

HLL Biotech Limited
(A Government of India Enterprise)
(A Subsidiary of HLL Lifecare Limited)
Corporate identity number of HBL: U24290KL2012GOI030732 dtd 12.3.12

BID REF No: HBL/IVC/LTE/LVS PHASE II/001/17-18 dated 02.02.2018

LIMITED TENDER ENQUIRY FOR SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF LOW VOLTAGE SYSTEM OF PHASE II BLOCKS AT INTEGRATED VACCINE COMPLEX, CHENGALPATTU

INTRODUCTION OF THE COMPANY

HLL Biotech Limited (HBL) was incorporated as a subsidiary of HLL Lifecare Ltd, a Government of India Enterprise under the Ministry of Health and Family Welfare, Government of India. HBL is conceived to take the lead role in providing products, services and assistance in achieving our country's goals in immunization and eradication of deadly diseases.

HBL is setting up an Integrated Vaccine Complex (IVC) at Chengalpattu, an emerging industrial hub in the southern tip of Tamilnadu state. Project outlay for IVC is Rs 6.00 Billion and 75% of the products & services will be designed to meet the targets of the Universal Immunization Policy (UIP) of the country.

This project has been declared as a "Project of National Importance" by the Government of India.

SCOPE OF WORK

The scope of work is **the Supply, Installation, Testing and Commissioning of Low Voltage System of Phase II Blocks at IVC, Chengalpattu as per the Bill of Quantities (BOQ) given in the Tender Document.**

The work has to be done by the supplier at **Integrated Vaccines Complex, SF No 192 & 195, Thirumani Village, Chengalpattu– 603001 Tamilnadu, India.**

Details regarding important dates are as follows:

S No	Description	Schedule
i.	Pre Bid Meeting Date & Time	12-02-2017 at 11:00 HRS
ii.	Pre Bid Meeting Venue	HLL BIOTECH LIMITED, INTEGRATED VACCINES COMPLEX, SF NO 192 & 195, THIRUMANI VILLAGE,CHENGALPATTU- 603003, TAMILNADU
iii.	Closing date & time for receipt of Tender	23-02-2018, 15:00 Hrs
iv.	Time and date of opening of Technical Bids	23-02-2018, 15.30 Hrs
v.	Venue of Opening of Techno Commercial Bids	HLL BIOTECH LIMITED, INTEGRATED VACCINES COMPLEX, SF NO 192 & 195, THIRUMANI VILLAGE,CHENGALPATTU- 603003, TAMILNADU

Interested parties may visit www.hllbiotech.com / www.lifecarehll.com to download the Tender enquiry document. Subsequent amendments/ addendum if any will be published in this websites; the parties are advised to visit the website regularly for updates.

1. Instruction to Bidders

1.1 The bid is invited for **Supply, Installation, Testing and Commissioning of Low Voltage System of Phase II Blocks at IVC, Chengalpattu as per the Bill of Quantities given in the Tender Document** as per technical specification and other details given in the bid document. All bidders who qualify the eligibility conditions as detailed in the bid document are eligible to participate except in the case of firms who are blacklisted / barred by competent agencies or HLL in participation and award of such contracts.

1.2 The Tender seeks quotation following Two Tender System, in two parts. First part will be known as '**Technical Bid**', and the second part known as '**Price Bid**'. Tenderer shall seal 'Technical Bid' and 'Price Bid' separately and covers will be suitably super scribed. Both these sealed covers shall be put in a bigger cover and sealed.

1.3 Non-Refundable Tender Fee of Rs. 1050/- (inclusive of GST) and EMD amount shall be submitted along with the technical bid.

1.4 Due date of submission of the bid will be on **23.02.2018 upto 15:00 Hrs.** The technical bid will be opened on the same day at **15:30 hrs.** The financial bid of only those bidders who are qualifying the minimum eligibility criteria & technical specification will be opened. The date & time of financial bid opening shall be intimated separately to the technically qualified parties.

1.5 Bids shall be valid for 120 days from the date of technical bid opening.

1.6 The bids should contain complete technical specification of the tender

1 Mode of submission of Bids

1.1 EMD Amount shall be submitted as per the details are given below:

SL No	Description	EMD Amount In Rs.
1	Supply, Installation, Testing and Commissioning of Low Voltage System of Phase II Blocks at IVC, Chengalpattu	₹ 15,000

- The earnest money deposit (EMD) shall be furnished in one of the following forms:
Account Payee Demand Draft or Bank Guarantee
- The demand draft shall be drawn on any commercial bank in India in favour of the **“HLL Biotech Limited” payable at Chennai.** If the EMD is in the form of bank guarantee, the same is to be provided from any scheduled commercial bank in India or in the case of foreign tenderer, the same should be routed through a Nationalized Indian Bank as per the format specified under **Annexure-V** of this tender.
- The earnest money shall be valid for a period of forty-five (45) days beyond the validity period of the tender.

**DOCUMENTS TO BE SUBMITTED ALONG WITH THE TECHNICAL BID, DULY SEALED
AND SIGNED**

- a. **Annexure : I** (Technical Specifications)
- b. **Annexure : II** (Bid Data sheet)
- c. **Annexure: III** (Past experience, including Performance Certificate from clients). All other supporting documents (mentioned in clause 3) and certificates substantiating the bidder's eligibility shall be attached.
- d. **Annexure: IV** (Bid form)
- e. **Annexure : V** (Bank Guarantee Form for EMD)

**DOCUMENTS TO BE SUBMITTED ALONG WITH THE PRICE BID
& DULY SEALED AND SIGNED**

- a. **Annexure : VII** (Bill of Quantity)
- b. Copy of the Bid Form

Price Bid

The price bid should be put in a separate envelope, sealed and marked "**Price Bid**". The price bid should contain the following:

- a. **Copy of the Bid Form**
- b. **The vendor should quote it prices as per the BOQ attached as Annexure-VII.**

The quoted price should be also inclusive of Customs Charges, Taxes, Freight, Packaging Charges, Insurance, documents & FOR delivery at consignee site and is firm and fixed till completion of the work

The bids shall be enclosed in a sealed envelope super scribing "**Supply, Installation, Testing & Commissioning of Low Voltage System of Phase II Blocks, Tender Ref No. HBL/IVC/LTE/LVS PHASE II/001/17-18 dated 02.02.2018**" and shall be addressed to:

**The Chief Executive Officer,
Integrated Vaccines Complex,
SF No 192 & 195, Thirumani Village,
Chengalpattu– 603001 Tamilnadu, India**

Email: ravindra.s@hllbiotech.com / sureshs@hllbiotech.com

Any bid received after the stipulated time period shall be considered as late tender and will be rejected.

2 Minimum Eligibility Criteria

1. Bidders shall be a manufacturer or an authorized dealer/agent of the original equipment manufacturer.

2 The bidder should have successfully supplied and installed similar low voltage system works during the last five years ending 31/12/2017,

(Copy of Work Order / Purchase Order (WO / PO) to be attached as detailed below).

a) One Work Order / Purchase Order costing not less than the amount equal to
Rs. 5, 70,000/- (Rupees Five Lakhs Seventy Thousand Only)

(Or)

b) Two Work Orders / Purchase Orders costing not less than the amount equal to
Rs. 3, 56,000/- (Rupees Three Lakhs Fifty Six Thousand Only)

(Or)

c) Three Work Orders / Purchase Orders costing not less than the amount equal to
Rs. 2, 85,000/- (Rupees Two Lakhs Eighty Five Thousand Only)

3. The balance sheet, profit and loss account for last three financial years (FY 2014-15, FY 2015-16, FY 2016-17) ending 31st March'17 certified by a Chartered Accountant shall be submitted.

4. Average Annual Financial Turnover of the Company must be minimum of Rs. 2,15,000/- during the last three financial years (FY 2014-15, FY 2015-16, FY 2016-17) ending 31st March'17 certified by a Chartered Accountant shall be submitted.

3 Country of Origin

3.1 All goods and services to be supplied and provided for the contract shall have the origin in India or in the countries with which the Government of India has trade relations.

3.2 The word “origin” incorporated in this clause means the place from where the goods are manufactured, produced or processed or from where the services are arranged.

4. Bid Evaluation

Bid determined to be substantially responsive will be checked by HBL for any arithmetic errors and the same will be corrected as follows:

- a. Where there is a discrepancy between the rates in figures and in words, the rates in words will prevail.
- b. Where there is a discrepancy between the unit price and the total price resulting from the multiplying the unit price by the quantity, the unit price as quoted shall prevail.
- c. The tenderer supplying indigenous goods or already imported goods shall quote only in Indian Rupees.

5. Tender Price & Documents

- For domestic goods or goods of foreign origin located within India, the price of the goods should be quoted on **FOR IVC, Chengalpattu basis** with the detailed breakup of the price along with applicable tax of GST
- Charges towards Packing & Forwarding, Inland Transportation, Insurance (local transportation and storage) would be borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery, Loading/Unloading and other local costs incidental to delivery of the goods to their final destination as specified in the List of Requirements and Price Schedule.

