



**Bihar Urban Infrastructure Development Corporation Ltd.  
(A Govt. Of Bihar Undertaking)**

## **Bid Document**

**For**

Supply, Construction, Fabrication and Installation of Traffic Light System and Control Room including all Associated Civil, Mechanical, Electrical Works with Three (3) Years Annual Maintenance Contract at Sasaram

**Estimated Cost- Rs. 6,54,92,157.00**

**June, 2022**



# Bihar Urban Infrastructure Development Corporation Ltd.

A Government of Bihar Undertaking

## NOTICE INVITING RE-TENDER

for

Supply, Construction, Fabrication, Installation and maintenance of Traffic Light System and Control room including all associates Civil, Mechanical, Electrical works & annual maintenance contract (AMC) for 3 years in Sasaram Town.

RFP No: BUIDCo/Yo-1751/20-22

Date: 06.06.2022

(Through e-procurement mode only – [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in))

Sl. No	Name of work	Estimated Cost	Bid Processing fees (Beltron)	Bid Document Cost	Bid Security (EMD)	Time of completion
1.	Supply, Construction, Fabrication, Installation and maintenance of Traffic Light System and Control room including all associates Civil, Mechanical, Electrical works & annual maintenance contract (AMC) for 3 years in Sasaram Town.	Rs. 7,04,21,674.00	Rs. 17,700.00	Rs. 20,000.00	Rs. 14,08,500.00	6 Months

1. Date of downloading of bid document : From **21.06.2022 to 09.07.2022** up to **03:00 PM** Through website **[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)**
2. Place & Date of Pre-bid meeting : Date **01.07.2022** Time **03:00 PM**. BUIDCo. Near Rajapur Pul, West Boring Canal Road, Patna-800001
3. Last date and time for receipt (upload) of bids : Date **11.07.2022** up to **03:00 PM** Through website **[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)**
4. Last Date and time for Submission of hard copy of bid : Date **12.07.2022** up to **03:00 PM**
5. Time and date of opening technical bids : Date **12.07.2022** Time **03:30 PM**
6. Time and date of opening of financial bids : To be communicated later on
7. Place of opening of bid : Through website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)
8. Period of bids validity : 120 days
9. Officer inviting bids : Chief Engineer, Planning, Design & Monitoring, BUIDCO
10. For participating in E – tendering process, the contractor shall have to get themselves registered to get user ID, Password and Digital signature. This will enable them to access the website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) and download/participate in E – tender. All tender queries related to this tender shall be communicated at **[cebuidco@gmail.com](mailto:cebuidco@gmail.com)**, **[pdhqbuidco@gmail.com](mailto:pdhqbuidco@gmail.com)**
11. (i) Bid processing fees to be paid through online mode i.e. Internet payment gateway (Credit/Debit Card), Net Banking, NEFT/RTGS.  
(ii) Bids along with necessary online payments must be submitted through e-procurement portal **[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)** before the date & time specified in the NIT. The department does not take any responsibility for the delay/Non availability of internet connection, Network Traffic/Holidays or any other reasons".
12. The tender documents can be obtained through website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) and [www.buidco.in](http://www.buidco.in)
13. Bid document cost should be paid by draft of any scheduled banks payable in favour of Managing Director, Bihar Urban Infrastructure Development Corporation Ltd, Original Bank Draft will have to be submitted in the office of Managing Director, Bihar Urban Infrastructure Development Corporation Ltd, Near Rajapur Pul, West Boring Canal Road, Patna-800001 on or before **03:00 PM on 12.07.2022** failing which the tender will be rejected.
14. Earnest Money should be in the form of Bank Guarantee of any scheduled banks payable in favour of Managing Director, Bihar Urban Infrastructure Development Corporation Ltd, on or before **03:00 PM on 12.07.2022** failing which the tender will be rejected. The Estimated Cost may increase or decrease.  
All the information/corrigendum/addendum related to the project shall be published on the website **[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)** and
15. **[www.buidco.in](http://www.buidco.in)**. The authority shall have the right to reject the bid partially or fully without assigning any reason what so ever.
16. Estimate amount may vary. So EMD will be deposited as per Technical Sheet uploaded on the website **[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)**
17. Further details of works can be obtained from the office of Chief Engineer, Planning, Design & Monitoring For clarification, regarding the E –tendering process, please contact e-procurement, Helpdesk, first Floor, M/22, Bank of India Building, Road No-25, Sri Krishna Nagar, Patna – 800 001, Telephone no. 0612-2523006, Mobile No –07542028164.

Chief Engineer,  
Planning, Design & Monitoring,  
BUIDCo, Patna

Bihar Urban Infrastructure Development Corporation, Near Rajapur Pul, West Boring Canal Road, Patna-800001  
(Tel: 0612-2558412, Email: [mdbuidco@gmail.com](mailto:mdbuidco@gmail.com))

**SECTION 1  
INSTRUCTION TO BIDDERS  
(ITB)**

**Section 1: Instructions to Bidders**

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## **A. GENERAL**

### **1. Scope of Bid**

- 1.1 The Employer (named in Appendix to ITB) invites bids for the construction of works (as defined in these documents and referred to as "the works") detailed in the table given in NIT. The bidders may submit bids for any one group or all groups of the works detailed in the table given in NIT.
- 1.2 The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.
- 1.3 Throughout these bidding documents, the terms 'bid' and 'tender' and their derivatives (bidder / tenderer, bid/tender, bidding/tendering, etc.) are synonymous.
- 1.4 Regarding PERCENTAGE RATE OR ITEM RATE, tender shall be as per Appendix to ITB and accordingly the non-relevant sections of this document must be crossed.

### **2. Sources of Funds**

- 2.1 The expenditure on this project will be met as decided by the Competent Authority.

### **3 Eligible Bidders**

- 3.1 This *Invitation for Bids* is open to all bidders.
- 3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a statement that the Bidder is neither associated, nor has been associated, directly or indirectly, with the Consultant; Engineer-in-Charge or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Executive Engineer for the Contract or involved in supervision of the contract. A firm that has been engaged by BUIDCo to provide consulting services for the preparation or supervision of the works, and any of its affiliates shall not be eligible to bid.
- 3.3 Bidders shall not be under a declaration of ineligibility for delay, failure or corrupt and fraudulent practices by any of the State Govt. or Central Govt. or Public Undertaking or any Autonomous Body.

### **4. Qualification of the Bidder**

- 4.1 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts indicating mile stones to complete the project on time.
- 4.2 All bidders shall also furnish the following information in Section 2.
  - (i) Evidence of access to or availability of credit facilities (minimum 10% of estimated cost) certified by the bankers.
  - (ii) Undertaking that bidder would be able to invest a minimum of cost up to 25% of the contract value of work, during implementation of contract.
  - (iii) Proposals, if any, for sub-contracting of elements of work, costing more than 10% of the bid amount.
  - (iv) Power of attorney, if any.
- 4.3 If the Employer has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 2:
  - (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;
  - (b) total monetary value of construction work performed for each of the last five years;
  - (c) experience in works of a similar nature and size for each of the last five years, and details of works underway or contractually committed; and clients who may be contacted for further information on those contracts;
  - (d) major items of construction equipment proposed to carry out the Contract or evidence of arrangement; of possessing them on hire/ lease/ buying as defined therein;
  - (e) qualifications and experience of key site management and technical personnel proposed for contract;

- (f) reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five years;
- (g) evidence of access to line(s) of credit and availability of other financial resources facilities (10% of contract value), certified by the Bankers (Issued after date of NIT published)
- (h) Undertaking that the bidder will be able to invest minimum cash up to 25% of contract value of work, during implementation of work.
- (i) authority to seek references from the Bidder's bankers;
- (j) information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned and dispute amount;
- (k) proposals for subcontracting components of the Works amounting to more than 10% of the Bid Price (for each, the qualifications and experience of the identified sub-contractor in the relevant field should be annexed);
- (l) the proposed methodology and programme of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

**4.4** Eligibility for Joint Venture:- Bids from Joint ventures are acceptable for projects costing Rs. 10 crores or more. Eligibility for Joint Venture will be as per Road Construction department, Government of Bihar, Letter no. 02/2010-8131 (S) w dated 24-07-2012.

**4.5 A.To qualify for award of the contract, each bidder in its name should have in the last five years as referred to in Appendix :-**

(a) Achieved in any one year a minimum annual financial turnover (in all classes of information technology and electronics traffic light works only) volume of work at least the amount equal to the 50% (fifty per cent) estimated cost of works for which bid has been invited. The turnover will be indexed at the rate of 8% for a year.

(b) Satisfactorily completed as a prime contractor (or as a nominated subcontractor, where the subcontract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied) at least one similar work of value not less than amount indicated in Appendix (usually not less than 10% (ten per cent) of estimated value of contract.

(c) Executed in any one year, the minimum quantities of the following items of work as indicated:

- i. ATC Controller - 3 nos.,
- ii. Supply of galvanised iron class B Traffic signal St.Pole-6 mtr. Height - 12nos.,
- iii. Supply of galvanised iron class B Traffic signal cantilever pole --10no.
- iv. HDD trenching by trenchless technology of 120mm for laying of DWC HDPE 120MM pipe-500mtr.
- v. PTZ / RLVD Camera - 3 Nos.,
- vi. FIX / ANPR / SVD Camara-10 Nos.,
- vii. Detection Camra-10 No

**B. Each bidder should further demonstrate:**

- (a) Availability (either owned or leased or by procurement against mobilization advances) of the following key and critical equipment for this work:

Based on the studies, carried out by the Engineer the minimum suggested major equipment to attain the completion of works in accordance with the prescribed construction schedule are shown in the Annexure-I.

Availability of the testing equipment required for establishing field laboratory to perform mandatory tests e.g. those stated in Appendix to ITB.

The bidders should, however, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with layout and necessary drawings and calculations (detailed) as stated in clause 4.3(i) above to allow BUIDCo to review their proposals. The numbers, types and capacities of each plant/equipment shall be shown in the proposals along with the cycle time for each operation for the given production capacity to match the requirements.

- (b) Availability for this work of personnel with adequate experience as required; as per Annexure-II.
- (c) Liquid assets and/or availability of credit facilities of no less than amount indicated in Appendix to ITB

*(Credit lines/letter of credit/certificates from Banks for meeting the funds requirement etc.- usually the equivalent of the estimated cash flow for 3 months in peak construction period.)*

**C. To qualify for a group of contracts made up of this and other contracts for which bids are invited in the IFB, the bidder must demonstrate having experience and resources sufficient to meet the aggregate of the qualifying criteria for the individual groups.**

- 4.6 Sub-contractors' experience and resources shall not be taken into account in determining the bidder's compliance with the qualifying criteria. Except to the extent stated in 4.5(A) above.

- 4.7 Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under :

Assessed Available BID CAPACITY = $(A*N*3-B)$

Where

A = Maximum value of civil engineering /Construction works executed in any one year during the last five years (updated to the price level of the year indicated in Appendix) taking into account the completed as well as works in progress.

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

B = Value (updated to the price level of the year indicated in Appendix) of existing commitments and on-going works to be completed during the next 2.5 Years (period of completion of the works for which bids are invited)

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

- 4.8 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- have record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc; and/or
- participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.

## **5. One Bid per Bidder**

- 5.1 Each bidder shall submit only one bid for any work or one package or group. A bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

## **6. Cost of Bidding**

- 6.1 The bidder shall bear all costs associated with the preparation and submission of his Bid and BUIDCo will in no case be responsible and liable for those costs.

In case of cancellation of tender, cost of bidding document will be charged each time.

## **7. Site Visit**

- 7.1 The Bidder, at the Bidder's own responsibility and risk must visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.2. Tender documents are not transferable.

## B. BIDDING DOCUMENTS

### 8. Content of Bidding Documents

8.1 The set of bidding documents comprises the documents listed below and addendum issued in accordance with Clause 10;

Section	Particulars	Volume No.
	<b>Corrigendum</b>	<b>I</b>
	<b>Notice Inviting Tender</b>	
<b>1</b>	<b>Instructions to Bidders</b>	
<b>2</b>	<b>Qualifications of Bidders</b>	
<b>3</b>	<b>Conditions of Contracts</b>	
<b>4</b>	<b>Contract Data</b>	<b>II</b>
<b>5</b>	<b>Special condition of Contract</b>	
<b>6</b>	<b>Technical Specifications</b>	<b>III</b>
<b>7</b>	<b>Bill of Quantities</b>	
<b>8</b>	<b>Securities and other forms</b>	
<b>9</b>	<b>Drawings</b>	<b>IV</b>
<b>10</b>	<b>Documents to be furnished by bidder</b>	<b>V</b>

8.2 Bidders will have to download each of the volumes I, II, III and IV in compliance to section 2 and completed documents will be uploaded by him as Volume- V in two parts (refer clause 12).

8.3 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, and technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 25 hereof, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

### 9. Clarification of Bid documents

#### 9.1 Pre-bid meeting

9.1.1 The bidder or his official representative is invited to attend a pre-bid meeting which will take place at the address, venue, time and date as indicated in appendix.

9.1.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

9.1.3 The bidder is requested to submit any questions in writing or by fax or through E-Mail to reach BUIDCo not later than one week before the pre-bid meeting.

9.1.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted without delay to all through eproc website. Any modification of the bidding documents listed in Sub-Clause 8.1 which may become necessary as a result of the pre-bid meeting shall be made by BUIDCo exclusively through the issue of an Addendum pursuant to Clause 10 and not through the minutes of the pre-bid meeting. All bidders have to download any addendum from the website. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

9.1.5 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

### 10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, BUIDCo may modify the bidding documents by issuing addendum.

10.2 Any addendum thus issued shall be part of the bidding documents and shall be downloaded by all the bidders.

10.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, BUIDCo may, at its discretion, extend as necessary the deadline for submission of bids, in accordance with Sub-Clause 20.2.



## C.PREPARATION OF BIDS

### 11. Language of the Bid

11.1 All documents relating to the bid shall be in English.

### 12. Documents Comprising the Bid

12.1 The bid to be uploaded by the bidder as Volume V of the bid document (refer Clause 8.1) shall be in two separate parts;

Part I shall be named "Technical Bid" and shall comprise

- (i) Earnest money in the form specified in Section 8
- (ii) Qualification Information and supporting documents as specified in Section- 2
- (iii) Certificates, undertakings, affidavits as specified in Section 2
- (iv) Any other information pursuant to Clause 4.2 of these instructions
- (v) Undertaking that the bid shall remain valid for the period specified in Clause 15.1
- (vi) An affidavit affirming the information he has furnished in the bidding document is correct to the best of his knowledge and belief.

Part II shall be named "Financial Bid" and shall comprise

- (i) Form of Bid as specified in Section 6
  - (ii) Priced Bill of Quantities for items specified in Section 7
- 12.2 Each part will be separately prepared and uploaded on website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) in case of e-bidding.
- 12.3 Following documents, which are not submitted with the bid, will be deemed to be part of the bid.

Section	Particulars	Volume No.
1	Invitation for Bids (IFB)	
2	Instructions to Bidders	Volume I
3	Conditions of Contract	
4	Contract Data	
5	Specifications	Volume II
8	Drawings	Volume IV

### 13. Bid Prices

- 13.1 The contractor shall bid for the whole work as described in Sub-Clause 1.1 based on the priced Bill of Quantities submitted by the Bidder.
- 13.1.1 The bidder shall not adopt the percentage rate method; bidder must adopt item rate method as specified in the appendix to ITB; only the same option is allowed to all the bidders. Percentage rate method requires the bidder to quote a percentage above/below/ at par of the schedule of rates specified in the appendix to ITB. Item rate method requires to quote rates and prices and line item total (both in figures and words) for all items of the Works described in the Bill of Quantities along with total bid price both in figure and words. Items for which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.
- 13.1.2 All duties, taxes, and other levies payable by the contractor under the contract or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.
- 13.2 The rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions clause 10CA & 10CC clause Conditions of Contract.

13.3 The rate should include the cost of all seen and unseen expenditure. No claim, whatsoever, will be entertained due to non-inclusion of any such event necessary for the completion of the item of work and whole work.

#### **14. Currencies of Bid and Payment**

14.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees.

#### **15. Bid Validity**

15.1 Bids shall remain valid for a period not less than 120 days after the deadline date for bid submission specified in Clause 20. A bid valid for a shorter period shall be rejected by the Employer as non-responsive. In case of discrepancy in bid validity period between that given in the undertaking pursuant to Clause 12.1 (v) and the Form of Bid submitted by the bidder, the latter shall be deemed to stand corrected in accordance with the former and the bidder has to provide for any additional security that is required.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable. 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.

#### **16. Bid Security (Earnest Money)**

16.1 The Bidder shall furnish, as part of his Bid, a Bid security in the amount as per NIT for this particular work. This bid security shall be in favour of **MD BUIDCO**. Patna

a. Indian post office term deposit 3 years/5 year, National saving certificate, duly endorsed by the competent postal authority in BIHAR

b. Fixed deposited receipt of a schedule national bank, fixed deposited receipt should be valid for six month after last date of receipt of tender and shall be **pledged in favour of MD , BUIDCO**.

c. Demand Draft of any scheduled national Bank in favour of **MD, BUIDCO** and payable at Patna.

d. Unconditional bank guarantee from any scheduled national bank issued within the state in the format given in Vol. III (If issued from any bank outside state will be converted to any bank within the state before executing the agreement).

16.2 Unconditional bank guarantees (and other instruments having fixed validity) issued as surety for the bid shall be valid for 120 days beyond the validity of the bid.

16.3 Any bid not accompanied by an acceptable Bid Security and not secured as indicated in Sub-Clauses 16.1 and 16.2 above shall be rejected by the Employer as non-responsive.

16.4 The Earnest money of unsuccessful bidders will be returned within 28 days of the end of the bid validity period specified in Sub-Clause 15.1.

16.5 The Earnest money of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.

16.6 The Earnest money may be forfeited

(a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;

(b) if the Bidder does not accept the correction of the Bid Price, pursuant to Clause 26; or

(c) 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

#### **17. Alternative Proposals by Bidder**

17.1 Bidders shall submit offers that fully comply with the requirements of the bidding documents, including the conditions of contract (including mobilization advance or time for completion), basic technical design as indicated in the drawing and specifications. Conditional offer or alternative offers will not be considered further in the process of tender evaluation.

17.2 Conditional tender will be rejected forthwith.

#### **18. Format and Signing of Bid**

18.1 The Bidder shall upload Technical bid and financial bid comprising of the documents as described in clause 12 of ITB at the eproc site ([www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in))

- 18.2 The Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clause 4.3. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid and a certificate of corrections must be given by BUIDCo.
- 18.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by BUIDCo, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

## D.SUBMISSION OF BIDS

(only on website: [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) )

**( SI.No. 19 To 21.1,shall be done through e-tendering Process )**

### **19. Sealing and Marking of Bids**

19.1 The bidder shall download the bid document from the site website: [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) and upload the scanned copy of required documents together with filled up documents on the website.: [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)

The contents of Technical and Financial Bids will be as specified in clause 12.1

19.2 The employer or service provider is not responsible for any failure such as a bad internet connection or power failure outside of their control. The bidder is responsible to ensure they have sufficient time to submit an electronic bid prior to closing including the payment and receipt of any fees including EMD.

19.3 The bidder have to submit original instruments of EMD and cost of BOQ in a envelope clearly marked the name of bidder, purpose and shall be addressed to the employer.

19.4 Deleted.

### **20. Deadline for Submission of the Bids**

20.1 Complete Bids (including Technical and Financial) must be uploaded at [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) not later than the date indicated in appendix.

20.2 The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, 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.

### **21. Late Bids**

21.1 The electronic bidding system would not allow any late submission of bids after due date and time.

## **E.BID OPENING AND EVALUATION**

(Only on website: [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) )

**( SI.No. 22 To 27.5,All Process shall be done through e-tendering Process )**

### **22. Bid Opening**

- 22.1 CE(PDM) BUIDCo or their authorized representative will open all the Bids submitted on [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) at the time and date specified in Appendix in the manner specified in Clause 20 and 22.3.
- 22.2 If any of the tenderers or their representative is not present at the time of opening, the employer will open the tender in their absence and prepare a statement and that will be binding on the absent tenders.
- 22.3 The "Technical Bid" shall be opened on the website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in). The amount, form and validity of the Earnest money furnished with each bid will be verified. If the bid security furnished does not conform to the amount and validity period as specified in the Invitation for Bid (ref. Column 6), and has not been furnished in the form specified in Clause 16, the technical bid will not be opened.
- 22.4 (i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid security will be taken up for evaluation with respect to the Qualification Information and other information furnished in Part I of the bid pursuant to Clause 12.1.
- (ii) After receipt of confirmation of the bid security, the bidder will be asked in writing (usually within 10 days of opening of the Technical Bid) to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects.
- (iii) The bidders will respond in not more than 7 days of issue of the clarification letter.
- (iv) Immediately (usually within 3 to 4 days), on receipt of these clarifications the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.
- 22.5 The Financial bids of only those bidders will be opened on the website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in), who qualifies in the technical evaluation. The remaining bids will not be opened. The responsive Bidders' names, the Bid prices, the total amount of each bid, any discounts, Bid Modifications and withdrawals, and such other details as BUIDCo may consider appropriate, will be announced by BUIDCo at the opening. Any Bid price or discount, which is not read out and recorded will not be taken into account in Bid Evaluation.
- 22.6 In case bids are invited in more than one package, the order for opening of the "Financial Bid" shall be that in which they appear in the "Invitation For Bid".
- 22.7 BUIDCo shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 22.5

### **23. Process to be Confidential**

- 23.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence BUIDCo's processing of Bids or award decisions may result in the rejection of his Bid.

### **24. Clarification of Financial Bids**

- 24.1 To assist in the examination, evaluation and comparison of Bids, BUIDCo may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by BUIDCo in the evaluation of the Bids in accordance with Clause 26.
- 24.2 Subject to sub-clause 24.1, no Bidder shall contact BUIDCo on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of BUIDCo, it should do so in writing.
- 24.3 Any effort by the Bidder to influence BUIDCo in BUIDCo's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

### **25. Examination of Bids and Determination of Responsiveness**

- 25.1 During detailed evaluation of "Technical Bids", BUIDCo will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding documents. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications, and drawings.
- 25.2 A substantially responsive "Financial Bid" is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, BUIDCo's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- 25.3 If a "Financial Bid" is not substantially responsive, it will be rejected by BUIDCo, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

## **26. Correction of Errors**

- 26.1 "Financial Bids" determined to be substantially responsive will be checked by BUIDCo for any arithmetic errors. Errors will be corrected by BUIDCo as follows:
- (a) Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
  - (b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- 26.2 The amount stated in the "Financial Bid" will be corrected by BUIDCo in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner:
- (a) If the Bid price increases as a result of these corrections, the amount as stated in the bid will be the 'bid price' and the increase will be treated as rebate;
  - (b) If the bid price decreases as a result of the corrections, the decreased amount will be treated as the 'bid price'

Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected, and the Earnest money may be forfeited in accordance with Sub-Clause 16.6(b).

## **27. Evaluation and Comparison of Financial Bids**

- 27.1 BUIDCo will evaluate and compare only the Bids determined to be substantially responsive in accordance with Sub-Clause 25.2.
- 27.2 In evaluating the Bids, BUIDCo will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:
- (a) making any correction for errors pursuant to Clause 26; or
  - (b) making an appropriate adjustments for any other acceptable variations, deviations.
- 27.3 BUIDCo reserves the right to accept or reject any variation or deviation. Variations and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for BUIDCo, shall not be taken into account in Bid evaluation.
- 27.4 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, BUIDCo 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 construction methods and schedule proposed. After evaluation of the price analysis, BUIDCo may require that the amount of the performance security set forth in Clause 31 be increased at the expense of the successful Bidder to a level sufficient to protect BUIDCo against financial loss in the event of default of the successful Bidder under the Contract.
- 27.5 A bid, in the opinion of employee which contains several items in the Bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder, may be rejected as non-responsive.

## F.AWARD OF CONTRACT

### 28. Award Criteria

- 28.1 Subject to Clause 29, BUIDCo will award the Contract to the Bidder whose Bid has been determined
- (i) to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price on overall evaluation for both schedule A (Percentage Rate Method) & Schedule B (Item Rate Method); and
  - (ii) to be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration.

In no case, the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at his evaluated bid price.

### 29. BUIDCo's Right to Accept any Bid and to Reject any or all Bids

Notwithstanding Clause 28, BUIDCo reserves the right to accept 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 ground for BUIDCo's action.

### 30. Notification of Award and Signing of Agreement

- 30.1 The Bidder whose Bid has been accepted will be notified of the award by BUIDCo prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the *General Conditions of Contract* called the "Letter of Acceptance") will state the sum that BUIDCo will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 30.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of the performance security in accordance with the provisions of Clause 31.
- 30.3 The Agreement will incorporate all agreements between BUIDCo and the successful Bidder. It will be signed by BUIDCo and the successful Bidder, after the performance security is furnished.

### 31. Performance Security

- 31.1 Within 10 (Ten) days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to BUIDCo a Performance Security in any of the forms given below for an amount equivalent 2% of the Contract price plus additional security for unbalanced Bids in accordance with the Clause 27.4 of ITB and the provisions of Bihar Financial Rules.
- 31.2 If the performance security is provided by the successful Bidder in the form of Bank Guarantee, it shall be issued either (a) at the Bidder's option, by a Nationalized/ Scheduled Indian bank within state or (b) acceptable to BUIDCo.
- 31.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 31.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

### 32. Advance Payment and Security

- 32.1 BUIDCo will provide an Advance Payment on the Contract Price as stipulated in the General Conditions of Contract, subject to maximum amount, as stated in the Contract Data.

### 33. Corrupt or Fraudulent Practices

- 33.1 BUIDCo will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with BUIDCo or any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for the contractor, or in execution.
- 33.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clause and Sub-Clause 14 of the General Conditions of Contract.

G. APPENDIX to ITB

Clause Reference with respect to Section-I.

1. Name of the Employer: Managing Director, BUIDCo, Patna [Cl. 1.1]
2. The last five years means for this tender
  - 2017– 2018
  - 2018- 2019
  - 2019 – 2020
  - 2020 – 2021
  - 2021 – 2022
3. The required annual financial turn over amount is **Rs. 327.46.00 Lakh** [Cl. 4.5A(a)]
4. The required minimum value of one similar work **is Rs. 65.49 Lakh** [Cl. 4.5A(b)]
5. Minimum Quantities of work are :- [Cl. 4.5A(c)]
  - i. ATC Controller - 3 nos.,
  - ii. Supply of galvanised iron class B Traffic signal St.Pole-6 mtr. Height - 12nos.,
  - iii. Supply of galvanised iron class B Traffic signalcantilever pole--10no.
  - iv. HDD trenching by trenchless technology of 120mm for laying of DWC HDPE 120MM pipe-500mtr.
  - v. PTZ / RLVD Camera - 3 Nos.,
  - vi. FIX / ANPR / SVD Camara-10 Nos.,
  - vii. Detection Camra-10 No
6. Liquid assets and/or availability of credit facilities is 10% of Estimated Cost. i.e- 65.49 Lakh [Cl. 4.4B(c)]
7. Price level of the financial year 2021-22
8. The Pre-bid meeting will take place at BUIDCo **Office at 03:00 PM on Date 01.07.2022**
9. The technical bid will be opened at 03.30 pm on **12.07.2022 through website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)**
10. Address of the Employer [Cl. 4.5(a)]

**Managing Director,**  
**Bihar Urban Infrastructure Development Corporation Limited.**  
  
Near Rajapur Pul, West Boring Canal Road, Patna-800001  
(Tel: 0612-2506213/2506109,Email: mdbuidco@gmail.com)



- 11 **Identification:** [Cl. 19.2(b)]  
**Bid for:**  
 Design, Drawing, Supply, Construction, Fabrication and Installation of Traffic Light System and Control Room including all Associated Civil, Mechanical, Electrical Works with Three (3) Years Annual Maintenance Contract at Sasaram.
- 12 **Bids may be submitted only in Item Rate Method**
- 13 **The bid should be submitted(Upload) latest by 03.00 PM on 11.07.2022 through website:[www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) only.** [Cl. 20.1(a)]
14. The technical bid will be opened at 03.30 PM on 12.07.2022 through website [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in). [Cl. 23.1]
- 15 **The Bank Draft in favor of Managing Director, Bihar Urban Infrastructure Development Corporation Limited. Patna.** [Cl. 34.1]
16. **Escalation factors (for the cost of works executed and financial figure to a common base value for works completed)**
- |                                    |      |
|------------------------------------|------|
| <b>Year before Multiply factor</b> |      |
| One                                | 1.1  |
| Two                                | 1.21 |
| Three                              | 1.33 |
| Four                               | 1.46 |
| Five                               | 1.61 |

[Reference Cl. 4.4(B) (a)]

**Details of IT and Traffic work likely to be used in carrying out the work**

<b>[Reference Cl. 4.5 (B) (a)]</b>						
SI No.	Type of Equipment	Max ***Age as on (07-08)	Information Technology and Traffic Light Work **			
			Rs. 1 – 2 Crores	Rs. 5 – 30 Crores	-	-
1	HYDRA	5	1	1	-	-
2	VIBRATER MACHINE	5	2	1	-	-
3	CONCRETE MIXTURE	5	1	1	-	-
4	TRENCHLESS MACHINE	5	1	1	-	-
5	WATER TANKER	5	1	1	-	-

**ANNEXURE – II**

**List of Key Personnel to be deployed on Contract Work (Indicative)**

[Reference Cl. 4.4(B) (b)]

Sl. No.	Personnel*	Qualification	Contract Package Size			
			Rs. 5-30 Lacs	Rs. 30 Lacs to 70 Lacs	Rs. 70 Lacs to 2 Crores	Rs. 2-10 Crores
1.	Project Manager	B.E. Electrical/Mech + 5 Years Exp.			1 No.	1 No.
2.	Site Engineer	B.E. Electrical/Mech/electronics/EEE + 05 Years Exp			1 No.	1 No.
3.	Site Supervisor	Fresh Graduate/ Diploma Civil + 03 Years Exp. or retired JE			1 No.	1 Nos.
4.	Site Supervisor	Fresh Graduate/ Diploma Electrical/Mech/Electronics/EEE + 03 Years Exp. or retired JE			1 No.	1 Nos.
	<b>Total</b>				<b>4</b>	<b>4</b>

**SECTION 2**

**QUALIFICATION INFORMATION**

**(To be filled in by Bidder)**

## QUALIFICATION INFORMATION

The information to be filled in by the Bidder in the following pages will be used for purposes of post qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract.

1. For Individual Bidders

1.1 Constitution or legal status of Bidder  
(Attach copy)

Place of registration:

Principal place of business:

Power of attorney of signatory of Bid  
(Attach)

1.2 Total value of Information and Traffic System work performed in the last Five years** (in Rs. Million)	20	20	20	20	20
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1.3.1 Work performed as prime contractor, work performed in the past as a nominated sub- contractor will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last five years.\*\*

Project Name	Name of the Employer *	Description of work	Contract No.	Value of Contract (Rs. In Crores)	Date of issue of work order	Stipulated period of completion	Actual date of completion*	Remarks explaining reasons for delay & work completed)

\* Attach certificate(s) from the Engineer(s)-in-Charge

\*\* Immediately preceding the financial year in which bids are received.

β Attach certificate from Chartered Accountant

# 1.3.2. Quantities of work executed as prime contractor, work performed in the past as a nominated sub-contractor will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied (in the same name and style) in the last five years :\*\*

Year	Name of the work	Name of the Employer*	Quantity of work performed (cum) @ Remarks						
			Number of erecting straight pole	Number of cantilever pole	Number of installation of CCTV	No. of Traffic Junction	Total experience of O&M work	Establishment of control room	Remarks* (indicate contract Ref)
20__20__									
20__20__									
20__20__									
20__20__									
20__20__									

1.4 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and on-going works:

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

\* Attach certificate(s) from the Engineer(s)-in-Charge

@ The item of work for which data is requested should tally with that specified in ITB clause 4.5A (c)

\*\* Immediately preceding the financial year in which bids are received.

# Delete, if prequalification has been carried out.



1.6 Qualifications and experience of key personnel required for administration and execution of the Contract [Ref. Clause 4.5(B)(b)]. Attach biographical data. Refer also to Sub Clause 4.3 (e) of instructions to Bidders and Sub Clause 9.1 of the Conditions of Contract.

Position	Name	Qualification	Year of Experience (General)	Years of experience in the proposed position
Project Manager				
Site Engineer				
Site Supervisor				
Site Supervisor				

1.7 Proposed sub-contracts and firms involved. [Refer ITB Clause 4.3(k)]

Sanction of the works	Value of Sub-contract	Sub-contractor (Name & Address)	Experience in similar work
1	2	3	4

Attach copies of certificates on possession of valid license for executing electrification works [Reference Clause 4.5(d) & Clause 4.5(e)], if required

\*1.8 Financial reports for the last seven years: balance sheets, profit and loss statements, auditors' reports (in case of companies/corporation), etc. List them below and attach copies.

1.9 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copies of support documents.

1.10 Name, address and telephone, telex and fax numbers of the Bidders' bankers who may provide references if contacted by BUIDCo.

1.11 Information on litigation history in which the Bidder is involved.

Other Party(ies)	Employer	Cause of Dispute	Amount involved	Remarks showing Present Status

1.12 Statement of compliance under the requirements of Sub Clause 3.2 of the instructions to Bidders. (Name of Consultant engaged for project preparation is \*\* .....)

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1.13 Proposed work method and schedule. The Bidder should attach descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents. [Refer ITB Clause 4.1 & 4.3(1)]

1.14 Programme

1.15 Quality Assurance Programme

Notes:

- The project experience, certification, turnover and net worth of parent company of the bidder will be considered for tender evaluation if the bidder is a 100% subsidiary of its foreign/Indian parent company. In that case, bidder shall submit a supporting letter from the parent company OR Chartered Accountant.
- In case bidder is using its foreign parent company financial statements, then financial years as per Parent company's country norms are acceptable.
- In case the last financial year (2020-2021 / 2021-22) auditing is not completed, bidder shall submit an undertaking from its Head of finance stating that the auditing is under processing and should mention the expected date of completion.
- In case the last financial year (2020-2021 / 2021-22) audited report not available bidder may submit the CA Certificate.



## **2. Additional Requirements**

2.1 Bidders should provide any additional information required to fulfill the requirements of Clause 4 of the Instructions to the Bidders, if applicable.

- (i) Affidavit
- (ii) Undertaking
- \*\*\* (iii) Update of original prequalification application
- \*\*\* (iv) Copy of original prequalification application
- \*\*\* (v) Copy of prequalification letter

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\*\* *Fill the Name of Consultant.*

\*\*\* *Delete, if prequalification has not been carried out.*

**SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR  
AVAILABILITY OF CREDIT FACILITIES**

**(CLAUSE 4.2 (i) OF ITB)**

**BANK CERTIFICATE**

This is to certify that M/s. \_\_\_\_\_ is a reputed company with a good financial standing.

If the contract for the work, namely \_\_\_\_\_ is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. \_\_\_\_\_ to meet their working capital requirements for executing to the above contract during the contract period.

\_\_\_\_\_  
**(Signature)**

**Name of Bank**

**Senior Bank Manager**

**Address of the Bank**

**AFFIDAVIT**

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also hereby certifies that neither our firm M/s \_\_\_\_\_  
\_\_\_\_\_ has been blacklisted nor has abandoned any work in any government department, India nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorizes and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by BUIDCo to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understands and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of BUIDCo.

\_\_\_\_\_  
**(Signed by an Authorized Officer of the Firm)**

\_\_\_\_\_  
**Title of Officer**

\_\_\_\_\_  
**Name of Firm**

\_\_\_\_\_  
**DATE**

**UNDERTAKING**

I, the undersigned do hereby undertake that our firm M/s \_\_\_\_\_  
\_\_\_\_\_ would invest a minimum cash up to 25% of the value of the work  
during implementation of the Contract.

\_\_\_\_\_  
**(Signed by an Authorised Officer of the Firm)**

\_\_\_\_\_  
**Title of Officer**

\_\_\_\_\_  
**Name of Firm**

\_\_\_\_\_  
**DATE**

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### **GENERAL GUIDELINES**

- 1. This book of "General Conditions of Contract" is applicable to both types of tenders i.e. "Percentage rate tenders" and "Item rate tenders". Accordingly alternative provisions for conditions Nos. 4, The appropriate alternatives will be applicable in specific cases depending on whether this is used for percentage rate tender or item rate tender Schedules A to F, special conditions/ specifications and drawing only will be issued to intending bidders. The standard form shall form part of the agreement to be drawn and signed by both parties after acceptance of tender.**
- 3. All blanks are confined to Notice Inviting Tender and Schedules A to F.**
- 4. Authority approving the Notice Inviting Tender (NIT) shall fill up all the blanks in 6 and in Schedules B to F before issue of Tender Papers.**
- 5. The intending bidders will quote their rates in Schedule A.**
- 6. The Performa for registers and Schedules A to F are only for information and guidance. These are not to be filled in the Standard Form. The Schedules with all blanks, duly filled shall be separately issued to all intending tenderers.**

**Bihar Urban Infrastructure Development Corporation Limited  
(A Govt. Of Bihar Undertaking)**

1. Tender on the behalf of Government of Bihar invites Item rate for Non SOR Item bids from the eligible and approved contractor registered with State other State & Central Government / PSU or any Agency of National or International repute for each of the following works.

District	Name of work	Estimated cost in Rs.	Earnest Money in Rs.	Time allowed for completion	Last date and time for receipt of application for issue of tender forms	Time and date of opening of tender	Place of sale and submission of tender
1	2	3	4	5	6	7	8
As per NIT							<a href="http://www.eproc.bihar.gov.in">www.eproc.bihar.gov.in</a> only

The bidders who download the bidding documents from the internet site [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) would have to pay the cost of bid documents and submit it in a separate envelope marked cost of bidding document downloaded from internet.

**Criteria of eligibility for issue of tender document**

- 1.1 Issue of Tender to any Contractor registered with Central Government / any State Government or any PSU or an agency of international or national repute may be submitted without the registration. However, registration with the concerned works department will be essential after issue of L.O.A.

Following documents duly attested by gazetted officer and photocopied are required at the time of submission of bid (In case of other State PWD/ CPWD/ any PSU eligible contractors or Agencies of National/ International repute following documents (from a to c) have to be submitted after letter of acceptance).

- Registration paper (renewed) of appropriate class and deptt.
- Latest sales tax clearance/ sales tax registration in State of Bihar.
- Latest labour license (renewed) in State of Bihar.
- Power of attorney/ partnership deed/ MoU of private limited company.
- Bank Draft for B.O.Q. cost.
- Copy of Valid Electric License
- Tools & plans ownership/ lease certificate required in aforesaid work duly verified from Executive Engineer / other State PWD / CPWD Contractor will provide definite proof from appropriate authority for tools & Plant and Undertaking to install it on works site after getting letter of acceptance.

2. Agreement shall be drawn with the successful tenderer on Agreement Form attached. Tenderer shall quote his rates as overall percentage above/below on estimated cost. The amount of BOQ quoted by bidder as per various terms and conditions of the said form which will form part of the agreement.

**प्रतिशत दर निविदा**

- कार्य के परिमाण विपत्र की राशि से प्रतिशत के रूप में अधिक, बराबर या कम दर (अंक एवं शब्दों में) अंकित किया जाय। अंक एवं शब्द में अंकित दरों में विसंगति होने पर शब्द में अंकित दर की मान्यता दी जायेगी।
- असाधारण असंतुलित दर (Serious Unbalanced Rate) उद्धृत करने पर प्रधान सचिव, पथ निर्माण विभाग, बिहार, पटना के पत्रांक-प्र०-6/द०वि० नियम-03-08/06 (अंश)-449 (S) पटना, दिनांक-16.01.2020



के अनुसार एकरारनामा के समय अतिरिक्त Performance गारंटी (Additional Performance Guarantee) देना होगा।

3. The amount of Estimated Cost or B.O.Q. Cost of the work may vary.
4. The earnest money will be applicable on the sanction cost of estimated cost only.
5. The time allowed for carrying out the work will be from the same day after the date of written orders to commence the work or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.
6. The site for the work is available.

