

Bharat Heavy Electricals Limited

ITX, HEEP, RANIPUR, HARIDWAR-249403 (Uttarakhand, India)

Phone: 01334-281399, FAX: 01334-223948 E-mail: ajaipal@bhelhwr.co.in

HW/ITX/2/1245

December 29, 2014

Subject: Procurement of CCTV surveillance System at BHEL Haridwar

Sir,

1. CCTV surveillance system (detail in Annexure-II), is to be procured on **five year finance lease basis**. The scope of work is given in detail in Annexure III. The Annexure details are as follows:

Annexure I	Technical Pre-qualification Compliance Sheet
Annexure II	Technical specifications of CCTV surveillance system
Annexure III	Scope of work and Terms & Conditions
Annexure IV	Technical Specifications Compliance Sheet
Annexure V	Format of Certificate by Chartered Accountant on letter head
Annexure VI	Price Bid Format

2. You are requested to submit techno-commercial offer in two parts as per the scope of supply indicated therein. The tender offer should be sealed in two separate envelopes with 'Technical bids' / 'Commercial bids', Tender no., opening date duly super scribed on the envelopes.
3. The technical bid envelope should enclose your technical offer comprising Technical Pre-qualification Compliance Sheet (Annexure-I), Scope of work and Terms & conditions (Annexure-III), Technical Specifications Compliance Sheet (Annexure-IV), Annexure-V (if applicable) duly signed/stamped and unpriced bid as per annexure-VI. **All documents/certificates / data sheets required as per Annexure-I and Annexure-IV must be submitted in the Technical bid.** The EMD and tender document fee will also be submitted alongwith this part of bid.
4. Vendor must meet prequalification criteria as per Annexure-I. The offers not meeting these criteria will not be evaluated further and will be rejected summarily.
5. The commercial bid envelope should enclose Price bid (As per format in Annexure VI) only.
6. The technical bids will be opened on the last day of submission of the offers at 2.00 P.M. in the presence of the tenderers or their authorized representatives who may like to be present. Incomplete offers are liable to be rejected.
7. The terms and conditions given at Annexure-III will be adhered to by the tenderer. Please do not remain silent on any point and if you are not accepting any terms/condition please clearly state so. Any deviation/remarks should be clearly specified by the tenderer in separate sheets.

8. Earnest money of Rs. 2,00,000/- and tender document charges of Rs. 2000/- in the form of demand draft (two separate drafts) in favour of BHEL, Haridwar or cash deposit (to the extent admissible in Income Tax Act) with Accounts officer, BHEL, Ranipur, Haridwar is to be furnished with the tender offer. BHEL reserves the right to reject any or all tenders without assigning any reason there- of.
9. The offers in sealed envelopes (as stated in para-2 above) should be submitted latest by **1.45 P.M. on 23/01/2015** at the following address:

**Head of Material Management
Heavy Electricals Equipment Plant
Bharat Heavy Electricals Limited
Ranipur Haridwar (Uttarakhand)
PIN – 249403**

IMPORTANT: Any vagueness / incomplete detail in the offers shall make it liable to be rejected as these shortcomings in the offers shall be interpreted as incompetence on the part of vendor to meet the requirements of BHEL.

Checklist for submitting the bid is as under:

To be submitted with Technical Bid

Sl.	Annexure	Description	Remarks
1	--	Your Technical Offer	
2	Annexure I	Technical Pre-qualification Compliance Sheet.	All referred documents/proofs/ data sheets to be submitted.
3	Annexure III	Scope of work and Standard Terms & Conditions	Signed/Sealed copy
4	Annexure IV	Technical Specifications Compliance Sheet	All referred documents/proofs/ data sheets to be submitted.
5	Annexure V	Valid Certificates as per clause 21.5 of annexure-III	If applicable
6	Annexure VI	Unpriced Bid	Mention all applicable tax rates without prices
7		Earnest Money Deposit (EMD)	
8		Tender document fee	

To be submitted with Price Bid:

Sl.	Annexure	Description	Remarks
1	Annexure VI	Price Bid	In a separate sealed envelope

Thanking you,

Yours faithfully,

**(Ajai Pal Singh)
Deputy Manager/ITX**



Information Technology Centre,
HEEP, BHEL Ranipur, Haridwar

Tender No :HW/ITX/2/1245 Dated:29.12.2014

Annexure I - Technical Pre Qualification Compliance Sheet

Note The vendor shall state in the "Compliance" column Y (yes) or N (no).

Sl. No.	Description	Compliance (Y/N)
1	The bidder should be either OEM of Cameras who is willing to undertake total scope of work or an authorized system integrator of the OEM of cameras having direct purchase and support agreement with OEM. In case of bidding by authorized system integrator, authorisation Letter from OEM of the cameras specific to this tender should be submitted by the bidder.	
2	<p>The bidder should have successfully executed (completion of supply and installation) similar contracts during last seven years ending 30/11/2014 in any of the following:</p> <ol style="list-style-type: none"> 1. One contract of value Rs.80 Lakhs or more <li style="text-align: center;">or 2. Two contracts each of value Rs. 50 Lakhs or more <li style="text-align: center;">or 3. Three contracts each of value Rs. 40 Lakhs or more <p>Similar contract means successful supply and installation of any one or combination of CCTV / Servers / Storage / Desktops & Peripherals / Workstations / Networking equipment / IT hardware.</p> <p>Vendor shall submit proof of such contracts (Purchase Order and Completion Certificate). Customers' contact details like name, designation, phone no., email address etc are to be provided.</p>	
3	OEMs of the cameras & server / storage should have registered office and service centre in India. Proof to be submitted	

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Annexure II - Technical Specifications of CCTV Surveillance System