FOR IVC, Chengalpattu price will be considered for comparison and evaluation.

6. Distribution of Dispatch Documents for Clearance/Receipt of Goods

The supplier shall send all the relevant despatch documents well in time to the Purchaser/Consignee, to enable the Purchaser/Consignee clear or receive (as the case may be) the goods in terms of the contract.

The usual documents involved and the drill to be followed in general for this purpose are as follows.

Within 24 hours of despatch, the supplier shall notify the purchaser/consignee, and others concerned if mentioned in the contract, the complete details of despatch and also supply the following documents to be submitted as per the instruction of purchaser:

- I. Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount.
- II. Two copies of packing list identifying contents of each package.
- III. Inspection certificate issued by the nominated Inspection agency, if any.
- IV. Certificate of origin.
- V. Insurance Certificate
- VI. Manufacturers/Supplier's warranty certificate & In-house inspection certificate.

7. Exemptions/Forms

HBL will not be giving any duty exemption.

8. Rejection of bids

Notwithstanding the above conditions, HBL reserves the right to accept or reject any offer, and to annul the tender process and reject all offers, at any time prior to award of Contract without thereby incurring any liability to the affected Bidder or Bidders or any obligations to inform the affected Bidder or Bidders of the grounds for HBL's action.

9. Notification of Award

- 9.1 Prior to the expiry of the period of offer validity prescribed by HBL, HBL will notify the successful Bidder by Tele-fax or e-mail, to be confirmed in writing by registered post/ by courier, that his offer has been accepted. The purchase order will be issued to the

successful bidder. No correspondence will be entertained by HBL from the unsuccessful Bidders.

- 9.2 Upon selection of the successful bidder (technically qualified L1 party) HBL will promptly notify the same to successful Bidder through a Purchase Order.
- 9.3 EMD's of unsuccessful bidders will be returned only after finalizing the L1 Party and EMD's of technically non-responsive bidders will be returned after financial bid opening.

TERMS AND CONDITIONS

1. DEFINITION:

- 1.1 For the purpose of this contract, the following words and expressions shall have the meaning hereby assigned to them except where the context otherwise requires:-
- i. "HBL" means HLL Biotech Limited, which expression shall unless excluded by or repugnant to the context include HBL's representative.
 - ii. "Contractor/ Bidder" Means successful lowest bidder.
 - iii. "Earnest Money Deposit" (EMD) means Bid Security/ monetary or financial guarantee to be furnished by a tenderer along with its tender.
 - iv. "Performance Security" means monetary or financial guarantee to be furnished by the successful tenderer for due performance of the contract placed on it. Performance Security is also known as Security Deposit.
 - v. "Consignee" means the organization/person to whom the goods are required to be delivered as specified in the Contract. If the goods are required to be delivered to a person as an interim consignee for the purpose of dispatch to another person as provided in the Contract then that "another" person is the consignee, also known as ultimate consignee.

2. PAYMENT SCHEDULE:

Payment shall be made within 15 days from the date of submission of invoice as specified in the contract in the following manner:

2.1 Payment Schedule for Purchase Order

Payment shall be made as specified in the contract in the following manner:

Sl. No.	Stage	%
1	Advance against ABG (as mentioned beneath)	10% of the order value
2	On Supply of material at site duly certified by HBL representative	60% of the order value
3	On completion of Installation, commissioning & On Final acceptance, receipt of Handing over Certificate duly certified by HBL representative	30% of the order value

For Payment Terms under SI. No: 1

An advance of 10% of the contract value shall be released against Bank guarantee equivalent to 110% of the advance amount and submission of 5 % of the contract value as Security Deposit/ Performance Security in the form of Bank Guarantee from any scheduled commercial bank. The advance bank guarantee shall be valid for a period up to the completion of the contract

2.2 Payment Schedule for Service Order

Payment shall be made as specified in the contract in the following manner:

Sl. No	Stage	%
1	On completion of Installation & commissioning duly certified by HBL representative	60% of the order value
3	On Final acceptance and receipt of Handing over Certificate from HBL	40% of the order value

3. TAXES AND OTHER LEVIES

The quoted price shall be inclusive of applicable GST.

4. PERFORMANCE SECURITY

4.1 The successful bidder has to furnish performance guarantee from nationalized / scheduled bank in the form of a bank guarantee (**as per Annexure-VI**) in the name of HLL Biotech Limited on receipt of the purchase order. The performance bank guarantee should be valid for a period of minimum 15 months for **5%** of total contract value has to be submitted within 10 days from the date of Purchase Order. The EMD Paid shall be returned after receipt of Performance Bank Guarantee.

4.2 Failure of the successful Bidder to furnish the required Performance Security shall constitute sufficient grounds for the annulment of the award of Contract and shall forfeit the EMD.

4.3 Forfeiture of Performance Security

In case, the Contractor/ Bidder fails to complete the work, HBL, without prejudice to rights and remedies available under the contract, shall forfeit and en-cash the Performance Guarantee.

- 4.4 In case, the bank goes in liquidation or for any reason is unable to make payment against the said Bank Guarantee, the loss caused thereby shall be borne by the Contractor/ Bidder. The Contractor/ Bidder forthwith, on demand from HBL, shall make good the deficit.

5. ADDITIONS/DELETIONS

- 5.1 HBL shall have the right to direct in writing for changes, additions, modifications or deletions in the design and drawings or any part of the work and to request in writing additional work in connection therewith and the Contractor/ Bidder shall comply with such directions.
- 5.2 The Contractor/ Bidder shall not make any deviations, alterations, additions, to or omissions from the work shown/described and awarded to the Contractor/ Bidder except through and with proper approval of HBL.

6. TIME SCHEDULE

- 6.1. The day of commencement of project will be reckoned from the date of issue of Purchase order.
- 6.2 **The material shall be delivered at site within 15 days from the date of issue of purchase order. The material shall be installed and commissioned within 2 months from the date of issue of Service Order.**
- 6.3 The Final Acceptance Certificate shall be issued on completion of the entire scope of work by the vendor.
- 6.3 The supply and installation shall be carried out with all due diligence and as per the time schedule specified above. In case of any delay/default, of the Contractor/ Bidder to adhere to the agreed time schedule, HBL shall recover the liquidated damages from the Contractor/ Bidder at the rate of 0.5% (Zero point Five percent) of the total amount of fee per week of delay of any activity subject to a maximum of 5% (Five percent) of the total order value. However if there is a purposeful delay by the Contractor/ Bidder, HBL reserves all rights to terminate the contract and get the full work executed at his

risk and cost.

7. EXTENSION OF TIME

- 7.1 To adhere to the above mentioned time schedule the Contractor/ Bidder shall provide on demand necessary documents, information and certificates/undertakings to HBL. Any delay in supplying the requisite documents and delay due to any other cause beyond the control of the Contractor/ Bidder shall be considered for grant of extension of time. If the Contractor/ Bidder require extension of time, they shall intimate in writing to HBL within 3 days of the occurrence of such hindrance/delay, along with proper documents.
- 7.2 HBL after satisfying itself about the reasonableness of grounds may grant extension of time, if it is justified and communicated the same in writing. Whenever such extension of time is granted, it would be without prejudice to the rights of HBL for any penal action to the extent of the delay attributable to the Contractor/ Bidder. Any extension of time granted as stated above shall neither entitle the Contractor/ Bidder to any claim for increase in their fees nor shall it release him from any of the obligations under the said agreement.

8. ABANDONMENT OF WORK

- 8.1 If the Contractor/ Bidder/ supplier abandons the work for any reason whatsoever or becomes incapacitated as aforesaid, HBL shall forfeit/en-cash the Performance Guarantee. HBL shall be at liberty to make full use of all or any of material supplied by the Contractor/ Bidder/ supplier. The Contractor/ Bidder/ supplier shall also be liable to refund all the charges paid to him up to date plus such damages as may be assessed by HBL including the recovery of liquidated damages.
- 8.2 Provided, however, that in the event of the termination of the agreement under proper notice as provided in the clause hereinafter, the Contractor/ Bidder shall be liable to refund any excess payment made to him over and above which is due to him in accordance with the terms of this agreement, for the work executed by him till the date of termination of agreement.

9. Warranty

- 9.1 The bidder shall give warranty of all the equipment for a period of **minimum one year** from the date of final acceptance certificate from HBL. HBL shall grant right of access to the Contractor/ Bidder, of this portion of the work claimed to be defective for inspection and rectification.
- 9.2 HBL may recover the loss from the dues of the Contractor/ Bidder in case of failure to comply with the above clause.

10. DETERMINATION AND RESCISSION OF TERMS & CONDITIONS

- 10.1. When the Contractor/ Bidder have made himself liable for action under any of the clauses aforesaid, HBL shall have powers:
- To rescind the agreement.
 - To engage another Contractor/ Bidder to carry out the balance work debiting the Contractor/ Bidder the extra amount, if any, so spent for getting the balance work done. This amount would be in addition to the recovery of liquidated damages.