OR

The site for the work shall be made available in parts as specified below :-

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7. Deleted  
Tender documents consisting of plans, specifications, the schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen at the site of the [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in). Tender documents, including standard form, will be **Downloaded** from [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in) during the **Dates** specified in Appendix to ITB.
8. Original Draft of Cost of B.O.Q and Earnest Money in Prescribed form, which should always be placed in sealed envelope, with the name of work and due date written on the envelopes, will be received by the Managing Director BUIDCo, Patna.
9. The Contractor shall be required to deposit an amount equal to 2% of the tendered value of the work as performance guarantee in the form as mentioned in Bihar Financial Rules. For works costing more than one Crore, bank guarantee is acceptable.
10. The description of the work is as follows: -

As per NIT

Copies of other drawings and documents pertaining to the works will be open for inspection by the tenderers at the office of the above-mentioned officer.

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tool & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by BUIDCo and local conditions and other factors having a bearing on the execution of the work.

11. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

12. The competent authority on behalf of Governor of Bihar reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall bound to perform the same at the rate quoted.
13. The contractor shall not be permitted to tender for works in the BUIDCo(responsible for award and execution of contracts) in which his near relative is posted as **Accountant** or as an officer in any capacity between the grades of C.E/S.E/EE/AE/JE(all inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any **officer** in BUIDCo.Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of **BUIDCo**.
14. No Engineer of Gazetted rank or other Gazetted officer employed in Engineering or Administrative duties in an Engineering Department of the Government of Bihar is allowed to work as a contractor for a period of two years after his retirement from Government service, without the previous permission of the Government of Bihar in writing. This contract is liable to be cancelled if either the contractor or any of his employee is found any time to be such a person who had not obtained the permission to the Government of Bihar as aforesaid before submission of the tender or engagement in the contractors service.
15. The tender for the works shall remain open for acceptance for a period of 120 days from the date of opening of tenders. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit **100%** of the said earnest money as aforesaid.
17. BUIDCo has right to cancel or postpone any work without given any notice or clarification.
18. BUIDCo may add or delete any of the condition required for execution of any work.
19. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, the **Competent Authority**, shall issue the letter of acceptance and will sign the contract within 15 days after submitting the performance guarantee.

Bihar Urban Infrastructure Development Corporation Limited  
(A Govt. Of Bihar Undertaking)

STATE - BIHAR

Organization : BUIDCo

**Rate as overall percentage above/below on estimated cost and the amount of BOQ quoted by bidder as per various which is part of the agreement**

- (A) Tender for the work of: -  
**As per NIT**
- (i) To be submitted (Upload) by DATE ..... **up to TIME 3.00 PM**
- (ii) To be opened at **DATE ..... TIME 03:30 PM Through website. [www.eproc.bihar.gov.in](http://www.eproc.bihar.gov.in)**

T E N D E R

I/We have read and examined the notice inviting tender, schedule, A,B,C,D,E & F. Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the Governor of Bihar within the time specified in Schedule 'F', viz., schedule of quantities and in accordance in all in respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respect in accordance with, such conditions so far as applicable.

We agree to keep the tender open for one hundred twenty (120) days from the due date of submission thereof and not to make any modifications in its terms and conditions.

Bid cost(Non Refundable) and EMD for one or all groups as mentioned in NIT shall be submitted by the bidder. If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/we agree that the said Governor of Bihar or his successors in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if/we fail to commence work as specified, I/we agree that Governor of Bihar or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, up to maximum of the percentage mentioned in Schedule 'F' and those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated .....

Signature of Contractor  
Postal Address

Witness :

Address :

Occupation :

**A C C E P T A N C E**

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the Governor of Bihar for a sum of Rs.....(Rupees.....)

The letters referred to below shall form part of this contract Agreement :-

- a)
- b)
- c)

For & on behalf of the Governor of Bihar.

Signature .....

Dated .....



**Bihar Urban Infrastructure Development Corporation Limited**  
(A Govt. of Bihar Undertaking)

**General Rules & Directions**

1. All work proposed for execution by contract will be notified in a form of invitation to tender pasted in public places and signed by the officer inviting tender or by publication in News papers and the internet as the case may be.

This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, and the amount of the security deposit to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.

2. In the event of the tender being submitted by a firm, it must be signed separately either by one or all the partners or person duly authorized by the partners, it must be signed on behalf of the firm by a person holding the requisite authorizations, such authorizations to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act, 1952.
3. Receipts for payment on account of work done, when executed by a firm, must also be signed by one or all the partners or a duly authorized signatory of the firm.

**Applicable for Item Rate Tender only (PWD- 3)**

4. Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort, will be liable to rejection. No single tender shall include more than one work, but contractors who wish to tender two or more works shall submit separate tenders for each; with the nature and number of works to which they refer on the envelope.

The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and less and considering more than fifty paise as rupee one.

**Applicable for Percentage Rate Tender only (PWD - 2)**

- 4A. In case of Percentage Rate Tenders, tenderer shall fill up the usual printed form, stating at what percentage below/above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule- A, he will be willing to execute the work Tenders, which propose any alteration in the work specified in the said form of invitation tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort, will be liable to rejection. No single tender shall include more than one work but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelope.

If for any special reasons, the contract provides for the payments for work done to be made at a specified percentage below or above the rates entered in the sanctioned estimate of the work (or the Scheduled of Rates), it should be stated in clear terms in the contract that the deductions or additions, as the case may be of the percentage, will be calculated on the gross, and not the net amounts of the bills for work done and in fixing the percentage it should be borne in mind that the calculations will be made.

5. The officer inviting tender or his duly authorized assistant will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amount of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, a receipt for the earnest money forwarded therewith shall thereupon be given to the contractor who

shall thereupon for the purpose of identification sign copies of the specifications and other documents mentioned in Rule-I. In the event of a tender being rejected, the earnest money forwarded with such unaccepted tender shall thereupon be returned to the contractor remitting the same, without any interest.

6. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
7. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as an acknowledgment or payment to the officer inviting tender and the contractors shall be responsible for seeing that he procures a receipt signed by the office inviting tender or a duly authorized person.
8. The memorandum of work tendered for and the schedule of materials to be supplied by the department and their issue-rates, shall be filled and completed in the office of the officer inviting tender before the tender form is issued. If a form is issued to an intending tenderer without having been so filled in and incomplete, he shall request the officer to have this done before he completes and delivers his tender.
9. For works of sensitive nature the tenderers shall sign a declaration under the Official Secrets Act 1923, for maintaining secrecy of the tender documents drawing or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawing given to them.
10. In the case of Item Rate Tenders, only rates quoted shall be considered. Any tender containing percentage below/above the rates quoted is liable to be rejected. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy if any discrepancy found or the rates which correspond with the amount worked out of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words then the rates quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in words tally but the amount is not worked out correctly, the rates quoted by the contractor will unless otherwise proved be taken as correct and not the amount.
- 10A. In case of Percentage Rate Tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the contractor in percentage rate tender shall be accurately filled in figures and words, so that there is no discrepancy. However if the contractor has worked out the amount of the tender and if any discrepancy is found in the percentage quoted in words and figures, the percentage which corresponds with the amount worked out by the contractor shall, unless otherwise proved, be take as correct. If the amount of the tender is not worked out by the contractor or it does not correspond with the percentage written either in figures or in words then the percentage quoted by the contractor in words shall be taken as correct. Where the percentage quoted by the contractor in figures and in words tally but the amount is not worked out correctly, the percentage quoted by the contractor will, unless otherwise proved, be taken as correct and not the amount.
11. In the case of any tender where unit rates of any item/items appear unrealistic, such tender will be considered as unbalanced and in case the tenderer is unable to provide satisfactory explanation such a tender is liable to be disqualified and rejected.

**Applicable for  
Item Rate  
Tender only  
(PWD - 3)**

**Applicable for  
Percentage  
Rate Tender  
only (PWD - 2)**

**Applicable for  
Item Rate  
Tender only**

**Applicable for  
Percentage  
Rate Tender  
only ( PWD- 2)**

12. All rates shall be quoted on the tender form. The amount for each item should be worked out and requisite totals given. Special care should be taken to write the rates in figures as well as in words and the amount in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the word 'Rs' should be written before the figure of rupees and word 'P' after the decimal figures, e.g. 'Rs 2.15 P' and in case of words, the word, 'Rupees' should precede and the word 'Paise'should be written in the end. Unless the rate is in whole rupee and followed by the word 'only' it should invariably be up to two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.

- 12A. In Percentage Rate Tender, the tenderer shall quote percentage below/above (in figures as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and the same should be written in figures as well as in words in such a way that no interpolation is possible. In case of figures, the word 'Rs' should be written before the figure of

rupees and word P after the decimal figures, e.g. 'Rs 2.15 P and in case of words, the word 'Rupees' should precede and the word 'paisa' should be written at the end.

The Quoted rate less than x % below the BOQ cost will be unworkable and bid will be rejected where x = 10 %; if materials will not be issued by BUIDCo. And if materials will be issued by BUIDCo then

$$X = (A - B) / A \times 10 \%$$

Where A = BOQ Cost

B = Cost of materials stipulated to be issued by BUIDCo.

Where the value of X will not be less than 10% in other words it will be within 10%.

13. (i) The contractor whose tender is accepted, will be required to furnish performance guarantee of 2 (two percent) including earnest money of the tendered amount within specified period. This guarantee shall be in the form of Govt. Securities or fixed deposit receipt of any scheduled bank, guarantee bonds of any scheduled bank or State Bank of India or Bank guarantee from any schedule bank in the State for works of more than one crore.
- (ii) The contractor whose tender is accepted will also be required to furnish by way of Security Deposit for the fulfillment of his contract, an amount equal to 8 % of the tendered value of the work. The security deposit will be collected by deductions from the running bills of the contractor at the rates mentioned above
14. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.
15. Sales-tax, purchase tax, turnover tax, service tax, entry tax royalty or any other tax on material in respect of this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same.
16. The contractor shall give a list of both gazetted and non-gazetted P.W.D. employees related to him posted in the division, if any.
17. The tender for the work shall not be witnessed by a contractor or contractors who himself/themselves has/have tendered or who may and has/have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
18. The tender for composite work includes in addition to building work all other works such as sanitary and water supply installations drainage installation, electrical work, horticulture work, roads and paths etc. The tenderer apart from being a registered contractor (B&R) of appropriate class, must associate himself with agencies of appropriate class which are eligible to tender for sanitary and water supply drainage, electrical and horticulture works in the composite tender.
19. The contractor shall submit list of works which are in hand (progress) in the following form:-

Name of Work	Name of Particular of Div. where work is	Value of Work	Position of work in Progress	Remarks
1	2	3	4	5

20. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the General Manager ( Works)/ Executive Engineer may in his discretion without prejudice to any other right or remedy available in law cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.



## CONDITIONS OF CONTRACT

- Definitions:**
1. The contract means the document forming the tender and acceptances thereof and the formal agreement executed between the competent authority on behalf of the Governor of Bihar and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time form one contract and shall be complementary to one another.
  2. In the contract, the following expressions shall, unless the context otherwise requires have the meanings, hereby respectively assigned to them :-
    - i) The expression works or work shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
    - ii) The site shall mean the land/or other places on. into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
    - iii) The Contractor shall mean the individual, firm or company, whether incorporate or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm of company.
    - iv) The Engineer-in-Charge means the Engineer officer who shall supervise and be in-charge of the work and who shall sign the contract on behalf of the Governor of Bihar as mentioned in Schedule 'F' hereunder.
    - v) Government or Government of Bihar shall mean the Governor of Bihar.
    - vi) Excepted Risk are risks due to riots (other than those on account of contractor employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, any act of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority Provided that the contractor is also to show that he has taken all due precautions to avoid / un minimise any adverse after / damage from the above or causes solely due to use or occupation by Government of the part of the works in respect of which a certificate of completion has been issued or a caused solely due to Government's faulty design of works.
    - vii) Bill of quantity means the price and completed Bill of Quantities forming part of the Bid.
    - viii) The Defect liability certificate is the certificate issued by Engineer-in-Charge after defect liability period has ended and upon correction of defects by the contractor.
    - ix) The defect liability period will be decided by BUIDCO for different nature of works from date of completion of the work and must be mentioned in the agreement.  
  
It will be decided by the department for different nature of work from time to time as mentioned in contract Data.
    - x) The intended completion date is the time intended to complete the work by the contractor.
    - xi) The start date is given in the contract data. It is the date when the contractor shall commence execution of the works. It does not necessarily coincide with any of the site possession date.
    - xii) A sub contractor is a person or corporate body who has a contract with the contractor to carry out a part of the construction work in the contract, which includes work on the site.
    - xiii) Temporary works are works designed, constructed, installed and removed by the contractor that are needed for construction or installation of the works.
    - xiv) Market Rate shall be the rate as decided by the competent authority on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Schedule 'F' to cover, all overheads and profits.
    - xv) Schedule(s) referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers or the standard Schedule of Government mentioned in Schedule 'F' hereunder, with the amendments thereto issued up to date of receipt of the tender.

- xvi) Department means any department of Government of Bihar, which invite tenders on behalf of Governor of Bihar as specified in schedule 'F'.
- xvii) Specifications means the specifications followed by relevant department of the Government of India / State Government.
- xviii) Tender value means the value of the entire work as stipulated in the letter award.

**Scope and Performance**

- 3. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.
- 4. Heading and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
- 5. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.

**Works to be carried out :**

- 6. The work to be carried out under the Contract shall, except as otherwise provided these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities (Schedule - A) shall unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

**Sufficiency of Tender**

- 7. The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

**Discrepancies and Adjustment of Errors**

- 8. The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
- 8.1 In the case of discrepancy between the schedule of Quantities, the Specifications and/or the Drawings, the following order of preference shall be observed :-
  - i) Description of Schedule of Quantities.
  - ii) Particular Specification and Special Condition, if any
  - iii) Drawings.
  - iv) MORT & H specification.
  - v) Indian Standard Specifications of B.I.S.
- 8.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
- 8.3 Any error in description, quantity or rate in Schedule of Quantities or any omission therefrom shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

**Signing of Contract**

- 9. The successful tenderer/contractor, after submitting the performance guarantee i.e. within 15 days of receipt of letter of acceptance shall attend the office of the Engineer-in-Charge for authentication signing and completion of the contractor document and execute the agreement consisting of :-
  - i) the notice inviting tender, all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
  - ii) Standard P.W.D. Form as mentioned in Schedule 'F' consisting of :  
Various standard clauses with corrections up to the date stipulated in Schedule 'F' along with annexure thereto.
  - iii) Drawing.

## CLAUSE OF CONTRACT

### CLAUSE 1

#### Performance Guarantee

- (i) The contractor shall submit an irrevocable PERFORMANCE GUARANTEE of 2% (Two percent) of the tendered amount including earnest money in the shape as mentioned in the Bihar Financial Rules or Bank Guarantee (for work costing more than one crore) or any other deposits mentioned for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified in scheduled 'F' from the date of issue of letter of acceptance. This period can be further extended by the Engineer-in-Charge up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Bank Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of N.S.C. of Post Office/ Pledged in favour of department; D.D. of any Scheduled Bank or State Bank of India or Bank Guarantee (for work costing more than Rupees one Crore.
- (ii) The performance Guarantee shall be initially valid up to 28 days beyond the defect liability.
- (iii) The Engineer-in-Charge shall not make a claim under the Performance guarantee except for amounts to which the Governor of Bihar is entitled under the contract (notwithstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
  - (a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance guarantee.
  - (b) Failure by the contractor to pay Governor of Bihar any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.
  - (c) Failure by the contractor to rectify any defects as defined in the defect liability clause in the schedule – F of contract data to the satisfaction of the Engineer incharge.
- (iv) In the event of the contract being determined or rescinded under provisions of any of the clause/condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Governor of Bihar.

### CLAUSE 1 A

#### Recovery of Security Deposit

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit BUIDCo at the time of making any payment to him for work done under the contract to deduct a sum at 8 % (eight percent) from the gross amount of each running bill till full amount of security deposit 10% (ten percent) of agreement value or value of work (whichever is higher) is reached. If value of work exceeds the agreement value, security deposit (10%) will be recovered for the exceeded work.

All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by Government on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities(if deposited for more than 12 months) endorsed in favour of the Engineer-in-Charge, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills of the contractor at the rates mentioned above and the earnest money at the time of tenders will be treated a part of the Security Deposit.

### CLAUSE 2

#### Compensation for Delay (Liquidated Damage)

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the Superintending Engineer (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete.

This will also apply to items or group of items for which a separate period of completion has been specified.

- i) *Compensation for delay of work - @ 2 % per month of delay to be computed on per Day basis*

Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the Tendered Value of work or to the Tendered Value of the item or group of items of work 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 BUIDCo. In case, the contractor does not achieve a particular milestone mentioned in schedule- F, or the rescheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of extension of time. Withholding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

#### **CLAUSE 2A**

**Incentive for early completion** In case, the contractor completes the work ahead of scheduled completion time, a bonus @ 1% (one percent) of the tendered value per month computed on per day basis, shall be payable the contractor, subject to a maximum limit of 5% (five percent) of the tendered value. The amount of bonus, if payable, shall be paid along with final bill after completion of work. Provided always that provision of the Clause 2A shall be applicable only when so provided in 'Schedule F'.

#### **CLAUSE 3**

**When Contract can be Determined / Resigned** Subject to the other provisions contained in this clause the Engineer-In-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

- i) It the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.
- ii) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wind up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
- iii) if the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date of completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
- iv) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.
- v) If the contractor persistently neglects to carry out his obligations under the contract and/or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
- vi) If the contractor commits any acts mentioned in Clause 21 hereof:
- vii) If the work is not started by the contractor within 1/8<sup>th</sup> of the stipulated time subject to the maximum of 45 days.

When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge on behalf of the Governor of Bihar shall have powers:

- a) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of Engineer-in-Charge shall be conclusive evidence). Upon such determination or rescission the Earnest Money Deposit, Security Deposit already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government.
- b) 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 un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined or rescinded as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above course(s) 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 advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid the contractor shall not be entitled to recover or 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 the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

**CLAUSE 3A**

In case, the work cannot be started due to reasons not within the control of the contractor as decided by Chief Engineer within ¼th of the stipulated time for completion of work, either party may close the contract. In such eventuality, the Earnest Money deposit and the Performance Guarantee of the contractor shall be refunded, but no payment on account of interest, loss of profit or damages etc. shall be payable at all. The reasons shall be examined by the Superintending Engineer and his decision shall be final and binding.

**CLAUSE 4**

**Contractor liable to pay compensation even if action not taken under Clause 3**

In any case in which any of the powers conferred upon the Engineer-in-Charge by Clause- 3 thereof, shall have become exercisable and the same are not exercised the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work. or any part thereof, paying or allowing for the same in account at the contract rates or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

**CLAUSE 5**

**Time and Extension for Delay**

The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in letter of acceptance or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the security deposit absolutely.

- 5.1 As soon as possible after the contract is concluded the Contractor shall submit a Time & Progress Chart for each milestone and get it approved by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the work. It shall indicate the forecast of the dates of commencement and completion of various trades or sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and Contractor within the limitations of time imposed in the contract documents, and further to ensure good

progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate Programme has been agreed upon) complete the work as per milestone given in schedule 'F'.

5.2 If the work(s) be delayed by.

- i) force majeure, or
- ii) Serious loss or damage by fire, or
- iii) Civil commotion, local.
- iv) delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
- v) Non-availability of stores, which are the responsibility of Government to supply or
- vii) Non-availability or break down of tools and Plant to be supplied or supplied by Government or
- vii) any other cause which, in the absolute discretion of the authority mentioned in Schedule 'F' is beyond the Contractor's control.

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

5.3 Request for the rescheduling of Milestones and extension of time, to be eligible for consideration, shall be made by the contractor in writing within fourteen days of the happening of the hindering event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

5.4 In any such case the authority mentioned in Schedule 'F' may give a fair and reasonable extension of time and reschedule the milestones for completion of work. Such extension shall be communicated to the Contractor by the Engineer-in-Charge in writing, within 3 months of the date of receipt of such request. Non application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Engineer-in-Charge and this shall be binding on the contractor.

5.5 The basic centerlines, reference points and benchmarks will be fixed by the department. The contractor shall established at his own cost at suitable points, additional reference lines and bench marks as may be necessary and instructed by the engineer-in-charge. The contractor shall remain responsible for the sufficiency and accuracy of all the bench marks and reference lines.

#### **CLAUSE 5A**

The Engineer may require the contractor to attend a progress review meeting during execution of work.

The Engineer shall record the minutes of the meeting and provide a copy to the Contractor for compliance. These minutes will be a part of evidence in case of any request for extension of time or impunitive action against the contractor.

#### **CLAUSE 6**

**Measurement of Work Done** Engineer-in-Charge shall, except as otherwise provided, ascertain and determine measurement and the value in accordance with the contract of work done.

All measurement of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works perform under the contract.

All measurements and levels shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative at bast once in a month during the progress of the work and such measurements shall be signed and dated by the Engineer-in-Charge and the contractor or their representatives in token their acceptance. If the contractor objects to any of the measurements recorded, a note shallbe made to that effect with reason and signed by both the parties.

If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the

date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every appliance labour and other things necessary for measurements and recording levels.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of India Standards and if for any item no such standard is available then a mutually agreed method as approved by the department shall be followed.

The contractor shall give not less than seven days notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimension thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement defects noticed till completion of the defects liability period.

## **CLAUSE 7**

### **Payment on Intermediate Certificate to be Regarded as Advances**

No payment shall be made for work for less than the estimated work of Rs. 2.5 Lacs till the whole of the work shall have been completed and certificate of completion given. For works estimated to cost over Rs. 2.5 Lacs the interim or running account bill shall be submitted by the contractor for the work executed on the basis of such recorded measurements on the format of the Department in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/adjustment of advances for material collected, if any, since the last such payment is less than the amount specified in Schedule 'F', in which case the interim bill shall be prepared on the appointed date of the month after the requisite progress is achieved. The Engineer-in-Charge shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, Engineer-in-Charge shall prepare or cause to be prepared such bills in which event no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-in-Charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer-in-Charge. The amount admissible shall be paid by 10th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Dy. Executive Engineer together with the account of the material issued by the department, or dismantled materials, if any. In the case of works outside the headquarters of the Engineer-in-Charge the period of ten working days will be extended to fifteen working days.

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any

of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion interim payments shall continue to be made as herein provided as per clause - 2, without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

#### **CLAUSE 8**

##### **Completion Certificate and Completion Plans**

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within fifteen days of the receipt of such notice the Engineer-in-Charge shall inspect the work and if there is no defect in the work shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of execution thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding surplus materials and rubbish etc. and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realised by the sale thereof.

#### **CLAUSE 8A**

##### **Contractor to Keep Site Clean**

When the annual repairs and maintenance of works are carried out, the splashes and droppings from white washing, color washing, painting etc. on walls, floor, windows etc. shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc. where the work is done without waiting for the actual completion of all the other items of work in the contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give ten days notice in writing to the contractor.

#### **CLAUSE 8 B**

##### **Completion Plans to be Submitted by the Contractor**

The contractor shall submit completion plan as required vide General Specifications for Electrical works (Part-I internal) 1972 and (Part-II External) 1974 as applicable within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.5% of the value of the work subject to a ceiling of Rs. 15,000 (Rs. Fifteen thousand only) as may be fixed by the General Manager (Works) concerned and in this respect the decision of the General Manager(Works) shall be final and binding on the contractor.

#### **CLAUSE 9**

##### **Payment of Final Bill**

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period specified herein under, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized Assistant Engineer/JE, complete with account of materials issued by the Department and dismantled materials.

i) If the Tendered value of work is up to Rs. 1 crores: 2 months

ii) If the Tendered value of work exceeds Rs. 1 crores: 4 months



## CLAUSE 9 A

### Payment of Contractor's Bills to Banks

Payments due to the contractor may, if so desired by him, be made to his bank instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorisation in the form of a legally valid document such as a power of attorney conferring authority on the bank to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by BUIDCo or his signature on the bill or other claim preferred against BUIDCo before settlement by the Engineer-in-Charge of the account or claim by payment to the bank. While the receipt given by such banks shall constitute a full and sufficient discharge for the payment, the contractor shall wherever possible present his bills duly receipted and discharges through his bankers.

Nothing herein contained shall operate to create in favour of the bank any rights or equities vis-a-vis the Governor of Bihar.

## CLAUSE 10

### Materials supplied by BUIDCo

Materials which BUIDCo will supply in rare case are shown in schedule 'B' which also stipulates quantum, place of issue and rate(s) to be charged in respect thereof. The contractor shall be bound to procure them from the Engineer-in-Charge.

As soon as the work is awarded, the contractor shall finalise the programme for the completion of work as per clause 5 of this contract and shall give his estimates of materials required on the basis of drawings/or schedule of quantities of the work. The Contractor shall give in writing his requirement to the Engineer-in-Charge which shall be issued to him keeping in view the progress of work as assessed by the Engineer-in-Charge, in accordance with the agreed phased programme of work indicating monthly requirements of various materials. The contractor shall place his indent in writing for issue of such materials at least 7 days in advance of his requirement.

Such materials shall be supplied for the purpose of the contract only and the value of the materials so supplied at the rates specified in the aforesaid schedule shall be set off or deducted, as and when materials are consumed in items of work (including normal wastage) for which payment is being made to the contractor, from any sum then due or which may therefore become due to the contractor under the contract or otherwise or from the security deposit. At the time of submission of bills the contractor shall certify that balance of materials supplied is available at site in original good condition.

The contractor shall submit along with every running bill (on account or interim bill) material wise reconciliation statements supported by complete calculations reconciling total issue, total consumption and certified balance (diameter/section-wise in the case of steel) and resulting variations and reasons therefore. Engineer-in-Charge shall (whose decision shall be final and binding on the contractor) be within his rights to follow the procedure of recovery in clause 42 at any stage of the work if reconciliation is not found to be satisfactory.

The contractor shall bear the cost of getting the material issued, loading, transporting to site, unloading, storing under cover as required, cutting assembling and joining the several parts together as directed by the engineer-in-charge. Notwithstanding anything to the contrary contained in any other clause of the contract and (or thePWD Code) all stores/materials so supplied to the contractor or procured with the assistance of the BUIDCo shall remain the absolute property of BUIDCo and the contractor shall be the trustee of the stores/materials, and the said stores/materials shall not be removed/disposed off from the site of the work on any account and shall be at all times open to inspection by the Engineer-in-Charge or his authorized agent. Any such stores/materials remaining unused shall be returned to the Engineer-in-Charge in as good a condition in which they were originally supplied at a require, but in case it is decided not to take back the stores/materials the contractor shall have no claim for compensation on any account of such stores/materials so supplied to him as aforesaid and not used by him or for any wastage in or damage to in such stores/materials.

On being required to return the stores/materials, the contractor shall hand over the stores/materials on being paid or credited such price as the Engineer-in-Charge shall determine, having due regard to the condition of the stores/materials. The price allowed for credit to the contractor, however, shall be at the prevailing market rate not exceeding the amount charged to him, excluding the storage charge, if any. The decision of the Engineer-in-Charge shall be final and conclusive. In the event of breach of the aforesaid condition, the contractor shall in addition to the throwing himself open to account for contravention of the terms of the licenses or permit and/or for criminal breach of trust, be liable to Government for all advantages or profits resulting or which in the usual course would have resulted to him by reason or such breach. Provided that the contractor shall in no case be entitled to any compensation or damages on account of any delay in supply or non-supply thereof all or any such materials and stores provided further that the contractor shall be bound to execute the entire work if the materials are supplied by the Government within the original scheduled time for completion of the work plus 50% thereof or schedule time plus 6 months whichever is more if the time of completion of work

exceeds 12 months but if a part of the materials only has been supplied within the aforesaid period then the contractor shall be bound to do so much of the work as may be possible with the materials and stores supplied in the aforesaid period. For the completion of the rest of the work, the contractor shall be entitled to such extension of time as may be determined by the Engineer-in-Charge whose decision in this regard shall be final and binding on the contractor.

The contractor shall see that only the required quantities of materials are got issued. Any such material remaining unused and in perfectly good/original condition at the time of completion or determination of the contract shall be returned to the Engineer-in-Charge at the stores from which it was issued or at a place directed by him by a notice in writing. The contractor shall not be entitled for loading, transporting, unloading and stacking of such unused material except for the extra lead, if any involved, beyond the original place of issue. Quantities issued in excess of requirement with respect to work done and not returned back to the department, recovery will be made of double of issue rate.

#### **CLAUSE 10 A**

**Materials to be provided by the Contractor**

The contractor shall, at his own expense, provide all materials, required for the works other than those, which are stipulated, to be supplied by the BUIDCo.

The contractor shall, at his own expense and without delay, supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within fifteen days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether sample are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analysed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative shall at all time have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss for damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall borne by the Contractor.

#### **CLAUSE 10 B**

**Secured Advance on Non-perishable Materials**

- i) The contractor, on signing an indenture in the form to be specified by the Engineer-in-Charge, shall be entitled to be paid during the progress of the execution of the work up to 75% of the assessed value of any materials which are in the opinion of the General Manager (Works) nonperishable, non-fragile and noncombustible and are in accordance with the contract and on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which advance has been made under this sub-clause are incorporated in the work the amount of such advance shall be recovered/deducted from the next payment made under any or the clause or clauses of this contract.

**Plant &  
Machinery &  
Shuttering  
Material  
Advance**

- ii) Mobilization advance not exceeding 10% of the tendered value may be given, if requested by the contractor in writing within one month of the order to commence the work. In such a case the contractor shall execute a Bank Guarantee/ Bond from a Scheduled Nationalized Bank as specified by the Engineer-in-Charge for the full amount of such advance before it is released. Such advance shall be in two or more installments to be determined by the Engineer-In-charge at his absolute discretion. The first installment of such advance before shall be released by the Engineer-in-Charge to the contractor on a request made by the contractor to the Engineer-in-Charge in this behalf. The second and subsequent installment shall be released by the Engineer-in-Charge only after the contractor furnishes a proof of the satisfactory utilisation of the earlier installment to the entire satisfaction of the Engineer-In-Charge.

iii) An advance for plant machinery required for the work and brought to site by the Contractor may be given if requested by the contractor in writing within one month of bringing such plant and machinery to site. Such advance shall be given on such plant and machinery which in the opinion of the Engineer-in-Charge will add to the expeditious execution of work and improve the quality of work. The amount of advance shall be restricted to 5% of the tender value. In the case of new plant and equipment to be purchased for the work the advance shall be restricted to 85% of the price of such new plant and equipment paid by the contractor for which the contractor shall produce evidence satisfactory to the Engineer-in-Charge and approval from Engineer-in-Charge. In the case of second hand and used plants and equipment, the amount of such advance shall be limited to 50% of the depreciated value of plant and equipment as may be decided by the Engineer-in-Charge. The contractor shall, if so required by the Engineer-in-Charge, submit the statement value of such old plant and equipment duly approved by a Registered Value recognized by the Central Board of Direct Taxes under the Income-Tax Act, 1961. No such advance shall be paid on any plant and equipment of perishable nature and on the plant and equipment of a value less than Rs. 50,000/- Seventy five percent of such amount of advance shall be paid after the plant & equipment is brought to site and balance twenty five percent on successfully commissioning the same only after approval from Engineer-in-Charge.

Leasing of equipment shall be considered at par with purchase of equipment and shall be covered by tripartite agreement with the following:

1. Leasing company which gives certificate of agreeing to lease equipment to the contractor.
2. Engineer in Charge, and
3. The contractor.

This advance shall further be subject to the condition that such plant and equipment (a) are considered by the Engineer-in-Charge to be necessary for the works; (b) and are in and are maintained in working order; (c) hypothecated to the BUIDCo as specified by the Engineer-in-Charge before the payment of advance is released. The contractor shall not be permitted to remove from the site such hypothecated plant and equipment without the prior written permission of the Engineer-in-Charge. The contractor shall be responsible for maintaining such plant and equipment in good working order during the entire period of hypothecation falling which such advance shall be entirely recovered in lump sum. For this purpose steel scaffolding and from work shall be treated as plant and equipment.

The contractor shall insure the Plant and Machinery for which mobilization advance is sought and given, for a sum sufficient to provide for their replacement at site. Any amounts not recovered from the insurer will be borne by the contractor.

**Interest &  
Recovery**

- iv) The mobilization advance and plant and machinery advance in (ii)&(iii) above bear simple interest and should be equal to the prevailing rate of interest charged by the bank as mentioned in contract date schedule 'F' and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractor's bills commencing after first ten per cent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty per cent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of the installment.
- v) If the circumstances are considered reasonable by the Engineer-in-Charge, the period mentioned in (ii) and (iii) for request by the contractor in writing for grant of mobilization advance and plant and equipment advance may be extended in the discretion of the Chief General Manager.

- vi) The said bank guarantee for advances shall initially be made for the full amount and valid for the contract period, and be kept renewed from time to time to cover the balance amount and likely period of complete recovery together with interest.
- vii) Any materials including tools plants equipments etc brought to the site shall not be removed from the sites without the written permission of the Engineer-in-charge.

#### **CLAUSE 10 C**

#### **Payment on Account of Increase in Prices/Wages due to Statutory Order(s)**

If after submission of the tender the price of any material incorporated in the works (not being a material supplied from the Engineer-in-Charge's stores in accordance with clause 10 thereof) and/or wages of labour increases as a direct result of the coming into force of any fresh law, or statutory rule or order (but not due to any changes in sales tax) and such increase in the price and/or wages prevailing at the time of the last stipulated date for receipt of the tenders including extensions if any for the work, and the contractor thereupon necessarily and properly pays in respect of that material (incorporated in the works) such increased price and/or in respect of labour engaged on the execution of the work such increased wages, then the amount of the contract shall accordingly be varied and provided further that any such increase shall not be payable if such increase has become operative after the stipulated date of completion of the work in question.

If after submission of the tender, the price of any material incorporated in the works (not being a material supplied from the Engineer-in-Charge's stores in accordance with clause 10 thereof) and/or wages of labour is decreased as a direct result of the coming not force of any law or statutory rules or order (but not due to any changes in sales tax) and such decrease in the prices and/ or wages prevailing at the time of receipt of the tender for the work. The government shall in respect of materials incorporated in the works (not being materials supplied from the Engineer-in-Charge's stores in accordance with Clause-10 hereof) and/or labor engaged on the execution of the work after the date of coming into force of such law statutory rule or order be entitled to deduct from the dues of the contractor such amount as shall be equivalent to the difference between the prices of the materials and/or wages as prevailed at the time of the last stipulated date for receipt of tenders including extensions if any for the work and the price of materials and/or wages of labour on the coming into force of such law, statutory rule or order.

The contractor shall, for purpose of this condition, keep such books of account and other documents as are necessary to show the amount of any increase claimed or reduction available and shall allow inspection of the same by a duly authorised representative of BUIDCo, and further shall, at the request of the Engineer-in-Charge may require any documents so kept and such other information as the Engineer-in-Charge may require.

The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such material and/or wages of labour, give notice thereof to the Engineer-in-Charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in position to supply.

#### **CLAUSE 10 CA**

#### **Payment on Account of Increase/decrease in Prices of construction materials after receipt of tender.**

If after submission of the tender, the price of cement or steel reinforcement bars / bitumen incorporated in the works (not being a material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) increase(s) beyond the price(s) prevailing at the time of the last stipulated date for receipt of tenders (including extensions, if any) for the work, then the amount of the contract shall accordingly be varied and provided further that any such increase shall not be payable if such increase has become operative after the stipulated date of completion of work in question.

If after submission of the tender, the prices of cement and/or steel reinforcement bars / bitumen incorporated in the works (not being a material stipulated from the Engineer-in-Charge's stores in accordance with the Clause 10 thereof) is decreased, Government shall in respect of these materials incorporated in the works (not being materials supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) be entitled to deduct from the dues of the contractor such amount as shall be equivalent to the difference between the prices of Cement and/or Steel reinforcement bars/ bitumen as prevailed at the time of last stipulated date for receipt of tenders including extensions if any for the work and the prices of these materials on the coming into force of such base price of cement and/or steel reinforcement bars/ bitumen issued under authority of Schedule of Rate Committee.

The increase/decrease in prices shall be determined by the All India Wholesale Price Indices for Cement and Steel (bars and rods) as published by Economic Advisor to Government of India, Ministry of Commerce and Industry and base price for cement and/or steel reinforcement bars / bitumen as issued under authority of Schedule of Rate Committee as valid on the last stipulated date of receipt of tender, including extension if any and for the period under consideration.

The amount of the contract shall accordingly be varied for cement or steel reinforcement bars / bitumen and will be worked out as per the formula given below:-

#### **Adjustment for cement component**

- (i) Price adjustment for increase or decrease in the cost of cement procured by the contractor shall be paid in accordance with the following formula:

$$V_0 = 0.85 \times P_c / 100 \times R \times (C_1 - C_0) / C_0$$

$V_0$  = increase or decrease in the cost of work during the month under consideration due to changes in rates for cement.

$R$  = Value of the work.

$C_0$  = The all India wholesale price index for cement on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.

$C_1$  = The all India average wholesale price index for cement for the month under consideration as published by Ministry of Industrial Development, Government of India, New Delhi.

$P_c$  = Percentage of cement component of the work.

#### **Adjustment for Steel component**

- (ii) Price adjustment for increase or decrease in the cost of steel procured by the Contractor shall be paid in accordance with the following formula:

$$V_s = 0.85 \times P_s / 100 \times R \times (S_1 - S_0) / S_0$$

$V_s$  = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel.

$S_0$  = The all India wholesale price index for steel (Bars and Rods) on 25 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India New Delhi.

$S_1$  = The all India average wholesale price index for steel (Bars and Rods) for the month under consideration as published by Ministry of Industrial Development, New Delhi.

$P_s$  = Percentage of Steel component of the work.

Note : For the application of this clause, index of Bars and Rods has been chosen to represent steel group.

#### **Adjustment of bitumen component**

- (iii) Price adjustment for increase or decrease in the cost of bitumen shall be paid in accordance with the following formula:

$$V_b = 0.85 \times P_b / 100 \times R \times (B_1 - B_0) / B_0$$

$V_b$  = Increase or decrease in the cost of work during the month under consideration due to changes in rates for bitumen.

$B_0$  = The office retail price of bitumen at the IOC depot at nearest center on the day 28 days prior to date of opening of Bids.

$B_1$  = The official retail price of bitumen of IOC depot at nearest center for the 15<sup>th</sup> day of the month under consideration.

$P_b$  = Percentage of bitumen component of the work.

#### **Adjustment for CI Pipes and Specials Component**

$$V_s = 0.85 \times \frac{PCI \times R (S_1 - S_0)}{100 S_0}$$

$V_s$  = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

$PCI$  = Percentage of C.I component of the work.

$R$  = Value of the work.

$S_1$  = Rate of Pig iron for the month under consideration as issued by Kudermukh iron ore Company Ltd (A GOI Undertaking)

S0 = Basic rate of pig iron on 25 days preceding the date of opening of Bids as issued by Kudermukh iron ore Company Ltd(A GOI undertaking)

#### **Adjustment for DI Pipes and Specials Component**

$$V_s = 0.85 \times 0.65 \frac{PDI}{100} \times R \frac{(S1-S0)}{S0}$$

Vs = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

PDI = Percentage of D.I component of the work.

R = Value of the work.

S1 = Rate of Pig iron for the month under consideration as issued by Kudermukh iron or Company Ltd (A GOI Undertaking) and as per PHED letter no. 682 dated 24/7/15

S0 = Basic rate of pig iron on 25 days preceding the date of opening of Bids as issued by Kudermukh iron ore Company Ltd(A GOI undertaking)

#### **Adjustment for M.S. /G.I. Pipes and Fittings Component**

$$V_s = 0.85 \times \frac{PGI}{100} \times R \frac{(S1-S0)}{S0}$$

Vs = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

PGI = Percentage of G.I. component of the work.

R = Value of the work.

S1 = Rate of HR Coil / plate for the month under consideration as issued by SAIL.

S0 = Rate of HR Coil / plate on 25 days preceding the date of opening of Bids as issued by SAIL

### **CLAUSE 10 CC**

Payment due to increase / Decrease in Prices / Wages after receipt of tender (Time of completion more than 18 months)

Contract price shall be adjusted for increase or decrease in rates and price of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formula given in the contract data :

(a) The price adjustment shall apply for the work done from the start date given in the contract data upto end of the initial intended completion date or extensions granted by the Engineer and shall not apply to the work carried out beyond the stipulated time for reasons attributable to the contractor.