1. Technical Specifications of IR IP Bullet Camera (80 nos)

Sr.No.	Features	
1	Image Sensor	CMOS/CCD Sensor progressive scan
2	Minimum Effective Pixels	1280 x 720 pixels
3	Lens	3.5 – 8.5 mm Vari-focal lens, Auto IRIS
4	Minimum Electronic Shutter Speed	1/5s to 1/2000 s
5	Day / Night Mode	Automatic
6	Min. Illumination	Color: 0.5 Lux @ F1.4 B/W: 0.1 Lux (IR ON)
7	Minimum IR Beam Distance	20 Meters. Either Built-in IR Illuminator or External IR Illuminator fixed with supplied camera
8	IR LED Control	Auto
9	Video Compression	H.264, MJPEG
10	Frame Rate	1280x720 @ 25 fps down stepping to lower resolutions
11	Streaming	Simultaneously multi-profile streaming
12	Supported Protocols	IPv4, IPv6, DNS , HTTP, HTTPS, SMTP, FTP, NTP, DHCP, ARP, UPnP, RTSP, RTP, RTCP, IGMP, ICMP,SNMP
13	Security	Multilevel user access for multiple user / password protection
14	Minimum Users	4 simultaneous unicast users for each camera
15	Ethernet	Minimum 100Base-T auto negotiation, full duplex, Auto MDI/Auto MDI-X
16	ONVIF	ONVIF Compliant
17	Event Detection	Intelligent motion detection, camera tampering
18	Event Actions	File upload via FTP or email; Notification via email
19	Power Supply/ PoE	IEEE 802.3af As all switches in BHEL Haridwar are Non-PoE switches, so Non PoE to PoE Adapter to be provided Power & Network Connectivity to camera to be provided through PoE Adapter
20	Connectors	RJ-45 minimum 100Base-TX; 1 alarm input and 1 alarm output
21	Protection	IP66 Weather-proof, vandal-proof



22	Operating Temperature	0°C to 50°C
23	Operating Humidity	15 to 85% non-condensing
24	Certificate	Either of CE/FCC/UL/EN

2. Technical Specifications of SERVER & STORAGE (1 nos)

Sr.No.	Features	
1	Processor	Latest Generation Xeon Processors (Minimum 2 Nos. populated)
2	Power Supply	Dual hot swappable
3	RAM	24GB DDR3
4	OS	Latest Server Class Operating System
5	NIC	4 Nos. Gigabit NIC
6	OS Disk	500GB x 2 Nos in RAID 1 configuration
7	Recording Storage	hot swappable disks in RAID 5 configuration for recording storage for 80 nos. cameras for 7 days at 1280x720 Resolution @25 fps expandable to 160 cameras. Detailed configuration and calculation to be provided for proposed hardware
8	Fans	Dual Hot Swappable fans
9	Ports	VGA, 4 nos. USB, Keyboard, Mouse
10	Monitor	46 inch LED Monitor with standard cables and connections
11	Mounting	19" Rack Mount with mounting hardware
12	Optical drive	RW DVD
13	Management	Web-based interface through http/https, Log management and email notification
14	Client OS Support	Latest windows OS, Windows 8 (32-bit/64-bit), Windows 7 (32-bit/64-bit), Windows Server 2012, Windows Server 2008 R2, Windows Server 2008

3. Technical Specifications of CAMERA MANAGEMENT SOFTWARE (1 nos)

Sr.No.	Feature
1	The Platform should have Megapixel camera support.
2	The platform should be able to support fixed as well as PTZ cameras.
3	The platform shall be triplex i.e. it should provide facility of Viewing, Recording & Replay simultaneously.
4	The Platform should support replay controls: play & pause & shuttle.
5	The Platform should support Uniform interface to configure and manage video
6	The Platform should support Events classified by types and secure levels for easy searching
7	The Platform should support BMP, JPEG and MPEG format
8	The Platform should support Management of user privileges one at a time or through common profiles
9	The Platform should Maintain database of all system functions for report out by request including devices error, alarms, and user actions
10	The Platform should support Preprogramming for quick response to various emergency
11	The platform should have Powerful management system to link video for actions when emergency happens
12	The platform should support full control of CCTV keyboard
13	The platform should have centralized management architecture
14	The platform should be able manage minimum 160 video channels from IP cameras for recording.
15	The platform Should have the capability to record and playback various compression devices including MPEG-4, H.264 and MJPEG video streams along with audio
16	System should be scalable so that increase in the number of cameras; number of servers & number of Clients should not affect the currently running system operations & functionality.
17	Software should be ONVIF compliant so that it can integrate with multiple digital IP cameras, multiple network video recording devices etc.
18	Necessary license for operating 80 cameras which may be expandable up to 160 cameras. Minimum license for 25 users for simultaneous playback, live viewing & recordings
19	Managing multiple user operations of attached recording devices simultaneously which includes live viewing, recording, playback, and handling the exchange of data between the server and a remote workstation.
20	System should receive alarms & events from multiple video, access and alarm devices. It should provide capability of Alarm & event viewing, management, popup, email trigger due to alarm etc.
21	Log Report should be used to search the device alarm events, device operations, user login, and web operation. It should also be used to set queries to get results quickly. Log reports should be exported in Text, CSV, Excel file formats.