11. GENERAL

- 11.1 The Contractor/ Bidder shall be fully responsible for the technical soundness of the material and also ensure that the material is supplied as per the specifications.
- 11.2 The Contractor/ Bidder hereby agrees that the charges to be paid as provided herein (clause 3) will be in full discharge of functions to be performed by him and no claim whatsoever shall be made against HBL in respect of any proprietary rights or copy right on the part of any other party relating to plans, models and drawings.
- 11.3 The Contractor/ Bidder shall indemnify and keep indemnified HLL Biotech Ltd against any such claims and all costs and expenses paid by HBL in defending such claims to be borne by the Contractor/ Bidder.
- 11.4 The Contractor/ Bidder hereby agrees that HBL shall have the right to take out any of the activities, which in the opinion of HBL is not being performed by the Contractor/ Bidder with due diligence, and within the agreed time schedule, and which can be performed independently. The fees or the expenses incurred shall be debited to the Contractor/ Bidder.

12. ARBITRATION

12.1 If any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives at any time in connection with construction, meaning, operation, effect, interpretation or out of the contract or breach thereof, the parties shall seek to resolve such a dispute or difference by mutual consultation within a period of 30 days from the date on which the party raising the dispute, first communicated the same in writing to the other party. The existing directions, classifications, measurements, drawings and certificates of the Employer shall be final and binding upon the contractor during the progress of the works and shall not be set aside on account of non-observance of any formality, any omission, delay or error in proceeding in or about the same or on any other ground or for any reason. In case the dispute is not settled by mutual consultation, then either party may refer the same to Arbitration by an Arbitral Tribunal consisting of three arbitrators. Each party shall appoint an arbitrator and the arbitrators so appointed shall appoint a third arbitrator who will act as presiding arbitrator.

The reference to arbitrator shall specify the matters which are in question, dispute or difference and only such dispute or differences of which the demand has been made be referred to arbitration. Notwithstanding the reference to arbitration, the contractor shall continue to duly perform his obligations under the contract.

The Award of the Arbitral Tribunal shall be final, conclusive and binding on the parties. The Arbitration shall be conducted in accordance with the provisions of Arbitration and Conciliation Act, 1996. The venue of the arbitration shall be at Chennai. The fees of the arbitrators shall be borne by the parties nominating them and the fee of the Presiding Arbitrator, costs and other expenses incidental to the arbitration proceedings shall be borne equally by the parties

12.2 The place of arbitration shall be at **Chennai**.

13. FALL CLAUSE

The prices charged for this particular service/supply under the Contract by the supplier/service provider shall in no event exceed the lowest price at which the supplier/service provider sells the service/supply of identical description to any person(s)/organization (s) including the Purchaser or any Department of the Central

Government or any Department of a State Government or any statutory undertaking of the Central or a State Government, as the case may be, during the period till performance of all Supply Orders placed during the currency of Rate Contract is completed.

14. STATUTORY VARIATIONS

Any variation in statutory levies/taxes within the contractual delivery period shall be to HBL's account subject to production of documentary evidence and Govt. notifications by the Supplier & beyond contractual delivery period, upward variation shall be to Supplier's account. Unit Prices quoted by the bidder shall be firm and valid, irrespective of any statutory variations in Taxes/levies. In case any taxes, duties are not clearly specified in price bid then it will be presumed that no such tax/levy is applicable or payable. Blank field in Price Bid shall be treated as 'Inclusive' in the quoted price.

ANNEXURE-I

TECHNICAL SPECIFICATIONS

A. 2.3.6.1 SCOPE OF SERVICES:-

- a) DESIGN, ENGINEERING, SUPPLY, TRANSPORTATION, TESTING, INSTALLATION & ERECTION AND COMMISSIONING OF IT SYSTEMS FOR SUCCESSFUL AND SATISFACTORY OPERATIONS AS PER REQUIREMENT.
- b) THE ITEMS OF WORK TO BE PERFORMED ON ALL CONSUMABLE ITEMS AND MATERIALS SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING:
 - SUPPLY, TRANSPORTING, RECEIVING, UNLOADING AND STORAGE AT SITE, IF STORE IS NOT READY CONTRACTOR SHALL UNLOAD AT INTERMEDIATE STORE AT SITE AND RE-SHIFTING TO ACTUAL PLACE OF INSTALLATION.
 - OPENING, INSPECTING AND REPORTING ALL DAMAGES & SHORT SUPPLY ITEMS IN PRESENCE OF ENGINEER IN-CHARGE.
 - ARRANGING TO RE-ORDER ALL DAMAGED AND SHORT SUPPLY ITEMS.
 - STORING FACILITY AT SITE WITH SUITABLE (ALL) WEATHER PROTECTION IN CONTACTOR SCOPE.
 - ASSEMBLIES, ERECTION AND COMPLETE INSTALLATION.
 - NECESSARY COORDINATION REQUIRED WITH WORKS DONE BY PURCHASER/OTHER CONTRACTOR.
 - PERFORMANCE GUARANTEES FOR 1 YEAR, DURING PG PERIOD, RECTIFICATION OF DEFECTS, IF ANY AND ADJUSTMENTS AS NECESSARY.
 - OBTAINING PURCHASER/CONSULTANT'S WRITTEN ACCEPTANCE OF SATISFACTORY PERFORMANCE.

2.3.6.1.1 TECHNICAL SPECIFICATION

2.3.6.1.1.1 VOICE AND DATA OUTLETS (OUTLET :-RJ45)

➤ OUTLETS AND ACCESSORIES

- a. CRCA BOX SHALL BE CONCEALED/SURFACE TYPE SHALL BE MADE OUT FROM METAL SHEET ENCLOSURE GALVANIZED – PREVENT FROM RUSTING, TOP, BOTTOM AND BACK SIDE KNOCK OUT FOR CONDUIT ENTRY FROM ANY DIRECTION . POSSIBLE TO BREAK OPEN KNOCK OUT WITHOUT ANY SPECIAL TOOL , SLIDING CLAMP FOR VERTICAL ADJUSTMENT , ADJUSTMENT BRACKET ARE TAPED TO PREVENT CEMENT INGRESS.
- b. CRCA BOX MINIMUM WALL THICKNESS SHALL BE 1.6 MM IN ALL SIDES EXCEPT IN THE FRONT.

- c. DEPTH OF BOXES SHALL NOT BE MORE THAN 47 MM
- d. THE BOXES SHALL BE PROVIDED WITH SUITABLE EARTHING SCREW/STUDS AND NO WELDING SPOT, FREE FROM THE RUST
- e. METAL FLUSH BOXES SHALL BE OF 1//3/4/6/8/12 MODULE AS PER SCHEDULE
- f. GENERAL DATA AND VOICE OUTLETS SHALL BE OF A RJ45 AND SHALL BE FLUSH MOUNTING MODULAR TYPE
- g. OUTLETS SHALL CONFORMS TO THE STANDARDS ISO11801 ED 2.0, EN 50173 & EIA / TIA 568- B1
- h. EASILY IDENTIFIABLE CONNECTOR: SEPARATE COLOUR FOR CAT6A AND CAT7
- i. INSULATION DISPLACEMENT CONTACT (IDC) :TOOL-FREE CONNECTION (SELF-STRIPPING CONNECTION) SHOULD HOLDS WIRES IN PLACE BY LOCKING THE LEVER, SHOULD ENSURE EASY UNTWISTING OF PAIRS FOR LESS THAN 13MM.
- j. POSSIBILITY OF REMAKING THE CONNECTION IF A MISTAKE IS MADE BY SIMPLY UNCLIPPING
- k. VISIBILITY OF THE CONNECTION
- l. COLOUR CODE AS PER EIA / TIA568A & B TO AVOID WIRING MISTAKES AND COLOUR OF THE OUTLETS SHALL BE IN WHITE COLOUR OR AS PER PURCHASER APPROVED COLOUR
- m. CABLE CAN BE FED FROM ANY DIRECTION
- n. GENERAL DATA OUTLETS SHALL BE OF A RJ45 AND SHALL BE FLUSH MOUNTING MODULAR TYPE
- o. COLOUR OF THE DATA OUTLETS SHALL BE IN WHITE COLOUR OR AS PER PURCHASER APPROVED COLOUR
- p. MODULAR PLATE SHALL HAVE SUPERIOR FINISH, SCREWLESS CURVED LOOK, SUPPORTED BY METAL FRAME BEHIND
FOR SOLID STRENGTH, SHALL POSSIBLE TO ADJUST IN HORIZONTAL OR VERTICAL DIRECTIONS, WHEN FLUSH IS TILTED
- q. MODULAR PLATE SHALL BE SUPPLIED WITH 30MM LONG SCREWS FOR PERFECT FIXING IF WALL BOX IS OVER FLUSHED.
- r. MODULAR PLATE SHALL BE MADE OF FROM HIGH GRADE POLYCARBONATE MATERIAL, CURVED SMOOTH FINISH
SCREWLESS APPEARANCE AND NO ACCUMULATION OF DUST.
- s. MODULAR PLATE SHALL BE OF 1 / 2 MODULE AS PER SCHEDULE.
- t. DATA AND VOICE OUTLETS SHALL HAVE INTEGRAL POLY CARBONATE MOUNTING PLATES OF MINIMUM 4.5 MM THICK AND OUTER PLATES SHALL BE SS 304 MATT FINISH OF MIN. 1.6 MM THICK. FOR CLEAN ROOM AREA AND POLY CARBONATE PLATES OF MINIMUM 4.5 MM THICKNESS FOR NON-CLEAN ROOM AREA.