- (b) Following expressions and meanings are assigned to the work done during each month:
- R = Total value of work done during the month. It would include the amount of secured advance granted, if any, during the month, less the amount of secured advance recovered, if any during the month. It will exclude value for works executed under variations for which price adjustment will be worked separately based on the terms mutually agreed.
- (c) To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clauses in the contract, the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

The formula (e) for adjustment of prices are:

#### **Adjustment for labour component**

- (i) Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula:

$$V_L = 0.85 \times P_1 / 100 \times R \times (L_1 - L_0) / L_0$$

V<sub>L</sub> = increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour.

L<sub>0</sub> = the consumer price index for industrial workers for the State on 28 days preceding the date of opening of Bids as published by Labour Bureau, Ministry of Labour, Government of India.

$L_1$  = The consumer price index for industrial workers for the State for the under consideration as published by Labour Bureau, Ministry of Labour, Government of India.

$P_1$  = Percentage of labour component of the work.

#### **Adjustment for cement component**

(ii) Price adjustment for increase or decrease in the cost of cement procured by the contractor shall be paid in accordance with the following formula:

$$V_0 = 0.85 \times P_0/100 \times R \times (C_1 - C_0)/C_0$$

$V_0$  = increase or decrease in the cost of work during the month under consideration due to changes in rates for cement.

$C_0$  = The all India wholesale price index for cement on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.

$C_1$  = The all India average wholesale price index for cement for the month under consideration as published by Ministry of Industrial Development, Government of India, New Delhi.

$P_c$  = Percentage of cement component of the work.

#### **Adjustment for Steel component**

(iii) Price adjustment for increase or decrease in the cost of steel procured by the Contractor shall be paid in accordance with the following formula:

$$V_s = 0.85 \times P_s/100 \times R \times (S_1 - S_0)/S_0$$

$V_s$  = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel.

$S_0$  = The all India wholesale price index for steel (Bars and Rods) on 25 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India New Delhi.

$S_1$  = The all India average wholesale price index for steel (Bars and Rods) for the month under consideration as published by Ministry of Industrial Development, New Delhi.

$P_1$  = Percentage of labour component of the work.

Note : For the application of this clause, index of Bars and Rods has been chosen to represent steel group.

#### **Adjustment of bitumen component**

(iv) Price adjustment for increase or decrease in the cost of bitumen shall be paid in accordance with the following formula:

$$V_b = 0.85 \times P_b/100 \times R \times (B_1 - B_0)/B_0$$

$V_b$  = Increase or decrease in the cost of work during the month under consideration due to changes in rates for bitumen.

$B_0$  = The office retail price of bitumen at the IOC depot at nearest center on the day 28 days prior to date of opening of Bids.

$B_1$  = The official retail price of bitumen of IOC depot at nearest center for the 15<sup>th</sup> day of the month under consideration.

$P_1$  = Percentage of bitumen component of the work.

#### **Adjustment of POL (fuel and lubricant) component**

(v) Price adjustment for increase or decrease in the cost of POL (fuel and lubricant) shall be paid in accordance with the following formula.

$$V_f = 0.85 \times P_f/100 \times R \times (F_1 - F_0)/F_0$$

$V_f$  = Increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel and lubricants.

$F_0$  = The official retail price of High Speed Diesel (HSD) at the existing consumer pumps of IOC at nearest center on the day 28 days prior to the date of opening of Bids.

$F_1$  = The official retail price of HSD at the existing consumer pumps of IOC at nearest center for the 15<sup>th</sup> day of month of the under consideration.

$P_1$  = Percentage of fuel and lubricants component of the work.

Note : For the application of this clause, the price of High Speed Diesel oil has been chosen to represent fuel and lubricants group.

#### **Adjustment for Plant and Machinery Spares component**

(vi) Price adjustment for increase or decrease in the cost of plant and machinery spares procured by the Contractor shall be paid in accordance with the following formula :

$$V_p = 0.85 \times P_p / 100 \times R \times (P_1 - P_0) / P_0$$

$V_p$  = Increase or decrease in the cost of work during the month under consideration due to changes in rates for plant and machinery spares.

$P_0$  = The all India wholesale price index for heavy machinery and parts on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development Government of India, New Delhi.

$P_1$  = The all India average wholesale price index for heavy machinery and parts for the month under consideration as published by Ministry of Industrial Development, Government of India, New Delhi.

$P_1$  = Percentage of plant and machinery spares component of the work.

Note : For the application of this clause, index of Heavy Machinery and Parts has been chosen to represent the Plant and Machinery Spares group.

#### **Adjustment for CI Pipes and Specials Component**

(vii)

$$V_s = 0.85 \times \frac{PCI}{100} \times R \times \frac{(S_1 - S_0)}{S_0}$$

$V_s$  = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

PCI = Percentage of C.I component of the work.

R = Value of the work.

S1 = Rate of Pig iron for the month under consideration as issued by Kudermukh iron ore Company Ltd (A GOI Undertaking)

S0 = Basic rate of pig iron on 25 days preceding the date of opening of Bids as issued by Kudermukh iron ore Company Ltd(A GOI undertaking)

#### **Adjustment for DI Pipes and Specials Component**

(viii)

$$V_s = 0.85 \times 0.65 \frac{PDI}{100} \times R \times \frac{(S_1 - S_0)}{S_0}$$

$V_s$  = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

PDI = Percentage of D.I component of the work.

R = Value of the work.

S1 = Rate of Pig iron for the month under consideration as issued by Kudermukh iron or Company Ltd (A GOI Undertaking)

S0 = Basic rate of pig iron on 25 days preceding the date of opening of Bids as issued by Kudermukh iron ore Company Ltd(A GOI undertaking)

#### **Adjustment for M.S./G.I. Pipes and Fittings Component**

(ix)

$$V_s = 0.85 \times \frac{PGI}{100} \times R \times \frac{(S_1 - S_0)}{S_0}$$



Vs = Increase or decrease in cost of work during the Month under consideration due to changes in the rates of pig iron

PGI = Percentage of G.I. component of the work.

R = Value of the work.

S1 = Rate of HR Coil / plate for the month under consideration as issued by SAIL.

S0 = Rate of HR Coil / plate on 25 days preceding the date of opening of Bids as issued by SAIL

### Adjustment of other materials component

(vii) Price adjustment for increase or decrease in cost of local materials other than cement, steel, bitumen and POL procured by the contractor shall be paid in accordance with the following formula:

$$V_m = 0.85 \times P_m / 100 \times R \times (M_1 - M_0) / M_0$$

$V_m$  = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local materials other than cement, steel, bitumen and POL.

$M_0$  = The all India wholesale price index (all commodities) on 28 days preceding the date of opening of Bids, as published by the Ministry of Industrial Development, Government of India, New Delhi.

$M_1$  = The all India wholesale price index (all commodities) for the month under consideration as published by Ministry of Industrial Development, Government of India, New Delhi.

$P_1$  = Percentage of local material component (other than cement, steel, bitumen and POL) of the work.

The following percentages will govern the price adjustment for the entire contract:

1.	Labour - $P_1$	25 %	} <div style="border: 1px solid black; padding: 5px; display: inline-block;">An example</div>
2.	Cement - $P_c$	5 %	
3.	Steel - $P_s$	5 %	
4.	Bitumen - $P_b$	10 %	
5.	POL - $P_f$	5 %	
6.	Plant & Machinery Spares - $P_p$	5 %	
7.	Other materials - $P_m$	45 %	
	Total	100%	

(viii) In contract where clause 10CA is applicable, this clause 10CC will not be applicable and in contract where this clause 10CC is applicable previous clause 10CA will not be applicable.

### CLAUSE 10 D

**Dismantled  
Material Govt.  
Property**

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as Government's property and such materials shall be disposed off to the best advantage of Government according to the PWD codal provision.

### CLAUSE 11

**Work to be  
Executed in  
Accordance with  
Specifications,  
Drawings, Orders  
etc.**

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specification, designs, drawings and instruction as are not included in the standard specifications of Public Works Department specified in Schedule 'F' or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract.

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing

these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

## CLAUSE 12

### Deviations/ Variations Extent and Pricing

The Engineer-in-Charge (As per codal provision) shall have power (i) to make alternation in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge after approval from competent authority and such alterations omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered be extended, if requested by the contractor, as follows:

- i) In the proportion which the additional cost of the altered, additional or substituted work, 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 after approval from competent authority

### Deviation, Extra items and Pricing

12.2 In the case of extra item(s) the contractor may within fifteen days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis, for the work and the Engineer-in-Charge after approval from competent authority shall within one month of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates as per power delegated in PWD Code and on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

In the case of substituted items, the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the aforesaid para.

- (a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
- (b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

### Deviation, Substituted Items, Pricing

### Deviation, Deviated Quantities, Pricing

In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in Schedule F, the contractor may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis, for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities the Engineer-in-Charge shall within one month of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates as per power delegated in PWD Code and on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

12.3 The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule 'F' and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of receipt of the notice, revise the rates as per power delegated in PWD Code for the work in question within one month of expiry of the said period of fifteen days having regard to the market rates or current schedule of rate.

12.4 The contractor shall send to the Engineer-in-Charge once every three months an up to date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge after approval from competent authority which he has executed during the preceding quarter failing which the contractor shall be deemed to have waived his right. However, the General Manager (Works) is authorized for consideration of such claims on merits.

12.5 For the purpose of operation of Schedule 'F' the following works shall be treated as works relating to foundation :

- i) For buildings, compound walls plinth level or 1.2 meters (4 feet) above ground level whichever is lower excluding items of flooring and D.P.C. but including base concrete below the floors.
- ii) For abutments, piers, retaining walls of culverts and bridges, walls of water reservoirs the bed of floor level.
- iii) For retaining walls where floor level is not determinate 1.2 meters above the average ground level or bed level.
- iv) For Roads all items of excavation and filling including treatment of sub-base.

12.6 Any operation incidental to or necessary has to be in contemplation of tenderer while filing tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

### **CLAUSE 13**

#### **Foreclosure of Contract due to Abandonment or Reduction in Scope of Work**

If at any time after acceptance of the tender Government shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer-in-Charge shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

The contractor shall be paid at contract rates for works executed at site only.

### **CLAUSE 14**

If the contractor :

- i) at any time makes default in proceeding with the works or any part of the work with due diligence and continues to do so after a notice in writing of 7 days from the Engineer-in-Charge; or
- ii) Commits default to comply with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge; or
- iii) Fails to complete the works or items of work with individual dates of completion, on or before the date(s) of completion, and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge; or
- iv) Shall offer or give or agree to give to any person in Government service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Government; or
- v) Shall enter into a contract with Government/ BUIDCo in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Accepting Authority/Engineer-in-Charge; or
- vi) Shall obtain a contract with Government / BUIDCo as a result of wrong tendering or other non-bonafide methods of competitive tendering; or
- vii) Being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors; or

- viii) Being a company, shall pass a resolution or the Court shall make an order for the winding up of the company, or a receiver or manager on behalf of the debenture holders or otherwise shall be appointed or circumstances shall arise which entitle the Court or debenture holders to appoint a receiver or manager; or
  - ix) Shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days; or
  - x) Assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Competent Authority;
- The Competent Authority may, without prejudice to any other right or remedy which shall have accrued or shall accrue hereafter to Government, by a notice in writing to cancel the contract as a whole or only such items of work in default from the Contract.

The Engineer-in-Charge shall on such cancellation by the Competent Authority have powers to :

- (a) Take possession of the site and any materials, constructional plant, implements stores, etc., thereon; and/or
- (b) Carry out the incomplete work by any means at the risk and cost of the contractor.

On cancellation of the contract in full or in part, the Engineer-in-Charge shall determine what amount, if any, is recoverable from the contractor for completion of the works or part of the works or in case the works or part of the works is not to be completed, the loss of damage suffered by Government. In determining the amount, credit shall be given to the contractor for the value of the work executed by him up to the time of cancellation, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor.

Any excess expenditure incurred or to be incurred by BUIDCo in completing the works or part of the works or the excess loss or damages suffered or which may be suffered by BUIDCo as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to BUIDCo in law be recovered from any moneys due to the contractor on any account, and if such moneys are not sufficient the contractor shall be called upon in writing and shall be liable to pay the same within 31 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days the Engineer-in-Charge shall have the right to sell any or all of the contractor's unused materials, constructional plant, implements, temporary buildings, etc. and apply the proceeds of sale thereof towards the satisfaction of any sums due from the contractor under the contract and if thereafter there be any balance outstanding from the contractor, it shall be recovered in accordance with the provisions of the contract.

Any sums in excess of the amounts due to BUIDCo and unsold materials, constructional plant, etc., shall be returned to the contractor, provided always that if cost or anticipated cost of completion by BUIDCo of the works or part of the works is less than the amount which the contractor would have been paid had he completed the works or part of the works, such benefit shall not accrue to the contractor.

## CLAUSE 15

### Suspension of Work

- i) The contractor shall, on receipt of the order in writing of the Engineer-in-Charge (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done 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 secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-in-Charge.
- ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above, the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for

completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

#### **CLAUSE 16**

**Action in case  
Work not done  
as per  
Specifications**

All works under or in course of execution or executed in pursuance of the contract shall at all times be open and accessible to the inspection and supervision of the Engineer-in-Charge, his authorized subordinates in charge of the work and all the superior officers, officer of the Quality Control Organization of the Department and of the Cabinet (Technical) Vigilance, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

If it shall appear to the Engineer-in-Charge or his higher authority or his authorised subordinates in charge of the work or to the Cabinet (Technical) Vigilance or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or article provides by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract the contractor shall, on demand in writing which shall be made within the period specified in schedule – F of contract data from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the contractor failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the competent authority may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure and incidental items rectified, or removed and re-executed at the risk and cost of contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor.

#### **CLAUSE 17**

**Contractor  
Liabile for  
Damages,  
defects during  
maintenance  
period**

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road curb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wired, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within defect liability period after a certificate final or otherwise of its completion shall have been given by the Engineer-in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit except for the portion pertaining to asphaltic work which is governed by sub-para (iii) of clause 35 or the proceeds of sale thereof or of a sufficient option thereof. The security deposit of the contractor shall not be refunded before the expiry of defected liability period after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later.

In case of Maintenance and Operation works of Electrical & Mechanical services, the security deposit deducted from contractors shall be refunded within one month from the date of final payment or within one month from the date of completion of the maintenance contract which ever is earlier.

#### **CLAUSE 18**

**Contractor to  
Supply Tools &  
Plants etc.**

The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other document forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the

Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting the measurement for examination at any time and from time to time of the work or materials. Failing his so doing the same may be provided by the Engineer-in-Charge at cost to the contractor, under this contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

#### **CLAUSE 18 A**

##### **Recovery of Compensation paid to Workman**

In every case in which by virtue of the provisions sub-section (1) of Section 12, of the Workmen's Compensations Act, 1923, Government is obliged to pay compensation to a workman employed by the contractor, in execution of the works, Government will recover from the contractor the amount of the compensation so paid; and without prejudice to the right of the Government under sub-section (2) of section 12, of the said Act, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government / BUIDCo to the contractor whether under this contract or otherwise. Government / BUIDCo shall not be bound to contest any claim made against it under sub-section (1) Section 12, of the said Act, except on the written request of the contractor and upon his giving to Government / BUIDCo full security for all costs for which Government / BUIDCo might become liable in consequence of contesting such claim.

#### **CLUASE 18 B**

##### **Ensuring Payment and Amenities to Workers if Contractor fails**

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, BUIDCo is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by P.W.D. Contractors, BUIDCo will recover from the contractor the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the BUIDCo under sub-section (2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, BUIDCo shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government/BUIDCo to the contractor whether under this contract or otherwise BUIDCo shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the BUIDCo full security for all costs for which Government/BUIDCo might become liable in contesting such claim.

#### **CLAUSE 19**

##### **Labour Laws to be complied by the Contractor**

The contractor shall obtain a valid license under the State Labour Act, and the Contract Labour (Regulation and Abolition) Central rules 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) ACT, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) ACT, 1996 and the building and other Construction Workers Welfare Cess Act, 1996.

Any failure to fulfill these requirements shall attract the penal provisions of the contract arising out of the resultant non-execution of the work.

The bidder should registered in EPF.

The bidder should submit the Project Insurance and professional liability insurance documents after award of the contract.

#### **CLAUSE 19 A**

No labour below the prescribed age shall be employed on the work.

## CLAUSE 19 B

### Payment of Wages

#### Payment of wages:

- i) The contractor shall pay to labour employed by him either directly or through sub-contractors, wages not less than fair wages as defined in P.W.D. Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.
- ii) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.
- iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorisedly made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation And Abolition) Central Rules, 1971, wherever applicable.
- iv)
  - a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of nonfulfilment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.
  - b) Under the provision of Minimum Wages (Central) Rules 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at same rate as for duty. In the event of default the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.
- v) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Act, 1970, or the modifications thereof or any other laws relating thereto and the rules made hereunder from time to time.
- vi) The contractor shall indemnify and keep indemnified BUUIDCo against payments to be made under and for the observance of the laws aforesaid and the P.W.D. Contractor's Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.
- vii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.
- viii) Whatever is the minimum wage for the time being, or if the wage payable higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.
- ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

## CLAUSE 19 C

In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid he shall be liable to pay a penalty of Rs. 200/- for each default and in addition the

Engineer-in-Charge shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the contractor.

#### **CLAUSE 20**

**Minimum wages Act to be complied with.**

The contractor shall at least pay and comply with all the provisions of the Minimum wages Act s and rules framed there under other labour laws related to contract labour .

#### **CLAUSE 21**

**Work not to be sublet. Action in case of insolvency**

The contract shall not be assigned or sublet without the written approval of the Engineer-in-Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employment of BUIDCo in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-Charge on behalf of the Governor of Bihar shall have power to adopt the courses specified in Clause 3 hereof in the interest of BUIDCo and in the event of such course being adopted the consequences specified in the said Clause 3 shall ensue.

#### **CLAUSE 22**

**Compensation**

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of BUIDCwithout reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

#### **CLUASE 23**

**Changes in firm's Constitution to be intimated**

Where the contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 thereof and the same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.

#### **CLAUSE 24**

**Approval of Engineer In charge**

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Engineer-in-Charge who shall be entitled to direct at what point or points and in what manner they are to be commenced, and from time to time carried on.

#### **CLAUSE 25**

**Settlement of Disputes & Arbitration**

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in-before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim right matter or thing whatsoever in any way arising out of or relating to contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter.

- i) If the contractor considered any work demanded of him to be outside the requirements of the contract, or dispute any drawings, record or decision given in writing by the Engineer-in-Charge on any matter in connection with or arising out of the contract or carrying out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 7 days request the General Manager(Works), BUIDCo in writing for written instruction or decision. Thereupon, the General Manager(Works), BUIDCo shall give his written instructions or decision within a period of fifteen days from the receipt of the contractor's letter.

If the General Manager(Works), BUIDCo fails to give his instructions or decision in writing within the aforesaid period or if the contractor is dissatisfied with the instructions or decision of the General Manager(Works),BUIDCo the contractor may, within 15 days of the receipt of General Manager(Works)'s decision, appeal to the Chief General Manager, BUIDCo who shall afford an



opportunity to the contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Chief General Manager, BUIDCO shall give his decision within 30 days of receipt of contractor's appeal. If the contractor is dissatisfied with this decision, the contractor shall within a period of 30 days from receipt of the decision, give notice to the Chief Engineer, PDM, BUIDCO for reference of the same to arbitration tribunal failing which the said decision shall be final binding and conclusive and not referable to adjudication by the arbitrator.

- ii) Except where the decision has become final, binding and conclusive in terms of Sub Para (i) above disputes or difference shall be referred for adjudication through Arbitration Tribunal already established by the state government under Bihar Public Work Contract Disputes arbitral Tribunal Act 2008.

It is also a term of this contract that if the contractor does not make any reference to the arbitration Tribunal in respect of any claims in writing as aforesaid within 45 days of receiving the intimation from the Engineer-in-Charge that the final bill is ready for payment, the claim of the contractor shall be deemed to have been waived and absolutely barred and the BUIDCO shall be discharged and released of all liabilities under the contract in respect of these claims.

The arbitration shall be conducted in accordance with the provisions of the Bihar Public works contract Dispute Arbitration Tribunal Act 2008 or any statutory modifications or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

All arbitration shall be held at PATNA and at no other place.

#### **CLAUSE 26**

**Contractor to indemnify Govt. against Patent Rights**

The contractor shall fully indemnify and deep indemnified the Governor of Bihar against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under the action brought against Government in respect of any such matter as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the Governor of Bihar if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

#### **CLAUSE 27**

**Lumpsum Provisions in Tender**

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge capable of measurement, The Engineer-in-Charge may at his discretion pay the lump-sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

#### **CLAUSE 28**

**Action where no Specifications are specified**

In the case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications, Indian Road Congress for road works and Indian Building Congress for building works or any central government agency. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers specifications. If not available then as per Department Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

#### **CLAUSE 29**

- i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge or the Government shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalisation or adjudication of any such claim. In

the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and have a lien to retain to the extent of payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the Government or any contracting person through the Engineer-in-Charge of the Government or any contraction person through the Engineer-in-Charge pending finalisation of adjudication of any such claim.

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or BUIDCo will be kept withheld or retained as such by the Engineer-in-Charge or BUIDCo till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) or by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the BUIDCo shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise.

- ii) BUIDCo shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for BUIDCo to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by BUIDCo to the contractor, without any interest thereon whatsoever.

#### **CLAUSE 29 A**

#### **Lien in respect of claims in other Contracts**

Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or the BUIDCo or any other contracting person or persons through Engineer-in-Charge against any claim of the Engineer-in-Charge or BUIDCo or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the BUIDCo or with such other person or persons.

It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the BUIDCo will be kept withheld or retained as such by the Engineer-in-Charge or the BUIDCo till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

#### **CLAUSE 30**

#### **Unfiltered water supply**

The contractor(s) shall make his/their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

- i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge.
- ii) The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor?(s) if the arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in-Charge, unsatisfactory.

#### **CLAUSE 31**

#### **Return of surplus material**

Notwithstanding anything contained to the contrary in this contract, where any materials for the execution of the contract are procured with the assistance of BUIDCo either by issue from BUIDCo stocks or purchase made under orders or permits or licences issued by BUIDCo the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the written permission of the BUIDCo and return, if required by the Engineer in Charge, all surplus or unserviceable materials that may be left with him after the

completion of the contract or at its termination for any reason whatsoever on being paid or credited such price as the Engineer in Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however shall not exceed the amount charged to him excluding the element of storage charges. The decision of the Engineer in Charge shall be final and conclusive. In the event of breach of the aforesaid condition the contractor shall in addition to throwing himself open to action for contravention of the term of the licence or permit and/or for criminal breach of trust, be liable to BUIDCo for all moneys, advantages or profits resulting or which in the usual course would have resulted to him by reason of such breach.

#### **CLAUSE 32**

##### **Hire of Plant & Machinery**

- i) The contractor shall arrange at his own expense all tools, plant machinery and equipment (hereinafter referred to as T & P) required for execution of the work except for the Plant & Machinery listed in Schedule 'C' and stipulated for issue to the contractor. If the contractor requires any item of T & P on hire from the T & P available will, if such item is available, hire it to the contractor at rates to be agreed upon between him and the Engineer-in-Charge. In such a case all the conditions hereunder for issue of T & P shall also be applicable to such T & P as is agreed to be issued.
- ii) Plant and Machinery when supplied on hire charges shown in Schedule 'C' shall be made over and taken back at the departmental equipment yard/shed shown in Schedule 'C' and the contractor shall bear the cost of carriage from the place of issue to the site of work and back. The contractor shall be responsible to return the plant and machinery in the condition in which it was handed over to him, and he shall be responsible for all damage caused to the said plant and machinery at the site of work or elsewhere in operation and otherwise during transit including damage to or loss of plant and for all losses due to his failure to return the same soon after the completion of the work for which it was issued. The Executive Engineer shall be the sole judge to determine the liability of the contractor and its extent in this regard and his decision shall be final and binding on the contractor.
- iii) The plant and machinery as stipulated above will be issued as and when available and if required by the contractor. The contractor shall arrange his programme of work according to the availability of the plant and machinery and no claim, whatsoever, will be entertained from him for any delay in supply by the Department.
- iv) The hire charges shall be recovered at the prescribed rates from and inclusive of the date the plant and machinery made over up to and inclusive of the date of the return in good order even though the same may not have been working for any cause except major breakdown due to no fault of the contractor or faulty use requiring more than three working days continuously (excluding intervening holidays and Sundays) for bringing the plant in order. The contractor shall immediately intimate in writing to the Engineer in Charge when any plant or machinery gets out of order requiring major repairs as aforesaid. The Engineer in Charge shall record the date and time of receipt of such intimation in the log sheet of the plant or machinery. Based on this if the breakdown occurs before lunch period or major breakdown will be computed considering half a day's breakdown on the day of complaint. If the breakdown occurs in the post lunch period of major breakdown will be computed starting from the next working day. In case of any dispute under this clause the decision of the General Manager (Works) shall be final and binding on the contractor.
- v) The hire charges shown above are for each day of 8 hours (inclusive of the one-hour lunch break) or part thereof.
- vi) Hire charges will include service of operating staff as required and also supply of lubricating oil and stores for cleaning purposes. Power fuel of approved type, firewood, kerosene oil etc. for running the plant and machinery and also the full time chowkidar for guarding the plant and machinery against any loss or damage shall be arranged by the contractor who shall be fully responsible for the safeguard and security of plant and machinery. The contractor shall on or before the supply of plant and machinery sign an agreement indemnifying BUIDCo against any loss or damage caused to the plant and machinery either during transit or at site of work.
- vii) Ordinarily, no plant and machinery shall work for more than 8 hours a day inclusive of one hour lunch break. In case of an urgent work however, the Engineer in Charge may, at his discretion, allow the plant and machinery to be worked for more than normal period or 8 hours a day. In that case the hourly hire charges for overtime to charge (1/8)th of the daily charges) subject to a minimum of half day's normal charges on any particular day. For working out hire charges for

over time a period of half an hour and above will be charged as one hour and a period of less than half an hour will be ignored.

- viii) The contractor shall release the plant and machinery every seventh day for periodical servicing and/or wash out which may take about three to four hours or more. Hire charges for full day shall be recovered from the contractor for the day of servicing/Wash out irrespective of the period employed in servicing.
- ix) The plant and machinery once issued to the contractor shall not be returned by him on account of lack of arrangements of labour and materials, etc. on his part, the same will be returned only when they are required for major repairs or when in the opinion of the Engineer in Charge the work or a portion of work for which the same was issued is completed.
- x) Log Book for recording the hours of daily work for each of the plant and machinery supplied to the contractor will be maintained by the Department and will be countersigned by the contractor or his authorised agent daily. In case the contractor contests the correctness of the entries and/or fails to sign the Log Book the decision of the Engineer in Charge shall be final and binding on him. Hire charges will be calculated according to the entries in the Log Book and will be binding on the contractor. Recovery on account of hire charges for road rollers shall be made for the minimum number of days worked out on the assumption that a roller can consolidate per day and maximum quantity of materials or area surfacing as noted against each in the annexed statement (see attached annexure).
- xi) In the case of concrete mixers, the contractors shall arrange to get the hopper cleaned and the drum washed at the close of the work each day or each occasion.
  - a) In case rollers for consolidation are employed by the contractor himself, log book for such rollers shall be maintained in the same manner as is done in case of departmental rollers, maximum quantity of any item to be consolidated for each roller day shall also be same as in Annexure to Clause 34(x). For less use of rollers recovery for the less roller days shall be made at the stipulated issue rate.
- xii) The contractor shall be responsible to return the plant and machinery in the condition in which it was handed over to him and he shall be responsible for all damage caused to the said plant and machinery at the site of work or elsewhere in operation or otherwise or during transit including damage to or loss of parts, and for all losses due to him failure to return the same soon after the completion of the work for which it was issued. The Executive Engineer shall be the sole judge to determine the liability of the contractor and its extent in this regard and his decision shall be final and binding on the contractor.
- xiii) The contractor will be exempted for levy of any hire charges for the number of days he is called upon in writing by the Engineer in Charge to suspend execution of the work provided by BUIDCo plant and machinery in question have, in fact remained idle with the contractor because of the suspension.
- xiv) In the event of the contractor not requiring any item of plant and machinery issued by BUIDCo though not stipulated for issue in Schedule 'C' any time after taking delivery at the place of issue, he may return it after two days written notice or at any time without notice if he agrees to pay hire charges for two additional days without in any way affecting the right of the Engineer in-Charge to use the said plant and machinery during the said period of two days as he likes including hiring out to a third party.

### **CLAUSE 33**

Contractors Superintendence, Supervision, Technical Staff & Employees

#### **Employment of Technical Staff and employees**

- i) The contractor shall provide all necessary superintendence during execution of the work and as along thereafter as may be necessary for proper fulfilling of the obligations under the contract.

The contractor along with bidding of the tender , intimate in writing to the Engineer-in-Charge the name, qualifications, experience, age, address and other particulars along with certificates, of the technical representative to be in charge of the work. If there is any change then the new incumbents qualifications and experience shall not be lower than specified in Schedule in I.T.B. (Annexure – 2).The Engineer-in-Charge shall within 15 days of issue of letter of acceptance intimate in writing his approval or otherwise it is deemed to be approved. Any such approval may at any time be withdrawn and in case of such withdrawal the contractor shall appoint another such representative according to the provisions of this clause. Decision of the tender accepting authority / General Manager (Works) shall be final and binding on the contractor in this respect. Technical staff shall be available at site within fifteen days of start of work.

If the contractor (or any partner in case of firm/company) himself has such qualifications, it will not be necessary for the said contractor to appoint such a principal technical representative but

the contractor shall designate and appoint a responsible agent to represent him and to be present at the work whenever the contractor is not in a position to be so present. All the provisions applicable to the principal technical representative under the Clause will also be applicable in such a case to contractor or his responsible agent. The principal technical representative and/or the contractor or his responsible authorised agent shall be actually available at site at least two working days every week, these days shall be determined in advance and also during recording of measurement of works and whenever so required by the Engineer-in-Charge by a notice as aforesaid and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative in the site order book and in token of acceptance of measurements. There shall be no objection if the representative/agent looks after more than one work and not more than three works in the same station provided these details are disclosed to the Engineer-in-Charge and he shall be satisfied that the provisions and the purpose of the clause are fulfilled satisfactorily.

If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative or agent is effectively appointed or is effectively attending or fulfilling the provision of this clause, a recovery shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-in-Charge as recorded in the site order book and measurement recorded in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint a suitable technical representative or responsible agent and if such appointed persons are not effectively present or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as a suitable agent is appointed and the contractor shall submit a certificate of employment of the technical representative/responsible agent along with every on account bill/fixed bill and shall produce evidence if at any time so required by the Engineer-in-Charge.

- ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work.

The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work.

The Engineer in Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer in Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer in Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

#### **CLAUSE 34**

##### **Levy/Taxes payable by Contractor**

- i) Sales Tax or any other tax on materials in respect of this contract shall be payable by the contractor according to law in effect.
- ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red earth, moorum, sand chips bajri, stone, kankar, etc. from local authorities.
- iii) If pursuant to or under any law, notification or order any royalty, cess or the hike becomes payable to the Government of India and does not at any time become payable by the contractor to the State Government/ Local authorities in respect of any material used by the contractor in the works then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from the dues of the contractor.

#### **CLAUSE 35**

##### **Conditions for reimbursement of levy/taxes if levied after receipt of tenders**

- i) All tendered rates shall be inclusive of all taxes and levies payable under respective statutes. However, pursuant to the Constitution (46th Amendment) Act. 1982, if any further tax or levy is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the contractor thereupon necessarily and properly pays such taxes/levies the contractor shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of the Chief Engineer PDM( whose decision shall be final and binding on the contractor) attributable to delay in execution of work within the control of the contractor.
- ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorised representative of the Government and/or the Engineer-in-Charge and further shall furnish such other information/document as the Engineer-in-Charge may require from time to time.

- ii) The contractor shall, within a period of 30 days of the imposition of any such further tax or levy, pursuant to the Constitution (Forty Sixth Amendment) Act 1982, give a written notice thereof to the Engineer-in-Charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

#### CLAUSE 36

- Imprisonment of Contractor** If the contractor is imprisoned, becomes insolvent compound with his creditors, has a receiving order made against him or carries on business under a receiver for the benefit of the creditors or any of them, or being a partnership firm becomes dissolved, or being a company or corporations goes into liquidation or commences to be wound up not being a voluntary winding up for the purpose only of amalgamation or reconstitution the department shall be at liberty.
- (a) To give such liquidator, receiver, or other person in whom the contract may become vested, the option of carrying out the contract or a portion thereof to be determined by BUIDCo, subject to his providing an appropriate guarantee for the performance of such contract or.
- (b) To terminate the contract, forthwith by notice in writing to the contractor, the liquidator, the receiver or person in whom the contract may become vested and take further action as provided in the relevant clauses of the contract.

#### CLAUSE 37

- Termination of Contract on death of contractor** Without prejudice to any of the rights or remedies under this contract if the contractor dies, the Divisional Officer on behalf of the Governor of Bihar shall have the option of terminating the contract without compensation to the contractor after the affidavit of his/ their legal heir/heirs that they are not going to be in this profession in future.

#### CLAUSE 38

- If relation working in PWD then the contractor not allowed to tender** The contractor shall not be permitted to tender for works in the P.W.D. Division (responsible for award and execution of contracts) in which his near relative is posted as Accountant or as an officer in any capacity between the grades of the General Manager (Works) and Dy. Executive Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted Officer in the P.W.D. or in BUIDCo. Any breach of this condition by the contractors of BUIDCo shall lead to blacklisting. If the contractor is registered in any other department, he shall be debarred from tendering in BUIDCo for any breach of this condition.

NOTE : By the term "near relatives" is meant wife, husband, parents and grand parents, children and grand children, brothers and sisters, uncles, aunts and cousins and their corresponding in law.

#### CLAUSE 39

- No-Gazetted-Engineer to work as Contractor within two years of retirement** No engineer of gazetted rank of other gazetted officer employed in engineering of administrative duties in an engineering department of the Government of Bihar shall work as a contractor or employee of a contractor for a period of two years after his retirement from government service without the previous permission of State Government in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained said permission prior to engagement in the contractor's service, as the case may be.

#### CLAUSE 40

- Return of material and recovery for excess material issued**
- i) After completion of the work and also at any intermediate stage in the event of non reconciliation of materials issued, consumed and in balance (see Clause 10) theoretical quantity of materials issued by the BUIDCo for use in the work shall be calculated on the basis and method given hereunder.
- a) Quantity of cement & bitumen shall be calculated on the basis of quantity of cement & bitumen required different items of work as shown in the Schedule of Rates mentioned in-Schedule 'F'. In case any item is executed for which standard constants for the consumption of cement or bitumen are not available in the above mentioned schedule/statement or cannot be derived from the same shall be calculated on the basis of standard formula to be laid down by the Engineer in Charge.
- b) Theoretical quantity of steel reinforcement of structural steel sections shall be taken as the quantity required as per design or as authorised by Engineer in Charge, including authorized lappages, chairs etc., plus 3% wastage due to cutting into pieces, such theoretical quantity being determined and compared with the actual issues each diameter wise, section wise and category wise separately.
- c) For any other material as per actual requirements.

ii) Over the theoretical quantities of materials so computed a variation shall be allowed as specified in Schedule 'F'. The difference in the net quantities of material actually issued to the contractor and the theoretical quantities including such authorised variation, if not returned by the contractor or if not fully reconciled to the satisfaction of the Engineer in Charge within fifteen days of the issue of written notice by the Engineer in Charge to this effect shall be recovered at the rates specified in Schedule 'F' without prejudice to the provision of the relevant conditions regarding return of materials governing the contract. Decision of Engineer in Charge in regard to theoretical quantities of materials, which should have been actually used as per the Annexure of the standard schedule of rates and recovery at rates specified in Schedule 'F', shall be final & binding on the contractor

For non scheduled items, the decision of the General Manager (Works) regarding theoretical quantities of materials, which should have been actually used, shall be final and binding on the contractor.

iii) The said action under this clause is without prejudice to the right of BUIDCo to take action against the contractor under any other conditions of contract for not doing the work according to the prescribed specifications.

#### **CLAUSE 41**

##### **Release of Security deposit**

On completion of the whole of the work, half of the total amount of security shall be repaid to the contractor after six months of completion. However, the balance half of the total amount of security will be returned after completion of defect liability period and after the Engineer has certified that all defects notified by him to the contractor before the end of this period have been corrected and also after recovery of any dues.

#### **CLAUSE 42**

##### **Responsibility of Technical Staff and employees**

Technical officers / staff deployed by the Contractor at any construction site will also be responsible for inferior quality / poor performance of any work and his name will be circulated to all works Sites of BUIDCo to debar from any other site, if his name is being proposed by other contractor.

#### **CLAUSE 43**

##### **Contractor's Risks**

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

#### **CLAUSE 44**

##### **Insurance**

The Contractor shall provide, in the joint names of BUIDCo and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks :

- (a) loss of or damage to the Works, Plant and Materials ;
- (b) loss of or damage to Equipment;
- (c) loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
- (d) personal injury or death.

Policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

If the Contractor does not provide any of the policies and certificates required, BUIDCo may effect the insurance which the Contractor should have provided and recover the premiums BUIDCo has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

Alteration to the terms of an insurance shall not be made without the approval of the Engineer.

Both parties shall comply with any conditions of the insurance policies.

#### **CLAUSE 45**

##### **Cash Flow Estimate to be Submitted**

The Contractor shall, within the time stated in special Conditions of contract after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer. in charge

#### CLAUSE 46

##### Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein :

- (a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by BUIDCo) in an orderly state appropriate to the avoidance of danger to such persons,
- (b) Provide and maintain at his own cost all lights, guards, fencing, warning signs and watchmen and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others, and
- (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

#### CLAUSE 47

##### Cost of Samples

All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

#### CLAUSE 48

##### Cost of Tests

The cost of making any test shall be borne by the Contractor if such test is :

- (a) clearly intended by or provided for in the Contract, or
- (b) particularized in the Contract (in case only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfill) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

#### CLAUSE 49

##### Cost of Tests not Provided for

If any test required by the Engineer which is :

- (a) not so intended by or provided for,
- (b) (in the cases above mentioned) not so particularized, or
- (c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested,

shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor, but in any other case department will bear the cost.

#### CLAUSE 50

##### Commencement of Works

The contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect from the Engineer, which notice shall be issued within the time stated in the Appendix to Tender after the date of the Letter of Acceptance. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

#### CLAUSE 51

##### Substantial completion of parts

If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Test on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

#### CLAUSE 52

##### Force Majeure

##### Force Majeure

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of acts of GOD such as Unprecedented flood, Volcanic eruption, Earthquake or other convulsion of nature and other acts such as general/ partial strikes by a section of government employees/ invasion, the act of foreign countries/ hostilities or war like operations before or after declaration of war, rebellion/ military or usurped power which prevent performance of the contract and which could not have been foreseen or avoided by a prudent person.

#### CLAUSE 53

##### Recovery

##### Force Majeure

Any amount found recoverable from the contractor shall be recovered as public demand under the Bihar Public Demand Act. without prejudice to any other mode of recovery.



**SECTION4  
CONTRACT DATA  
(PROFORMA OF SCHEDULES)**

**PROFORMA OF SCHEDULES**

(Operative Schedules to be supplied separately to each intending tenderer)

**SCHEDULE 'A'**

Schedule of quantities

Sl. No.	Description of Item (with brief specification and reference to book of specification)	BILL OF QUANTITY				Amount
		Quantity	Unit	Rate		
				In figure	In words	
1	2	3	4	5	6	7

Attached

**SCHEDULE 'B'**

Schedule of materials to be issued to the contractor.

S. No.	Description of item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of Issue
1	2	3	4	5
			NIL	

**SCHEDULE 'C'**

Tools and plants to be hired to the contractor

Sl. No.	Description	Hire charge per day	Place of Issue
1	2	3	4
		NIL	

**SCHEDULE 'D'**

Extra schedule for specific requirements/ document for the work, if any.

