

**Government of India
Bhabha Atomic Research Centre
Electronics Division**

ESC Building, BARC,
Trombay,
Mumbai 400 085

Ref: EO/2018/527

Date: 06/08/2018

Sub: Enquiry for Supply, installation and testing of additional power supply, data network and telephone points through Universal DLP PVC Trunking

1. Quotations are invited for and on behalf of President of India, under minor fabrication job for "Supply, installation and testing of additional power supply, data network and telephone points through Universal DLP PVC Trunking (As per detailed technical specification in Annexure – C)"
2. GST shall be quoted separately & will be paid.
3. The quotations must reach, Head, Electronics Division, BARC by 20/08/2018 and must be sent in a sealed envelope **by Indian Speed Post only**, super scribed with the above reference number and due date given above.
4. The address on the envelope should read:
**Head, Electronics Division,
Room no 400, ESC Building - North Site,
Bhabha Atomic Research Centre,
Trombay, Mumbai 400 085.
Attn.: Saurabh Neema, SO/E, ED, BARC**
5. Head, Electronics Division, BARC reserves the right to accept/reject any or all quotations without assigning any reason.
6. Work order shall be completed within 2 months from date of order issued to bidder.
7. Supplier must attach technical compliant statement meeting the technical specification attached without which offer may not be considered. All terms and conditions as mentioned in the detailed technical specifications in Annexure - C should be met.
8. The fabrication work shall be subject to inspection by our engineer. The finished components shall not be dispatched prior to approval by our engineer at bidders works.
9. Quotation must indicate the validity of offer. Quotation must also indicate the PAN no, GST tax, registration number registered with local ST authority /CST authority. Quotation must be submitted in printed letterhead. Quotations should be preferably neatly typed and corrections are not acceptable. The quotation has to be signed by authorized person with company seal.
10. Items delivered should have 1 year warranty against manufacturing defect.
11. Payment will be made by ECS only after satisfactory completion of work on production of bill, delivery challan and advance stamped receipt. It may be noted that IT@2% shall be deducted from your bills. The supplier has to produce GST undertaking in standard format along with bills after satisfactory completion of work order. Final bill shall be cleared by accounts only after receipt of site clearance certificate issued by BSMO.
12. Liquidity damage of 0.5% per week of PO amount, subject to max 5% of PO cost shall be applicable
13. Enclosed:
 - Confidentiality clause
 - Detailed Technical specification as per Annexure – C.1, Annexure C.2, Annexure C.3
 - Quantity and cost of proposal – Annexure D

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Anita Behere

(Anita Behere) *03/08/18*
**Head, Electronics Division, BARC
For and on behalf of President of India**

अनिता बेहेरे / ANITA BEHERE
अध्यक्ष, इलेक्ट्रॉनिकी प्रभाग / Head, Electronics Division
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केंद्र / Bhabha Atomic Research Centre
ट्रॉम्बे, मुंबई / Trombay, Mumbai - 400 085
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Confidentiality Clause

- 1.1 No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as “**Proprietary**” in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.

This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by a party with equal force.

1.2 “Restricted information” categories under Section 18 of the Atomic Energy Act, 1962 and “Official Secrets” under Section 5 of the Official Secrets Acts, 1923:-

Any contravention of the above-mentioned provision by any contractor, sub-contractor, consultant, adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.

1.3 Prohibition against use of BARC’s name without permission for publicity purposes:-

The contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC’s name for any publicity purpose through any public media like Press, Radio, TV or Internet without the prior written approval of BARC.