22	System should manage investigation, post-recording motion detection, motion detection-based recording, and alarm based recording and search tools with advanced search capabilities of the recording. The search facility should include search based on date and time, device type, trigger type, alarm, user, location and site.
23	System should provide multi-level user access rights for viewing and managing access to the recorder functions.
24	System should support tamperproof recording modes of continuous, scheduled, manual, event and alarm-based recording. System should be able to export recordings to standard video formats. Exported recordings should be able to play on any PC. Should allow the user to initiate recording through GUI of client PC.
25	Facility of camera recording in real-time mode (25 fps or lower selectable) must be available in the system. Facility of Camera recording in CIF, 2CIF, 4 CIF as well as in any combination i.e. any camera can be recorded in any quality – Selective or Group of cameras must be available in the system.
26	All camera recordings shall have Camera ID & location/area of recording as well as date/time stamp. Camera ID, Location/Area of recording & date/time shall be programmable by the system administrator with User ID & Password.
27	VIDEO Software should provide at least 25 Client licenses as inbuilt. System should provide unified login to users. User should be able to login from any PC loaded with VIDEO-Software application. Software should be integrated with Active Directory so that users should have the option of login through active directory. Client software for Latest windows client OS, Windows 8/7 including licenses.
28	The administrator should be able to add, edit & delete users with rights. It shall be possible to view ability / rights of each user or the cameras which can be viewed & controlled as per the permission assigned by the administrator. It should be able integrate with Active Directory.
29	System should provide the watermarking facility for tamper proofing of video data so that they can used on a later date as evidence.
30	Should be able to backup & restore system configuration and license information for faster recovery of system in case of disaster.
31	video viewing screen should be capable of showing 1, 4, 9, 16 and other customized split layout of live streaming
32	Should provide user the capability of configuring and running video patrol sequences to automatically play videos of multiple channels in specified windows by turns. A patrol should include several scenarios and a scenario includes several video channels.
33	Capable of capturing snapshot of live video and allowing user to export snapshot. Snapshot tool should be available in video window itself. Only the authorized users should have snapshot functionality.



34	Should be able to playback recorded video. Different playback modes should be there as 1x, 2x, 4x, 8x, 16x, 1/2x, 1/4x, 1/8x, 1/16x speeds, frame by frame and backward playback.
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4. Technical Specifications of UTP Cable	
Sr. No.	Feature
1	4 Pair Cat 6, 23 AWG UTP Cable (Amp/Dlink/Molex/Panduit/Systemax/Avaya)

5. Technical Specifications of PVC Pipe	
Sr. No.	Feature
1	1" PVC Pipe, Medium Strength. ISI Mark

6. Technical Specifications of MS Pipe	
Sr. No.	Feature
1	1" MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm

TERMS & CONDITIONS

1. General

- 1.1. The term vendor shall apply to successful tenderer. The vendor is the lessor and BHEL, Haridwar (A Govt. of India Undertaking) is the lessee.
- 1.2. The vendor shall supply, install, commission and maintain on a turn-key basis, the equipment, detailed in the lease orders hereinafter referred as "Lease Orders" placed by BHEL on the vendor from time to time which will fulfill the functional requirements as defined in scope of supply.

2. Lease / Prices

- 2.1 The lease period shall be 5 years after the successful commissioning and acceptance of the complete system.
- 2.2 Successful vendor shall enter into lease rental agreement with BHEL on non-judicial stamp paper of required value as per extant rules, at their own cost.
- 2.3 Lease payment will be paid on quarterly basis, at the end of each quarter. Invoices are to be submitted in triplicate along with other necessary documents. Deduction of downtime if any shall be made from quarterly lease rental charges.
- 2.4 Prices are net F.O.R destination, inclusive of freight, handling and packing charges, transit insurance, installation, commissioning, regular insurance, on-site comprehensive maintenance during the entire lease period and shall remain firm without any variation during lease period. Lease / RTU tax, service tax and government levies shall be extra as per actuals during the lease period.
- 2.5 The vendor shall be responsible for payment of excise duty, custom duty, all other state/central/local govt. taxes, freight and insurance up to equipment-installation-sites in BHEL Haridwar and during the lease period.
- 2.6 No interest whatsoever shall be payable by BHEL on any amount due to the vendor.
- 2.7 The insurance coverage should be comprehensive with provisions for theft, fire, floods, riots etc. The responsibility for the insurance will rest with the vendor. Claim(s), if any, will be dealt with the underwriters directly by the vendor / lessor. Evidence of insurance policy shall be submitted to BHEL, if the vendor / lessor fails to renew the insurance policy before expiry, BHEL may affect the insurance from the lease rental.
- 2.8 Projected requirement for each camera / hardware / software or any other component is as per tender document. The vendor shall extend the same rates for 6 months from the date of placement of original order for the additional equipment / software to be installed at BHEL Haridwar.
- 2.9 The benefit of depreciation under IT act and other related statutory provisions for the equipment supplied by the vendor under this contract will be claimed by BHEL after capitalization of goods in its books. The vendor will furnish all relevant documents to enable BHEL to claim benefit of depreciation.
- 2.10 The Lease Charges are calculated quarterly. BHEL agrees that vendor may assign the Lease Charges in favor of third party ("Assignee") and consents (subject to prior approval from BHEL) to such assignment of the Lease Charges by the vendor to the Assignee. BHEL agrees that the vendor may disclose any information or documents that it may consider necessary to help the vendor exercise these rights subject to NDA (Non-Disclosure Agreement) clauses.
- 2.11 Pursuant to the assignment of the Lease Charges by the Vendor to the Assignee, all amounts payable to the vendor under this agreement by BHEL shall be payable by BHEL to the Assignee. Responsibilities and obligations of BHEL and the vendor under this Agreement shall remain unchanged, notwithstanding the assignment of Lease Charges in favor of the Assignee.

2.12 Price bid offer shall be valid for 120 days from the date of opening of technical bid.

3. Delivery

- 3.1 The vendor shall supply, install, test and commission the whole work in all respect within 14 weeks from the date of placement of order. Early delivery / commissioning is acceptable.
- 3.2 BHEL reserves the right to ask for a delayed delivery of a part or whole of equipment.
- 3.3 Hardware/software configuration shall be deemed as incomplete or undelivered, if any component of hardware or software within the configuration or main documentation related thereto is not delivered and if delivered is not operational or not acceptable after testing/examination.
- 3.4 In case the delivery, installation and successful commissioning schedule for the works is not adhered to, penalty at the rate of 0.5% per week (or part thereof) of the amount equivalent to lease rent of entire lease period of the remaining equipment/works (subject to a maximum of 10% of total lease rent of entire lease period) shall be levied by BHEL on the vendor. However, in the event that the delay occurs on account of fault of BHEL including on account of failure of BHEL to ensure site preparation, the period on this account will not be considered for penalty. For the purpose of this clause, part of the week is considered as a full week.
- 3.5 Penalty, if any, shall be deducted from first quarterly lease charges. In case, the penalty amount is more than the first quarterly lease charges, the same shall be adjusted from the subsequent quarters.

