarantee to the effect that the said structures will remain water and leak proof for five years from the date of giving water proofing treatment.

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be five years to be reckoned from the date after the maintenance period prescribed in the contract.

Provided that the Guarantor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose.

- a) Misuse of roof shall mean any operation, which will damage proofing treatment, like chopping of fire wood and things of the same nature which might cause damage to the roof.
- b) Alternation shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts.
- c) The decision of the Engineer-in-Charge with regard to cause of leakage shall be final.

During this period of guarantee, the Guarantor shall make good all defects and in case of any defect being found render the building water proof to the satisfaction of the Engineer-in-Charge at his cost and shall commence the work for such rectification within seven days from the date of issue of notice from the Engineer-in-Charge calling upon him to rectify the defects failing which the work shall be got done by Coalfields by some other Contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost, payable by the Guarantor shall be final and binding.

That if the Guarantor fails to execute the water proofing or commits breach thereunder, then the Guarantor will indemnify the principal and his successors against all loss, damage, cost, expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and / or damage and / or cost incurred by Coalfields, the decision of the Engineer-in-Charge will be final and binding on the parties.

IN WITNESS WHEREOF these presents have been executed by the Guarantor..... and by and for and on behalf of Limited on the day, month and year first above written.

Signed, sealed and delivered by Guarantor in the presence of -

- 1.
- 2.

Signed for and on behalf of Limited by

In presence of:

- 1.
- 2.

—

CONSENT TO ARBITRATION CLAUSE 16 and 16A
(Applicable in case of Partnership firm/Joint Venture)

We,.....(Name of Partners of Partnership Firm/Joint Venture), partners of(Name of Partnership Firm/Joint Venture) hereby consent to abide by the provisions of Clause 16 and 16A of General Terms and Conditions pertaining to arbitration.

(Name, Signature and Seal of Partners of Partnership Firm)

Note:

1. If the Contractor is a partnership or a Joint Venture, this agreement must be signed by all partners or JV members.

Performa for certificate regarding Restrictions under Rule 144 (xi) of the GFRs, 2017 to be uploaded by bidder during submission of bid online on the LETTER HEAD OF BIDDER (As enrolled on the e-Procurement Portal of CIL) :

“Certificate regarding compliance to order no.F.No.6/18/2019-PPD dt 23/7/2020 of Ministry of Finance, Dept of Expenditure, Public Procurement Division with respect to restrictions on procurement of goods, services or works from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries”

Name of work	Supply, Installation, Testing, Trial Run and Commissioning with Six Years Comprehensive AMC after One Year Warranty period of an IP Network based CCTV Surveillance System at multiple locations of Projects, Areas, Bhubaneswar Office and Headquarters of Mahanadi Coalfields Limited, as per given Technical specifications, Special Terms and Conditions, and other Terms & Conditions of the NIT.		
NIT no.	MCL/HQ/E&T/e-Tender/20-21/	Dated: / /20____.	
Tender ID	2020_MCL_ XXXXX_1		

I/we have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I/we certify that I am/we are not from such a country or, if from such a country, has/have been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that I/we fulfil all requirements in this regard and I am/ we are eligible to be considered.

(This document is digitally signed by the DSC holder authorized by the bidder and therefore no physical signature is required).

Note:

If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.

**Competent Authority and procedure for Registration with Competent Authority
in case of bidder from a country which shares a land border with India**

- A. The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT)*.
- B. The Registration Committee shall have the following members*:
 - i. An officer, not below the rank of Joint Secretary, designated for this purpose by DPIIT, who shall be the Chairman;
 - ii. Officers (ordinarily not below the rank of Joint Secretary) representing the Ministry of Home Affairs, Ministry of External Affairs, and of those Departments whose sectors are covered by applications under consideration;
 - iii. Any other officer whose presence is deemed necessary by the Chairman of the Committee.
- C. DPIIT shall lay down the method of application, format etc. for such bidders as stated in para 1 of this Order.
- D. On receipt of an application seeking registration from a bidder from a country covered by para 1 of this Order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.
- E. The Ministry of External Affairs and Ministry of Home Affairs may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them.
- F. The decision of the Competent Authority to register such bidder may be for all kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.
- G. Registration shall not be granted unless the representatives of the Ministries of Home Affairs and External Affairs on the Committee concur*.
- H. Registration granted by the Competent Authority of the Government of India shall be valid not only for procurement by Central Government and its agencies/ public enterprises etc. but also for procurement by State Governments and their agencies/ public enterprises etc. No fresh registration at the State level shall be required.

- I. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.
- J. For national security reasons, the Competent Authority shall not be required to give reasons for rejection / cancellation of registration of a bidder.
- K. In transitional cases falling under para 3 of this Order, where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority, giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so shall follow the procedure laid down in the above paras.
- L. Periodic reports on the acceptance/ refusal of registration during the preceding period may be required to be sent to the Cabinet Secretariat. Details will be issued separately in due course by DPIIT.

[*Note:

- i. In respect of application of this Order to procurement by/ under State Governments, all functions assigned to DPIIT shall be carried out by the State Government concerned through a specific department or authority designated by it. The composition of the Registration Committee shall be as decided by the State Government and paragraph G above shall not apply. However, the requirement of **political and security clearance as per para D shall remain and no registration shall be granted without such clearance.**
 - ii. Registration granted by State Governments shall be valid only for procurement by the State Government and its agencies/ public enterprises etc. and shall not be valid for procurement in other states or by the Government of India and their agencies/ public enterprises etc.]
-

ANNEXURE-XVI

F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block
New Delhi
23rd July, 2020

Order (Public Procurement No. 2)

Subject: Exclusion from restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 –regarding

In Order (Public Procurement No. 1) dated 23rd July 2020, orders have been issued requiring registration of bidders from a country sharing a land border with India in order to be eligible to bid in public procurement.

2. Notwithstanding anything contained therein, it is hereby clarified that the said Order will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects.

3. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs.


(Sanjay Prasad)
Joint Secretary (PPD)
Email ID: js.pfc2.doe@gov.in
Telephone: 011-23093882

To,

- (1) Secretaries of All Ministries/ Departments of Government of India for information and necessary action. They are also requested to inform these provisions to all procuring entities.
- (2) Secretary, Department of Public Enterprises with a request to immediately reiterate these orders in respect of Public Enterprises.
- (3) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi

ANNEXURE-XVII**Certificate towards Local Content to be uploaded by the Bidder on his Letter Head during submission of bid online in compliance to clause no: 8.E & 9(b) of NIT**

We certify that the works/services offered by us against the tender for the work
 “.....(Name of work)” against NIT No/Tender ID.
 Dated....., meet the minimum local content requirement and has local
 content:

* Equal to or more than 50% (*Select this, in case of Class-I Local Suppliers*)
i.e.....% (indicating the percentage of local content)

* More than 20% but less than 50% (*Select this, in case of Class-II Local Suppliers*)
i.e.....% (indicating the percentage of local content)

***Delete whichever is not applicable.**

Note:

1. This document is digitally signed by the DSC holder authorized by the bidder. Hence, no physical signature is required.
2. If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.

Item Rate BoQ

Tender Inviting Authority: GM

Name of the Work / Contract No: WORKS AND SERVICES

.	Category of Services (To Be Selected by Department)	Category of Bidder (To Be Selected by Bidder)	To Be Entered by Department			
ITC Available	Works Contract	Bidder's Status (Mandatory)	Rate of GST (in %)	Total GST(in Rs.)	GST to be Paid By Bidder (in Rs.)	GST to be Paid By CIL/Subsidiary (in Rs.)
Name of the Bidder/ Bidding Firm / Company :		Select	18	0.00	0.00	0.00

PRICE SCHEDULE							
(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)							
NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Estimated Rate in Rs. P	BASIC RATE In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8
	Item Description/ Heading						
1	2 MP IP Camera, Dome Type, min. 30 m IR	526	NOS	5296.61		0.00	INR Zero Only
2	2 MP IP Camera, Bullet Type, min. 50 m IR	1808	NOS	20593.22		0.00	Zero Only
3	2MP IP Camera, PTZ Type, min. 150 m IR	135	NOS	85423.73		0.00	Zero Only
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	9	NOS	463559.32		0.00	Zero Only
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	10	NOS	225508.47		0.00	Zero Only
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	6	NOS	157703.39		0.00	Zero Only
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	25	NOS	72372.88		0.00	Zero Only
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	16	NOS	35846.61		0.00	Zero Only
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	94	NOS	33093.22		0.00	Zero Only
10	Centralized Video Management Server	8	NOS	368154.00		0.00	Zero Only
11	Centralized Network Video Management software	8	NOS	92868.64		0.00	Zero Only
12	Network Attached Storage (NAS) - 192 TB	1	NOS	1483049.15		0.00	Zero Only
13	Network Attached Storage (NAS) - 120 TB	4	NOS	715253.39		0.00	Zero Only
14	Network Attached Storage (NAS) - 48TB	10	NOS	287372.88		0.00	Zero Only
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT	706	NOS	20453.00		0.00	Zero Only
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000	35	NOS	159661.02		0.00	Zero Only
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and	1	NOS	96864.41		0.00	Zero Only
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and	44	NOS	30000.00		0.00	Zero Only
19	SFP Modules	1529	NOS	3000.00		0.00	Zero Only
20	Single Mode Media Converter	110	NOS	2033.90		0.00	Zero Only
21	75 inch LED Displays	2	NOS	106312.50		0.00	Zero Only
22	55 inch LED Displays	43	NOS	59997.66		0.00	Zero Only
23	24 inch LED Displays	28	NOS	7421.88		0.00	Zero Only
24	Desktop Workstation for surveillance monitoring	56	NOS	52118.64		0.00	Zero Only
25	Laptop - min. i7 processor & 8 GB RAM	6	NOS	66440.68		0.00	Zero Only
26	Point to Point Radios	187	NOS	25084.75		0.00	Zero Only
27	Point to Multi Point Radios	12	NOS	142769.00		0.00	Zero Only
28	UPS (1kVA) with 2 hours battery backup	392	NOS	25169.49		0.00	Zero Only

29	UPS (2kVA) with 2 hours battery backup	5	NOS	41101.69		0.00	Zero Only
30	UPS (3 kVA) with 2 hours battery backup	33	NOS	52372.88		0.00	Zero Only
31	UPS (5 kVA) with 2 hours battery backup	9	NOS	93220.34		0.00	Zero Only
32	UPS (650 VA) with 15 mins backup	184	NOS	4144.07		0.00	Zero Only
33	Electrical Socket Board / Multi Pin Socket	692	NOS	288.14		0.00	Zero Only
34	Surge Protection Device for UPS	620	NOS	15570.00		0.00	Zero Only
35	Ethernet Surge Protector for Cameras and Radios	2625	NOS	1327.34		0.00	Zero Only
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with	881	NOS	33333.33		0.00	Zero Only
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6	615	NOS	9895.21		0.00	Zero Only
38	Supply and installation Metallic Poles (10m) including Erection	537	NOS	12808.42		0.00	Zero Only
39	Supplying and installation Metallic Poles (15m) including	143	NOS	13959.00		0.00	Zero Only
40	Self Supported 15 m Mast	76	NOS	48250.00		0.00	Zero Only
41	Self Supported 30 m Mast	23	NOS	257750.00		0.00	Zero Only
42	Self Supported 51 m Masts	13	NOS	360762.00		0.00	Zero Only
43	CAT - 6 STP Cable	135785	METER	18.64		0.00	Zero Only
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	60600	METER	49.15		0.00	Zero Only
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	125170	METER	23.73		0.00	Zero Only
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	39000	METER	14.07		0.00	Zero Only
47	Power Cable, 3 core, 2.5 sq. mm	55190	METER	42.00		0.00	Zero Only
48	HDPE PLB Duct (40mm OD & 33mm ID)	22000	METER	61.86		0.00	Zero Only
49	24 Port CAT 6 Patch Panel	188	NOS	3898.31		0.00	Zero Only
50	CAT 6 Patch Panel (8 PORTS LOADED)	95	NOS	2645.76		0.00	Zero Only
51	Cat 6 UTP Patch Cord (2 mtrs)	630	NOS	127.12		0.00	Zero Only
52	Cat 6 UTP Patch Cord (1 mtrs)	470	NOS	67.80		0.00	Zero Only
53	24 port Fully Loaded OFC LIU	106	NOS	4618.00		0.00	Zero Only
54	12 port Fully Loaded OFC LIU	421	NOS	3959.00		0.00	Zero Only
55	06 port Fully Loaded OFC LIU	64	NOS	2699.15		0.00	Zero Only
56	OFC Patch Cord - 3 meter duplex single mode	1373	NOS	285.71		0.00	Zero Only
57	OFC Pig Tails single mode	3281	NOS	228.81		0.00	Zero Only
58	IP 67 Metal Enclosure with pole mounting kit	215	NOS	17222.11		0.00	Zero Only
59	24 U Floor Mount rack	37	NOS	14110.17		0.00	Zero Only
60	9U Wall mount Rack	469	NOS	4500.00		0.00	Zero Only
61	Supplying and fixing of following sizes of medium class PVC	68140	METER	25.00		0.00	INR Zero Only
62	Laying of Overhead CAT -6 / OFC / Power Cable with Gi Wire	91275	METER	57.00		0.00	INR Zero Only
63	Excavation of trenches, laying of HDPE pipe, including supply of	79940	METER	150.00		0.00	INR Zero Only
64	Fixing of HDPE pipe on wall surface and laying of CAT 6	35280	METER	74.00		0.00	INR Zero Only
65	Excavation of trenches, laying of Gi Pipe pipe, including supply	11660	METER	250.00		0.00	INR Zero Only
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of	22000	METER	355.00		0.00	INR Zero Only
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs	80	NOS	3000.00		0.00	INR Zero Only
68	Comprehensive AMC for six years after one years warranty	1	LS	12786790.94		0.00	INR Zero Only
69	Total impact of GST for the purpose of CTC	1.000	Nos		0.00	0.00	INR Zero Only
70						0.00	INR Zero Only
71							INR Zero Only

LOCATION WISE LIST OF EQUIPMENT - JAGANNATH OCP, JAGANNATH AREA

S. No	ITEM	UOM	Jagannath PO	FC1/ FC2 & In-Motion WB 2	Time Office/JNC Store/Substation	J-4/FC Coal Stock	Excavation Workshop	CHP Coalstock	Entry/Exit Point	Field MTK	New Coal Stock	New proposed WB -1	Village Chowk	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	2	4	1	2	0	0	0	1	0	2	2	14
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	5	3	5	5	8	4	4	3	4	1	1	43
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	1	1	0	0	0	0	0	0	2
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS												0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS												0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS												0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS												0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS												0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	3	0	0	0	0	0	0	0	0	0	0	3
10	Centralized Video Management Server	NOS	1	0	0	0	0	0	0	0	0	0	0	1
11	Centralized Network Video Management software	NOS	1	0	0	0	0	0	0	0	0	0	0	1
12	Network Attached Storage (NAS) - 192 TB	NOS												0
13	Network Attached Storage (NAS) - 120 TB	NOS												0
14	Network Attached Storage (NAS) - 48TB	NOS	1	0	0	0	0	0	0	0	0	0	0	1
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	4	2	1	2	3	1	1	1	2	1	1	19
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	0	0	0	0	0	0	0	0	0	0	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS												0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS												0
19	SFP Modules	NOS	13	4	2	4	6	2	2	2	4	2	2	43
20	Single Mode Media Converter	NOS												0
21	75 inch LED Displays	NOS												0
22	55 inch LED Displays	NOS	1	0	0	0	0	0	0	0	0	0	0	1
23	24 inch LED Displays	NOS												0
24	Desktop Workstation for surveillance monitoring	NOS	2	0	0	0	0	0	0	0	0	0	0	2
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0									0
26	Point to Point Radios	NOS	1	0	0	0	0	0	0	1	0	0	0	2
27	Point to Multi Point Radios	NOS												0
28	UPS (1kVA) with 2 hours battery backup	NOS	0	1	1	1	1	1	1	1	1	1	1	10
29	UPS (2kVA) with 2 hours battery backup	NOS												0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	0	0	0	0	0	0	0	0	0	0	1
31	UPS (5 kVA) with 2 hours battery backup	NOS												0
32	UPS (650 VA) with 15 mins backup	NOS												0
33	Electrical Socket Board / Multi Pin Socket	NOS	2	2	1	2	3	1	1	1	2	1	1	17
34	Surge Protection Device for UPS	NOS	1	1	1	1	1	1	1	1	1	1	1	11
35	Ethernet Surge Protector for Cameras and Radios	NOS	8	7	6	8	9	4	4	5	5	3	3	62
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	2	1	1	2	2	1	1	2	1	1	1	15

LOCATION WISE LIST OF EQUIPMENT - JAGANNATH OCP, JAGANNATH AREA

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LOCATION WISE LIST OF EQUIPMENT - JAGANNATH OCP, JAGANNATH AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - BHUBANESWARI OCP, JAGANNATH AREA

S. No	ITEM	UOM	BBSRI PO	In-motion WB 1	In-motion WB 2	Static WB-3	Substation	Excavation Workshop	Static WB 1&2/Coal Stock 8	Static WB 4/Coal Stock	Entry Exit for stock 8	Time Office/View Point	In-motion WB-7/Coal Sampling	In-motion WB 6	In-motion WB 3	Rly WB 1&2	Rly WB 3&4	Coal Sampling 3&4	Coal Stock 16	Coal Stock Extension	2 No of Proposed new WB	Coal Stock 3&4	Entry Exit Coal stock 16	Enty Exit for 3&4	Washery Entry/Exit(CT Road)	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	2	2	2	2	0	0	2	2	0	1	3	2	2	2	2	2	0	0	4	0	0	0	0	30
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	5	1	1	1	4	4	6	6	4	4	1	1	1	2	2	0	6	4	2	8	2	2	4	71
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																							0	
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																							0	
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																							0	
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																							0	
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																							0	
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
10	Centralized Video Management Server	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11	Centralized Network Video Management software	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
12	Network Attached Storage (NAS) - 192 TB	NOS																							0	
13	Network Attached Storage (NAS) - 120 TB	NOS																							0	
14	Network Attached Storage (NAS) - 48TB	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	1	1	1	1	1	2	2	1	3	1	1	1	1	1	1	1	1	2	2	1	1	1	31
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																							0	
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																							0	
19	SFP Modules	NOS	11	7	2	2	2	2	4	4	2	6	2	2	2	2	2	2	2	2	4	4	2	2	2	72
20	Single Mode Media Converter	NOS																							0	
21	75 inch LED Displays	NOS																							0	
22	55 inch LED Displays	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
23	24 inch LED Displays	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	Desktop Workstation for surveillance monitoring	NOS	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	Point to Point Radios	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	Point to Multi Point Radios	NOS																							0	
28	UPS (1kVA) with 2 hours battery backup	NOS	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	23
29	UPS (2kVA) with 2 hours battery backup	NOS																							0	
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
31	UPS (5 kVA) with 2 hours battery backup	NOS																							0	
32	UPS (650 VA) with 15 mins backup	NOS																							0	
33	Electrical Socket Board / Multi Pin Socket	NOS	2	1	1	1	1	1	3	2	2	3	2	1	1	1	1	1	3	1	2	3	1	1	1	36
34	Surge Protection Device for UPS	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	24
35	Ethernet Surge Protector for Cameras and Radios	NOS	9	3	3	3	4	4	8	8	4	6	4	3	3	4	4	2	6	4	6	8	2	2	4	104

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LOCATION WISE LIST OF EQUIPMENT - BHUBANESWARI OCP, JAGANNATH AREA

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LOCATION WISE LIST OF EQUIPMENT - ANANTA OCP, JAGANNATH AREA

S. No	ITEM	UOM	Ananta PO	5&6 Rly WB & Coal Sampling	Time Office	Static WB 1	Static WB 2&6/Coal Stock	Store	Excavation Workshop	Blasting Office/ Coal stock	Static WB-3	In motion WB-4/Coal stock	In-Motion WB 2	In-Motion WB 3	Substation	InMotion WB -1	Proposed new WB 7&8	Mins View Point	Dumper Parking	New Coal Stock6	Entry Exit Handidhwa point	Entry Exit New coalstock 6 yard point	Entry exit for new proposed coal stock yard	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	2	4	1	2	2	0	0	0	2	2	2	2	1	2	4	0	0	0	0	0	0	26
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	5	2	2	1	5	6	6	5	1	4	1	1	2	1	2	0	0	3	2	2	2	53
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0	4
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																						0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																						0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																						0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																						0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																						0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
10	Centralized Video Management Server	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	Centralized Network Video Management software	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12	Network Attached Storage (NAS) - 192 TB	NOS																						0
13	Network Attached Storage (NAS) - 120 TB	NOS																						0
14	Network Attached Storage (NAS) - 48TB	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	5	1	1	1	2	2	1	2	1	2	1	1	1	1	2	1	1	1	1	1	1	30
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																						0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																						0
19	SFP Modules	NOS	15	2	2	2	4	4	2	4	2	4	2	2	2	2	4	2	2	2	2	2	2	65
20	Single Mode Media Converter	NOS																						0
21	75 inch LED Displays	NOS																						0
22	55 inch LED Displays	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23	24 inch LED Displays	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
25	Laptop - min. i7 processor & 8 GB RAM	NOS																						0
26	Point to Point Radios	NOS	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	6

LOCATION WISE LIST OF EQUIPMENT - ANANTA OCP, JAGANNATH AREA

S. No	ITEM	UOM	Ananta PO	5&6 Rly WB & Coal Sampling	Time Office	Static WB 1	Static WB 2&6/Coal Stock	Store	Excavation Workshop	Blasting Office/ Coal stock	Static WB-3	In motion WB-4/Coal stock	In-Motion WB 2	In-Motion WB 3	Substation	InMotion WB -1	Proposed new WB 7&8	Mins View Point	Dumper Parking	New Coal Stock6	Entry Exit Handidhwa point	Entry Exit New coalstock 6 yard point	Entry exit for new proposed coal stock yard	TOTAL QTY
33	Electrical Socket Board / Multi Pin Socket	NOS	2	2	1	1	1	3	3	2	1	2	1	1	1	1	2	2	2	2	2	2	2	36
34	Surge Protection Device for UPS	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0	0	0	0	0	0	16
35	Ethernet Surge Protector for Cameras and Radios	NOS	8	6	3	3	7	6	7	5	3	7	3	3	3	4	6	2	1	3	2	2	2	86
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	1	1	1	1	1	2	1	2	1	1	1	2	2	1	1	2	2	2	2	29
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	15	7	6	6	0	4	4	0	6	8	3	0	16	20	20	1	8	20	10	10	10	174
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	8	0	0	0	10	0	0	3	0	4	0	0	0	0	0	0	0	2	4	4	4	39
40	Self Supported 15 m Mast	NOS																						0
41	Self Supported 30 m Mast	NOS																						0
42	Self Supported 51 m Masts	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	4
43	CAT - 6 STP Cable	METER	600	600	300	150	300	600	500	300	100	400	100	100	150	150	300	20	300	400	400	400	400	6570
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	3200																					3200
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	5300																					5300
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	4450																					4450
47	Power Cable, 3 core, 2.5 sq. mm	METER	100	500	200	100	100	700	800	300	100	500	100	100	100	100	200	500	300	500	400	400	400	6500
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER																						0
49	24 Port CAT 6 Patch Panel	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	22
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS																						0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS																						0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	7	6	3	3	7	6	7	5	3	7	3	3	3	3	6	1	1	3	2	2	2	83
53	24 port Fully Loaded OFC LIU	NOS	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
54	12 port Fully Loaded OFC LIU	NOS	3	0	3	1	2	2	1	2	1	2	1	1	1	1	2	1	1	1	1	1	1	29
55	06 port Fully Loaded OFC LIU	NOS																						0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	15	2	2	2	4	4	2	4	2	4	2	2	2	2	4	2	2	2	2	2	2	65
57	OFC Pig Tails single mode	NOS	30	4	4	4	8	8	4	8	4	8	4	4	4	4	8	4	4	4	4	4	4	130
58	IP 67 Metal Enclosure with pole mounting kit	NOS	0	1	0	0	1	2	3	1	0	1	0	0	0	0	0	1	1	2	2	2	2	19
59	24 U Floor Mount rack	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
60	9U Wall mount Rack	NOS	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0	0	0	1	1	1	18

LOCATION WISE LIST OF EQUIPMENT - ANANTA OCP, JAGANNATH AREA

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LOCATION WISE LIST OF EQUIPMENT - GM UNIT, JAGANNATH AREA

S. No	ITEM	UOM	GM Office	132 KV Substation	Magazine	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	0	1	0	1
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	0	5	6	11
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	1	0	1
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS				0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS				0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS				0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS				0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS				0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	2	1	1	4
10	Centralized Video Management Server	NOS				0
11	Centralized Network Video Management software	NOS				0
12	Network Attached Storage (NAS) - 192 TB	NOS				0
13	Network Attached Storage (NAS) - 120 TB	NOS				0
14	Network Attached Storage (NAS) - 48TB	NOS	1	0	0	1
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	2	2	2	6
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	0	0	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS				0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS				0
19	SFP Modules	NOS	9	4	4	17
20	Single Mode Media Converter	NOS				0
21	75 inch LED Displays	NOS				0
22	55 inch LED Displays	NOS	1	0	0	1
23	24 inch LED Displays	NOS	0	1	1	2
24	Desktop Workstation for surveillance monitoring	NOS	1	0	0	1
25	Laptop - min. i7 processor & 8 GB RAM	NOS	1	0	0	1
26	Point to Point Radios	NOS				0
27	Point to Multi Point Radios	NOS				0
28	UPS (1kVA) with 2 hours battery backup	NOS	0	1	1	2
29	UPS (2kVA) with 2 hours battery backup	NOS				0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	0	0	1
31	UPS (5 kVA) with 2 hours battery backup	NOS				0
32	UPS (650 VA) with 15 mins backup	NOS				0
33	Electrical Socket Board / Multi Pin Socket	NOS	1	3	2	6
34	Surge Protection Device for UPS	NOS	1	1	1	3
35	Ethernet Surge Protector for Cameras and Radios	NOS	1	1	1	3
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	1	3

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, JAGANNATH AREA

S. No	ITEM	UOM	GM Office	132 KV Substation	Magazine	TOTAL QTY
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	6	40	46
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS				0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS				0
40	Self Supported 15 m Mast	NOS				0
41	Self Supported 30 m Mast	NOS				0
42	Self Supported 51 m Masts	NOS				0
43	CAT - 6 STP Cable	METER	100	600	800	1500
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER				0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER				0
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	300	1300	2300	3900
47	Power Cable, 3 core, 2.5 sq. mm	METER	0	0	2500	2500
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER				0
49	24 Port CAT 6 Patch Panel	NOS	0	1	1	2
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS				0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS				0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	7	6	13
53	24 port Fully Loaded OFC LIU	NOS	2	0	0	2
54	12 port Fully Loaded OFC LIU	NOS	2	2	2	6
55	06 port Fully Loaded OFC LIU	NOS				0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	9	4	4	17
57	OFC Pig Tails single mode	NOS	18	8	8	34
58	IP 67 Metal Enclosure with pole mounting kit	NOS	0	3	3	6
59	24 U Floor Mount rack	NOS	1	0	0	1
60	9U Wall mount Rack	NOS	0	1	1	2
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	700	200	0	900
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	4500			4500
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER				0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER				0

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, JAGANNATH AREA

S. No	ITEM	UOM	GM Office	132 KV Substation	Magazine	TOTAL QTY
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER				0
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm - 100mm dia bore)	METER				0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS				0

LOCATION WISE LIST OF EQUIPMENT - JAGANNATH AREA TOTAL

S. No	ITEM	UOM	JOCP	BBSRI OCP	ANANTA OCP	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	14	30	26	1	71
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	43	71	53	11	178
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	2	1	4	1	8
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	3	5	5	4	17
10	Centralized Video Management Server	NOS	1	1	1	0	3
11	Centralized Network Video Management software	NOS	1	1	1	0	3
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	1	1	1	1	4
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	19	31	30	6	86
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	2	1	1	5
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0	0
19	SFP Modules	NOS	43	72	65	17	197
20	Single Mode Media Converter	NOS	0	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0	0
22	55 inch LED Displays	NOS	1	1	1	1	4
23	24 inch LED Displays	NOS	0	0	0	2	2
24	Desktop Workstation for surveillance monitoring	NOS	2	2	2	1	7
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	1	1
26	Point to Point Radios	NOS	2	0	6	0	8
27	Point to Multi Point Radios	NOS	0	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	10	23	15	2	50
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	1	1	1	4
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0	0	0
33	Electrical Socket Board / Multi Pin Socket	NOS	17	36	36	6	95
34	Surge Protection Device for UPS	NOS	11	24	16	3	54
35	Ethernet Surge Protector for Cameras and Radios	NOS	62	104	86	3	255
36	Lightning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	15	34	29	3	81
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	46	46
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	88	275	174	0	537
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	16	88	39	0	143
40	Self Supported 15 m Mast	NOS	0	0	0	0	0
41	Self Supported 30 m Mast	NOS	0	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - JAGANNATH AREA TOTAL

S. No	ITEM	UOM	JOCP	BBSRI OCP	ANANTA OCP	GM UNIT	TOTAL QTY
42	Self Supported 51 m Masts	NOS	2	0	4	0	6
43	CAT - 6 STP Cable	METER	3150	6580	6570	1500	17800
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	4400	7300	3200	0	14900
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	1300	6800	5300	0	13400
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	5700	1900	4450	3900	15950
47	Power Cable, 3 core, 2.5 sq. mm	METER	1300	2000	6500	2500	12300
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	11	20	22	2	55
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	59	102	83	13	257
53	24 port Fully Loaded OFC LIU	NOS	2	7	3	2	14
54	12 port Fully Loaded OFC LIU	NOS	18	29	29	6	82
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	43	72	65	17	197
57	OFC Pig Tails single mode	NOS	86	144	130	34	394
58	IP 67 Metal Enclosure with pole mounting kit	NOS	8	19	19	6	52
59	24 U Floor Mount rack	NOS	1	1	1	1	4
60	9U Wall mount Rack	NOS	10	22	18	2	52
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	440	1020	1260	900	3620
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	13890	21020	18030	4500	57440
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	200	500	200	0	900
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	0	0	0	0	0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	20	40	30	0	90
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - BHARATPUR OCP, BHARATPUR AREA