2.3.6.1.1.2 TELEPHONE CABLES (CAT6/6A)

- a. ALL TELEPHONE CONDUCTORS SHALL BE HALOGEN FREE LSZH INSULATED 4PAIR CAT6 OR CAT6A CABLE.
- b. TELEPHONE CABLE WILL BE THE SAME AS THE DATA CABLE WITH 4 TWISTED PAIRS 100 Ω
- c. THE MAXIMUM LENGTH OF THE TELEPHONE CABLE WILL BE 305M.
- d. TELEPHONE CABLE SHALL CONFORMING TO THE STANDARDS ISO 11801 ED 2.0, EN50173 AND EIA/TIA 568-B
- e. TELEPHONE CABLE SHALL HAVE EIA/TIA COLOUR CODE AND PVC SHEATH AND PVC SLEEVE SHALL BE FAME RETARDANT
- f. TELEPHONE CONDUCTORS SHALL BE IN COLOURS FOR EASY IDENTIFICATION OF PAIRS.
- g. DATA CABLE COLOUR SHALL BE LUMINOUS YELLOW RAL 1026
- h. THE DISTRIBUTION TELEPHONE WIRE SHALL BE IN SEALED COILS IN STANDARD LENGTHS AND SHALL BEAR MANUFACTURER'S TRADE MARK, NAME, NOS. OF PAIRS ETC.

SR. NO.	SIZE OF WIRE	STANDARD LENGTH
1.	4 TWISTED PAIR 100 Ω CAT6 / 6A CABLES. SAME CABLES AS THE DATA CABLES.	305 METER

- i. FOR FLAME PROOF AREA THE CABLE SHOULD BE LOW SMOKE ZERO HALOGEN (LSZH) OR JELLY FILLED ARMOURED CABLE.

2.3.6.1.1.3 TELEPHONE TAG BOX (JUNCTION BOX)

THE TELEPHONE TAG BLOCKS SHALL BE KRONE TYPE, WITH SUITABLE CONNECTORS AS PER DISTRIBUTION SCHEME.

2.3.6.1.1.4 DATA CABLES (CAT6 / CAT 6A)

- a. ALL DATA CONDUCTORS SHALL BE HALOGEN FREE LSZH INSULATED 4PAIR CAT 6 OR CAT 6A.
- b. DATA CABLE SHALL BE WITH 4 TWISTED PAIRS 100 Ω
- c. THE MAXIMUM LENGTH OF THE DATA CABLE WILL BE 305 M.
- d. DATA CABLE SHALL CONFORMING TO THE STANDARDS ISO 11801 ED 2.0, EN50173 AND EIA/TIA 568-B

- e. DATA CABLE SHALL HAVE EIA/TIA COLOUR CODE AND PVC SHEATH AND PVC SLEEVE SHALL BE FAME RETARDANT
- f. DATA CONDUCTORS SHALL BE IN COLOURS FOR EASY IDENTIFICATION OF PAIRS.
- g. DATA CABLE USED FOR COMPUTER SHALL BE SKY BLUE RAL 5015 COLOUR , DATA CABLE USED FOR CCTV//ACCESS CONTROL SYSTEM ETC SHALL BE SILVER GREY RAL 7001
- h. THE DATA WIRE SHALL BE IN SEALED COILS IN STANDARD LENGTHS AND SHALL BEAR MANUFACTURER'S TRADE MARK, NAME, TYPE OF WIRE ETC.

SR.NO.	SIZE OF WIRE	STANDARD LENGTH
1.	CAT6 / CAT6A CABLE	305 METER

2.3.6.1.1.5 PATCH CORDS

- a. PATCH CORD SHALL BE HALOGEN FREE LSZH INSULATED 4PAIR CAT 6 OR CAT 6A CABLE.
- b. PATCH CORD SHALL BE WITH 4 TWISTED PAIRS 100 Ω
- c. PATCH CORD SHALL CONFORMING TO THE STANDARDS ISO 11801 ED 2.0, EN50173 AND EIA/TIA 568-B
- d. PATCH CORD SHALL HAVE EIA/TIA COLOUR CODE AND PVC SHEATH AND PVC SLEEVE SHALL BE FAME RETARDANT
- e. PATCH CORD COLOUR SHALL BE AS PER DATA CABLE FOR PARTICULAR I/Os
- f. PATCH CORD SHALL BE AS PER FOLLOWING:
 - U/UTP – UNSCREENED, IMPEDANCE 100Ω PVC
 - F/UTP – SCREENED, IMPEDANCE 100Ω LSZH
 - SF/UTP – SHIELDED, IMPEDANCE 100Ω LSZH
- g. PATCH CORD SHALL BE IN STANDARD LENGTH 1/2/3 MTR; WITH BOTH SIDE CONNECTOR.

2.3.6.1.1.6 PATCH PANEL

- a. PATCH PANEL SHALL CONFORMS TO THE STANDARDS ISO 11801 ED 2.0, EN 50173 AND EIA / TIA 568-B-1
- b. PATCH PANEL SHALL HAVE AUTOMATIC PANEL EARTHING OF EACH CONNECTOR FOR FTP AND STP SUPPLIED WITH SCREWS
- c. PATCH PANEL SHALL HAVE CAPACITY OF 24 / 48 CONNECTORS

- d. PATCH PANEL CAN ALSO RECEIVE OPTICAL FIBER BLOCKS OR OPTIC FIBER TO COPPER CONVERTER
- e. IT SHALL HAVE FACILITY TO TERMINATE MULTIPLE MEDIA COPPER / FIBER ON THE SAME PANEL
- f. TOTALLY ACCESSIBLE: WIRING IS DONE AT THE FRONT AFTER ASSEMBLY OF THE PATCH PANELS
- g. IT SHALL HAVE SIMPLICITY OF CONNECTION WITH THE RJ45 CONNECTOR

2.3.6.1.1.7 OFC CABLE

THIS SPECIFICATION COVERS THE DESIGN, MANUFACTURE, TESTING AND INSTALLATION OF SINGLE MODE OPTICAL FIBRE CABLES - OS2, ACCESSORIES AND TERMINATION FACILITIES.

THE OPTICAL FIBER CABLES SHALL BE DESIGNED, MANUFACTURED AND TESTED IN ACCORDANCE WITH THE LATEST APPLICABLE SECTIONS OF THE IEC AND ITU STANDARDS LISTED BELOW. CABLES MANUFACTURED IN INDIA SHALL BE DESIGNED, MANUFACTURED AND TESTED IN ACCORDANCE WITH EITHER THE QUOTED CODES OR THEIR EQUIVALENT IS STANDARDS. APPROPRIATE NATIONAL STANDARDS SHALL BE USED WHERE RELEVANT.

2.3.6.1.1.8 IEC STANDARD

STANDARDS	SPECIFICATIONS
IEC 11801	INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES
IEC 60331-25	TESTS FOR ELECTRIC CABLES UNDER FIRE CONDITIONS - CIRCUIT INTEGRITY - PART 25: PROCEDURES AND
IEC 60332-1-1	PART 1: TEST ON ELECTRIC CABLES UNDER FIRE CONDITIONS. TESTS ON A SINGLE VERTICAL INSULATED
IEC 60332-3-10	PART 3: TEST ON ELECTRIC CABLES UNDER FIRE CONDITIONS. TEST METHOD FOR VERTICALLY BUNCHED
IEC 60332-3-22	PART 3: TEST ON ELECTRIC CABLES UNDER FIRE CONDITIONS. TESTS ON VERTICALLY BUNCHED WIRES OR
IEC 60754-1	PART 1: DETERMINATION OF THE AMOUNT OF HALOGEN ACID GAS EVOLVED DURING THE COMBUSTION OF
IEC 60754-2	PART 2: DETERMINATION OF DEGREE OF ACIDITY OF GASES EVOLVED DURING THE COMBUSTION OF MATERIALS TAKEN FROM CABLES BY MEASURING PH AND CONDUCTIVITY.
IEC 60793-1-40	OPTICAL FIBRES - PART 1-40: MEASUREMENT METHODS AND TEST PROCEDURES – ATTENUATION