4. Scope of Work

- 4.1 Supply, unloading, Installation, Configuration, Commissioning, Testing, integration and maintenance of CCTV Surveillance System equipment & software as per specified configuration.
- 4.2 Supply, installation, testing and commissioning of servers/storage along with OS software, Video Management software, Client access Software, camera License, server License and user Access License.
- 4.3 Supply & Installation of Cables & all cable laying accessories including MS conduits, PVC pipes, supporting structures, clamps, identification tags, ferules etc required for laying of cables.
- 4.4 Providing power/network to camera from nearest network switch rack using POE adapter. Power cum network UTP cables shall run in MS conduits / PVC pipes with temper-proof arrangement.
- 4.5 Minor civil works such as chipping / cutting of floors for making grooves, making holes/opening through walls, ceiling or floors, drilling of holes through steel structures and frames, grouting of frames, hooks on walls/ceiling etc. required for execution of work. After erection, surface shall be made good by plastering / painting to their original shape and finish.
- 4.6 Ferruling / labeling of cables/wires/passive networking for easy identification.
- 4.7 Supply of RJ45 connectors as per requirement, Cable termination, testing etc. shall be as per industry standards.
- 4.8 Vendor should ensure the completeness of the solution. Any items / equipment, not mentioned in the BoM, but are mandatory for the completeness of the project; same shall be supplied and installed. Cost of same shall be included in the cost of existing line items of the price bid.
- 4.9 The specifications of each item has been defined in the tender document after due consideration of BHEL requirements and scalability needs. These specifications are **minimum** required specifications to meet the solution implementation needs. However, the vendor should study, on its own, at his/her own cost the requirement of BHEL and can quote specifications higher than those mentioned in the document.

- 4.10 One set of software CDs/DVDs, O&M manuals, relevant documents / drawings and test certificates of equipment shall be submitted.
- 4.11 A high level design/ diagram and plan should be submitted along with detailed equipment layout.
- 4.12 BHEL's involvement during each stage of implementation shall be ensured by the vendor.
- 4.13 Training on daily maintenance and administration of whole system as per mutually agreed training plan.
- 4.14 Acceptance Testing based on agreed ATP document.
- 4.15 Comprehensive maintenance of entire CCTV Surveillance System for five years lease period after the successful commissioning of all the components.
- 4.16 Preventive Maintenance of equipment.
- 4.17 Daily checking of normal functionality of the system
- 4.18 Before submission of bid, vendor can visit the site physically to assess the actual amount of work.
- 4.19 Vendor should quote only one make & model for each of the equipment i.e. no alternatives of makes and/or models are allowed for single equipment. However different makes can be quoted for different equipment.
- 4.20 Vendor should ensure the completeness of the solution. Any items / equipment, not mentioned in the BoM, but are mandatory for the completeness of the project; same shall be supplied and installed.
- 4.21 Repairing/replacing any faulty cable/UTP during full lease period, damaged due to any reason whatsoever, will be done by the vendor. BHEL shall not bear any cost for the same.
- 4.22 Software / firmware updates, patches updates including version change with respect to the Camera Management Software, Client Access Software, Camera firmware should be regularly provided during entire lease period.
- 4.23 BHEL reserves the right to relocate the equipment. Shifting of equipment from one location to another with in BHEL campus shall be the responsibility of the vendor. All the requisite works like dismantling of equipment, packing, transportation etc. shall be the responsibility of the vendor. . A mutually agreed cost will be paid by BHEL to the vendor on this account. The time given for shifting and installation of equipment at new location will be mutually agreed and time taken beyond that period will be treated as downtime.
- 4.24 Vendor shall ensure back to back AMC for hardware and software from OEMs during entire lease period, proof to be submitted to BHEL. Any software / firmware updates, patches updates including version change should be regularly provided during the entire lease period.
- 4.25 The vendor shall provide the certificate of newness of the equipment at the time of supply of equipment.
- 4.26 No items shall be offered, whose end-of-sale has been declared by the OEM or has been declared to be under phase out. Certificate from OEM shall be submitted regarding it.

5. TENDER EVALUATION:

- a) After the process of Technical Bid evaluation, Price Bid opening / RA (Reverse Auction) will be done for all technically qualified vendors.
- b) BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.
In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit "online

- sealed bid” in the Reverse Auction. Non-submission of “online sealed bid” by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.”
- c) The valuation will be on the basis of delivered cost i.e. “total cost to BHEL”.
 - d) Optional item, quoted if any, will not be considered in evaluation as well as during the tender execution.
 - e) Vendor has to quote for all items in the Price Bid (Annexure – VI).

6. REVERSE AUCTION (RA):

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

- a. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
- b. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit ‘online sealed bid’ in the Reverse Auction. Non-submission of ‘online sealed bid’ by the bidder for any of the eligible items for which techno commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
- c. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
- d. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
- e. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance. Bidders have to fax the Compliance form before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
- f. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
- g. Reverse auction will be conducted on scheduled date & time.
- h. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
- i. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, as provided on case-to-case basis to Service provider within two working days of Auction without fail.
- j. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.
- k. Bidders shall be required to read the “Terms and Conditions” section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the ‘Business Rules of Reverse Auction’, which will be communicated before the Reverse Auction.
- l. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.

