INSTITUTE OF NANO SCIENCE AND TECHNOLOGY

Habitat Centre, Sector-64, Phase-X, Mohali-160062

Tender document for the

NAME OF WORK: SITC of Data Networking System.

for Institute of Nano Science & Technology at Sector-81, Knowledge City, Mohali (Punjab)

(Two Bid System)

Percentage Rate Tender for Works

PART A

Technical / Eligibility Bid

Notice Inviting Tender, Eligibility Criteria, General Conditions of Contract

PART B

Particular Specifications

Approved makes & Tender Drawings

PART C

Financial Bid

July 2019

PART-A

TECHNICAL/ELIGIBILITY BID

NOTICE INVITING TENDER, ELIGIBILITY CRITERIA,

GENERAL CONDITIONS OF CONTRACT

INDEX

PART B for Particular Specifications, Approved Makes and

PART C for Financial bid

INSTITUTE OF NANO SCIENCE &TECHNOLOGY

Habitat Centre, Sector-64, Phase-X, Mohali-160062

1.0. Press Notice

NOTICE INVITING TENDER

The Director, Institute of Nano Science & Technology, Mohali (INST), on behalf of Institute of Nano Science & Technology Mohali invites percentage rate bids from approved and eligible contractors in composite category of CPWD for the under Mentioned work. **SITC of Data Networking System.**

NIT NO: 03/INST/2019-20

Name of work: **SITC of f Data Networking System** at INST Campus at Sector-81, Knowledge City, Mohali (Punjab)-140306

Estimated cost put to tender	: ₹10, 62,71,714/
Earnest Money	: ₹20, 62,717 /-.
Period of Completion	: 05 (Five Months (150 days)
Uploading of NIT on website	: 20-07-2019

Last Date and Time for Submission of Tender: **On or before 16-08-2019 till 3.00 PM**

For NIT/Tender Documents Details/downloads or any other correction /amendments /modification / extension till the last date of submission of bids, can be downloaded free of cost from the website: www.inst.ac.inor www.eprocure.gov.in

2.0. PART-A: TECHNICAL/ELIGIBILITY BID

2.1 NIT/TENDER DOCUMENT

The Director, Institute of Nano Science & Technology, Mohali (INST) invites percentage rate bids from approved & eligible contractors in composite category of CPWD for the under mentioned work :

N.I.T.No.: 03/INST/2019-20

Name of work :	**SITC of Data Networking System** at INST Campus at Sector-81, Knowledge City, Mohali (Punjab)-140306

Estimated Cost	₹10,62,71,714/
Period of Completion	05 (Five) Months
Earnest Money Deposit:	₹20, 62 ,717 /-
Performance Guarantee	5% of tendered value of schedule
Security Deposit	2.5% of tendered value
Tender to be uploaded on website	On 20-07-2019
Last date of Submission of queries by e-mail	26-07-2019 up to 5:00 PM
Date of Pre-Bid meeting	30-07-2019 at 11:00 AM at INST, Mohali
Uploading of Pre-Bid queries	05-08-2019
Last Date and time of submission of Tender	16-08-2019 up to 3:00 PM INST shall not be responsible for any postal delay
Date and time of opening of Technical/Eligibility bid/	16-08-2019 at 3:30 PM
Date and time of opening of Financial bid	To be intimated later
Validity of offer	60 days from the date of opening of Tender

Certified that this NIT contains Part - A from page 2 to 40, Part – B from page 1 to 35 and Part - C from page 1 to 3.

This NIT amounting to ₹10, 62, 71,714 /- (Rupees Ten Crore Sixty Two Lakh Seventy One Thousand Seven Hundred Fourteen Only) is hereby approved.

PMC,
(Tata Consulting Engineers)

Architect,
(Sikka Architect Associates)

Consultant (Engineering)

Director,
Institute of Nano Science & Technology

2.2. INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR TENDERING FORMING PART OF BID DOCUMENT.

The Director, Institute of Nano Science & Technology, Mohali (INST) invites percentage rate bids from approved & eligible contractors in composite category of CPWD for the under mentioned work :

S. No.	NIT No.	Name of work & Location	Estimated cost put to Tender	Earnest Money	Period of Completion	Last date & time of submission of tender	Period during which EMD, and other Documents shall be submitted	Time and date of opening of tender
1	2	3	4	5	6	7	8	9
1	03/INST/2019-20	*NAME OF WORK: SITC of* **SITC of Data Networking** *System at INST Campus at Sector-81, Knowledge City, Mohali*.	₹10,62,71,714/-	₹ ₹20, 62 ,717 /-	150days	Up to 03:00 PM on 16-08-.2019	Up to 03:00 PM on 16-08-.2019	03.30 PM on 16-08-.2019

1. The bidder is required to quote his rate in percentage above / below the estimated cost of work i.e. ₹10, 62, 71,714/-

2. The tender document consisting of specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be compiled with and other necessary documents can be seen and Downloaded from website www.inst.ac.in or www.eprocure.gov.in free of cost.