## SCHEDULE'E'

Schedule of component of Cement, Steel, other Materials, Labour etc. for price escalation.

### CLAUSE 10 CC- As per SBD, GoB

Component of Cement- expressed as percent of total value of work.	Pc
Component of Steel- expressed as percent of total value of work. Component of CI/DI Pipes and specials	Ps
Component of civil (except cement & steel)/ Electrical construction Materials expressed as percent of total value of work-	Pm
Component of Bitumen - expressed as percent of total value of work.	Pb
Component of Labour- expressed as percent of total value of work.	P1
Component of P.O.L. – expressed as percent of total value of work.	Pf
Component of Plant & Machinery – expressed as percent of total value of work.	Pp

## SCHEDULE'F'

### Reference to General Condition of Contract

Name of work	As per NIT
Estimated cost of work	As per NIT
Earnest money	As per NIT
Performance Guarantee	2% of tendered value
Security Deposit	8% of tendered value (to be deducted from RA Bill)
Defect Liability period	1 Year from the date of completion of project.
Rate of Interest	<u>Prevailing lending rate of interest floated by SBI at the time of first installation of Mobilization Advance</u>

**GENERAL RULES AND DIRECTIONS :** Managing Director, BUIDCo.  
Maximum percentage for quantity of items of work to be executed beyond Which rates are to be determined in Accordance with Clauses 12.2 & 12.3 See below

### Definitions:

2(v)	Engineer-in-Charge	To be given in the letter for award of work by BUIDCo
2(x)	Percentage on cost of materials and labour to cover all overheads and profits.	10 %
2(xi)	Standard Schedule of Rates	<u>deleted</u>
2(xii)	Department & Employer	ManagingDirector Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo) (A Govt. of Bihar Undertaking)

9(ii) Standard PWD Contract Form

PWD 2/3 as modified & corrected upto

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**Clause 1**

- i) Time allowed for submission of performance Guarantee from the date of issue of letter of acceptance, in days **15 days**
- ii) Maximum allowable extension beyond the period provided in i) above in days -----

**Clause 2**

Authority for fixing compensation Chief Engineer, PDM, UD& HD (BUIDCo), Patna under clause 2.

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**Clause 2A**

Whether Clause 2A shall be applicable **N/A**

**Clause 5**

Number of days from the date of issue of notice to start. **07 days**

Mile stone(s) as per table given below:

**Table of Mile Stone(s)**

Sl. No.	Description of Milestone(Physical)	Time allowed in days (from date of start)	Remarks
1.	1/8 <sup>TH</sup> (of whole work)	45 days	
2.	3/8 <sup>TH</sup> (of whole work)	90 days	
3	3/4 <sup>TH</sup> (of whole work)	135 days	
4.	Full	180 Days	

OR

Sl. No.	Financial Progress	Time allowed (from date of start)	Remarks
1.	1/8 <sup>TH</sup> (of whole work)	1/4 <sup>TH</sup> (of whole work)	
2.	3/8 <sup>TH</sup> (of whole work)	1/2 <sup>TH</sup> (of whole work)	
3.	3/4 <sup>TH</sup> (of whole work)	3/4 <sup>TH</sup> (of whole work)	
4.	Full	Full	

Time allowed for execution of work **6 Months**

Authority to give fair and reasonable extension of time for completion of work. **Chief Engineer, PDM, UD&HD (BUIDCo.), Patna**

**Clause 7**

Gross work to be done together with net payment/ adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment

Not Applicable

**Clause 10CC**

Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column

As per SBD, GoB

**Clause 11**

Specifications to be followed for execution of work

Bihar PWD/ CPWD

**Clause 12**

Deviation, variation  
Extent and pricing.

As per P.W.D. Code  
clause 182A, 292XII,  
293XVII & 294XVI

**Clause 13**

Competent Authority for  
deciding reduced rates.

Chief Engineer, PDM, UD&HD, BUIDCo, Patna

- The following document also forms part of the contract. *Special Condition attached.*
- The law, which applies to the contract, is The Law of Union of India.
- The court of jurisdiction Patna, Bihar
- The Language of contract document English
- The limit of sub-contracting Nil
- The Currency of the Contract is Indian Rupees
- Place of Arbitration Patna

**SECTION 5**  
**SPECIAL CONDITION OF CONTRACT**  
**(Condition of Particular Application)**

For the general guidance and information of the prospective tenderers a brief note on the existing sasaram traffic system, HOWEVER THE TENDERERS MUST NOTE THAT BEFORE PARTICIPATING IN THE BID, THEY MUST VISIT THE SITE AND SATISFY THEMSELVES BY BECOMING FULLY CONVERGENT/ FAMILIAR WITH THE ENTIRE EXISTING SYSTEM AND ALL RELEVANT SITE CONDITIONS. THE RATES QUOTED MUST BE INCLUSIVE OF ALL TAXES AND DUTIES FOR ALL THE COMPONENTS.

**Requirement of traffic junctions: - 6 Nos.**

**Type of soil:** - In general the soil is alluvial mixed with hard soil and stone.

**Scope of work:** - The scope of work includes Design, drawing supply all material, execute the work and commissioning of the works for Electronics Traffic Signal for Sasaram.

**(A) Kind and Scope of Work**

The scope of work shall include the following activities:

- IT Enabled Traffic and Surveillance System for Sasaram City Traffic and Security;
- Field survey and investigation with total station survey, Preparation of Maps and drawings on AutoCAD, wherever required.
- Establish Of Traffic Control Room;
- Prepare detailed design of Traffic Signal and to be included in the Operator's operations and maintenance contract;
- Prepare detailed designs of new works and processes required to fulfill the requirements for smooth traffic management.
- The locations of Traffic Light points are as follows in Sasaram including all associated Civil, mechanical, Electrical works
  - 6 locations will have adaptive traffic control

S.No	Place Name	Galvanised Iron Class B Traffic Signal cantilever pole	Galvanised Iron Class B Traffic Signal straight pole of 6 mtr height (4.5 mtr as per IRC + Foundation Height 1.5 mtr)
1	DharmshalaChowk / Gandhi Chowk	23	45
2	Post Office Chauwk/Golambar		
3	Bauliya More/ JagdeoMargChowk		
4	Kargahar More / Majar More		
5	PrabhakarChowk		
6	Circuit HouseMore		

- O&M will be started after commissioning of all the six (06) traffic junctions.

- Infrastructure Details for Traffic Lightening System

<b>Fixed lighting system</b>	
1	Signal Pole
2	Controller
3	Junction box and power supply
4	Signal Head pair
5	Flashers pair
<b>Fixed Lighting system</b>	
1	Signal Pole
2	Controller
3	Junction box and power supply
4	Signal Head pair
5	Flashers pair
6	Vehicle detection camera
7	Expansion board (for camera)

- Supply, Installation, Commissioning and maintenance of the CCTV Cameras at junction points. A mix of High definition (HD) IP based Fixed and PTZ cameras will be used for the purpose. Both IP based CCTV Camera should work with Wireless and Fiber based Network or mix of wireless or fiber network.

<b>Type of Camera</b>	<b>No of Cameras</b>
PTZ Camera	6
Fixed Camera	20
Detection camera	20

Deployment of Camera is based on the view generated at the installation points. It is advisable to install fixed cameras at all arms at round about junctions and one PTZ camera at the junctions at where view to all arms of junction is clear. The above mentioned numbers of cameras are tentative. Actual numbers of cameras along with its calcification need to be provided by the bidder before actual execution.

All the cameras will be connected to a Command & Control Centre which will be equipped with video management modules and storage modules. Provisions will be made to record and view live incidents at all surveillance premises. Recorded clips can also be viewed readily on requirement. The Command & Control Centre will be equipped with LCD display units to aid the officials in monitoring events.

The infrastructure for Command & Control Centre will be provided by BUIDCo along with renovation. Fuel cost for Genset at the Command & Control Centre will be borne by the Contractor, which will be reimbursed by SP Sasaram.

The proposed installation of CCTV Camera system shall function in such a way that following functionalities are available at the operator desk:

- The Video Management System (VMS) server proposed for the CCTV should be such that the required CCTV feeds can be seen from the operator desk, when required.



- The operator should have functionality to Pan, Tilt or Zoom the PTZ Cameras from his workstation itself.
- Operator shall be able to see the video from a specific camera by clicking on the camera icon while sitting at the operator desk itself.
- To enable hybrid connectivity, as per feasibility i.e. Fiber and Wireless based network will be preferred. This network should be zero interruption based communication for links among Control room, IP Cameras and Traffic lights installed & spread over various locations in the city.
  - **The successful bidder shall be responsible for end-to-end implementation of connectivity of all the locations under this RFP and shall quote and provide/ supply any item(s) of latest make and model not included in the bill of materials, but required for successful implementation and commissioning of the system as well as its management. For such item(s), which have not been quoted by the successful bidder in the bid, but are required for successful completion of the project, the Bidder shall not be paid for the same.**
  - The supply of all the installation material/accessories/ consumables necessary for the installation of the systems.
  - The required networking equipment for end to end connectivity from Control room to individual Camera & Traffic light shall also be provided by the bidder at each location.
  - The complete ownership of the network proposed on wireless/fibre will that be of BUIDCo Bihar. Therefore proposed Network has to be a private Network build for Bihar Govt. and not hired from a Telecom Operator. However complete maintenance will be in the scope of the bidder including rectification of minor or major faults/breakages in the network equipment. There is provisioning of usage of existing tower infrastructure which has been created for BUIDCo of the state and can be referred in “Annexure-4” of this document.
  - Carry out installation of active components, passive components and accessories supplied as per standards for successful integration and implementation of the systems at each location connected under this RFP.
  - Configuring and fine-tuning of subsystems to achieve overall optimal network performance with high level physical & cyber security.
  - CPE (Customer Premise Equipment) shall have enough gain to provide strong signals for the video & Traffic Light signal communication.
  - Wireless Communication should be fully secure and shall support 128-bit encryption or better.
  - Minimum bit-rate of streaming shall be 2 Mbps.
  - All the locations are connected through wireless or wired medium(fibre) with Local Control Room.
  - Access Point shall be placed in such a way that it covers the entire locations which is under surveillance. Associated planning and diagrams of placement of Access Points shall be provided by bidder.
  - Product offer by bidder must fulfill functional requirement of entire project for successful implementation and commissioning of the project as well as its management. For meeting such

functional requirement in case any components /items is not specified in this RFP, it must be quoted as a separate item along with its price.

- Connectivity between Police Control Room and SP office, other Senior Official, link to be provided for displaying dashboard for alert messages to BUIDCo all Senior officials by extending link from control room to nearest S.P office at Sasaram City
- Establishment of Control room including all associated Civil, mechanical, Electrical and IT works. Fully furnished Control room infrastructure will be provided by SP Sasaram. The function of the control room is the following:
  - Program the phasing of the individual lights
  - Monitor flow of traffic on a continual basis through large screens and take corrective measures as needed in terms of re-phasing
  - Monitor junctions for any malfunction and appropriately action repair / servicing work
  - Monitor junction for any untoward incident, traffic pile up and take appropriate measures in collaboration with local police and traffic police.

Below is a screen shot of video at a control room and some highlight.



- 6 display units gives integrated view of Surveillance cameras and graphical user interface for better traffic management.
- Changes in timing parameters of adaptive system can be made
- Changes in parameters for timetable schedule in controller can also be modified from control room
- The server capable of controlling and collecting data from 6 signal junctions
- The operator will be trained 7 Traffic police personnel, working across 3 shifts (5 each in two shifts of 8 hours each, 2 people in the night shift)
- The system is capable of generating a temporary Green Wave on VIP routes
- Supply, Installation, Commissioning and maintenance of connectivity between Police Control Room at SP office and CCTV Cameras using wired / wireless connectivity.

- Annual Maintenance for a period of 3 years of all equipment \application supplied by bidder at allocations.
- The operator shall be deployed system Engineer (2 Nos) 1 Per Shift at day and night at Control room for providing technical support.

Control Room Furniture and renovation including fall sealing and Lighting accessories, Supply and installation of AC for Control room, Server room & UPS room (4 nos-2 ton each with 2 Nos of timer) etc. will be provided as per BOQ before prior approval of Engineer-in-charge.

### **(B) Design and Build Specifications**

The Operator shall be responsible to coordinate for the provision of all relevant permits necessary for construction, the preparation of detailed design and the construction of the element as defined in the attached bid document.

The Operator shall be executing the work to co-ordination with BUIDCO and Police HQ/SP, Sasaram.

The Operator should submit satisfactory completion of work certificate issued by Police HQ/SP, Sasaram before payment of final bill and as well as annual Certificate during O&M work.

### **(C) Special Conditions for Manufacturer-**

**Bidder should submit manufacturer relevant details as below:-**

1. Manufacturer shall have supplied/deployed at least 500 nos. of EN-12368 Hi flux LED Lights in past 2 years
2. Manufacturer shall have supplied/deployed at least 50 nos. of controller of same technology in past 2 years

### **(D) Operation and Maintenance of the Site**

The Operator shall be responsible for the operation and maintenance of the traffic system as described in the attached Operations and Maintenance Specifications during the handholding period.

The Operator shall manage, operate and maintain the control room equipment that support the operation of the Project, including without limitation:

- Handholding of the system to the police official;
- Control Room technical support;
- Traffic System management and maintenance;
- Conducting operative training to the police official as specified in tender document;
- Operation and maintenance till 3 years from the date of acceptance or Go-Live;
- Any other work as defined in the Contract.

All Personnel employed by the Operator at the Project shall hold relevant qualifications and appropriate training and shall have sufficient relevant experience in the operation and management of the Works, to ensure the Project is operated and maintained in compliance with the requirements of the Contract.

#### **(D) Technical Documentation**

The following documents shall form an integral part of the contract:

- The Design Build Operate & Maintain Agreement for the Operator in the Traffic System
- The Bidders Technical Proposal on Operation & Maintenance. The Operator shall have familiarized himself with;
- The Project Implementation Plan.

#### **Works related with OPERATION AND MAINTENANCE OF ALL COMPONENTS**

Deployment of manpower, supply of all equipment's as specified in the bill of quantity **for 36 calendar months** from the date

of completion of trial run (excluding energy charges)

O & M cost for the first 12 calendar months - 1 Job.

O & M cost for the Second 12 calendar months - 1 Job.

O & M cost for the Third 12 calendar months - 1 Job.

## **SPECIAL CLAUSES PERTAINING TO TIME CONTROL QUALITY CONTROL AND COST CONTROL**

### **(A) TIME CONTROL**

Within the time stated in the Contract data the contractor shall submit to the Engineer in charge for approval a program showing the general methods, arrangements, order, and timing for all the activities in the works along with monthly cash flow forecast.

An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.

The contractor shall submit to the Engineer in charge, for approval, an updated program at intervals no longer than the period stated in the contract data. If the contractor does not submit an updated program within this period, the Engineer in charge may withhold the amount stated in the contract data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted.

The Engineer's approval of the program shall not alter the contractor's event occur or a variation is issued which makes it impossible for completion to be achieved by the intended completion date without the contractor taking steps to accelerate the remaining work and which would cause the contractor to incur additional cost.

### **(B) QUALITY CONTROL**

The Engineer shall check the contractor's work and notify the contractor of any defects that are found. Such checking shall not affect the contractor's responsibilities. The Engineer in charge may instruct the contractor to search for a defect and to uncover and test any work that the Engineer in charge considers may have a defect.

If the Engineer in charge instructs the contractor to carry out a test not specified in the specification to check whether any work has a defect and the test shows that it does, the contractor shall pay for the test and any samples.

The Engineer in charge shall give notice to the contractor of any defects before the end of the defects liability period, which begins at completion and is defined in the contract data. The defects liability period shall be extended for as long as defects remain to be corrected.

Every time notice of a defect is given, the contractor shall correct the notified defect within the length of time specified by the Engineer's notice.

If the contractor has not corrected a defect within the time specified in the Engineer's notice, the Engineer in charge will assess the cost of having the defect corrected, and the contractor will pay this amount.

### **(C) COST CONTROL**

The bill of quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the contractor.

The bill of quantities is used to calculate the contract price.

## **CERTIFICATE OF UNDERTAKING**

1. We shall replace, repair and adjust free of all charges to the Employer any part of the work which fails to comply with the specifications for, wear and tear expected until the completion.
2. All the work will be reliable. The material and equipment supplied will be as per the information given in schedule.
3. All the work will be of a type which has been proved in service to be suitable for the duty required by the specifications and will have been manufactured and tested in accordance with the appropriate standard specifications approved by the Engineer in charge.
4. We accept and abide by the clauses relating to Quality and guarantee of work.

5. All the testing of materials like Cement, Steel, M.S. plates etc. required during the execution of the contract will be got tested by me at my own cost from Government recognized Laboratory. The sampling and testing will be done as given in relevant I.S. Codes.
6. We guarantee performance of all the equipment and material complying with the figures filled in respective schedule and the same will operate satisfactorily throughout the operating range specified in the tender.
7. We will comply with all necessary rectification within total time granted for rectification without any cost to BUIDCo.

#### **Acceptance Test Criteria**

After successful implementation of all hardware/software / networking and their related services as defined in the RFP, Bidder will run Hardware, Software, Services and solution defined in Scope of work and as per proposed BOQ, mentioned in the RFP for a minimum period of 7 days continuously at the site. The bidder will submit acceptance test plan in line with scope of work mentioned in RFP including, but not limited to Compliance check, functionality check, quantity check etc. to BUIDCo for conducting Acceptance Test (AT). BUIDCo will start AT process at the site with authorized representative of the bidder and the consultant. The AT certificate will be released by BUIDCo to the Bidder/Service provider of this project, after successful completion.

**SECTION 6  
TECHNICAL SPECIFICATION**

## **GENERAL SPECIFICATIONS**

- 1.1** Materials and methods of construction for all civil works shall be as per relevant.

The system documentation shall comprise the following covering each of the sub systems provided by this Contract namely ATC system and Control Room Systems and all associated equipment including:-

- o Final System Proposal (FSP),
- o Operator's Manuals,
- o Hardware Manual,
- o Maintenance and Routine Servicing Manual,
- o Software/Firmware Manual.

### **1.2 General**

All materials shall be best of their kind and shall conform to the relevant latest Indian standard.

All materials shall be of approved quality as per samples and from origins approved by the Engineer in Charge. A set of specimen samples of all approved materials shall be kept in sealed container or otherwise at site, cost of which is to be borne by the contractor.

### **1.3 Documentation**

- o The Bid return shall include a Preliminary System Proposal providing at least 95% of the detail intended to be included within the systems comprising the bid.
- o After Contract Signing: -  
The Contractor shall be required to submit two copies of the Final Systems Proposal within 2 (Two) weeks from the date of issuance of LOI.
- o Before completion tests of a sub-system or item are commenced, parts of the system documentation, or preliminary documentation, relating to the sub-system or item, shall have been supplied to the Engineer, not less than two week prior to such tests.
- o Before final acceptance tests, additional documentation not already supplied shall be provided so that the Engineer holds two complete sets of all system documentation.
- o After acceptance of the system, the Engineer will return one copy approved by the Authority of the draft documentation to the Contractor, with any agreed amendments. Final system documentation, incorporating any amendments shall be provided within two months of the issue of the Takeover Certificate.

The system documentation shall be written and bound in such a manner that superseded parts may be easily replaced. Each volume shall contain an amendment record sheet and contents sheet. Each sheet shall have a page number and, if it has been amended, an amendment number, and shall be clearly marked with a date and issue number.

All documentation shall be printed in English, and shall be of such detail as to enable third party maintenance contractors to fully maintain the system. The Contractor shall include with the Bid return, samples of typical documentation, produced to the same standard as that proposed for this contract.

### **1.4 Final System Proposal (FSP)**

1.4.1 The Engineer shall approve the document containing Final System Proposals, assessing all aspects of the system design, and advise the Contractor where the requirements of the Contract have been misinterpreted.

1.4.2 The FSP proposals shall be divided into sections reflecting both in-station and outstation equipment associated with the Fully Adaptive Traffic control systems provided as part of this

Contract and shall deal with the phased (Milestone 1 followed by Milestone 2) implementation program. This shall include but not be limited to:

- o Functional descriptions of all items of in-station equipment
- o Any comments the Contractor may wish to make regarding the proposals for the layout of the Control Room. In particular, the Contractor shall outline his proposals for his Control Room design illustrating the features he has provided.
- o Details of the Contractor's power and system interconnection cabling, including a full definition of power supply requirements. (Full Connectivity Diagrams).
- o Details of the shape and dimensions of the equipment, and any constraints placed on equipment layout.
- o Details of the Contractor's proposals for the layout and method of installing the equipment at all external sites. Implementing a standard layout/method of installation consistent throughout the Contract.
- O Details of the Contractor's requirements for power and system cable interconnection at the outstation showing standard configurations.
- o Details of the Contractors method of tracing all system equipment from manufacture to delivery through commissioning in the form of a statement.
- o Details of the transition plan proposal for changeover from the old system to new system. This transition plan shall include a time-line for equipment changes and controlling modes at each intersection. The transition plan shall provide a timely change between the old and the new systems while maintaining safe operations

1.4.3 A complete and comprehensive description of the overall systems shall be supplied which shall include but not be limited to individual system block diagrams, wiring schedules and core allocations.

1.4.4 Subsequent to the submission of the FSP, details of any amendment shall be submitted to the Engineer for approval once final design has been completed and before implementation is initiated.

## **1.5 Operator's Manual**

1.5.1 The operator's manual shall be written such that the system operator can follow the manual in a step-by-step process to carry out the day to day operation and tests of any of the systems supplied. The manuals shall be written in plain English for use by persons with no previous technical knowledge of the systems. These manuals shall describe in non-specialist language all operator procedures, inputs, the results of these inputs, alarms and outputs not related to operator inputs. The manuals shall detail the procedures for carrying out the operator's functions specified.

1.5.2. The operator's manuals shall provide cross-references to the other documentation provided for information, which is not essential to the operator's function. All documents relating to the Adaptive Traffic Control system shall be the version of the ATC System supplied by the Contractor. In addition the Contractor shall supply four copies of the basic ATC System documentation inclusive of operator handbooks, technical descriptions and full system operational descriptions. All documents shall be clearly marked with a title, date, issue number and signature of a representative of the Contractor.



- 1.5.3. The manuals shall list specific procedures, which must be followed:
- o to start up and shut down the systems, ATC and Data Transmission;
  - o to carry out permitted system functions;
  - o Explanation of all unsolicited fault or other system messages.
- 1.5.4. The manual shall be compiled in parts to cover all levels of operator control.
- 1.5.5. The fully documented procedures for making alterations to the system to allow for expansion of the system, editing plans, timetables, and ATC data are to be fully described, with examples. Where appropriate, flow diagrams of the order of database preparation shall be provided.
- 1.5.6. The manuals shall detail a full explanation of diagnostic messages generated during database processing.

#### **1.6 Manual for Traffic Signal Equipment, CCTV and Connectivity**

- 1.6.1. The Hardware Manuals shall be in two parts, in-station and outstation equipment.
- 1.6.2. Each unit of hardware shall be clearly labeled on at least two configuration drawings in block form. Each unit of hardware shall have a detailed description as to its function and operation.
- 1.6.3. The interaction of units shall be clearly shown on a configuration diagram and described in detail.
- 1.6.4. Logic diagrams and circuit diagrams of each part of the system shall be included with descriptions of the functions of each.
- 1.6.5. Parts lists and wiring schedules shall be provided, which shall follow a consistently standard colour coding across all items of similar equipment across the whole system.
- 1.6.6. In particular it is required that the manuals shall detail the following:-
- o The interconnectivity of equipment within buildings and cabinet housings.
  - o Cross referencing with the maintenance and routine service manual, together with the software manual.
  - o Use of data transmission equipment (data and video) shall be described in detail.
  - o Software/firmware used in the system must be described in detail, including a description of how this software/firmware controls the system and how it can subsequently be modified.

#### **1.7 Manual for Maintenance and Routine Servicing of Equipment**

- 1.7.1. The Contractor in performing his maintenance duties as required by this Contract shall comply with the requirements of the Hardware Manuals wherever appropriate. All maintenance and frequency of routine servicing shall comply with the requirements set out in Section 14.14 of this document Maintenance during the Warranty Period and extended Maintenance Period for all items provided as part of this Contract.
- 1.7.2. The manuals shall detail the procedure for the replacement of faulty parts. Special attention shall be paid to ensure that a step-by-step procedure for the replacement of faulty parts is described.
- 1.7.3. Fault diagnosis routines shall be documented and shall be related to the observable effects of faults.
- 1.7.4. Operational adjustments of equipment shall be detailed. The operation of test equipment for maintenance and routine servicing shall be described.

- 1.7.5. Procedures for testing each item of equipment and the interaction between associated equipment to determine correct functioning shall be detailed, as shall the procedures for testing the interaction of two or more items of equipment.
- 1.7.6. The operational facilities provided by the Engineer control and selection equipment and Engineers monitor shall be described in detail.
- 1.7.7. This manual shall contain reasonable first, second and third line documentation and any additional information necessary to allow the Contractor to carry out his maintenance responsibilities detailed in this Contract, including the following:
  - o Routine service procedures for each item of equipment, including recommended frequency of routine system diagnostics.
  - o Details of the operation of the in-station and out-station test sets and their use in fault location and identification.
  - o Details of other fault diagnosis, location and identification procedures related to observable effects of faults.
  - o List of equipment connected to the system including details of all test dates and work done to the equipment.
  - o Details of setting up and adjustments including the actions to be taken for those items on which first line maintenance is to be carried out.
  - o Diagnostic programs to be used in fault analysis.
  - o Details of the procedure for replacement of faulty parts.
  - o Circuit diagrams of all non-propriety equipment.
  - o Details of the operation of test equipment for maintenance and routine servicing.
  - o Detailed procedures for testing each item of equipment and the interaction between associated equipment and also the interaction between two or more items of equipment so as to determine correct functioning.

## **1.8 Equipment Manual No.1**

- 1.8.1. This manual shall describe the overall capability of the ATC System and the functions carried out and shall identify the role of all units of equipment. Twelve copies shall be provided.
- 1.8.2. The manual shall be suitable for use by engineers as an introduction to other parts of the documentation and management as a system description and reference guide.
- 1.8.3. The manual shall give a complete specification of the system facilities in terms of system operator inputs, outputs to associated equipment, inputs from associated equipment and displays/outputs to the operator. The Specification shall include details of data stored and of system checks carried out to establish the validity of the various stages of the control process.

## **1.9 Equipment Manual No.2**

- 1.9.1. This manual shall be in two parts, one covering all control centre equipment one per control office and the other covering all outstation equipment. This latter part shall be suitable for use on street under adverse weather conditions.

- 1.9.2. The manual shall cover the following:
- o Each unit of equipment shall be clearly labelled on at least one configuration drawing in block form.
  - o Details of the location of all units and boards within their cabinets and racks shall be given.
  - o The interaction of units shall be clearly shown on a configuration diagram.
  - o The method of connection of peripheral equipment to the computer system
  - o The method of transfer of data between the out-stations and the various computer system
  - o Interconnections between equipment
  - o Detailed technical and functional descriptions of the data transmission test equipment.
  - o Cross-referencing with Maintenance and Routine Service Manual.
  - o For each individual item of non-propriety equipment, detailed technical and functional description shall be given together with logic and circuit diagrams.
  - o Parts lists and cabling schedules covering the whole of the system.
  - o All timings of data transmission equipment
  - o Interaction timings between systems
  - o Layout of all equipment with full details of all equipment interfaces including identification of cables at these interfaces.
- 1.9.3. As a minimum requirement all logic and circuit diagrams shall conform fully to the relevant British or other International Standards as appropriate for use in India or the Country of original manufacture of the equipment.

#### **1.10 Updating of Manuals**

1.10.1. The Contractor shall undertake, without additional charge, to update and replace in appropriate circumstances all manuals and documentation supplied under this Contract.

1.10.2. Such appropriate instances may be taken to result from but shall not be limited to:

- o Modifications to correct deficiencies which have become apparent during the use of the system either in Sasaram or elsewhere;
- o Development of improvements subsequent to installation, but excluding any which extends the functions of the system.

#### **1.11 Alternative Documentation Formats**

Alternative formats of documentation will be considered, but any such alternatives shall be fully described by the Contractor.

#### **1.12 Software/Firmware Manuals**

All system software and firmware shall be supplied on a licensed basis in an "Executable File Format". User manuals shall include full descriptive listings of all systems supplied. The Contractor shall also include complementary flow diagrams and an accompanying descriptive commentary for each describing how to use and maintain the system.

#### **1.13 As Built Drawings**

The Contractor shall provide as built drawings for all elements of the work he has carried out and the systems he has provided as part of this Contract.

#### 1.14 Training

The Bidder shall arrange for a training free of cost to the Call Centre Agents, Supervisors, Technical staff and officers of Traffic Police BUIDCo either at the time of installation and handing over or at a common place on the operation and use of systems and software utilities (30 persons for operation side and 10 persons for maintenance side with training materials on operation and maintenance of equipment for a period of one week and refresher training of 3 days on the 7th month of handover). Venue for training will be provided by BUIDCo.

#### 1.15 Penalties for delay in implementation

If the Operator fails to offer the system for Partial Acceptance Test as specified in the agreed implementation plan, BUIDCo may, without prejudice to its other remedies under the Agreement, levy as Penalties, a sum equivalent to 0.5 % of the project value payable under the Agreement, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 10% of the project value. Any unreasonable delay in completing the projects may entail blacklisting of Bidder.

#### 1.16 Penalty for non-fulfilment of conditions

Penalty will be levied @ 10% on the total value of the Agreement or the actual loss incurred by the BUIDCo whichever is lower if the conditions stipulated in the Contract Agreement are not fulfilled or observed till the project is completed with satisfactory performance and handed over.

#### 1.17 Warranty

1.17.1. Warranty periods of 36 months should be allowed against the continuous working with satisfactory performance for all the equipment and accessories used for commissioning the systems from the date of handing over the completed project.

1.17.2. If any defects in manufacturing or technical aspects are noticed within the warranty period, the Bidder is liable to rectify or replace free of cost.

#### 1.18 SLA Requirement

- a. Service Level Agreement (SLA) is the contract between the BUIDCo and the Implementation Agency. SLA defines the terms of the operator's responsibility in ensuring the performance of the Traffic Light System, CCTV Camera and Central Control Room based on the agreed Performance Indicators as detailed in the Agreement. This section defines various Service Level Indicators for Traffic Light System, CCTV Camera and Central Control Room, which can be considered by the State in the Service Level Agreement with operator.
- b. The Table below summarizes the Indicative Performance Indicators for the services to be offered Operator. The detailed description of the performance indicators, SLA Terms and their definitions are discussed in the following sections. Availability should be recorded electronically & physically both as indicator of SLA by Operator.

#### 1.19 SLA for Traffic Light System

S. No	Indicative SLA Parameter	SLA Target
1	Availability of traffic Signals including Power during 24x7x No. of installed camera in that Quarter. [Reduction in uptime due to non-availability of power beyond UPS backup will not be considered for calculating the SLA and penalty.]	97%

#### 1.20 SLA for CCTV Camera and Control Room

S. No	Indicative SLA Parameter	SLA Target
1	Availability of traffic Signals including Power during 24x7x No. of installed camera in that Quarter. [Reduction in uptime due to non-availability of power beyond UPS backup will not be considered for calculating the SLA and penalty.]	97%

### 1.21 Measurement of SLA

The Measurement of SLA shall be performed by a third party agency, independent of the Operator, to be identified by the BUIDCo.

The Operator shall establish a Network Management System for monitoring and measurement of the SLA parameters identified for this project. The NMS implemented for the project shall conform to the open network management standards such as Simple Network Management Protocol and Remote Monitoring (RMON) features. BUIDCo reserves the right to periodically change the measurement points and methodologies it uses without notice to the Operator.

### 1.22 Penalties

Description	Availability	Penalty
Availability of Traffic Signals including Power during 24x7x No. of installed camera in that Quarter of project duration.	97% ( <b>Maintenance downtime is allowed for 2 Hours for Traffic Signals &amp; ALLIED EQUIPMENTS</b> ) %	Rs.200 per Hour per Camera (Including Power)
Availability of Surveillance Services during 24x7 = 168 Hours in a Quarter of duration of project for Quarterly Payment calculation.	>= 97%	Nil
	Less by 1%	5% of the Quarterly Payment
	Less by >1% but <1.5%	10% of the Quarterly Payment
	Less by >1.5% but <2%	20% of the Quarterly Payment
	Less by >2% but <2.5%	25% of the Quarterly Payment
	>2.5%	No payment
Availability of CCTV Camera including Power and connectivity during 24x7x No. of installed camera in that Quarter of project duration.	97% ( <b>Maintenance downtime is allowed for 2 Hours for CCTV Camera &amp; ALLIED EQUIPMENTS</b> ) %	Rs.200 per Hour per Camera (Including Power and Network for which video is not available to central control room)
Availability of Man Power	>= 97%	Nil
	Less by 1%	5% of the Quarterly Payment
	Less by >1% but < 1.5%	10% of the Quarterly Payment
	Less by >1.5% but <2%	20% of the Quarterly Payment
	Less by >2% but <2.5%	25% of the Quarterly Payment
	>2.5%	No payment

### 1.23 Operational Penalties

In the event the operator is unable to meet any one of the SLA parameters defined in this RFP & corrigendum for 10% or more of the operational period of this project during two quarters in a year or four quarters during the three years of the contract, BUIDCo reserves the right to terminate the contract.

### 1.24 Penalties for Misuse

In the case of power failure beyond the capacity of UPS, Bidder will not be liable for any penalty but In case of any fraud, such as theft or misuse of data or issue of fake documents, etc. by the vendor, action will be taken by BUIDCo.

### 1.25 Change Orders

BUIDCo may at any time, give written order to the selected bidder to make changes for providing additional Hardware specifically required, but not falling within the general scope of the this RFP/Contract.

### 1.26 Special Conditions for Contract

#### 1.26.1 General Obligations of the Successful Bidder

- a. The successful bidder shall provide all such information as may reasonably be necessary to effect as seamless a handover as practicable in the circumstances to the client or its nominated agencies

or its Replacement Operator and which the Operator has in its possession or control at any time during the exit management period.

- b. The successful bidder shall commit adequate resources to comply with its obligations under this Exit Management Schedule.

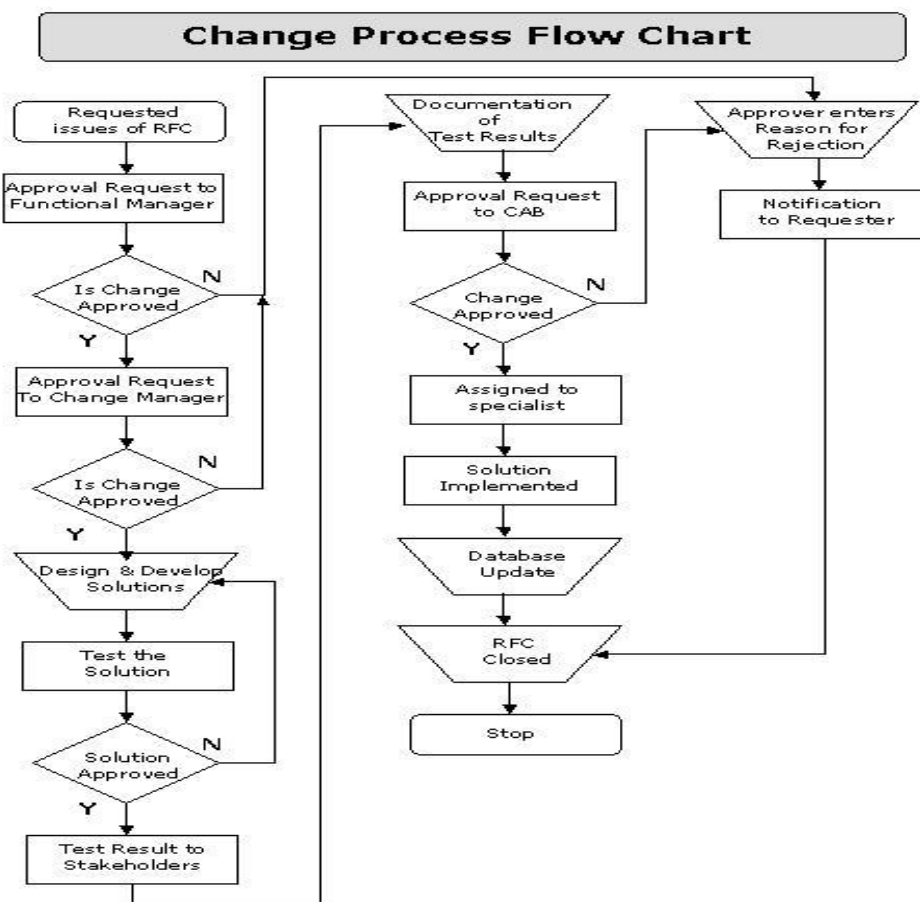
### 1.27 Change Management

Bidder has to ensure that suitable Change Management methodologies are being practised in Project, in order to carry out changes economically, timely and with minimal risk. As it has been observed in IT industry, that most of the high proportion of problems have always been traced back to some changes in the system or environment. Therefore bidder has to ensure effective change management practice has to be followed religiously.

**In order to bring about Change Management following tasks are undertaken:**

- i. Receive and record Request for Change (RFC)
- ii. Assess the overall process, costs, benefits and risks of planned changes
- iii. Expected Impact analysis report with every RFC
- iv. Update the change plan
- v. Coordinate and control the implementation in Change Advisory Board (CAB). The CAB will consist of Operator and the representative from Client and consultant.
- vi. Monitor the success of implementation and report on it
- vii. Update the configuration management database
- viii. Complete and review the RFC (post-implementation review).

An indicative Problem Management flow is defined in flow chart below as:



### **3.0 General**

This part covers conditions pursuant to the contract and shall supplement the general conditions, detailed specifications and requirements.

### **3.1 Limits of Contract**

Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories, normally provided with such equipment and /or need for erection, completion, and safe operation of the equipment as required by applicable codes, though they may not have been specifically detailed in the technical specifications unless included in the list of exclusions. All similar standard equipment provided shall be interchangeable with one another.

### **3.2 Engineering Data**

The contractor shall furnish complete engineering data of each set of equipment such as name of the manufacturer, the type of model of each principle item of equipment proposed to be furnished and erected. Standard catalogues, pages and other documents of the tenderer may be used in the tender to provide additional information and data as deemed necessary by the tenderer. The review of this data by an Engineer will cover only general confirmation of the data to the specifications and documents interfaced with the equipment provided under the specifications, external connection and of the dimension, which might affect plant layout. This review by the Engineer in charge may not indicate a thorough review of all the dimensions, quantities and details of the equipment, materials, and any devices of the items indicated or accuracy of the information submitted. This review or approval by the Engineer in charge shall not be construed by the contractor and limiting his responsibilities and liabilities for mistakes, and deviations from the requirements specified under these specifications and documents. All engineering data submitted by the contractor after final process including review and approval by the Engineer in charge shall form part of contract documents and the entire work covered under these specifications shall be performed in the strict conformity unless otherwise expressly requested by the Engineer in charge.

### **3.3 Drawing**

Each drawing submitted by the contractor shall be clearly marked with the name of the owner, unit designation, the specifications, number and name of the project. If standard catalogue pages are submitted the applicable items shall be marked therein. All titles, noting, markings and writings on drawing shall be in English. All dimensions shall be in metric units. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawing shall be at contractor's risk. The contractor may make any changes in the design which are necessary to make the equipment conform to provisions and intent of contract and such changes will again be subject to the approval of the Engineer in charge and shall not relieve the contractor of any of the responsibilities and liabilities under contract. Drawing shall include all installation and detailed pipe drawing wherever applicable. All pipe of 100 mm and above in diameter shall be rounded in detail and smaller pipe shall be shown schematically or by isometric drawings. All drawings shall be fully corrected to actual 'as built' construction.

### **3.4 Design Improvements**

The Engineer or Contractor may propose changes in the specifications of the equipment or quality thereof and if the parties agree upon any such changes the specifications shall be modified accordingly. If any such change agreed upon in such that it affects price and schedule of completion, the parties shall agree in writing as to the extent of changes in period and or schedule of completion before the contractor proceeds with the change. Following such agreements, the provisions thereof shall be deemed to have been amended accordingly.