Annexure C.1

Detailed specification for Supply, installation and testing of additional power supply, data network and telephone points through Universal DLP PVC Trunking

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1 Scope of Work

Power supply, Network (data) and telephone connection extension is required to be done in two of the rooms of Electronics Division. Power supply has to be tapped from Existing Distribution boxes. For each of the power point (2 power sockets) contractor should lay separate wires from MCB (In existing Distribution box). Contractor shall lay Data/telephone cables separately for about 10 meters from existing Network/Telephone sockets (through PVC casing and capping). The contractor shall then fix DLP PVC Trunking along the perimeter wall of the room. The DLP PVC Trunking shall have provision to install as per requirement universal 5/15 A sockets and switches and for 250 V, 50 Hz single phase power supply along with Network (Ethernet) and telephone connectors. Contractor shall lay cables (wires) for providing power supply for equipments operating on 230 V 50 Hz power supply. The supplier shall also lay data (Ethernet) and Telephone lines. On DLP PVC Trunking Contractor should provide Power sockets, data & telephone sockets as per attached drawings and bill of material.

2 Brief description of job

Extension of power supply, data network and telephone points through Universal DLP PVC Trunking in room no. 314 and 401 of ESC building. Job involves cabling, termination, connectorization of power supply, Network and telephone points. It also involves supply and installation of Network switches in wall mount rack and Laying of DLP PVC Trunking with constituent accessories. The work consists of 3 main parts as mentioned below:

1. Supply, Installation and testing of Universal DLP PVC Trunking with accessories to accommodate following:
 - i. Power points : (36 socket+switches)
 - ii. Internet+Intranet connection: 18
 - iii. Telephone connection: 6
2. Supply, Installation and testing of Ethernet Switch and 19" Wall mount rack along with required inlet wires (Ethernet + Telephone) for input connection (Through Casing/Capping)
3. Supply and installation of Power supply wires for connection from Existing Distribution boxes to input of DLP PVC Trunking.

Details of all the above parts are mentioned in next sections. All three parts of contract should be executed by single vendor in closely coupled manner. Offer for individual part will not be considered. Supplier shall quote for all three parts so as to complete the full activity. Contractor shall perform all necessary preparations, including but not limited to arranging qualified electrical supervisors, labours for the job material and tools for fixing the DLP PVC trunking and casing/capping, requisite quantity of good quality multi strand Fire Retardant Low Smoke (FRLS) copper wires from reputed manufacturer (Polycab or equivalent make) having requisite rating for laying wires and cables to the power supply points. There should not be any joints in the power line wire between MCB and Power sockets. Casing and capping used shall be of good quality PVC free from defects like deformation, cavities blisters unevenness etc. Telephone and Ethernet cables should be of standard make.



3 Bill of Material

This bill of material summarises the items required for the installation and testing. Detailed specification of each item is given in the next section

S. No	Description	Unit	Total quantity
1	Supply, Installation and testing of Universal DLP PVC Trunking with Power points (36 socket+switches), Internet+Intranet connection (18), Telephone connection (6) along with necessary cabling as per detailed technical specification in section "Technical specifications" and room Layout details. Various constituents of the Each Set is given below.	Set	2
	a) Universal DLP PVC Trunking (150x50) mm with two partitions each having 65 mm cover plates.	Meter	25
	b) Universal power sockets (5/15 A)	No.	36
	c) Push button switch with LED indicator	No.	36
	d) Face plates with support frames for power sockets	No.	18
	e) Ethernet connection sockets	No.	18
	f) Telephone connection sockets	No.	6
	g) Ethernet cable	Meter	*
	h) Telephone cable	Meter	*
	i) Power supply cable	Meter	*
2	Supply, Installation and testing of Ethernet Switch and 19" Wall mount rack along with required inlet wires (Ethernet + Telephone) for input connection (Through Casing/Capping)	Set	2
	a) Casing and Capping	Meter	10
	b) 19" Wall mount rack for Network Switch installation	No.	1
	c) 10/100 Mbps unmanaged network switch (rack mountable)	No.	2
	d) Ethernet cable	Meter	20 (10m x 2)*
	e) Telephone cable	Meter	60 (10m x 6)*
3	Supply and installation of Power supply wires for connection from Existing Distribution boxes to input of DLP PVC Trunking.	Meter	27
	a) Dedicated Copper wire for power supply to Inlet of DLP PVC Trunking from DB (Phase, Neutral and GND) for each of the 18 power supply sockets in DLP PVC Trunking.	Meter	27
	b) Casing/Capping to carry the above mentioned wires	Meter	27

* Required Length should be calculated by bidder as per the room layout given in Annexure C.2 and Annexure C.3. Bidder shall provide margin to fit to the room.