STANDARDS	SPECIFICATIONS
IEC 60793-1-41	OPTICAL FIBRES - PART 1-41: MEASUREMENT METHODS AND TEST PROCEDURES – BANDWIDTH
IEC 60793-1-42	OPTICAL FIBRES - PART 1-42: MEASUREMENT METHODS AND TEST PROCEDURES - CHROMATIC DISPERSION
IEC 60793-1-43	OPTICAL FIBRES - PART 1-43: MEASUREMENT METHODS AND TEST PROCEDURES - NUMERICAL APERTURE
IEC 60793-1-44	OPTICAL FIBRES - PART 1-44: MEASUREMENT METHODS AND TEST PROCEDURES - CUT-OFF WAVELENGTH
IEC 60793-1-45	OPTICAL FIBRES - PART 1-45: MEASUREMENT METHODS AND TEST PROCEDURES - MODE FIELD DIAMETER
IEC 60793-1-46	OPTICAL FIBRES - PART 1-46: MEASUREMENT METHODS AND TEST PROCEDURES - MONITORING OF CHANGES IN
IEC 60793-1-47	OPTICAL FIBRES - PART 1-47: MEASUREMENT METHODS AND TEST PROCEDURES - MACRO BENDING LOSS
IEC 60793-1-51	OPTICAL FIBRES - PART 1-51: MEASUREMENT METHODS AND TEST PROCEDURES - DRY HEAT
IEC 60793-1-52	OPTICAL FIBRES - PART 1-52: MEASUREMENT METHODS AND TEST PROCEDURES - CHANGE OF TEMPERATURE
IEC 60793-1-53	OPTICAL FIBRES - PART 1-53: MEASUREMENT METHODS AND TEST PROCEDURES - WATER IMMERSION
IEC 60794-1-1	OPTICAL FIBRE CABLES - PART 1-1: GENERIC SPECIFICATION – GENERAL
IEC 60794-1-2	OPTICAL FIBRE CABLES - PART 1-2: GENERIC SPECIFICATION – BASIC OPTICAL CABLE TEST PROCEDURES
IEC 60825-2	SAFETY OF LASER PRODUCTS
IEC 60874:	CONNECTORS FOR OPTICAL FIBRES AND CABLES
IEC 61034-1:	MEASUREMENT OF SMOKE DENSITY OF ELECTRIC CABLES BURNING UNDER DEFINED CONDITIONS. – TEST APPARATUS
IEC 61034-2	MEASUREMENT OF SMOKE DENSITY OF ELECTRIC CABLES BURNING UNDER DEFINED CONDITIONS. – TEST PROCEDURE
IEC 61280:	OPTICAL FIBRE COMMUNICATION SUB-SYSTEM TEST PROCEDURE
IEC 61300:	FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS BASIC TEST AND MEASUREMENT PROCEDURE
IEC 61315:	CALIBRATION OF FIBRE OPTIC POWER METERS

STANDARDS	SPECIFICATIONS
IEC 61753:	FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD
IEC/TS 62033:	ATTENUATION UNIFORMITY IN OPTICAL FIBRES
IEC/TR 62221:	OPTICAL FIBRES - MEASUREMENT METHODS - MICRO BENDING SENSITIVITY

2.3.6.1.1.9 ITU STANDARD

STANDARDS	SPECIFICATIONS
ITU-T G.650.2	DEFINITION AND TEST METHODS FOR STATISTICAL NON-LINEAR ATTRIBUTES OF SINGLE-MODE FIBRE AND CABLE
ITU-T G.652	CHARACTERISTICS OF A SINGLE-MODE OPTICAL FIBRE CABLE
ITU-T G.957	OPTICAL INTERFACES FOR EQUIPMENT'S AND SYSTEMS RELATING TO THE SYNCHRONOUS DIGITAL HIERARCHY
IEC 60332-3-10	PART 3: TEST ON ELECTRIC CABLES UNDER FIRE CONDITIONS. TEST METHOD FOR VERTICALLY BUNCHED

2.3.6.1.1.10 CABLE CONSTRUCTION

A. CABLE CONSTRUCTION

CABLE CONSTRUCTION SHALL BE AS DETAILED BELOW

- **OPTICAL FIBRE CABLES (12 CORE SINGLE MODE) OS-2**

12 CORE SINGLE MODE OPTICAL FIBRE ARMoured CABLE SUITABLE FOR INSTALLATION INDOORS ON THE CABLE TRAY AND THROUGH HDPE CONDUIT FOR OUTDOOR INSTALLATION

THE MAXIMUM LENGTH OF THE OFC CABLE WILL BE 2000M.

SERVICE	THE FULL RANGE OF COMMUNICATION SERVICES INCLUDING VOICE, DATA, IMAGE AND VIDEO.
CONSTRUCTION	SILICA BASED FIBRE MANUFACTURED WITH A PRIMARY PROTECTIVE OF UV - CURED ACRYLATE OF DIMENSIONS:
	SECONDARY PROTECTIVE: - GEL FILLED LOOSE TUBES OF HIGH MODULUS PLASTIC. EACH TUBE SHALL CONTAIN UP TO 24 FIBRES.

FIBRE AND TUBE IDENTIFICATION	FIBRES IN EACH TUBE SHALL BE COLOURED DIFFERENTLY FOR EASY IDENTIFICATION ALL TUBES SHALL BE COLOURED DIFFERENTLY AND IN THE SAME MANNER AS THE FIBRES,
LAYING-UP	TUBES STRANDED AROUND A CENTRAL STRENGTH MEMBER OF STEEL OR GRP. THE INTERSTICES OF THE CABLE CORE INSIDE THE CORE COVERING SHALL BE FILLED WITH A FILLING COMPOUND.
CORE COVERING	MINIMUM OF ONE LAYER OF NON-HYDROSCOPIC, HALOGEN-FREE, FLAME RETARDANT (HFFR) TAPE APPLIED HELICALLY OR LONGITUDINALLY WITH AN OVERLAP.
MOISTURE BARRIER	THE CORE SHALL BE COMPLETELY COVERED WITH AN ALUMINIUM FOIL COATED ON ONE SIDE AND APPLIED LONGITUDINALLY WITH AN OVERLAP. THE BARRIER SHALL BE BONDED TO THE INNER SHEATH.
INNER SHEATH/BEDDING	THE FIRST INNER SHEATH SHALL BE OF HIGH DENSITY POLYETHYLENE COMPOUND (BLACK) AND BONDED TO THE MOISTURE BARRIER. A SECOND INNER SHEATH SHALL BE MADE OF POLYAMIDE COMPOUND (BLACK).
ARMOURING	SINGLE LAYER OF ROUND GALVANIZED STEEL WIRES, DIAMETER 1.25MM, WITH A COUNTER SPIRAL.
OVER SHEATH	EXTRUDED PVC. WHERE CABLES ARE PROVIDED FOR ABOVE GROUND USE THE OVER SHEATH SHALL BE ADDITIONALLY PROVIDED WITH UV RAY PROTECTION SUITABLE FOR DIRECT EXPOSURE TO SUNLIGHT WITHOUT DETERIORATION.
OVER SHEATH COLOUR	ORANGE
FIRE PERFORMANCE	THE OUTER SHEATH SHALL BE FLAME RETARDANT ACCORDING TO IEC 60332 AND LOW SMOKE, ZERO HALOGEN (LSZH) TYPE IN COMPLIANCE WITH IEC 61034 AND IEC 60754. CHARACTERISTICS SHALL BE: a) LOWEST OXYGEN INDEX (LOI): 32 b) HCL EMISSION: LESS THAN 5% WHERE STIPULATED IN THE MATERIAL REQUISITION, CABLES SHALL ALSO BE FIRE RESISTANT TO IEC 60331 AND TYPE TESTED FOR 1000 DEG.C FOR A MINIMUM OF 1 HOUR

SINGLE MODE OPTICAL FIBRE UN ARMoured LSZH SUITABLE FOR BLOWING IN UNDERGROUND HDPE DUCTS OR THROUGH FRLS-PVC CONDUITS FOR INDOOR USE.

SERVICE	THE FULL RANGE OF COMMUNICATION SERVICES INCLUDING VOICE, DATA, IMAGE AND VIDEO.
CONSTRUCTION	SILICA BASED FIBRE MANUFACTURED WITH A PRIMARY PROTECTIVE OF UV - CURED ACRYLATE OF DIMENSIONS:
	SECONDARY PROTECTIVE: - GEL FILLED LOOSE TUBES OF HIGH MODULUS PLASTIC. EACH TUBE SHALL CONTAIN AN EVEN NUMBER OF FIBRES.
FIBRE AND TUBE IDENTIFICATION	FIBERS IN EACH TUBE SHALL BE COLOURED DIFFERENTLY FOR EASY IDENTIFICATION. ALL TUBES SHALL BE COLOURED DIFFERENTLY AND IN THE SAME MANNER AS THE FIBRES,
LAYING-UP	TUBES STRANDED AROUND A CENTRAL STRENGTH MEMBER OF STEEL OR GRP. THE INTERSTICES OF THE CABLE CORE INSIDE THE CORE COVERING SHALL BE FILLED WITH A FILLING COMPOUND.
CORE COVERING	MINIMUM OF ONE LAYER OF NON-HYDROSCOPIC, HALOGEN-FREE, FLAME RETARDANT (HFFR) TAPE APPLIED HELICALLY OR LONGITUDINALLY WITH AN OVERLAP.
MOISTURE BARRIER	THE CORE SHALL BE COMPLETELY COVERED WITH AN ALUMINIUM FOIL COATED ON ONE SIDE AND APPLIED LONGITUDINALLY WITH AN OVERLAP. THE BARRIER SHALL BE BONDED TO THE INNER SHEATH.
INNER SHEATH/BEDDING	THE FIRST INNER SHEATH SHALL BE OF HIGH DENSITY POLYETHYLENE COMPOUND (BLACK) AND BONDED TO THE MOISTURE BARRIER. A SECOND INNER SHEATH SHALL BE MADE OF POLYAMIDE COMPOUND (BLACK).
OVER SHEATH	EXTRUDED FLAME RETARDANT, HALOGEN FREE THERMOPLASTIC MATERIAL
OVER SHEATH COLOUR	ORANGE