- m. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
- n. In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

7. Installation

- 7.1 The vendor shall nominate a qualified and experienced project manager who on behalf of the vendor shall coordinate and be responsible for all the activities related to execution of the order for establishing the CCTV Surveillance system at BHEL Haridwar. He shall act as an interface between the vendor and BHEL. The project manager shall:
- Be posted at site till completion of installation and acceptance test.
 - Carry out detailed site inspection.
 - Suggest additional site preparation requirement to BHEL not a part of the order.
 - Submit a complete layout plan / drawings for the required components of CCTV Surveillance system
 - Submit the detailed project schedule in consultation with BHEL.
 - Monitor the progress vis-à-vis the project schedule.
 - Coordinate for all required help and inputs necessary for the execution of the contract.
 - Maintain logbook of the work carried out.
 - Submit a detailed drawing of cable layout, position of cameras etc.
 - Finalise the acceptance test procedure with the BHEL.
- 7.2 Any equipment, fitting, material, software or supplies which may not be specifically mentioned in the specifications but which are necessary for carrying out the contract works within the scope of the tender are to be provided for and rendered to by the vendor. Such items not quoted by the vendor, if found necessary during execution of the contract, shall have to be supplied at no extra charge by the vendor.
- 7.3 The vendor shall ensure that work is carried out by experienced personnel of the proposed system.
- 7.4 The vendor should fulfill all statutory and safety requirements for personnel engaged while executing the contract. If BHEL has to incur any expenditure due to non-compliance of the applicable statutory provisions, the same will be compensated by the vendor.

8. Acceptance Test Procedure

- 8.1 The vendor shall submit project completion report to BHEL once the equipment is successfully installed so that BHEL can carry out the acceptance test. All manuals, accessories etc. will be handed over by vendor to BHEL.
- 8.2 The vendor shall submit the detailed documentation of system including bill of material etc. prior to start of the acceptance test. The vendor shall give all documents in computer format.
- 8.3 All the software offered, shall be loaded completely and made functional in all respects before the start of the acceptance test by the vendor. Vendor shall demonstrate all the features of the equipment/software and show that equipment/software is performing as per specified configuration.
- 8.4 The acceptance test which involves running standard vendor tests and/or BHEL tests and the operations of the complete system shall be carried out round the clock for 7 days immediately after completion of installation and documents submission as stated above.

- 8.5 If any equipment fails during the acceptance test for three times, it will be replaced by the vendor and the acceptance test on the replaced equipment shall be performed afresh.

9. Warranty, Maintenance & Support

- 9.1 The vendor shall keep the sufficient spares at site to keep the system downtime at minimum.
- 9.2 The vendor shall provide comprehensive maintenance support on 24x7 hours basis by minimum one resident engineer posted at BHEL Haridwar without payment of extra charges for operations, maintenance and upkeep of system. Normal shift timings will be 7 AM to 4 PM on 6 days working basis, however engineer shall be available on 24x7 basis on emergency call basis. The resident engineer:
- Shall observe BHEL timings and holidays.
 - Shall leave the station only after seeking written permission from BHEL and arranging for proper substitute.
 - Shall have his / her own accommodation, mobile phones, vehicle etc.
- 9.3 Comprehensive maintenance shall include the following:
- 1.1..1. Repair / Replacement of faulty equipment including but not limited to all plastic and/or rubber parts, adapters, batteries etc.
 - 1.1..2. Installation charges
 - 1.1..3. Site inspection charges
 - 1.1..4. Periodic maintenance, wherever required
 - 1.1..5. Cost of Maintenance Engineer(s)
 - 1.1..6. Keeping sufficient spares to maintain the specified uptime.

10. Downtime Penalty

- 10.1. The vendor shall be responsible for optimum uptime of 98% on a quarterly basis. It includes replace / repair of faulty equipment / part without any cost to BHEL. The downtime penalty will be deducted for uptime less than 98% on pro rata basis. Downtime calculation will be applicable for non-availability of all services / equipment arising due of malfunctioning of particular equipment.
- 10.2. If the uptime of a particular equipment/system falls below 90% continuously for 3 months, the equipment/system shall have to be replaced with the new equipment by the vendor without any extra cost to BHEL.
- 10.3. Downtime shall be calculated on the basis of system logs / log book / Complaint System.

11. Risk Purchase

BHEL reserves the right to terminate the order / contract and purchase from elsewhere at the risk and cost of the vendor / lessor, either the whole or part of equipment, which the vendor / lessor has failed to deliver within the stipulated delivery period. The vendor / lessor shall be liable to compensate the BHEL for any loss which BHEL may sustain by reason of such purchase. This clause will be operated only after completion of delivery period including extended period with penalty.

12. Patents & Trademarks

Vendor / lessor shall at all times fully indemnify and keep indemnified the purchaser/lessee (BHEL) against all claims which may be made in respect of systems/ goods/ software supplied by the vendor/lessor, for infringement of any right protected by patent, registration of designs or trademarks and legality of usage of software. In the event of any such claims being made against the purchaser / lessee (BHEL), purchaser / lessee (BHEL) will inform the vendor / lessor who shall at his own cost either settle any such dispute or conduct any litigation that may arise there from.

However vendor / lessor will have no obligation for any claim or infringement arising from third party products not supplied in the order, modifications and technical information / instructions advised by purchaser and use of products prohibited by product manuals.

All such claims will be settled as per Indian laws.

13. New / Better System

During the contract period of this rental agreement, if new / better systems are available and if desired by BHEL, the existing system shall be replaced by the vendor on mutually agreed terms and price.

14. Transfer of Ownership

The transfer of ownership of the equipment which is in efficient working condition and is also decided to be taken over by BHEL shall be automatically in favour of BHEL at the termination of the 5 year lease period on payment of token terminal amount of Re. One only.