4 Technical specification

This section describes technical specifications of the Items for the installation

S. No.	Item	Specifications
1	Universal DLP PVC Trunking	<p>Universal DLP PVC Trunking of size 150x50 mm for power point, Data network and Telephone connection with all required accessories for installation as mentioned below:</p> <ul style="list-style-type: none"> • Should have unified body of 150x50mm. • Should have two partitions (separated by separation partition) for Power and data cable isolation. Partitions should be covered with two 65 mm width covers (thickness of 1.5 mm) which can fit onto whole Trunking. • Various joints should be joined properly by use of proper body joint for alignment and adhesives at the end of installation. • The Trunking shall be perfect level and plumb. • Adequate accessories shall be used at joints and required location for right angle turns etc. • Ends of Trunking shall be properly covered with proper cover or End caps. • Degrees of protection provided by enclosure : IP40 • Should comply to standard EN 50085-2-1 • Equivalent to 104-27 of type Legrand with compatible accessories • Material should be Non-flame propagating • Temperature range to be met : -5°C to 60°C
2	Casing/ Capping	<p>25 x 12 mm Good quality PVC free from defects like deformation, cavities blisters unevenness on wall, truss beams and columns by suitable wood screws at every 200mm distance. The open ends of casing openings are to be sealed by PVC / rubber gasket and right angle, straight joints are to be made neatly. The thickness of PVC casing and capping shall not be less than 1.2 mm. Casing shall be rigidly screwed into neatly drilled holes in the wall. Screws of suitable size and nylon plugs (Raw plugs) shall be used using. The distance between two screws shall not exceed more than 600 mm.</p>

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3	Power Supply Wires	<p>Good quality (ISI mark) FRLS Insulated Multi-strand copper conductor colour coded wires 1100 V grade as per IS 694 (latest). Wires of following cross section shall be used :</p> <ul style="list-style-type: none"> • Minimum 2.5 mm² cross section for phase and neutral • 1.5 mm² for earthing wire. <p>Wires from MCB should directly get terminated on Power supply sockets and there should not be any joints in between.</p> <p>Colour Codes:</p> <ul style="list-style-type: none"> • Phase: Red Yellow or Blue Colour • Neutral: Black Colour • Earth: Green Colour
4	Power socket, Switches and Face plates	<p>Good Quality standard (ISI mark) switch made of MS sheet metal & suitable modular face plate & other accessories:</p> <p>a) Face Plate & support frame:</p> <ul style="list-style-type: none"> • Should accommodate 2 power sockets and 2 switches. • Equivalent to 10954 of Legrand with compatible accessories <p>b) Power Socket:</p> <ul style="list-style-type: none"> • Universal power socket Shall be have facility of 5/15 A plugs. Shall be rated for 6A and 250 V • Equivalent to 572123 of Legrand <p>c) Switches:</p> <ul style="list-style-type: none"> • Shall be rated for 6A and 250 V • Pushbutton type with LED indicator • Equivalent to 572002 of Legrand <p>Proper sequencing of phase and neutral in each socket point shall be checked to be as intended.</p>
5	Ethernet/ Telephone connection sockets	<p>Ethernet and Telephone connection sockets compatible with DLP PVC Trunking should have following specifications:</p> <p>a) Ethernet socket:</p> <ul style="list-style-type: none"> • Rated for 100 Mbps/ 1gbps Ethernet (RJ45) • Color code: Green for internet, Orange for intranet • Equivalent to 572354 and 572355 of Legrand • Termination of 4 pair copper cable (CAT 6e) <p>b) Telephone socket:</p> <ul style="list-style-type: none"> • Termination of 2 pair telephone cable • RJ 11 Connector for low noise • Equivalent to 572300 of Legrand