S. No	ITEM	UOM	PO Off	CHP	RLS	NQ TK & Dump Park	New Silo & Rail WB	W B Off & Coal Stock	Static-5&6 & Mines Entry/ Exit	IM RD WB.1	Rakas St. 11&12 & Coal Stock	IM RD WB.3	NQ Rail WB & Sampling	Static7/Main Coal Stock	Static8 & Siding.8	NQ SS & Sdng.7	Static 9&10	OITDS Control & Mines View	BLA CAMP & Mines Patch	Siding.7 End Seq Room	IM RD WB.4	IM RD WB.2 & Mines Entry/Exit	Sdng.8 End Chln Point	JB Workshop	JB Magazine	TOTAL
24	Desktop Workstation for surveillance monitoring	NOS																								0
25	Laptop - min. i7 processor & 8 GB RAM	NOS																								0
26	Point to Point Radios	NOS																	5							5
27	Point to Multi Point Radios	NOS																	1							1
28	UPS (1kVA) with 2 hours battery backup	NOS		2	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	29
29	UPS (2kVA) with 2 hours battery backup	NOS	1																							1
30	UPS (3 kVA) with 2 hours battery backup	NOS																								0
31	UPS (5 kVA) with 2 hours battery backup	NOS																								0
32	UPS (650 VA) with 15 mins backup	NOS																								0
33	Electrical Socket Board / Multi Pin Socket	NOS																								0
34	Surge Protection Device for UPS	NOS	1	2	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	30
35	Ethernet Surge Protector for Cameras and Radios	NOS	11	27	41	7	46	6	3	3	8	3	8	8	3	6	3	2	9	2	3	3	2	52	5	261
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	81	2	2	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	112
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling	NOS	80																							80
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																								0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																								0
40	Self Supported 15 m Mast	NOS																	3							3
41	Self Supported 30 m Mast	NOS																								0
42	Self Supported 51 m Masts	NOS																	2							2

[illegible]

LOCATION WISE LIST OF EQUIPMENT - BHARATPUR OCP, BHARATPUR AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT BHARATPUR AREA

S. No	ITEM	UOM	GM Offr. BA	L&R Dept(Chhpd Off)	Director House	Bpr Dispensary	Reg Str	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	11	3	2	1		17
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	8	2	2	2	0	14
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS						0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS						0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS						0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS						0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS						0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	2					2
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS		1		1		2
10	Centralized Video Management Server	NOS	1					1
11	Centralized Network Video Management software	NOS	1					1
12	Network Attached Storage (NAS) - 192 TB	NOS	1					1
13	Network Attached Storage (NAS) - 120 TB	NOS						0
14	Network Attached Storage (NAS) - 48TB	NOS						0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	1	1	1		6
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1					1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS						0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	2	1	1	1	1	6
19	SFP Modules	NOS	18	3	3	3	2	29
20	Single Mode Media Converter	NOS	70					70
21	75 inch LED Displays	NOS						0
22	55 inch LED Displays	NOS	1					1
23	24 inch LED Displays	NOS	1	1		1		3
24	Desktop Workstation for surveillance monitoring	NOS	2					2
25	Laptop - min. i7 processor & 8 GB RAM	NOS	1					1
26	Point to Point Radios	NOS	1					1
27	Point to Multi Point Radios	NOS						0
28	UPS (1kVA) with 2 hours battery backup	NOS		1	1	1		3
29	UPS (2kVA) with 2 hours battery backup	NOS					1	1
30	UPS (3 kVA) with 2 hours battery backup	NOS	1					1
31	UPS (5 kVA) with 2 hours battery backup	NOS						0
32	UPS (650 VA) with 15 mins backup	NOS						0
33	Electrical Socket Board / Multi Pin Socket	NOS						0
34	Surge Protection Device for UPS	NOS	1	1	1	1	1	5
35	Ethernet Surge Protector for Cameras and Radios	NOS	20	5	4	3	0	32
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	3	1	1	1	1	7
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	2					2
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS						0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS						0
40	Self Supported 15 m Mast	NOS						0

LOCATION WISE LIST OF EQUIPMENT - GM UNIT BHARATPUR AREA

S. No	ITEM	UOM	GM Offr, BA	L&R Dept(Chhpd Off)	Director House	Bpr Dispensary	Reg Str	TOTAL
41	Self Supported 30 m Mast	NOS						0
42	Self Supported 51 m Masts	NOS						0
43	CAT - 6 STP Cable	METER			1525			1525
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER			1500			1500
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER			1000			1000
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	0					0
47	Power Cable, 3 core, 2.5 sq. mm	METER	0					0
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER			2000			2000
49	24 Port CAT 6 Patch Panel	NOS	1					1
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS						0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS						0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS						0
53	24 port Fully Loaded OFC LIU	NOS	2	1	1	1	1	6
54	12 port Fully Loaded OFC LIU	NOS						0
55	06 port Fully Loaded OFC LIU	NOS						0
56	OFC Patch Cord - 3 meter duplex single mode	NOS			100			100
57	OFC Pig Tails single mode	NOS			80			80
58	IP 67 Metal Enclosure with pole mounting kit	NOS						0
59	24 U Floor Mount rack	NOS	1					1
60	9U Wall mount Rack	NOS	2	1	1	1	1	6
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER			1100			1100
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER						0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER						0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER						0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER						0
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm - 100mm dia bore)	METER			2000			2000
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS			15			15

LOCATION WISE LIST OF EQUIPMENT - BHARATPUR AREA TOTAL

S. No	ITEM	UOM	BHP OCP	GM UNIT	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	16	17	33
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	236	14	250
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	3	0	3
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	12	2	14
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	13	2	15
10	Centralized Video Management Server	NOS	0	1	1
11	Centralized Network Video Management software	NOS	0	1	1
12	Network Attached Storage (NAS) - 192 TB	NOS	0	1	1
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	54	6	60
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	0	1	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	29	6	35
19	SFP Modules	NOS	163	29	192
20	Single Mode Media Converter	NOS	0	70	70
21	75 inch LED Displays	NOS	0	0	0
22	55 inch LED Displays	NOS	0	1	1
23	24 inch LED Displays	NOS	10	3	13
24	Desktop Workstation for surveillance monitoring	NOS	0	2	2
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	1	1
26	Point to Point Radios	NOS	5	1	6
27	Point to Multi Point Radios	NOS	1	0	1
28	UPS (1kVA) with 2 hours battery backup	NOS	29	3	32
29	UPS (2kVA) with 2 hours battery backup	NOS	1	1	2
30	UPS (3 kVA) with 2 hours battery backup	NOS	0	1	1
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0
33	Electrical Socket Board / Multi Pin Socket	NOS	0	0	0
34	Surge Protection Device for UPS	NOS	30	5	35
35	Ethernet Surge Protector for Cameras and Radios	NOS	261	32	293
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	112	7	119
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	80	2	82
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0

LOCATION WISE LIST OF EQUIPMENT - BHARATPUR AREA TOTAL

S. No	ITEM	UOM	BHP OCP	GM UNIT	TOTAL
40	Self Supported 15 m Mast	NOS	3	0	3
41	Self Supported 30 m Mast	NOS	0	0	0
42	Self Supported 51 m Masts	NOS	2	0	2
43	CAT - 6 STP Cable	METER	12505	1525	14030
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	9000	1500	10500
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	12000	1000	13000
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	7000	0	7000
47	Power Cable, 3 core, 2.5 sq. mm	METER	8000	0	8000
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	20000	2000	22000
49	24 Port CAT 6 Patch Panel	NOS	0	1	1
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	30	6	36
54	12 port Fully Loaded OFC LIU	NOS	0	0	0
55	06 port Fully Loaded OFC LIU	NOS	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	0	100	100
57	OFC Pig Tails single mode	NOS	360	80	440
58	IP 67 Metal Enclosure with pole mounting kit	NOS	0	0	0
59	24 U Floor Mount rack	NOS	0	1	1
60	9U Wall mount Rack	NOS	31	6	37
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	7500	1100	8600
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	0	0	0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	0	0	0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	0	0	0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	0	0	0
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	20000	2000	22000
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	65	15	80

LOCATION WISE LIST OF EQUIPMENT - LINGARAJ OCP, LINGARAJ AREA

S. No	ITEM	UOM	PO Office and Road Sale Checkpoint	Main Substation	Sampling Office	Coal Analysis Lab	Sidings	Coal Stocks	Weighbridges	Time Office	HEMM Workshop	Shantinagar Field Workshop, substation and mines overview	Diesel Filling Station, Washery Coal Despatch point, Balunga Chawk	Dumper Parking	CHP	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	1	2	2	3	0	0	20	3	4	1	0	0	0	36
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	5	4	0	0	8	10	14	5	10	5	5	4	3	73
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	0	4	6	0	0	0	2	0	0	0	12
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0	0	0	0	1	1	0	0	0	0	2
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS														0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS														0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS														0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS														0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	1	0	0	0	0	2	3	0	0	1	0	0	0	7
10	Centralized Video Management Server	NOS														0
11	Centralized Network Video Management software	NOS														0
12	Network Attached Storage (NAS) - 192 TB	NOS														0
13	Network Attached Storage (NAS) - 120 TB	NOS														0
14	Network Attached Storage (NAS) - 48TB	NOS														0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	2	1	1	12	16	10	4	6	5	3	2	1	66
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS														0
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS														0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	1	0	0	0	0	0	0	1	1	0	0	0	0	3
19	SFP Modules	NOS	10	4	2	2	24	32	20	12	16	10	6	4	2	144
20	Single Mode Media Converter	NOS														0
21	75 inch LED Displays	NOS														0
22	55 inch LED Displays	NOS														0
23	24 inch LED Displays	NOS														0
24	Desktop Workstation for surveillance monitoring	NOS														0
25	Laptop - min. i7 processor & 8 GB RAM	NOS														0
26	Point to Point Radios	NOS	0	0	0	2	24	16	8	0	0	0	2	0	0	52
27	Point to Multi Point Radios	NOS														0
28	UPS (1kVA) with 2 hours battery backup	NOS	1	0	0	0	0	0	6	1	1	0	0	0	0	9
29	UPS (2kVA) with 2 hours battery backup	NOS														0
30	UPS (3 kVA) with 2 hours battery backup	NOS														0
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0	0	0	0	1	1	0	0	0	0	2

LOCATION WISE LIST OF EQUIPMENT - LINGARAJ OCP, LINGARAJ AREA

S. No	ITEM	UOM	PO Office and Road Sale Checkpoint	Main Substation	Sampling Office	Coal Analysis Lab	Sidings	Coal Stocks	Weighbridges	Time Office	HEMM Workshop	Shantinagar Field Workshop, substation and mines overview	Diesel Filling Station, Washery Coal Despatch point, Balunga Chawk	Dumper Parking	CHP	TOTAL
32	UPS (650 VA) with 15 mins backup	NOS	2	2	1	1	12	16	0	2	5	5	3	2	1	52
33	Electrical Socket Board / Multi Pin Socket	NOS	2	2	1	1	12	16	10	2	5	4	3	2	1	61
34	Surge Protection Device for UPS	NOS	2	2	1	1	12	16	10	3	7	5	3	2	1	65
35	Ethernet Surge Protector for Cameras and Radios	NOS	6	6	2	3	48	32	34	8	14	8	7	4	3	175
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	2	1	0	0	12	16	10	2	5	4	3	2	1	58
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	2	1	0	0	12	16	10	2	5	4	3	2	1	58
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS														0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS														0
40	Self Supported 15 m Mast	NOS														0
41	Self Supported 30 m Mast	NOS														0
42	Self Supported 51 m Masts	NOS														0
43	CAT - 6 STP Cable	METER	200	200	100	100	200	400	900	400	500	200	100	100	100	3500
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER														0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	500	300	300	0	0	3600	3000	0	400	400	400	800	1000	10700
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER														0
47	Power Cable, 3 core, 2.5 sq. mm	METER	50	50	50	50	120	200	200	200	200	200	50	50	100	1520
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER														0
49	24 Port CAT 6 Patch Panel	NOS	2	1	0	1	0	0	6	1	3	1	0	0	0	15
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS														0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS														0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS														0
53	24 port Fully Loaded OFC LIU	NOS	2	1	0	1	0	0	6	1	3	1	0	0	0	15
54	12 port Fully Loaded OFC LIU	NOS														0
55	06 port Fully Loaded OFC LIU	NOS														0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	2	4	2	2	0	32	20	12	16	10	6	4	2	112

LOCATION WISE LIST OF EQUIPMENT - LINGARAJ OCP, LINGARAJ AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - SILO, LINGARAJ OCP, LINGARAJ AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - SILO, LINGARAJ OCP, LINGARAJ AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, LINGARAJ AREA

S. No	ITEM	UOM	GM Office	IWSS	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	2	5	7
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	3	2	5
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	1	0	1
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS			0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS			0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS			0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS			0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS			0
10	Centralized Video Management Server	NOS			0
11	Centralized Network Video Management software	NOS			0
12	Network Attached Storage (NAS) - 192 TB	NOS			0
13	Network Attached Storage (NAS) - 120 TB	NOS			0
14	Network Attached Storage (NAS) - 48TB	NOS			0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1	3	4
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS			0
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	1	0	1
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	1	1
19	SFP Modules	NOS	6	6	12
20	Single Mode Media Converter	NOS			0
21	75 inch LED Displays	NOS			0
22	55 inch LED Displays	NOS			0
23	24 inch LED Displays	NOS			0
24	Desktop Workstation for surveillance monitoring	NOS			0
25	Laptop - min. i7 processor & 8 GB RAM	NOS			0
26	Point to Point Radios	NOS			0
27	Point to Multi Point Radios	NOS			0
28	UPS (1kVA) with 2 hours battery backup	NOS			0
29	UPS (2kVA) with 2 hours battery backup	NOS			0
30	UPS (3 kVA) with 2 hours battery backup	NOS			0
31	UPS (5 kVA) with 2 hours battery backup	NOS	1	0	1
32	UPS (650 VA) with 15 mins backup	NOS	1	1	2
33	Electrical Socket Board / Multi Pin Socket	NOS	1	1	2
34	Surge Protection Device for UPS	NOS	1	1	2
35	Ethernet Surge Protector for Cameras and Radios	NOS	5	7	12
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	2
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	1	1	2
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS			0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS			0
40	Self Supported 15 m Mast	NOS			0
41	Self Supported 30 m Mast	NOS			0
42	Self Supported 51 m Masts	NOS			0

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, LINGARAJ AREA

S. No	ITEM	UOM	GM Office	IWSS	TOTAL
43	CAT - 6 STP Cable	METER	305	610	915
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER			0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	400	400	800
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER			0
47	Power Cable, 3 core, 2.5 sq. mm	METER	100	200	300
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER			0
49	24 Port CAT 6 Patch Panel	NOS	1	1	2
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS			0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS			0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	20	20	40
53	24 port Fully Loaded OFC LIU	NOS	1	1	2
54	12 port Fully Loaded OFC LIU	NOS			0
55	06 port Fully Loaded OFC LIU	NOS			0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	6	6	12
57	OFC Pig Tails single mode	NOS			0
58	IP 67 Metal Enclosure with pole mounting kit	NOS	1	1	2
59	24 U Floor Mount rack	NOS	1	0	1
60	9U Wall mount Rack	NOS	0	1	1
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	100	300	400
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	605	710	1315
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER			0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER			0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER			0
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canal/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER			0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS			0

LOCATION WISE LIST OF EQUIPMENT - LNGARAJ AREA TOTAL

S. No	ITEM	UOM	LIN OCP	LIN SILO	GM UNIT	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	36	22	7	65
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	73	172	5	250
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	12	2	0	14
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	2	2	1	5
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	7	0	0	7
10	Centralized Video Management Server	NOS	0	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	66	47	4	117
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	0	0	0	0
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	1	1
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	3	1	1	5
19	SFP Modules	NOS	144	94	12	250
20	Single Mode Media Converter	NOS	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0
22	55 inch LED Displays	NOS	0	0	0	0
23	24 inch LED Displays	NOS	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	0	0	0	0
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0
26	Point to Point Radios	NOS	52	0	0	52
27	Point to Multi Point Radios	NOS	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	9	0	0	9
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	0	0	0	0
31	UPS (5 kVA) with 2 hours battery backup	NOS	2	2	1	5
32	UPS (650 VA) with 15 mins backup	NOS	52	34	2	88
33	Electrical Socket Board / Multi Pin Socket	NOS	61	26	2	89
34	Surge Protection Device for UPS	NOS	65	38	2	105
35	Ethernet Surge Protector for Cameras and Radios	NOS	175	196	12	383
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	58	0	2	60
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	58	0	2	60
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
40	Self Supported 15 m Mast	NOS	0	0	0	0
41	Self Supported 30 m Mast	NOS	0	0	0	0
42	Self Supported 51 m Masts	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - LNGARAJ AREA TOTAL

S. No	ITEM	UOM	LIN OCP	LIN SILO	GM UNIT	TOTAL
43	CAT - 6 STP Cable	METER	3500	8150	915	12565
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	0	0	0	0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	10700	5000	800	16500
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	0	0	0	0
47	Power Cable, 3 core, 2.5 sq. mm	METER	1520	1220	300	3040
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	15	26	2	43
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	80	40	120
53	24 port Fully Loaded OFC LIU	NOS	15	26	2	43
54	12 port Fully Loaded OFC LIU	NOS	0	0	0	0
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	112	74	12	198
57	OFC Pig Tails single mode	NOS	0	0	0	0
58	IP 67 Metal Enclosure with pole mounting kit	NOS	48	20	2	70
59	24 U Floor Mount rack	NOS	2	1	1	4
60	9U Wall mount Rack	NOS	13	25	1	39
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	470	4330	400	5200
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	13730	8820	1315	23865
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	0	0	0	0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	0	0	0	0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	0	0	0	0
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - HINGULA OCP, HINGULA AREA

S. No	ITEM	UOM	Project Office	Sub Station	Shalbani Chowk	Static WB No. 3 & 6	Static WB No. 02	Static WB No. 04	Static WB No. 05	Static WB No. 01	New Static Wb 100 T	In Motion Wb No. 01	In Motion Wb No. 02	Despatch Office	CHP	Coal Sampling Room	Time Office/ MTK	Excav Workshop Dozer, Dumper Parking	Yard	Field Substation	Dozer Workshop	Water Filling Station	Coal Stock	TOTAL	
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	6			1	1	1	1	1	1	1	1	1			2							17	
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	4	5	4	2	2	2	2	2	2	2	2	2	3	4	5	5	4	3	3	2	3	20	81
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS																	1				2	3	
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																					0		
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																					0		
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																					0		
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																					0		
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																					0		
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS																					0		
10	Centralized Video Management Server	NOS	1																				1		
11	Centralized Network Video Management software	NOS	1																				1		
12	Network Attached Storage (NAS) - 192 TB	NOS																					0		
13	Network Attached Storage (NAS) - 120 TB	NOS																					0		
14	Network Attached Storage (NAS) - 48TB	NOS	2																				2		
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	25																				25		
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1																				1		
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																					0		
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																					0		
19	SFP Modules	NOS	40																				40		
20	Single Mode Media Converter	NOS																					0		
21	75 inch LED Displays	NOS																					0		
22	55 inch LED Displays	NOS	2																				2		
23	24 inch LED Displays	NOS																					0		
24	Desktop Workstation for surveillance monitoring	NOS	2																				2		
25	Laptop - min. i7 processor & 8 GB RAM	NOS																					0		
26	Point to Point Radios	NOS	1																				1		
27	Point to Multi Point Radios	NOS																					0		
28	UPS (1kVA) with 2 hours battery backup	NOS	12																				12		
29	UPS (2kVA) with 2 hours battery backup	NOS																					0		
30	UPS (3 kVA) with 2 hours battery backup	NOS																					0		
31	UPS (5 kVA) with 2 hours battery backup	NOS																					0		
32	UPS (650 VA) with 15 mins backup	NOS	17																				17		
33	Electrical Socket Board / Multi Pin Socket	NOS	35																				35		
34	Surge Protection Device for UPS	NOS	29																				29		
35	Ethernet Surge Protector for Cameras and Radios	NOS	102																				102		
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	35																				35		
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	35																				35		
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																					0		
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																					0		

LOCATION WISE LIST OF EQUIPMENT - HINGULA OCP, HINGULA AREA

S. No	ITEM	UOM	Project Office	Sub Station	Shalbani Chowk	Static WB No. 3 & 6	Static WB No. 02	Static WB No. 04	Static WB No. 05	Static WB No. 01	New Static Wb 100 T	In Motion Wb No. 01	In Motion Wb No. 02	Despatch Office	CHP	Coal Sampling Room	Time Office/ MTK	Excav Workshop	Dozer, Dumper Parking Yard	Field Substation	Dozer Workshop	Water Filling Station	Coal Stock	TOTAL
40	Self Supported 15 m Mast	NOS																					0	
41	Self Supported 30 m Mast	NOS																					0	
42	Self Supported 51 m Masts	NOS																					0	
43	CAT - 6 STP Cable	METER	6100																				6100	
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	8000																				8000	
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	2000																				2000	
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	4000																				4000	
47	Power Cable, 3 core, 2.5 sq. mm	METER	7000																				7000	
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER																					0	
49	24 Port CAT 6 Patch Panel	NOS	26																				26	
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS																					0	
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	105																				105	
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS																					0	
53	24 port Fully Loaded OFC LIU	NOS	1																				1	
54	12 port Fully Loaded OFC LIU	NOS																					0	
55	06 port Fully Loaded OFC LIU	NOS	25																				25	
56	OFC Patch Cord - 3 meter duplex single mode	NOS	40																				40	
57	OFC Pig Tails single mode	NOS	200																				200	
58	IP 67 Metal Enclosure with pole mounting kit	NOS	10																				10	
59	24 U Floor Mount rack	NOS	1																				1	
60	9U Wall mount Rack	NOS	18																				18	
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	2500																				2500	
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER																					0	
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	2500																				2500	
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER																					0	
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	200																				200	
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canal/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm - 100mm dia bore)	METER																					0	
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS																					0	

S. No	ITEM	UOM	Outsourcing Coal Stock	Departmental Coal Stock	Entry & Exit Point Outsourcing Mines	Entry & Exit Point Departmental Mines	CHP Entry & Exit Point	Magazines	Static Weighbridge No. 2 & 3	Static Weighbridge No. 4 & 5	Static Weighbridge No. 6 & 7	Static Weighbridge No. 8 & 9	Static Weighbridge No. 10	Static Weighbridge No. 11	In Motion WB No. 1	In Motion WB No. 2	Coal Laboratory	Diesel Filling Station	HEMM Workshop	Dozer Workshop	Field MTK	Workshop MTK	Unit Store	Departmental Mines View Point	Outsourcing Mines View Point	Project Office	Balram Guest House	Balram Dispensary	Balram Colony Sub Station	Balram Colony Civil Office	Main Sub Station	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS							1	1	1	1	1	1	1	1	1						3			3	2	2			2	21
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	5	5	4	4	10	5	2	2	2	2	1	1	1	1	2	3	8	9	3	3	2	2	2	2	2	4	2	3	94	
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS					2												2	1		1			1						7	
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																														0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																														0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																														0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																														0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																														0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	2																													2
10	Centralized Video Management Server	NOS	1																													1
11	Centralized Network Video Management software	NOS	1																													1
12	Network Attached Storage (NAS) - 192 TB	NOS																														0
13	Network Attached Storage (NAS) - 120 TB	NOS																														0
14	Network Attached Storage (NAS) - 48TB	NOS	2																													2
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS																														

S. No	ITEM	UOM	Outsourcing Coal Stock	Departmental Coal Stock	Entry & Exit Point Outsourcing Mines	Entry & Exit Point Departmental Mines	CHP Entry & Exit Point	Magazines	Static Weighbridge No. 2 & 3	Static Weighbridge No. 4 & 5	Static Weighbridge No. 6 & 7	Static Weighbridge No. 8 & 9	Static Weighbridge No. 10	Static Weighbridge No. 11	In Motion WB No. 1	In Motion WB No. 2	Coal Laboratory	Diesel Filling Station	HMM Workshop	Dozer Workshop	Field MTK	Workshop MTK	Unit Store	Departmental Mines View Point	Outsourcing Mines View Point	Project Office	Baram Guest House	Baram Dispensary	Baram Colony Sub Station	Baram Colony Civil Office	Main Sub Station	TOTAL
30	UPS (3 kVA) with 2 hours battery backup	NOS																									0					
31	UPS (5 kVA) with 2 hours battery backup	NOS																									0					
32	UPS (650 VA) with 15 mins backup	NOS	15																								15					
33	Electrical Socket Board / Multi Pin Socket	NOS	35																								35					
34	Surge Protection Device for UPS	NOS	30																								30					
35	Ethernet Surge Protector for Cameras and Radios	NOS	125																								125					
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	35																								35					
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	35																								35					
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																									0					
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																									0					
40	Self Supported 15 m Mast	NOS																									0					
41	Self Supported 30 m Mast	NOS																									0					
42	Self Supported 51 m Masts	NOS																									0					
43	CAT - 6 STP Cable	METER	8540																								8540					
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	10000																								10000					
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	3000																								3000					
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	2000																								2000					
47	Power Cable, 3 core, 2.5 sq. mm	METER	5000																								5000					
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER																									0					
49	24 Port CAT 6 Patch Panel	NOS	33																								33					
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS																									0					
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	122																								122					
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS																									0					
53	24 port Fully Loaded OFC LIU	NOS	2																								2					
54	12 port Fully Loaded OFC LIU	NOS																									0					

[illegible]

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LOCATION WISE LIST OF EQUIPMENT - GM UNIT, HINGULA AREA

S. No	ITEM	UOM	Main gate	Front Side	Back Side	Fin. Dept 1st Floor	Personnel Deptt	Land Deptt	Sales Deptt	Security Off	Legal Deptt	Canteen	Canteen back	Surv, P&P, Envt	Civil Dept	GM Chamber	E&M, Excv Dept	SO (Min)	Finance Deptt	Office main From Side	Office ain Back Side	Office Ground Floor	First Floor Ground	Office Square	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS				1	3	2	1	1	1	2		3	2	1	2	1	3			1			24
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	2	1	2	0	0	0	0	2	0	0	1	1	1	2	0	0	1	4	4	0			21
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS					1	1															1	2	5
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																					0		
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																					0		
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																					0		
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																					0		
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																					0		
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS																					0		
10	Centralized Video Management Server	NOS	1																				1		
11	Centralized Network Video Management software	NOS	1																				1		
12	Network Attached Storage (NAS) - 192 TB	NOS																					0		
13	Network Attached Storage (NAS) - 120 TB	NOS																					0		
14	Network Attached Storage (NAS) - 48TB	NOS	1																				1		
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	4																				4		
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1																				1		
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																					0		
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	4																				4		
19	SFP Modules	NOS	20																				20		
20	Single Mode Media Converter	NOS																					0		
21	75 inch LED Displays	NOS																					0		
22	55 inch LED Displays	NOS	2																				2		
23	24 inch LED Displays	NOS																					0		
24	Desktop Workstation for surveillance monitoring	NOS	3																				3		
25	Laptop - min. i7 processor & 8 GB RAM	NOS	1																				1		
26	Point to Point Radios	NOS	2																				2		
27	Point to Multi Point Radios	NOS																					0		
28	UPS (1kVA) with 2 hours battery backup	NOS	4																				4		
29	UPS (2kVA) with 2 hours battery backup	NOS																					0		
30	UPS (3 kVA) with 2 hours battery backup	NOS																					0		
31	UPS (5 kVA) with 2 hours battery backup	NOS																					0		
32	UPS (650 VA) with 15 mins backup	NOS	4																				4		
33	Electrical Socket Board / Multi Pin Socket	NOS	8																				8		
34	Surge Protection Device for UPS	NOS	8																				8		
35	Ethernet Surge Protector for Cameras and Radios	NOS	52																				52		
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	3																				3		
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	3																				3		
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																					0		
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																					0		
40	Self Supported 15 m Mast	NOS																					0		

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, HINGULA AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - HINGULA AREA TOTAL

S. No	ITEM	UOM	HOCF	BOCF	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	17	21	24	62
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	81	94	21	196
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	3	7	5	15
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	2	0	2
10	Centralized Video Management Server	NOS	1	1	1	3
11	Centralized Network Video Management software	NOS	1	1	1	3
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	2	2	1	5
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	25	32	4	61
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	2	1	4
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	4	4
19	SFP Modules	NOS	40	50	20	110
20	Single Mode Media Converter	NOS	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0
22	55 inch LED Displays	NOS	2	2	2	6
23	24 inch LED Displays	NOS	0	2	0	2
24	Desktop Workstation for surveillance monitoring	NOS	2	2	3	7
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	1	1
26	Point to Point Radios	NOS	1	3	2	6
27	Point to Multi Point Radios	NOS	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	12	15	4	31
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	0	0	0	0
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	17	15	4	36
33	Electrical Socket Board / Multi Pin Socket	NOS	35	35	8	78
34	Surge Protection Device for UPS	NOS	29	30	8	67
35	Ethernet Surge Protector for Cameras and Radios	NOS	102	125	52	279
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	35	35	3	73
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	35	35	3	73
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - HINGULA AREA TOTAL

S. No	ITEM	UOM	HOCF	BOCF	GM UNIT	TOTAL QTY
40	Self Supported 15 m Mast	NOS	0	0	0	0
41	Self Supported 30 m Mast	NOS	0	0	0	0
42	Self Supported 51 m Masts	NOS	0	0	1	1
43	CAT - 6 STP Cable	METER	6100	8540	3050	17690
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	8000	10000	500	18500
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	2000	3000	0	5000
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	4000	2000	400	6400
47	Power Cable, 3 core, 2.5 sq. mm	METER	7000	5000	100	12100
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	26	33	9	68
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	105	122	50	277
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	1	2	2	5
54	12 port Fully Loaded OFC LIU	NOS	0	0	0	0
55	06 port Fully Loaded OFC LIU	NOS	25	31	8	64
56	OFC Patch Cord - 3 meter duplex single mode	NOS	40	50	20	110
57	OFC Pig Tails single mode	NOS	200	200	70	470
58	IP 67 Metal Enclosure with pole mounting kit	NOS	10	10	4	24
59	24 U Floor Mount rack	NOS	1	2	1	4
60	9U Wall mount Rack	NOS	18	22	8	48
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	2500	2500	1500	6500
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	0	0	0	0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	2500	3000	850	6350
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	0	0	0	0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	200	200	50	450
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - KANIHA OCP, KANIHA AREA