15. Arbitration

In all cases of disputes emanating from and in references to this contract, the matter shall be referred to the arbitration. All disputes or differences between the parties will be resolved through arbitration governed by Arbitration & Conciliation Act 1996 as amended from time to time. The venue of arbitration shall be Haridwar only.

16. Jurisdiction

All disputes or differences arising out of, under or in connection with this contract shall be subject to the exclusive jurisdiction of the courts having jurisdiction over BHEL Haridwar.

17. Governing Law

This contract shall be governed in all respects by the Indian law.

18. Force Majeure

Neither BHEL nor the vendor shall be responsible for delays/failures in performance resulting from acts beyond the control of either. Such acts shall include but not limited to acts of God, strikes, lockouts, riots, acts of war, epidemics, and governmental regulations superimposed after the agreement, fire, earthquakes and other such disasters.

19. Termination of Order / Lease Agreement & its Consequences

- 19.1. Lessee will issue a written notice of non-compliance to the vendor / lessor and after a rectification period of one month, termination clauses will be applicable.
- 19.2. Lessee reserves the right to terminate the order / contract, either wholly or in part upon situations arising due to non-compliance of stipulations of the order / contract by the vendor / lessor, at the risk and cost of the vendor / lessor.
- 19.3. Lessee reserves the right to terminate the order/contract or a portion thereof for the contracted Systems/Goods not delivered within the stipulated period, and procure from an alternate source at the risk and cost to the vendor. The vendor shall be liable to the Purchaser/Lessee for any additional costs thereof.
- 19.4. Vendor / lessor shall continue the performance of the order / contract under all circumstances, to the extent not cancelled.
- 19.5. Consequences: As soon as the lease agreement is cancelled / terminated by the lessee, no lease charges will be payable to the lessor for the cancelled part of the agreement. Meaning of "cancelled part" is either undelivered part or delivered but not adhering to our specifications / T & C and vendor is unable to rectify the issue even after rectification period.
- 19.6. **Foreclosure:** In case of foreclosure of the lease agreement in part or full by the BHEL for reasons not attributable to the lessor / vendor, pro-rata compensation will be payable. Compensation will be equivalent to percentage of outright purchase cost and proportionately linked to balance lease period. Ownership of the equipment shall be transferred to BHEL. Notice period of one month shall be given, in case foreclosure clause is exercised.

20. Limitation of Liability

The vendor's / Lessor's liability will be limited to the scope / order value of this contract only.

21. Earnest Money Deposit (EMD)

- 21.1 EMD is to be deposited by vendor as per tender document.
- 21.2 EMD given by unsuccessful tenderers shall be refunded normally within fifteen days of acceptance of award of work by the successful tenderer.
- 21.3 EMD shall not carry any interest.
- 21.4 EMD by the Tenderer will be forfeited as per Tender Documents if:
 - 21.4.1 After opening the tender, the tenderer revokes his tender within the validity period or increases his earlier quoted rates.
 - 21.4.2 The tenderer does not commence the work within the period as per LOI/Contract.
- 21.5 MSEs (Micro and Small Enterprises) are exempted from payment of Earnest Money Deposit (EMD). Note: MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Five years from the date of issue of

acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of CA certificate (format enclosed as per annexure-V where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted Officer.

22. E-Waste Disposal

- 22.1 Vendor shall ensure full compliance to E-waste (Management and Handling) Rules, 2011 for products being supplied to BHEL
- 22.2 Vendor should ensure that either they or the producer of products supplied by them has required authorization from respective State Pollution Control Boards / Pollution Control Committees for implementing EPR (Extended Producer Responsibility) across the concerned state.
- 22.3 Vendor shall manage a system directly or with a help of any professional agency for collection and channelization system of E-waste generated by the end of lifecycle of products supplied by it or whenever BHEL discards these products as E-waste.
- 22.4 Vendor shall arrange for collection of e-waste generated at the end-of-life from BHEL or whenever BHEL discards these products as E-waste and channelize the waste to authorized collection centers or recyclers/dismantlers under E-waste (Management and Handling) Rules, 2011. Also, Vendor shall bear all costs including transportation costs etc. involved in the aforesaid arrangement.
- 22.5 Vendor shall provide the full contact details including helpline number of the authorized collection centers and collection points or their collection mechanism being used by them to BHEL and such information should be periodically updated

23. Acceptance of LOI / Order

Letter of vendor's acceptance of the LOI / Rate Contract is to be submitted within one week of issue date of LOI / Order.

24. Information Security Requirements

BHEL Haridwar has implemented Information Security Management System (ISMS) and has taken certificate for the same based on ISO 27001 standard.

BHEL Information Security Policy is as follows:

"BHEL is committed to ensure Integrity, Confidentiality, Availability and Security of its information at all times for serving the needs of the organization in line with its Vision, Mission & Values while meeting all regulatory requirements."

In line with the ISMS requirements, vendor and its staff shall ensure the protection of BHEL information assets / information processing facilities at all times with respect to confidentiality, integrity and availability.



The vendor / personnel deputed by vendor shall comply with following requirements:

- Personnel deputed by vendor shall follow the ISMS system requirements.
- Personnel deputed by vendor shall present his / her identity proof to BHEL for getting proper authorization from BHEL. He/she shall not enter into BHEL premises without proper authorization.
- Vendor and personnel deputed by vendor shall sign Non-Disclosure Agreement (NDA) in the specified format of BHEL Haridwar.
- When allowed by proper authority, he / she shall work in secure area only in the presence of BHEL staff.
- If he /she has to work on any server / network device in secure area, the work shall only be allowed in presence of system administrator or any other person authorized by ITX.
- He / she shall maintain and service only those equipment which comes under his /her scope of contract.
- Vendor / personnel deputed by vendor shall ensure the return or destruction of information / data at the end of lease agreement and as and when required.
- Access to information assets, which is not explicitly authorized, shall be treated as forbidden.
- Any information security incident and / or security breaches shall be immediately reported to BHEL.
- In case of any violation of the above, it will amount to non-fulfillment of terms & conditions of the contract.