### **3.5 Transportation**

The contractor whenever applicable shall after proper painting pack and cart all equipments in such manner as to protect them from damage and deterioration in transit by road or rail, during storage at site till the time of erection. The contractor shall be held responsible for all damages due to improper packing. While packing all the materials the limitations from point of view of availability or railway wagons, size and other modes of transport should be taken into account. The packing and protection should be in conformity with the requirements of the insurance companies and transport agencies.

The contractor shall prepare detailed packing list of all packages and containers, bundles and loose materials forming each and every consignment for making all necessary Arrangements for loading, unloading and other handling, right from his works up to the site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipment.

All demurrage, warehouse and other expenses incurred due to delay in clearance of the material or any other reasons shall be to the account of contractor.

**3.6 Protection to plant**

Deleted

**3.7 Preservative shop coating**

Deleted

**3.8 Material handling and storage**

All the equipment furnished under the contract and arriving at site shall be promptly received unloaded, transported and stored in a storage space by the contractor. Contractor shall be responsible for examining all the shipment and notify the Engineer in charge immediately of any damages, storage, discrepancy that is for the purpose of the Engineer's information only. The contractor shall submit to the Engineer in charge every week, report detailing all receipts during the week. However the contractor shall be solely responsible for any storage on damage in transit handling and / or in storage and erection of equipment at site. The contractor shall maintain in accurate exhaustive record detailing out the list of all equipment received by him for the purpose of erection and keep such record open for inspection of the Engineer in charge. All the equipment shall be handled carefully to prevent any damage or loss. No bars, wire ropes strings etc shall be used without specific written permission of the Engineer in charge The equipment stored shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from stores shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site. All electrical panels, control gears, motors and other devices shall be properly dried up by heating before they are installed and energized. Motor bearing, slip rings commutators and other exposed parts shall be protected from moisture, ingress and corrosion during storage and periodically inspected. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion due to prolonged storage. All the material stored in open or dust location must be covered with suitable weatherproof and flame proof covering whichever is applicable. The contractor shall be responsible for making suitable indoor storage. Normally all electrical equipments such as motors, control gears, generators exciters and consumables like electrodes, lubricants etc. shall be stored in closed storage place. The Engineer in charge in addition may direct contractor to move certain other materials, which in his opinion will require indoor storage, and the contractor shall strictly comply with it.

**3.9 Contractor's material brought to Site.**

The contractor shall bring to site all equipment components, parts, materials including construction equipment tools and tackle for the purpose of the work under intimation to the Engineer in charge. All such goods shall from time of their being brought vest in the owner but may not on any account be removed or taken away by the contractor without written permission from the Engineer in charge. The contractor shall nevertheless be solely liable and responsible for any loss or destruction there of and damage there to. The owner shall have lieu on such goods for any sum or sums, which may at the time be due to owing to him by the contractor. After giving 15 days notice in writing of his intention to do so, the owner shall be at liberty to sell and dispose of any such goods in a manner as he shall think fit including public Auction or private treaty and to apply the proceeds in or towards completion of work, the contractor shall remove from the site under the directions of the Engineer in charge, the material such as construction equipment, erection tools and tackles, scaffolding etc. within 15 days of issue of a notice by the Engineer in charge to do so. Then the Engineer in charge shall have the liberty to dispose off such materials and credit the proceeds there of to the account of the contractor.

**3.10 Maintenance tools and tackles**

The contractor shall supply with the equipment one complete set of all special tools and tackles for the erection assembly and maintenance of the equipment. However these tools and tackles shall be separately packed and brought to site. The tenderer shall indicate all the above items in the annexure. This set shall be for owner's use and any of the equipment out of this set shall not be used by the tenderer.



**3.11 Facilities to be provided by the owner**

Deleted

**3.12 Cleanliness**

The areas where the equipment might drip oil and cause damage to the floor surface a suitable protective cover of flame resistant oil proof sheet shall be provided to protect the floor from such damage.

**3.13 Construction management**

Deleted

**3.14 Contractor's co-operation with the owner**

Deleted

**3.15 Field office records**

Deleted

**3.16 Co-operation with other contractors and consulting Engineers appointed by BUIDCO.**

The contractor shall agree to co-operate the owners other contractors and consulting Engineers and freely exchange with them such technical information as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of errors. The contractor shall attend design co-ordination meetings at his cost whenever required.

**3.17 Design Co-ordination**

The contractor shall be responsible for the selection and the design for appropriate equipments to provide best-coordinated performance of entire system. The basic design requirements are detailed out in technical specifications. The design of various components, sub assemblies, assemblies, maintenance and all rotating components shall be so selected that the natural frequency of the complete unit is not critical at or close to the operating range of the unit.

**3.18 Quality Assurance Program**

To ensure that the equipment and services under the scope of this contract whether manufactured or performed within the contractor's premises or at the owner's site or at only other place of work are in accordance with the specifications. The contractor shall adopt suitable quality assurance programs to control such activities at all the points necessary. Such program shall be outlined by the contractor and shall be finally accepted by the Engineers after discussions before the award of contract and such agreed program shall form part of contract.

**3.19 Unfavorable working conditions**

The contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects during inclement weather conditions like monsoon, storms etc. and during other unfavorable construction conditions. No field activities shall be performed by the contractor which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the contractor in a proper and satisfactory manner in the performance of such works and with the concurrence of Engineer in charge, such unfavorable conditions will in no way relieve the contractor of his responsibility to perform the works as per schedule.

**3.20 Bankruptcy and Insolvency**

BUIDCo Limited can terminate the contract if the bidder becomes bankrupt and/or losses the desired state of insolvency with a notice of 15 days. BUIDCo Limited, in such cases of termination, will not be responsible for any loss or financial damage to the service provider resulted due to the termination. The BUIDCo Limited will also, in such cases have the right to recover any pending dues by invoking the performance unconditional Bank Guarantee or any such instrument available with the BUIDCo.

**3.21 IPR and Copyrights**

BUIDCo will retain all the IP rights of all the applications as part of project, trademark, service mark and logos. BUIDCo will not be liable for any copyrights or IPR infringements of any third party

software component used by the bidder for supplying applications as part of the project. The source code of all the applications, design documents, Data populated as part of the project will handed over to BUIDCo in working and integrated condition at the end of the contract period.

1. BUIDCo will be owner of IPR for any Application Developed
2. Source Code along with executable file will be kept with BUIDCo
3. BUIDCo will be owner of any documents generated for this project.

### **3.22 Data Rights**

The BUIDCo reserves the Data Rights in the following areas-

- a. The right to information of Data subject: The BUIDCo reserves the right of full knowledge of the collected data, its nature and prior authorization by the BUIDCo to collect, store and process them.
- b. The right to prevent processing: The BUIDCo reserves all the rights to prevent the processing or reprocessing of the data collected, stored and under process.
- c. The right to prevent collection, storage and processing for direct marketing and/or indirect marketing: The BUIDCo reserves all the rights to prevent any or all data collected, stored and processed for any sale, lease, rent or any other monetary or non-monetary transfer of data without it's written permission with explanation of grounds for such sale, lease, rent, transfer for monetary or non-monetary basis. The BUIDCo, however can sale, lease or rent the data for monetary or non-monetary gains
- d. The right to compensation: The BUIDCo reserves all the rights to extract compensation for loss or damage, whether full or partial, of the data by the service provider or any person authorized on behalf of the service provider.
- e. The right to rectification and other remedies for inaccuracy: The BUIDCo reserves complete authority to ask the service provider to make up for the wrong or tempered or manipulated or distorted or illegitimate data with or without any compensation on finding the data bearing any evidence of deviation at any time, irrespective of the fact that BUIDCo has accepted the same data at any prior time from the date of issuing letter to service provider to make any change or replacement in the data. The BUIDCo also reserves rights to take action through a court to rectify, block, erase or destroy inaccurate data.

The BUIDCo reserves all the rights to give order pertaining to manner and methodology for data collection, storage and processing to the service provider at any time within the contract period, which may not be a part of the Agreement.

### **3.23 Taxes and Duties**

All the taxes, duties, levy and all other charges applicable and shall be valid for delivery on the designated delivery points. All payments will be subjected to tax deduction at source as applicable/required at the prevailing tax rates.

BUIDCo shall not pay any increase in duties, taxes and surcharges and other charges on account of any revision, enactment during the period of validity of the Bids and also during the contract period. The decision of BUIDCo in this regard will be final and binding and no disputes in this regard will be entertained.

### **3.24 Guarantee**

The goods/equipments ordered for supply / delivery must be new and should be from the manufacturer's current product line. The vendor /s should guarantee that the Goods supplied are new, unused and conform to technical specifications of design, materials and workmanship mentioned in the quotation. The Supplier should also guarantee that the Goods supplied should perform satisfactorily as per requirements mentioned in the specification during implementation and operation & maintenance period. All hardware and software must be supplied with their originals along with complete original printed documentation and licenses.

### **3.25 Local Conditions**

- a. Each bidder is expected to get fully acquainted with the local conditions and factors that would have an effect on the performance of the contract and / or the cost.
- b. The bidder is expected to know all conditions and factors, which may affect the execution of the project.
- c. Neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted on account of failure of the bidder to know the local laws / conditions.
- d. The bidder is strongly advised to visit and examine the locations of the project sites and its surrounding and obtain all information that may be necessary for preparing the response to this RFP at their own interest and cost.
- e. The Bidder will bear the cost and all expenses incurred for preparing and submitting the bid documents and presentation/demonstration. BUIDCo will not entertain any claims/money of any bidder for preparation and submission of bid document in any situation.

### **3.26 Confidentiality**

- a. As used herein, the term "Confidential Information" means any information, including information created by or for the other party, whether written or oral, which relates to internal controls, computer or data processing programs, algorithms, electronic data processing applications, routines, subroutines, techniques or systems, or information concerning the business or financial affairs and methods of operation or proposed methods of operation, accounts, transactions, proposed transactions or security procedures of either party or any of its affiliates, or any client of either party, except such information which is in the public domain at the time of its disclosure or thereafter enters the public domain other than as a result of a breach of duty on the part of the party receiving such information. It is the express intent of the parties that all the business process and methods used by the Bidder in rendering the services hereunder are the Confidential Information of the Bidder.
- b. The Bidder shall keep confidential any information related to this tender with the same degree of care as it would treat its own confidential information. The Bidders shall note that the confidential information will be used only for the purposes of this tender and shall not be disclosed to any third party for any reason whatsoever.
- c. At all times during the performance of the Services, the Bidder shall abide by all applicable security rules, policies, standards, guidelines and procedures. The Bidder should note that before any of its employees or assignees is given access to the Confidential Information, each such employee and assignees shall agree to be bound by the term of this tender and such rules, policies, standards, guidelines and procedures by its employees or agents.

- d. The Bidder should not disclose to any other party and keep confidential the terms and conditions of this Contract agreement, any amendment hereof, and any Attachment or Annexure hereof.
- e. The obligations of confidentiality under this section shall survive rejection of the contract.

### **3.27 Insurance**

The equipment and services supplied under the contract shall be fully insured by the bidder against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery and installation. The period of insurance shall be up to the date the supplies are accepted and the rights of the property are transferred to BUIDCo.

The responsibility to maintain adequate insurance coverage on comprehensive all risk basis at all times during the project period in all respects shall be that of the bidder alone.

Goods supplied under the contract shall be also fully insured on all risks including fire, theft, flood, earth quake and other natural calamities at his own cost basis during inland transit up to destination defined in the purchaser's country. The supplier must insure the goods in an amount equal to 110% of CIF/EXW price of goods.

### **3.28 Arbitration**

- a. Public works contract dispute arbitration tribunal ACT 2008 shall apply.
- b. In case of any dispute arising out of this RFQ / bid document / contract agreement between the parties to the contract, the same shall be resolved by referring the dispute to Bihar public works contracts disputes arbitration tribunal situated at Patna and the provision of Bihar.

### **3.29 Consortium**

Consortium JV Not Allowed

### **3.30 Consortium Criteria:**

**NIL**

### **3.31 Sub-Contracting**

Bidder is allowed to give part of work on sub-contract to other persons who are not part of bidding process. But the details, profile and experiences of Sub-Contracted Party and agreement with that Party should be clearly indicated in the Technical Proposal and financial details of sub-contracting should be indicated in Commercial proposal.

### **3.32 Force Majeure**

Neither party shall be responsible to the other for any delay or failure in performance of its obligations due to any occurrence commonly known as Force Majeure which is beyond the control of any of the parties, including, but without limited to, fire, flood, explosion, acts of God or any Governmental body, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions. If a Force Majeure arises, the Bidder shall promptly notify bidder in writing of such condition and the cause thereof. Unless otherwise directed by bidder, the successful bidder shall continue to perform his obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. The successful bidder shall be excused from performance of his obligations in whole or part as long as such causes, circumstances or events shall continue to prevent or delay such performance.

### **3.33 Termination**

The Tendering Authority reserves the right to change any bid condition including technical specifications even after inviting the bids with/without prior notification. The Tendering Authority also reserves the right to Terminate/Cancel RFP at any time/stage of Bid without giving any reasons. In such case, the EMD shall be returned to the bidder. However, the RFP document fee shall remain non-refundable.

### **3.34 Termination for Default**

The Tendering Authority, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the selected bidder, may terminate the Contract fully or in part:

- a. If the selected bidder fails to deliver any or all Contracted services as per service standards specified in the Contract or
- b. If the selected bidder/ fails to perform any other obligation(s) under the Contract, or
- c. If the selected bidder in the judgment of the Tendering Authority has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

In such type of event Tendering Authority can terminate the Contract and would be free to fully take over operations without giving any compensation to the selected bidder.

### **3.35 Termination for Insolvency**

Tendering Authority may at any time terminate the Contract by giving written notice to the selected bidder if the selected bidder becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation of any type to the selected bidder, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Tendering authority.

### **3.36 Events of Default, Rectification and Termination**

If there is breach which translates into default as per Management Service Agreement (MSA) in provisioning of services and / or default as per this MSA in provisioning of services on account of matters related to the provision of other IT and non-IT services by the bidder under the project, continuously for more than seven days or more than a cumulative period of ten days in a month, except in conditions of force majeure, the same shall attract liquidated damages.

In case the rectification is not carried out within 30 days of the applicability of the inoperability clause, it would constitute a material breach by the bidder, which shall entitle the Purchaser to, at its sole option, forthwith terminate MSA on the expiry of such stipulated period, unless the SI has in the meantime rectified, removed or cured, as the case may be, such material breach. The Purchaser may at its sole option, debit or set off the amounts of liquidated damages, if any, against the payments as defined the RFP/ MSA, and/ or through invocation or forfeiture of the performance security, in full or part, as the case may be.

In the event of any invocation of the performance security by the Purchaser, the bidder shall be required to forthwith replenish or top up the existing performance security, failing which the same shall constitute a material breach by the bidder, which shall entitle the Purchaser to terminate MSA. Failure to replenish/ top up within 15 days will invite liquidated damages of Rs.5,000/- per day and penal interest @ 18% for the delayed period for the amount of deficit in the performance security. Failure to Replenish/ top up beyond 30 days will be material breach and may lead to termination of agreement.

### **3.37 Effects of Termination**

- i. The termination provisions set out in MSA shall apply mutatis mutandis to the Service Level Agreements.
- ii. Upon termination of MSA, the Parties will comply with the Exit Management Schedule, as outlined in the MSA.
- iii. Upon the expiration or any termination of MSA, vendor shall undertake the actions set forth in MSA to assist the Purchaser to procure replacement services as provided hereunder:
  - ◆ The bidder undertakes to negotiate in good faith with the Purchaser and any relevant Replacement bidder in respect of commercial terms applying to all bidder Intellectual Property Rights and which the Purchaser and any relevant Replacement bidder require to enable them to provide or receive services substantially equivalent to the Services hereunder.
  - ◆ In respect of bidder third party Intellectual Property Rights, bidder undertakes to assist the Purchaser to secure such consents or licenses from such third parties as are necessary

to enable Purchaser / Replacement bidder to receive services substantially equivalent to the Services hereunder.

- ◆ The bidder shall hand over to the Purchaser or its designated agency in accordance with the terms of MSA, any asset or deliverable, including the software, (and including any data, ownership, source code and associated documentation which is the work product of the development efforts involved in the Project) in which the Purchaser has the right, title and interest and that is in the possession or control of the bidder.
- ◆ Notwithstanding anything contained herein above and without prejudice to the right to terminate MSA, if the bidder fails to set up and operationalize the system in accordance with RFP document, the Purchaser may in its sole discretion, instead of terminating MSA, engage another person to fulfil the remaining obligations (or part of the remaining obligations) as may be decided, at the risk and cost of the bidder. The additional cost incurred by the Purchaser shall be recoverable from the Performance Security or any amount payable or due to the bidder, and in case such Performance Security or amount is not adequate, the SI shall make good the shortfall.
- ◆ The action as provided in this clause above shall not be construed or treated as waiver of any right of the Purchaser and the right to terminate this MSA shall subsist even if an action in accordance with this clause had been taken.

### **3.38 Limitation of Liability**

- a. There shall be no limitation of liability in respect of the bidder in case of any damages for bodily injury (including death) and damage to real property and tangible personal property, other than as applicable under the relevant laws.
- b. Neither MSA nor the Agreements grants or creates any rights, benefits, claims, obligations or causes of action in, to or on behalf of any person or entity (including any third party) other than between the respective Parties to MSA, as the case may be.
- c. Any claim or series of claims arising out or in connection with MSA shall be time barred and invalid if legal proceedings are not commenced by the relevant Party against the other Party within a period of 3 years from the date when the cause of action first arose or within such longer period as may be permitted by applicable law without the possibility of contractual waiver or limitation.
- d. The Purchaser shall be entitled to claim the remedy of specific performance under MSA.

### **3.39 Indemnification**

- i. Subject to Clause 3.17.2 below, System Integrator (the "Indemnifying Party") undertakes to indemnify BUIDCo (the "Indemnified Party") from and against all Losses on account of bodily injury, death or damage to tangible personal property arising in favor of any person, corporation or other entity (including the Indemnified Party) attributable to the Indemnifying Party's performance or non-performance under this Agreement or the SLA to the extent of the Indemnifying Party's comparative fault in causing such Losses.
- ii. The indemnities set out in Clause 3.17.1 shall be subject to the following conditions:

- a. The Indemnified Party as promptly as practicable informs the Indemnifying Party in writing of the claim or proceedings and provides all relevant evidence, documentary or otherwise;
  - b. the Indemnified Party shall, at the cost of the Indemnifying Party, give the Indemnifying Party all reasonable assistance in the defence of such claim including reasonable access to all relevant information, documentation and personnel provided that the Indemnified Party may, at its sole cost and expense, reasonably participate, through its attorneys or otherwise, in such defence;
  - c. if the Indemnifying Party does not assume full control over the defence of a claim as provided in this Article, the Indemnifying Party may participate in such defence at its sole cost and expense, and the Indemnified Party will have the right to defend the claim in such manner as it may deem appropriate, and the cost and expense of the Indemnified Party will be included in Losses;
  - d. The Indemnified Party shall not prejudice, pay or accept any proceedings or claim, or compromise any proceedings or claim, without the written consent of the Indemnifying Party;
  - e. All settlements of claims subject to indemnification under this Article will:
    - o be entered into only with the consent of the Indemnified Party, which consent will not be unreasonably withheld and include an unconditional release to the Indemnified Party from the claimant or plaintiff for all liability in respect of such claim; and
    - o Include any appropriate confidentiality agreement prohibiting disclosure of the terms of such settlement;
- iii. The Indemnified Party shall account to the Indemnifying Party for all awards, settlements, damages and costs (if any) finally awarded in favour of the Indemnified Party which are to be paid to it in connection with any such claim or proceedings;
  - iv. The Indemnified Party shall take steps that the Indemnifying Party may reasonably require to mitigate or reduce its loss as a result of such a claim or proceedings;
  - v. in the event that the Indemnifying Party is obligated to indemnify an Indemnified Party pursuant to this Article, the Indemnifying Party will, upon payment of such indemnity in full, be subrogated to all rights and defenses of the Indemnified Party with respect to the claims to which such indemnification relates; and
  - vi. If a Party makes a claim under the indemnity set out under Clause 3.17.1 above in respect of any particular Loss or Losses, then that Party shall not be entitled to make any further claim in respect of that Loss or Losses (including any claim for damages).

### **3.40 Exit Management**

- i. The Purchaser shall be entitled to serve notice in writing on the bidder at any time prior to the date that is 30 days prior to the end of the exit management period requiring the bidder to

transfer and hand over the terms to the Purchaser or its nominated agency at the appropriate time, in accordance with the terms of the Management system analysis (MSA) any Asset or Deliverable, in which the Purchaser has the right, title and interest and that is in the possession and/ or control of the bidder.

- ii. Performance security in the event the MSA is terminated due to the bidder being in breach as stated above and the Purchaser shall return the performance security if the MSA is terminated due to the Purchaser being in breach as stated above or due to a Force Majeure Event, or on normal expiry of MSA.
- iii. Upon service of a notice the following provisions shall apply:
  - All risk in and title to the Assets, other than those that are to be transferred to the Purchaser, shall remain with the bidder after the last day of the exit management period.
  - The Purchaser shall pay to the bidder on the last day of the exit management period the amounts due for services already rendered as stated in the Financial Provisions Section of MSA.
  - The Purchaser shall withdraw all services and the bidder shall cease to have any right whatsoever to render such services under or pursuant to this Agreement.
- iv. The employees of the bidder / its sub-contractors shall continue to be their respective employees / counter parties and Purchaser shall have no obligation in respect of such employees.
- v. The bidder shall ensure that sub-contractors, agents, representatives and respective associated entities carry out their respective obligations during the Exit Management Period
- vi. Save as otherwise expressly provided in this MSA, the bidder shall be entitled to retain all physical infrastructure; hardware, software, technology, networks, connectivity, all contracts with any non-Government content and services providers belonging to/ owned by it.

### **3.41 Exit Management Plan**

- i. The successful bidder shall provide the client with a recommended exit management plan ("Exit Management Plan") which shall deal with at least the following aspects of exit management in relation to the SLA as a whole and in relation to the Project Implementation, the Operation and Management SLA and Scope of work definition.
  - A detailed program of the transfer process that could be used in conjunction with a Replacement Operator including details of the means to be used to ensure continuing provision of the services throughout the transfer process or until the cessation of the services and of the management structure to be used during the transfer;
  - Plans for the communication with such of the Operator's, staff, suppliers, customers and any related third party as are necessary to avoid any material detrimental impact on Project's operations as a result of undertaking the transfer;
  - Plans for provision of contingent support to Project and Replacement Operator for a reasonable period after transfer.



- ii. The successful bidder shall re-draft the Exit Management Plan annually thereafter to ensure that it is kept relevant and up to date.
- iii. Each Exit Management Plan shall be presented by the bidder to and approved by the client or its nominated agencies.
- iv. The terms of payment as stated in the Terms of Payment Schedule include the costs of the successful bidder complying with its obligations under this Schedule.
- v. In the event of termination or expiry of SLA, Project Implementation, Operation and Management SLA or Scope of Work each Party shall comply with the Exit Management Plan.
- vi. During the exit management period, the successful bidder shall use its best efforts to deliver the services.
- vii. Payments during the Exit Management period shall be made in accordance with the Terms of Payment Schedule.
- viii. Exit Management plan shall be furnished in writing to the client or its nominated agencies within 90 days from the Effective Date of Lol/LoA.

#### **3.42 Cooperation and Provision of Information**

During the exit management period the successful bidder will allow the client access to information reasonably required to define the then current mode of operation associated with the provision of the services to enable the client to assess the existing services being delivered;

#### **3.43 Confidential Information, Security and Data**

The successful bidder will promptly on the commencement of the exit management period supply to the client or its nominated agencies the following:

- i. Information relating to the current services rendered and customer satisfaction surveys and performance data relating to the performance of the services;
- ii. Documentation relating to Project's Intellectual Property Rights;
- iii. Project data and confidential information
- iv. All current and updated Project data as is reasonably required for purposes of the Project or for transitioning of the services to its Replacement Operator in a readily available format
- v. All other information (including but not limited to documents, records and agreements) relating to the services reasonably necessary to enable Project or its nominated agencies, or its Replacement Operator to carry out due diligence in order to transition the provision of the Services to Project or its nominated agencies, or its Replacement operator (as the case may be).

#### **3.44 Employees**

- i. Promptly on reasonable request at any time during the exit management period, the Operator shall, subject to applicable laws, restraints and regulations (including in particular those relating to privacy) provide to the client a list of all employees (with job titles and communication address) of the Operator dedicated to providing the services at the commencement of the exit management period;

- ii. To the extent that any Transfer Regulation does not apply to any employee of the Operator, the client or its Replacement Operator may make an offer of employment or contract for services to such employee of the Operator and the Operator shall not enforce or impose any contractual provision that would prevent any such employee from being hired by the client or any Replacement Operator.

### **3.45 Rights of Access to Information**

At any time during the exit management period, the Operator will be obliged to provide an access of information to the client, and/or any Replacement Operator in order to make an inventory of the Assets (including hardware / Software / Active / passive), layouts, diagrams, schematics, documentations, manuals, catalogs, archive data, IP addressing, Live data, policy documents or any other material related to Project.

### **3.46 Spares support**

The Bidder shall undertake to supply the necessary lifetime spares required to maintain the equipments for a period of 10 years.

The Bidder must sign and affix the seal in every page of the Tender document duly signed and completed original Tender Documents must be submitted in respective cover without fail.

## **Pre-commissioning Trials**

### **4.1 Start up**

On completion of the erection of equipment and before start up, each item of the equipment shall be thoroughly cleaned and then inspected by the Engineer in charge and the contractor jointly for correctness and completeness of installation and acceptability for start up leading to initial pre-commissioning tests at site. The list of pre commissioning tests to be performed shall be mutually agreed and included in contractor's quality assurance Programme. The contractor's commissioning /start up engineers specially identified as far as possible shall be responsible for carrying out all pre-commissioning tests. On completion of inspection, checking and after pre-commissioning tests are satisfactorily over the complete equipment shall be placed on initial operation during which period, the complete equipment shall be operated integral with sub-system and supporting equipment complete plant.

### **4.2 Commissioning spares**

The contractor shall make Arrangements for an adequate inventory at site, of necessary commissioning spares prior to commissioning of equipments furnished and erected so that any damage or loss during these commissioning activities necessitating the requirements of spares will not come in way of timely completion of works under contract.

### **4.3 Registration and statutory Inspection**

All the registration and statutory inspection fees if any in respect of work pursuant to this contract shall be to the account of contractor. Should any such inspection on registration need to be re-Arranged due to the fault of contractor, the additional fees for such inspection shall also be borne by the contractor.

### **4.4 Progress Reports and Photographs**

During various stages of works in pursuant of the contract the contractor shall at his own cost submit periodic progress reports as may be reasonably required by the Engineer in charge with such materials as charts, networks, photographs, test certificates etc. Such progress reports and photographs shall be in the form and size as may be required by the Engineer in charge and shall be submitted in at least three copies and shall contain the date, the name of the contractor and the title of the photographs. The report shall also indicate reasons for variance between the schedule and actual progress and the action proposed for corrective measures whatever necessary.

### **4.5 Work and Safety Regulations**

a) The contractor will notify the Engineer in charge of his intention to bring on to the site any equipment or any container with liquid or gaseous fuel or other substance, which may create hazards. The Engineer in charge shall have right to prescribe the condition under which such equipments or container may be handled and

used during the performance works and the contractor shall strictly adhere to such instructions. The Engineer in charge shall have the right to inspect any construction plant and to forbid its use if in his opinion it is unsafe, no claim due to such prohibition shall be entertained by the owner.

b) Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives the contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934 Explosive Act 1948 and petroleum and carbide of calcium manual. All such storage shall have prior approvals necessary from chief Inspector of Explosives or any Statutory Authorities. The contractor shall be responsible for obtaining the same.

#### **4.6 Electrical Safety Regulations**

a) In no circumstances will the contractor interfere with the fuses and electrical equipment belonging to the owner or other contractor

b) Before the contractor connects any electrical appliances to any plugs or sockets belonging to owner or other contractor he shall

1) Satisfy the Engineer in charge that the appliances are in good working conditions.

2) Inform the Engineer in charge of maximum current rating voltage and phases of the appliances.

3) Obtain the permission of the Engineer in charge, detail the sockets to which appliances may be connected.

c) The Engineer in charge will not grant permission to connect until he is satisfied that

1) The appliance is in good condition and is fitted with suitable plug.

2) The appliance is fitted with suitable cable having two earth conductors one of which shall be an earthed metal sheath surrounding the core.

d) No electric cable in use by the contractor shall be in use by the contractor/owner will be disturbed without prior permission.

No weight at any description will be imposed on any such cable and no ladder of similar equipment will rest against or to be attached to it.

e) No work will be carried out on any live equipment. The equipment must be made safe to work issued before any work is carried out.

f) The contractor shall employ the necessary number of qualified full time electricians to maintain the temporary electrical installation.

Contractor shall make necessary Arrangements for the following

I) It is necessary to carry out the testing of number of equipments in the manufacturers works. This is stated in the item wise specification. However the items, which require third party inspection as tested below with brief requirement of tests.

II) The Arrangements for this shall be Arranged by the contractor, the cost of testing in factory payable to manufacturer (including power charges etc.) The testing fees of inspecting authorities etc. shall be Arranged by the contractor without any extra cost to the department.

Whenever department Engineers will be attending the inspection and testing to and fro charges will be born by the department as per Govt. civil service rules. However all other Arrangements shall be made by the contractor.

## **5. Technical Specification of Equipments**

### **5.1.1 Traffic Light System**

#### **5.1.2 Purpose**

The primary objective of the System is to control and monitor traffic signals and equipment, including signaled pedestrian crossings, using a traffic responsive strategy – fully adaptive real time system, based on real time traffic flow and vehicle presence information. However, the system shall also be capable of operating under fixed time plan by time of day (green wave etc) as defined subsequently in this specification.

Within the scope of this contract the real time fully adaptive control system is defined as a system with the capacity to calculate in real time the optimal cycle times, effective green time ratios, and change intervals for all system traffic signal controllers. Such calculations will consist of simulations carried out in the central control computer, or individual traffic signal controller, based on a negative feedback control engineering principle for data and information transmitted by the vehicle detectors at the intersections controlled by the system.

In the operation of the real time control system, except for the system start up, traffic data shall not be necessary since the computer shall instantly calculate the best signals arrangements for any time, optimising the traffic performance in real time for the entire controlled area.

The variation if appropriate of green transitions and change intervals within the real time control system shall occur at least once every traffic signal cycle, while the adjustment of cycle time will occur, at least, once every two and half minutes.

The real time control system shall be capable of producing minor and frequent changes of the traffic control parameters, smoothly becoming suitable for the traffic variations without disrupting the flow. Systems based on vehicle actuation, whereby the green phase times are determined according to the number of "extensions" given by the vehicle detectors will qualify as real time control systems provided that they do not only optimise the traffic at each intersection locally, and in isolation from the rest of the system.

In order for a system to be considered a real time control system, it is necessary that the values for at least two of the parameters (green splits, offsets, and cycle times) be computed in real time by the central computer, based on traffic levels at each instant in time

(milliseconds). With the exception of the initial values (system start-up), it shall not be necessary to furnish the system any value for the said parameters.

The system shall permit any combination of the following degrees of real time adaptive control optimisation by operation from the Traffic Police Control Room; -

- i. Split optimisation on/off (node basis)
- ii. Offset optimisation on/off (node basis)
- iii. Cycle time optimisation on/off (region basis)
- iv. Limitation of the minimum permitted cycle time (region basis)
- v. Limitation of the maximum permitted cycle time (region basis)
- vi. Set single/double cycling restraint (to prevent the system from double cycling nodes within the overall region cycle time, node basis)

The Contract for the Fully Adaptive Traffic Control System shall include the design, manufacture, supply, acceptance testing, installation, commissioning, validation/calibration and documentation of the following as described in the Bill of Quantities :-

## **5.2 Traffic Control Computers and peripherals;**

- i. Operator terminals:
  - ◆ using a graphical user interface (GUI) for screen displays;
  - ◆ Graphical display utilities for operator terminals;
  - ◆ Operator terminals to operate over a local area network ie Ethernet or similar;
- ii. Data transmission equipment directly associated with the ATC system, including any new in-station, out-station equipment, and test sets
- iii. Lamp and system failure monitoring to be ensured by contractor by means of field support team
- iv. ATC software for fully adaptive operation, including traffic control, pedestrian facilities, diversion routing, emergency traffic plans and emergency vehicle priority on selected routes".
- v. Traffic signal status history.
- vi. Traffic signals and on-street traffic controllers
- vii. Other on-street traffic equipment necessary for the system to function in accordance with the specification

- viii. The Traffic Signal Controller equipment shall provide a microprocessor based solid state traffic signal lamp switching and a conflict monitoring facility to ensure that conflicting, dangerous or disallowed traffic signal displays are not shown. The conflict control facilities shall be independent of the microprocessor and the Bidder shall detail how they are met in the design of the controller. The controller shall consist of a rack mounted, controller logic module, housed in a zinc electroplated steel cabinet which provides a frame for termination to field cables.
- ix. The Contractor shall provide a single type of traffic signal control equipment which shall be capable of operating:-
- ◆ A computer linked, co-ordinated system under fully adaptive control strategies;
  - ◆ Linked locally to adjacent controllers with vehicle detection facilities;
  - ◆ in an isolated mode;
  - ◆ in fixed time or vehicle actuated mode with detection facilities;
  - ◆ in night time mode of flashing red/amber mode

Features	Specifications
General Specification	Equipment shall be designed to function correctly in a wide range of climatic conditions. In particular the equipment shall operate reliably in extremes of temperature and humidity. It shall operate in a temperature range of -10 and +60 degrees Centigrade external ambient temperature, and relative humidity to 95 percent, non-condensing.
Controller Firmware	The controller design shall be based on modern high performance microprocessor and all logical functions necessary external to the microprocessor shall be performed by solid state devices. Timing functions shall be based on digital techniques implemented by the microprocessor system. Site specific configuration data shall be stored in a single easily installed memory unit (EPROM). This data will comprise non-volatile time settings and data tables required to configure the operation for the particular junction or intersection. The data stored in the memory unit shall be protected by a checksum test. The site specific configuration data shall be prepared on a PC based configuration platform. Data in the site-specific data EPROM shall correspond to hardware programmed intersection number and revision level in the controller housing, for the controller to start operation when mains power is applied.
Controller Functionality:	The standard controller shall allow expansion from 3 phases/signal groups up to a maximum of at least 12 phases/signal groups. Each phase/signal group output shall be configurable to be either a vehicle phase/signal group or a pedestrian phase/signal group, within the limits of a maximum of 16 vehicle/pedestrian phases/signal groups, or combination thereof. Each phase/signal group output shall provide 3 triacdrives (or similar), which may be used for switching either vehicle or pedestrian lantern displays, Red/Amber/Green for vehicle phases/signal groups and Red/Wait/Green for pedestrian phases/signal groups. The pedestrian phases/signal groups will be configured for flashing red aspect during pedestrian clearance. The solid state switches used shall be able to drive loads consisting of resistive and inductive elements. That is, the lamp switching outputs shall be able to drive Tungsten, Quartz Halogen, LED and Neon lamp loads, or combinations of these. All phase/signal group outputs must berated accordingly.
Controller certification	EN12675: Traffic Signal Controllers /Functional safety requirement EN50556 : Road traffic signal system EN50293 : Road traffic signal system / Electromagnetic capability IEC 60950-1 Information technology / Safety
Phase/signal Group Drives - Software Control	The controller software shall provide control for a maximum of 16vehicle/pedestrian phases/signal groups or combination thereof. The numbers of vehicle and pedestrian phases/signal groups are specified by separate entries in the controller site specific data. Each lamp switching output may be configurable via the controller EPROM, to drive a vehicle phase/signal group or a pedestrian phase/signal group.
Phase/signal Group Drives -	The signal aspects shown to vehicular traffic shall be: <ul style="list-style-type: none"> <li>• red, green, amber, red;</li> </ul>

Configuration	<ul style="list-style-type: none"> <li>• the sequence to pedestrians shall be red standing man, green walking man, flashing red standing man, red standing man;</li> <li>• The green walking man shall indicate a protected pedestrian crossing movement;</li> <li>• The flashing red walking man shall indicate a clearance period between the termination of the pedestrian green signal and the start of the pedestrian red signal; The flashing amber signal shall be presented to traffic in coincidence with the flashing red walking man signal and may be continued for an adjustable period(seconds)after the termination of the flashing red man signal.</li> <li>• Flashing red(night time operation)pedestrian signals shall be extinguished.</li> <li>• Each phase/signal group must be configurable to any of the normal displays described below. The normal displays are:- <ul style="list-style-type: none"> <li>• Red, green, Amber(3-aspect vehicle signal);</li> <li>• Red, Green, Flashing Red or Red(pedestrian signal).</li> <li>• Flashing Amber(to main roads), Flashing Red(to side roads),Flashing Red Man to pedestrians.</li> <li>• Filter Green Arrow for left turning traffic;</li> <li>• Filter Green Arrows for left, ahead and right traffic;</li> <li>• Filter Green Arrow for right turning traffic(see above);</li> <li>• Flashing Filter Amber arrows for left turning traffic.</li> </ul> </li> </ul>
Protection of Conflicting Phases/signal Groups	The Contractor shall confirm if simple green-green conflict monitoring is provided, or a more extensive monitoring function covering other dangerous voltage combinations are possible.
Phases/signal Groups Appearance Criteria	<p>Any phase/signal group shall be configurable in the site-specific data, to be introduced automatically or only upon demand.</p> <p>Each phase/signal group shall be displayed for a fixed or variable duration according to traffic flow or demand, in accordance with the data entered in the controller configuration EPROM. Typically the duration of phase/signal group green displays will be determined by the duration of the stage(s)/phases in which the phases/signal groups receive right of way.</p> <p>The controller configuration EPROM shall provide for filter green arrow for left or right turning traffic. The filter green left or right arrow may have an associated vehicle phase/signal group and can be configured such that it will not terminate until right of way for the associated vehicle phase/signal group is granted. Where a filter green arrow phase/signal group is defined as having 3 aspects, it shall not be possible for the phase/signal group to terminate from green to red without intermediate amber.</p> <p>The controller configuration EPROM shall provide for flashing filter amber arrow for left turning traffic. The filter amber left turn arrow may have an associated vehicle or pedestrian phase/signal group and can be configured such that it will not terminate until right of way for the associated vehicle or pedestrian phase/signal group is terminated.</p>
Stage/phase - Phase/signal Group Timing Intervals	The controller configuration EPROM shall provide comprehensive stage/phase – phase/signal group timing interval facilities compatible with the system design.
Stages/Phases	<p>The Controller shall provide facilities for a number of stages/phases orphases/signal groups, which may include all red stages/phases. The available phases/signal groups are allocated to these stages/phases or phases/signal groups in any combination subject to the method of control, with the traffic characteristics and safety considerations as necessary to meet the individual site requirement.</p> <p>The controller shall provide a minimum of 7 stages/phases, within which any combination of phase/signal group displays are permitted in any stage/phase. Phases/signal groups shall be able to be specified for simultaneous appearance within a stage/phase, for appearance after a specified delay, or for early termination within a stage/phase. It shall also be possible for phase/signal group displays to overlap a number of stages/phases. Specified phases/signal groups shall also be able to provide Leaving Amber and All Red displays independent of the running stage/phase</p> <p>Each stage/phase shall be capable of conditional and alternative phase/signal group displays, as defined by condition table entries in the controller site-specific configuration data.</p> <p>Complex phase/signal group or staging/phasing designs shall be possible with the appearance of phases/signal groups in multiple stages/phases being conditional on specified conditions at the junction, such as presence of particular demands or the state of special control signals.</p>