FIRE PERFORMANCE	<p>THE OUTER SHEATH SHALL BE FLAME RETARDANT ACCORDING TO IEC 60332 AND LOW SMOKE, ZERO HALOGEN (LSZH) TYPE IN COMPLIANCE WITH IEC 61034 AND IEC 60754. CHARACTERISTICS SHALL BE:</p> <p>a) LOWEST OXYGEN INDEX (LOI): 32</p> <p>b) HCL EMISSION: LESS THAN 5%</p> <p>WHERE STIPULATED IN THE MATERIAL REQUISITION</p>
------------------	--

- CABLE FILLERS SHALL BE SOLID, NON-HYGROSCOPIC AND SHALL FILL THE CROSS SECTION SUCH THAT THE TRANSMISSION OF GAS AND HYDROCARBONS ALONG THE LENGTH OF THE CABLE WILL NOT OCCUR UNDER NORMAL PRESSURE.
- THE OUTER SHEATH OF CABLES SHALL BE EMBOSSED WITH:
 - MANUFACTURER'S IDENTIFICATION
 - NUMBER OF FIBRES / TYPE OF FIBRES
 - THE DRUM PROGRESSIVE LENGTH OF CABLE AT EVERY METER. (ZERO POINT SHALL BE THE CABLE END AT ITS INNER COIL ON THE CABLE DRUM).
 - THE STOCK CODE AS STATED IN THE MATERIAL REQUISITION.
- CABLE SHALL HAVE UNIFORMITY IN CONSTRUCTION AND OUTER SHEATH COLOUR.
- CABLES SHALL BE DESIGNED TO WITHSTAND WITHOUT FIBRE ELONGATION OR DAMAGE A PULLING FORCE OF NOT LESS THAN 3000N. THE PULLING FORCE FOR CABLES DESIGNED SPECIFICALLY FOR INSTALLATION BY CABLE BLOWING SHALL BE CLEARLY STATED BY THE SUPPLIER.
- ARMoured CABLES SHALL HAVE A CRUSH RESISTANCE OF NOT LESS THAN 5000N APPLIED OVER 100MM IN ACCORDANCE WITH BS EN 50289-3-5:2001. THE CRUSH RESISTANCE FOR CABLES DESIGNED SPECIFICALLY FOR INSTALLATION BY CABLE BLOWING SHALL BE CLEARLY STATED BY THE SUPPLIER.
- CABLES SHALL HAVE A BENDING RADIUS OF NOT MORE THAN 15 X CABLE DIAMETER (280 MM SHALL BE THE MINIMUM BENDING RADIUS).
- ALL CABLES SHALL BE PROVIDED WITH A VERMIN RESISTANT OUTER SHEATH

- A MEMBRANE OF BONDED ALUMINUM POLYAMIDE SHALL BE PROVIDED AS AN INNER LAYER IN ALL UNDERGROUND CABLES TO PROTECT AGAINST MOISTURE INGRESS AND ATTACK FROM HYDROCARBONS AND OTHER CHEMICALS.
- OFC CABLE SHALL RUN ALONG WITH HDPE PIPE FOR PROTECTION AGAINST RODENT AND MECHANICAL DAMAGE.

2.3.6.1.1.11 SPLICING AND JOINTING

The process of fusion splicing normally involves using localized heat to melt or fuse the ends of two optical fibers together

a. Stripping the fiber :

STRIPPING IS THE ACT OF REMOVING THE PROTECTIVE POLYMER COATING AROUND OPTICAL FIBER IN PREPARATION FOR FUSION SPLICING.

THE SPLICING PROCESS BEGINS BY PREPARING BOTH FIBER ENDS FOR FUSION, WHICH REQUIRES THAT ALL PROTECTIVE COATING IS REMOVED OR STRIPPED FROM THE ENDS OF EACH FIBER. CLEANING THE STRIPPING AND CLEAVING TOOLS IS ALSO IMPORTANT

b. Splicing the fiber :

USING CORE (OR) CLADDING ALIGNMENT, CONTRACTOR SHALL ENSURE 0 DB LOSS. THE BASE FIBRE IS PROTECTED EITHER BY RECOATING OR WITH A SPLICE PROTECTOR. A SPLICE PROTECTOR IS A HEAT SHRINKABLE TUBE WITH A STRENGTHEN MEMBRANE.

c. Patch Cords :

PATCH CABLES ARE USED FOR CONNECTION TO LIU UNIT AND NETWORKING ACTIVE COMPONENTS. THE CONNECTOR SHALL BE OF STANDARD DESIGN INCLUDES FC OR SC OR ST, HOWEVER CONTRACTOR SHALL MAINTAIN ONE SINGLE STANDARDS DESIGN FOR THE COMPLETE PROJECT FROM THE ABOVE FOR UNIFORMITY AND INVENTORY MANAGEMENT.

d. Connectors :

THE FIBER OPTIC CONNECTORS HAVE SEVERAL FUNCTIONS. IT ALIGN THE FIBER WITH EMITTERS IN TRANSMITTERS, ADJUSTMENT FIBERS IN SPLICES AND PHOTO DETECTORS IN RECEIVERS.

ALL FIBER OPTIC CONNECTORS HAVE FOUR BASIC COMPONENTS WHICH ARE THE FERRULE, CONNECTOR BODY, CABLE AND COUPLING DEVICES. CONTRACTOR SHALL ENSURE THAT THEY HAVE MAINTAINED THE UNIFORMITY AND SHALL BE SUBJECT TO APPROVAL BY ENGINEER'S OR CUSTOMER.

2.3.6.1.1.12 FIRE PROPERTIES

- a. **Flame Retardancy:** Where specified, cables shall be of flame retardant construction to minimize flame propagation under fire conditions. Cable flame retardancy shall comply with the applicable standards listed in Standard Tests for cable flame retardancy shall be in accordance with these referenced standards. Seller shall produce copies of type test certificates to prove that cables of the same type comply

with the relevant standards. Where type test certification is not available, Seller shall carry out witnessed type tests at the Factory Acceptance Test stage.

- b. **Smoke Emission:** Indoor cables shall be tested for smoke emission in accordance with IEC 61034-1 and IEC 61034-2. The cable light transmittance so determined shall be better than 60%.
- c. **Toxicity:** Indoor cables shall be of Zero Halogen type (i.e. < 0.5% HCL content) and shall be tested in accordance with IEC 60754-1 & 2. Outdoor cables shall be of the low halogen type (i.e. 19% HCL content).
- d. **Fire Resistance:** Where called for in the Material Requisition, above-ground cables shall meet the transmission integrity requirements of IEC60331-25. Tests shall prove circuit integrity for at least one hour at 1000 deg.C.

2.3.6.1.1.13 DRUMMING:

- a. Cables shall be drummed in maximum continuous lengths on non-returnable wooden drums. The manufacturer shall guarantee that drums are of sufficient strength to protect the cable during shipping and handling. The standard drum length shall be not less than 6000m with zero negative tolerance.
- b. Cable ends shall be sealed and fixed to the drum so that both ends are accessible. To protect the cable during shipment battens shall be fitted around the entire periphery of the drum. Drums shall be suitable for long term outdoor storage at site.
- c. All cable drums shall have the Purchase Order Number, Purchase Order Item Number, Drum Number and Stock Code clearly stencilled on the outside of both flanges.
- d. Drum identification labels shall be attached to the outside and inside of the drum flanges. Labels shall be protected by transparent plastic envelopes and shall give the following information:
 - Drum identification number
 - Cable construction
 - Number of fibres & type of fibres
 - Cable quantity (metres)
 - Purchase order number and item number
 - Total weight of cable and drum (kg)
 - Manufacturer's name
 - Year of manufacture
 - Stock code number

2.3.6.1.1.14 INSPECTION AND TESTING

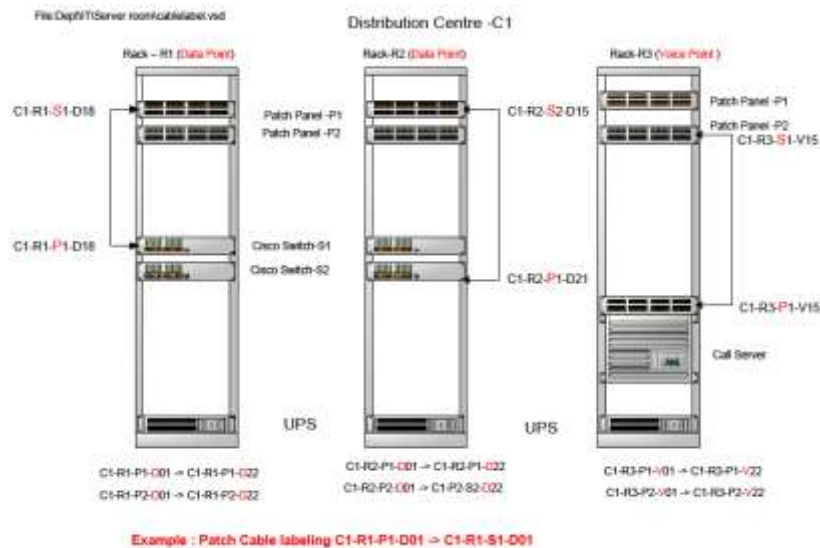
- a. All cables shall undergo witnessed factory acceptance testing at the manufacturer's works. Both routine & type tests shall be carried out in accordance with the recommendations of the relevant codes and standards.
- b. The Seller shall provide certificates for tests carried out on all cables. Tests shall be those listed in the relevant standard specifications and any additionally specified within the Material Requisition. The Seller shall submit a comprehensive Factory Acceptance Test (FAT) procedure at least 4 weeks prior to the tests. All

measurements shall be recorded in an organized and systematic way and logged against the respective cable drum number & stock code.