S. No	ITEM	UOM	Sampling Lab	Telesingha Railway Siding Start	Telesingha Road	Receiving Point	Z Patch	Time Office	Jarada Main Gate	Jarada Road	Jarada Gate No. 2	Challan Point	In Motion Road WB 1 + Upcoming Static 6	Old Quarry	Jamania Site	Site Office	RPL Camp	P O Office	Electrical Sub Station	Mechanical Workshop	Rail In-Motion WB 1 & 2	Old Time Office Patch	Kansamunda Patch	Magazine	Telesingha Railway Siding End	Static Weighbridge 1	In Motion Road WB 2	Static Weighbridge 2, 3	Static Weighbridge 4, 5	TOTAL	
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	3															3			1					1	1	1	1	11	
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	2	2	2	3	3	4	5	4	4	5	3	4	4	4	4	2	3	2	2	3	3	4	2	2	2	2	2	82	
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS					1															1	1							3	
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																												0	
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																												0	
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																												0	
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	4																												4
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																												0	
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	1	1					1			1														1				5	
10	Centralized Video Management Server	NOS																												0	
11	Centralized Network Video Management software	NOS																												0	
12	Network Attached Storage (NAS) - 192 TB	NOS																												0	
13	Network Attached Storage (NAS) - 120 TB	NOS																												0	
14	Network Attached Storage (NAS) - 48TB	NOS																												0	
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1		1		1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1		1	1	1	1	22	
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS																1												1	
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																												0	
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																												0	
19	SFP Modules	NOS	1		1		1	1	1	1	1	1	1	1	1	1	1	25			1	1	1	1		1	1	1	1	46	
20	Single Mode Media Converter	NOS																												0	
21	75 inch LED Displays	NOS																												0	
22	55 inch LED Displays	NOS	2																												2
23	24 inch LED Displays	NOS																												0	
24	Desktop Workstation for surveillance monitoring	NOS	2																												2
25	Laptop - min. i7 processor & 8 GB RAM	NOS	1																												1
26	Point to Point Radios	NOS																												0	
27	Point to Multi Point Radios	NOS																												0	
28	UPS (1kVA) with 2 hours battery backup	NOS	1					1				1	1			1	1				1			1		1	1	1	1	12	
29	UPS (2kVA) with 2 hours battery backup	NOS																												0	
30	UPS (3 kVA) with 2 hours battery backup	NOS																1												1	
31	UPS (5 kVA) with 2 hours battery backup	NOS																												0	
32	UPS (650 VA) with 15 mins backup	NOS			1		1		1	1	1			1	1			1				1	1							10	

S. No	ITEM	UOM	Sampling Lab	Telesingha Railway Siding Start	Telesingha Road	Receiving Point	Z Patch	Time Office	Jarada Main Gate	Jarada Road	Jarada Gate No. 2	Challan Point	In Motion Road WB 1 + Upcoming Static 6	Old Quarry	Jamania Site	Site Office	RPL Camp	P O Office	Electrical Sub Station	Mechanical Workshop	Rail In-Motion WB 1 & 2	Old Time Office Patch	Kansamunda Patch	Magazine	Telesingha Railway Siding End	Static Weighbridge 1	In Motion Road WB 2	Static Weighbridge 2, 3	Static Weighbridge 4, 5	TOTAL
33	Electrical Socket Board / Multi Pin Socket	NOS	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	2	0	0	1	1	1	1	0	1	1	1	1	23
34	Surge Protection Device for UPS	NOS	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	2	0	0	1	1	1	1	0	1	1	1	1	23
35	Ethernet Surge Protector for Cameras and Radios	NOS	5	2	2	3	4	4	5	4	4	5	3	4	4	4	4	5	3	2	3	4	4	4	2	3	3	3	3	96
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	29																											29
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	24																											24
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																												0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																												0
40	Self Supported 15 m Mast	NOS	4																											4
41	Self Supported 30 m Mast	NOS	1																											1
42	Self Supported 51 m Masts	NOS																												0
43	CAT - 6 STP Cable	METER	3355																											3355
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	5600																											5600
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	7800																											7800
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER																												0
47	Power Cable, 3 core, 2.5 sq. mm	METER	220																											220
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER																												0
49	24 Port CAT 6 Patch Panel																													

[illegible]

LOCATION WISE LIST OF EQUIPMENT - TALCHER U/G MINE, TALCHER AREA

S. No	ITEM	UOM	Bil Section	Exchange Room	Manager Office Corridor	Survey Office Corridor	Po Office	Personnel Office	Civil Office	P O Office Corridor	Canteen	Main gate	Store Main Gate	E&M Workshop	Colliery Engineer Office	Head Gear Structure	Boiler	Filter Bed	MTK	Pit Top Manager's Office	Store Gate	Store Corridor	Magazine	Weighbridge	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	1		1	1	1	1	1	1	2				1							1			11
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	0		0	0	0	0	0	0	0	2	2	2	0	1			2	1	2	0	2	2	16
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS												1			1	1	1				1		5
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																							0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																							0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																							0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS		2																					2
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																							0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS		1																					1
10	Centralized Video Management Server	NOS																							0
11	Centralized Network Video Management software	NOS																							0
12	Network Attached Storage (NAS) - 192 TB	NOS																							0
13	Network Attached Storage (NAS) - 120 TB	NOS																							0
14	Network Attached Storage (NAS) - 48TB	NOS																							0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1	1			1		1						2				1			1	1	1	10
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS		1																					1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																							0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																							0
19	SFP Modules	NOS	2	2	0	0	2	0	2	0	0	0	0	0	4	0	0	0	2	0	0	2	2	2	20
20	Single Mode Media Converter	NOS																							0
21	75 inch LED Displays	NOS																							0
22	55 inch LED Displays	NOS					1																		1
23	24 inch LED Displays	NOS																							0
24	Desktop Workstation for surveillance monitoring	NOS					1								1										2
25	Laptop - min. i7 processor & 8 GB RAM	NOS																							0
26	Point to Point Radios	NOS																							0
27	Point to Multi Point Radios	NOS																							0
28	UPS (1kVA) with 2 hours battery backup	NOS	1				1		1						1				1			1	1	1	8
29	UPS (2kVA) with 2 hours battery backup	NOS																							0
30	UPS (3 kVA) with 2 hours battery backup	NOS		1																					1
31	UPS (5 kVA) with 2 hours battery backup	NOS																							0
32	UPS (650 VA) with 15 mins backup	NOS																							0

LOCATION WISE LIST OF EQUIPMENT - TALCHER U/G MINE, TALCHER AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - TALCHER U/G MINE, TALCHER AREA

[illegible]

[illegible]

LOCATION WISE LIST OF EQUIPMENT - NANDIRA U/G MINE, TALCHER AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, TALCHER AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, TALCHER AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - TALCHER AREA TOTAL

S. No	ITEM	UOM	TAL UG	NAN UG	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	11	6	6	23
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	16	20	15	51
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	5	4	0	9
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	2	2	1	5
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	1	1	1	3
10	Centralized Video Management Server	NOS	0	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	10	10	5	25
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	1	3
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
19	SFP Modules	NOS	20	20	10	50
20	Single Mode Media Converter	NOS	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0
22	55 inch LED Displays	NOS	1	1	1	3
23	24 inch LED Displays	NOS	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	2	2	1	5
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0
26	Point to Point Radios	NOS	0	2	0	2
27	Point to Multi Point Radios	NOS	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	8	9	4	21
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	1	1	3
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0	0
33	Electrical Socket Board / Multi Pin Socket	NOS	9	10	5	24
34	Surge Protection Device for UPS	NOS	9	10	5	24
35	Ethernet Surge Protector for Cameras and Radios	NOS	32	30	21	83
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	6	7	1	14
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	5	4	0	9
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - TALCHER AREA TOTAL

S. No	ITEM	UOM	TAL UG	NAN UG	GM UNIT	TOTAL QTY
40	Self Supported 15 m Mast	NOS	0	0	0	0
41	Self Supported 30 m Mast	NOS	0	0	0	0
42	Self Supported 51 m Masts	NOS	0	2	0	2
43	CAT - 6 STP Cable	METER	1920	1920	1260	5100
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	0	0	0	0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	410	1320	310	2040
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	400	350	400	1150
47	Power Cable, 3 core, 2.5 sq. mm	METER	90	100	50	240
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	0	0	0	0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	0	0	0	0
54	12 port Fully Loaded OFC LIU	NOS	13	12	7	32
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	20	20	10	50
57	OFC Pig Tails single mode	NOS	50	44	28	122
58	IP 67 Metal Enclosure with pole mounting kit	NOS	0	0	0	0
59	24 U Floor Mount rack	NOS	1	1	1	3
60	9U Wall mount Rack	NOS	10	10	5	25
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	1920	1920	1260	5100
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	0	0	0	0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	330	1030	0	1360
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	110	100	260	470
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	370	540	450	1360
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - SAMALESWARI OCP, IB VALLEY AREA

S. No	ITEM	UOM	Project Office	Rd WB 1 & 4	Entry Exit Point	Coal Stock 1 & 4	Sub Station	MTK	WB No. 8	Excv W/S Unit Store	WB no. 7	WB No. 5 & 6, Coal Stock	In Motion Rd. WB No. 2	Rob 1 & 2, In Motion WB 3	Rail WB 1 & 2/ Coal Sampling	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	4	4				2	1	2	3	4	2	3	4	29
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	4	5	4	10	6	6	2	11	4	6	2	6	4	70
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS														0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	1													1
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS														0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	1													1
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS														0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS														0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS														0
10	Centralized Video Management Server	NOS														0
11	Centralized Network Video Management software	NOS														0
12	Network Attached Storage (NAS) - 192 TB	NOS														0
13	Network Attached Storage (NAS) - 120 TB	NOS														0
14	Network Attached Storage (NAS) - 48TB	NOS														0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	2	1	2	1	2	1	3	2	3	1	3	2	26
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1													1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS														0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS														0
19	SFP Modules	NOS	10	4	2	4	2	4	2	6	4	6	2	6	4	56
20	Single Mode Media Converter	NOS						4			2	2	0	4	0	12
21	75 inch LED Displays	NOS														0
22	55 inch LED Displays	NOS	1													1
23	24 inch LED Displays	NOS														0
24	Desktop Workstation for surveillance monitoring	NOS	2					1								3
25	Laptop - min. i7 processor & 8 GB RAM	NOS														0
26	Point to Point Radios	NOS	0	0	0	0	0	2	0	0	1	1	0	2	0	6
27	Point to Multi Point Radios	NOS														0
28	UPS (1kVA) with 2 hours battery backup	NOS	1	2	1	0	1	1	1	3	1	2	1	3	2	19
29	UPS (2kVA) with 2 hours battery backup	NOS														0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1													1
31	UPS (5 kVA) with 2 hours battery backup	NOS														0
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0	1	0	0	0	0	0	0	0	0	0	1
33	Electrical Socket Board / Multi Pin Socket	NOS	2	2	1	1	1	1	1	3	1	2	1	3	2	21
34	Surge Protection Device for UPS	NOS	2	2	1	1	1	1	1	3	1	2	1	3	2	21
35	Ethernet Surge Protector for Cameras and Radios	NOS	6	5	4	10	6	8	2	11	5	7	2	8	4	78
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	6	10	0	0	2	3	2	8	3	8	2	7	7	58
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	2	4	0	0	0	0	0	4	0	4	1	3	4	22
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS														0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS														0

LOCATION WISE LIST OF EQUIPMENT - SAMALESWARI OCP, IB VALLEY AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - LAJKURA OCP, IB VALLEY AREA

S. No	ITEM	UOM	Project Office	Road Wb 2, Coal Stock	Entry Exit Point	Sub Station	Unit Store	E&M Deptt	Excav Workshop	RD WB 1 & IM WB 1	CHP	Coal Sampling Room	Rail WB No. 3 & 4	MTK & Control Room	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	4	2			2	1		2		2	2	2	17
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	4	8	4	4	4	3	10	4	4	2	4	3	54
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS													0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	1												1
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS													0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	1												1
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS													0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS													0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS													0
10	Centralized Video Management Server	NOS													0
11	Centralized Network Video Management software	NOS													0
12	Network Attached Storage (NAS) - 192 TB	NOS													0
13	Network Attached Storage (NAS) - 120 TB	NOS													0
14	Network Attached Storage (NAS) - 48TB	NOS													0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	3	1	1	2	1	3	2	1	1	2	1	21
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	0											1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS													0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS													0
19	SFP Modules	NOS	12	6	2	2	4	2	6	4	2	2	4	2	48
20	Single Mode Media Converter	NOS	4	0	0	0	0	0	0	2	0	2	4	0	12
21	75 inch LED Displays	NOS													0
22	55 inch LED Displays	NOS												1	1
23	24 inch LED Displays	NOS													0
24	Desktop Workstation for surveillance monitoring	NOS	1											1	2
25	Laptop - min. i7 processor & 8 GB RAM	NOS													0
26	Point to Point Radios	NOS	2	0	0	0	0	0	0	1	0	1	2	0	6
27	Point to Multi Point Radios	NOS													0
28	UPS (1kVA) with 2 hours battery backup	NOS	1	1	1	1	1	1	2	1	1	1	1	1	13
29	UPS (2kVA) with 2 hours battery backup	NOS													0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1												1
31	UPS (5 kVA) with 2 hours battery backup	NOS													0
32	UPS (650 VA) with 15 mins backup	NOS													0
33	Electrical Socket Board / Multi Pin Socket	NOS	3	3	1	1	2	1	3	2	1	1	2	1	21
34	Surge Protection Device for UPS	NOS	2	1	1	1	1	1	2	1	1	1	1	1	14
35	Ethernet Surge Protector for Cameras and Radios	NOS	10	10	4	4	6	4	10	7	4	5	8	5	77
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	3	2	1	1	3	1	6	2	4	1	1	1	26
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	2	0	1	1	3	1	6	1	4	0	0	1	20
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS													0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS													0
40	Self Supported 15 m Mast	NOS	0	2	0	0	0	0	0	1	0	1	1	0	5
41	Self Supported 30 m Mast	NOS	1												1
42	Self Supported 51 m Masts	NOS													0
43	CAT - 6 STP Cable	METER	500	700	100	200	300	150	500	300	200	100	200	200	3450
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	0	0	0	0	250	500	250						1000
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER													0
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	200	400	500	300	0	0	0	0	300	50	50	400	2200
47	Power Cable, 3 core, 2.5 sq. mm	METER	200	400	20	20	150	20	150	150	50	10	50	20	1240

LOCATION WISE LIST OF EQUIPMENT - LAJKURA OCP, IB VALLEY AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT (INCLUDING CENTRAL HOSPITAL), IB VALLEY AREA

S. No	ITEM	UOM	Main Gate of GM Office	Security Room Near DAV School Front Gate	Ground Floor Lounge Near Entry	First Floor Lounge	Ground Floor entry pt. near Fin Deptt	Canteen	E&T Deptt	VIP Guest House	Ib House	Kalyan Mandap	Main Gate of CH	IT Room	OPD	CMS Office	Casualty	Nursing Hostel	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS			2	2	1	2		2	2	2			4	3	5	5	30
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	4	4	0	1	2	1	2	2	2	4	5		2	1	2	2	34
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS																	0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	1							1				1					3
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS																	0
10	Centralized Video Management Server	NOS																	0
11	Centralized Network Video Management software	NOS																	0
12	Network Attached Storage (NAS) - 192 TB	NOS																	0
13	Network Attached Storage (NAS) - 120 TB	NOS																	0
14	Network Attached Storage (NAS) - 48TB	NOS																	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1	1	1	0	1	1	2	1	1	2	1	0	1	1	2	2	18
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS							1				0	1	0	0	0	0	2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																	0
19	SFP Modules	NOS	2	2	2	0	2	2	4	2	2	4	2	4	2	2	4	4	40
20	Single Mode Media Converter	NOS							2	2		2	0	0	0	0	0	0	6
21	75 inch LED Displays	NOS																	0
22	55 inch LED Displays	NOS	1										1	0	0	0	0	0	2
23	24 inch LED Displays	NOS																	0
24	Desktop Workstation for surveillance monitoring	NOS	1						1	1			1	1	0	0	0	0	5
25	Laptop - min. i7 processor & 8 GB RAM	NOS																	0
26	Point to Point Radios	NOS							1			1							2
27	Point to Multi Point Radios	NOS																	0
28	UPS (1kVA) with 2 hours battery backup	NOS	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	12
29	UPS (2kVA) with 2 hours battery backup	NOS																	0
30	UPS (3 kVA) with 2 hours battery backup	NOS							1										1
31	UPS (5 kVA) with 2 hours battery backup	NOS																	0
32	UPS (650 VA) with 15 mins backup	NOS					1	1											2
33	Electrical Socket Board / Multi Pin Socket	NOS	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	15
34	Surge Protection Device for UPS	NOS	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	15
35	Ethernet Surge Protector for Cameras and Radios	NOS	4	4	2	3	3	3	3	4	4	7	5	0	6	4	7	7	66
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1						2	2	5	3	0	1	1	1	3	20
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	2	2						2	2	4	2	0	0	0	0	2	16
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																	0
40	Self Supported 15 m Mast	NOS										1							1
41	Self Supported 30 m Mast	NOS																	0
42	Self Supported 51 m Masts	NOS																	0

LOCATION WISE LIST OF EQUIPMENT - GM UNIT (INCLUDING CENTRAL HOSPITAL), IB VALLEY AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - IB VALLEY AREA TOTAL

S. No	ITEM	UOM	SOCP	LOCP	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	29	17	30	76
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	70	54	34	158
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	1	1	0	2
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	1	1	3	5
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
10	Centralized Video Management Server	NOS	0	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	26	21	18	65
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	2	4
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
19	SFP Modules	NOS	56	48	40	144
20	Single Mode Media Converter	NOS	12	12	6	30
21	75 inch LED Displays	NOS	0	0	0	0
22	55 inch LED Displays	NOS	1	1	2	4
23	24 inch LED Displays	NOS	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	3	2	5	10
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0
26	Point to Point Radios	NOS	6	6	2	14
27	Point to Multi Point Radios	NOS	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	19	13	12	44
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	1	1	3
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	1	0	2	3
33	Electrical Socket Board / Multi Pin Socket	NOS	21	21	15	57
34	Surge Protection Device for UPS	NOS	21	14	15	50
35	Ethernet Surge Protector for Cameras and Radios	NOS	78	77	66	221
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	58	26	20	104
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	22	20	16	58
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
40	Self Supported 15 m Mast	NOS	13	5	1	19
41	Self Supported 30 m Mast	NOS	1	1	0	2

LOCATION WISE LIST OF EQUIPMENT - IB VALLEY AREA TOTAL

S. No	ITEM	UOM	SOCP	LOCP	GM UNIT	TOTAL QTY
42	Self Supported 51 m Masts	NOS	0	0	0	0
43	CAT - 6 STP Cable	METER	4130	3450	3300	10880
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	1700	1000	300	3000
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	0	0	0	0
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	3800	2200	2500	8500
47	Power Cable, 3 core, 2.5 sq. mm	METER	790	1240	320	2350
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	0	0	0	0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	0	0	0	0
54	12 port Fully Loaded OFC LIU	NOS	27	22	17	66
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	56	48	40	144
57	OFC Pig Tails single mode	NOS	124	108	120	352
58	IP 67 Metal Enclosure with pole mounting kit	NOS	4	3	0	7
59	24 U Floor Mount rack	NOS	1	1	2	4
60	9U Wall mount Rack	NOS	22	21	16	59
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	1670	2850	3230	7750
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	0	0	0	0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	4060	2690	1880	8630
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	20	150	620	790
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	620	270	200	1090
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - LAKHANPUR OCP, LAKHANPUR AREA

S. No	ITEM	PO OFFICE	Surveillance Room	Coal Analysis Lab	Manager Office	EXC. W/S	MTK	Diesel Filling	Unit Store	Scrapyard (near Exv.)	E&M W/S	Coal Stock 1(near E&M)	Coal Stock 1(near IM WB3)	Query 3 Junc	Milan Chowk	New Nasta point	In Gate	Out Gate	Canteen	Sub-station	Junction near PO Office	Welcome Gate	Cycle stand	New MGR Siding	W/Bs ALL	MGR Siding chowk	View Point(q-4&5)	Coal Sampling Room (YCS)	Magazine (near Lilari)	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR		2	2	2				3										2	3					10			1		25
2	2 MP IP Camera, Bullet Type, min. 50 m IR	3	0	1	2	15	2	2	4	4	8	10	10	2	2	5	3	3	2	2	2	3	5	10	20	2	4	2	4	132
3	2MP IP Camera, PTZ Type, min. 150 m IR	0	0	0	0	3	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	10
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded																													0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded																													0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded																													0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded																													0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded																													0
10	Centralized Video Management Server																													0
11	Centralized Network Video Management software																													0
12	Network Attached Storage (NAS) - 192 TB																													0
13	Network Attached Storage (NAS) - 120 TB																													0
14	Network Attached Storage (NAS) - 48TB																													0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	1	2	1	1	4	1	1	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	3	12	1	2	1	1	50
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports																													0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports																													0
19	SFP Modules	2	4	2	2	8	2	2	4	0	4	0	0	0	0	0	0	0	2	2	2	0	2	0	24	0	0	0	0	62
20	Single Mode Media Converter																													0
21	75 inch LED Displays																													0
22	55 inch LED Displays	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
23	24 inch LED Displays																													0
24	Desktop Workstation for surveillance monitoring	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
25	Laptop - min. i7 processor & 8 GB RAM	0																												0
26	Point to Point Radios	0	2	0	0	0	0	0	0	1	0	2	2	1	1	1	1	1	0	0	0	1	0	3	10	1	2	1	1	31
27	Point to Multi Point Radios	0	6	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	7
28	UPS (1kVA) with 2 hours battery backup	1	1	1	1	4	1	1	1	0	0			0	0	1	1	1	1	1	1	0	0	1	10	0	2	1	1	32
29	UPS (2kVA) with 2 hours battery backup																													0
30	UPS (3 kVA) with 2 hours battery backup	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5
31	UPS (5 kVA) with 2 hours battery backup																													0
32	UPS (650 VA) with 15 mins backup	0	0	0	0	0	0	0	0	1		2	2	1	1		1	1				1	1			1	0			12
33	Electrical Socket Board / Multi Pin Socket	1	3	1	1	4	1	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1	1	2	10	1	2	1	1	49
34	Surge Protection Device for UPS	1	3	1	1	4	1	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1	1	2	10	1	2	1	1	49

LOCATION WISE LIST OF EQUIPMENT - LAKHANPUR OCP, LAKHANPUR AREA

S. No	ITEM	PO OFFICE	Surveillance Room	Coal Analysis Lab	Manager Office	EXC. W/S	MTK	Diesel Filling	Unit Store	Scrapyard (near Exv.)	E&M W/S	Coal Stock 1(near E&M)	Coal Stock 1(near IM WB3)	Query 3 Junc	Milan Chowk	New Nasta point	In Gate	Out Gate	Canteen	Sub-station	Junction near PO Office	Welcome Gate	Cycle stand	New MGR Siding	W/Bs ALL	MGR Siding chowk	View Point(q-4&5)	Coal Sampling Room (YCS)	Magazine (near Lilari)	TOTAL
35	Ethernet Surge Protector for Cameras and Radios	3	4	3	4	18	2	2	9	5	9	12	12	4	3	6	4	4	4	5	2	4	5	13	40	3	8	4	6	198
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	0	1	0	3	15	0	2	4	3	8	9	9	1	1	4	1	1	2	3	2	2	2	2	17	1	2	1	5	101
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	0	0	0	3	15	0	2	4	2	8	8	8	0	0	3	0	0	2	3	2	1	2	0	15	0	0	0	4	82
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.																													0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.																													0
40	Self Supported 15 m Mast	0	0	0	0	0	0	0	0	1	0	2	2	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	8
41	Self Supported 30 m Mast	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	2	2	1	2	1	1	14
42	Self Supported 51 m Masts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43	CAT - 6 STP Cable	200	100	500	200	1000	100	100	1000	600	500	360	360	100	100	700	100	100	200	400	50	200	500	200	1000	200	200	500	500	10070
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	0	0	0	400	400	200	300	300	0	400	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	0	0	0	2900
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	100	0	200	200	300	100	100	100	0	200	0	0	0	0	0	0	0	300	300	300	0	100	0	0	0	0	500	0	2800
46	Singlemode Unarmoured 6 Core Optical Fiber Cable																													0
47	Power Cable, 3 core, 2.5 sq. mm	20	100	100	10	100	20	50	20	100	50	100	100	50	50	50	50	50	10	20	100	50	50	100	200	50	50	20	20	1690
48	HDPE PLB Duct (40mm OD & 33mm ID)																													0
49	24 Port CAT 6 Patch Panel																													0
50	CAT 6 Patch Panel (8 PORTS LOADED)	1	2	1	1	4	1	1	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	3	12	1	2	1	1	50
51	Cat 6 UTP Patch Cord (2 mtrs)	3	10	3	4	18	2	2	9	5	9	12	12	4	3	6	4	4	4	5	2	4	5	13	41	3	8	4	6	205
52	Cat 6 UTP Patch Cord (1 mtrs)																													0
53	24 port Fully Loaded OFC LIU		3																											3
54	12 port Fully Loaded OFC LIU	1	3	1	1	4	1	1	2	0	1	2	2	0	0	0	0	0	1	1	1	0	1	0	6	0	0	2	0	31
55	06 port Fully Loaded OFC LIU																													0
56	OFC Patch Cord - 3 meter duplex single mode	2	4	2	2	8	2	2	4	0	4	0	0	0	0	0	0	0	2	2	2	0	2	0	24	0	0	0	0	62
57	OFC Pig Tails single mode	4	80	4	4	16	4	4	8	0	8	0	0	0	0	0	0	0	4	4	4	0	4	0	48	0	0	0	0	196
58	IP 67 Metal Enclosure with pole mounting kit	0	0	0	0	0	0	0	0	1	0	2	2	1	1	0	1	1	0	0	1	1	0	1	0	1	0	0	0	13

LOCATION WISE LIST OF EQUIPMENT - LAKHANPUR OCP, LAKHANPUR AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - BELPAHAR OCP, LAKHANPUR AREA

S. No	ITEM	UO M	PO OFFICE	Sub-station	E&M Garage	Entry/Exit Point (Near Canteen)	Safety Store (near canteen)	Canteen	ROB Chowk	EXC. W/S	MTK	Diesel Filling	Unit Store	CHP	Coal Stock (near CHP)	Dozer Section	Static WB (1,2,&3)	Static Road WB 8	Road In-motion -4	Road In-motion -5	Rail In-motion WB	Entry/Exit Point (Near In-motion 5)	Coal Analysis	Siding 7	Magazine	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	1	2	2			2					3				3	1	1	1	1		3			20
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	2	2	2	2	2	2	2	10	2	2	2	4	5	3	3	1	1	1	2	2	2	2	2	58
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	2	6
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																								0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																								0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS																								0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																								0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS																								0
10	Centralized Video Management Server	NOS																								0
11	Centralized Network Video Management software	NOS																								0
12	Network Attached Storage (NAS) - 192 TB	NOS																								0
13	Network Attached Storage (NAS) - 120 TB	NOS																								0
14	Network Attached Storage (NAS) - 48TB	NOS																								0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	3	1	1	0	1	1	1	3	1	1	2	2	2	1	2	1	1	1	1	1	2	1	1	31
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																								0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																								0
19	SFP Modules	NOS	6	2	2	0	2	2	2	6	2	2	4	4	4	2	4	0	0	0	0	2	4	2	2	54
20	Single Mode Media Converter	NOS																								0
21	75 inch LED Displays	NOS																								0
22	55 inch LED Displays	NOS	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23	24 inch LED Displays	NOS																								0
24	Desktop Workstation for surveillance monitoring	NOS	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
25	Laptop - min. i7 processor & 8 GB RAM	NOS																								0
26	Point to Point Radios	NOS	1	0	0	0	0	0	0	0	0	0	0	1	2	0	1	1	1	1	1	0	1	3	1	14
27	Point to Multi Point Radios	NOS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
28	UPS (1kVA) with 2 hours battery backup	NOS	0	1	1	1	1	1	1	4	1	1	2	2	3	2	2	1	1	1	1	1	2	1	1	32
29	UPS (2kVA) with 2 hours battery backup	NOS																								0
30	UPS (3 kVA) with 2 hours battery backup	NOS	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
31	UPS (5 kVA) with 2 hours battery backup	NOS																								0
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	3
33	Electrical Socket Board / Multi Pin Socket	NOS	2	1	1	1	1	1	1	4	1	1	2	2	2	2	2	1	1	1	1	1	3	1	1	34
34	Surge Protection Device for UPS	NOS	2	1	1	1	1	1	1	5	1	1	2	2	3	2	2	1	1	1	1	1	3	1	1	36
35	Ethernet Surge Protector for Cameras and Radios	NOS	6	6	4	2	2	4	2	11	2	2	6	6	7	3	8	3	3	3	4	2	6	5	5	102

LOCATION WISE LIST OF EQUIPMENT - BELPAHAR OCP, LAKHANPUR AREA

S. No	ITEM	UO M	PO OFFICE	Sub-station	E&M Garage	Entry/Exit Point (Near Canteen)	Safety Store (near canteen)	Canteen	ROB Chowk	EXC. W/S	MTK	Diesel Filling	Unit Store	CHP	Coal Stock (near CHP)	Dozer Section	Static WB (1,2,&3)	Static Road WB 8	Road In-motion -4	Road In-motion -5	Rail In-motion WB	Entry/Exit Point (Near In-motion 5)	Coal Analysis	Siding 7	Magazine	TOTAL
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	2	2	2	2	2	2	16	0	2	3	4	5	3	11	1	1	1	1	2	1	3	5	72
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	2	2	2	2	2	2	15	0	2	3	6	4	2	10	1	1	1	1	2	0	0	4	64
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																								0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																								0
40	Self Supported 15 m Mast	NOS	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	2	0	6
41	Self Supported 30 m Mast	NOS	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	5
42	Self Supported 51 m Masts	NOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	CAT - 6 STP Cable	MET ER	400	400	200	100	100	200	300	1000	100	100	700	200	500	100	200	50	50	50	50	100	500	200	700	6300
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	MET ER	0	400	200	0	0	300	0	400	0	0	400	300	0	600	400	0	0	0	0	0	0	0	0	3000
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	MET ER	0	200	100	100	100	100	100	300	50	50	50	200	200	300	100	0	0	0	0	200	0	300	0	2450
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	MET ER																								0
47	Power Cable, 3 core, 2.5 sq. mm	MET ER	1000	10	10	10	10	10	20	100	10	10	20	50	100	100	50	10	10	10	10	10	100	20	20	1700
48	HDPE PLB Duct (40mm OD & 33mm ID)	MET ER																								0
49	24 Port CAT 6 Patch Panel	NOS																								0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	3	1	1	0	1	1	1	3	1	1	2	2	2	1	2	1	1	1	1	1	2	1	1	31
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	7	4	4	2	2	4	2	11	2	2	6	6	7	3	8	3	3	3	4	2	6	5	5	101
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS																								0
53	24 port Fully Loaded OFC LIU	NOS	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
54	12 port Fully Loaded OFC LIU	NOS	3	1	1	0	1	1	1	3	1	1	2	2	2	1	2	0	0	0	0	1	2	1	1	27
55	06 port Fully Loaded OFC LIU	NOS																								0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	6	2	2	0	2	2	2	6	2	2	4	4	4	2	4	0	0	0	0	2	4	2	2	54

LOCATION WISE LIST OF EQUIPMENT - BELPAHAR OCP, LAKHANPUR AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, LAKHANPUR AREA