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6	Telephone cable	<p>Should be standard 2 wire cable from reputed manufacturer conforming to following specifications:</p> <ul style="list-style-type: none"> • LowAttenuation, LowCrosstalk, FireRetardant Jacket • Conductor : Solid annealed high conductivity bare copper of 0.5 sq. mm • Insulation Material : High density polyethylene • Number of pairs : 2 • Protection : Polyester Taped & Sheathed with High Oxygen Index Fire Retardent PVC Compound • Equivalent to 0.5x2P PE INSU.TELEPHONE finolex telephone cable • Colour : Gray
7	Ethernet cable	<p>Should be Unshielded Twisted pair (UTP) CAT 6e cable complying to following specifications:</p> <ul style="list-style-type: none"> • Product or component type : Copper cable • Colour : tint Grey • Type of cable : 4 twisted-pairs cable • Conductor material : Solid bare copper • Insulation resistance \geq 500 mOhm/km 500 V DC • Nominal velocity propagation : 69 % • Cable outer diameter : 6 mm • Equivalent to DC6CAUTP4P1X of Schneider Electric • Flame Retardance : UL 94 V-0 • Standards to be complied : <ul style="list-style-type: none"> ➤ ANSI/TIA-568-C.2 ➤ ISO/IEC 11801
8	19" Wall mount rack for Network Switch installation	<p>Wall Mount Single Section 19" rack (6U height) should be of supplied. Rack should comply to following specifications:</p> <ul style="list-style-type: none"> • Size: 371.3(H) x600(W) x500(D) mm • Top & Bottom covers, side panels: Sheet steel, powder coated • Vertical 19"/metric panel mounts: Sheet steel, powder coated • Door Trims: Sheet steel, powder coated • Viewing area - Toughened tinted glass • Equivalent to 100-01-1-06-6-5 of VALRACK

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9	Ethernet Switch	<p>16 Port 10/100 Mbps Unmanaged Ethernet switch should be (19" Rack mountable) of good quality as per following specifications:</p> <ul style="list-style-type: none"> • Total Number of 10/100BASE-T (RJ45) ports: 16 • IEEE 802.3 10BASE-T Ethernet • IEEE 802.3u 100BASE-TX Fast Ethernet • ANSI/IEEE 802.3 NWay auto-negotiation • IEEE 802.3x flow control • IEEE 802.3az EEE function • Data Transfer Rates: <ul style="list-style-type: none"> ➤ 100 Mbps Half-Duplex ➤ 200 Mbps Full-Duplex • Packet Filtering/Forwarding Rate : 148,800 pps for 100M • Switching Fabric : 3.2 Gbps • Media Interface Exchange : Auto MDI/MDIX adjustment for all ports • LED Indicators : <ul style="list-style-type: none"> ➤ Per port: Link/Activity ➤ Per device: Power • Transmission Method : Store-and-forward • MAC Address Table : 8K entries per device • Equivalent to DSS-16+ of Digilink • MAC Address Learning : Automatic update • Topology : Star
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5 Deliverables

25 meters of Universal DLP PVC Trunking shall be installed in both the rooms. Both the rooms shall have Total 18 points as described in the room layout plane in annexure C.2 and C.3 as explained below:

S.No	Name of items	Unit	Qty
1	<p>Supply, Installation and testing of Universal DLP PVC Trunking with assesories to accomodate following:</p> <ul style="list-style-type: none"> • Power points : (36 socket+switches) • Internet+Intranet connection: 18 • Telephone connection: 6 <p>Along with necessary cabling as per detailed technical specification</p>	Set	2
2	<p>Supply, Installation and testing of Ethernet Switch and wall mount rack along with required inlet wires (Ethernet + Telephone) for input connection (Through Casing/Capping)</p>	Set	2
3	<p>Supply and installation of Power supply wires for connection from Existing Distribution boxes to input of DLP PVC Trunking.</p>	Meters	27