- c. The Buyer reserves the right to witness all tests specified on completed cables. Details of all test instruments used in the tests shall be declared and the results recorded. These details shall include make/type, year, manufacturer, serial no., calibration date & calibration test body. Witnessed tests shall include the following as a minimum:
- VISUAL INSPECTION: COLOURING OF FIBRES AND TUBES, IDENTIFICATION.
 - OPTICAL CHARACTERISTICS: ATTENUATION & CHROMATIC DISPERSION SHALL BE MEASURED ON ALL FIBRES END-TO-END TO ENSURE THE REQUIREMENTS OF SECTION 4.
BANDWIDTH PERFORMANCE AND MACROBENDING LOSS SHALL ALSO BE MEASURED.
 - MECHANICAL CHARACTERISTICS: FIBRE GEOMETRY, THICKNESS OF SHEATHS, OVERALL DIAMETERS.
BENDING TESTS, TENSILE STRENGTH AND STRESS CORROSION SUSCEPTIBILITY.
 - FIRE PROPERTIES: FLAME RETARDANCY, SMOKE EMISSION, TOXICITY AND FIRE RESISTANCE SHALL BE TESTED AS APPROPRIATE.
- d. The Supplier shall give two weeks' notice of tests prior to commencement. The FAT procedure shall be reviewed and agreed to by the Purchaser/consultant before the tests commence.
- e. The Purchaser/consultant reserves the right to inspect cables at the supplier's works at any time prior to dispatch to prove compliance with the specifications. Cables shall not be dispatched unless the test certificates have been approved by the Purchaser.
- f. The supplier shall provide for inspection a draft manufacturing record dossier at the time of the tests. The dossier shall include all type test certification and results of the FAT. The supplier shall submit copies of the dossier in the form of a Manufacturing Record Book for formal review by the Purchaser within 2 weeks.

2.3.6.1.1.15 TAGGING & LABELING

- All equipment cabinets shall be fitted with a large engraved tag label made of plastic laminate material which shall be mechanically affixed to the exterior of the enclosure. Engraving details, size, etc. will be provided in due course.
- All patch panels and sub-modules shall be suitably labeled.
- All fibre circuits shall be identified with a suitable label carrying the identity of the port and the circuit reference.
- All internal fibre connections shall be labeled.
- Sample Labeling standard as per below



2.3.6.1.1.16 TESTING AND DOCUMENTATION

- FTP Cat6 or CAT6A Cable for C1 Data Centre to test and maintain record for data point as under.

C1:- PRIMARY DATA CENTRE
C2:- SECONDARY DATA CENTRE
C3:- DISTRIBUTION CENTRE

CABLE: FOILED TWISTED PAIR (AMP FTP CAT 6 OR NEXAN CAT6A)

FTP CABLE RECORD TO BE GENERATE FOR EACH DATA POINT

SR.NO	LOCATION	USER/COMPUTER NAME	CABLE ID	LENGTH IN MTR.	TEST DATE	VLAN	SWITCH PORT	REMARK
1.	OFFICE	QC MANAGER	C1-R2-P1-D01	55	08/01/2012	112	3/2	OK

b. *FTP Cat6 or CAT6A Cable for C1 Data Centre to test and maintain record for voice point as under.*

C1:- PRIMARY DATA CENTRE
C2:- SECONDARY DATA CENTRE
C3:- DISTRIBUTION CENTRE

CABLE: FOILED TWISTED PAIR (AMP FTP CAT 6 OR NEXAN CAT6A)

FTP CABLE RECORD TO BE GENERATE FOR EACH VOICE POINT

SR.NO	LOCATION	USER/COMPUTER NAME	CABLE ID	EXTENSION	TEST DATE	LENGTH IN MTR.	REMARK
1.	OFFICE	QC MANAGER	C1-R1-P2-V12	813	08/01/2012	55	OK

FTP CAT6A CABLE FOR DATA CENTRE TESTING PROCEDURE AND MAINTAINING RECORD FOR DATA/VOICE POINT TO BE DONE AS PER PURCHASER/ CONSULTANT APPROVED PROCEDURE SAMPLE TWO SHALL BE GIVEN FOR REFERENCE

ANNEXURE-II
BID DATA SHEET

S.no	Description	Details
1	Bid reference number	HBL/IVC/LTE/LVS PHASE II/001/17-18 dated 02.02.2018
2	Due date for submission	23-02-2018 @ 15:00 HRS
3	Name & Address of bidder	
5	Year of establishment	
6	Type of the firm	Public Ltd/Pvt Ltd./Partnership/Regd firm
8	Name & Address of Directors/Partners	1. 2.
7	PAN Number	
8	Contact Phone-Office	
9	Cell	
10	Email	
11	Copy of MOA/partnership deed/Registration	Attached/Not Attached
12	Copy of PAN of Directors/Partners	Attached/Not Attached
13	Latest IT return statement	Attached/Not Attached
14	Past three years P&L, Balance Sheet	Attached/Not Attached
15	All pages of bid document duly sealed and signed by the authorized person	Attached/Not Attached
16	Power of Attorney/Authorization to sign the bid	Attached/not Attached
17	Manufacturer's authorization letter	Attached/not Attached
18	EMD (as per TED)	Attached/Not Attached

ANNEXURE- III

Details of Similar Projects handled in the last five years ending with 31/12/2017

Sl. No.	Name and location of the Project	Name and address of the Client	Project Details		Completion Date
			Details of the items supplied	Project Value Rs Lakhs	
1					
2					
3					
4					
5					
6					

Note: Satisfactory completion certificates/Final Acceptance certificate from the clients to be attached.

ANNEXURE- IV

BID REF No: HBL/IVC/LTE/LVS PHASE II/001/17-18 dated 02.02.2018

BID FORM

Item: Supply of _____.

Having examined the bidding documents, including amendments of which is hereby acknowledged, we, the undersigned, offer to execute the contract including the supply and delivery of the goods (**FOR IVC, Chengalpattu**) in full conformity with the said bidding documents for the sum of:

In Fig:

IN WORDS

(Hereinafter called “the Total Bid Price”) or such other sums as may be determined in accordance with the terms and conditions of the Contract. The above amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.

We undertake, if our bid is accepted, to execute the contract in accordance with the delivery schedule specified in the schedule of requirements.

If our bid is accepted, we undertake to provide a performance security in the form, in the amounts, and within the times specified in the Bidding Documents.

We agree to abide by this bid, for the Bid Validity Period specified in the Bid Data Sheet and it shall remain binding upon us and may be accepted by you at any time before the expiration of that period.

Until the formal final Contract is prepared and executed between us, this bid, together with your written acceptance of the bid and your notification of award, shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated:

Signed by:
In the capacity of

ANNEXURE - V
BANK GUARANTEE FORM FOR EMD

Whereas _____ (hereinafter called the "Tenderer") has submitted its quotation dated _____ for the supply of _____ (hereinafter called the "tender") against the purchaser's tender enquiry No. _____ Know all persons by these presents that we _____ of _____ (Hereinafter called the "Bank") having our registered office at _____ are bound unto _____ (hereinafter called the "Purchaser) in the sum of _____ for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its 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 the Tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- (2) If the Tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-
 - a) fails or refuses to furnish the performance security for the due performance of the contract.
or
 - b) fails or refuses to accept/execute the contract.
or
 - c) if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period of forty-five days after the period of tender validity and any demand in respect thereof should reach the Bank not later than _____ day of _____ 20____.

(Signature of the authorised officer of the Bank)

Name and designation of the officer

SEAL, NAME & ADDRESS OF THE BANK AND ADDRESS OF THE BRANCH

ANNEXURE- VI

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY

To

HLL Biotech Ltd.,
Integrated Vaccine Complex,
Survey No: 192-195,
Thirumani Village,
Thirukalukundram Taluk,
Kanchipuram District - 603003

1. In consideration of HLL Biotech Limited (hereinafter called "HBL") having agreed under the terms and conditions of Order No..... dated..... made between (here in after called "the said contractor(s)") for the work (herein after called "the said agreement") for compliance of his obligation in accordance with the terms and conditions in the said agreement.