S. No	ITEM	GM OFFICE	BTI	BTI Hostel	Triveni	Mayuri	Jet Hostel	TA Office	Hospital	132 JSS	IWSS	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	1	2	2	2				1	1	3	12
2	2 MP IP Camera, Bullet Type, min. 50 m IR	4	2	2	2	2	2	2	2	3	2	23
3	2MP IP Camera, PTZ Type, min. 150 m IR	2	1	0	1	0	0	0	1	1	0	6
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded											0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	2	0	0	0	0	0	0	0	0	0	2
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded											0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded											0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded											0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded											0
10	Centralized Video Management Server											0
11	Centralized Network Video Management software											0
12	Network Attached Storage (NAS) - 192 TB											0
13	Network Attached Storage (NAS) - 120 TB											0
14	Network Attached Storage (NAS) - 48TB											0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	3	2	1	1	1	1	1	1	2	1	14
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	1	0	0	0	0	0	0	0	0	0	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports											0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports											0
19	SFP Modules	6	4	2	2	2	2	2	0	4	2	26
20	Single Mode Media Converter											0
21	75 inch LED Displays											0
22	55 inch LED Displays	2	0	0	0	0	0	0	0	1	0	3
23	24 inch LED Displays											0
24	Desktop Workstation for surveillance monitoring	2	0	0	0	0	0	0	0	1	0	3
25	Laptop - min. i7 processor & 8 GB RAM	1	0	0	0	0	0	0	0	0	0	1
26	Point to Point Radios	3	0	0	0	0	0	0	1	1	0	5
27	Point to Multi Point Radios	1	0	0	0	0	0	0	0	0	0	1
28	UPS (1kVA) with 2 hours battery backup	2	2	1	1	1	1	1	1	2	1	13
29	UPS (2kVA) with 2 hours battery backup											0
30	UPS (3 kVA) with 2 hours battery backup	2	0	0	0	0	0	0	0	0	0	2
31	UPS (5 kVA) with 2 hours battery backup											0
32	UPS (650 VA) with 15 mins backup											0
33	Electrical Socket Board / Multi Pin Socket	4	2	1	1	1	1	1	1	2	1	15
34	Surge Protection Device for UPS	4	2	1	1	1	1	1	1	2	1	15
35	Ethernet Surge Protector for Cameras and Radios	11	5	4	5	2	2	2	5	6	5	47
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	7	10	2	4	2	2	2	2	4	3	38
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	6	10	2	4	2	2	2	2	3	3	36
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.											0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.											0
40	Self Supported 15 m Mast	0	0	0	0	0	0	0	0	0	0	0
41	Self Supported 30 m Mast	0	0	0	0	0	0	0	0	1	0	1
42	Self Supported 51 m Masts	1	0	0	0	0	0	0	0	0	0	1
43	CAT - 6 STP Cable	500	500	200	200	200	300	300	100	200	400	2900

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, LAKHANPUR AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - LAKHANPUR AREA TOTAL

S. No	ITEM	UOM	LKPOCP	BOCM	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	25	20	12	57
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	132	58	23	213
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	10	6	6	22
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	4	3	2	9
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0
10	Centralized Video Management Server	NOS	0	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	50	31	14	95
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	2	2	1	5
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0
19	SFP Modules	NOS	62	54	26	142
20	Single Mode Media Converter	NOS	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0
22	55 inch LED Displays	NOS	4	3	3	10
23	24 inch LED Displays	NOS	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	4	3	3	10
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	1	1
26	Point to Point Radios	NOS	31	14	5	50
27	Point to Multi Point Radios	NOS	7	3	1	11
28	UPS (1kVA) with 2 hours battery backup	NOS	32	32	13	77
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	5	3	2	10
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	12	3	0	15
33	Electrical Socket Board / Multi Pin Socket	NOS	49	34	15	98
34	Surge Protection Device for UPS	NOS	49	36	15	100
35	Ethernet Surge Protector for Cameras and Radios	NOS	198	102	47	347
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	101	72	38	211
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	82	64	36	182
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0
40	Self Supported 15 m Mast	NOS	8	6	0	14
41	Self Supported 30 m Mast	NOS	14	5	1	20
42	Self Supported 51 m Masts	NOS	1	0	1	2

LOCATION WISE LIST OF EQUIPMENT - LAKHANPUR AREA TOTAL

S. No	ITEM	UOM	LKPOCP	BOCM	GM UNIT	TOTAL QTY
43	CAT - 6 STP Cable	METER	10070	6300	2900	19270
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	2900	3000	2200	8100
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	2800	2450	2200	7450
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	0	0	0	0
47	Power Cable, 3 core, 2.5 sq. mm	METER	1690	1700	650	4040
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	0	0	0	0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	50	31	14	95
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	205	101	47	353
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	3	2	1	6
54	12 port Fully Loaded OFC LIU	NOS	31	27	14	72
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	62	54	26	142
57	OFC Pig Tails single mode	NOS	196	156	50	402
58	IP 67 Metal Enclosure with pole mounting kit	NOS	13	5	0	18
59	24 U Floor Mount rack	NOS	1	1	1	3
60	9U Wall mount Rack	NOS	36	27	14	77
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	4550	3600	2100	10250
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	1320	650	500	2470
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	3540	2200	2200	7940
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	4600	3570	1750	9920
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	800	1250	1000	3050
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - BASUNDHARA (W) OCP, BASUNDHARA AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - BASUNDHARA (W) OCP, BASUNDHARA AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - KULDA OCP, BASUNDHARA AREA

S. No	ITEM	UOM	New KOCp Office at Basundhara	Surveillance Room Project Office, KOCp	Coal Stock and In-motion WB 01	Coal Stock and In-motion WB 02	Entry Exit Gate No. 2 & Gate Pass Room	Weigh Bridge No.6,8 & CHP	Weigh Bridge No.11 & STOCK	Weigh Bridge No.4,5,7	Entry Exit Gate No.1 & Gate Pass Room	Entry Exit Gate No. 3 & Gate Pass rooms	HEMM Workshop	S/S AND DG ROOM	MTK	Weigh Bridge No. 12	Mine Overview Point	Despatch & Coal Sampling and Weigh Bridge 1, 2	Weigh Bridge No. 9, 10 & Stock	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS		2				2	1	3										8
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS		1	5	5	3	6	1	3	4	3	6	3	2	2	1	8	6	59
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS			1	1			1							1			1	5
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																		0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																		0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																		0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS		3																3
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																		0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS					1	1				1								3
10	Centralized Video Management Server	NOS																		0
11	Centralized Network Video Management software	NOS																		0
12	Network Attached Storage (NAS) - 192 TB	NOS																		0
13	Network Attached Storage (NAS) - 120 TB	NOS																		0
14	Network Attached Storage (NAS) - 48TB	NOS																		0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	2	20
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	0	1																1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																		0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																		0
19	SFP Modules	NOS	6	30	2	2	2	4	2	2	2	2	2	2	2	2	0	4	4	70
20	Single Mode Media Converter	NOS																		0
21	75 inch LED Displays	NOS																		0
22	55 inch LED Displays	NOS	1	1																2
23	24 inch LED Displays	NOS																		0
24	Desktop Workstation for surveillance monitoring	NOS	1	1																2
25	Laptop - min. i7 processor & 8 GB RAM	NOS																		0
26	Point to Point Radios	NOS		2													1			3

LOCATION WISE LIST OF EQUIPMENT - KULDA OCP, BASUNDHARA AREA

S. No	ITEM	UOM	New KOCp Office at Basundhara	Surveillance Room Project Office, KOCp	Coal Stock and In-motion WB 01	Coal Stock and In-motion WB 02	Entry Exit Gate No. 2 & Gate Pass Room	Weigh Bridge No.6,8 & CHP	Weigh Bridge No.11 & STOCK	Weigh Bridge No.4,5,7	Entry Exit Gate No.1 & Gate Pass Room	Entry Exit Gate No. 3 & Gate Pass rooms	HEMM Workshop	S/S AND DG ROOM	MTK	Weigh Bridge No. 12	Mine Overview Point	Despatch & Coal Sampling and Weigh Bridge 1, 2	Weigh Bridge No. 9, 10 & Stock	TOTAL
27	Point to Multi Point Radios	NOS																		0
28	UPS (1kVA) with 2 hours battery backup	NOS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
29	UPS (2kVA) with 2 hours battery backup	NOS																		0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	1																2
31	UPS (5 kVA) with 2 hours battery backup	NOS																		0
32	UPS (650 VA) with 15 mins backup	NOS					1	1		1	1	1								5
33	Electrical Socket Board / Multi Pin Socket	NOS	3	6	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	41
34	Surge Protection Device for UPS	NOS	1	2	1	1	2	2	1	2	2	2	1	1	1	1	1	1	1	23
35	Ethernet Surge Protector for Cameras and Radios	NOS	0	5	6	6	3	8	3	6	4	3	6	3	2	2	3	8	7	75
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	1	1	1	1	1	1	1	1	1	0	0	3	1	7	4	26
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS					1	1		1	1	1								5
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																		0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																		0
40	Self Supported 15 m Mast	NOS		1	1	1			1				1				1		1	7
41	Self Supported 30 m Mast	NOS																		0
42	Self Supported 51 m Masts	NOS																		0
43	CAT - 6 STP Cable	METER	100	420	360	360	210	560	210	420	280	210	420	210	140	140	70	280	490	4880

LOCATION WISE LIST OF EQUIPMENT - KULDA OCP, BASUNDHARA AREA

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LOCATION WISE LIST OF EQUIPMENT - KULDA OCP, BASUNDHARA AREA

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LOCATION WISE LIST OF EQUIPMENT - GARJANBAHAL OCP, BASUNDHARA AREA

S. No	ITEM	UOM	Project Office	Coal Stock No. 1	Coal Stock No. 2	Entry Exit Point Road sale	Entry Exit Point Sardega siding	Excav Workshop	E&M W/s	MTK	substation	WB 1,2,3,4,	wb 5	Mine Overview Point	In motion wb	Sampling room at GOCP	kanika siding wb no2 & Imwb	Kanika Sampling room & Lab	Kanika Rail WB	Kanika siding entry exit point & stock	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	2									4	1		1	1	2	3	1		15
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	3	3	3	4	2	16	6	3	4	8	2		2	2	2	2	1	3	66
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS						4						2						1	7
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS																			0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS																			0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS																			0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	3															1			4
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS																			0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS				1	1										1	1	1	1	6
10	Centralized Video Management Server	NOS																			0
11	Centralized Network Video Management software	NOS																			0
12	Network Attached Storage (NAS) - 192 TB	NOS																			0
13	Network Attached Storage (NAS) - 120 TB	NOS																			0
14	Network Attached Storage (NAS) - 48TB	NOS																			0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	1					5	2	1	1	3	1	1	1	1	1	1	1	1	21
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1															1			2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																			0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS																			0
19	SFP Modules	NOS	60																		60
20	Single Mode Media Converter	NOS																			0
21	75 inch LED Displays	NOS																			0
22	55 inch LED Displays	NOS	1															1			2
23	24 inch LED Displays	NOS																			0
24	Desktop Workstation for surveillance monitoring	NOS	1															1			2
25	Laptop - min. i7 processor & 8 GB RAM	NOS																			0
26	Point to Point Radios	NOS																			0
27	Point to Multi Point Radios	NOS																			0
28	UPS (1kVA) with 2 hours battery backup	NOS					1	5	1	1	1	1	1	1	1	1	1	1	1	1	18
29	UPS (2kVA) with 2 hours battery backup	NOS																			0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1															1			2
31	UPS (5 kVA) with 2 hours battery backup	NOS																			0
32	UPS (650 VA) with 15 mins backup	NOS												2						1	3
33	Electrical Socket Board / Multi Pin Socket	NOS	6				1	10	6	2	2	6	2	2	3	3	2	5	2	2	54

LOCATION WISE LIST OF EQUIPMENT - GARJANBAHAL OCP, BASUNDHARA AREA

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LOCATION WISE LIST OF EQUIPMENT - GARJANBAHAL OCP, BASUNDHARA AREA

[illegible]

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, BASUNDHARA AREA

S. No	ITEM	UOM	GM OFFICE	Control Room 220KV	Yard 220KV	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	13			13
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	8	2	10	20
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	1		3	4
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS				0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS				0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS				0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	1	1		2
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS				0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS				0
10	Centralized Video Management Server	NOS				0
11	Centralized Network Video Management software	NOS				0
12	Network Attached Storage (NAS) - 192 TB	NOS				0
13	Network Attached Storage (NAS) - 120 TB	NOS				0
14	Network Attached Storage (NAS) - 48TB	NOS				0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	4	2	2	8
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	0	2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS				0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS				0
19	SFP Modules	NOS	8	8		16
20	Single Mode Media Converter	NOS				0
21	75 inch LED Displays	NOS				0
22	55 inch LED Displays	NOS	1	1		2
23	24 inch LED Displays	NOS				0
24	Desktop Workstation for surveillance monitoring	NOS	1	1		2
25	Laptop - min. i7 processor & 8 GB RAM	NOS				0
26	Point to Point Radios	NOS				0
27	Point to Multi Point Radios	NOS				0
28	UPS (1kVA) with 2 hours battery backup	NOS	3		2	5
29	UPS (2kVA) with 2 hours battery backup	NOS				0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	1		2
31	UPS (5 kVA) with 2 hours battery backup	NOS				0
32	UPS (650 VA) with 15 mins backup	NOS				0
33	Electrical Socket Board / Multi Pin Socket	NOS	10	2	2	14
34	Surge Protection Device for UPS	NOS	4	1	2	7
35	Ethernet Surge Protector for Cameras and Radios	NOS	22	2	13	37
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	8	10
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	1		8	9
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS				0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS				0

LOCATION WISE LIST OF EQUIPMENT - GM UNIT, BASUNDHARA AREA

S. No	ITEM	UOM	GM OFFICE	Control Room 220KV	Yard 220KV	TOTAL
40	Self Supported 15 m Mast	NOS				0
41	Self Supported 30 m Mast	NOS				0
42	Self Supported 51 m Masts	NOS				0
43	CAT - 6 STP Cable	METER	1500	800		2300
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER				0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	1600	350		1950
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER				0
47	Power Cable, 3 core, 2.5 sq. mm	METER	150	150		300
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER				0
49	24 Port CAT 6 Patch Panel	NOS				0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS				0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS				0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS				0
53	24 port Fully Loaded OFC LIU	NOS				0
54	12 port Fully Loaded OFC LIU	NOS	1	1		2
55	06 port Fully Loaded OFC LIU	NOS				0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	8	8		16
57	OFC Pig Tails single mode	NOS	16	16		32
58	IP 67 Metal Enclosure with pole mounting kit	NOS			2	2
59	24 U Floor Mount rack	NOS	1	1		2
60	9U Wall mount Rack	NOS	3		0	3
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	1550	450		2000
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER				0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	1300	300		300
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	200	100		100
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	50	100		100
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER				0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS				0

LOCATION WISE LIST OF EQUIPMENT - BASUNDHARA AREA TOTAL

S. No	ITEM	UOM	B (W) OCP	KULDA OCP	GOCF	GM UNIT	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	13	8	15	13	49
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	60	59	66	20	205
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	6	5	7	4	22
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	0	0	0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	3	3	4	2	12
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0	0	0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	3	3	6	0	12
10	Centralized Video Management Server	NOS	0	0	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0	0
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	20	20	21	8	69
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	2	2	6
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0	0	0
19	SFP Modules	NOS	48	70	60	16	194
20	Single Mode Media Converter	NOS	0	0	0	0	0
21	75 inch LED Displays	NOS	0	0	0	0	0
22	55 inch LED Displays	NOS	1	2	2	2	7
23	24 inch LED Displays	NOS	0	0	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	1	2	2	2	7
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0	0
26	Point to Point Radios	NOS	2	3	0	0	5
27	Point to Multi Point Radios	NOS	0	0	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	15	16	18	5	54
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	2	2	2	7
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	0	0	0
32	UPS (650 VA) with 15 mins backup	NOS	2	5	3	0	10
33	Electrical Socket Board / Multi Pin Socket	NOS	24	41	54	14	133
34	Surge Protection Device for UPS	NOS	18	23	23	7	71
35	Ethernet Surge Protector for Cameras and Radios	NOS	81	75	88	37	281
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	38	26	39	10	113
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	19	5	14	9	47
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0	0	0
40	Self Supported 15 m Mast	NOS	3	7	0	0	10
41	Self Supported 30 m Mast	NOS	0	0	0	0	0
42	Self Supported 51 m Masts	NOS	0	0	0	0	0
43	CAT - 6 STP Cable	METER	4280	4880	6750	2300	18210

LOCATION WISE LIST OF EQUIPMENT - BASUNDHARA AREA TOTAL

S. No	ITEM	UOM	B (W) OCP	KULDA OCP	GOCF	GM UNIT	TOTAL QTY
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	0	0	0	0	0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	8200	7000	22700	1950	39850
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	0	0	0	0	0
47	Power Cable, 3 core, 2.5 sq. mm	METER	2000	620	2800	300	5720
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	0	0	0	0	0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	0	0	0	0	0
54	12 port Fully Loaded OFC LIU	NOS	20	24	25	2	71
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	48	70	60	16	194
57	OFC Pig Tails single mode	NOS	96	132	120	32	380
58	IP 67 Metal Enclosure with pole mounting kit	NOS	2	5	3	2	12
59	24 U Floor Mount rack	NOS	1	2	2	2	7
60	9U Wall mount Rack	NOS	16	17	18	3	54
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	4500	2600	4000	2000	13100
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	0	0	0	0	0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	8200	8000	20200	300	36700
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	500	500	5400	100	6500
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	500	250	500	100	1350
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0	0	0

LOCATION WISE LIST OF EQUIPMENT - ORIENT AREA

S. No	ITEM	UOM	OC 1&2	OC 3	OC 4	OSA	HBM	RSA	GM Unit	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	7	5	2	2	6	5	2	29
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	8	6	1	5	5	1	7	33
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS								0
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS								0
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0	0	1	1
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS								0
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	1	0	0	1	0	1	1	4
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS								0
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS								0
10	Centralized Video Management Server	NOS								0
11	Centralized Network Video Management software	NOS								0
12	Network Attached Storage (NAS) - 192 TB	NOS								0
13	Network Attached Storage (NAS) - 120 TB	NOS								0
14	Network Attached Storage (NAS) - 48TB	NOS								0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	4	2	1	2	4	1	3	17
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	0	0	0	1	0	1	1	3
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS								0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS								0
19	SFP Modules	NOS	8	4	2	4	8	2	12	40
20	Single Mode Media Converter	NOS								0
21	75 inch LED Displays	NOS								0
22	55 inch LED Displays	NOS	0	0	0	1	0	1	1	3
23	24 inch LED Displays	NOS								0
24	Desktop Workstation for surveillance monitoring	NOS								0
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0	0	0	0	1	1
26	Point to Point Radios	NOS								0
27	Point to Multi Point Radios	NOS								0
28	UPS (1kVA) with 2 hours battery backup	NOS	4	2	1	2	4	1	3	17
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0	1	0	1	1	3
30	UPS (3 kVA) with 2 hours battery backup	NOS								0
31	UPS (5 kVA) with 2 hours battery backup	NOS								0
32	UPS (650 VA) with 15 mins backup	NOS								0
33	Electrical Socket Board / Multi Pin Socket	NOS	4	2	1	3	4	2	4	20
34	Surge Protection Device for UPS	NOS	4	2	1	3	4	2	4	20
35	Ethernet Surge Protector for Cameras and Radios	NOS	15	11	3	7	11	6	9	62
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	0	0	0	1	0	1	1	3
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	3	0	1	0	1	0	0	5
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS								0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS								0
40	Self Supported 15 m Mast	NOS	1	2	0	0	1	0	0	4
41	Self Supported 30 m Mast	NOS								0
42	Self Supported 51 m Masts	NOS								0
43	CAT - 6 STP Cable	METER	305	610	305	610	305	305	305	2745

LOCATION WISE LIST OF EQUIPMENT - ORIENT AREA

S. No	ITEM	UOM	OC 1&2	OC 3	OC 4	OSA	HBM	RSA	GM Unit	TOTAL
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER								0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	790	780	300	680	550	700	4830	8630
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER								0
47	Power Cable, 3 core, 2.5 sq. mm	METER								0
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER								0
49	24 Port CAT 6 Patch Panel	NOS	4	2	2	3	4	2	4	21
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS								0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS								0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	9	10	2	7	10	6	9	53
53	24 port Fully Loaded OFC LIU	NOS								0
54	12 port Fully Loaded OFC LIU	NOS	4	2	2	3	4	2	4	21
55	06 port Fully Loaded OFC LIU	NOS								0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	8	4	2	4	8	2	12	40
57	OFC Pig Tails single mode	NOS	16	8	4	36	16	12	44	136
58	IP 67 Metal Enclosure with pole mounting kit	NOS								0
59	24 U Floor Mount rack	NOS	0	0	0	1	0	1	1	3
60	9U Wall mount Rack	NOS	4	2	1	2	4	1	3	17
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	70	70	50	90	190	70	180	720
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER								0
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	730	720	290	540	430	650	4550	7910
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER								0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	60	60	10	140	120	50	270	710
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER								0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS								0

LOCATION WISE LIST OF EQUIPMENT - ANAND VIHAR, MCL HQ

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LOCATION WISE LIST OF EQUIPMENT - ANAND VIHAR, MCL HQ

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ANAND VIHAR, MCL HQ

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LOCATION WISE LIST OF EQUIPMENT - JAGRUTI VIHAR, MCL HQ

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LOCATION WISE LIST OF EQUIPMENT - JAGRUTI VIHAR, MCL HQ

S. No	ITEM	UOM	Near D-64	Roundabout after ATM	C Type Duplex (1-24)	JV Mandir & Shopping Centre	Chowk Near D-67	Chowk Near D-9	Chowk Near D-1	C Type Block 6	C Type Block 9	New D Type Flats	Old D Type Flats	Old C Type Flats	Chowk Near CMD Bungalow	MT Hostel and Transit House	MT Hostel Parking	Security at MCL HQ Reception	E&T Exchange Basement	TOTAL
32	UPS (650 VA) with 15 mins backup	NOS																		0
33	Electrical Socket Board / Multi Pin Socket	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	20
34	Surge Protection Device for UPS	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1		1		2	16
35	Ethernet Surge Protector for Cameras and Radios	NOS	4	5	4	5	3	3	4	6	5	9	9	11	4	22	5	0	0	99
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	15
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS		1		1	1	1			1	1	1	1	1		1			10
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																		0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS																		0
40	Self Supported 15 m Mast	NOS																		0
41	Self Supported 30 m Mast	NOS																		0
42	Self Supported 51 m Masts	NOS																		0
43	CAT - 6 STP Cable	METER	4270																	4270
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER																		0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	5000																	5000
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER																		0
47	Power Cable, 3 core, 2.5 sq. mm	METER	2500																	2500
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER																		0
49	24 Port CAT 6 Patch Panel	NOS																		0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS																		0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS																		0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS																		0
53	24 port Fully Loaded OFC LIU	NOS																		0
54	12 port Fully Loaded OFC LIU	NOS	1	1	1	1	1	1	1	1	1	1	1	1	1		1		3	17

LOCATION WISE LIST OF EQUIPMENT - JAGRUTI VIHAR, MCL HQ

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LOCATION WISE LIST OF EQUIPMENT - MCL HQ TOTAL

S. No	ITEM	UOM	JAGRUTI VIHAR	ANAND VIHAR	TOTAL QTY
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	22	0	22
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	67	70	137
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	10	7	17
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	1	1	2
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	1	0	1
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	1	1	2
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	0	0
10	Centralized Video Management Server	NOS	0	0	0
11	Centralized Network Video Management software	NOS	0	0	0
12	Network Attached Storage (NAS) - 192 TB	NOS	0	0	0
13	Network Attached Storage (NAS) - 120 TB	NOS	2	2	4
14	Network Attached Storage (NAS) - 48TB	NOS	0	0	0
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	24	19	43
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1	1	2
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	0
19	SFP Modules	NOS	72	62	134
20	Single Mode Media Converter	NOS	10	0	10
21	75 inch LED Displays	NOS	1	1	2
22	55 inch LED Displays	NOS	1	0	1
23	24 inch LED Displays	NOS	0	0	0
24	Desktop Workstation for surveillance monitoring	NOS	3	2	5
25	Laptop - min. i7 processor & 8 GB RAM	NOS	0	0	0
26	Point to Point Radios	NOS	0	0	0
27	Point to Multi Point Radios	NOS	0	0	0
28	UPS (1kVA) with 2 hours battery backup	NOS	16	17	33
29	UPS (2kVA) with 2 hours battery backup	NOS	0	0	0
30	UPS (3 kVA) with 2 hours battery backup	NOS	1	0	1
31	UPS (5 kVA) with 2 hours battery backup	NOS	2	2	4
32	UPS (650 VA) with 15 mins backup	NOS	0	0	0
33	Electrical Socket Board / Multi Pin Socket	NOS	20	18	38
34	Surge Protection Device for UPS	NOS	16	18	34
35	Ethernet Surge Protector for Cameras and Radios	NOS	99	77	176
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	15	18	33
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	10	7	17
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	0	0	0
40	Self Supported 15 m Mast	NOS	0	0	0
41	Self Supported 30 m Mast	NOS	0	0	0
42	Self Supported 51 m Masts	NOS	0	0	0
43	CAT - 6 STP Cable	METER	4270	3050	7320
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	0	0	0
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	5000	6000	11000
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	0	0	0
47	Power Cable, 3 core, 2.5 sq. mm	METER	2500	3500	6000

LOCATION WISE LIST OF EQUIPMENT - MCL HQ TOTAL

S. No	ITEM	UOM	JAGRUTI VIHAR	ANAND VIHAR	TOTAL QTY
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	0	0
49	24 Port CAT 6 Patch Panel	NOS	0	0	0
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	0	0	0
53	24 port Fully Loaded OFC LIU	NOS	0	0	0
54	12 port Fully Loaded OFC LIU	NOS	17	20	37
55	06 port Fully Loaded OFC LIU	NOS	0	0	0
56	OFC Patch Cord - 3 meter duplex single mode	NOS	60	62	122
57	OFC Pig Tails single mode	NOS	150	124	274
58	IP 67 Metal Enclosure with pole mounting kit	NOS	0	0	0
59	24 U Floor Mount rack	NOS	1	1	2
60	9U Wall mount Rack	NOS	18	17	35
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	2000	2000	4000
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	3000	4500	7500
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	0	0	0
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	0	0	0
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	200	300	500
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boaring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	0	0	0
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	0	0	0

LOCATION WISE LIST OF EQUIPMENT - ALL SIDINGS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ALL SIDINGS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ALL SIDINGS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ALL REAGIONAL STORES AND CWS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ALL REAGIONAL STORES AND CWS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - ALL REAGIONAL STORES AND CWS OF MCL

[illegible]

LOCATION WISE LIST OF EQUIPMENT - MCL BHUBANESWAR CAMPUS

S. No	ITEM	UOM	MCL BHUBANESWAR GUEST HOUSE AND CAMPUS
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	28
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	33
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded (To be kept at respective Project Office/ GM Office as per feasibility)	NOS	
10	Centralized Video Management Server	NOS	1
11	Centralized Network Video Management software	NOS	1
12	Network Attached Storage (NAS) - 192 TB	NOS	
13	Network Attached Storage (NAS) - 120 TB	NOS	
14	Network Attached Storage (NAS) - 48TB	NOS	1
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	13
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	1
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	
19	SFP Modules	NOS	30
20	Single Mode Media Converter	NOS	
21	75 inch LED Displays	NOS	
22	55 inch LED Displays	NOS	2
23	24 inch LED Displays	NOS	
24	Desktop Workstation for surveillance monitoring	NOS	1
25	Laptop - min. i7 processor & 8 GB RAM	NOS	
26	Point to Point Radios (One at Siding and other at NVR Location)	NOS	
27	Point to Multi Point Radios	NOS	
28	UPS (1kVA) with 2 hours battery backup	NOS	1
29	UPS (2kVA) with 2 hours battery backup	NOS	
30	UPS (3 kVA) with 2 hours battery backup	NOS	3
31	UPS (5 kVA) with 2 hours battery backup	NOS	
32	UPS (650 VA) with 15 mins backup	NOS	
33	Electrical Socket Board / Multi Pin Socket	NOS	4
34	Surge Protection Device for UPS	NOS	4
35	Ethernet Surge Protector for Cameras and Radios (At respective camera & radio location)	NOS	61
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	8
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	12
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	
40	Self Supported 15 m Mast	NOS	

LOCATION WISE LIST OF EQUIPMENT - MCL BHUBANESWAR CAMPUS

S. No	ITEM	UOM	MCL BHUBANESWAR GUEST HOUSE AND CAMPUS
41	Self Supported 30 m Mast	NOS	
42	Self Supported 51 m Masts	NOS	
43	CAT - 6 STP Cable (120 m at Siding and rest at NVR Location)	METER	1500
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	500
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	
47	Power Cable, 3 core, 2.5 sq. mm	METER	300
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	
49	24 Port CAT 6 Patch Panel	NOS	
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	
53	24 port Fully Loaded OFC LIU	NOS	
54	12 port Fully Loaded OFC LIU	NOS	17
55	06 port Fully Loaded OFC LIU	NOS	
56	OFC Patch Cord - 3 meter duplex single mode	NOS	30
57	OFC Pig Tails single mode	NOS	80
58	IP 67 Metal Enclosure with pole mounting kit	NOS	
59	24 U Floor Mount rack	NOS	1
60	9U Wall mount Rack	NOS	13
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	1300
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire including supply of GI Wire	METER	
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	150
64	Fixing of HDPE pipe on wall surface and laying of CAT 6 cable/OFC cable/power cable as required	METER	300
65	Excavation of trenches, laying of GI Pipe pipe, including supply of GI Pipe, laying of OFC/Cat-6/ Power cable through GI pipe and backfilling the trenches , in cement concrete surface/ road , trench depth 0.30 meter , and making good the demolished surface by cement concrete as required.	METER	60
66	Horizontal Directional Drilling(HDD) & Laying of PLB Pipe of 33/40 mm dia through boring by "No Dig" method using Trench-Less technology and other associated works along road and under Railway/Road/Canel/Streams crossing in all type of soil including soft rock and hard rock.(For 40mm -100mm dia bore)	METER	
67	Inspection Chamber(Digging Manhole - 120cm dia x 1.65Mtrs depth, 2 nos RCC rings(100cm outer dia,30cm height & 5 cm thickness) and split cover(100cm outer dia) and pucca reinstatement with excavated earth outside the RCC ring and filling river sand in full inside the RCC ring after placing OFC cables in both the direction including supply of RCC rings and split cover	NOS	