Tender No :HW/ITX/2/1245 Dated:29.12.2014		
Annexure IV - Technical Specifications Compliance Sheet		
Note	1	The vendor shall state in the "Compliance" column Y (yes) or N (no).
	2	Wherever specific values / ratings are desired, the same shall be given by the vendor.
	3	Various features mentioned in technical specifications should be supported in the quoted products at the time of bidding.
	4	All the specifications complied by the bidder should be verifiable through OEM's web site. Also, vendor must ensure that relevant technical brochures for each product specifying the technical features, specifications and ratings are positively enclosed.

1. Technical Specifications of IR IP Bullet Camera (80 nos)			
Sr.No.	Feature	Compliance (Y/N)	Remarks
1	Image Sensor	CMOS/CCD Sensor progressive scan	
2	Minimum Effective Pixels	1280 x 720 pixels	
3	Lens	3.5 – 8.5 mm Vari-focal lens, Auto IRIS	
4	Minimum Electronic Shutter Speed	1/5s to 1/2000 s	
5	Day / Night Mode	Automatic	
6	Min. Illumination	Color: 0.5 Lux @ F1.4 B/W: 0.1 Lux (IR ON)	
7	Minimum IR Beam Dist	20 Meters. Either Built-in IR Illuminator or External IR Illuminator fixed with supplied camera	
8	IR LED Control	Auto	
9	Video Compression	H.264, MJPEG	
10	Frame Rate	1280x720 @ 25 fps down stepping to lower resolutions	
11	Streaming	Simultaneously multi-profile streaming	
12	Supported Protocols	IPv4, IPv6, DNS , HTTP, HTTPS, SMTP, FTP, NTP, DHCP, ARP, UPnP, RTSP, RTP, RTCP, IGMP, ICMP,SNMP	

13	Security	Multilevel user access for multiple user / password protection		
14	Minimum Users	4 simultaneous unicast users for each camera		
15	Ethernet	Minimum 100Base-T auto negotiation, full duplex, Auto MDI/Auto MDI-X		
16	ONVIF	ONVIF Compliant		
17	Event Detection	Intelligent motion detection, camera tampering		
18	Event Actions	File upload via FTP or email; Notification via email		
19	Power Supply/ PoE	IEEE 802.3af As all switches in BHEL Haridwar are Non-PoE switches, so Non PoE to PoE Adapter to be provided Power & Network Connectivity to camera to be provided through PoE Adapter		
20	Connectors	RJ-45 minimum 100Base-TX; 1 alarm input and 1 alarm output		
21	Protection	IP66 Weather-proof, vandal-proof		
22	Operating Temperature	0°C to 50°C		
23	Operating Humidity	15 to 85% non-condensing		
24	Certificate	Either of CE/FCC/UL/EN		

2. Technical Specifications of SERVER & STORAGE (1 nos)

Sr.No.	Feature	Compliance (Y/N)	Remarks
1	Processor		Latest Generation Xeon Processors (Minimum 2 Nos. populated)
2	Power Supply		Dual hot swappable
3	RAM		24GB DDR3
4	OS		Latest Server Class Operating System
5	NIC		4 Nos. Gigabit NIC
6	OS Disk		500GB x 2 Nos in RAID 1 configuration
7	Recording Storage		hot swappable disks in RAID 5 configuration for recording storage for 80 nos. cameras for 7 days at 1280x720 Resolution @25 fps expandable to 160 cameras. Detailed configuration and calculation to be provided for proposed hardware
8	Fans		Dual Hot Swappable fans

9	Ports	VGA, 4 nos. USB, Keyboard, Mouse		
10	Monitor	46 inch LED Monitor with standard cables and connections		
11	Mounting	19" Rack Mount with mounting hardware		
12	Optical drive	RW DVD		
13	Management	Web-based interface through http/https, Log management and email notification		
14	Client OS Support	Latest windows OS, Windows 8 (32-bit/64-bit), Windows 7 (32-bit/64-bit), Windows Server 2012, Windows Server 2008 R2, Windows Server 2008		

3. Technical Specifications of CAMERA MANAGEMENT SOFTWARE (1 nos)

Sr.No.	Feature	Compliance (Y/N)	Remarks
1	The Platform should have Megapixel camera support.		
2	The platform should be able to support fixed as well as PTZ cameras.		
3	The platform shall be triplex i.e. it should provide facility of Viewing, Recording & Replay simultaneously.		
4	The Platform should support replay controls: play & pause & shuttle.		
5	The Platform should support Uniform interface to configure and manage video		
6	The Platform should support Events classified by types and secure levels for easy searching		
7	The Platform should support BMP, JPEG and MPEG format		
8	The Platform should support Management of user privileges one at a time or through common profiles		
9	The Platform should Maintain database of all system functions for report out by request including devices error, alarms, and user actions		
10	The Platform should support Preprogramming for quick response to various emergency		
11	The platform should have Powerful management system to link video for actions when emergency happens		
12	The platform should support full control of CCTV keyboard		
13	The platform should have centralized management architecture		
14	The platform should be able manage minimum 160 video channels from IP cameras for recording.		