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6 Acceptance Testing

All the power points and network/Telephone points should be demonstrated by the supplier as working with the help of suitable test instruments as below mentioned:

- 1) Power supply sockets: Each socket shall be tested with a fixed load (Any bulb/Instrument)
- 2) Network sockets: Each socket shall tested by ping test to a given IP address on the existing network.
- 3) Telephone sockets: All the telephone sockets should be tested with a given instrument and should not have any noise in communication. (due to improper termination)
- 4) Testing shall be performed on the following set of points as mentioned in the following table

S. No.	Type	Description	Total No.
1.	Type 1	Power with Intranet, Internet & Telephone (2 Socket, 2 Switch, 2 Network and 1 Telephone)	6
2.	Type 2	Power with Intranet (2 Socket, 2 Switch & 1 Network)	6
3.	Type 3	Only Power (2 Socket & 2 Switch)	6

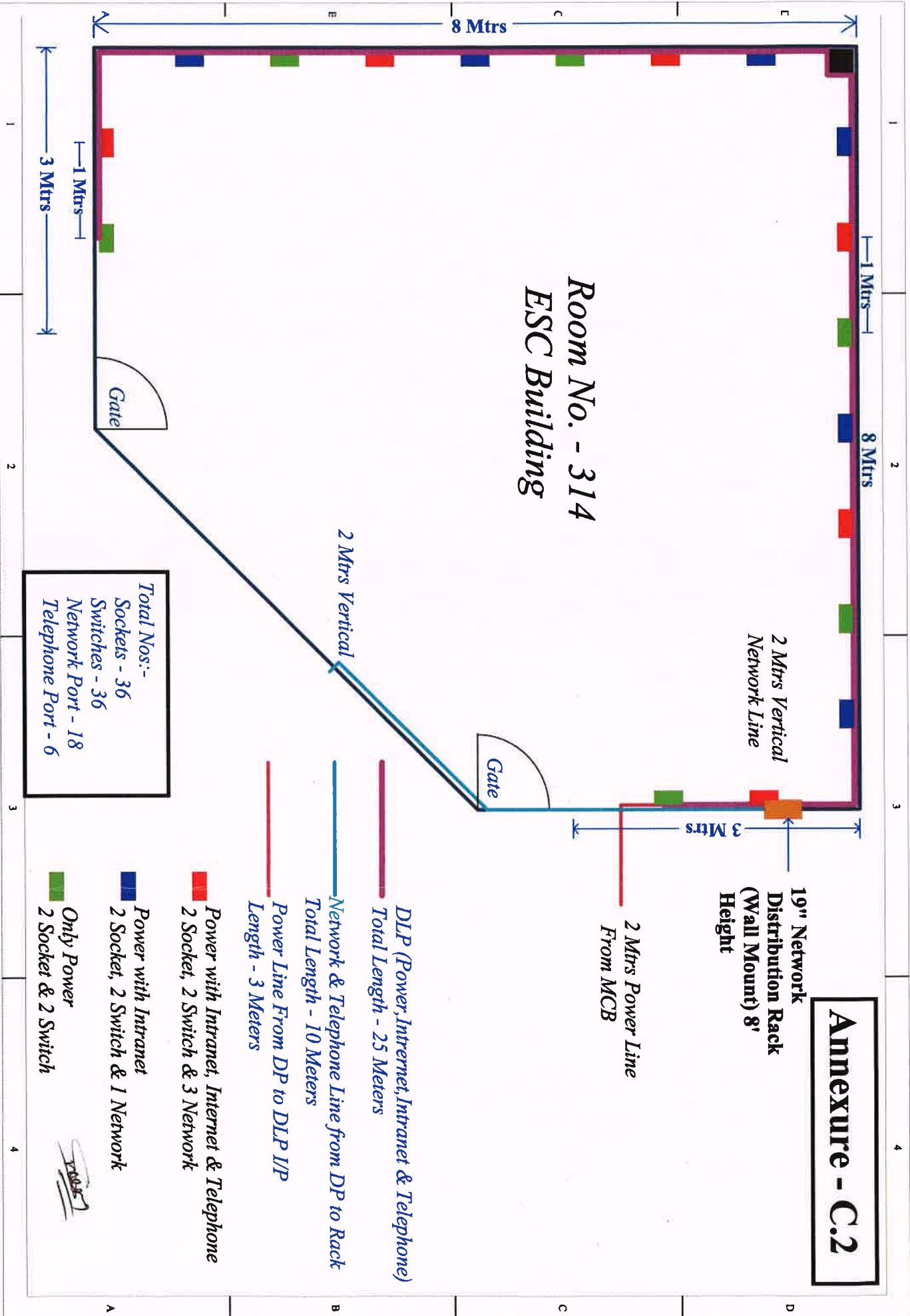
7 Terms and conditions

- 1) Supplier shall have carried out similar jobs in BARC premises.
- 2) Payment shall be issued only after successful Acceptance Testing of all the Power supply, Ethernet and telephone sockets.
- 3) Supplier shall give warranty of one year against any manufacturing defects.
- 4) Supplier shall clearly mention make and model number of all the items (which is going to be used) as mentioned in the Bill of material.
- 5) Support/guidance shall be provided by departmental representatives for power supply tapping from existing power points. Similar guidance shall be provided for Network and telephone tapping. Supplier shall agree to work under the guidance of departmental representatives.
- 6) Supplier should give price quotation as per Annexure : D (Quantity and Cost of proposal)