	<p>Conditioning - Each stage/phase shall be configurable to appear automatically or upon demand from specified detector inputs within the controller. The controller shall provide facilities for a combination of phase/signal group equipment any or all of which may be:-</p> <ul style="list-style-type: none"> <li>• fully actuated by on street demands and extensions;</li> <li>• demand dependent (vehicle or pedestrian Phases)</li> <li>• fixed time phases (vehicle or pedestrian Phases);</li> <li>• Fully Adaptive Control</li> <li>• Hurry call or other priority demand.</li> </ul> <p>Each phase/signal group may provide control for one of the following:</p> <ul style="list-style-type: none"> <li>• vehicular movements;</li> <li>• pedestrian movements;</li> <li>• vehicular movements controlled by Green Arrow signals;</li> <li>• vehicular movements controlled by Amber Arrow signals;</li> <li>• Dummy phase.</li> </ul> <p>A dummy phase/signal group is used where timings or detector operation have to be associated with a particular traffic movement which is not uniquely signalled. It may be used to provide suitable time periods or to condition stage/phase changes even though no signal aspect is associated with the phase.</p> <p>Timers shall be allocated to phases/signal groups. The timers shall control the following timed periods of each phase but shall not be limited to only these:</p> <ul style="list-style-type: none"> <li>• minimum green time;</li> <li>• extension time;</li> <li>• maximum green time;</li> </ul> <p>Timers shall control the appearance and disappearance of phases/signal groups during the inter stage period. Such timers shall generate the phase/signal group to phase/signal group inter green periods and introduce any further delays to offset phases/signal group with respect to the stage/phase end point.</p> <p>The controller shall respond to vehicle detectors with associated with phases/signal groups which may be:-</p> <ul style="list-style-type: none"> <li>• demand a phase/signal group;</li> <li>• extend a phase/signal group;</li> <li>• demand and extend a phase/signal group;</li> <li>• introduce a hurry call facility;</li> <li>• be associated with an all red condition;</li> <li>• demand via call/cancel;</li> <li>• priority demand of stage/phase;</li> <li>• uni-directional demand for stage/phase;</li> </ul>
Vehicle Detection	<p>The detector equipment is a separate logic unit, which may be integrated into the controller, or alternatively mounted in its own housing. The outputs of the detectors indicate to the controller the presence and passage of vehicles and are used to influence the operation of the controller and shall generate demands and extensions for right-of-way.</p> <p>Means shall be provided so that a detector may be connected to demand and / or extend a phase movement as specified.</p> <p>Uni-directional detection shall comprise of a combination of detectors, which may be connected to have this effect. The logic for this may be incorporated within the controller. The operator facility shall provide means by which continuous artificial demand and extensions may be applied to any phase/signal group of phases/signal groups and a means by which the effect of a detector maybe inhibited.</p> <p>Detectors may be associated with the following demanding conditions and facilities:-</p> <ul style="list-style-type: none"> <li>• extend a phase/signal group;</li> <li>• introduce a hurry call;</li> <li>• introduce a priority stage/phase;</li> <li>• uni-directional demand for stage/phase;</li> <li>• to provide for adaptive control</li> </ul>
Stage/phase Selection	<p>The controller shall examine phase/signal group demand requests and identify those stages/phases, which will satisfy these demands. Stage/phase changes shall normally</p>

	<p>occur to serve the next stage/Milestone 1n cyclic order subject to the following conditions:-</p> <ul style="list-style-type: none"> <li>• to enable a particular stage/phase always to follow another</li> <li>• to enable a particular stage/phase to always precede another</li> <li>• to prohibit certain stage/phase to stage/phase moves and substitute alternative moves so that the desired stage/Milestone 1s eventually served. Fixed time or Local control will follow the stage/phase pattern and timings set out in the controller configuration for each specific site and shall be independent of other modes of control.</li> </ul>
Controller Functional Requirements Operational Facilities	<p>Modes of Operation - The controller shall provide the following modes of operation:-</p> <ul style="list-style-type: none"> <li>• Manual</li> <li>• FATC mode</li> <li>• Cable-less Linking</li> <li>• Vehicle Actuation.</li> <li>• Fixed Time</li> <li>• Night Time Flashing</li> <li>• Hurry call</li> </ul>
Controller User Interface	<p>Facilities within the Controller Cabinet - Access to the controller housing shall be by a controller key, which fits a secure, vandal proof compression lock at the top and bottom of the traffic signal controller opening door.</p> <p>Facilities either external to the cabinet door or located inside the controller casing beneath a flap secured by key shall permit the local controller lamps to be switched On or Off, to select NightTime operation, to assume Normal Operation (modes priorities) and to permit the selection and control of Manual mode.</p> <p>Monitoring - The controller front panel shall display Red, Amber and Green LEDs for each phase/signal group output to allow easy monitoring of the drive signals to the signal displays. Status LEDs shall be provided to give indication of the state of the hardware and software. The status LEDs include:-</p> <ul style="list-style-type: none"> <li>• CPU is operating normally</li> <li>• Conflict detected</li> <li>• Communications synchronised</li> <li>• Power is OK</li> <li>• Lamp Alarm (i.e. a lamp fault exists)</li> <li>• System Shutdown (due to an internal system fault)</li> </ul>
Design Life	<p>All components must be rated for minimum 15-year life, excluding the standby battery, which shall have a minimum life of 5 years.</p>
Fault Log and Diagnostic Facilities	<p>The controller must provide a Fault Log in battery backed RAM. The Log will provide storage for Faults, which cause the signals to be blacked out. Storage is also provided for Errors, which are detected, including Hurry Call Requests and Watchdog time-out. These would not cause the signal displays to be blacked out. The control shall also provide an historical fault log, which shall be battery backed. The historical fault log shall have no effect on controller operation but shall provide an event list of previous faults</p> <p>Fault Diagnostics - The controller Fault Log will store relevant diagnostic data concerning each Fault entered into the Log. Each Fault is identified by a unique fault code, which will allow each fault to be quickly assessed as to the likely cause. Diagnostics are available that identify:</p> <ul style="list-style-type: none"> <li>• Green Conflicts</li> <li>• Phase Monitor Faults</li> <li>• Memory Corruption/Failure</li> <li>• Plan and Timetable Data Faults</li> <li>• Real Time Clock Failure</li> <li>• Hurry Call Request</li> <li>• Special Facility faults</li> </ul> <p>Detector Fault Monitor - Detector fault monitoring shall be a system function supported directly by the controller. The system will provide periodic messages from the ATC System to the controllers to interrogate the controller for current detector alarms. The control shall also provide an historical detector fault log, which shall be battery backed. The historical detector fault log shall have no effect on controller operation but shall provide an event list of previous detector faults</p>



Electrical Specification	<p>Mains Power Supply - The controller shall be designed to operate with wide variations in nominal mains supply and be tolerant to variations of +/- 15% of the nominal supply voltage and frequency.</p> <p>An interruption in the mains power of less than 50ms will not cause any disruption to normal controller operation. The controllers will shutdown in an orderly fashion as a consequence of a power failure. At such time as mains supply is restored to the controller the controller shall be capable of resuming operation with interference.</p> <p>The controller must be protected against overvoltage on the mains power supply of 800 Volts, 50 microsecond pulses, (5 ohm source impedance) randomly phased. The controller must survive these overvoltage transients and continued to operate correctly without damage.</p> <p>All terminals that provide an interface to equipment external to the controller shall be isolated by opto-couplers, which will provide protection from transients of +/- 75V for 1 minute.</p> <p>A main fuse and switch rated to a minimum of 20 Amps will be provided. The Main switch will remove power from all circuits within and fed from the traffic controller. The following schedule of fuses shall be provided:-</p> <ul style="list-style-type: none"> <li>• 32 Amp HRC fuse for all junction control equipment;</li> <li>• 16 Amp HRC fuse for all pedestrian control equipment;</li> </ul>
Lamp Circuit Isolation/Protection	<p>A Lamps Circuit Breaker will be provided to switch off the signal lamps and any pedestrian push button units or WAIT indicators without affecting the operation of the controller logic. The lamp circuits (red/amber/green) for each phase will be protected by separate fuses, 10.28.2 Signal Lamp Switching shall be by solid state, triac load switches. The Triac load switches must be rated in excess of five million switching operations and to 40 amps during switching. The rated lamp load must be at least 4 Amperes continuous for each aspect for each phase at voltages in the range 32V to 250V.</p> <p>Signal Lamp Dimming shall be provided for all signal displays, including WAIT indicators, but excluding regulatory/secret signs.</p> <p>The battery shall protect the real time clock and RAM against loss of power. Data will not be corrupted in either the clock or the RAM due to loss of mains power, or the removal of any circuit cards from the logic module.</p>
Mechanical Specification	<p>Controller Housing - The traffic signal controller must be an integrated system with all necessary control, communications, input/output and termination facilities located within the one base mounted cabinet.</p> <p>Physical Design - The controller shall be housed in a cabinet fabricated from thick mild steel, zinc seal steel electro-galvanized to an appropriate international standard with a powder coated baked enamel finish. The cabinet shall be supplied with all fixtures and fittings to mount internal equipment and to fix it to the base plinth. All fittings and fixtures supplied with the cabinet shall be protected against corrosion.</p> <p>The cabinet shall be convection ventilated with air entry through a channel at the base of the door, and air exit around the top cover. The base design shall provide frangible mountings to minimize accident damage.</p> <p>Cabinet weatherproofing shall be to a minimum of IP56 standard or equivalent international standard.</p> <p>The standard cabinet shall provide field wiring terminals in 4 phase/signal group increments to a capacity of 12 phase/signal group outputs, or alternatively may be available to allow connection of larger phase/signal group drive capacity where appropriate.</p> <p>Manual control of the controller shall be possible by either a key flap revealing a manual control panel or alternatively by a 5 position key-switch "facility key". The lock shall be flush mounted to a side panel of the controller cabinet. The lock shall be protected against water and dirt ingress. The manual panel or key-switch shall provide the following switched functions as a minimum:</p> <ul style="list-style-type: none"> <li>• AUTO (Normal operation, key can be removed in this position)</li> <li>• FLASH (Flash amber / red, controller continues to run, key may be removed in this position)</li> <li>• OFF (lamps off, controller continues to run. The key may be removed in this position).</li> <li>• MANUAL (select manual control) (key not able to be removed in this position)</li> </ul> <p>Cable Termination and Earthing - Cable clamps bars and cable trunking shall be provided for all internal cabinet wiring. Termination points shall be provided for all</p>

		<p>incoming and outgoing cables. A minimum of 40 termination points for incoming / outgoing cables.</p> <p>Mains voltage lamp output terminal units shall be separate from loop terminal and auxiliary input/output terminal units.</p> <p>Lamp output terminal units shall be provided in each controller cabinet. Each shall have terminal positions for four 3-aspect phases, Red/Amber/Green for vehicles and Red/Wait/Green for pedestrians. Three screw terminals shall be provided at each position for incoming cables. Alternatively spring load terminations can be used.</p>
Traffic Heads	Signal	<p><b>Arrangement of Aspects</b></p> <p>Vehicle Signals, each signal face shall, unless otherwise specified, contain three aspects arranged vertically. The coloured lens of the upper aspect shall be red, the middle one amber, and the lower one green. In addition, red, amber, green arrow or amber arrow aspects may be used.</p> <p>All aspects on each vehicle signal face shall be of the same diameter. Aspect diameters shall be 300 mm as defined for each intersection on plans.</p> <p><b>Pedestrian Signals</b></p> <p>Each signal face shall contain two aspects arranged vertically. The aspects shall be circular with a diameter of 300 mm. The upper aspect shall show a standing red man on a black background. The lower aspect shall show a walking green man on a black background.</p> <p><b>Optical Performance</b></p> <p>The design of the optical system shall be such that when a signal aspect is installed with its visor, under all normal conditions experienced in Sasaram Bihar it shall give a clear and unambiguous indication to all road users including buses, goods vehicles and pedestrians when viewed from all normal viewing angles up to a distance of 80 m from the aspect and shall be made from unbreakable polycarbonate. In particular:</p> <p>When an aspect is switched off it shall give a uniform, near black appearance with no visible phantom or spectral reflection.</p> <p>For the pedestrian and coloured arrow aspects, when switched on, the contrast between the illuminated and non-illuminated portions of the aspect shall be such that the intended indication is completely clear.</p> <p><b>Construction of Signal Heads and Visors (Hoods)</b></p> <p>The materials used and the form of construction used shall be such as to ensure that the signal head (including visors, which are required) has adequate mechanical strength and durability to withstand the conditions of installation, operation and maintenance. In particular it shall be capable of withstanding winds of up to 145 km/h. The colour of the signal body and visors shall be black UV stabilised high impact or impact modified Polypropylene. The lenses shall be acrylic, and reflectors shall be polycarbonate with stainless steel or Polypropylene fixings.</p> <p>The signal head shall be of modular construction, permitting signal head configurations to be built from standard building designed to be safe, vandal resistant and easy to install and maintain. Aspect lenses shall be available in 300mm sizes. It shall comply with the requirements of BS505 as amended by TRO102 and BS873, EN12368, BS1376, DIN6163 or other International Standard appropriate for use in India.</p> <p>The signal head shall achieve a precise beam distribution, which produces high intensities of light in the centre of the optic with minimum 4 Hi Flux LED or its above. The displayed symbols shall offer some form of protection against the adverse effects of phantom illumination of aspects.</p>
Signal Poles		<p>All poles and posts shall comply with or exceed the requirements of BS505 or similar international approved specification as appropriate for use in India about fabrication and steel content and shall be galvanized steel Class B, to BS729 or similar International standard.</p> <p>Signal poles shall have a diameter of 127mm (I/D) with a straight pole height of 4.5m and a strength and cantilever pole height 6m with rigidity at least equivalent to that for a seamless steel tube of 131.5mm outside diameter and 4.4mm thickness and a tensile strength of 375MN/m<sup>2</sup>.</p> <p>Signal poles shall be of a uniform diameter. An exception may be made to increase the diameter of the lower part of any post at a signal installation to accommodate, for example, electrical services including 3 mts. ARM.</p>
LED Signal Aspects		<p>The provision of LED signal heads shall be to the specifications detailed in EN12368 (European standard) and the further detailed requirements of TR2206A or other equivalent International Standards. The LED signal heads are to be compliant with Class A (-15 to + 60) for use in a class A environment, provide a luminosity of intensity of</p>

	<p>400cd, have a medium intensity distribution, a luminous uniformity of 1:10, phantom class 5 and an impact resistance of 0.51kg dropped from IR3 (1300mm).</p> <p>All the previously stated requirements for conventional signal aspects shall apply equally to LED signals such as optical performance, physical materials and construction standards, fixings and similar.</p>
Cable Installation	<p>Contractor shall install and test the cables specified in accordance with the plans. Cables shall be laid in HDPE and G.I./M.S. conduits as shown in the plans. Contractor's scope of work includes unloading, laying, fixing, jointing, bending and terminating of cables. Contractor shall also supply necessary materials and equipment required for jointing and terminating of cables.</p>
Signal Cable / Control Cable/power cable	<p>Signal Cable/Control shall be rated for 650/1100 V Grade Copper Conductor, PVC/XLPE insulated and sheathed armoured cables as per IS 1554 Part I – 1976.</p> <p>The recommended sizes are:  3 C X 2.5 sq. Mm  8 C x 1 sq. mm  16 C x 1 sq. Mm</p>
Vehicle Detectors	<p>Vehicle detectors shall be provided data for the ATC algorithm and for all other vehicle detection requirements such as:-  Vehicle actuation;  Fully adaptive control  The type of vehicle detectors, their location and function shall be defined as per the specific requirements of the Contractors fully adaptive traffic control system.</p>
Full Graphic Count Down Timer	<p>CPU – 8bit Micro-Controller  Structural Material - Polycarbonate strengthened against UV rays  Dimensions - 360 mm x 370mm x 220 mm  Lamp Diameter - 300 mm  Height of Man Figure - 150-165 mm  Digit Height - 150-190 mm  Display Type - Full Graphic, Dual Colored (Red &amp; Green)  LED Diameter - 5 mm  LED Viewing Angle - 30 Degree  LED Wave Length - 630-640 nm (Red), 505-520nm(Blue –Green)  LED Dice Material - All n Gap 9Red), InGaN (Blue-Green)  LED Life Time - 1,00,000 hrs from the date of Commissioning  Power Consumption - 25-30 Watt nominal per lamp  Input Power - 85 to 260 Volt AC, 50 Hz  Operating Temperature - -20 Degree to +60 Degree C  Humidity - 0 % to 95% Relative Humidity  Water &amp; Dust Ingress - IP 65  The Vehicular countdown timer should be dual colour, Red for STOP or STP and Green Colour for GO. These should have alternate Red and Balance Phase Time for STOP or STP in flashing. Alternate Green and Balance Phase Time for GO in flashing.  The Pedestrian Countdown timer should be dual color with RED MAN &amp; balance phase time in flashing and GREEN MAN &amp; balance phase time in flashing.</p>
Traffic Signal Equipment Installation	<p>The Contractor shall agree the final placing on site with the Engineer of all traffic signal pole positions and the locations of traffic signal controller cabinets as illustrated in the detailed junction drawings prior to any works commencing.</p> <p>The Contractor shall be required to remove all redundant traffic signal equipment and cable from each individual site once any new equipment has been fully cabled and commissioned. The equipment shall be removed with care to avoid damage and delivered to the Employer. If on the instruction of the Engineer the equipment is not required by the Employer, the Contractor shall make his own arrangements for disposal.</p>
Inspection Chambers	<p>The Contractor shall provide details of proposed chamber locations marking these on the traffic signal drawings. The locations of ground chambers shall be in accordance with the following:</p> <ul style="list-style-type: none"> <li>• Located in footways</li> <li>• Adjacent to Traffic Signal Controller</li> <li>• Adjacent to Traffic Signal Poles</li> <li>• At detector loop collection points</li> <li>• Significant changes in direction</li> <li>• Each end of carriageway crossings</li> </ul>

	<ul style="list-style-type: none"> <li>Intervals of not more than 40m.</li> </ul> <p>Inspection Chamber covers shall be of a composite construction, black in colour, and fitted with in a galvanised steel frame. The cover and frame shall meet the requirements of 12.5 tonne loading in accordance with EN 124 Grade B or equivalent loading.</p>
Civil Engineering Works	<p>The Contractor will be responsible for the implementation of all necessary civil engineering works to implement the project. This will include: -</p> <ul style="list-style-type: none"> <li>The installation of the hardware necessary for the ATC system itself such as signal controller bases, signal poles, cables and cable ducts.</li> <li>The provision of a fully ducted network for traffic signal infrastructure in the form of ducts and chambers in line with the detailed standards outlined in this specification.</li> </ul>

### 5.3 2.0 KVA Online Ups System Specification

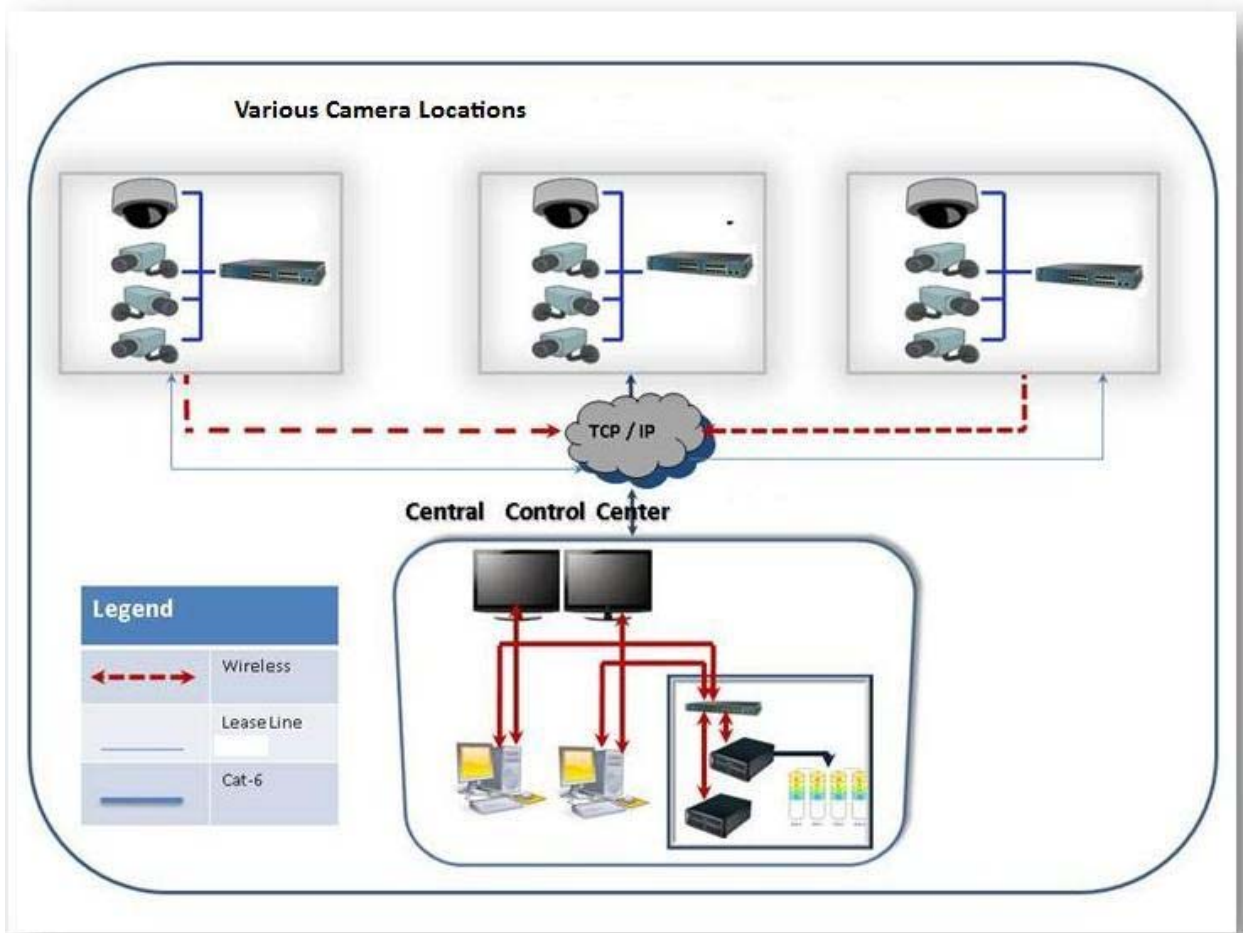
Description	Specification
Technology	True On Line UPS with double conversion technology Rectifier and inverter should be based on IGBT
Power Rating	2000 VA / 1600 W
<b>Input</b>	
Voltage Range	160 VAC – 300 VAC@ 100% Load, 110 VAC – 300 VAC @ 50% Load
Frequency	40 Hz ~ 70 Hz
Power Factor	≥ 0.95
<b>Output</b>	
Voltage Range	220/230/240 VAC ± 2%
Voltage Distortion	≤ 3% (Linear Load) ≤ 6% (non Linear Load)
Frequency	47.5 ~ 52.5 Hz
Power Factor	0.8
Crest Factor	3:1
<b>Inverter Overload</b>	
Transient Response	Less or equal to 3% for 100% nonlinear load (Battery mode)
<b>Battery</b>	
Type	Sealed Maintenance Free, Valve Regulated Lead Acid
Number of Battery cells	One set of 8 Batteries of 12V
Rated Voltage	96 VDC
Backup Time	240 min 9600 VAH
Protection	Inbuilt protection for surge suppression and EMI/RFI filter provided
<b>Environmental and Other</b>	
Audible Noise	Less than 45dB at 1 meter
Operating temp & Humidity	20 – 90%RH @ 0 – 40°C (non condensing)
LCD Display	UPS Status, Load level, Battery level, Input / Output voltage, Discharge Timer & Fault conditions
<b>Management</b>	
SMART RS 232/USB Port	Supports Windows, Novell, Linux and FreeBSD
SNMP	Power Management from SNMP manager and web browser option should be present
Power Outlet	Should have programmable power management outlet for independent control of load segment.
ECO Mode	Should be capable of operating in ECO mode for energy saving.
Credentials	Manufacturer Should be ISO 9001:2000 certified Manufacturer Should be ISO 14001 certified,
Battery	4 hr backup at junction.

## 5.4 Surveillance System

### CCTV Solution and Architecture

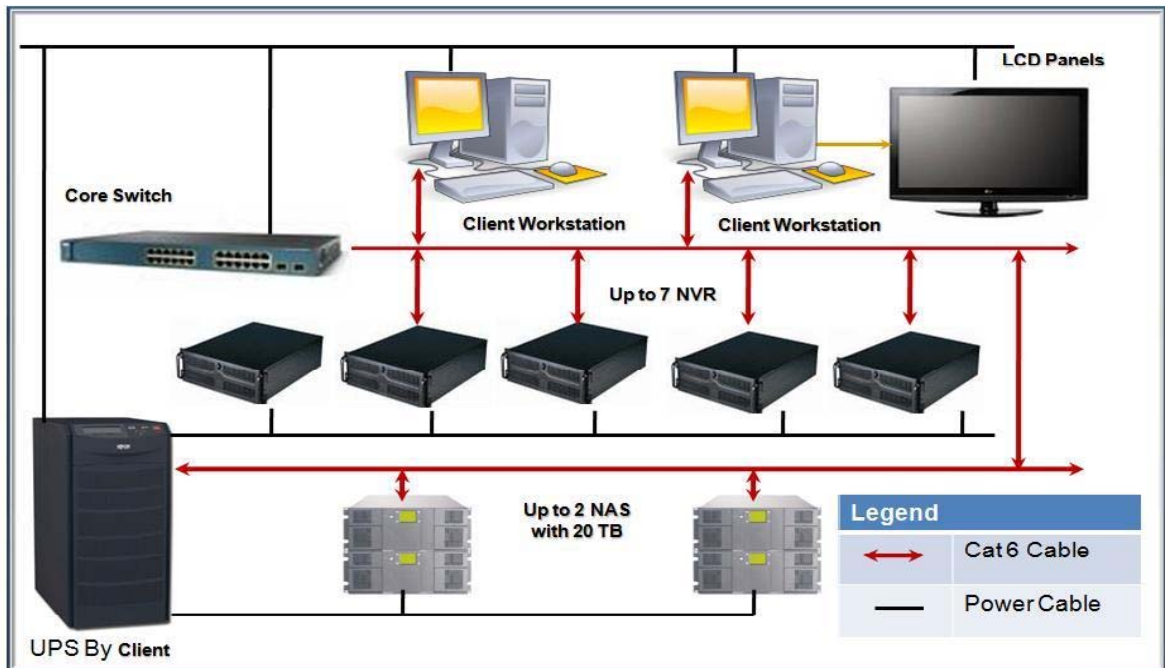
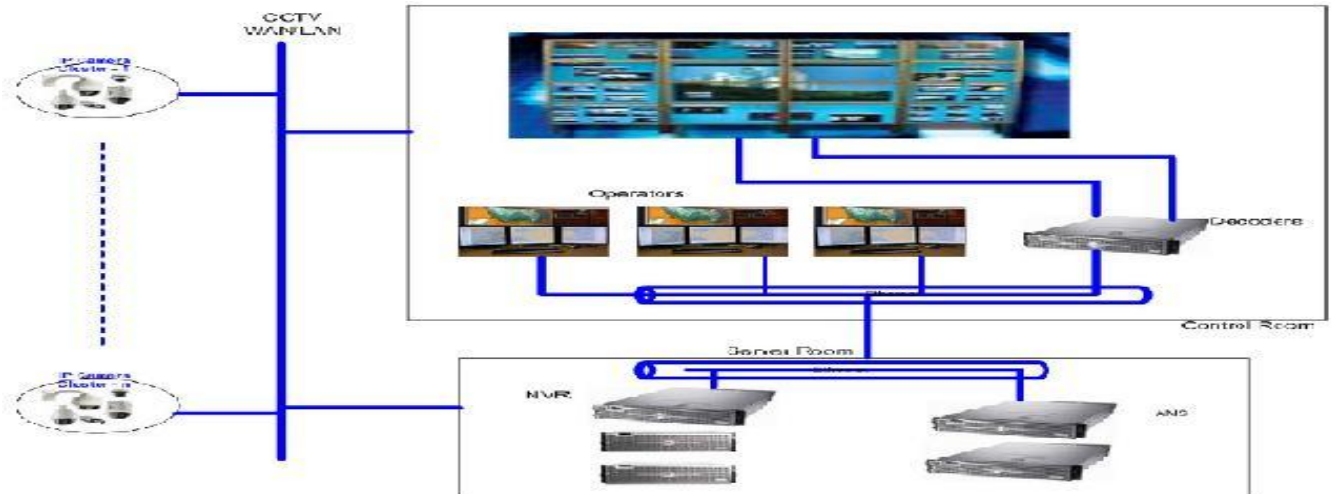
- Open Architecture based system.
- Future Expandability possible.
- Failover Management.
- Complete Command and Control operation.

### CCTV System Architecture



As per above Architecture all cameras are connected to central command and control station via network connectivity through Wireless/wired network, where complete recording of all the camera feeds are taking place with viewing at multiple locations across the city. Provision for storage should be made at edge also along with central however the edge storage should be for minimum 3 days. The data stored locally should automatically update the central data on restoration of connectivity. Bidder should plan storage capacity for storing 7daysdata with 20% cushion. It is also to note that Storage of the feed required 2 Megapixel, 25 FPS, H.264 Compression standards with 100% feed

## 5.5 Command and Control Station Architecture



The main servers and video management application will be placed at Main Control Room with a Core Switch connecting the main camera Network from sub-Control room to the Main server at Central Control Room. The Monitoring stations are connected to the network via switch and will be placed at various stated viewing locations across the cities. The Viewing station will be directly/indirectly connected to the main server for retrieving the recording or viewing the live video.

There will be a NAS storage connected to the recording servers for recording storage, there will be one or multiple numbers of server through which the NAS device will be attached. All the devices will be connected to RAW power supply through a UPS placed at control stations.. All the cameras at field will be connected to the same network via switch placed at field level further connecting to sub control station and to the servers at main control station.

## 5.6 Network Connectivity (Dedicated Network for Police BUIDCo)

To enable hybrid connectivity, as per feasibility i.e. Fiber or Wireless based network will be preferred. This network should be zero interruption based communication for links among Control room and IP Cameras installed & spread over various locations in the city as mentioned in **Annexure-2**.

1. The successful bidder shall be responsible for end-to-end implementation of connectivity of all the locations under this RFP and shall quote and provide/ supply any item(s) of latest make and model not included in the bill of materials, but required for successful implementation and commissioning of the system as well as its management. For such item(s), which have not been quoted by the successful bidder in the bid, but are required for successful completion of the project, the Bidder shall not pay for the same.
2. The supply of all the installation material/accessories/ consumables necessary for the installation of the systems.
3. The required networking equipment for end to end connectivity from Control room to individual Surveillance Cameras shall also be provided by the bidder at each location.
4. The complete ownership of the network proposed on wireless/fibre will that be of Police BUIDCo Bihar. Therefore proposed Network has to be a private Network build for Bihar Govt. and not hired from a Telecom Service Provider/ Operator. However complete maintenance will be in the scope of the bidder including rectification of minor or major faults/breakages in the network equipment.
5. Carry out installation of active components, passive components and accessories supplied as per standards for successful integration and implementation of the systems at each locations connected under this RFP.
6. Configuring and fine-tuning of subsystems to achieve overall optimal network performance with high level physical & cyber security.
7. CPE (Customer Premise Equipment) shall have enough gain to provide strong signals for the video & audio communication.
8. Wireless Communication should be fully secure and shall support 128-bit encryption or better.
9. Minimum bit-rate of streaming shall be 2 Mbps.
10. All the locations are connected through wireless or wired medium (fibre) with Local Control Room.
11. Access Point shall be placed in such a way that it covers the entire locations which is under surveillance. Associated planning and diagrams of placement of Access Points shall be provided by bidder.
12. Product offer by bidder must fulfil functional requirement of entire project for successful implementation and commissioning of the project as well as its management. For meeting such functional requirement in case any components /items is not specified in this RFP, it must be quoted as a separate item along with its price.
13. Connectivity between Police Control Room and SSP office, other Senior Official, link to be provided for displaying dashboard for alert messages to BUIDCo all Senior officials by extending link from control room to nearest BSWAN PoPs at Sasaram City.

## 5.7 Pan tilt zoom (PTZ) cameras specification

Sr. No.	Features	Specifications
1.	Image sensor	1 / 3" CMOS(2 MP)
2.	Focal Length	4.45 to 89mm
3.	Zoom	20x Optical
4.	Electronic Shutter	1/30 to 1 / 30,000 s
5.	Min illumination/ light sensitivity(Colour)	0.15 lux (50 IRE AGC ON)
6.	Min illumination/ light sensitivity (B/W)	0.01 lux (50 IRE, AGC ON)
7.	Wide Dynamic Range	80 dB
8.	Backlight Compensation	ON/OFF
9.	IRIS Control	DC or Automatic
10.	Focus	Automatic / Manual
11.	Automatic Gain Control	Auto / Manual
12.	Colour, Brightness, Contrast functionality	Required
13.	Frame Rate	25 FPS for 1920 x 1080
	<b>Video</b>	
14.	Day and Night functionality	Automatic, Colour, Mono
15.	Video Resolution	2 MP (1920 x 1080)
16.	Video Streams	Individually configurable 02 video streams (H.264High Profile, MJPEG) should support at least 12 different video profiles including Q1080P (960 x 544) profile.
17.	Intelligent Video	Motion detection
18.	Electronic Image Stabilization	Required
	<b>PTZ Function</b>	
19.	PAN TILT Range	360° continuous pan & 90° tilt range
20.	PAN TILT Speed	300°/sec manual
21.	Presets	256 Preset Points
22.	Tour & Pattern	Required
23.	Privacy Mask	04 Zones
	<b>Compression</b>	
24.	MJPEG	Required
25.	H.264	Required
	<b>Audio</b>	
26.	Audio support	Required
27.	Audio Compression	G.711 or better



Sr. No.	Features	Specifications
28.	Two-way audio	Required
29.	Input / Output	02 IN & 01 OUT.Alarm linkage with SD card video recording / FTP Upload / Email / Snapshot / Preset / Alarm output / CMS
<b>Network &amp; Interface</b>		
30.	Interface	RJ-45 for 10/100 base-T Ethernet
31.	Upgrade	Through web browser , online, firmware upgrade
32.	Network Protocols support	TCP/IP, HTTP, DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP protocols
33.	Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.
34.	Alarm	Tamper Alarm
35.	Compliance	ONVIF Profile S or above
<b>Security</b>		
36.	Password Protection	Required
37.	HTTPS encryption	Required
38.	IEEE 802.1X	Required
<b>General</b>		
39.	Operational temperature °C	-10°C to 60 °C
40.	Humidity	0 to 90% RH non-condensing
41.	IP rating	IP66 Outdoor Housing,Vandal proof IK10
42.	Power	Upto 26W, AC/DC24V/ 100- 230VAC
43.	Certifications	CE, FCC
44.	SD card	Camera shall be able to support SD card up to 32 GB
45.	Auto detection and configuration	Camera shall be automatically discovered and configured when connected to video management.

#### Fixed lenses high resolution cameras specification

Sr. No.	Features	Specifications
1.	Image sensor	1/3" CMOS Progressive Scan (2 MP)
2.	Electronic Shutter	1/5 to 1 / 32,000 s
3.	Min illumination/ light sensitivity (Colour)	0.02 lux ( AGC ON@F 1.4)
4.	Min illumination/ light sensitivity (B/W)	0 lux with IR illuminator active (30 IRE, F 1.2)
5.	Wide Dynamic Range	80dB
6.	Backlight Compensation	ON/OFF
7.	IRIS Control	DC or Automatic
8.	Focus	Automatic / Manual
9.	Automatic Gain Control	Auto / Manual
10.	Colour, Brightness, Contrast	functionality Required

11.	Frame Rate	25 FPS for 1920 x 1080
12.	Varifocal Lens	2.8 – 12mm varifocal lens
<b>Video</b>		
13.	Day and Night functionality	Automatic, Color, Mono
14.	Video Resolution	2 MP (1920 x 1080)
15.	Video Streams	Individually configurable 02 video streams (H.264 High Profile, MJPEG), should support at least 12 different video profiles including Q1080P (960 x 544) profile.
16.	Intelligent Video	Motion detection
<b>Compression</b>		
17.	MJPEG	Required
18.	H.264 (Recording & Viewing)	Required
<b>Audio</b>		
19.	Audio support	Required, TWO-WAY
20.	Audio Compression	G.711 or better
21.	Two-way audio	Required
22.	Input / Output	02 IN & 01 OUT
<b>Network &amp; Interface</b>		
23.	Interface	RJ-45 for 10/100 base-T Ethernet
24.	Upgrade	Through web browser, online, firmware upgrade
25.	Network Protocols support	TCP/IP, HTTP, DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP protocols, UNICAST (4 simultaneous users)
26.	Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering. camera shall provide Camera Tamper Alarm and Motion detection as standard feature.
27.	Compliance	ONVIF 2.0 or above
<b>Security</b>		
28.	Password Protection	Required
29.	HTTPS encryption	Required
30.	IEEE 802.1X	Required
<b>General</b>		
31.	Operational temperature °C	- 20 °C to 55 °C
32.	Humidity	0 to 90% RH non-condensing
33.	IP rating	IP66 Outdoor Housing
34.	Power	Upto 10 Watt, AC24V/ DC12V, 100-230VAC
35.	Certifications	CE, FCC
<b>Local Storage</b>		
36.	SD card	Camera shall be able to support SD card up to 32 GB.
37.	Auto detection and configuration	Camera shall be automatically discovered and configured when connected to video management system.

## 5.8 Connectivity

### Fiber Specifications:

- Minimum 12Core Amour Cable
- No any Media Converter required, Fiber will be terminated from Switch to Switch directly
- HDD (Horizontal Drilling) lying

### Wireless Specifications:

Bidder is free to build its network on fibre or wireless technology. But if bidder chooses to go on providing connectivity using wireless network then the specifications mentioned below should be followed.

- Bidder should propose a separate wireless secured communication technology that should prohibit any kind of intrusion in the Network, Bidder has to do survey for distance of links. Bidders need to be plan for this survey at their own Band width requirement
  - a) On an average a typical CCTV PTZ requires 4 Mbps bandwidth.
  - b) On an average a typical fixed camera requires 2 Mbps bandwidth.
  - c) Megapixel Camera requires 4 Mbps
  - d) City of Sasaram is approximately 20 meter height.

<b>Wireless Radio with Antenna Mast &amp; Other Related Accessories</b>	
1	System shall operate in Unlicensed band frequency spectrum of ISM-III – 5 GHz band.
2	The Wireless system shall be fit for outdoor use with supported integrated antenna. The system shall be based on state of art QoS IEEE 802.11 standards.
3	The System shall support centralized bandwidth management and authentication system for high security and QoS. The management application should be client server based system and not browser based, to ensure security of the network.
4	The system shall support remote maintenance of radio units. System shall be remotely configured, maintained, reset, monitored without compromising the security of the wireless network.
5	The system shall have the capabilities of upgrading the Software without interrupting the normal system service
6	The system shall have built in targeted coverage capability in point to point system designed specifically for Video streaming application. The system shall have latest software for managing various clusters of cameras.
7	Power transmitted should be less than or equal to 4W EIRP for outdoor frequency range, less than 200mW indoor frequency range. All definitions as per WPC requirements.
8	The system shall be scalable in terms of deployment for future expansion.
9	Wireless system shall be capable of easy and rapid deployment to avoid lengthy way-leave, access and legal agreements and operate in preapproved license free bands authorised by WPC.
10	All Wireless equipment should be WPC - ETA approved. The approval should be annexed with technical documents. Any submission without this approval shall render the disqualified technically.
11	The system shall support extensive networking modes including switching, VLAN tagging and classifications etc.
12	The system shall support high level of security mechanisms. AES, WEP 64/128/152, WEP 2, WPA, TKIP, 128 Bit, Access Control, SSID, Suppress and BRAID authentication etc for end-to-end connectivity to avoid any breaches due to Interference or hacking.
13	The system both in point to point and point to Multipoint mode shall support high level of interference mitigation techniques
14	The system shall support remote maintenance of radio units.
16	The radios shall support 2 x N type (f) antennas
17	Ethernet Interface - 10/100 Base T
18	VLAN - IEEE std. 802.1Q

19	Auto Frequency Mode - System must check automatically and select alternative channels, if required, due to frequency interference
20	Frequency & Power Control should be DFS based.
21	All necessary cables shall be included in the cost of wireless set.
22	Modulation should be on OFDM and 802.11a,b,g
23	The system equipment shall support 802.1x with Radius Authentication
24	The equipment shall be operational in environments where frequency jammers are deployed
25	Power Supply - 110 VAC - 240VAC, 47Hz to 63 Hz
26	Min IP 65 or above weather proof protection should be provided
27	The equipment should be able to withstand salt spray test for 24hrs. Test Certificate for enclosure required.
28	Operating temperature - (-)20degC to (+)50deg C
29	Signaling rate should be 108 Mbps for 40 MHz spectrum
30	<u>MIMO Standards</u>
31	User Interface should be simple, intuitive and easy to use without onerous need for training. The software should facilitate ease of installation from Control Room. Network management tool should be capable of viewing the complete system and choose the nodes for further actions.