AREA WISE LIST OF EQUIPMENT

S. No	ITEM	UOM	JAG	BHP	LIN	HIN	KAN	TAL	IBVA	LKPA	BGA	OA	MCL HQ	MCL BBSR	SIDINGS	STORES & CWS	TOTAL
1	2 MP IP Camera, Dome Type, min. 30 m IR	NOS	71	33	65	62	11	23	76	57	49	29	22	28	0	0	526
2	2 MP IP Camera, Bullet Type, min. 50 m IR	NOS	178	250	250	196	82	51	158	213	205	33	137	33	0	22	1808
3	2MP IP Camera, PTZ Type, min. 150 m IR	NOS	8	3	14	15	3	9	0	22	22	0	17	0	22	0	135
4	NVR 128 Channel with inbuilt 128 TB Storage fully loaded	NOS	0	0	5	0	0	0	2	0	0	0	2	0	0	0	9
5	NVR 64 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0	0	0	9	0	1	0	0	0	0	10
6	NVR 32 Channel with inbuilt 64 TB Storage fully loaded	NOS	0	0	0	0	0	0	5	0	0	0	1	0	0	0	6
7	NVR 32 Channel with inbuilt 32 TB Storage fully loaded	NOS	0	0	0	0	4	5	0	0	12	4	0	0	0	0	25
8	NVR 16 Channel with inbuilt 16 TB Storage fully loaded	NOS	0	14	0	0	0	0	0	0	0	0	2	0	0	0	16
9	NVR 8 Channel with inbuilt 16 TB Storage fully loaded	NOS	17	15	7	2	5	3	0	0	12	0	0	0	22	11	94
10	Centralized Video Management Server	NOS	3	1	0	3	0	0	0	0	0	0	0	1	0	0	8
11	Centralized Network Video Management software	NOS	3	1	0	3	0	0	0	0	0	0	0	1	0	0	8
12	Network Attached Storage (NAS) - 192 TB	NOS	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
13	Network Attached Storage (NAS) - 120 TB	NOS	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4
14	Network Attached Storage (NAS) - 48TB	NOS	4	0	0	5	0	0	0	0	0	0	0	1	0	0	10
15	Industrial Grade Managed Switch with 8 x 10/100/1000 BaseT Ports POE+ and 2 SFP Port	NOS	86	60	117	61	22	25	65	95	69	17	43	13	22	11	706
16	Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	NOS	5	1	0	4	1	3	4	5	6	3	2	1	0	0	35
17	Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
18	Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	NOS	0	35	5	4	0	0	0	0	0	0	0	0	0	0	44
19	SFP Modules	NOS	197	192	250	110	46	50	144	142	194	40	134	30	0	0	1529
20	Single Mode Media Converter	NOS	0	70	0	0	0	0	30	0	0	0	10	0	0	0	110
21	75 inch LED Displays	NOS	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
22	55 inch LED Displays	NOS	4	1	0	6	2	3	4	10	7	3	1	2	0	0	43
23	24 inch LED Displays	NOS	2	13	0	2	0	0	0	0	0	0	0	0	0	11	28
24	Desktop Workstation for surveillance monitoring	NOS	7	2	0	7	2	5	10	10	7	0	5	1	0	0	56

AREA WISE LIST OF EQUIPMENT

S. No	ITEM	UOM	JAG	BHP	LIN	HIN	KAN	TAL	IBVA	LKPA	BGA	OA	MCL HQ	MCL BBSR	SIDINGS	STORES & CWS	TOTAL
25	Laptop - min. i7 processor & 8 GB RAM	NOS	1	1	0	1	1	0	0	1	0	1	0	0	0	0	6
26	Point to Point Radios	NOS	8	6	52	6	0	2	14	50	5	0	0	0	44	0	187
27	Point to Multi Point Radios	NOS	0	1	0	0	0	0	0	11	0	0	0	0	0	0	12
28	UPS (1kVA) with 2 hours battery backup	NOS	50	32	9	31	12	21	44	77	54	17	33	1	0	11	392
29	UPS (2kVA) with 2 hours battery backup	NOS	0	2	0	0	0	0	0	0	0	3	0	0	0	0	5
30	UPS (3 kVA) with 2 hours battery backup	NOS	4	1	0	0	1	3	3	10	7	0	1	3	0	0	33
31	UPS (5 kVA) with 2 hours battery backup	NOS	0	0	5	0	0	0	0	0	0	0	4	0	0	0	9
32	UPS (650 VA) with 15 mins backup	NOS	0	0	88	36	10	0	3	15	10	0	0	0	22	0	184
33	Electrical Socket Board / Multi Pin Socket	NOS	95	0	89	78	23	24	57	98	133	20	38	4	22	11	692
34	Surge Protection Device for UPS	NOS	54	35	105	67	23	24	50	100	71	20	34	4	22	11	620
35	Ethernet Surge Protector for Cameras and Radios	NOS	255	293	383	279	96	83	221	347	281	62	176	61	66	22	2625
36	Lighning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	NOS	81	119	60	73	29	14	104	211	113	3	33	8	22	11	881
37	Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	46	82	60	73	24	9	58	182	47	5	17	12	0	0	615
38	Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	537	0	0	0	0	0	0	0	0	0	0	0	0	0	537
39	Supplying and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	NOS	143	0	0	0	0	0	0	0	0	0	0	0	0	0	143
40	Self Supported 15 m Mast	NOS	0	3	0	0	4	0	19	14	10	4	0	0	22	0	76
41	Self Supported 30 m Mast	NOS	0	0	0	0	1	0	2	20	0	0	0	0	0	0	23
42	Self Supported 51 m Masts	NOS	6	2	0	1	0	2	0	2	0	0	0	0	0	0	13

AREA WISE LIST OF EQUIPMENT

S. No	ITEM	UOM	JAG	BHP	LIN	HIN	KAN	TAL	IBVA	LKPA	BGA	OA	MCL HQ	MCL BBSR	SIDINGS	STORES & CWS	TOTAL
43	CAT - 6 STP Cable	METER	17800	14030	12565	17690	3355	5100	10880	19270	18210	2745	7320	1500	4000	1320	135785
44	Singlemode Unarmoured 24 Core Optical Fiber Cable	METER	14900	10500	0	18500	5600	0	3000	8100	0	0	0	0	0	0	60600
45	Singlemode Unarmoured 12 Core Optical Fiber Cable	METER	13400	13000	16500	5000	7800	2040	0	7450	39850	8630	11000	500	0	0	125170
46	Singlemode Unarmoured 6 Core Optical Fiber Cable	METER	15950	7000	0	6400	0	1150	8500	0	0	0	0	0	0	0	39000
47	Power Cable, 3 core, 2.5 sq. mm	METER	12300	8000	3040	12100	220	240	2350	4040	5720	0	6000	300	660	220	55190
48	HDPE PLB Duct (40mm OD & 33mm ID)	METER	0	22000	0	0	0	0	0	0	0	0	0	0	0	0	22000
49	24 Port CAT 6 Patch Panel	NOS	55	1	43	68	0	0	0	0	0	21	0	0	0	0	188
50	CAT 6 Patch Panel (8 PORTS LOADED)	NOS	0	0	0	0	0	0	0	95	0	0	0	0	0	0	95
51	Cat 6 UTP Patch Cord (2 mtrs)	NOS	0	0	0	277	0	0	0	353	0	0	0	0	0	0	630
52	Cat 6 UTP Patch Cord (1 mtrs)	NOS	257	0	160	0	0	0	0	0	0	53	0	0	0	0	470
53	24 port Fully Loaded OFC LIU	NOS	14	36	43	5	2	0	0	6	0	0	0	0	0	0	106
54	12 port Fully Loaded OFC LIU	NOS	82	0	0	0	23	32	66	72	71	21	37	17	0	0	421
55	06 port Fully Loaded OFC LIU	NOS	0	0	0	64	0	0	0	0	0	0	0	0	0	0	64
56	OFC Patch Cord - 3 meter duplex single mode	NOS	197	100	198	110	46	50	144	142	194	40	122	30	0	0	1373
57	OFC Pig Tails single mode	NOS	394	440	139	470	92	122	352	402	380	136	274	80	0	0	3281
58	IP 67 Metal Enclosure with pole mounting kit	NOS	52	0	70	24	10	0	7	18	12	0	0	0	22	0	215
59	24 U Floor Mount rack	NOS	4	1	4	4	1	3	4	3	7	3	2	1	0	0	37
60	9U Wall mount Rack	NOS	52	37	39	48	13	25	59	77	54	17	35	13	0	0	469
61	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as reqd.(25mm) and laying OFC/CAT 6 through conduit as required	METER	3620	8600	5200	6500	2000	5100	7750	10250	13100	720	4000	1300	0	0	68140
62	Laying of Overhead CAT -6 / OFC / Power Cable with GI Wire incuding supply of GI Wire	METER	57440	0	23865	0	0	0	0	2470	0	0	7500	0	0	0	91275
63	Excavation of trenches, laying of HDPE pipe, including supply of HDPE Pipe, laying of OFC/Cat-6/ Power cable through HDPE pipe and backfilling the trenches , all kinds of soil, trench depth 1.05 mtr.	METER	900	0	0	6350	10000	1360	8630	7940	36700	7910	0	150	0	0	79940

AREA WISE LIST OF EQUIPMENT

[illegible]

TECHNICAL SPECIFICATIONS OF ALL EQUIPMENT

Item No. 1: 2 MP IP Camera, Dome Type, minm. 30 m IR

Type of Camera Housing	DOME CAMERA
IP Camera	Yes
Image Sensor Type	CMOS
Image Sensor Size	0.357 inch
Camera Image Sensing capacity (Picture Mode)	2 MP
Resolution	Full HD (1920 x 1080 Pixel) or higher
Day/Night Capable	Yes
IR illumination Range(mtr)	30
Lens Type	Motorized Varifocal
Focal Length(mm)	2.8 - 12
Focus Mode	Auto, Manual
Frame Rate (fps)	25 or more
Video Compression	H.265+ or better
Video Streaming	Triple compressed stream
Audio Support	Yes
Audio Compression	G.726/G.711
Audio Streaming	Two-Way
Number of Audio Input Channel	1
Number of Audio Output Channel	1
External Microphone Support	Yes
Alarm Support	Yes
Number of Alarm Digital Input	1
Number of Alarm Relay Output	1
Pre/Post Alarm Buffer	Yes
Multi Level User ID/Password	Yes
IP Address Filtering	Yes
Encrypted Data Transmission	HTTPS (SSL/TSL)
Minimum Illumination for Capturing Color Image	0.01 lux
Electronic Shutter Speed(sec)	1/3 to 1/10000
WDR (Wide Dynamic Range)	120 dB or better
SNR (Signal to Noise Ratio)	50-60 or better
Auto Exposure	Auto Level Control, Electronic Level Control
White Balance (Indoor/Out door/Manual Selectable)	Yes
Auto Gain Control (On/Off selectable)	Yes
Back Light Compensation	Yes
Remote Administration (Remote	Yes

configuration and status using web based tool)	
Remote System Update Over Network	Yes
PC Client (PC application client with a channel recording feature support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display in English	Yes
ONVIF Support	Yes
Privacy Zones	4
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
IP Support	Static, Dynamic
Signal Processing	Digital Signal Processing
IPv6 ready	Yes
On Board SD Card Support	Yes
SD Card Memory(GB)	128 or higher (To be provided with the Camera)
Installation Type	Indoor, Outdoor
Protection	IP67
Vandal Resistant Housing	Yes
IK rating	IK 10
Mounting bracket	Ceiling, Wall, Pole Mounted
Power Input	PoE
Operating Temperature Range	0 to +50 deg C or better
Relative Humidity Non Condensing (%)	95 or higher
Supply of Compatible drivers and software included	Yes
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 2: 2 MP IP Camera, Bullet Type, min. 50 m IR	
Type of Camera Housing	BULLET CAMERA
IP Camera	Yes
Image Sensor Type	CMOS
Image Sensor Size	0.357 inch
Camera Image Sensing capacity (Picture Mode)	2MP
Resolution	Full HD (1920 x 1080 Pixel)or higher
Day/Night Capable	Yes
IR illumination Range(mtr)	50
Lens Type	Motorized Varifocal
Focal Length(mm)	2.8 - 12
Focus Mode	Auto, Manual
Frame Rate (fps)	25 or more
Video Compression	H.265+ or better
Video Streaming	Triple compressed stream
Optical Zoom	12X
Digital Zoom	16X
Audio Support	Yes
Audio Compression	G.726/G.711
Audio Streaming	Two-Way
Number of Audio Input Channel	1
Number of Audio Output Channel	1
External Microphone Support	Yes
Alarm Support	Yes
Number of Alarm Digital Input	1
Number of Alarm Relay Output	1
Pre/Post Alarm Buffer	Yes
Multi Level User ID/Password	Yes
IP Address Filtering	Yes
Encrypted Data Transmission	HTTPS (SSL/TSL)
Minimum Illumination for Capturing Color Image	0.01 lux
Electronic Shutter Speed(sec)	1/3 to 1/10000
WDR (Wide Dynamic Range)	120 dB or better
SNR (Signal to Noise Ratio)	50-60 or better
Auto Exposure	Auto Level Control, Electronic Level Control
White Balance (Indoor/Out door/Manual Selectable)	Yes
Auto Gain Control (On/Off selectable)	Yes
Back Light Compensation	Yes
Remote Administration (Remote	Yes

configuration and status using web based tool)	
Remote System Update Over Network	Yes
PC Client (PC application client with a channel recording feature support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display in English	Yes
ONVIF Support	Yes
Privacy Zones	4
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
IP Support	Static, Dynamic
Signal Processing	Digital Signal Processing
IPv6 ready	Yes
On Board SD Card Support	Yes
SD Card Memory(GB)	128 or higher (To be provided with the Camera)
Simultaneous Connections	20 or more
Installation Type	Outdoor
Protection	IP67
Vandal Resistant Housing	Yes
IK rating	IK 10
Mounting bracket	Pole Mounted, Wall Mounted
Power Input	PoE
Operating Temperature Range	0 to +55 deg C or better
Relative Humidity Non Condensing (%)	95 or higher
Supply of Compatible drivers and software included	Yes
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 3: 2MP IP Camera, PTZ Type, min. 150 m IR	
Type of Camera Housing	PTZ CAMERA
IP Camera	Yes
Image Sensor Type	CMOS
Image Sensor Size	0.357 inch
Camera Image Sensing capacity (Picture Mode)	2MP
Resolution	Full HD (1920 x 1080 Pixel) or higher
Day/Night Capable	Yes
IR illumination Range(mtr)	150
Lens Type	Motorized Varifocal
Focal Length(mm)	4.5 - 162
Iris Control	Yes
Focus Mode	Auto, Manual
Frame Rate (fps)	25 or more
Video Compression	H.265+ or better
Video Streaming	Triple compressed stream
Optical Zoom	36X
Digital Zoom	16X
Audio Support	Yes
Audio Compression	G.726/G.711
Audio Streaming	Two-Way
Number of Audio Input Channel	1
Number of Audio Output Channel	1
External Microphone Support	Yes
Alarm Support	Yes
Number of Alarm Digital Input	1
Number of Alarm Relay Output	1
Pre/Post Alarm Buffer	Yes
Multi Level User ID/Password	Yes
IP Address Filtering	Yes
Encrypted Data Transmission	HTTPS (SSL/TSL)
Minimum Illumination for Capturing Color Image	0.01 lux
Electronic Shutter Speed(sec)	1/3 to 1/10000
WDR (Wide Dynamic Range)	120 dB or better
SNR (Signal to Noise Ratio)	50-60 or better
Auto Exposure	Auto Level Control,Electronic Level Control
White Balance (Indoor/Out door/Manual Selectable)	Yes
Auto Gain Control (On/Off selectable)	Yes
Back Light Compensation	Yes
Remote Administration (Remote configuration and status using web	Yes

based tool)	
Remote System Update Over Network	Yes
PC Client (PC application client with a channel recording feature support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display in English	Yes
ONVIF Support	Yes
Privacy Zones	8
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
IP Support	Static, Dynamic
Signal Processing	Digital Signal Processing
IPv6 ready	Yes
On Board SD Card Support	Yes
SD Card Memory(GB)	128 or higher (To be provided with the Camera)
Simultaneous Connections	20 or more
Installation Type	Outdoor
Protection	IP67
Vandal Resistant Housing	Yes
IK rating	IK 10
Mounting bracket	Pole Mounted
Power Input	PoE
Operating Temperature Range	0 to +55 deg C or better
Relative Humidity Non Condensing (%)	95 or higher
Supply of Compatible drivers and software included	Yes
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 4: NVR 128 Channel with inbuilt 128 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	128
Number of Video Output Channels	2
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	64
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Throughput (Mbps)	1024
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	8
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection, Motion Detection, Crossing line, Intrusion Detection, Face Recognition, Object counting, Tampering, Object Removal, Number Plate Recognition, Video Loss, Text-IN, Digital Zoom 12X and more
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485
Physical Layer of Ethernet	10/100/1000 Base TX

Number of Ethernet Ports	4 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event, E-mail, SMS
Network transmission Speed	Synchronous Playback IN full HD, Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date, Time, Event, Log, Motion, Bookmarks, Time-Lapse, Event, Thumbnail, Motion, Text-In
Bookmarks	Forward, Backward, Adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors
Total Management	Group add, Delete, Group management, Remote Data Export
Camera	Add, Edit, Delete, Use Master account, Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	16
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	128
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE, ADAPTER, HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 5: NVR 64 Channel with inbuilt 64 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	64
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	64
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Through put (Mbps)	512
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows / Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private

	Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event, E-mail, SMS
Network transmission Speed	Synchronous Playback IN full HD, Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In
Bookmarks	Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat
Page preview	Multi Monitor Support,Video Window,Electronic Map on two separate monitors
Total Management	Group add,Delete,Group management,Remote Data Export
Camera	Add,Edit,Delete,Use Master account,Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	8
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	64
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE, ADAPTER, HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 6: NVR 32 Channel with inbuilt 64 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	32
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	32
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Through put (Mbps)	256
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private

	Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In
Bookmarks	Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat
Page preview	Multi Monitor Support,Video Window,Electronic Map on two separate monitors
Total Management	Group add, Delete, Group management, Remote Data Export
Camera	Add, Edit, Delete, Use Master account, Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	8
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	64
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 7: NVR 32 Channel with inbuilt 32 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	32
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	32
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Through put (Mbps)	256
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private

	Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In
Bookmarks	Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat
Page preview	Multi Monitor Support,Video Window,Electronic Map on two separate monitors
Total Management	Group add,Delete,Group management,Remote Data Export
Camera	Add,Edit,Delete,Use Master account,Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	4
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	32
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 8: NVR 16 Channel with inbuilt 16 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	16
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	16
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Through put (Mbps)	128
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICM P,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private

	Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	2
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In
Bookmarks	Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors
Total Management	Group add, Delete, Group management, Remote Data Export
Camera	Add, Edit, Delete, Use Master account, Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	2
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	16
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 9: NVR 8 Channel with inbuilt 16 TB Storage fully loaded	
Type of Recording Device	NVR
IP Camera Support	Yes
PTZ Camera control Support	Yes
Mounting	Rack Mounted
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes
Number of Video Input Channels	16
Recording Resolution	Full HD (1920 x 1080 Pixel) or higher
Supported Compression Technique	H.265+
Maximum Number of cameras to be viewed on a single display	16
Total number of simultaneous local views	4
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16
Recording Speed for all channels (fps)	25 or higher
Minimum Through put (Mbps)	64
Display Image Rate	Real time per channel
Audio Support	Yes
Audio Input	1
Audio Output	1
Audio Compression	G.726,G.711
Minimum Number of Simultaneous Channels for Two-way Audio Support	1
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	4
Alarm Output	1
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private

	Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	2
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event, E-mail, SMS
Network transmission Speed	Synchronous Playback IN full HD, Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date, Time, Event, Log, Motion, Bookmarks, Time-Lapse, Event, Thumbnail, Motion, Text-In
Bookmarks	Forward, Backward, adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors
Total Management	Group add, Delete,Group management,Remote Data Export
Camera	Add,Edit,Delete,Use Master account,Use Specific account
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the scope of supply)	2
Storage Capacity of each Hard Disk (TB)	8
Total Storage Capacity(TB)	16
Redundancy Option	RAID 10
Redundant Power Supply	Yes
Minimum Operating Temperature	0 degree Celsius

Maximum Operating Temperature	55 degree Celsius
Relative Humidity Non Condensing at 40 deg C	95 percent
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 10: Centralized Video Management Server	
Form Factor	Rack
Processor Architecture	CISC(X86)
Processor Make	Intel
Number of Cores per Processor	8 or higher
Processor Base Frequency (GHz)	3.3 or higher
Processor Turbo Frequency (GHz)	4 or higher
Total Cache (L1+L2+L3)(MB)	24.75 or higher
Processor Description/ Number	Intel Xeon Gold 6234 or better
Expansion Slots Gen 3 (PCIe x8)	3 or higher
Expansion Slots Gen 3 (PCIe x16)	4 or higher
Maximum number of Sockets available on Server	2
Maximum number of Sockets populated with Processors available on Server	1
Type of RAM	DDR4 SDRAM with ECC
Total Number of DIMM Slots available	12 or higher
Number of DIMM Slots populated with DDR SDRAM	4
DDR SDRAM Size(GB)	128
DDR SDRAM upgradable upto using spare DIMM Slots (GB)	8
Type of Interface	SATA
Type of SATA SSD	Read Intensive
SATA SSD Hot Swappable	Yes
Total Number of Slots available for SATA SSD	4
Number of Slot Populated with SATA SSD	4
Total Capacity Offered with SATA SSD (GB)	8000
Total number of Slots available for SATA Drive	4 or higher
RAID level	0, 1
No of RAID Controller Ports	2 or higher
Speed of RAID Controller Ports (Gbps)	6 or higher
Network Card Supported	1G or better
Number of Networking Interface Cards (LAN)	2 or higher (With capability to connect on Public and Private Network simultaneously)
Number of Ports Per Network Interface Card	RJ 45, 4 x 1G
Keyboard Port	Yes
Mouse Port	Yes
USB Ports (version 2.0/3.0)	4

Operating System	Windows
Management Features-1	Remoter power On/ Shutdown of server,,Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port, Should have virtual Media support with all required licenses, Remote KVM, Server Health Logging, Out of Band Management
Management Features-2	Platform inventory and health status
Security Features-1	Secure Boot(Firmware and Bios Level Security),"Malicious Code Free design"
Security Features-2	Network Card secure firmware boot
Server scalability to be achived within the box & without adding nodes	Yes
support for high availability clustering and virtualization	Yes
Redundant Power Supply	Yes
Hot Swappable (Redundant Power Supply)	Yes
Power Supply Efficiency	Platinum
Redundant Fan	Yes
Server Main Supply	230 +/- 10% V ac
BIS Registration under CRS of MeitY	Yes
Other Certifications Available	UL/EN/CE/IEC-60950 for Safety
RoHS Compliance	Yes
Availability of the type test report from Central Government / NABL / ILAC accredited laboratory covering verification of all features & functional parameters & environmental tests sequence	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 11: Centralized Network Video Management software	
General Features	1. Video Management software is highly scalable Enterprise level software & a complete video surveillance solution. It is scalable to required numbers of cameras that can be added on a unit -by-unit basis.
	2. Video Management software is licensed & operate on open architecture & require no proprietary IT hardware
	3. The Video Management software allow video to be streamed on workstation monitor or on a Video wall.
	4. The User with administrative rights to create clients(users) & give access to the software client application based on predefined user access rights
	5. System allow the recording, live monitoring, playback of archived video and data simultaneously.
	6. The VMS Video management system to be seamlessly integrated with Face recognition software and have the capability to receive the alerts.
	7. Management screen: Lock, unlock with password support.
	8. Virtual key board support.
Software features	1. Several simultaneous live picture connections of camera in network.
	2. Configuration of monitoring situation (site maps).
	3. Programming of alarm-triggered automatic events in various alarms configuration.
	4. System set up with limited operation options for clearly defined surveillance tasks.
	5. Programming of automatic recording events on a network recorder.
Type of Streaming	1. Single Compressed Streaming, 2. Dual Compressed Streaming, and 3. Triple Compressed streaming.
Video compression format supported by the software in real time	H.265+
Frame rate range supported by the software (in fps)	upto 60 fps
Resolution	Full HD or better
Number of monitor for displaying live video with one server /workstation	16
Number of level of users and alarm prioritization supported by the offered product	5
Number of cameras to be replayed simultaneously by the offered product	64

Compliance of standard of the offered product	1. Global standards ONVIF Profile 'S' for the interface of network video product (ONVIF- Open Network Video Interface Forum). 2. Offered product available on ONVIF website and confirmation certificate to be provided to buyer on demand.
Cyber-security Parameters	1. HTTPS encryption, 2. SSL/TLS, 3. Complex passwords, 4. HMAC Digital Authentication, 5. user lockout, 6. Digital Watermarking, 7. NIST
Camera Related features in Software	1. Camera's bit rate , frame rate and resolution to be set independently from other Cameras in the system and altering these settings do not affect the recording and display settings of other Cameras., 2. The software capable to provide automatic search & discovery of components of video surveillance system on the network which can be network Cameras., 3. The software capable to provide drag & drop functions on the system & also for set up of connection between Cameras and monitors connected to one workstation., 4.The Software capable of handling Camera & alarm icons on area map & area map to be configurable to pop up upon the receipt of an alarm recieved from a camera on the map. This can be on the same or other monitors on the PC., 5. The Software enable the client to dynamically create connections between Cameras and clients and view live or recorded video on monitors., 6. Software capable to provide the client seamless operation of all cameras & clients available in the system regardless of the actual connection to different network video recording servers. 7. Scalable licensing model supporting unlimited cameras per server based on the available hardware configuration, 8. Camera License not tied to MAC address of cameras 9. Unrestricted camera replacement in case of camera failure
Software Capability	1. Live Display of Cameras, 2. Live Display of Camera sequences, 3. Control of PTZ Cameras,

	4. Playback of archived video, 5. Retrieval of archived video, 6. Instant Replay of live Video, 7. Use of Site maps, 8. Configuration of System Settings, 9. Configuration and programming of P /T /Z Cameras, features like auto tours, presets etc., 10. Digital PTZ Control, 11. Comport Joystick support, 12. Preset position setup,, 13. Preset position search,, 14. Optical zoom in, Zoom out,, 15. Digital zoom enable/disable,, 16. Full screen view enable/disable,, 17. Camera connect/disconnect.
Software capable to record video on	1. Inbuilt hard disks on the server, 2. Direct attached storage boxes attached to the servers, 3. Network attached storage, 4. Storage area network.
Software capable to select recording based on	1. Time at which recording was activated, 2. Duration of recording, 3. Operator activated recording, 4. Event activated recording, 5. Scheduled recording, 6. Camera, 7. Date
Option available in the offered product for reporting utility for tracking for	1. Video clips and image snapshots to be stored with reports for documenting events, 2. Alarms, 3. Incidents, 4. Operator logs
Video management and recording feature in the offered product	1. Software have the facility to export the desired portion of clipping of video from a Desired date/ Time to another desired date/ time on DVD on any client/ Network storage device. Viewing of the recording should be possible on authorized player or in media player on computer utilizing a Windows environment,, 2. The video management server not to limit the number of video recording servers can be networked together to form video management and recording system,, 3. The video management servers capable to maintain a catalog of settings for all clients, servers and IP Cameras & IP enabled Cameras in the system. In case of

	single server, if recording cannot be managed then offered product have a provision for addition of server. 4. The Software enable the client to dynamically create connections between Cameras and clients and view live or recorded video on monitors., 5. Software capable to provide the client seamless operation of all cameras & clients available in the system regardless of the actual connection to different network video recording servers
	6. Software capable to commence the video recording from the date & time specified by the end-user & also able to playback more than one camera recording simultaneously., 7. Watermarking, Encrypt and Digital Signature option while video exporting, 8. Software shall support encryption based recording. Encrypted recording shall play only in Video Management Software, 9. Video push feature to send individual cameras or an entire view of cameras to public view or other monitor, 10. Manage users through LDAP/Active directory, 11. Client bandwidth throttling to Optimize video data rates over limited bandwidth client connections, 12. Scheduled Access time for Operation with assign permission.
Supporting feature in the offered product	1. The Video management software provide a full matrix operation of IP video to display monitors., 2. Video management software have the capability of creating camera sequences with following functionalities:-i) Capability to sequence cameras ii). Each camera in the sequence have its own individual dwell time iii). Multiple users able to view the same camera sequence simultaneously, not necessarily synchronized one with the other.
NO of cameras VMS Software can sequence upto	100
Each camera in the sequence have its own individual dwell time in seconds	60
VMS Througout	1200 Mbps or better
Client Interface	100
Operating System Compatibility	Windows
Number of monitor for displaying live video with one server / workstation	upto 16
Number of Video Streams (Channels)concurrently supported by Central	5000