Room No. - 314 ESC Building

Annexure - C.2



19" Network
Distribution Rack
(Wall Mount) 8'
Height

2 Mtrs Power Line
From MCB

DLP (Power, Internet, Intranet & Telephone)
Total Length - 25 Meters

Network & Telephone Line from DP to Rack
Total Length - 10 Meters

Power Line From DP to DLP I/P
Length - 3 Meters

Power with Intranet, Internet & Telephone
2 Socket, 2 Switch & 3 Network

Power with Intranet
2 Socket, 2 Switch & 1 Network

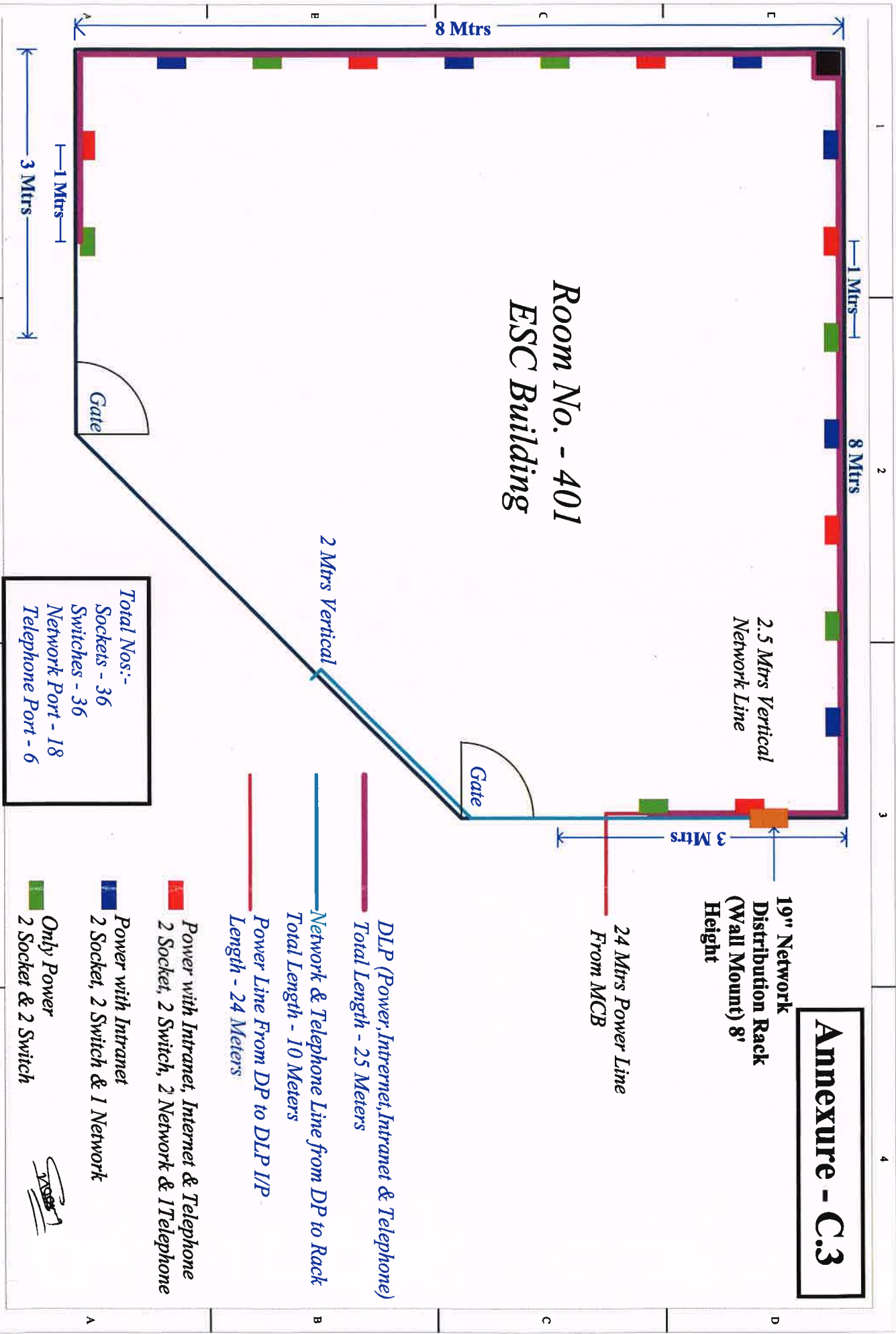
Only Power
2 Socket & 2 Switch

Total Nos:-
Sockets - 36
Switches - 36
Network Port - 18
Telephone Port - 6

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Annexure - C.3

Room No. - 401 ESC Building



Total Nos:-
 Sockets - 36
 Switches - 36
 Network Port - 18
 Telephone Port - 6

Power with Intranet, Internet & Telephone
 2 Socket, 2 Switch, 2 Network & 1 Telephone

Power with Intranet
 2 Socket, 2 Switch & 1 Network

Only Power
 2 Socket & 2 Switch



Annexure 'D'

Quantity and Cost of proposal

1	2	3	4	5	6
S. No.	Description of Item	Unit	Quantity	Offer price (₹)	Total cost (₹) (4x5)
1	Supply and installation of Universal DLP Trunking with <ul style="list-style-type: none">• Power points (36 socket+switches)• Internet+Intranet connection (18),• Telephone connection (6) alongwith necessary cabling as per detailed technical specification in Annexure 'C'	Set	2		
2	Supply and installation of Ethernet Switch and wall mount rack along with required inlet wires (Ethernet + Telephone) for input connection (Through Casing/Capping)	Set	2		
3	Supply and installation of Power supply wires for connection from Existing Distribution boxes to input of DLP Trunking.	Meters	27		
Total Offer cost (₹)					

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Basic cost =
Taxes, etc. = (GST @ %)
Transportation =
Others =
Total Offer Cost = (Inclusive of taxes and all other charges)