### 5.9 Core Switch

Parameter	Minimum Specifications
Ports	<ul style="list-style-type: none"> <li>· 24 or 48 (as per density required) 1G Ethernet ports</li> <li>· Should support 4 no. of 10G SFP+ ports uplink ports</li> </ul>
Switch type	Layer 3 with 8GB of RAM and 8 GB of Flash
MAC	32k or more
Backplane	Capable of providing wire-speed switching for fully populated switch
Throughput	Required throughput to achieve non-blocking performance for switch when all ports are populated.
Port Features	Must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks
Flow Control	Support IEEE 802.3x flow control for full-duplex mode ports.
Protocols	<ul style="list-style-type: none"> <li>· IPV4, IPV6</li> <li>· Support 802.1D, 802.1S, 802.1w, Rate limiting</li> <li>· Support 802.1X Security standards</li> <li>· Support 802.1Q VLAN encapsulation, IGMP v1, v2 and v3 snooping</li> <li>· 802.1p Priority Queues, port mirroring, DiffServ</li> <li>· DHCP support</li> <li>· Support up to 1024 VLANs</li> <li>· Support IGMP Snooping and IGMP Querying</li> <li>· Support Multicasting</li> <li>· Should support Loop protection and Loop detection,</li> </ul>
Access Control	<ul style="list-style-type: none"> <li>· Support port security</li> <li>· Support 802.1x (Port based network access control).</li> <li>· Support for MAC filtering.</li> <li>Should support TACACS+ and RADIUS authentication</li> </ul>
VLAN	<ul style="list-style-type: none"> <li>· Support 802.1Q Tagged VLAN and port based VLANs and Private VLAN</li> <li>· The switch must support dynamic VLAN Registration or equivalent</li> <li>· Dynamic Trunking protocol or equivalent</li> </ul>
L3 Protocols	Should have advance Layer 3 protocol like RIP, BGPv4, BGPv6, MPLS, VRF, VXLAN, IS-ISv4, OSPFv3 from day 1

Protocol and Traffic	<ul style="list-style-type: none"> <li>· Network Time Protocol or equivalent Simple Network Time Protocol support</li> <li>· Switch should support traffic segmentation</li> <li>· Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, TCP/UDP port number</li> </ul>
Management	<ul style="list-style-type: none"> <li>· Switch needs to have a console port for management via a console terminal or PC</li> <li>· Must have support SNMP v1, v2 and v3</li> <li>· Should support 4 groups of RMON</li> <li>· Should have accessibility using Telnet, SSH, Console access, easier software upgrade through network using TFTP etc. Configuration management through CLI, GUI based software utility and using web interface</li> </ul>
Resiliency	Switch should support internal hot-swappable Redundant Power supply and redundant hot swappable fans from day 1

### 5.10 Distribution Switch

<b>Port Density</b>
Layer-2 PoE Switch. 19" Rack Mountable. Min. 24-port stackable 10/100/1000TX Copper Port
Should Have 4 no. of 1G SFP ports
Should have dedicated stacking port and support at least 8 switches in a single stack
<b>Performance</b>
Min. 56 Gbps switching fabric, Min. 41 Mpps forwarding rate. Support 8K MAC address
Wire speed switching on all Ethernet ports for all packet sizes including jumbo frames up to 10Kbytes
<b>VLAN support</b>
Supports up to 4094 VLAN IDs and 256 active VLANs
Support Port based, MAC Based and Tagged based VLANs, GARP
<b>General Features</b>
Support Storm Control: Broadcast, multicast, IGMP snooping v3, Across Stack Link Aggregation, Stack VLAN configuration, Stack Port Mirroring, Trunking across stack, Single IP address Stack management, 20Gig Resilient Ring Stacking Architecture, Dual-stack IPv4/IPv6 protocol
Support Spanning-Tree Protocol, Rapid Spanning-Tree, Multiple Spanning Tree, 802.3ad LACP link aggregation, Trunk can support up to eight members per group, LLDP-MED
RFC 2461 IPv6 neighbor discovery, RFC 2463 ICMPv6: Internet Control Message, Protocol version 6
RFC 1981 Path MTU discovery, IPv6 Tunneling over IPv4
Support Dual software images, Port mirroring, DHCP, IGMPv3 & IGMP queries
<b>Security</b>
Guest VLAN, SSHv2 for Telnet management, SSLv3 for WEB management, RFC 1492 TACACS+, RFC 2138 RADIUS Authentication, IEEE 802.1x Port-based and MAC network access control, Access Control Lists, MAC Acls, IPv4 as well IPv6 ACLs, service-ACL, SNTP. Layer 2 and Layer 3 Access Control Lists (ACL), Broadcast Storm Control
<b>Quality of Service</b>
Support IEEE 802.1p QoS, Eight priority queues and Strict priority and weighted round robin, DSCP (Diffusers) for Layer 3 QoS, Traffic prioritization using 802.1p, ToS, DSCP Fields, 802.1p to DSCP remarking traffic

<b>Management</b>
SNMPV3, Secure encrypted Web based and Command Line Interface with SSH v2 and SSL, Telnet, RMON (4 groups) and TFTP, Two levels access privileges User EXEC mode, Privileged EXEC mode, Global Configuration mode, and Interface Configuration mod
IPv6 Network management, IPv6 Applications: WEB/SSL Telnet server/SSH, AAA/Radius, Management ACLs, SNTP, PING, TFTP/Copy, Syslog
<b>Electrical Approvals and Compliances</b>
EN60950 (TUV), EMI FCC Class A, EN55022 Class A, VCCI Class A, EN61000-3-2, EN61000-3-3, Immunity EN55024, Ro HS compliant
<b>Power Specifications</b>
Voltage input 100- 240VAC,
<b>Environmental Specifications</b>
Operating Temp 0°C to 45°C (32F to 113F)
Storage Temp -25°C to 70°C (-13F to 158F)
Operating humidity 5% to 80% non-condensing

### 5.11 Technical specs Of the Broadband Radio

System should consist, outdoor and indoor equipment, antenna cable with associated accessories System Software and other hardware and software required for operation, monitoring and configuration of the links. It shall be used for point to Point and point to Multipoint. The system should be reliable and field proven design and suitable for harsh environmental conditions. The system shall support flexible quality of service and concurrent use of IP, VOIP for Voice and data applications.

Feature	Specification
Frequency Range	5.1-5.9Ghz (includes unlicensed band)
Channel Width	10/20/40mhz
Radio Technology	TDD, OFDM
RF media access protocol	TDMA with Polling
MIMO Options	2x2
Interference Resistant	Yes
Wireless Data Rate	54 Mbps, 108 Mbps 150Mbps,300 mbps
	OFDM
Option of multiple rate algorithm for different LOS schemes	Yes
Duplex Format	Time division Duplexing (TDD)
Certification	CE, ETSI, FCC
Range	75kms
Output Power	upto 28dBm
Watch Dog Timer (for un-manned monitoring )	Software/Hardware/Temperature
QOS/COS/GOS (quality, class, grade of service)	Yes
Option of priority to Video or any specific type of server	
VLAN with Management VLAN	Yes
Static Routing	Yes
MPLS Support	Yes
TDMA Polling	Yes
Auto Channel Selection	Yes
Jumbo Frame	1700 bytes or more
Management Options	Preferably Telnet/ SNMP Based/ NMS
Packet Format	IEEE 802.3 and Ethernet II

Feature	Specification
Network Connection	10/100
	RJ Female Ethernet Connection, Ruggedized Ethernet Connector
IGMP support	Yes
802.1x support	Yes
NTP	Yes
Bridge Functionality (fully transparent)	Yes
Network Topologies	Point to Multipoint, Any point-to Multipoint, Multipoint-to Multipoint
Repeater Mode	Built-in Mode
RF Collision Management	Combined TDD / OFDM and FEC
Security - Open VPN support (Server and client)	Yes
Security - Data Scrambling	256 bit Encryption , AES, WPA, WPA2
Security - Data Security Password	Network attachment is password protected
Remote Management	http web, SSH
Management Port	Ethernet, SSH
SNMP (read/write/ trap)	V2
Wireless NMS	Yes
Multicasting support	Yes
Management Port Functionality	Full configuration/management from any station through a command line
Software Management	File download over RF for firmware updates
Built in surge protection	3KVA or more
Power Adapter Requirement	110 VAC or 220 VAC
Power Consumption	max 25W (fully loaded)
Operational Temperature	(-)40C to (+)80C
Humidity	Humidity 0-95% non condensing
	Outdoor weatherproof endorser
Outdoor Unit	IP67

## 5.12 Central Control Room

Sr. No.	Features	Specifications
	<b>Additional Equipment Monitoring and Testing Facilities</b>	It shall be possible to insert and remove a computer demand for demand dependent stages by timetable, macro, or operator command, or by the use of the in-station test set
	<b>Monitoring By Operator</b>	The operational display facilities of terminal shall provide the following as a minimum requirement: - i) Monitor display ii) Plan compliance display iii) Override control and reply data pattern it shall be possible to display a minimum of 4 different plan

		compliance displays on any active operator terminal using the GUI operating environment.
	<b>Green Wave</b>	The System shall provide a minimum of 100 Green Wave routes with a maximum of 25 junctions on each Green Wave route. The system shall be capable of running a minimum of 15 Green Wave routes simultaneously in different regions without impeding the operation, response time and speed of implementation of any Green Wave which may already in operation.
	<b>Remote Requests</b>	A Remote Request is a facility where it is possible to call a plan or other facility as described below from a remote location by an authorised source. It shall be possible to implement a minimum of 20 different Remote Requests either in combination or singly. There are four types of remote request demand, which are: i) Request for a fixed plan(s) ii) Call a diversion; iii) Call a Green Wave; iv) User configurable, or by the use of Macros
	<b>System Log</b>	The System shall be supplied with a hard disc of sufficient capacity to store all System log data output for a minimum of 2 years. The System shall create a disc file log in which the following shall be stored: - i) All messages output by the System; ii) All implemented operator commands; iii) All generated fault messages; iv) All operator comments; v) All operator recorded faults.
	<b>System Graphics and Operator Terminal Screen Displays</b>	The System shall be configured to operate within a GUI type of Operator terminal screen display environment. It shall be possible to display a minimum of 8 active displays on each Operator terminal and every display shall be capable of showing real time fully adaptive ATC facilities and events. The System shall have the facility to show System real-time information changes including 'user defined text' within the graphical displays. As a minimum requirement, the graphical displays shall be capable of providing the following: i) Whole network area; ii) Sub-area; iii) Group; iv) Signal junction; v) Signalled pedestrian crossing; vi) Fixed Time region; vii) Fixed Time node; viii) Fully adaptive region; ix) Fully adaptive node.
	<b>Traffic Signal Junction Graphics</b>	It shall be possible to display the status of a signal junction by the use of symbols and colours. The parameters to be displayed shall include : - i) Operator control; ii) Equipment fault; iii) Method of control (e.g. local, operator, Fixed Time, fully adaptive, green Wave); v) Current plan, cycle time, stage with movements at green, and intergreen in progress.

### 5.13 Soundless Genset – 20 KVA with AMF Control Panel

- No. of Phases: Three
- Speed 1500 RPM



- Type of Engine: 4 Stroke Diesel Engine with Electronic / Mechanical Fuel Governor
- Cooling: Air or water
- Rated Voltage (in Volts): 415V
- Rated Capacity (in KVA): 30
- ALTERNATOR
- Foundation
- Earthing
- SNMP based controller

#### 5.14 15 KVA Rack Mountable Online Ups Specification in 1+1 Redundant mode

Technology	<ul style="list-style-type: none"> <li>a. True on Line Rack Mountable DSP based UPS with double conversion technology.</li> <li>b. UPS should be capable of paralleling up to 4 units.</li> <li>c. UPS should have IGBT based rectifier and inverter</li> <li>d. Temperature compensated battery charging feature should be built-in for prolonged battery life</li> </ul>
Input	<ul style="list-style-type: none"> <li>a. VOLTAGE RANGE 228-478 V AC. 3 phase</li> <li>b. FREQUENCY 40-70Hz</li> <li>c. POWER FACTOR 0.99 ( With p.f correction)</li> <li>d. CAPACITY 20KVA/18 KW</li> </ul>
Output	<ul style="list-style-type: none"> <li>a. VOLTAGE RANGE 3 phase 380V AC ,Single phase 220V AC +/-1%</li> <li>b. HARMONIC DISTORTION &lt;2%(Linear Load); &lt;5%(Non-Linear Load)</li> <li>c. FREQUENCY +/-0.25% free run</li> <li>d. POWER FACTOR 0.9</li> <li>e. CREST FACTOR 3:1</li> </ul>
Efficiency	AC – AC >93%
Battery	<ul style="list-style-type: none"> <li>a. TYPE Sealed, lead acid, maintenance free (SMF)</li> <li>b. RATED VOLTAGE 360-432 V</li> <li>c. BACKUP TIME 47520vah 120 MIN</li> <li>d. TRANSFER TIME Zero</li> <li>e. AUDIBLE NOISE &lt;55dB</li> <li>f. DISPLAY LED</li> </ul>
Interface Slot	USB & Intelligent Slot (SNMP)
Management	SNMP Ready UPS from Day One
Protection Grade	IP 20
Credentials	<ul style="list-style-type: none"> <li>a. Manufacturer Should be ISO 9001:2000 certified</li> <li>b. Manufacturer Should be ISO 14001 certified</li> <li>c. UPS should meet ROHS R5 standards</li> </ul>
Scope of Transient Voltage Surge Suppression (TVSS)	<p>Critical and expensive electronic equipment should be protected from transient over-voltages by TVSS. The selection of surge protective devices typically depends on the location of the device. TVSS device for ITE equipment shall be as per following specifications.</p> <ul style="list-style-type: none"> <li>• Surge Current Capacity: 50kA</li> <li>• All Modes Protection: L-L, L-N, L-G, N-G</li> <li>• Connection Type: Parallel</li> <li>• Protection Level: &lt; 1 kV</li> <li>• MCOV: Min. 320 Volts</li> <li>• Response Time: &lt; 0.5 nanoseconds</li> <li>• EMI/RFI Attenuation: 40 dB typical</li> <li>• Status Indication: LED, Dry contacts</li> <li>• Monitoring: Monitoring of All Modes, including N-E</li> <li>• Fusing: Individual Fusing of MOV's including N-G</li> <li>• Certification: UL 1449-3</li> <li>• Enclosure: NEMA Tested</li> <li>• Mounting: Wall Mounting</li> <li>• Warranty : 5 Years</li> </ul>

### **5.15 PTZ Keyboard/ joystick**

- Communication Distance : Maximum 1200m
- Baud Rate: 2400 – 19200Bps
- Working Voltage: DC or AC
- Communication Port: RJ45 or any other

### **5.16 55" LED Commercial LCD Display**

- Screen Size: 55"
- Resolution: 1920x1080 or better
- Wall mounting kit
- Energy Star Complaint
- Connectivity with Workstation/Server for Surveillance Camera Display
- 15 meter VGA Data Cable
- 24x7 operation
- Operating Temperature: 0 degree C – 40 degree C
- Power supply: AC Voltage

### **5.17 Network Management Software (NMS)**

#### **1. General features**

- a. Secure SNMP v3 support
- b. Scalable, distributed architecture, with management support for multiple distributed domains, each NMS should be able to import the map of one or more remote servers. With support for both local and remote access.
- c. Remote console component
- d. Remote console and JAVA access
- e. Email/Pager event notification
- f. Real-time MIB displays
- g. Multi-vendor graphical device views
- h. Web and printed trend reports

#### **2. Monitoring and Alerts**

- a. Should automatically discovers and polls
  - SNMP/ICMP
  - WEB
  - FTP
  - SMTP
  - TELNET services
- b. Along with real-time service status
- c. Should support Web-based availability reports.

### 3. Trend Reporting

- a. Should be capable of automatically generating daily, weekly, and monthly statistical reports. Report formats include graph, bar chart, distribution, and summary.
- b. Exported reports to a variety of destinations, including
  - Printers
  - Files
  - Web server
  - ODBC databases.
- c. Customized reports.

### 4. Console Options

- a. Remote console:
  - Should enable local user access in the nms station via remote console
  - Run the remote console application from any Windows workstation using TCP/IP connection

### 5. SNMP Protocols

- a. v1, v2c, v3 with SHA/MD5 authentication and DES encryption.

### 6. Device Discovery

- a. Automatically discovers and polls SNMP and ICMP(Ping) devices.

### 7. Service Discovery

- a. Performs service discovery on device, including
  - SNMP
  - ICMP
  - Telnet
  - FTP
  - HTTP
  - SMTP

### 8. Service Polling

- a. Up to 16 user-defined TCP ports per icon, each with configurable send/reply string.
- b. External polling with custom applications.

### 9. Topology Layout

- a. Multiple level hierarchies, segmented by polling agent.
- b. Tree, ring, or snaked bus networks.

### 10. Event Notification

- a. Ignore,

- b. Ignore duplicates
- c. forward e-mail
- d. page
- e. display alarm box
- f. execute application

#### 11. Reporting

- a. Graph
- b. Bar chart
- c. Distribution
- d. Summary–with print
- e. Web export.

#### 12. Backup

- a. Live/standby server support with automated failover.

#### 13. External Interfaces

- a. ODBC
- b. Text export
- c. Event forwarding using SNMP Traps

#### 14. Customization

- a. Private MIB import,
- b. Custom tables, expressions, and menus
- c. Execute application from map double-click, on event reception, and during custom polling.

#### 15. Programming Interfaces

- a. Proprietary object-oriented interface for C/C++ applications
- b. SNMPc v4.0 DDE Interface
- c. WinSNMP de-facto standard interface
- d. Utilities for Scripting language support

### 5.18 Workstation

Parameter	Description
Processor	9th Generation Intel Core i5 or Higher
Chipset	Intel C246 or higher
Memory	Minimum 16 GB DDR4 SDRAM at 2666 MHz, upgradable up to 64 GB with 4 DIMM slots.
Graphics	2 GB or higher Graphic Accelerator Card (NVIDIA Quadro P620 or higher)
Optical Drive	8 X DVD-ROM
Ethernet port	10/100/1000
HDD	Minimum 2 x 1 TB HDD
Operating Systems	Genuine Windows 10 Professional 64 Bit with recovery media.

Anti-Virus software	Preloaded Antivirus software (subscription as per warranty required)
Integrated Ports	Minimum 10 no's (Min 4 no's of USB 3.1 Gen-1 and 1 x USB 3.1 Type C), out of 10 Nos minimum 4 in front, 4 in back and should be easily accessible. Integrated HDMI Port: Minimum 1 no; Should be easily accessible. Integrated Display Port: Minimum 1 no should be easily accessible. Integrated Audio controller with Internal speaker. Universal Audio Port
Power Supply	Minimum 450 Watt or above (90% energy efficient Power Supply)
Security	Hardware based TPM 2.0, chassis Intrusion switch / Intrusion Sensor with chassis physical security cable lock slot. Workstation Auto performance tuning software from same Workstation OEM.
LED Monitor TFT	Narrow bezel, viewing Size not less than 23.5" with Maximum Resolution of 1920 x 1080. Panel Type: Antiglare, IPS and LED backlight technology. Connectivity option (integrated): 1xHDMI port, 1xDisplay Port, 1 x USB Type-C port and Minimum 2 x USB 3.0 ports. Color depth not less than 16.5 billion colors and Viewing Angle 178°/178°. Height adjustable monitor Stand (Same desktop OEM Make)

### 5.19 Storage NAS

Parameter	Minimum Specification
Interfaces	"Min. a) 8 Gbps FC host port >=4 b) Device lanes >= 4" c) 10 GbE>=4
Controller	a) Dual Active controllers b) Supporting Hardware RAID - 1, 5, 6 &10 c) 8 GB cache scalable to 16 GB cache within the same pair of controllers. d) Cache should be RAM based and usable read / write data cache.
Max nos. of Disks	a) Min. 100 SAS disks scalable
Usable capacity required	As per Bidder's solutions proposed / calculation, using SAS/NL-SAS/SATA disk with minimum 7.2K RPM or more, with RAID-5 configuration.
Power, Cooling & Host Connectivity	Power supply & Fans : a) Dual redundant b) Hot-swap Host Connectivity a) Minimum 20 Server supported 5_
Mandatory features to be provided	a) Custom LUN b) No single point of failure architecture. c) Hot-spare disks support d) Clone copy / Incremental clone copy e) Point-in-time pointer based copy f) Thin provisioning to be offered for full capacity of the storage. g) Storage Management -should support configuration, error management, administration security and reporting of assists centrally
File Server Features	Intel Xeon-8 core Processor
	Minimum ten hot swappable disks space.
	N+N redundant power supply

## 5.20 Video Management System (VMS)

1. The Video Management System (VMS) shall be open platform, a fully distributed solution, designed for multi-site and multiple server installations requiring 24/7 surveillance with support for devices from different OEM/ Vendors.
2. The VMS shall allow for up to 64cameras or other devices to be connected to each Recording Server and for an unlimited number of Recording Servers to be connected to a single master Recording Server across multiple sites.The system shall support any combination of master and slave servers to provide flexibility and scalability in the overall system configuration.
3. The VMS shall support Microsoft Vista Business/Enterprise/Ultimate (32 bit or 64 bit running as a 32 bit application), Windows 2003 Server (32 bit or 64 bit running as a 32 bit application), Windows XP Professional (32 bit or 64 bit running as a 32 bit application), Windows 7 Professional/Enterprise/Ultimate (32 bit or 64 bit running as a 32 bit application) and Windows Server 2008 (32 bit or 64 bit running as a 32 bit application) with the latest patches and service packs installed.The system shall use Direct X and .Net.
4. The VMS shall consist of the following major components:  
Surveillance System Server, which further consists of the following add-on modules or services:
  - Recording Server (a service).
  - Administration application.
  - Image Server (a service).
  - PDA / Smartphone Server.
  - Video client viewer.
  - Web client viewer.
  - Viewer – For Exported Video Recordings.
  - Matrix Monitor.
  - Central Alarm Management Module.
  - PDA / Smartphone Client.
5. The VMS shall incorporate fully integrated Matrix functionality for distributed viewing of any camera in the system from any computer with the Video Client Viewer or Matrix Monitor application installed.
6. The VMS shall include support for a graphical Central Alarm Management application module.The alarm management module shall allow for the continuous monitoring of the operational status and event-triggered alarms from system servers, cameras and other external devices.The alarm management module shall support graphical displays with interactive icons to display the status of cameras and other inputs.
7. The VMS shall provide connectivity with third-party systems and devices using the OPC (Object-Linking and Embedding Process Control) Data Access set of communication standards.The supported third-party systems shall include industrial automation and SCADA (Supervisory Control and Data Acquisition) systems.The VMS shall support the following commands and interfaces:
  - Get configuration.
  - Get server CPU load.
  - Get camera status and frame rate.

- Get camera and global events.
  - Set events.
  - Set Matrix Monitor live view and play back.
8. The VMS shall include a stand-alone Viewer application to be included with video exported from the Video client viewer application. The Viewer application shall allow recipients of the video to browse and play back the exported video without installing separate software on their computers.
  9. The VMS shall include support for Active Directory to allow users to be added to the system. Use of Active Directory shall require that a server running Active Directory, acting as a domain controller, be available on the network.
  10. The VMS shall be designed to support each component on the same computer for efficiency in smaller systems or in a distributed architecture for large system deployments. VMS core components shall be installed on the same server.
  11. Video Device Drivers - Video device drivers are installable program components used for controlling / communicating with the cameras / devices connected to a Recording Server. Video device drivers for supported devices are automatically loaded during the initial installation of the system. Newly released device drivers may be downloaded from the VMS manufacturer's website if the user is connecting a device for which the driver is not already loaded.

#### **5.21 SURVEILLANCE SYSTEM SERVER**

1. The Surveillance System Server shall support the assignment of any of the Image Servers (a service running on the Surveillance System Server) to function as a master, and any of the Image Servers to function as slaves, thus allowing the user to connect to all Image Servers in the system by connecting to only a master Image Server.
2. The Surveillance System Server shall support the use of separate networks, VLANs or switches for connecting the cameras to the Recording Servers to provide physical network separation from the clients and facilitate the use of static IP addresses for the devices.
3. The Surveillance System Server shall support H.264, MPEG-4 (both ASP and SP), and MJPEG compression formats for the video stream from all devices including analog cameras connected to encoders, DVRs, and IP cameras connected to the system.
4. The Surveillance System Server shall have the option to record the native frame rate and resolution (NTSC, PAL, HD or Megapixel) supplied by the camera or as configured from the administration application.
5. Multi-stream Support - The Surveillance System Server shall support H.264 / MPEG-4 / MJPEG bandwidth optimized multi-streaming. The system shall allow a single video stream from a device to be independently recorded at one specified frame rate by the Recording Server, and viewed by Video client viewers or Web client viewers using a different frame rate setting.
6. The VMS shall support interoperability with IP camera standards including, at a minimum, the Physical Security Interoperability Alliance (PSIA) and the Open Network Video Interface Forum (ONVIF).
7. The VMS recording servers shall support interface to cameras with universal serial bus (USB) communications.
8. The system shall support specific devices, where the specific supported model numbers shall be listed for each manufacturer on an up-to-date on-line web-site.

9. The Surveillance System Server shall support the PTZ protocols of the supported devices as listed in section 5.21, subsection 8 above. The Surveillance System Server shall support both Absolute positioning PTZ protocols to move the camera to a specific X, Y, and Z set of coordinates positions, as well as, Relative positioning PTZ protocols to move the camera a relative amount based on the camera's current position.
10. The Surveillance System Server shall support full two-way audio between the Video client viewers and remote cameras/devices. Two-way audio integration shall support the following features and functions:
  - Outgoing Audio - Microphone inputs to Video client viewers shall transmit audio streams to speakers attached to remote IP devices. Selectable options shall be one-to-one (send audio to a specific IP device), and one-to-all (broadcast to all IP devices).
  - Audio from remote IP devices equipped with microphones shall be transmitted to, and recorded by, the Recording Server. The audio shall be relayed to Video client viewers equipped with speakers.
  - Each speaker and microphone shall be assigned to a specific camera/device. The speaker and microphone shall have the capability to be assigned to other devices as well.

## **5.22 VIDEO CLIENT VIEWER**

1. The Video client viewer shall allow users to connect to the Image Server for initial authorization. Upon authorization the Video client viewer will allow connection to the Recording Server(s) for access to video recordings.
2. The Video client viewer shall provide users with a comprehensive suite of features including:
  - Viewing live video from cameras on the surveillance system.
  - Playing back recordings from cameras on the surveillance system, with a selection of advanced navigation tools, including an intuitive timeline browser.
  - Creating and switching between an unlimited number of views, each able to display video from up to 100 cameras from multiple servers at a time. The system shall allow views to be created which are only accessible to the user or to groups of users.
  - Creating special views for widescreen monitors.
  - Using multiple screens as well as floating windows for displaying multiple views simultaneously.
  - Quickly substituting one or more of a view's cameras with other cameras.
  - Viewing a "slideshow" of images from several cameras in sequence in a single camera position view. This view of several cameras in sequences in a single view is called a carousel.
  - Viewing video from selected cameras in greater magnification and/or higher quality in a designated hotspot.
  - Receiving video triggered through the Matrix Monitor application including live video upon event.
  - Include HTML pages and static images (e. g. maps or photos) in views.
  - Controlling PTZ cameras.
  - Using digital zoom on live video, as well as, recorded video.
  - Activating manually triggered events.
  - Activating external outputs (e. g. lights and sirens)



- Using sound notifications for attracting attention to detected motion or events.
  - Getting quick overview of sequences with detected motion.
  - Getting quick overviews of detected alerts or events.
  - Quickly searching selected areas of video recording for motion (also known as Smart Search).
  - Skipping gaps during playback of recordings.
  - Configuring and using several different joysticks.
  - Printing images, with optional comments.
  - Copying images for subsequent pasting into word processors, email, etc.
  - Exporting recording (e.g. for use as evidence) in AVI or MJPEG database formats.
  - Using pre-configured as well as customizable keyboard shortcuts to speed up common actions.
  - Selecting between a number of language versions, independent of language used on main surveillance system via the download of language packages.
  - Communicating with remote audio devices, including microphones and speakers via a local microphone and speaker.
  - Wiping and washing of supported PTZ cameras using assigned keyboard shortcuts or joystick buttons.
  - Navigating images from fisheye 360-degree panoramic cameras.
3. The Video client viewer shall have the ability to adjust the display parameters for the video images from the Recording Server to optimize bandwidth utilization.
  4. The Video client viewer shall have the capability to serve as a host to third-party applications through the use of a plug-in component.
  5. The Video client viewer shall be installed on remote user's computers.
  6. The Video client viewer shall provide a Graphical User Interface (GUI) and feature Live, Browse and Setup tabs for the convenient access of live and recorded video as well as camera properties and display quality.
  7. The Video client viewer shall support a minimum of two languages Hindi and English.
  8. The Video client viewer shall by default, support English with a fully localized help system in Arabic, Danish, Dutch, French, German, Italian, Japanese, Polish, Russian and Spanish.
  9. The Video client viewer shall support the use of standard PTZ controllers or three-axis USB joysticks for the control of pan, tilt, zoom and auxiliary camera functions.
  10. For the efficient review of recorded video, the Video client viewer shall support the use of multimedia control devices that are capable of emulating keystrokes.
  11. The Video client viewer shall support the use of keyboard shortcuts for control of standard features.
  12. The Video client viewer shall have the following two-way audio functions:
    - The Video client viewer shall allow an operator to play live audio from a camera's microphone and play back recorded audio.
    - The Video client viewer shall allow an operator to export incoming audio from a camera's microphone together with video in the native database format or as an AVI file.
    - The operator shall have a "press to talk" option which shall send the microphone input from the operator out to one IP device enabled speaker, or to all of them.

- Each camera view item shall use the default assigned microphone and speaker, but the operator shall have the ability to select other audio devices or to let the same speaker follow the operator when choosing other views.
13. The operator shall have the ability to use digital zoom where the zooming is performed in the image only. This functionality shall be the default for fixed cameras.
  14. The Video client viewer shall be equipped with a context-sensitive help system that covers the full Video client viewer functionality for operators to instantly get help on a certain topic.
  15. The Live tab shall allow the user to trigger manual events, control outputs, select audio inputs, and control PTZ cameras.
  16. The Video client viewer shall support the following multiple viewing options:
    - Floating Window – Allows the selected view to be duplicated as a new floating view which may be moved to other connected monitors by dragging the image.
    - Send view to a primary monitor (a full-screen view on a PC's main monitor), or secondary monitor (a full-screen view on another monitor).
    - Create views of up to 100 cameras
    - Carousel – The Carousel feature shall allow the sequencing display of cameras in a view window. Multiple carousels may be defined to allow all view windows to display sequences of cameras. The operator shall have the ability to select the default display time or to enter a custom display time for each camera in the carousel. From inside the camera view the operator shall have the option to manually switch to the next or previous camera in the carousel camera list as well as pausing at the current camera. When switching from one camera to the next the transition phase shall be completely smooth without any delay.
    - Static Image – The Static Image feature shall allow any position of a view to be used for displaying maps or other images of interest to the user.
    - Matrix Window – A window that is used to display cameras on demand or by an external event.
    - Dynamic Actions – The operator shall be able to assign outputs, PTZ presets, events, and views as actions to joystick buttons and as keyboard shortcuts. The actions shall be ordered in categories to optimize the ease of use.
  17. HTML Page – The HTML Page feature shall allow for several navigation functions within the Video client viewer including.
    - Allow web pages to be opened in Video client viewer views.
    - Switching between views by clicking on a text description of the view in the HTML Page. For example; “Go to Shared Group 1 View 1”
    - Switching between different views by clicking on an interactive map area. For example; a site or building floor plan with interactive colored zones inserted as a HTML page would allow the user to switch views to a camera displaying images of the specific part of the site or building.
    - Allowing maps to be created from standard image files (MJPEG, GIF, TIF, etc.).
    - Allowing HTML scripting for use in creating buttons for view navigation.
  18. The Video client viewer shall allow the user to select events and manually trigger the selected event to occur. The event window shall list all events grouped by server and camera/device that the event is associated with.
  19. The Video client viewer shall allow actions to be taken with a specific camera by right-clicking on the camera's live video window. The actions for a specific camera shall be:

- Start/stop recording for a predefined period in minutes – This action shall force the system to record, or stop recording live video, regardless of settings. The predefined period to start/stop recording shall be configurable by the Administrator.
  - Copy – This action will copy a current live image from the camera to the PC clipboard.
  - Camera – This action will present a menu of available cameras and will allow the user to select a different camera for the given live view position in the live view user interface.
  - Sound Notification – This action will allow the toggling of <mute> and <unmute> of a sound notification upon an event or detected motion.
  - PTZ Presets – This action will allow the selection of a preset from a list of presets assigned to the specific camera.
  - Matrix – This action will force a manual trigger of the live video feed to a Matrix Monitor recipient.
  - Send Camera – This action will send the camera's video to a specific position within the live view user interface.
20. The Video client viewer shall feature an Output Control user interface to allow the user to manually activate an external output port on a device. The user interface shall list all selectable outputs grouped by server and camera/device that the output is attached to.
21. The Video client viewer shall allow the user to control a PTZ camera within each displayed view, provided that the user has been granted the proper privileges by the Administrator. Depending on camera capabilities / camera model the typical method for controlling the PTZ functions is as follows: when the mouse cursor is placed on the video image the cursor pointer shall automatically change to a crosshair indicating the camera has PTZ capabilities. Re-centering the camera's field-of-view shall be accomplished by left clicking the crosshair on the area of interest within the image. Controlling the zoom function shall be accomplished by holding down the left mouse button and selecting a percent zoom from a scale of 0% to 100% or by use of the mouse wheel.
22. Additional control feature for cameras (device dependent) includes the ability to draw a rectangle around the area of interest to zoom the camera in for closer examination. The size of the rectangle shall be proportionate to the level of zoom, i.e., the smaller the rectangle the greater the zoom level achieved.
23. The Video client viewer shall feature a PTZ controls rendered on the user interface that provides eight directional and home positions.
- The PTZ controls shall provide a digital zoom feature for the user to digitally zoom in on the displayed image without affecting the recording or the display of the camera on other Video client viewer applications.
  - An overview image in the view shall display the normal field-of-view and the digital zoom area in a highlighted box to provide the user with spatial awareness.
  - The PTZ control window shall allow the user to select pre-defined presets for PTZ cameras and thus move the selected camera to the preset.
24. The system shall allow for live or playback video to switch to full quality for a selected camera when the camera's view is maximized unless "Keep when maximized" is selected and the stored camera settings are not set to full quality settings. If "Keep when maximized" is selected, the quality settings for the camera that are stored in the system will be used.
25. The Browse tab shall display motion activated sequences for the selected camera in a drop down menu. Each sequence shall be represented by a line with the date, start time and duration. A drop down preview screen shall allow the user to view the recorded sequence.

### 5.23 Central Alarm Management Module

1. The alarm management module shall allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices. The alarm management module shall provide a real-time overview of alarm status or technical problems while allowing for immediate visual verification and troubleshooting.
2. The alarm management module shall provide interface and navigational tools through the client including:
  - Graphical overview of the operational status and alarms from servers, network cameras and external devices including motion detectors and access control systems.
  - Intuitive navigation using a map-based, hierarchical structure with hyperlinks to other maps, servers and devices or through a tree-view format.

### 5.24 Specification of the Servers for Video Management

Parameter	Description
Processors	Each server shall have a minimum of two (2) Intel Xeon-8-core Processor
Storage	The server should have up to 8nos front-accessible, hot-swappable, SAS or SATA drives
	The Server RAID controller should support the following configurations RAID 0, 1, 5, 6
	Should support a write cache of 2 GB for the storage controller
	Support for a battery back write cache for the storage controller
Memory	Should have at least 24 DIMM slots for up to 768 GB of DDR4 memory using 32 GB DIMMs
	Support for advanced memory redundant technologies like Advanced error-correcting code (ECC) and memory mirroring
Network	Should have 4 * 1GbE LAN on Motherboard (LOM) for network connectivity
Ports	Should have the following ports for server connectivity 1serial port, 2 USB ports, 1 VGA video port
Others	Supports hot swappable redundant fans
	Supports hot swappable redundant power supplies

### 5.25 Firewall Specifications

Hardware Architecture
The appliance based security platform should be capable of providing firewall / IPS /Botnet and VPN (IPSec and SSL(IPSec and SSL (internally/externally)) functionality simultaneously from day one
The appliance should support atleast 6 Gigabit copper Interfaces & should support additional scalability of 6 Gigabit interfaces copper &Fiber
The appliance should support atleast one 10/100/1000 dedicated management interfaces to configure/manage the firewall policies, perform image upgrades even in case of failure of the data interfaces. Data ports should not be used for management purpose
The appliance hardware should be a multicore CPU architecture with a hardened 64 bit operating system to support higher memory
Firewall should support adequatememory or more to support additional services
Firewall should support integrated IPS functionality for threat prevention

Proposed Firewall should not be proprietary ASIC based in nature & should be open architecture based on multi-core CPU's to protect & scale against dynamic latest security threats.
<b>Performance &amp; Scalability</b>
Firewall should support atleast 600 Mbps of Multi-protocol real-world throughput based on protocols like HTTP, SMTP, FTP, IMAP (Only UDP based performance nos. will not be considered)
Firewall should support atleast 400 Mbps of combined Firewall & IPS throughput (IPS is not required from day 1)
Firewall should support at least 250 IPSec/SSL (internally/externally) concurrent VPN peers
Firewall should support at least 200,000 concurrent sessions
Firewall should support at least 15,000 new connections per second
Firewall should support processing at least 500,000 64 byte packets per second
Firewall should support atleast 100 VLANs & has support for atleast 5 virtual firewalls for network segmentation with scalability
Firewall should support Jumbo Frames upto 9216 bytes
<b>Firewall Features</b>
Firewall should support IPv4 & IPv6 dual stack functionality to be able to use IPv4 & IPv6 simultaneously
Firewall should support creating access-rules with IPv4 & IPv6 objects simultaneously eg: IPv4 source & IPv6 destination
Firewall should support operating in routed & transparent mode
In transparent mode firewall should support ARP-inspection to prevent spoofing at Layer-2
Failover function should ensure that the routes learned via dynamic routing protocols are maintained in the standby unit as well
Firewall should support failover of IPv4 & IPv6 sessions
Firewall should replicate NAT translations, TCP,UDP connection states, ARP table, HTTP connection states, ISAKMP & IPSec SA's, SIP signaling sessions
Firewall should provide application inspection for DNS, FTP, HTTP, SMTP,ESMTP,LDAP, MGCP, RTSP, SIP, SQLNET, TFTP, H.323, SNMP
Firewall should provide IPv6 application inspection for DNS, FTP, HTTP, SIP, SMTP & IPv6
Firewall should support DoS protection functionalities
Firewall should support setting connection limits based on max embryonic-connections, per-client embryonic connections,per-clientmaxconnections,settingembryonicconnection timeouts&idle-timeouts.These settings should be applicable on web servers & clients.
Firewall should be able to create access policies based on the User/group info from the directory services either through clientless or agent based mechanism.
Firewall should support static NAT, PAT, dynamic NAT, PAT & destination based NAT
Firewall should support integration with RADIUS, TACACS+, RSA, LDAP v3 Directory servers,NT server & Local Database
<b>High-Availability Features</b>
Firewall should support stateful failover of sessions in Active/Standby & Active/Active mode
Firewall should support port aggregation functionality for the failover control
Firewall should support the functionality for allowing Asymmetrically Routed Packets in active/active mode
Firewall should support redundant interfaces to provide interface level redundancy before device failover
Firewall should support 802.3ad port aggregation functionality to increase the bandwidth for a segment.
Firewall should support stateful failover of NAT translations, TCP & UDP connections, ISAKMP & IPSec SA's & SIP Signaling sessions
<b>VPN Features</b>
Firewall should support IPSec & SSL Client (externally/internally) based VPN from day one.
Firewall should support Cryptography Suites/algorithms for enhanced VPN security.
Firewall should support latest IKEv2 standards for supporting SHA-2 256, 384 & 512 bit message integrity algorithms in hardware to ensure there is no performance bottleneck & higher security.
Should support pre-shared keys & Digital Certificates for VPN peer authentication
Should support perfect forward secrecy & dead peer detection functionality
<b>Routing Features</b>
Firewall should support IPv4 & IPv6 static routing, RIP, OSPF v2 & v3

Firewall should support PIM multicast routing
Should support stateful failover for OSPFv3
Firewall should support SLA monitoring for static routes
<b>Management Capabilities</b>
Firewall should support management of firewall policies via CLI, Telnet, SSH & inbuilt GUI management interface.
Firewall should support syslog with the functionality of sending syslogs messages via email to different teams based on syslog severity
Firewall should support sending syslogs over TCP with the capability to block new connections in case the syslog server is down
Firewall should support the function of sending syslogs in a encrypted format using SSL/TLS
Firewall should support SNMP logging & specify which messages are to be sent to SNMP servers
Firewall should support rate-limiting of syslog messages to avoid DoS attacks on the firewall
Firewall should support Netflow /jflow to provide detailed flow information about the connections
Firewall should support SNMP v1,2c & 3 simultaneously
Firewall should support the functionality of identifying issues quickly with continuous monitoring & providing notifications of potential problems in which a service request has been raised with all diagnostic data attached.
Firewall should support the functionality to automatically generate service request with the OEM support center, route it to the appropriate support team which provides detailed diagnostic information to speed up problem resolution.
Firewall GUI management interface should support backing up & restoring configurations
Firewall GUI should support inbuilt function to simulate network traffic to check firewall rules & for troubleshooting network access issues
Firewall should support packet capturing functionality to send the packet capture to ethereal/wireshark for detailed packet analysis
Firewall should support the functionality of Auto-Update to check for latest software versions & download the same & replicate the image to the standby unit

**Annexure – 1: Profile of the company**

The Bidder should furnish the following details to be pre-qualified for the commercial bid opening.