VMS	
Image rotate(in degree)	Customizable
Status display	Free disk space, Camera status, CPU usage
Display clock (in real time)	day, date, time, year
Type of audio	2-way
Type of Codec	G.711/G.726
Support offered in the Audio	Audio broadcasting
Hot-Spot Window Feature	1. To activate and switch the channel with event to the hot-spot window, 2. The original video in the hot-spot window to be switched over.
Recording type	schedule, continuous, manual, motion, event
Recording Recycle	Auto, FIFO mode Audio and video simultaneous recording
Audio Recording	Pre-record, Post-record support
Network storage path	ISCSI, network share, NAS
Storage/ BackUp features	Multiple local storage support, Network Storage Device Support, CD Burning, DVD Burning, USB backup support, back up Tape device
Playback Search from Local and Network storage	1.Channels,2.Date and time,3. Bookmarking,4. Alarm,5. All - Channels; Date & Time; Bookmarking; Alarm,6.Attribute Search(Object Size, color)
Event Playback Search from video loss, motion detection and manual recording	1.Channels,2.Date and time
Playback mode	Play, Stop,Pause, Forward,Backward, Next, Previous.
Forward/Backward mode	x1/4,x1/2,x1,x2,x4,x16,x32,x 64
Image Export	Image Export by JPEG
Protocols	1. HTTP,2. TCP,3. UDP,4. RTSP,5. Multicast,6.SRTP
Remote View	1. Remote Live streaming,,2. Video record to AVI/ASF,3. Image Snapshot to JPEG,,4. PTZ control,,5. Event notification,,6. Video playback.
E-Map	1. Multi E-map layers support,2. Indicator camera &I/O,,3. E-Map Type BMP/JPG/GIF/PNG/TIF,,4. Unlimited E-map pictures,,5. Camera Preview,,6. Online Google Map integration,,7. Map support: map, satellite and hybrid view,,8. Online control:left,right,up,down, Zoom in and Zoom out,,9.GIS Maps Support for Customer Defined Maps and vector files
Tools	1. DB Tools,,2. Backup system,,3. 3rd party backup software support,,4. File export to AVI, ASF, MP4
Compatibility	1. Compatible with 3rd party IP cameras,2. Widescreen Support,3. SDK Integration
The GUI software capable to perform the applications simultaneously without interfering with any of the	1. Live display of Cameras,2. Live display of Camera sequences,3. Control of PTZ Cameras,4. Playback of archived video,5.Retrieval of archived video,6.Instant

storage server operations (recording, alarms etc)	replay of live video,7. Use of graphical controls (maps) and alarm management,8. Configuration of system settings
The GUI software capable to support	1. Any form of IP network connectivity including LAN,WAN and wireless LAN technologies,2. Multicast video streaming,3. Unicast video streaming
GUI Software Feature	1. Capable to provide an authentication mechanism, which verifies the validity of the user.,2. Capable to allow live monitoring of video.,3. Capable to provide management and control over the system using a standard PC mouse, keyboard and Digital keyboard,4. Capable to display all Cameras attached to the system regardless of their physical location on the network.,5. Capable to display all Camera sequences created in the system,6. Capable to display all Cameras, sequences and users in a logical tree.,7. Capable to support graphical site representation (map) functionality,where digital maps are used to represent the physical location of Cameras and other devices throughout facility,8. The maps have the ability to contain hyperlinks to create a hierarchy of interlinked maps,9. Capable to support digital zoom on a fixed Camera's live video streams,10. Capable to support digital zoom on a PTZ Camera's live video streams,11. Capable to display video of Cameras on 40 inch Large Format Display Monitors and Workstation Monitors,12. Capable to allow the control of display from the client PC,13. The operator from the GUI software able to decide the screen layout and also the Cameras that shall be displayed on the monitors,14. Capable to support multicasting,15. Capable to switch the screen layout in response to an alarm,17. Adaptive Streaming. Option to switch stream to lower to higher or vice-versa based on full screen
No Of video tiles enable on a single digital monitor	100
Tiles Views provided on each of the digital monitors independently	1. Full screen,2. Quad view,3. 4x4(16-view),4. Support any other window division based on the site requirement
GUI Software Operator Feature	1. Allow operators to view an instant replay of any Camera.,2. The operator able to define the amount of time he wishes to go back from timeline bar or through a custom setup period,3. The operator able to control the playback with play, pause, forward, and speed buttons,4. Operator capable to drag and drop a Camera

	from a tree of available Cameras into any video tile for live viewing,5. Operator capable to view the Camera from a tree of available Cameras into any video tile for live viewing,6. Operator able to view the Camera from a map into a video tile for live viewing in the same browser without opening a new browser,7. Operator able to click on an icon in a map to initiate PTZ Camera preset, run PTZ pattern, view Camera in an analog monitor or send an I/O stream,8. The operator capable to control Pan, Tilt and Zoom patterns of P/T/Z Camera
The operator capable to choose and trigger following action from a macro/site map	1. View Camera in a video tile,2. View map or procedure in a video tile,3. Starting/stopping PTZ pattern,4. Go to PTZ preset
Video Recording Feature by the offered product	1. Support recording H.265+ or higher video streams and audio for all the channels.,2. Supports triplex applications, recording, re-play and backup simultaneously compatible with windows Server OS for highest performance and reliability.,3. Software operates on open architecture and not requires any proprietary hardware.,4. Software capable to record different video streams or more simultaneously accessible from any client PC connected to the network.,5. Software provides network time server function to ensure the synchronization of the video servers and the recordings.,6. Servers/NVRs be connected to the network so that these can be placed at any location which has network access.,7. Software capable to receive alarms of different types from equipment to start a recording These alarms be motion detection, video loss, unified picture and trigger input.,8. Software alarm recording supports pre-and post-alarm periods both can be configured in duration.,9. Software shall provide a status of the available recording capacity.,10. Software shall define limits and alerts for low disk space at warning and recording stopped levels
Features of Fault Tolerance Recording	1. Software & Server(s)/ NVRs operation are interrupted, like power disconnection and once the server(s) are restarted, these automatically resume recording of any Cameras these were recording prior to the interruption.,2. Software supports network fault-tolerant recording such that if the network connection between a video management server and video recording server becomes unavailable, for example through cable breakage, network congestion or WLAN

	interruption, the system operation shall automatically recover when the connection is restored.
Feature of Search & Export	1. Search for recordings in the software by Camera, date and time if a data and time is specified, playback shall commence from that date and time possible to playback more than one Camera simultaneously., 2. Software be capable to export sections of recordings to a separate Windows folder, which then be written to CD-ROM, DVD-ROM or USB Flash Drives etc. to be played back at a location not connected to the network video management& recording network. The export process make available a player application, which provided with the exported video. Export be possible in Windows media player or any other media player compatible format. Simultaneous export of multiple Cameras be possible.,3. Software provides secured recording for evidence purposes and user authentication to protect data integrity.,4. Software supports activity controlled video recording. This is required to automatically adjust recording bit rate depending on motion & scene. During periods of negligible motion, the recording bits rate shall drop and when motion occurs, the recording bit rate shall return to normal without any perceptible delay.,5. Video Recording Software be compliant to global standards ONVIF Profile 'S' for the interface of network video product (ONVIF – Open Network Video Interface Forum). The quoted models should appear on the ONVIF website and a confirmation certificate for the offered models to be provided.,6. Watermarking, Encrypt and Digital Signature option while video exporting
Additional Features	1. GIS supported with vector files, open street Maps and Google Maps, 2. Centralized monitoring of Unlimited devices spread across multiple station, 3. Local recording at branch with High Quality Video and Low bandwidth streaming to Central station, 4. User can define SOPs for manual and automatic actions on real time data. Actions and SOPs can be defined with workflows and logical if-then-else conditions, 5. The alert send by VMS, Video Analytics software can be view in form of pop up on screen
	1. The software capable to detect signal loss & have the

Alert feature in the offered product	capability to alert the Systems administrator 2. Software capable to receive all incoming events (motion detection , triggered digital input & relay output) in the system and take the appropriate actions based on user-defined event/action relationships, 3. The Software shall create an audit trail of all events and user activities, 4. Software capable to provide alarm management module, 5. Alarm management able to set any monitor or groups of monitors to automatically display cameras in response to alarm inputs, 6. Ability to send SNMP traps messages on events, 7. Inbuilt Video Analytic Alerts required: Abandoned Baggage, Intrusion, Camera Tampering, Crowd Detection
Remote Access	1. The software should be accessible through a Remote Client over Internet. 2. The cameras being viewed or recorded over the Video Management Software should be accessible over Mobile Application, Desktop Application and Web Client by accessing the Video Management Server.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 12: Network Attached Storage (NAS) - 192 TB	
Rack-mountable	Yes
Network Storage Type	NAS server
Total Storage Capacity	192 TB or higher Successful bidder has to provide the NAS including HDDs for minimum 192 TB Storage.
ISCSI support	Yes
Supported Devices	disk array (RAID)
Cache / Buffer Size (Max)	1 GB
RAID Level	RAID 0, RAID 10, RAID 1, RAID 5, RAID 50
Interface Type	Serial Attached SCSI
Type	2 x RAID - internal
Processors Installed	2 x Intel Xeon E5520 2.26 GHz or better
Interface Type	DDR4 SDRAM with ECC
RAM Installed	DRAM 48 GB (installed) / 288 GB (supported)
NETWORKING Type	Network adapter - integrated
Data Link Protocol	Ethernet, 10 Gigabit Ethernet, Fast Ethernet, Gigabit Ethernet
PROCESSOR Type	Intel Xeon
Clock Speed	2.26 GHz
Number of Cores	Quad-Core
Hard Drive Type	HDD - hot-swap - 3.5" x 1/3H
Spindle Speed	7200 rpm
Power Cable	Included
Storage Operating System	Microsoft Windows Storage Server 2012 R2 Standard or better
Network Services Compatibility	DHCP, DNS, FTP, FTPS, HTTP, HTTPS, Network File System (NFS), Server Message Block (SMB), Web-based Distributed Authoring and Versioning (Web-DAV)
Power Redundancy	yes
Power Redundancy Scheme	1+1
Frequency Required	50/60 Hz
Nominal Voltage	AC 120/230 V

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 13: Network Attached Storage (NAS) - 120 TB	
Rack-mountable	Yes
Network Storage Type	NAS server
Total Storage Capacity	120 TB or higher Successful bidder has to provide the NAS including HDDs for minimum 120 TB Storage.
ISCSI support	Yes
Supported Devices	disk array (RAID)
Cache / Buffer Size (Max)	1 GB
RAID Level	RAID 0, RAID 10, RAID 1, RAID 5, RAID 50
Interface Type	Serial ATA-600 / SAS 2.0
Type	2 x RAID - internal
Processors Installed	Intel Xeon E5-2609V3 1.9 GHz or better
Interface Type	DDR4 SDRAM with ECC
RAM Installed	DRAM 16 GB (installed) / 288 GB (supported)
NETWORKING Type	Network adapter - integrated
Data Link Protocol	Ethernet, 10 Gigabit Ethernet, Fast Ethernet, Gigabit Ethernet
PROCESSOR Type	Intel Xeon
Clock Speed	1.9 GHz
Number of Cores	6-core
Hard Drive Type	HDD - hot-swap - 3.5" LFF
Data Transfer Rate	600 MBps
Spindle Speed	7200 rpm
Power Cable	Included
Storage Operating System	Microsoft Windows Storage Server 2012 R2 Standard or better
Network Services Compatibility	DHCP, DNS, FTP, FTPS, HTTP, HTTPS, Network File System (NFS), Server Message Block (SMB), Web-based Distributed Authoring and Versioning (Web DAV)
Power Redundancy	yes
Power Redundancy Scheme	1+1
Frequency Required	50/60 Hz
Nominal Voltage	AC 120/230 V

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 14: Network Attached Storage (NAS) - 48 TB	
Rack-mountable	Yes
Network Storage Type	NAS server
Total Storage Capacity	48 TB or higher Successful bidder has to provide the NAS including HDDs for minimum 48 TB Storage.
ISCSI support	Yes
Supported Devices	disk array (RAID)
Cache / Buffer Size (Max)	1 GB
RAID Level	RAID 0, RAID 10, RAID 1, RAID 5, RAID 50
Interface Type	Serial ATA-600 / SAS 2.0
Type	2 x RAID - internal
Processors Installed	Intel Xeon E5-2609V3 1.9 GHz or better
Interface Type	DDR4 SDRAM with ECC
RAM Installed	DRAM 16 GB (installed) / 288 GB (supported)
NETWORKING Type	Network adapter - integrated
Data Link Protocol	Ethernet, 10 Gigabit Ethernet, Fast Ethernet, Gigabit Ethernet
PROCESSOR Type	Intel Xeon
Clock Speed	1.9 GHz
Number of Cores	6-core
Hard Drive Type	HDD - hot-swap - 3.5" LFF
Data Transfer Rate	600 MBps
Spindle Speed	7200 rpm
Power Cable	Included
Storage Operating System	Microsoft Windows Storage Server 2012 R2 Standard or better
Network Services Compatibility	DHCP, DNS, FTP, FTPS, HTTP, HTTPS, Network File System (NFS), Server Message Block (SMB), Web-based Distributed Authoring and Versioning (Web DAV)
Power Redundancy	yes
Power Redundancy Scheme	1+1
Frequency Required	50/60 Hz
Nominal Voltage	AC 120/230 V

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 15: 8 Port Managed Industrial Grade Switch with PoE+ with 2 port SFP	
Type of Switch	Managed - Industrial Grade
Technology	PoE+ (802.3at) (backward POE 802.3af compatible).
10/100/1000 Base Tx RJ 45 Ports with PoE	8 nos. with PoE+.
1000 Base SFP Port	2 nos.
Console Port	Available
Switching Capacity -Non Blocking (Gbps)	10 Gbps or higher
Throughput (MPPS)	24 or higher
Switching mode	Store and forward
Flow control	802.3x at full duplex
Multicast	IGMP snooping V1, V2
Port Trunking	Upto 8 ports per group or better, dynamic LACP or static aggregation
Port Mirroring	Supported, can be based on flow classification
Spanning Tree	IEEE 802.1D(STP), IEEE 802.1w(RSTP), IEEE 802.1s MSTP
VLAN	Port Based VLAN, 802.1Q tag VLAN, GVRP dynamic
MAC Address	8000 or more
Security Feature	IEEE 802.1x port based user authentication, Port security, Hardware support for IPACL, MAC ACL, VLAN ACL, IPv6 source/destination/TCP/UDP/protocol based ACL, User privileges classification and password protection, Head of Line (HOL) blocking prevention mechanism
Management Protocol	CLI, Web GUI, Telnet, SNMP V1/V2/V3
QoS	Strict Priority, Weighted Round Robin, First Come First Serve, RTS, Priority Mapping, DiffServ Marking/classification, Static IEEE 802.1p QoS/CoS/ToS/DSCP priority queuing, Port Mirroring, LLDP, Best effort Service,
Operating Temperature Range (Degree C)	0 to 60° C
Operating Humidity (RH)(%)	10% to 90% non-condensing
IPv6 Ready from day one and duly certified	Yes
PoE Power Budget (Watt)	130 or higher
Installation	Complete installation/ configuration with supply of suitable mountings , power supply/power injector/power adapter/ power cable/ patch cords and other accessories as required

Item No. 16: Layer 3 Managed Switch with 24 Port SFP + 4 x 10/100/1000 BaseT Ports	
Type of Switch	Non-PoE Layer 3 Switch with full IPv6 support along with IPV4 & Dual Stack configurable.
Port Density	a. 1000base-X SFP: Atleast 24 Nos. (but should meet the requirement) b. 10/100/1000 BaseT (RJ45): Atleast 04 Nos. (but should meet the requirement) If this is achieved by inserting suitable SFP to Ethernet port trans-receiver/converter /adapter into the SFP ports , will also be acceptable . However suitable SFP to Ethernet port trans-receiver/converter /adapter to connect Cat-6 cable will have to be provided by the successful bidder. it may be noted that SFP transreceivers to connect optical fiber are already included in the BOQ.
Switching capacity	88 Gbps or better, non-blocking
Stacking bandwidth	40 Gbps or better
Forwarding performance	65 Mpps or better
Redundant Power supply from Day one	Available
Console Port	Available
MAC Address Table Size	minm. 16000 entries
Operating Temperature Range (Degree C)	0°C to +50°C (or better)
Operating Humidity (RH) (%)	10% to 90% (non condensing)
IPv6 Ready from day 1 and dully certified	Yes
Cooling fan	Available
Dedicated Stacking (port/Slot) from Day 1	minm. 2 Nos with Modules and cables
Features	a) Supports 9 KB Jumbo frames. b) 1000 Active VLANs (802.1Q), VLAN tagging. c) Supports at least 8 Spanning Tree Groups/Instances. d) IEEE (802.1D)STP, RSTP(802.1w), MSTP (802.1s). e) IEEE 802.3ad LACP- Link Aggregation. f) IEEE 802.1AB LLDP. g) Static Routing and Dynamic Routing (RIP v1 & v2 Present) from Day 1. h) Support OSPF, VRRP, ECMP. i) Support for Multicast, PIM-SM, IGMPV1/V2, IGMP V3 Snooping. j) IEEE 802.1p prioritization, DiffServ/COS. k) Broadcast and Multicast Suppression. l) ACLs/filters. m) Support for Rate limiting/Queue Shaping. n) Dynamic VLAN Assignment.

	o) Guest VLAN Support. p) DHCP Snooping, DHCP Relay for IPv4 and IPv6 (RFC-3315).
Management	a) Console Management Port on the front panel. b) Web Based Management. c) SMMP V1,V2 and V3 Support. d) SSH V2 Support. e) 4 Groups of RMON Support. f) Telnet Support , TFTP. g) USB Port / SD Memory card Socket. h) Port Mirroring. i) Industry Standard CLI with built in Scripting tool.
Quality of Service	a) IEEE 802.1p Priority. b) Diff. Serv Marking /Classification, Diff Serv c) 8 Nos. QOS Queues per Port d) IPv6 traffic identification , prioritization, redirection.
Security Feature	a) 802.1x port based network access control & Authentication Protocols. b) RADIUS / TACACS+ Authentication support c) MAC Based Port limiting d) SSH Remote Login e) SSL (HTTPs) f) ACLs g) SNMPV3
Form Factor	Rack Mountable
Power Supply	230V +/- 10% AC, 50 c/s AC
Installation	Complete installation/ configuration with supply of suitable mountings , power supply/power injector/power adapter/ power cable/ patch cords and other accessories as required .

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 17: Layer 3 Managed Switch with 24 x 10/100/1000 BaseT Ports and 4 SFP Ports	
Type of Switch	Layer 3 Switch with full IPv6 support along with IPV4 & Dual Stack configurable.
Port Density	a. 1000base-X SFP: Atleast 04 Nos. (but should meet the requirement) b. 10/100/1000 BaseT (RJ45): Atleast 24 Nos. (but should meet the requirement) If this is achieved by inserting suitable SFP to Ethernet port trans-receiver/converter/ adapter into the SFP ports, will also be acceptable . However suitable SFP to Ethernet port trans-receiver/converter /adapter to connect Cat-6 cable will have to be provided by the successful bidder. it may be noted that SFP transreceivers to connect optical fiber are already included in the BOQ.
Switching capacity	88 Gbps or better, non-blocking
Stacking bandwidth	40 Gbps or better
Forwarding performance	65 Mpps or better
Redundant Power supply from Day one	Available
Console Port	Available
MAC Address Table Size	minm. 16000 entries
Operating Temprature Range (Degree C)	0°C to +50°C (or better)
Operating Humidity (RH) (%)	10% to 90% (non condensing)
IPv6 Ready from day 1 and dully certified	Yes
Cooling fan	Available
Features	a) Supports 9 KB Jumbo frames. b) 1000 Active VLANs (802.1Q), VLAN tagging. c) Supports at least 8 Spanning Tree Groups/Instances. d) IEEE (802.1D)STP, RSTP(802.1w), MSTP (802.1s). e) IEEE 802.3ad LACP- Link Aggregation. f) IEEE 802.1AB LLDP. g) Static Routing and Dynamic Routing (RIP v1 & v2 Present) from Day 1. h) Support OSPF, VRRP,ECMP. i) Support for Multicast, PIM-SM,IGMPV1/V2, IGMP V3 Snooping. j) IEEE 802.1p prioritization, DiffServ/COS. k) Broadcast and Multicast Suppression. l) ACLs/filters. m) Support for Rate limiting/Queue Shaping. n) Dynamic VLAN Assignment. o) Guest VLAN Support. p) DHCP Snooping, DHCP Relay for IPv4 and IPv6 (RFC-

	3315).
Management	a) Console Management Port on the front panel. b) Web Based Management. c) SMMP V1,V2 and V3 Support. d) SSH V2 Support. e) 4 Groups of RMON Support. f) Telnet Support , TFTP. g) USB Port / SD Memory card Socket. h) Port Mirroring. i) Industry Standard CLI with built in Scripting tool.
Quality of Service	a) IEEE 802.1p Priority. b) Diff. Serv Marking /Classification, Diff Serv c) 8 Nos. QOS Queues per Port d) IPv6 traffic identification , prioritization, redirection.
Security Feature	a) 802.1x port based network access control & Authentication Protocols. b) RADIUS / TACACS+ Authentication support c) MAC Based Port limiting d) SSH Remote Login e) SSL (HTTPs) f) ACLs g) SNMPV3
Form Factor	Rack Mountable
Power Supply	230V +/- 10% AC, 50 c/s AC
Installation	Complete installation/ configuration with supply of suitable mountings , power supply/power injector/power adapter/ power cable/ patch cords and other accessories as required .

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 18: Layer 2 Managed Switch with 24 x 10/100/1000 BaseT Ports with PoE and 4 SFP Ports	
Type of Switch	Layer 2 PoE Switch with full IPv6 support along with IPV4 & Dual Stack configurable.
Port Density	a. 1000base-X SFP: Atleast 04 Nos. (but should meet the requirement) b. 10/100/1000 BaseT (RJ45): Atleast 24 Nos. with PoE. If this is achieved by inserting suitable SFP to Ethernet port trans-receiver/converter/adaptor into the SFP ports , will also be acceptable . However suitable SFP to Ethernet port trans-receiver/converter /adaptor to connect Cat-6 cable will have to be provided by the successful bidder. The switch should be able to provide PoE (Power over Ethernet) after use of such transreceivers, if applicable. It may be noted that SFP transreceivers to connect optical fiber are already included in the BOQ.
Switching capacity	48 Gbps or better, non-blocking
Forwarding performance	36 Mpps or better
Redundant Power supply from Day one	Available
Console Port	Available
MAC Address Table Size	minm. 8000 entries
Operating Temprature Range (Degree C)	0°C to +50°C (or better)
Operating Humidity (RH) (%)	10% to 90% (non condensing)
IPv6 Ready from day 1 and dully certified	Yes
Cooling fan	Available
Features	a) Supports 9 KB Jumbo frames. b) 256 Active VLANs (802.1Q), VLAN tagging. c) Supports at least 8 Spanning Tree Groups/Instances. d) IEEE (802.1D)STP, RSTP(802.1w), MSTP (802.1s). e) IEEE 802.3ad LACP- Link Aggregation. f) IEEE 802.1AB LLDP. g) Broadcast and Multicast Suppression. h) ACLs/filters. i) Support for Rate limiting/Queue Shaping. j) Dynamic VLAN Assignment. k) Guest VLAN Support. l) DHCP Snooping, DHCP Relay for IPv4 and IPv6 (RFC-3315).
Management	a) Console Management Port on the front panel. b) Web Based Management. c) SMMP V1,V2 and V3 Support.

	d) SSH V2 Support. e) 4 Groups of RMON Support. f) Telnet Support , TFTP. g) USB Port / SD Memory card Socket. h) Port Mirroring. i) Industry Standard CLI with built in Scripting tool.
Quality of Service	a) IEEE 802.1p Priority. b) Diff. Serv Marking /Classification, Diff Serv c) 8 Nos. QOS Queues per Port d) IPv6 traffic identification , prioritization, redirection.
Security Feature	a) 802.1x port based network access control & Authentication Protocols. b) RADIUS / TACACS+ Authentication support c) MAC Based Port limiting d) SSH Remote Login e) SSL (HTTPs) f) ACLs g) SNMPV3
Form Factor	Rack Mountable
Power Supply	230V +/- 10% AC, 50 c/s AC
Installation	Complete installation/ configuration with supply of suitable mountings , power supply/power injector/power adapter/ power cable/ patch cords and other accessories as required.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 19: SFP Modules	
Form Factor	SFP
Ports	1 x SC/LC
Transmit Power	3 to 7 dBm
Receive Power	-30 to 12 dBm
Wavelength	1310 / 1490 nm
Data Rate	2.5 Gb/s
Cable Distance Supported	Minimum 20 kms.
Mode	Single-Mode
Material	Metal
Shall be same make as that of switch	Yes
Shall be of SFP configuration with operating temperature support upto 60°C	Yes
Should be compatible with the switches that are part of Schedule of Requirement	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 20: Single Mode Media Converter	
Standards and Protocols	IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z
Networking Distance	Extends fiber distance up to 9.3 miles (15km)
Ports	2 x 1000M SC/UPC port
	1 x 10/100/1000M RJ45 port (Auto MDI/MDIX)
Data Rate	1 Gbps
Wave Length	1310nm
Cable Distance Supported	Minimum 10 kms.
Network Media 1000BASE-LX	Single-mode Fiber
Network Media 1000BASE-T	UTP category 6, 6e cable (maximum 100m), EIA/TIA-568 100Ω STP (maximum 100m)
LED Indicators	Power, Link/Act
Power Supply	External Power Adapter
Safety & Emission	FCC, CE, RoHS
Environment	Operating Temperature: 0°C~60°C
Operating Humidity	95% non-condensing

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 21: 75 inch LED Displays	
Type	LED Display
Screen Size	75 inches or higher (Tolerance of 1 inch is acceptable)
Resolution (Pixels)	UHD(3840 x 2160) or higher
Aspect Ratio	16:9 or 9:16 TV should be able to work both in Portrait and Landscape orientation
Brightness (Nits)	500 or better
Mounting	Both Table and Wall Mount should be available
Screen Mirroring	Should be Available
Speakers	minm. 10W x 2
HDMI Port	2 or more
USB Port	Should be Available
VGA Port	Should be Available
Ethernet Port	Should be Available
Built-in Wi-Fi	Should be Available
Wi-Fi Direct	Should be Available
Composite Input	Should be Available(Common or same with Component Input)
Component Input	Should be Available (Common or same with Composite Input)
Energy Star Rating	5 star
Recommended Usage	24 x 7, the TV/Display is intended to be used for continuous monitoring 24 hours a day and the bidder should quote accordingly.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 22: 55 inch LED Displays	
Type	LED Display
Screen Size	55 inches
Resolution (Pixels)	FHD(1920x1080) or higher
Aspect Ratio	16:9 or 9:16 TV should be able to work both in Portrait and Landscape orientation
Brightness (Nits)	350 or better
Mounting	Both Table and Wall Mount should be available
Screen Mirroring	Should be Available
Speakers	minm. 10W x 2
HDMI Port	2 or more
USB Port	Should be Available
VGA Port	Should be Available
Ethernet Port	Should be Available
Built-in Wi-Fi	Should be Available
Wi-Fi Direct	Should be Available
Composite Input	Should be Available(Common or same with Component Input)
Component Input	Should be Available (Common or same with Composite Input)
Energy Star Rating	5 star
Recommended Usage	24 x 7, the TV/Display is intended to be used for continuous monitoring 24 hours a day and the bidder should quote accordingly.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 23: 24 inch LED Displays	
Type	LED Display
Screen Size	24 inches
Resolution (Pixels)	FHD(1920x1080) or higher
Aspect Ratio	16 :9
Brightness (Nits)	250 or better
Mounting	Both Table and Wall Mount should be available
Screen Mirroring	Should be Available
Speakers	minm. 5W x 2
HDMI Port	2 or more
VGA Port	Should be Available
Energy Star Rating	5 star
Recommended Usage	24 x 7, the TV/Display is intended to be used for continuous monitoring 24 hours a day and the bidder should quote accordingly.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 24: Desktop Workstation for surveillance monitoring	
Form Factor	Desktop
Processor Make	Intel
Processor Generation	10 or higher
Number of Cores per Processor	6 or more
Processor Base Frequency (GHz)	3.2
Processor Turbo Frequency (GHz)	4.6
Processor Description	Intel Core i7
Number of sockets available on the motherboard	1
Number of Sockets populated with the Processors	1
Cache (MB)	12
Expansion Slots (PCIe x 4) (Number)	1
Expansion Slots (PCIe x 16) (Number)	2
Expansion Slots (PCI) (Number)	1
Graphics Type	Dedicated/Discrete
Number of Graphic Cards	1
Graphic Card Description	AMD Radeon Pro WX2100 or better
Operating System (Factory Pre-Loaded)	Windows 10 Professional 64 bit
Recovery Image Media	CD from the OEM / Stored in Partition of the Hard Disk / USB Drive from the OEM / On Line / Cloud
OS Certification	Windows
RAM Type	DDR4
RAM Speed (MHz)	2666 or better
Type of Memory	Non ECC
RAM Size (GB)	8
Total Numbers of DIMM Slots Available	4
Number of DIMM Slots Populated	1
RAM Expandability upto using spare DIMM Slots (GB)	32
Storage	SSD + SATA
Primary Storage	
Type of Drives used to populate the internal Bays	SSD
Number of Drives	1
Capacity of each Drive (GB)	256
Secondary Storage	
Type of Drives used to populate the Internal Bays	SATA
Total number of Internal Bays available for SATA Drive	4
Number of Internal Bays populated with SATA Drive	1

Each SATA Drive Capacity (GB)	500
Speed of each SATA Drive (RPM)	7200
Total SATA Drive Capacity (GB)	500
RAID level	0,1
Number of RAID Controller Ports	4
Speed of RAID Controller Ports (Gbps)	6
Type of Ethernet Ports	Single Gigabit NIC 10/100/1000
Number of Ethernet Ports	1
Number of USB Version 2 Point 0 Ports	4
Number of USB Version 3 point 0 / 3 point 1, Gen 1 Ports	5
Number of USB Type C Ports	1
Number of VGA Ports	1
Number of HDMI Ports	2
Number of Mini DP Ports	2
Number of DP Ports	1
Display Availability	Monitor
Display Size (cm)	45 - 49
Display Type	Non Touch
Panel Type	Flat
Display Resolution (Pixels)	1366 x 768
LED Backlit	Yes
Monitor Stand	Standard
Minimum Power Efficiency (%)	90
Power Management Unit	Yes
Mouse Connectivity	Wired
Type of Mouse	Optical Scroll
Keyboard Connectivity	Wired
Type of Keyboard	Standard with Rupee Symbol
Optical Drive	DVD R/W
Number of External Bays	1
Security	S/W Based
Availability of Bundled Software	Yes
Type of Bundled Software	Standard Performance Improvement Software
BIS Registration under CRS of Meity (Requisite certificate may be furnished as and when demanded by the buyer)	Yes
ROHS Compliance	Yes
Minimum Operating Temperature (Degree C)	0
Maximum Operating Temperature (DEgree C)	50
Operating Humidity (%RH)	90

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 25: Laptop - min. i7 processor & 8 GB RAM	
Processor Make	Intel
Processor Generation	10 or better
Number of Cores per Processor	4 or higher
Processor Base Frequency (GHz)	1.8 or higher
Processor Description	Intel Core i7 or better
Cache (MB)	4
Form Factor	Standard
Chassis Material	Aluminum
Graphics Type	Dedicated/Discrete
Size of Memory in Case of Dedicated Graphic Card (GB)	2
Operating System (Factory Pre-Loaded)	Windows 10 Professional
Recovery Image Media	CD from the OEM / Stored in Partition of the Hard Disk / USB Drive from the OEM / On Line / Cloud
Type of RAM	DDR4
RAM Size (GB)	8
RAM Speed (MHz)	2666
Total Numbers of DIMM Slots Available	2
Number of DIMM Slots populated	1
RAM Expandability up to(using spare DIMM Slots in GB)	32
Storage	
Type of Drives used to populate the Internal Bays	HDD
Number of Internal Bays populated with HDD	1
Capacity of each HDD (GB)	1000 @7200 rpm
Total HDD Capacity (GB)	1000
Wireless Connectivity	Yes
Type of Wireless Connectivity	Wi-Fi 802.11 b/g/n
Number of Ethernet Ports	1
Type of Ethernet Ports	10/100/1000 on board Integrated Gigabit Port
Bluetooth Connectivity	Yes
Version of Bluetooth Available	4
Ports	
Number of USB Version 3 point 0 / 3 point 1, Gen 1 Ports	4
Number of VGA Ports	1
Number of HDMI Ports	1
Display	
Display Size (Inch)	14
Display Type	Non Touch
Display Technology	LED HD Backlit Antiglare

Display Resolution (Pixels)	1920 x 1080
Availability of Webcam integrated with Display	Yes
Resolution of Webcam	HD
Internal Speaker (Dual)	Yes
Audio-in	Yes
Audio-out	Yes
Headphone out	Yes
Microphone-in	Yes
Type of Keyboard	Standard
Spill Resistant Keyboard	Yes
Pointing Device/Touchpad	Touchpad with multi-touch gestures enabled
Hardware Trusted Platform Enabled	Yes
Carry Case	Yes
Type of Carry Case	Back Pack
Battery Type	Integrated
Battery Chemistry	Li - ion
Battery Backup Time (Hours)	minm. 6
BIS Registration under CRS of Meity	Yes
BEE / Energy Star for the given Model	Yes
ROHS Compliance	Yes
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	50 degree Celsius
Operating Humidity (%RH)	90