15	The platform Should have the capability to record and playback various compression devices including MPEG-4, H.264 and MJPEG video streams along with audio		
16	System should be scalable so that increase in the number of cameras; number of servers & number of Clients should not affect the currently running system operations & functionality.		
17	Software should be ONVIF compliant so that it can integrate with multiple digital IP cameras, multiple network video recording devices etc.		
18	Necessary license for operating 80 cameras which may be expandable up to 160 cameras. Minimum license for 25 users for simultaneous playback, live viewing & recordings		
19	Managing multiple user operations of attached recording devices simultaneously which includes live viewing, recording, playback, and handling the exchange of data between the server and a remote workstation.		
20	System should receive alarms & events from multiple video, access and alarm devices. It should provide capability of Alarm & event viewing, management, popup, email trigger due to alarm etc.		
21	Log Report should be used to search the device alarm events, device operations, user login, and web operation. It should also be used to set queries to get results quickly. Log reports should be exported in Text, CSV, Excel file formats.		
22	System should manage investigation, post-recording motion detection, motion detection-based recording, and alarm based recording and search tools with advanced search capabilities of the recording. The search facility should include search based on date and time, device type, trigger type, alarm, user, location and site.		
23	System should provide multi-level user access rights for viewing and managing access to the recorder functions.		
24	System should support tamperproof recording modes of continuous, scheduled, manual, event and alarm-based recording. System should be able to export recordings to standard video formats. Exported recordings should be able to play on any PC. Should allow the user to initiate recording through GUI of client PC.		

25	Facility of camera recording in real-time mode (25 fps or lower selectable) must be available in the system. Facility of Camera recording in CIF, 2CIF, 4 CIF as well as in any combination i.e. any camera can be recorded in any quality – Selective or Group of cameras must be available in the system.		
26	All camera recordings shall have Camera ID & location/area of recording as well as date/time stamp. Camera ID, Location/Area of recording & date/time shall be programmable by the system administrator with User ID & Password.		
27	VIDEO Software should provide at least 25 Client licenses as inbuilt. System should provide unified login to users. User should be able to login from any PC loaded with VIDEO-Software application. Software should be integrated with Active Directory so that users should have the option of login through active directory. Client software for Latest windows client OS, Windows 8/7 including licenses.		
28	The administrator should be able to add, edit & delete users with rights. It shall be possible to view ability / rights of each user or the cameras which can be viewed & controlled as per the permission assigned by the administrator. It should be able integrate with Active Directory.		
29	System should provide the watermarking facility for tamper proofing of video data so that they can used on a later date as evidence.		
30	System Should be able to backup & restore system configuration and license information for faster recovery of system in case of disaster.		
31	video viewing screen should be capable of showing 1, 4, 9, 16 and other customized split layout of live streaming		
32	System should provide user the capability of configuring and running video patrol sequences to automatically play videos of multiple channels in specified windows by turns. A patrol should include several scenarios and a scenario includes several video channels.		
33	System should Capable of capturing snapshot of live video and allowing user to export snapshot. Snapshot tool should be available in video window itself. Only the authorized users should have snapshot functionality.		
34	System should be able to playback recorded video. Different playback modes should be there as 1x, 2x, 4x, 8x, 16x, 1/2x, 1/4x, 1/8x, 1/16x speeds, frame by frame and backward playback.		



4. Technical Specifications of UTP Cable			
Sr. No.	Feature	Compliance (Y/N)	Remarks
1	4 Pair Cat 6, 23 AWG UTP Cable (Amp/Dlink/Molex/Panduit/Systimax/Avaya)		

5. Technical Specifications of PVC Pipe			
Sr. No.	Feature	Compliance (Y/N)	Remarks
1	1" PVC Pipe, Medium Strength. ISI Mark		

6. Technical Specifications of MS Pipe			
Sr. No.	Feature	Compliance (Y/N)	Remarks
1	1" MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm		

Certificate by Chartered Accountant on letter head

This is to Certify that M/S,
(hereinafter referred to as 'company') having its registered office at
....., is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

Tender No : HW/ITX/2/1245 Dated : 29.12.2014								
Annexure -VI Price Bid Sheet								
1	The lease charges are to be quoted for financial lease for 60 months, payable at the end of each quarter for 20 quarters.							
2	Total Quarterly Lease Charges (at column H) shall include Total Quarterly Equipment Cost, Installation charges, Insurance, Total Quarterly Maintenance Charges, Total Quarterly Interest Charges, etc.							
3	The comparative statement will be on total quarterly lease charges (Total of column H) plus taxes x 20 quarters. All taxes except service tax will be loaded in comparative statement to arrive at "LANDED COST TO BHEL"							
4	Lease/RTU tax and service tax on maintenance or any other service will be paid extra. Vendor will clearly mention lease/RTU tax and service tax payable on various heads.							
5	The outright purchase value of each unit shall be 20 times of column D. Equipment cost at column D should also include installation charges.							
6	Payment on account of cables and pipes shall be made on actual consumption basis, however for comparative statement, quantities under various heads have been mentioned.							
7	All values are to be quoted in Indian Rupees.							
Sl. No.	Item Description	Unit	Qty	Per Quarter Lease Charges for UNIT Quantity				Per Quarter Lease Charges (Excluding Taxes) for Total Quantity
				Towards Equipment Cost Excluding Lease/RTU Taxes	Towards Maintenance (Excluding Service Tax)	Incidental Like Interest on Capital (Excluding Taxes)	Per Quarter Lease Charges (Excluding Taxes)	
A	B		C	D	E	F	G = D + E + F	H = C x G
	Active Components							
1	IP IR Bullet Camera	Nos.	80					
2	Server/Storage	Nos.	1					
3	Camera Management Software	Nos.	1					
	Passive Components							
4	UTP CABLE	METERS	4800					
5	1" PVC PIPE	METERS	1980					



6	1" MS PIPE	METERS	2820					
7	Fixing of PVC Pipes on Walls	METERS	1980					
8	Fixing of MS Pipes on steel columns / Beams / Walls	METERS	2820					
9	Laying and Termination of UTP in PVC/MS Pipes	METERS	4800					

Note: Taxes in Percentages on Equipment, Maintenance & Incidental Like Interest on Capital and/or wherever applicable to be mentioned clearly here.

1	Taxes on Column D	
2	Taxes on Column E	
3	Taxes on Column F	