Sr.No.	Details	Remarks
1	Name of the organization and year of incorporation.	
2	Nature of organization	
3	Address of the Registered office of Bidder with phone and Fax number.	
4	Sales Tax registration/GST No.	
5	Income Tax clearance certificate (Latest to be enclosed)	
6	Audited Balance sheet and Income statements of the last 3 financial years.	
7	Project officer who will be handling the above project. (Name, qualification and experience and Contact phone number)	
8	Details of qualified Technical personnel available for Installation, commissioning and maintaining the project	
9	Name of the Government agencies and other organisations, to whom the supply installation and commissioning of similar systems were made in the preceding seven years (enclose copy of purchase orders and other documents)	
10	Details of service center in Sasaram or nearest location (Full address with Phone and Fax No.)	

**Note: All the details above with supporting documents must be provided by the Bidder.**

I/We, hereby declare that the particulars furnished by us in this offer are true to the best of my/our knowledge and we understand and accept that, if at any stage the information furnished are found to be incorrect or false, we are liable for disqualification from this tender and also liable for any penal action that may arise due to the above.

**Name:**

**Designation:**

**Signature:**

**Seal of the Bidder:**

**Date:**

**Place:**

**Annexure-2: The tentative list of locations at which traffic light system needs to be installed**

S.No	Place Name	Galvanised Iron Class B Traffic Signal cantilever pole	Galvanised Iron Class B Traffic Signal straight pole of 6 mtr height (4.5 mtr as per IRC + Foundation Height 1.5 mtr)
1	DharmshalaChowk / Gandhi Chowk	23	45
2	Post Office Chauwk/Golambar		
3	Bauliya More/ JagdeoMargChowk		
4	Kargahar More / Majar More		
5	PrabhakarChowk		
6	Circuit HouseMore		

**Annexure- 3: Qualification of PMU Team****Project Manager****Qualifications**

- B.E./B.Tech./MCA with Project management qualification (PMP) or other similar certification [such as Prince2.]

**Experience Requirements**

- Should have experience in monitoring large IT/e-Governance projects (to the tune of Min. Rs. 5Crores)
- Should have relevant experience in Problem Identification, Cause Analysis, Reporting and Escalation
- Should have experience in Project Planning and Implementation, evaluation and assessment of Project plans including ability to anticipate and address the project risks
- Should have ability to lead, motivate and direct the team to achieve the business objectives.
- Should have excellent oral & written communication skills.

**System Engineer****Qualifications**

- B.E./B.Tech./MCA
- Should have experience of working on Government Projects, preferably in Bihar Should have experience in programs involving extensive communication and coordination with stakeholders in a coordinated fashion for the implementation of a large- scale project/program.
- Should have experience in Project Planning and Implementation, evaluation and assessment of Project plans including ability to anticipate and address the project risks
- Should have excellent oral & written communication skills
- Should have excellent documentation skills.

**Annexure –4: Provisioning of usage of existing tower infrastructure**

To enhance security of citizens of Sasaram and protect vital assets of the city and also to reduce wait time for citizens for getting help during emergency, a project was envisaged by the BUIDCo which had ensured highly effective police operations with accurate flow of information and communication. The project “IT based City Surveillance & Dial 100 for Vehicle Tracking for Emergency Response System” was conceived and implemented by BUIDCo with the help of Police BUIDCo. For the purpose, state-of-the art 30 seater control room operations for Sasaram Police is being developed and made operational for smooth execution using wi-fi/ RF-radio technology.

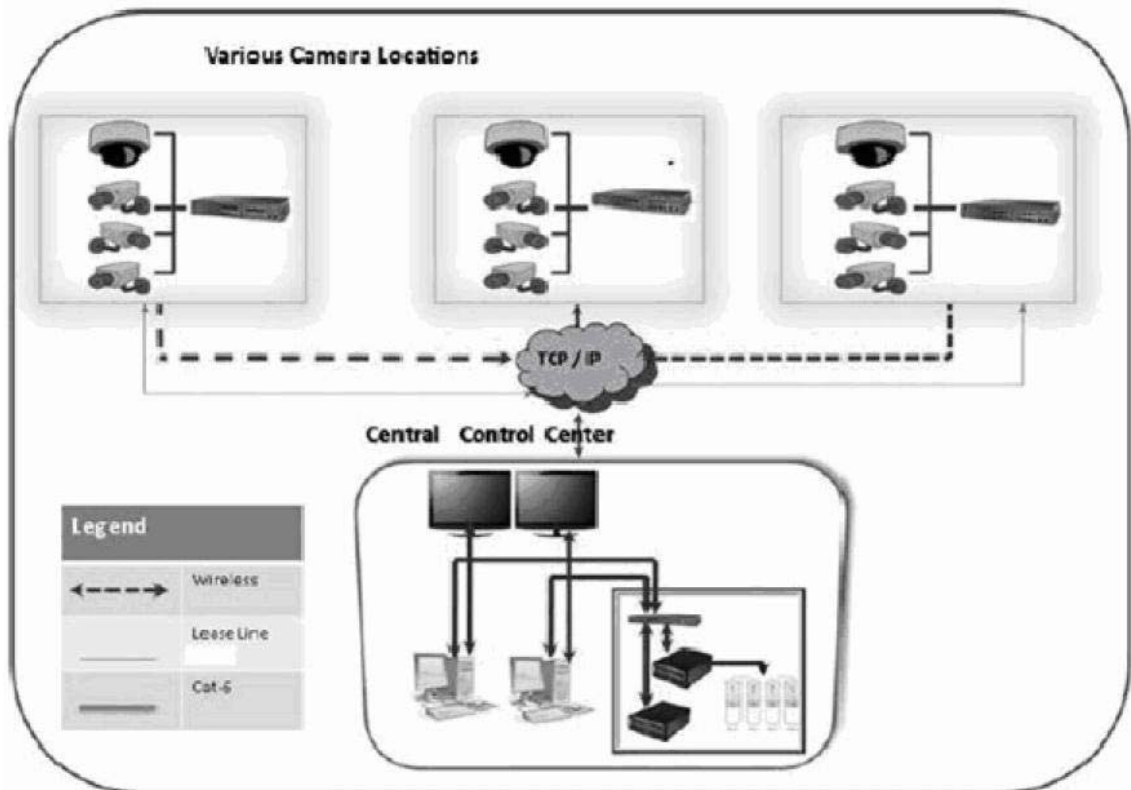


Apart from that, survey was executed by the selected bidder in the guidance of Police BUIDCo and BUIDCo for identification of sites for installing of tower and creating clustering for surrounding locations. In this regard, locations across the city were identified for this purpose and are being used for mounting of CPE (Customer premises equipment). Further these CPE is connected to control room tower (Back haul). List of CPE locations is tabled below:

S No	Location
1	Central BTS--- SP Office, Sasaram
2	Police Wireless BTS: SP office, Sasaram

After the award of the bid, bidder had visited sites and finalized bill of material and quantities as per feasibility in order to provide the solution. The solution is design as such than there are central towers which cuts across the city and through these central towers various field towers are connected through RF Connectivity. In consequence to this, these central towers/sites are further integrated to Control room via, Leased line. The entire established tower infrastructure is the property of the BUIDCo and can be utilised for implementing this project "Traffic Light System".

Below is the Network Diagram for the same.



For the execution of the Traffic Light System project, the selected bidder is required to conduct the Site Survey along with RF Planning and Network design. Bidder will decided the capacity, configuration and quantity of the radio equipments which needs to be mounted at Back hole and CPE Towers to meet the requirement of project for the purpose of seamless integration across the city.

**SECTION 7  
BILL OF QUANTITY**

**(Rates to be quoted in Financial Bid Sheet attached separately)**

## **BILL OF QUANTITIES**

### **Preamble**

- 1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, Conditions of Contract, Technical Specifications and Drawings.**
- 2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.**
- 3. The rates and prices tendered in the priced Bill of Quantities shall, except in so far as it is otherwise provided under the Contract, include all constructional plant, labour supervision, materials, erection, maintenance, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.**
- 4. The rates and prices shall be quoted entirely in Indian Currency.**
- 5. A rate whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no Items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.**
- 6. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no Items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.**
- 7. General directions and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering rates or prices against each item in the Bill of Quantities.**
- 8. The method of measurement of completed work for payment shall be in accordance with the specification issued by the department time to time.**
- 9. Errors will be corrected by BUIDCo for any arithmetic errors pursuant to Clause 29 of the Instructions to Bidders.**

**Name Of Work :- Design, Drawing, Supply , Construction , Fabrication , Installation and maintenance of Traffic Light System and Control room including all associated Civil, Mechanical, Electrical work & Annual Maintenance contract (AMC) for 3 year in sasaram Town**

	<b>Total Amount of Estimate: - 6,54,92,157.00</b>					
	<b>Cost of BOQ: - 20,000.00</b>					
	<b>Earnest money :- 14,08,500.00</b>					
<b>Bidder's Name:-</b>						
<b>1.1</b>	<b>Traffic Light System</b>					
<b>Sl. No.</b>	<b>Description of Item (with brief specification)</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate Quoted by Agency</b>		
				<b>Rate</b>		<b>Amount</b>
				<b>Fig.</b>	<b>Word</b>	
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1	Supply of power supply box 600mm X 400mm X 300mm UPS(HXWXD), with canopy made in welded construction of M.S which also houses the UPS and base frame	Nos.	6			-
2	Supply of Type 4 controller (13-16 phases) with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc.	Nos.	6			-
3	Installation, testing and commissioning of all types of ATC controller	Nos.	6			-
4	Sealing of controller with bitumen / foam for achieving IP 55 protection.	Nos.	6			-
5	Supply of single 120mm (OD)/100 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes conforming to the IS 14930 (Part-II) including supply of necessary sockets, couplings etc.	mtrs	2055			-
6	Laying of single 120mm (OD)/ 100 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes including pull wire along with necessary sockets, couplings etc.	mtrs	2055			-
7	Supply of single 50 mm (OD)/ 37 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes conforming to the IS 14930 (Part-II) including supply of necessary sockets, couplings etc.	mtrs	795			-
8	Laying 50 mm (OD)/ 37mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes including pull wire along with necessary sockets, couplings etc.	mtrs	795			-
9	Supply and installation of fabricated Pre-cast concrete chamber of M20 cc grade, type 450mm inner by 600mm deep .	Nos	66			-
10	Supply of FRP chamber cover with frame 510mm (L)X510mm (B) X 35mm thick as per EN 124 grade B to take load 12.5 MT	Nos.	66			-

11	Supply and installation of M.S. chamber cover frame to accommodate the chamber cover of size 510mm (L)X 510mm (B) X 35mm thick	Nos.	66			-
12	Supply of Polycarbonate LED Signal head housing 300 mm dia. alongwith brackets & accessories etc.	Nos.	468			-
13	Supply of 300 mm dia – single source – LED retrofit - Red (Blow) EN-12368 as per Specification	Nos.	90			-
14	Supply of 300 mm dia – single source – LED retrofit - Amber (Blow) EN-12368 as per Specification	Nos.	90			-
15	Supply of 300 mm dia – single source – LED retrofit - Green (arrow/U- Turn) EN-12368 as per Specification	Nos.	192			-
16	Supply of 300 mm dia – single source – LED retrofit - Red (ped. standing) EN-12368 as per Specification	Nos.	48			-
17	Supply of 300 mm dia – single source – LED retrofit - Green (ped.walking) EN-12368 as per Specification	Nos.	48			-
18	Installation of Polycarbonate LED Signal aspect of 300 mm dia. On standard traffic signal straight pole	Nos.	90			-
19	Installation of Polycarbonate LED Signal aspect of 300 mm dia. On standard traffic signal cantilever pole	Nos.	85			-
20	Supply of Galvanised Iron Class B Traffic Signal straight pole of 6 mtr height as per Specification	Nos.	45			-
21	Supply of Galvanised Iron Class B Traffic Signal cantilever pole of as per Specification	Nos.	23			-
22	Supply of following 650/1100 volt grade PVC insulated PVC sheathed ulticore copper conductor armoured cables as per specification & IS 1554 part I in existing trenches, ducts, GI pipes - 1 Sq.mm. 8 core copper conductor	mtrs	1999.5			-
23	Supply of following 650/1100 volt grade PVC insulated PVC sheathed ulticore copper conductor armoured cables as per specification & IS 1554 part I in existing trenches, ducts, GI pipes - 1 Sq.mm. 16 core copper conductor	mtrs	4326			-
24	Supply of following 650/1100 volt grade PVC insulated PVC sheathed multicore copper conductor armouredCAT 6 cables	mtrs	2487			-
25	Supply of following 650/1100 volt grade PVC insulated PVC sheathed ulticore copper conductor armoured cables as per specification & IS 1554 part I in existing trenches, ducts, GI pipes -2.5 Sq.mm. 3 core copper conductor	mtrs	705			-
26	Supply of 1 Sq mm 3 core Flexible wire for connecting LED aspects fixed on each pole to the connectors in that Pole	mtrs	300			-

27	Supply of 1 Sq mm 6 core Flexible wire for connecting Multiple LED aspects fixed on each pole to the connectors in that Pole	mtrs	300			-
28	Laying of signal cables (all types including communication cables with multipairs as described above) in trenches, existing ducts / G.I. Pipes including ferruling, testing etc. but excluding any cable joint, excavation etc.	mtrs	9517.5			-
29	Supply of Brass Gland (20 MM S Gland) for attaching and securing the end of 4 Core & 8 core power cables to the controller	Nos	90			-
30	Supply of Brass Gland (25 MM B Gland) for attaching and securing the end of 16 core power cables to the controller	Nos	90			-
31	Camera for Vehicle detection system, (of reputed make) Wide Angle Lens Camera for Vehicle detection system, Black & White	Nos.	20			-
32	Interface card for detection camera 4TI - 16 outputs	Nos.	6			-
33	Ethernet interface for detection camera	Nos.	6			-
34	Power Supply Unit for detection camera system	Nos.	6			-
35	Supply of cable jointing Kit and joining of 1.5 Sq.mm. 2 Pair copper conductor cable (IP68 Enclosure)	Nos.	20			-
	<b>TOTAL</b>					-
<b>1.2</b>	<b>Cost for Civil Work for Traffic System</b>					
1	Construction of signal controller foundation upto 600mm height above ground level and 600 mm below ground level on C.C. M20 grade pedestal, having size (LXBXH) with fixing of SS304 nut bolts for controller cabinet & Power supply box cabinet	Nos.	6			-
2	HDD Trenching by trenchless technology of 120mm for laying of DWC HDPE 120 MM pipe	mtrs	1125			-
3	Excavation of trench for traffic signals and VMS boards cables and conduiting as per requirement of the signal junction up to the depth of 600mm below the ground surface and width 500mm in the footpath/soft soil including refilling of the trench in footpath and removal of debris	Cum	210			-
4	Excavate and install pre-cast chamber of 450 mm dia ID by 600 mm deep to tie into proposed 100mm duct in footway. Including backfilling of material	Nos	66			-
5	Excavate and install brick built sectional chamber type "3B". Chamber to be 650mm by 650mm by 600mm deep to tie into proposed 100mm ducts in footway(carriage way). Including backfilling of material with RCC cover and MS frame	Nos.	11			-

6	Supply and installation of fabricated Pre-cast concrete chamber of M20 cc grade, type 1000mm inner by 800mm deep .	Per Nos	6			-
7	Erecting straight pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/or above ground level having dia. Of 300mm only, as per technical specification.	Nos.	45			-
8	Erecting cantilever pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/or above ground level having dia. Of 450mm only, as per technical specification.	Nos.	23			-
	<b>TOTAL</b>					-
<b>1.3</b>	<b>Cost components for CCTV</b>					
1	Supply Installation, testing and commissioning of Outdoor, Colour Pan Tilt Zoom Integrated Dome Network Camera. Including master recorder software, camera review licence and per camera licence required including extension arm wherever required.	Nos.	6			-
2	Supply Installation, testing and commissioning of Outdoor, Colour 3 MP camera including master recorder software, camera review licence and per camera licence required including extension arm wherever required	Nos.	20			-
3	Junction box IP66 compliant with accessories	Nos.	6			-
4	UPS 2 KVA & 4 hr battery Back	Nos.	6			-
5	Supply of Armoured Single Mode Optical Fibre Cable – 4 core	mtrs	2175			-
6	PoE Distribution Switch for CCTV	Nos.	6			-
7	Supply of following 650/1100 volt grade PVC insulated PVC sheathed ulticore copper conductor armoured cables as per specification & IS 1554 part I in existing trenches, ducts, GI pipes -2.5 Sq.mm. 3 core copper conductor	mtrs	600			-
8	Laying of signal cables (all types including communication cables with multipairs as described above) in trenches, existing ducts / G.I. Pipes including ferruling, testing etc. but excluding any cable joint, excavation etc.	mtrs	2775			-
9	Supply of Camera support mounting bracket for fixed camera	Nos.	20			-
10	Patch chord fiber	Nos.	45			-
11	Media Converter to connect the Ethernet interface of the cameras to the OFC	Nos.	45			-
12	Power supply box for cameras and other CCTV equipments	Nos.	23			-
13	Splicing termination	Nos.	9			-
	<b>TOTAL</b>					-

<b>1.4</b>	<b>Cost components for Control Room</b>					
1	Supply, installation & commissioning of Server including the Operating system for Adaptive system as per the specification mention above	Nos.	1			-
2	Supply, installation & commissioning of Server including the Operating system for CCTV as per the specification mention above	Nos.	1			-
3	Supply, installation & commissioning of Storage NAS as per specification mention above	Nos.	1			-
4	Supply, installation & commissioning of Video Management System for monitoring and recording with necessary hardware with adequate licences for recording & reviewing.	Sets	1			-
5	Supply, installation of Workstations as per specification mentioned above Specification including PTZ Keyboard/ joystick	Nos.	6			-
6	Supply, installation, testing and commissioning of 15 kVA (1+1) UPS along with batteries providing 2 hr Total back up including MS powder quoted battery rack	Nos.	1			-
7	Soundless 20 KVA Genset as per the specification mention above	Nos.	1			-
8	Supply of a Fully Fix Traffic Control System capable of running 100 nodes with proper interface with transmission equipment including modems sufficient to meet the requirement	Nos.	1			-
9	Creation and Input of ATC System graphical displays	Nos	1			-
10	FLUX , 1 server license of the Traficon Management Software	Nos.	1			-
11	Other networking equipment for interconnections with the onsite equipments such as Rack 42U for mounting servers, Network caballing cat 6 (LAN) with IOs, Patch panel	Sets	1			-
12	Core Network Switches as per specification mention in RFP	Nos	2			-
13	Firewall as per specification mention above	Nos	1			-
14	55" LED Commercial LED Display	Nos	6			-
15	NMSsoftware With Hardware for monitoring of 100 devices	Nos	100			-
16	Installation & Commissioning Charges of Control Room	Lumpsum	1			-
	<b>TOTAL</b>					-



<b>1.5 Point-to-Point connectivity between Traffic junction &amp; Control room</b>						
1	Supply of Single wall HDPE Pipe - OD 40mm & ID 33mm HDPE pipe of PE80 grade on IS 4984 & BS – 6437 with proper marking/printed of standard over pipe in single colour	mtrs	15000			-
2	Laying of Single wall HDPE Pipe - OD 40mm & ID 33mm HDPE pipe of PE80 grade on IS 4984 & BS – 6437 with proper marking/printed of standard over pipe in single colour	mtrs	15000			-
3	Supply of Armoured Single Mode Optical Fibre Cable – 12 Core – Outdoor Underground application	mtrs	15000			-
4	Laying of Armoured Single Mode Optical Fibre Cable – 12 Core – Outdoor Underground application	mtrs	15000			-
5	Supply of Pre-cast sectional chamber . Chamber to be 600mm by 650mm by 600mm deep with Iron Frame of 75mm thickness.	Nos	37			-
6	Excavate and install pre-cast sectional chamber . Chamber to be 600mm by 650mm by 600mm deep with Iron Frame of 75mm thickness.	Nos	37			-
7	Supply of RCC Frame Cover with Iron frame of 75mm thickness to be fixed on 600mm by 650mm Pre-cast Chamber	Nos	37			-
8	Installation of RCC Frame Cover with Iron frame of 75mm thickness on 600mm by 650mm Pre-cast Chamber	Nos	37			-
9	Excavate and install Brick Chamber 650 x 650 mm -and supply of Iron Chamber cover -2 Inches and installation of the brick chamber cover	Nos	3			-
10	Excavate and install Brick Chamber 650 x 650 mm -and supply of Iron Chamber cover -4 Inches and installation of the brick chamber cover	Nos	3			-
	<b>TOTAL</b>					-
<b>1.6 AMC &amp; Operation Cost</b>						
1	AMC of Equipments of 1st Year	Lumpsum	1			-
2	AMC of Equipments of 2nd year	Lumpsum	1			-
3	AMC of Equipments of 3rd year	Lumpsum	1			-
4	Site Engineer	Per Man Month	36			-
	1 SE for 36 month					-
5	Site Supervisor	Per Man Month	120			-
	• 1 SS in day shift for 36 months					-
	• 1 SS each in night for 36 months					-
	<b>TOTAL</b>					-

<b>1.7</b>	<b>Electrical Work at Traffic Control Room</b>					
1	Supply of 50 sq. mm. armored cable gland	No.	2			-
2	Supply of 35 sq. mm. armored cable gland	No.	2			-
3	Supply of 1 sq. mm FR Electrical Cable (Green)	Mtrs.	600			-
4	Supply of 2.5 sq. mm FR Electrical Cable	Mtrs.	700			-
5	Supply of 4 sq. mm FR Electrical Cable	Mtrs.	180			-
6	Supply of 50 sq. mm. ring type thimble	No.	2			-
7	Supply of 35 sq. mm. ring type thimble	No.	4			-
8	Supply of PVC 1.5mm gulli	Packet	1			-
9	Supply of 8mm fastner	No.	22			-
10	Supply of Power and UPS Control Panel of cubical construction, floor mounted type, fabricated out of 1.6mm. thick CRCA sheet, compartmentalized with hinged lockable & Ot doors, dust and vermin proof, powder coated of approved shade after 7 tank treatment process, cable alley, interconnection with solid aluminum strip/single core PVC insulated FR copper conductor cable and other accessories	No.	1			-
11	Supply of 50 Sq.mm. 4core Copper armored Cable for providings electrical connection from the Transformer	Mtr	170			-
12	Installation of UPS Power control Panel , 50 sq.mm. power cable laying, sockets, MCB, cable glanding, testing, and commissioning etc. as required	Lot	1			-
13	Supply of PVC Electrical Board with 3 Socket, Switch, Indicator and 6A MCB	No.	25			-
14	Supply of PVC Electrical Board with 16A 5 Pin Scket & Switch	No.	25			-
15	Laying / Installation of UPS Wiring for Video Wall, Light, FAN, Work Station and Server Rack	No.	25			-
	<b>TOTAL</b>					-
<b>1.8</b>	<b>Supply and Installation of Air Conditioner at Traffic Control Room</b>					
1	2 Ton Inverter Split AC	No.	4			-
2	Mounting Stand for 2 Ton AC - ODU	No.	4			-
3	Automatic Stabilizer for 2 Ton AC-5 KVA (Input from 90V)	No.	4			-
4	7 Ton Split AC Timer	No.	2			-
	Installation Cost of Split AC with ODU and Timer	No.	4			-
5	False ceiling in Traffic Control Room	Sq. Feet	400			-
6	Supply and Installation of 2 x 2 Feet LED False Ceiling Light	No.	12			-
7	Wall Mount FAN	No.	6			-
	<b>TOTAL</b>					-

<b>1.9</b>	<b>Supply and Installation of Control Room Furniture</b>					
1	Computer Table	No.	10			-
2	Computer Chair	No.	10			-
3	Wooden File Rack with Lock	No.	2			-
4	Woodel Almirah	No.	1			-
	<b>TOTAL</b>					-
	<b>Grand Total</b>					-

**SECTION 8**  
**SECURITIES AND OTHER FORMS**  
**(to be filled by Bidder/Employer)**

**BID SECURITY (BANK GUARANTEE UNCONDITIONAL)**

WHEREAS, \_\_\_\_\_ [name of Bidder] (hereinafter called "the Bidder") has submitted his Bid dated \_\_\_\_\_ [date] for the construction of \_\_\_\_\_ [name of Contract hereinafter called "the Bid"].

KNOW ALL PEOPLE by these presents that We \_\_\_\_\_ [name of Bank] of \_\_\_\_\_ [name of country] having our registered office at \_\_\_\_\_ (hereinafter called "the Bank") are bound unto **BUIDCo. Ltd.** (hereinafter called "the Employer") in the sum of \_\_\_\_\_ \*for which payment well and truly to be made to the said Employer by the Bank itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

THE CONDITIONS of this obligation are:

(1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified in the Form of Bid;

OR

(2) If the Bidder having been notified to the acceptance of his bid by the Employer during the period of Bid validity :

- (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
- (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders; or
- (c) Does not accept the correction of the Bid Price pursuant to Clause 27.

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him as due to him owing to the occurrence of one or any of the three conditions, (specifying the occurred condition or conditions).

This Guarantee will remain in force up to and including the date \_\_\_\_\_ \*\* days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

WITNESS \_\_\_\_\_

SEAL \_\_\_\_\_

\_\_\_\_\_  
[Signature, name and address]

\* The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 16.1 of the Instructions to Bidders.

\*\* 45 days after the end of the validity period of the Bid. Date should be inserted by the Employer before the Bidding documents are issued.

**PERFORMANCE BANK GUARANTEE**

To

\_\_\_\_\_ [name of Employer]  
\_\_\_\_\_ [address of Employer]  
\_\_\_\_\_

**WHEREAS** \_\_\_\_\_ [name and address of Contractor] (hereafter called "the Contractor") has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to execute \_\_\_\_\_ [name of Contract and brief description of Works] (hereinafter called "the Contract").

**AND WHEREAS** it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract;

**AND WHEREAS** we have agreed to give the Contractor such a Bank Guarantee :

**NOW THEREFORE** we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of \_\_\_\_\_ [amount of guarantee]\* \_\_\_\_\_ (in words), such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of \_\_\_\_\_ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until 28 days from the date of expiry of the Defect Liability Period.

Signature and Seal of the guarantor \_\_\_\_\_  
Name of Bank \_\_\_\_\_  
Address \_\_\_\_\_  
Date \_\_\_\_\_

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\* *An amount shall be inserted by the Guarantor, representing the percentage the Contract Price specified in the Contract including additional security for unbalanced Bids, if any and denominated in Indian Rupees.*

**UNCONDITIONAL BANK GUARANTEE FOR ADVANCE PAYMENT**

To

\_\_\_\_\_ [name of Employer]  
\_\_\_\_\_ [address of Employer]  
\_\_\_\_\_ [name of Contractor]

Gentlemen :

In accordance with the provisions of the Conditions of Contract, sub-clause 51.1 ("Advance payment") of the above-mentioned Contract, \_\_\_\_\_ [name and address of Contractor] (hereinafter called "the Contractor") shall deposit with \_\_\_\_\_ [name of Employer] a bank guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of \_\_\_\_\_ [amount of Guarantee]\* \_\_\_\_\_ [in words].

We, the \_\_\_\_\_ [bank of financial institution], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to \_\_\_\_\_ [name of Employer] on his first demand without whatsoever right of obligation on our part and without his first claim to the Contractor, in the amount not exceeding \_\_\_\_\_ [amount of guarantee]\* \_\_\_\_\_ [in words].

We further agree that no change or addition to or other modification of the terms of the Contractor or Works to be performed there under or any of the Contract documents which may be made between \_\_\_\_\_ [name of Employer] and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until \_\_\_\_\_ [name of Employer] receives full repayment of the same amount from the Contractor.

Yours truly,

Signature and Seal : \_\_\_\_\_  
Name of Bank /Financial Institution \_\_\_\_\_  
Address : \_\_\_\_\_  
Date : \_\_\_\_\_

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\* *An amount shall be inserted by the Bank or Financial Institution representing the amount of the Advance Payment, and denominated in Indian Rupees.*

## INDENTURE FOR SECURED ADVANCES

### FORM 31

(for use in case in which the contract is for finished work and the contractor has entered into an agreement for the execution of a certain specified quantity of work in a given time)

This indenture made the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ BETWEEN \_\_\_\_\_ (hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his executors, administrators and assigns) or the one part and the Employer of the other part.

Whereas by an agreement dated \_\_\_\_\_ (hereinafter called the said agreement) the contractor has agreed.

AND WHEREAS the contractor has applied to the Employer that he may be allowed advance on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charges)

AND WHEREAS the Employer has agreed to advance to the Contractor the sum of Rupees \_\_\_\_\_ on the security of materials the quantities and other particulars of which are detailed in Accounts of Secured Advances attached to the Running Account bill for the said works signed by the Contractor on \_\_\_\_\_ and the Employer has reserved to himself the option of making any further advance or advances on the security of other materials brought by the Contractor to the site of the said works.

Now THIS INDENTURE WITNESSETH that in pursuance of the said agreement and in consideration of the sum of Rupees \_\_\_\_\_ on or before the execution of these presents paid to the Contractor by the Employer (the receipt where of the Contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as a for said the Contractor doth hereby covenant and agree with the President and declare as follows :

- (1) That the said sum of Rupees \_\_\_\_\_ so advanced by the Employer to the Contractor as aforesaid and all or any further sum of sums advanced as aforesaid shall be employed by the Contractor in or towards expending the execution of the said works and for no other purpose whatsoever.
- (2) That the materials details in the said Account of Secured Advances which have been offered to and accepted by the Employer as security are absolutely the Contractor's own propriety and free from encumbrances of any kind and the contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the Contractor indemnified the Employer against all claims to any materials in respect of which an advance has be made to him as aforesaid.
- (3) That the materials detailed in the said account of Secured Advances and all other materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereafter called the said materials) shall be used by the Contractor solely in the Execution of the said works in accordance with the directions of the Engineer.
- (4) That the Contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protection against all risks of the said materials and that



until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and on his own responsibility and shall at all times be open to inspection by the Engineer or any officer authorized by him. In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof the Contractor will forthwith replace the same with other materials of like quality or repair and make good the same required by the Engineer.

- (5) That the said materials shall not be any account be removed from the site of the said works except with the written permission of the Engineer or an officer authorized by him on that behalf.
- (6) That the advances shall be repayable in full when or before the Contractor receives payment from the Employer of the price payable to him for the said works under the terms and provisions of the said agreement. Provided that if any intermediate payments are made to the Contractor on account of work done than on the occasion of each such payment the Employer will be at liberty to made recovery from the Contractor's bill for such payment by deducting there from the value of the said materials that actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates at which the amounts of the advances made under these presents were calculated.
- (7) That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing of the Employer shall immediately on the happening of such default be repayable by the Contractor to be the Employer together with interest thereon at twelve per cent per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the Contractor and the Contractor hereby covenants and agrees with the Employer to reply and pay the same respectively to him accordingly.
- (8) That the Contractor hereby charges all the said materials with the repayment to the Employer of the said sum of Rupees \_\_\_\_\_ and any further sum of sums advanced as aforesaid and all costs, charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the power contained therein if and whenever the covenant for payment and repayment here in before contained shall become enforceable and the money owing shall not be paid in accordance there with the Employer may at by time thereafter adopt all or any of the following courses as he may deem best :
  - (a) Seize and utilise the said materials or any part thereof in the completion of the said works on behalf of the contractor in accordance with the provisions in that behalf contained in the said agreement debiting the contractor with the actual cost of effecting such completion and the amount due to the contractor with the value of work done as if he has carried it out in accordance with the said agreement and at the rests thereby provided. If the balance is against the contractor, he is to pay same to the Employer on demand.
  - (b) Remove and sell by public auction the seized materials or any part there of and out of the moneys arising from the sale retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the Contractor.

- (c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said agreement.
- (9) That except in the event of such default on the part of the contractor as aforesaid interest on the said advance shall not be payable.
- (10) That in the event of any conflict between the provisions of these present and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been here-in-before expressly provided for the same shall be referred to the Employer whose decision shall be final and the provision of the Indian Arbitration Act for the time being in force shall apply to any such reference.

**Letter of Acceptance**  
**(Letterhead paper of BUIDCo)**

\_\_\_\_\_ (Date)

To

\_\_\_\_\_ (Name and address of the Contractor)

Dear Sirs,

This is to notify you that your Bid dated \_\_\_\_\_ for execution of the \_\_\_\_\_ (name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees \_\_\_\_\_ (\_\_\_\_\_ ) (amount in words and figures), as corrected and modified in accordance with the Instructions to Bidders<sup>1</sup> is hereby accepted by our agency.

We accept/ do not accept that \_\_\_\_\_ be appointed as the Adjudicator<sup>2</sup>. Your are hereby requested to furnish Performance Security, in the form detailed in Para 31.1 of ITB for an amount equivalent to Rs. \_\_\_\_\_ within 15 days of the receipt of this letter of acceptance valid up to 28 days from the date of expiry of defects Liability Period i.e. up to \_\_\_\_\_ and sign the contract, failing which action as stated in Para 31.3 of ITB will be taken.

Yours faithfully,

Authorized Signature  
Name and title of Signatory  
Name of Agency

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<sup>1</sup>Delete "corrected and" or "and modified" if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.

<sup>2</sup>To be used only if the Contractor disagrees in his Bid with the Adjudicator proposed by the Employer in the "Instructions to Bidders".

**Issue of Notice to proceed with the work  
(Letterhead of BUIDCo)**

\_\_\_\_\_ (Date)

To

\_\_\_\_\_ (Name and address of the Contractor)  
\_\_\_\_\_  
\_\_\_\_\_

Dear Sirs,

Pursuant to your furnishing the requisite security as stipulated in ITB Clause 34.1 and signing of the Contract for the construction of \_\_\_\_\_  
\_\_\_\_\_ ata Bid Price of  
Rs. \_\_\_\_\_.

You are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

(Signature, name and title of signatory authorized  
to sign on behalf of Employer)

## Agreement Form

### Agreement

This agreement, made the \_\_\_\_\_ day of \_\_\_\_\_ between \_\_\_\_\_ (name and address of Employer) [hereinafter called "the (name and address of contractor) hereinafter called "the Contractor" of the other part.]

Whereas BUIDCo is desirous that the Contractor execute

\_\_\_\_\_ (name and identification number of Contract) (hereinafter called "the Works") and BUIDCo has accepted the Bid by the Contractor for the execution and completion of such works and the remedying of any defects therein, at a cost of Rs. \_\_\_\_\_

**NOW THIS AGREEMENT WITNESSETH as follows :**

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by BUIDCo to the Contractor as hereinafter mentioned, the Contractor hereby covenants with BUIDCo to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the contract.
3. BUIDCo hereby covenants to pay the Contractor in consideration of the Execution and completion of the Works and the remedying the defects wherein Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be ready and construed as part of this Agreement viz.
  - (i) Letter of Acceptance
  - (ii) Notice to proceed with the works;
  - (iii) Contractor's Bid
  - (iv) Condition of Contract : General and Special
  - (v) Contract Data
  - (vi) Additional condition
  - (vii) Drawings
  - (viii) Bill of Quantities and
  - (ix) Any other documents listed in the Contract Data as forming part of the Contract.

In witnessed whereof the parties there to have caused this Agreement to be executed the day and year first before written.

The Common Seal of \_\_\_\_\_ was hereunto affixed in the presence of :

Signed, Sealed and Delivered by the said \_\_\_\_\_  
\_\_\_\_\_

in the presence of :

Binding Signature of Employer \_\_\_\_\_

Binding Signature of Contractor \_\_\_\_\_

**UNDERTAKING**

I, the undersigned do hereby undertake that our firm M/s \_\_\_\_\_  
\_\_\_\_\_ agree to abide by this bid for a period \_\_\_\_\_ days for the date fixed for  
receiving the same and it shall be binding on us and may be accepted at any time before the expiration of  
that period.

\_\_\_\_\_  
**(Signed by an Authorised Officer of the Firm)**

\_\_\_\_\_  
**Title of Officer**

\_\_\_\_\_  
**Name of Firm**

\_\_\_\_\_  
**DATE**

**SECTION 9**  
**(DOCUMENTS TO BE FURNISHED BY BIDDER)**  
**(ATTACHED)**



**Form 01: Format for Authorization Letters from OEMs (MAF)**

(To be printed on letter head of OEM and signed by Authorized signatory of OEM)

To:

Date: dd/mm/yyyy

Managing Director  
Bihar Urban Infrastructure Development Corporation  
Near RajapurPul, West Boring Canal Road  
Patna-800001

Subject: Authorization Letter to **M/s** ..... for the participation in the Bid for Supply, Construction, Fabrication, Installation and maintenance of Traffic Light System and Control room including all associates Civil, Mechanical, Electrical works & annual maintenance contract (AMC) for 3 years in Sasaram Town.

Ref: TenderNo: ..... **Dated:** \_\_\_\_\_

Dear Sir/Madam,

We ,(name and address of the manufacturer)who are established and reputed manufacturers of having factories at(addresses of manufacturing) do hereby authorize **M/s**.....for the participation in the Bid for Supply, Construction, Fabrication, Installation and maintenance of Traffic Light System and Control room including all associates Civil, Mechanical, Electrical works & annual maintenance contract (AMC) for 3 years in Sasaram Town(name and address of the bidder) to bid, negotiate and conclude the contract with you against the above mentioned tender for the above equipment/software manufactured/developed by us.

We herewith certify that the above mentioned equipment/software products are not end of the life and we hereby under take to support the equipment/software for the duration of minimum10years from the date of this letter.

Yours faithfully,

(Signature of the Authorized Signatory from OEM)

(Signature of the Authorized Signatory Lead Bidder)

Name :

Name :

Designation :

Designation :

Seal :

Seal :

Date :

Date :

Business Address :

Business Address :

**SECTION 10**  
**DRAWINGS**  
**(To be Attached)**