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 26: Point to Point Radios	
Throughput	500 Mbps or better
Range	40 Km or better
Frequency band	4.9-6.0 GHz /3.4-3.8 GHz
Channel Bandwidth	10/20/40/80 MHz
Tx Power	24 dBm
Adaptive Modulation & Coding	BPSK to 256QAM
Radio Access Scheme	MIMO 2 x 2 - OFDM
Duplex Technology	TDD
Asymmetric TDD	Configurable
Dynamic Channel BW Selection	20/40/80 MHz or 20/40 MHz
DFS / ACS	Supported
Diversity	Polarization and Spatial Diversity supported
Spectrum View	Built-in Spectrum Analyzer
Intra-site and inter-site TDD Synchronization using GPS	Supported
Encryption	AES128
Maximum Information Rate	Supported
QoS	4 levels supported, Strict priority, TTL
Maximum Frame Size	2048 bytes
Latency	< 3 msec
Equipment Manager System (EMS)	Yes
Protocol	SNMPv1, SNMPv3, Telnet and HTTP/HTTPS
NMS Application	Yes
Web based Management	Supported
Power Feeding	PoE
Max Power Consumption	<20W
Operating Temperatures	0°C to 60°C
Humidity	100% condensing, IP67
Shock and Vibration	Should be resistant as per IEC/ISO Standards
Ethernet ports	10/100/1000BaseT PoE

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 27: Point to Multi Point Radios	
Throughput	750 Mbps or better
Number of Subscriber Units	10 or more
Range	40 Km or better
Frequency band	4.9-6.0 GHz /3.4-3.8 GHz
Channel Bandwidth	10/20/40/80 MHz
Tx Power	24dBm
Adaptive Modulation & Coding	BPSK /QPSK / QAM16 / QAM64 / QAM256
SLA management	CIR, MIR, Best-Effort
Radio Access Scheme	MIMO 2x2, OFDM, Diversity per Subscriber Unit
Duplex Technology	TDD, Configurable Uplink / Downlink ratio
Dynamic Channel BW Selection	20/40/80MHz or 20/40MHz
DFS (FCC&ETSI)	Supported
Spectrum View	Supported
Intra-site and inter-site TDD Synchronization using GPS	Supported
Encryption	AES128
Maximum Information Rate	Supported
QoS	4 levels supported, Strict priority, TTL
Maximum Frame Size	2048 bytes
Latency	< 3msec
Equipment Manager System (EMS)	Yes
Protocol	SNMPv1, SNMPv3, Telnet and HTTP/HTTPS
NMS Application	Yes
Web based Management	Supported
Power Feeding	PoE
Max Power Consumption	<20W
Operating Temperatures	0°C to 60°C
Humidity	100% condensing, IP67
Shock and Vibration	Should be resistant as per IEC/ISO Standards
Ethernet ports	10/100/1000BaseT PoE

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 28: UPS (1kVA) with 2 hours battery backup	
Rating in KVA (KVA)	1.0 KVA
Type of UPS	Online UPS
Technology	IGBT-PWM with inbuilt isolation transformer
Input Power	single phase 160V - 260V sinewave, 50Hz
Output power	Single phase 230V +/-1% sinewave 50 Hz
Backup time (Minutes)	120
Minimum VAH (VAH)	3200 (The bidder has to maintain batteries supplied with the UPS upto 2 years from the date of commissioning of the system without any additional cost to MCL).
Movable trolley for Batteries	Without trolley but with rack
Degree of Protection	IP21
Cabling 5 meters for input and out put	With
Minimum thickness of M. S. Sheet Enclosure duly painted (mm)	1.2
Type of Battery	SMF-VRLA conforming to JISC:8702 (Pt.I,II&III)
Maximum overshoot and Under shoot of output rated voltage	4
Voltage Regulation from no load to full load (%)	< / = 3%
20% Overload limit for minimum 10 minutes	Yes
Overall Efficiency (%)	> / = 90%
Total Harmonic Distortion(THD) (%)	Maximum 3%
50% Overload limit for minimum 1 minutes	Yes
Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
Protection of Over voltage, Short Circuit & over load at UPS output terminal	Yes
Digital Metering in UPS for AC Input Voltage, Output AC Voltage, Current, Frequency, Battery Voltage and Current	Yes
Indicators for mains presence, Battery charging and discharging, Output Over Load, Low Battery Voltage	Yes
Certification	Valid BIS CRS certifications as applicable
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 29: UPS (2 kVA) with 2 hours battery backup	
Rating in KVA (KVA)	2.0 KVA
Type of UPS	Online UPS
Technology	IGBT-PWM with inbuilt isolation transformer
Input Power	single phase 160V - 260V sinewave,50Hz
Output power	Single phase 230V +/-1% sinewave 50 Hz
Backup time (Minutes)	120
Minimum VAH (VAH)	6400 (The bidder has to maintain batteries supplied with the UPS upto 2 years from the date of commissioning of the system without any additional cost to MCL).
Movable trolley for Batteries	Without trolley but with rack
Degree of Protection	IP21
Cabling 5 meters for input and out put	With
Minimum thickness of M. S. Sheet Enclosure duly painted (mm)	1.2
Type of Battery	SMF-VRLA conforming to JISC:8702(Pt.I,II&III)
Maximum overshoot and Under shoot of output rated voltage	4
Voltage Regulation from no load to full load (%)	< / = 3%
20% Overload limit for minimum 10 minutes	Yes
Overall Efficiency (%)	>/=90%
Total Harmonic Distortion(THD) (%)	Maximum 3%
50% Overload limit for minimum 1 minutes	Yes
Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
Protection of Over voltage, Short Circuit & over load at UPS output terminal	Yes
Digital Metering in UPS for AC Input Voltage, Output AC Voltage, Current, Frequency, Battery Voltage and Current	Yes
Indicators for mains presence, Battery charging and discharging, Output Over Load, Low Battery Voltage	Yes
Certification	Valid BIS CRS certifications as applicable
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 30: UPS (3 kVA) with 2 hours battery backup	
Rating in KVA (KVA)	3.0 KVA
Technology	IGBT-PWM with inbuilt isolation transformer
Input Power	single phase 160V - 260V sinewave, 50Hz
Output power	Single phase 230V +/-1% sinewave, 50 Hz
Backup time (Minutes)	120
Minimum VAH (VAH)	9600 (The bidder has to maintain batteries supplied with the UPS upto 2 years from the date of commissioning of the system without any additional cost to MCL).
Movable trolley for Batteries	Without trolley but with rack
Degree of Protection	IP21
Cabling 5 meters for input and out put	With
Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
Type of Battery	SMF-VRLA conforming to JISC:8702(Pt.I,II&III)
Maximum overshoot and Under shoot of output rated voltage	4
Voltage Regulation from no load to full load (%)	< / = 3%
20% Overload limit for minimum 10 minutes	Yes
Overall Efficiency (%)	>/=90%
Total Harmonic Distortion(THD) (%)	Maximum 3%
50% Overload limit for minimum 1 minutes	Yes
Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 31: UPS (5 kVA) with 2 hours battery backup	
Rating in KVA (KVA)	5.0 KVA
Technology	IGBT-PWM with inbuilt isolation transformer
Input Power	single phase 160V - 260V sinewave,50Hz
Output power	Single phase 230V +/-1% sinewave 50 Hz
Backup time (Minutes)	120
Minimum VAH (VAH)	16000 (The bidder has to maintain batteries supplied with the UPS upto 2 years from the date of commissioning of the system without any additional cost to MCL).
Movable trolley for Batteries	Without trolley but with rack
Degree of Protection	IP21
Cabling 5 meters for input and out put	With
Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
Type of Battery	SMF-VRLA conforming to JISC:8702(Pt.I,II&III)
Maximum overshoot and Under shoot of output rated voltage	4
Voltage Regulation from no load to full load (%)	< / = 3%
20% Overload limit for minimum 10 minutes	Yes
Overall Efficiency (%)	>/=90%
Total Harmonic Distortion(THD) (%)	Maximum 3%
50% Overload limit for minimum 1 minutes	Yes
Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 32: UPS (650 VA) with 15 mins backup	
Rating in KVA	0.65
min VAH capacity of battery	168
Technology	MOSFET-PWM
Type of battery	SMF-VRLA confirming to JISC-8702 Pt 1,2 &3
Rated Output (Volt)	Single phase sinewave 230v AC , 50Hz
Degree of protection	IP-21
Efficiency (%)	> / = 90%
Type of enclosure	ABS
AC out put	Yes
out put socket	3 Three pin
Total harmonic distorsion (%)	< / = 40%
Input (Volt)	Single phase sinewave(160-280v)
Switching over time (Mili sec)	Maximum 10 milli seconds
Overload Time (Minutes)	> / = 10 minutes
Load power factor	> / = 0.6
Variation in AVR output in AC mode (%) AVR (Voltage regulation) output voltage in AC Mode	230 Volts +/-9%, 50 +/-3 Hz
Overload (%)	> /=10%
Variation in output voltage in battery mode (%) (UPS output voltage in battery mode)	230 Volts +/- 10%
Variation on output frequency in battery mode (Hz)	< /=0.5
Protection against (over discharge) discharge per 12v battery (Volt)	10.5
Protection for outside input voltage range: If Input voltage goes outside the range 160 to 280 Volts, the system shall switch over to battery mode	Yes
Protection against short circuit of UPS	Yes
Protection for over voltage and over load	Yes
Availability of the type test report from central Govt./NABL/ILAC Accredited Lab	Yes
As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius
Additional Scope of Maintenance	The battery of the UPS shall have to be maintained/ replaced by the successful bidder in case of inadequate backup under warranty and CAMC period.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 33: Electrical Socket Board / Multi Pin Socket	
No. of Sockets - 6 Pin 16 Amp. (In Numbers)	6
No. of 16 Amp Switches (in Nos)	6
No. of cores in the cable (Nos)	3
Length of cable with Extension Box (In Mtrs)	5
Conformity of Switches to IS:3854/1997	Yes
Conformity of Socket to IS:1293/2005	Yes
Material of Box	Poly Carbonate
PVC insulated and sheathed flexible cable with copper conductor to IS:694	Yes
Conductor Size (Sq-mm) as per IS:694	Yes
Recoiling of cord	Yes
Input Plug Rating (AMP)	16 Amp.
Nos of pin in the Input plug (Nos)	3 Pin
Over all Power rating of Extension Box (K Watt) shall comply with No. of Sockets and Ratings	Yes
Power ON indicator	Yes
Fuse	Available
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 34: Surge Protection Device for UPS	
Input	3 Phase
Wiring Configuration	3-wire (isolated ground)
Maximum Continuous Operating Voltage (MCOV)	320V
Line Frequency	47-63 Hz
Response Time	< 0.5 ns
Enclosure	Metal, UL Listed /NEMA type 12
Mounting Type	Wall Mounted
Connection	Internally connected
Status Indication	Red and green LED status indicators, audible alarm, summary alarm contacts
Operating Temperature	0°C to +55°C
Operating Humidity	0% to 95% non-condensing
Noise Attenuation	50 dB maximum
Modes of Protection	All Modes: L-N, L-L, L-G, N-G
SCCR Rating	200 kA IC
Nominal Discharge Current Rating (In)	20 kA
Should be compatible and Synchronized	Yes

with UPS	
Surge Current	200 A per phase
Input Voltage	320 V L-G, 300 V L-L
Voltage Rating	240V AC

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 35: Ethernet Surge Protector for Cameras and Radios	
Interface Connections	2 nos. RJ45 Female Connectors
ESD/EMP Protection	Absorbing Transient Current with Response to Surge Voltage from 100V/s to 1kV/μs
Discharge Current	5kA (Maximum) 0.5kA (Normal)
Maximum Insulation Resistance	>=1G ohm @50V
Maximum Capacitance	1.0 pF @ 1 MHz
Data Line Protection	RJ45 10/100/1000 Ethernet
IEEE 802.3af and 802.3at compliant for PoE and PoE Plus	Yes
Operating Temperature	0 to 65° C
Operating Humidity	10 to 90% Noncondensing
Mounting	Wall Mount, Suitable fitting to be provided for mounting
Additional Feature	The Ethernet Surge Protector should be compatible with the Cameras and other active components as in the schedule of requirement.
Earthing	The Ethernet Surge Protector should be properly grounded.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 36: Lightning Arresters, BFC Bag(25 Kg), Earthing Wire, etc. with other accessories for maintenance free chemical earthing including earth pit digging	
Maintenance Free	Yes
Earth Resistance	one Ohm or less round the year
Earth pit size:	5 ft * 5ft * 10ft * (Minm)
Type of Conductor	The System will have one central highly galvanized mild steel solid conductor inside a highly galvanized mild steel pipe with crystalline, highly conductive, anticorrosive mixture in the space between.
Lightning arrestor with connection arrangement to Earth to be provided.	Yes. Lightning Arrestor at the top of the tower lightning rod made of copper with 12 mm dia and 600 mm length as per IS:613 with a spike on one end and threading on the other shall be provided and installed on the top of the Pole/ Building where earthing is to be done. Tin coated copper wire IS mark of gauge 7/20 shall be provided from lower end of the lightning rod to the lug with a hole provided at 0.5 m top of the pole/building.
Installation and other features	Complete installation/ configuration with supply of suitable accessories as required for standard installation. The earth conductor will be of suitable gauge/quality (Minm. 4 sq. mm) and suitably terminated with less than 0.5 ohm DC resistance upto 100 mtrs. Normally there will not be any joint in the earth conductor other than at distribution point. Any joint, if indispensable, must have same or better conductivity and mechanical strength as the original. The System will have suitable arrangement for low resistance mechanically strong joints for connection of the earth electrode with the earth conductor leading to a Central Junction Point from where it will be distributed to the Devices/Sub-Systems
	The Earthing System should conform to standard IS: 3043:1987 or, later modified version, if any.
	The Earthing Electrode structure will be surrounded by highly conductive, non-corrosive, non-soluble (in water), high moisture absorbing capacity, packing material. The pit on being filled up should be air pocket-free with low resistivity.
	The Earth Conductor should not have any sharp Bend.
BFC Bag	25 KG

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 37: Metallic Poles (8m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required	
Type of Pole:	Tubular Steel Poles for camera mounting Specification IS:2713 (Part 1 & 2) with amdt No1.
Length of pole	Min. 8 meter
Erection of metallic pole in cement concrete	Yes. 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required, including mounting brackets as required and secured with holding clamps, bolts, nuts, etc. as required as per relevant IS Standard.
Features of pole	The Pole should be Corrosion resistant with minm. Dia of 1.5 Inch at the top. It will be securely placed with concrete construction at Roof top/on ground as per site requirements with flexibility for dismantling for maintenance activity. The pole should not rotate or vibrate with wind/storm in the region and should be fitted with suitable brackets for fixing/aligning Equipments. The pole along with fittings should be suitably painted with double coat weather resistant paint.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 38: Supply and installation Metallic Poles (10m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	
Type of Pole:	Tubular Steel Poles for camera mounting Specification :IS:2713(Part1&2) with amdt No1.
Length of pole	Minm. 10 meter
Erection of metallic pole in cement concrete	Yes. 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required, including mounting brackets as required and secured with holding clamps, bolts, nuts, etc. as required as per relevant IS Standard.
Features of pole	The Pole should be Corrosion resistant with minm. Dia of 1.5 Inch at the top. It will be securely placed with concrete construction at Roof top/on ground as per site requirements with flexibility for dismantling for maintenance activity. The pole should not rotate or vibrate with wind/storm in the region and should be fitted with suitable brackets for fixing/aligning Equipments. The pole along with fittings should be suitably painted with double coat weather resistant paint.
Additional accessories to be provided with pole	Each pole should be supplied with the following: a. 02 Nos. Channel Iron 75mm*40mm*6mm (7.14kg)cross arm for Single wire over headline complete with clamps,bolts,nuts,washer. b. 02 Nos. 100mm*80mm pin insulator complete with G.I Spindle and nuts etc.
Complete installation/ configuration with supply of suitable accessories as required for standard installation.	Yes, along with installation of Channel Iron Cross Arms and Pin Insulator with G.I. Spindle and Nuts, etc. as above.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 39: Supply and installation Metallic Poles (15m) including Erection in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.	
Type of Pole:	Tubular Steel Poles for camera mounting Specification :IS:2713(Part1&2) with amdt No1.
Length of pole	minm. 15 metre
Erection of metallic pole in cement concrete	Yes. 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required, including mounting brackets as required and secured with holding clamps, bolts, nuts, etc. as required as per relevant IS Standard.
Features of pole	The Pole should be Corrosion resistant with minm. Dia of 1.5 Inch at the top. It will be securely placed with concrete construction at Roof top/on ground as per site requirements with flexibility for dismantling for maintenance activity. The pole should not rotate or vibrate with wind/storm in the region and should be fitted with suitable brackets for fixing/aligning Equipments. The pole along with fittings should be suitably painted with double coat weather resistant paint.
Additional accessories to be provided with pole	Each pole should be supplied with the following: a. 02 Nos. Channel Iron 75mm*40mm*6mm (7.14kg)cross arm for Single wire over headline complete with clamps,bolts,nuts,washer. b. 02 Nos. 100mm*80mm pin insulator complete with G.I Spindle and nuts etc.
Complete installation/ configuration with supply of suitable accessories as required for standard installation.	Yes, along with installation of Channel Iron Cross Arms and Pin Insulator with G.I. Spindle and Nuts, etc. as above.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 40: Self Supported 15 m Mast	
Height of Mast	15m
Type of Mast	4 legged self supporting type with square base of side 2217 mm and angular construction in segment of 2.5m. The top will be square of side 1300mm
No. of segments	It consists of 6 panels, each of 2.5 meter for 15 meter high tower
Foundation	Foundation bolts shall be placed in the beams using templates corresponding to the tower height. The columns and beams shall be RCC. non-galvanizing steel structures such as Anchor bolts etc. should be painted with red oxide coating. The base plates should be galvanized as some portion of them may be directly exposed to environment.
	M-20 grade concrete shall be used. High Yield Stength Deformed Steel bars of grade Fe-415 conforming to IS 1786 shall be used. Bending bars shall be as per IS:2502m
Legs/Bracings	MS angles of grade 'A' as per IS 2062 IS 808 shall be used
	All MS angles are to be hot dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS: 13229- 1991 or IS : 209
Gusset/Splice plates	MS plates of Grade 'A' as per IS;3062 shall be used
	All the plates are to be ho dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS:13229 or IS:209
Nuts, Bolts & Washers – material	Nuts & bolts of grade 5.6 as per IS 6639 IS:1364, IS:1367 Part 8 and plain washers as per IS 6610 & spring washers of type 'B' as per IS 3063 shall be used
	Nuts, bolts and washers are to be hot dip galvanized as per IS 1367
Connection between vertical legs and bracings	Vertical legs and bracings shall be connected to each other at site by gusset/splice plate with nuts, bolts and washers by user as per design. The design of tower members and joints shall be in accordance with the relevant provisions in BIS documents IS:800
Wind velocity	Tower shall be operational and able to withstand the wind velocity corresponding to wind zone 55 m/s{200Km/hr] of IS:875 [Part 3]
Lightning arrestor	Lightning Arrestor at the top of the tower lightning rod made of copper with 12 mm dia and 600 mm length as per IS:613 with a spike on one end and threading on the other shall be provided on the top of the tower. Tin coated copper wire IS mark of gauge 7/20 shall be provided from lower end of the lightning rod to the lug with a hole provided at 0.5m top of the tower
Verticality	The verticality for tower of shall be within the limits as per IS:12843][i.e. the bottom of the line joining the center of the

	top of tower and the center of the base of the tower should be within the limits] Limit for 15m mast -> with +/- 15mm
Welding	Welding, if any, shall be done as per IS 9595 The thickness of weld for base will be 6mm fillet
Marking	Manufacturer's identity marking and item marking shall be provided on each section by punching & painting for enabling easy assembly and traceability. A plate indicating the name of the tower, specification, number, tower serial number, manufacturer's identity, year of manufacture and the maximum load capacity of the tower shall be supplied by the manufacturer for display at the bottom of the tower. The top horizontal member of the tower on all the four faces should have center clearly visibly marked for easy check of verticality. The tower supplier shall also provide the tower compound manufacturers identity/source
Painting	The tower shall be coloured with alternate bands of orange & white or red & white paint as per ICAO recommendations. The Ready mixed paint, primer, enamel etc., used for tower painting may be as per the following IS codes i) IS 2074 (1992): Ready Mixed Paint, Air Drying, Red Oxide Zinc Chrome, Priming – Specifications; ii) IS 2932 (1993): Enamel , Synthetic ,Exterior: (a) Undercoating (b) Finishing -specification ii) IS 2933 (1975): Enamel Exterior (a) Undercoating (b) Finishing
Documentation	Two copies of detailed drawings along with installation details shall be supplied
Mounting fixtures	The fixing arrangement at the required location of the tower shall be made for camera/Radio
Additional features	All responsibility for tower erection shall lie with the erection agency which would follow safety norms as per IS7205. All IS standards are subject to revision and the most recent editions of the standards shall be applicable. The specifications given above are indicative, the final mast design needs to be approved by a Govt. agency/institution and the same needs to be submitted by the Bidder before installation.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 41: Self Supported 30 m Mast	
Height of Mast	30m
Type of Mast	4 legged self supporting type with square base of side 3514 mm and angular construction in segment of 2.5m. The top will be square of side 1300mm
No. of segments	It consists of 12 panels, each of 2.5 meter for 30 meter high tower.
Foundation	Foundation bolts shall be placed in the beams using templates corresponding to the tower height. The columns and beams shall be RCC. non-galvanizing steel structures such as Anchor bolts etc. should be painted with red oxide coating. The base plates should be galvanized as some portion of them may be directly exposed to environment.
	M-20 grade concrete shall be used. High Yield Strength Deformed Steel bars of grade Fe-415 conforming to IS 1786 shall be used. Bending bars shall be as per IS:2502m
Legs/Bracings	MS angles of grade 'A' as per IS 2062 IS 808 shall be used
	All MS angles are to be hot dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS: 13229- 1991 or IS : 209
Gusset/Splice plates	MS plates of Grade 'A' as per IS;3062 shall be used
	All the plates are to be hot dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS:13229 or IS:209
Nuts, Bolts & Washers – material	Nuts & bolts of grade 5.6 as per IS 6639 IS:1364, IS:1367 Part 8 and plain washers as per IS 6610 & spring washers of type 'B' as per IS 3063 shall be used
	Nuts, bolts and washers are to be hot dip galvanized as per IS 1367
Connection between vertical legs and bracings	Vertical legs and bracings shall be connected to each other at site by gusset/splice plate with nuts, bolts and washers by user as per design. The design of tower members and joints shall be in accordance with the relevant provisions in BIS documents IS:800
Wind velocity	Tower shall be operational and able to withstand the wind velocity corresponding to wind zone 55 m/s{200Km/hr} of IS:875 [Part 3]
Lightning arrestor	Lightning Arrestor at the top of the tower lightning rod made of copper with 12mmdia and 600mm length as per IS:613 with a spike on one end and threading on the other shall be provided on the top of the tower. Tin coated copper wire IS mark of gauge 7/20 shall be provided from lower end of the lightning rod to the lug with a hole provided at 0.5m top of the tower
Verticality	The verticality for tower of shall be within the limits as per IS:12843][i.e. the bottom of the line joining the center of

	the top of tower and the center of the base of the tower should be within the limits] Limit for 15m mast -> with +/- 20mm
Welding	Welding, if any, shall be done as per IS 9595 The thickness of weld for base will be 8mm fillet
Marking	Manufacturer's identity marking and item marking shall be provided on each section by punching & painting for enabling easy assembly and traceability. A plate indicating the name of the tower, specification, number, tower serial number, manufacturer's identity, year of manufacture and the maximum load capacity of the tower shall be supplied by the manufacturer for display at the bottom of the tower. The top horizontal member of the tower on all the four faces should have center clearly visibly marked for easy check of verticality. The tower supplier shall also provide the tower compound manufacturers identity/source
Painting	The tower shall be coloured with alternate bands of orange & white or red & white paint as per ICAO recommendations. The Ready mixed paint, primer, enamel etc., used for tower painting may be as per the following IS codes i) IS 2074 (1992): Ready Mixed Paint, Air Drying, Red Oxide Zinc Chrome, Priming – Specifications; ii) IS 2932 (1993): Enamel , Synthetic ,Exterior: (a) Undercoating (b) Finishing - specification ii) IS 2933 (1975): Enamel Exterior (a) Undercoating (b) Finishing
Documentation	Two copies of detailed drawings along with installation details shall be supplied
Mounting fixtures	The fixing arrangement at the required location of the tower shall be made for camera/Radio
Additional features	All responsibility for tower erection shall lie with the erection agency which would follow safety norms as per IS7205. All IS standards are subject to revision and the most recent editions of the standards shall be applicable The specifications given above are indicative, the final mast design needs to be approved by a Govt. agency/institution and the same needs to be submitted by the Bidder before installation.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 42: Self Supported 51 m Mast	
Height of Mast	51m
Type of Mast	4 legged self supporting type with square base of suitable side size and angular construction in segment of 2.5m. The top will be square of side 1300mm
No. of segments	It consists of 21 panels, each of 2.5 meter for 15 meter high tower
Foundation	Foundation bolts shall be placed in the beams using templates corresponding to the tower height. The columns and beams shall be RCC. non-galvanizing steel structures such as Anchor bolts etc. should be painted with red oxide coating. The base plates should be galvanized as some portion of them may be directly exposed to environment.
	M-20 grade concrete shall be used. High Yield Strength Deformed Steel bars of grade Fe-415 conforming to IS 1786 shall be used. Bending bars shall be as per IS:2502m
Legs/Bracings	MS angles of grade 'A' as per IS 2062 IS 808 shall be used
	All MS angles are to be hot dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS: 13229- 1991 or IS : 209
Gusset/Splice plates	MS plates of Grade 'A' as per IS:3062 shall be used
	All the plates are to be ho dip galvanized as per IS 4759
	Zinc for galvanizing should conform to IS:13229 or IS:209
Nuts, Bolts & Washers – material	Nuts & bolts of grade 5.6 as per IS 6639 IS:1364, IS:1367 Part 8 and plain washers as per IS 6610 & spring washers of type 'B' as per IS 3063 shall be used
	Nuts, bolts and washers are to be hot dip galvanized as per IS 1367
Connection between vertical legs and bracings	Vertical legs and bracings shall be connected to each other at site by gusset/splice plate with nuts, bolts and washers by user as per design. The design of tower members and joints shall be in accordance with the relevant provisions in BIS documents IS:800
Wind velocity	Tower shall be operational and able to withstand the wind velocity corresponding to wind zone 55 m/s{200Km/hr} of IS:875 [Part 3]
Lightning arrestor	Lightning Arrestor at the top of the tower lightning rod made of copper with 12mmdia and 600mm length as per IS:613 with a spike on one end and threading on the other shall be provided on the top of the tower. Tin coated copper wire IS mark of gauge 7/20 shall be provided from lower end of the lightning rod to the lug with a hole provided at 0.5m top of the tower

Verticality	The verticality for tower of shall be within the limits as per IS:12843][i.e. the bottom of the line joining the center of the top of tower and the center of the base of the tower should be within the limits] Limit for 15m mast -> with +/- 20mm
Welding	Welding, if any, shall be done as per IS 9595 The thickness of weld for base will be 8mm fillet
Marking	Manufacturer's identity marking and item marking shall be provided on each section by punching & painting for enabling easy assembly and traceability. A plate indicating the name of the tower, specification, number, tower serial number, manufacturer's identity, year of manufacture and the maximum load capacity of the tower shall be supplied by the manufacturer for display at the bottom of the tower. The top horizontal member of the tower on all the four faces should have center clearly visibly marked for easy check of verticality. The tower supplier shall also provide the tower compound manufacturers identity/source
Painting	The tower shall be coloured with alternate bands of orange & white or red & white paint as per ICAO recommendations. The Ready mixed paint, primer, enamel etc., used for tower painting may be as per the following IS codes i) IS 2074 (1992): Ready Mixed Paint, Air Drying, Red Oxide Zinc Chrome, Priming – Specifications; ii) IS 2932 (1993): Enamel , Synthetic ,Exterior: (a) Undercoating (b) Finishing - specification ii) IS 2933 (1975): Enamel Exterior (a) Undercoating (b) Finishing
Documentation	Two copies of detailed drawings along with installation details shall be supplied
Mounting fixtures	The fixing arrangement at the required location of the tower shall be made for camera/Radio
Additional features	All responsibility for tower erection shall lie with the erection agency which would follow safety norms as per IS7205 All IS standards are subject to revision and the most recent editions of the standards shall be applicable The specifications given above are indicative, the final mast design needs to be approved by a Govt. agency/ institution and the same needs to be submitted by the Bidder before installation.