We (Indicate the name of the Bank) (Herein after referred to as "as Bank) hereby undertake to pay to the HBL and amount not exceeding Rs..... (Rupees..... only) on demand by HBL.

2. We (Indicate the name of the Bank) do hereby undertake to pay the amount due and payable under this Guarantee without any demure, merely on a demand from HBL stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). any such demand made on the Bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees..... only).

3. We undertake to pay to HBL any money so demanded notwithstanding any dispute or disputes raised by the contractor (s) in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment made by us under this guarantee shall be valid discharge of our liability for payment to there-under and the contractor(s) shall have no claim against us making such payment.

4. We (Indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of HBL under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-charge on behalf of HBL Certified that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor(s) accordingly discharges this guarantee.

5. We..... (Indicate the name of Bank) further agree with HBL that HBL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary

any of the terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any of the powers exercisable by HBL against the said contractor(s) and to forebear or enforce any of the terms and conditions relating to the said agreement we shall not be relieved from our liability by reasons of any such variation or extension being granted to the said contractor(s) or for any forbearance act of omission on that part of the HBL or any indulgence by HBL to the said contract(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effected or so relieving us.

6. The guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).

7. We..... (Indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of HBL in writing.

8. This guarantee shall be valid up to Unless extended on demand by HBL. Notwithstanding anything mentioned above our liability against this Guarantee is restricted to Rs..... (Rupees.....only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under the Guarantee shall stand discharged.

Dated the Day of 2018

For
(Indicate the name of Bank)

ANNEXURE-VII - BILL OF QUANTITIES

S.NO	DESCRIPTION OF WORK	UNIT	QTY	UNIT RATE FOR SUPPLY (IN RS)	TAX % FOR SUPPLY	TOTAL AMOUNT FOR SUPPLY INCLUDING TAX	UNIT RATE FOR INSTALLATION (IN RS)	TAX % FOR INSTALLATION	TOTAL AMOUNT FOR INSTALLATION INCLUDING TAX
1.0	SITC OF IT System :-								
	All Passive Components must be from same Manufacturer								
1.1	Telephone & Data wiring :-								
	All telephone wiring shall be carried out using Cat6 Cable and Data Wiring shall be carried out using Cat6A cable in MS Conduits								
	MS Conduits and Raceway will be paid extra in Item No.5.1.3								
1.1.1	Supply & Laying of CAT6A Data wire (UTP Cable , up to 650 MHz)	Mtr.	2500						
1.1.2	Supply & Laying of CAT6 Data wire (UTP Cable , up to 450 MHz)	Mtr.	1751						
1.2	SUPPLY AND INSTALLATION OF PATCH CORD :-								
	Supply and Installation of Patch cord between Patch panel and Network switch, Switch, Patch cord between Network outlets and CPU/Laptop.								
1.2.1	1 Mtr. Cat6A Patch cord between Patch Panel and Network switch for Data (Patch Cord, UTP 4P, LSZH, Real10 Cat.6A, length 1.0 m)	Nos.	60						
1.2.2	1 Mtr. Cat6 Patch cord between Patch Panel and Resource Patch Panel for Telephone System (Patch Cord, UTP 4P, Cat.6, length 1.0/ 2.0 m)	Nos.	80						

S.NO	DESCRIPTION OF WORK	UNIT	QTY	UNIT RATE FOR SUPPLY (IN RS)	TAX % FOR SUPPLY	TOTAL AMOUNT FOR SUPPLY INCLUDING TAX	UNIT RATE FOR INSTALLATION (IN RS)	TAX % FOR INSTALLATION	TOTAL AMOUNT FOR INSTALLATION INCLUDING TAX
1.2.3	2 Mtr. Cat6A Patch cord between CPU/Laptop and Network outlets (Patch Cord, UTP 4P, LSZH, Real10 Cat.6A, length 2.0m)	Nos.	55						
1.3	Supply and laying of Single mode OFC Cable OS2 , Scope also includes supply and installation of suitable size HDPE pipe for OFC Cable protection								
1.3.1	Supply and installation of 12 CORE OFC Cable/Required Pigtails, Patch cords & end termination with all accessories	Lot	543						
1.4	Supply and installation of Network rack								
1.4.1	Supply and installation of Network rack Model :- Floor Mounting type 24U w800mm * d800mm with 24U Glass door , 2U standard rack mount power distribution unit with 6 Nos. X 5 Amp 5 Pin 230 Volts AC, Inlet Plug type 6A Indian Round Pin-PDU Rating 8A-2Sets , Cantilever shelf/type2/1U , Horizontal cable Manager /1U/Loop , Fan as per required CFM , 24 Port LIU fully loaded with LC Coupler , plate pigtail , spicing kits & Fiber (OFC) LC patch cords- 2Mtr. SM Pigtail , SM LC to LC Patch card 2Mtrs and Cat6A Patch cords (matching the number of data points in patch panel-2mt), 2 LIU units + 48 pigtails + 4 patch chords items added etC. Also all required mounting Hardware	Nos.	2						
1.5	Supply and installation of Patch panel (UNLOADED)								

S.NO	DESCRIPTION OF WORK	UNIT	QTY	UNIT RATE FOR SUPPLY (IN RS)	TAX % FOR SUPPLY	TOTAL AMOUNT FOR SUPPLY INCLUDING TAX	UNIT RATE FOR INSTALLATION (IN RS)	TAX % FOR INSTALLATION	TOTAL AMOUNT FOR INSTALLATION INCLUDING TAX
	Patch panel with integrated cable tie shelf, 19" fastening kit, labeling field, accepting the snap-in type color coding clips in 8 colors. Material: sub-rack made of sheet steel (DC01A) 1.5 mm, color blue chromitized, screen made of plastic (ABS), halogen-free, color medium gray (NCS 2502-B). Information Outlet or connectin module should comply with the specification mentioned above in 1.2 Mounting dimensions 14.9 x 19.5 mm, max. material thickness 1.6 mm. Including information outlets to suite UTP cable								
1.5.1	Supply and installation of Patch Panel :- 24 port (Cat-6A)	Nos.	6						
	Supply and installation of Patch Panel :- 24 port (Cat-6)	Nos.	5						
	Cat-6A Information outlet for rackside (blue)	Nos.	134						
	Cat-6 Information outlet for rackside (yellow)	Nos.	117						
1.6	Supply and installation of Krone Type Junction box								
1.6.1	100 Pair Krone Type Junction box with riser cable of 15 mtr	Nos.	2						
1.7.1	"RJ 45 I/O 1 Nos. in CRCA box with front & rear plate.(Tt type Legend) ,(CAT6 1 x RJ45, unshielded - 1 Nos.)	Nos.	12						
1.7.2	"RJ 45 I/O 3 Nos. in CRCA box with front & rear plate (Dn type legend). (CAT6A 1 x RJ45, shielded- 3Nos.)	Nos.	1						
1.7.3	"RJ 45 I/O 2 Nos. in CRCA box with front & rear plate.(DnTn type legend). (CAT6 1 x RJ45, unshielded- 1 Nos., CAT6A 1 x RJ45, shielded- 1Nos.)	Nos.	18						

S.NO	DESCRIPTION OF WORK	UNIT	QTY	UNIT RATE FOR SUPPLY (IN RS)	TAX % FOR SUPPLY	TOTAL AMOUNT FOR SUPPLY INCLUDING TAX	UNIT RATE FOR INSTALLATION (IN RS)	TAX % FOR INSTALLATION	TOTAL AMOUNT FOR INSTALLATION INCLUDING TAX
1.7.4	"RJ 45 I/O 1 Nos. in CRCA box with front & rear plate (Dn type legend). (CAT6A 1 x RJ45, shielded- 1Nos.)	Nos.	13						
1.7.5	"RJ 45 I/O 1 Nos. in CRCA box with front & rear plate.(Tn type Legend) (CAT6 1 x RJ45, unshielded- 1 Nos)	Nos.	14						
1.7.6	"RJ 45 I/O 2 Nos. in CRCA box with front & rear plate.(DcTc type legend). (CAT6 1 x RJ45, unshielded- 1 Nos., CAT6A 1 x RJ45, shielded- 1Nos.)	Nos.	9						
1.7.7	"RJ 45 I/O 1 Nos. in CRCA box with front & rear plate (Dc type legend). (CAT6A 1 x RJ45, shielded- 1Nos.)	Nos.	93						
1.7.8	"RJ 45 I/O 1 Nos. in CRCA box with front & rear plate.(Tc type Legend) (CAT6 1 x RJ45, unshielded- 1 Nos)	Nos.	64						
TOTAL FOR SUPPLY AND INSTALLATION OF IT SYSTEM									
GRAND TOTAL IN FIGURES									
GRAND TOTAL IN WORDS									