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 43: CAT - 6 STP Cable	
Category	CAT 6 SFTP Solid cable
Conductor	23 AWG Multi-cores (Solid)
Conductor Metal	Bare Copper
Insulation Material	HD-PE
Pairs	2 Insulated conductors twisted together
Shield	Aluminum / Polyester Foil Tinned copper Braiding
Sheath	PVC/LSZH
Cable Diameter	7.5 mm nominal
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 44: Singlemode Unarmoured 24 Core Optical Fiber Cable	
No. of Cores	24
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius
Jacket Material	HDPE
Outer Diameter	6.8 mm to 7.3mm +/- 0.3mm
Jacket Thickness	1.8 mm +/- 0.2mm
Pulling Tension: Short Term	1500 N
Pulling Tension: Long Term	600N
Crush Load: Short Term	1000 N/100mm
Crush Load: Long Term	300 N /100mm
Bend Radius: Short Term	20D
Bend Radius: Long Term	10D
Fiber Type	9/125um (OS2)
Operational Wavelength	1310nm/1550nm
Maximum Attenuation (db/km)	0.36

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 45: Singlemode Unarmoured 12 Core Optical Fiber Cable	
No. of Cores	12
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius
Jacket Material	HDPE
Outer Diameter	6.8 mm to 7.3mm +/- 0.3mm
Jacket Thickness	1.8 mm +/- 0.2mm
Pulling Tension: Short Term	1500 N
Pulling Tension: Long Term	600N
Crush Load: Short Term	1000 N/100mm
Crush Load: Long Term	300 N /100mm
Bend Radius: Short Term	20D
Bend Radius: Long Term	10D
Fiber Type	9/125um (OS2)
Operational Wavelength	1310nm/1550nm
Maximum Attenuation (db/km)	0.36

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 46: Singlemode Unarmoured 6 Core Optical Fiber Cable	
No. of Cores	6
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	55 degree Celsius
Jacket Material	HDPE
Outer Diameter	6.8 mm to 7.3mm +/- 0.3mm
Jacket Thickness	1.8 mm +/- 0.2mm
Pulling Tension: Short Term	1500 N
Pulling Tension: Long Term	600N
Crush Load: Short Term	1000 N/100mm
Crush Load: Long Term	300 N /100mm
Bend Radius: Short Term	20D
Bend Radius: Long Term	10D
Fiber Type	9/125um (OS2)
Operational Wavelength	1310nm/1550nm
Maximum Attenuation (db/km)	0.36

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 47: Power Cable, 3 core, 2.5 sq. mm	
1.5 sq mm, Core: 3 Core, Colour Coded.	Yes
Conductor	Copper, multistranded
Insulation	PVC/PE
Outer Sheath	PVC
Max. DC Res./Km	10 Ohm
Current Rating	24 Amp. Minm.
Voltage Rating	1100V Minm.
Operating Temp	0 to 60° C
Confirming to IS : 7098 (Pt-1) 1988	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 48: HDPE PLB Duct (40mm OD & 33mm ID)	
Material	superior grade of High-Density Polyethylene materials, meets all the requirements of TEC Specifications as well as IS 4984-1995.
Lubrication	special lubricated compound on Inner Side for Conveying Optical Fiber cables with extremely low friction. Coefficient of Friction between the inside of the HDPE Duct and the outside of the inserted communication cable should not exceed 0.06
Environment Stress Crack Resistance (ESCR)	Yes
Impact Resistance	Yes
Crush Resistance	Yes
Low Coefficient of Friction	Yes
Temperature Resistance	Yes
Ultraviolet (UV) protection	Yes
Outer Diameter	40 mm
Inner Diameter	33 mm
Duct shall be suitable for cable laying by blowing / pulling technique	Yes
Two nos. each of end plug, cable sealing plug and end cap shall be supplied along with each coil	Yes
One number of Duct cutter, C spanner and chamfering tool shall be supplied along with each lot of 100 coils	Yes
Adequate no. of plastic couplers (No. of couplers to make a continuous length of the lot + 10% extra) shall be supplied along with each lot.	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 49: 24 Port CAT 6 Patch Panel	
CAT 6 patch Panel conforming to ANSI/ TIA/ EIA-568 C.2 latest or ISO/IEC:11801 latest	Yes
Patch panel suitability for	CAT 6 UTP/STP/FTP
Height of patch panel	1 U
No. of ports (RJ 45)	24 Ports Loaded
Cable Management (Rear side)	With
Applications: 0BASE-T, 100BASE-TX Fast Ethernet, 1000BASE-T (IEEE802.3) , 100VG-AnyLAN (IEEE802.12), 250 MHz Broadband Video, Voice, T1, ISDN, 155/ 622 Mbps ATM , Power over Ethernet (POE, POE+, 4 PPOE)	Yes
Material of patch panel	Steel
Modular plug fitting (RJ 45)	Individual ports for loaded
Plug insertion durability	≥ 750 mating cycles"
Holder for connector / module	Yes
Dust protection for information outlet	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 50: CAT 6 Patch Panel (8 PORTS LOADED)	
CAT 6 patch Panel conforming to ANSI/ TIA/ EIA-568 C.2 latest or ISO/IEC:11801 latest	Yes
Patch panel suitability for	CAT 6 UTP/STP/FTP
Height of patch panel	1 U
No. of ports (RJ 45)	08 Ports Loaded
Cable Management (Rear side)	With
Applications: 0BASE-T, 100BASE-TX Fast Ethernet, 1000BASE-T (IEEE802.3) , 100VG-AnyLAN (IEEE802.12), 250 MHz Broadband Video, Voice, T1, ISDN, 155/ 622 Mbps ATM , Power over Ethernet (POE, POE+, 4 PPOE)	Yes
Material of patch panel	Steel
Modular plug fitting (RJ 45)	Individual ports for loaded
Plug insertion durability	≥ 750 mating cycles"
Holder for connector / module	Yes
Dust protection for information outlet	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 51: Cat 6 UTP Patch Cord (2 mtrs)	
Cat 6 patch cord conforming to ANSI/ TIA/ EIA-568 C.2 or ISO/IEC:11801 latest	Yes
Patch cord type	CAT6 U/UTP
Conductor diameter	23 to 26 AWG
Length of Patch cord (Mtrs)	2
Applications: 0BASE-T, 100BASE-TX Fast Ethernet, 1000BASE-T (IEEE802.3) , 100VG-AnyLAN (IEEE802.12), 250 MHz Broadband Video, Voice, T1, ISDN, 155/ 622 Mbps ATM , Power over Ethernet (POE, POE+, 4 PPOE)	Yes
Termination type / Connection type	Insulation Piercing Connection (IPC)
Modular plug	RJ45
Plug insertion durability	≥ 750 mating cycles"
Conductor Material	Stranded copper
Conductor Insulation Material	Polyethylene
Cable jacket material	Low Smoke zero halogen (LSZH)
Operating temperature range	0 deg.C to +55 deg.C

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 52: Cat 6 UTP Patch Cord (1 mtrs)	
Cat 6 patch cord conforming to ANSI/ TIA/ EIA-568 C.2 or ISO/IEC:11801 latest	Yes
Patch cord type	CAT6 U/UTP
Conductor diameter	23 to 26 AWG
Length of Patch cord (Mtrs)	1
Applications: 0BASE-T, 100BASE-TX Fast Ethernet, 1000BASE-T (IEEE802.3) , 100VG-AnyLAN (IEEE802.12), 250 MHz Broadband Video, Voice, T1, ISDN, 155/ 622 Mbps ATM , Power over Ethernet (POE, POE+, 4 PPOE)	Yes
Termination type / Connection type	Insulation Piercing Connection (IPC)
Modular plug	RJ45
Plug insertion durability	≥ 750 mating cycles"
Conductor Materail	Stranded copper
Conductor Insulation Material	Polyethylene
Cable jacket material	Low Smoke zero halogen (LSZH)
Operating temperature range	0 deg.C to +55 deg.C

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 53: 24 port Fully Loaded OFC LIU	
Fiber optic LIU should include with LIU Box itself, Adapter Panel and Adapters as per requirement.	Yes
Have sufficient slots for accommodate Simplex/duplex 24 number SC adapters individually.	Yes
Should be 19 inch rack mountable	Yes
Aluminum base material for light mounting.	Yes
Should have Splice Tray & Cable Spool provision inside LIU	Yes
Accessory kit consists of cable ties; mounting ear screw earthling and spiral wrap tube.	Yes
Panel cover should be slide out for easy maintenance	Yes
Removable Rear & Front cover for better access to interior of LIU.	Yes
Should have Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers.	Yes
Should capable of storing up to 3 meters of 900 μ m tight buffered fiber per adapter	Yes
Adapter Plate made from Cold rolled steel materials.	Yes
Adapter Plate Suitable for SC adapters	Yes
All SC adaptors should be Simplex type. Adapters should have compact design & high precision, which perform well under various circumstances & maintain good plug retention strength.	Yes
SC adaptors Should have TIA/EIA/IEC compliance.	Yes
The sleeves are basically recommended zirconia split type, the phosphor bronze split	Yes
Insertion Loss should be ≤ 0.20 dB for Zirconia Sleeve	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 54: 12 port Fully Loaded OFC LIU	
Fiber optic LIU should include with LIU Box itself, Adapter Panel and Adapters as per requirement.	Yes
Have sufficient slots for accommodate Simplex/duplex 12 number SC adapters individually.	Yes
Should be 19 inch rack mountable	Yes
Aluminum base material for light mounting.	Yes
Should have Splice Tray & Cable Spool provision inside LIU	Yes
Accessory kit consists of cable ties; mounting ear screw earthling and spiral wrap tube.	Yes
Panel cover should be slide out for easy maintenance	Yes
Removable Rear & Front cover for better access to interior of LIU.	Yes
Should have Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers.	Yes
Should capable of storing up to 3 meters of 900 μ m tight buffered fiber per adapter	Yes
Adapter Plate made from Cold rolled steel materials.	Yes
Adapter Plate Suitable for SC adapters	Yes
All SC adaptors should be Simplex type. Adapters should have compact design & high precision, which perform well under various circumstances & maintain good plug retention strength.	Yes
SC adaptors Should have TIA/EIA and IEC compliance.	Yes
The sleeves are basically recommended zirconia split type, the phosphor bronze split	Yes
Insertion Loss should be ≤ 0.20 dB for Zirconia Sleeve	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 55: 06 port Fully Loaded OFC LIU	
Fiber optic LIU should include with LIU Box itself, Adapter Panel and Adapters as per requirement.	Yes
Have sufficient slots for accommodate Simplex/duplex 06 number SC adapters individually.	Yes
Should be 19 inch rack mountable	Yes
Aluminum base material for light mounting.	Yes
Should have Splice Tray & Cable Spool provision inside LIU	Yes
Accessory kit consists of cable ties; mounting ear screw earthling and spiral wrap tube.	Yes
Panel cover should be slide out for easy maintenance	Yes
Removable Rear & Front cover for better access to interior of LIU.	Yes
Should have Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers.	Yes
Should capable of storing up to 3 meters of 900 μ m tight buffered fiber per adapter	Yes
Adapter Plate made from Cold rolled steel materials.	Yes
Adapter Plate Suitable for SC adapters	Yes
All SC adaptors should be Simplex type. Adapters should have compact design & high precision, which perform well under various circumstances & maintain good plug retention strength.	Yes
SC adaptors Should have TIA/EIA and IEC compliance.	Yes
The sleeves are basically recommended zirconia split type, the phosphor bronze split	Yes
Insertion Loss should be ≤ 0.20 dB for Zirconia Sleeve	Yes

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 56: OFC Patch Cord - 3 meter duplex single mode	
Connector Type	SC-SC/As per requirement
Cable Type	LSZH
Cable Type	3.0mm duplex Single mode
Cable Length	3 Meter
Insertion Loss - Typical	≤ 0.2 dB, Max. 0.3dB
Return Loss	60dB
Connector Ferrule	Ceramic
Apex Offset	$< 50\mu$ m
Fiber Height	± 100 nm

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 57: OFC Pig Tails single mode	
9/125 um Single Mode Fibre	Yes
Length 1m- 2m (as required for healthy cable management)	Yes
Compatible for fusion or mechanical splicing	Yes
Insertion Loss	0.35 db (max)
Operating Temp.	0 - 55 degree C
Type of Connector	SC/LC as required

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 58: IP 67 Metal Enclosure with pole mounting kit	
Size of Enclosure	6U
Depth of the Enclosure (mm)	Upto 500
Basic Frame	Steel
Construction	Welded
Top & Bottom Cover	Welded to Frame, Field Cable entry exit from bottom
Front Door	Lockable Steel Door
Mounting Angle	19" Mounting angles made of formed steel
Std. Equipment Mounting	ISO Standard Slots
Standard Finish	Powder Coated
Rack Standard	Conforms to IP67 standard
Static Load	25 kgs
3 Socket PDU 5Amp	3 Nos.
Rigid frame that can be fixed to the pole	Yes
Front Door with Filter, Louver & T type Lock	Yes
90CFM, 230V AC Fan	2 Nos
front door Self-adhesive thermal foam from inside	Yes
Door Hinges	2 Nos
Gasket	As per IP67 Standard
Pole Mounting Brackets at rear side	2 or more Nos
Standard Finish	Powder Coated
Minimum Operating Temperature	0 degree Celsius
Maximum Operating Temperature	60 degree Celsius

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 59: 24 U Floor Mount rack	
Type of Server Racks	Rack Enclosures
Size of Server Rack Enclosure	24U
Depth of the Rack (mm)	Upto 800
Mount Type	Free-Standing
Front glass Door	Yes
Type of glass used in front door	Transparent Toughened Glass
Material used for rear door	SPCC Quality Cold Rolled Steel Metal
Both rear and front doors with Perforation	Yes
Side Panels With Key Locks and Slam Latch	Yes
Secure Locks	Available
Rear split door design	Yes
Keyboard Tray Sliding and Rotary	Yes
Shelf For CRT/TFT Display	Yes
Cable channel in rear side for cable management	Yes
Support cable entry from top or bottom	Yes
Vertical & Horizontal managers	Yes
Numbers of Rack trays	3
Number of Fan For Heat dissipation (nos)	4
Number of fan trays	2
Heavy Duty Caster Wheels	Yes
Front Break Options	Available
Dust or water resistant	Yes
PDU Power Strips	Available

Note - Higher (Better) Specification of any parameter shall be acceptable.

Item No. 60: 9U Wall mount Rack	
Type of Server Racks	Rack Enclosures
Size of Server Rack Enclosure	9U
Depth of the Rack (mm)	Upto 600
Mount Type	Wall mount
Front glass Door	Yes
Type of glass used in front door	Transparent Toughened Glass
Material used for rear door	CRCA Steel
Side Panels With Key Locks and Slam Latch	Yes
Secure Locks	Available
Rear split door design	No
Shelf For CRT/TFT Display	Yes
Support cable entry from top or bottom	Yes
Vertical & Horizontal managers	Yes
Numbers of Rack trays	2
Number of Fan For Heat dissipation (nos)	2
Swing-Out Racks	Available
Dust or water resistant	Yes
PDU Power Strips	Available

Note - Higher (Better) Specification of any parameter shall be acceptable.

TECHNICAL COMPLIANCE SHEET - 1

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 1
2. Description of Item: 2 MP IP Camera, Dome Type, min. 30 m IR
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Camera Housing IP Camera Image Sensor Type Image Sensor Size Camera Image Sensing capacity (Picture Mode) Resolution Day/Night Capable IR illumination Range(mtr) Lens Type Focal Length(mm) Focus Mode Frame Rate (fps) Video Compression Video Streaming Audio Support Audio Compression Audio Streaming Number of Audio Input Channel Number of Audio Output Channel External Microphone Support Alarm Support Number of Alarm Digital Input Number of Alarm Relay Output Pre/Post Alarm Buffer Multi Level User ID/Password IP Address Filtering Encrypted Data Transmission Minimum Illumination for Capturing Color Image Electronic Shutter Speed(sec) WDR (Wide Dynamic Range)	DOME CAMERA Yes CMOS 0.357 inch 2 MP Full HD (1920 x 1080 Pixel) or higher Yes 30 Motorized Varifocal 2.8 - 12 Auto, Manual 25 or more H.265+ or better Triple compressed stream Yes G.726/G.711 Two-Way 1 1 Yes Yes 1 1 Yes Yes Yes Yes Yes 0.01 lux 1/3 to 1/10000 120 dB or better	

SNR (Signal to Noise Ratio)	50-60 or better	
Auto Exposure	Auto Level Control,Electronic Level Control	
White Balance (Indoor/Out door/ Manual Selectable)	Yes	
Auto Gain Control (On/Off selectable)	Yes	
Back Light Compensation	Yes	
Remote Administration (Remote configuration and status using web based tool)	Yes	
Remote System Update Over Network	Yes	
PC Client (PC application client with a channel recording feature support)	Yes	
Web Client (Viewer through HTTP system configuration)	Yes	
On Screen Display in English	Yes	
ONVIF Support	Yes	
Privacy Zones	4	
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP, FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,U PnP,QoS,TCP/IP	
IP Support	Static,Dynamic	
Signal Processing	Digital Signal Process	
IPv6 ready	Yes	
On Board SD Card Support	Yes	
SD Card Memory(GB)	128 or higher (To be provided with the Camera)	
Installation Type	Indoor, Outdoor	
Protection	IP67	
Vandal Resistant Housing	Yes	
IK rating	IK 10	
Mounting bracket	Ceiling, Wall, Pole Mounted	
Power Input	PoE	
Operating Temperature Range	0 to +50 deg C or better	
Relative Humidity Non Condensing (%)	95 or higher	
Supply of Compatible drivers and software included	Yes	
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 2

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 2
2. Description of Item: 2 MP IP Camera, Bullet Type, min. 50 m IR
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Camera Housing	BULLET CAMERA	
	IP Camera	Yes	
	Image Sensor Type	CMOS	
	Image Sensor Size	0.357 inch	
	Camera Image Sensing capacity (Picture Mode)	2MP	
	Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Day/Night Capable	Yes	
	IR illumination Range(mtr)	50	
	Lens Type	Motorized Varifocal	
	Focal Length(mm)	2.8 - 12	
	Focus Mode	Auto, Manual	
	Frame Rate (fps)	25 or more	
	Video Compression	H.265+ or better	
	Video Streaming	Triple compressed stream	
	Optical Zoom	12X	
	Digital Zoom	16X	
	Audio Support	Yes	
	Audio Compression	G.726/G.711	
	Audio Streaming	Two-Way	
	Number of Audio Input Channel	1	
	Number of Audio Output Channel	1	
	External Microphone Support	Yes	
	Alarm Support	Yes	
	Number of Alarm Digital Input	1	
	Number of Alarm Relay Output	1	
	Pre/Post Alarm Buffer	Yes	
	Multi Level User ID/Password	Yes	
	IP Address Filtering	Yes	
	Encrypted Data Transmission	HTTPS (SSL/TSL)	
	Minimum Illumination for Capturing	0.01 lux	
	Color Image		
	Electronic Shutter Speed(sec)	1/3 to 1/10000	

WDR (Wide Dynamic Range)	120 dB or better	
SNR (Signal to Noise Ratio)	50-60 or better	
Auto Exposure	Auto Level Control, Electronic Level Control	
White Balance (Indoor/Out door/Manual Selectable)	Yes	
Auto Gain Control (On/Off selectable)	Yes	
Back Light Compensation	Yes	
Remote Administration (Remote configuration and status using web based tool)	Yes	
Remote System Update Over Network	Yes	
PC Client (PC application client with a channel recording feature support)	Yes	
Web Client (Viewer through HTTP system configuration)	Yes	
On Screen Display in English	Yes	
ONVIF Support	Yes	
Privacy Zones	4	
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP	
IP Support	Static, Dynamic	
Signal Processing	Digital Signal Process	
IPv6 ready	Yes	
On Board SD Card Support	Yes	
SD Card Memory(GB)	128 or higher (To be provided with the Camera)	
Simultaneous Connections	20 or more	
Installation Type	Outdoor	
Protection	IP67	
Vandal Resistant Housing	Yes	
IK rating	IK 10	
Mounting bracket	Pole Mounted, Wall Mounted	
Power Input	PoE	
Operating Temperature Range	0 to +55 deg C or better	
Relative Humidity Non Condensing (%)	95 or higher	
Supply of Compatible drivers and software included	Yes	
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 3

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 3
2. Description of Item: 2MP IP Camera, PTZ Type, min. 150 m IR
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Camera Housing	PTZ CAMERA	
	IP Camera	Yes	
	Image Sensor Type	CMOS	
	Image Sensor Size	0.357 inch	
	Camera Image Sensing capacity (Picture Mode)	2MP	
	Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Day/Night Capable	Yes	
	IR illumination Range(mtr)	150	
	Lens Type	Motorized Varifocal	
	Focal Length(mm)	4.5 - 162	
	Iris Control	Yes	
	Focus Mode	Auto, Manual	
	Frame Rate (fps)	25 or more	
	Video Compression	H.265+ or better	
	Video Streaming	Triple compressed stream	
	Optical Zoom	36X	
	Digital Zoom	16X	
	Audio Support	Yes	
	Audio Compression	G.726/G.711	
	Audio Streaming	Two-Way	
	Number of Audio Input Channel	1	
	Number of Audio Output Channel	1	
	External Microphone Support	Yes	
	Alarm Support	Yes	
	Number of Alarm Digital Input	1	
	Number of Alarm Relay Output	1	
	Pre/Post Alarm Buffer	Yes	
	Multi Level User ID/Password	Yes	
	IP Address Filtering	Yes	
	Encrypted Data Transmission	HTTPS (SSL/TSL)	
	Minimum Illumination for Capturing Color Image	0.01 lux	

Electronic Shutter Speed(sec)	1/3 to 1/10000	
WDR (Wide Dynamic Range)	120 dB or better	
SNR (Signal to Noise Ratio)	50-60 or better	
Auto Exposure	Auto Level Control,Electronic Level Control	
White Balance (Indoor/Out door/Manual Selectable)	Yes	
Auto Gain Control (On/Off selectable)	Yes	
Back Light Compensation	Yes	
Remote Administration (Remote configuration and status using web based tool)	Yes	
Remote System Update Over Network	Yes	
PC Client (PC application client with a channel recording feature support)	Yes	
Web Client (Viewer through HTTP system configuration)	Yes	
On Screen Display in English	Yes	
ONVIF Support	Yes	
Privacy Zones	8	
Supported Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP	
IP Support	Static, Dynamic	
Signal Processing	Digital Signal Process	
IPv6 ready	Yes	
On Board SD Card Support	Yes	
SD Card Memory(GB)	128 or higher (To be provided with the Camera)	
Simultaneous Connections	20 or more	
Installation Type	Outdoor	
Protection	IP67	
Vandal Resistant Housing	Yes	
IK rating	IK 10	
Mounting bracket	Pole Mounted	
Power Input	PoE	
Operating Temperature Range	0 to +55 deg C or better	
Relative Humidity Non Condensing (%)	95 or higher	
Supply of Compatible drivers and software included	Yes	
BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 4

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 4
2. Description of Item: NVR 128 Channel with inbuilt 128 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	128	
	Number of Video Output Channels	2	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	64	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Throughput (Mbps)	1024	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	

Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	8
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection, Motion Detection, Crossing line, Intrusion Detection, Face Recognition, Object counting, Tampering, Object Removal, Number Plate Recognition, Video Loss, Text-IN, Digital Zoom 12X and more
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	4 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event, E-mail, SMS

Network transmission Speed	Synchronous Playback IN full HD, Constant Bit Rate (CBR), Variable Bit Rate (VBR)	
Search	Date, Time, Event, Log, Motion, Bookmarks, Time- Lapse, Event, Thumbnail, Motion, Text-In	
Bookmarks	Forward, Backward, Adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat	
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors	
Total Management	Group add, Delete, Group management, Remote Data Export	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Internal Hard Drive Interface	SATA III	
Number of Hard Disks (inclusive in the scope of supply)	16	
Storage Capacity of each Hard Disk (TB)	8	
Total Storage Capacity(TB)	128	
Redundancy Option	RAID 10	
Redundant Power Supply	Yes	
Minimum Operating Temperature	0 degree Celsius	
Maximum Operating Temperature	55 degree Celsius	
Relative Humidity Non Condensing at 40 deg C	95 percent	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
List of Items and Quantity of each item included in the offer	MOUSE, ADAPTER, HDMI Cable, VGA Cable, other accessories as required	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 5

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 5
2. Description of Item: NVR 64 Channel with inbuilt 64 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	64	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	64	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Through put (Mbps)	512	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	
	Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP	
Multi Level User ID / Password	Yes		
Alarm Support	Yes		
Alarm Input	16		
Alarm Output	4		

Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows / Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,U PnP,QoS,TCP/IP
Supported Interface Physical Layer of Ethernet	Ethernet,HDMI,VGA,USB,RS 232,RS-485 10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time - Lapse,Event,Thumbnail,Motion,Text-In Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat
Bookmarks	Multi Monitor Support,Video Window,Electronic Map on two separate monitors
Page preview	Group add,Delete,Group management,Remote Data Export
Total Management	Add,Edit,Delete,Use Master account,Use Specific account
Camera	
Internal Hard Drive Interface	SATA III
Number of Hard Disks (inclusive in the	8

	scope of supply)	
	Storage Capacity of each Hard Disk (TB)	8
	Total Storage Capacity(TB)	64
	Redundancy Option	RAID 10
	Redundant Power Supply	Yes
	Minimum Operating Temperature	0 degree Celsius
	Maximum Operating Temperature	55 degree Celsius
	Relative Humidity Non Condensing at 40 deg C	95 percent
	BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes
	List of Items and Quantity of each item included in the offer	MOUSE, ADAPTER, HDMI Cable, VGA Cable, other accessories as required
	Note - Higher (Better) Specification of any parameter shall be acceptable	

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TECHNICAL COMPLIANCE SHEET - 6

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 6
2. Description of Item: NVR 32 Channel with inbuilt 64 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	32	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	32	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Through put (Mbps)	256	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	

Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP ,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP, UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)

Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat	
Bookmarks	Multi Monitor Support,Video	
Page preview	Window,Electronic Map on two separate monitors	
Total Management	Group add, Delete, Group management, Remote Data Export	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Internal Hard Drive Interface	SATA III	
Number of Hard Disks (inclusive in the scope of supply)	8	
Storage Capacity of each Hard Disk (TB)	8	
Total Storage Capacity(TB)	64	
Redundancy Option	RAID 10	
Redundant Power Supply	Yes	
Minimum Operating Temperature	0 degree Celsius	
Maximum Operating Temperature	55 degree Celsius	
Relative Humidity Non Condensing at 40 deg C	95 percent	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 7

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 7
2. Description of Item: NVR 32 Channel with inbuilt 32 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	32	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	32	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Through put (Mbps)	256	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	

Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP ,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP, UPnP,QoS,TCP/IP
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	4
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)

Search	Date,Time,Event,Log,Motion,Bookmarks,Time-Lapse,Event,Thumbnail,Motion,Text-In Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat	
Bookmarks	Multi Monitor Support,Video	
Page preview	Window,Electronic Map on two separate monitors	
Total Management	Group add,Delete,Group management,Remote Data Export	
Camera	Add,Edit,Delete,Use Master account,Use Specific account	
Internal Hard Drive Interface	SATA III	
Number of Hard Disks (inclusive in the scope of supply)	4	
Storage Capacity of each Hard Disk (TB)	8	
Total Storage Capacity(TB)	32	
Redundancy Option	RAID 10	
Redundant Power Supply	Yes	
Minimum Operating Temperature	0 degree Celsius	
Maximum Operating Temperature	55 degree Celsius	
Relative Humidity Non Condensing at 40 deg C	95 percent	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 8

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 8
2. Description of Item: NVR 16 Channel with inbuilt 16 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	16	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	16	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Through put (Mbps)	128	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	

Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	16
Alarm Output	4
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection,Motion Detection,Crossing line,Intrusion Detection,Face Recognition,Object counting,Tampering,Object Removal,Number Plate Recognition,Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP,UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	2
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event,E-mail,SMS
Network transmission Speed	Synchronous Playback IN full HD,Constant Bit Rate (CBR),Variable Bit Rate (VBR)
Search	Date,Time,Event,Log,Motion,Bookmarks,Time-

	Lapse,Event,Thumbnail,Motion,Text-In Forward,Backward,adjustable playback speed,Full Screen,Next Camera,Previous Camera,Repeat	
Bookmarks		
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors	
Total Management	Group add, Delete, Group management, Remote Data Export	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Internal Hard Drive Interface	SATA III	
Number of Hard Disks (inclusive in the scope of supply)	2	
Storage Capacity of each Hard Disk (TB)	8	
Total Storage Capacity(TB)	16	
Redundancy Option	RAID 10	
Redundant Power Supply	Yes	
Minimum Operating Temperature	0 degree Celsius	
Maximum Operating Temperature	55 degree Celsius	
Relative Humidity Non Condensing at 40 deg C	95 percent	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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TECHNICAL COMPLIANCE SHEET - 9

(UNDERTAKING TO BE SUBMITTED BY OEM)

REF: NIT NO. _____

DATE _____

TENDER ID: _____

1. Item S. No. of the BOQ: 9
2. Description of Item: NVR 8 Channel with inbuilt 16 TB Storage fully loaded
3. Make and Model of the Item: _____
4. Name of Bidder: _____

S. No	Required Technical Specification (As per NIT, point wise)		Complied (Yes/ No)
1	Type of Recording Device	NVR	
	IP Camera Support	Yes	
	PTZ Camera control Support	Yes	
	Mounting	Rack Mounted	
	Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	
	Number of Video Input Channels	16	
	Recording Resolution	Full HD (1920 x 1080 Pixel) or higher	
	Supported Compression Technique	H.265+	
	Maximum Number of cameras to be viewed on a single display	16	
	Total number of simultaneous local views	4	
	Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	16	
	Recording Speed for all channels (fps)	25 or higher	
	Minimum Through put (Mbps)	64	
	Display Image Rate	Real time per channel	
	Audio Support	Yes	
	Audio Input	1	
	Audio Output	1	
	Audio Compression	G.726,G.711	
	Minimum Number of Simultaneous Channels for Two-way Audio Support	1	

Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL),WPA,WPA2,TKIP
Multi Level User ID / Password	Yes
Alarm Support	Yes
Alarm Input	4
Alarm Output	1
Pre / Post Alarm Buffer	Yes
Video Content Analytics (VCA)	Trip-wire Detection, Motion Detection, Crossing line, Intrusion Detection, Face Recognition, Object counting, Tampering, Object Removal, Number Plate Recognition, Video Loss
Operating System	Windows/ Linux
Antivirus	Installed in the NVR, with Cyber Threat Protection
Supported Network Protocols	UDP,SNMP,IGMP,DHCP,RTP,RSTP,HTTP,SMTP ,FTP,ICMP,HTTPS,DNS,DDNS,RTSP,RTCP,NTP, UPnP,QoS,TCP/IP
Supported Interface	Ethernet,HDMI,VGA,USB,RS 232,RS-485
Physical Layer of Ethernet	10/100/1000 Base TX
Number of Ethernet Ports	2 (With capability to connect on Public and Private Network simultaneously)
Number of HDMI Ports	2
Number of VGA Ports	1
Number of USB Ports	2
Number of Serial Ports	1
Video Loop Support	Yes
Video Recorder supports recording on NAS Directly	Yes
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes
System Update (Remote System Update Over Network Using Web Client)	Yes
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes
Web Client (Viewer through HTTP system configuration)	Yes
On Screen Display (In English)	Yes
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes
Recording schedule support	Yes
Bandwidth Control	Yes
Camera Notification	Spot (POP up Window) on Event, E-mail, SMS
Network transmission Speed	Synchronous Playback IN full HD, Constant Bit Rate (CBR),Variable Bit Rate (VBR)

Search	Date, Time, Event, Log, Motion, Bookmarks, Time- Lapse, Event, Thumbnail, Motion, Text-In	
Bookmarks	Forward, Backward, adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat	
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors	
Total Management	Group add, Delete, Group management, Remote Data Export	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Internal Hard Drive Interface	SATA III	
Number of Hard Disks (inclusive in the scope of supply)	2	
Storage Capacity of each Hard Disk (TB)	8	
Total Storage Capacity(TB)	16	
Redundancy Option	RAID 10	
Redundant Power Supply	Yes	
Minimum Operating Temperature	0 degree Celsius	
Maximum Operating Temperature	55 degree Celsius	
Relative Humidity Non Condensing at 40 deg C	95 percent	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
List of Items and Quantity of each item included in the offer	MOUSE,ADAPTER,HDMI Cable, VGA Cable, other accessories as required	
Note - Higher (Better) Specification of any parameter shall be acceptable		

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Signature Not Verified

Digitally signed by K S ARULMARAI SELVAN
Date: 2020.10.12 19:45:48 IST
Location: Coal India Limited-CIL