3. The intending bidder should read the schedule of quantities, additional conditions, additional specifications, particular specifications, CPWD- 6 and other terms and conditions given in the NIT. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required. The bidder should also read the General Conditions of Contract for CPWD Works 2014 with up to date correction slips, which is available with Government of India Publications.

4. Information and Instructions for bidders posted on website shall form part of bid document.

5. The Tender can only be submitted after deposing of original EMD in the form of Demand Draft or Pay Order or Banker's Cheque or Fixed Deposit Receipts and Bank Guarantee of any scheduled Bank towards EMD in favour of Director, INST, Mohali, be submitted along with the tender documents.

ELIGIBILITY CRITERIA

The contractors who fulfil any of the following requirements at 1.1, 1.2 shall be eligible to apply. **Joint ventures are not accepted**.

1.1 Approved and eligible registered contractors of CPWD in appropriate class in composite category of CPWD. The enlistment of contractors should be valid on last date of submission of tender. In case only the last date of submission of tender is extended, the enlistment of contractor should be valid on the original date of submission of tender.

1.2 The Contractors, who are not registered with CPWD but fulfil the following requirements, shall be eligible to apply. The definite proof from the appropriate authority not less than Executive Engineer or equivalent rank of having satisfactorily completed the works as mentioned below during the last Seven years ending previous day of last day of submission of Bid:

(a) Three similar completed works each costing not less than ₹4.25 Crore

OR

Two similar completed works each costing not less than ₹6.36 Crore

OR

One similar completed work costing not less than Rs.8.50 Crore

(b) **Similar work** shall mean works comprising of:-"Supply, Installation, Testing and Commissioning of **Data Networking** System" executed under one single agreement."

For 1.2 above ,the financial value of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the actual date of completion to last date of receipt of eligibility bid . The works should have been executed in the same name in which present bid is made or work experience gained from the works executed by the earlier firm (partnership firm) in the same proportion of share of the applicant in that partnership firm where the applicant was a partner earlier. **The past works as Joint Ventures / SPV / consortiums will not be considered for eligibility.**

1.3 The bidder should have had average **annual financial turnover of** ₹ 25.00 Crore **on** construction works during the last three years ending 31st march of 2019.**The bidder shall submit these details as per Form- 'A' attached with NIT.**

1.4 The bidder should not have incurred any loss in more than two years during the last five years ending 31st March of 2019. **The bidder shall submit these details as per Form- 'A' attached with NIT.**

1.5 Solvency Certificate issued by a Scheduled Bank for ₹ 4.25 Crore or more, the solvency certificate should not be older than six months. **The bidder shall submit these details as per, Form- 'B' attached with NIT.**

2 Authorization from OEM:
The following authorization for this tender shall be made available by the **successful bidder** from the Manufacturer as per **Annexure –X**, along with the Performance Guarantee.

i. Authorization that the items quoted by the tenderer are in production and would be serviceable for at-least 5 years from the date of tender.
ii. Confirmation that quoted items are not obsolete products.

iii. Letter from Manufacturer for supporting the system at least for 5 years. In respect of **Data Networking.**

3. List of eligible similar nature of works successfully completed during the last seven years in (Form "Performance report of works referred to in form "G" ----In form "H")

4. **List of Documents to be submitted along with the tender:**

i. Demand Draft/ Pay order or Banker's Cheque/FDR/ Bank Guarantee of any scheduled Bank against EMD (Applicable to all bidders)

ii. Enlistment Order of the Contractor (Applicable to CPWD registered contractors)

iii. Copy of Certificate of Registration for GST & GST return up to 31/03/2019 (Applicable to all bidders)

iv. Integrity Pact of the bid document shall be signed between Authorized Signatory /Executive Engineer and the successful bidder after acceptance of bid.

5. It will be mandatory to constitute Dispute Redressal Committee (DRC). The contractor or INST can only seek arbitration if not satisfied with the decision of DRC.

6. The bid submitted shall be invalid if:

i. The bid is submitted late after scheduled date & time.
ii. The bidder is found ineligible.
iii. The bidder does not deposit original EMD with the office of Director INST, Mohali.
iv. The bidder does not submit all the documents as required and as mentioned above in point No-4
v. If any discrepancy is noticed between the documents at the time of submission of bid by the lowest contractor the bid shall become invalid.
vi. If a bidder does not quote any percentage above / below on the total amount of the tender or any section / Sub head in percentage rate tender, The tender shall be treat as invalid and will not be considered as lowest tenderer.
vii. In the event of tender being submitted by a firm, it must signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender and it must disclose that the firm is duly registered under the Indian Partnership Act 1932.
viii. If the contractor is found ineligible after opening of bids, his bid shall become invalid.

Receipt of deposition of original EMD

(Receipt No...../ Date.....)

1	**Name of work**	SITC of **Data Networking** System at INST Campus at Sector-81, Knowle City, Mohali.
2	**NIT No**	03/INST/2019-20
3	**Estimated Cost**	₹ 10,62,71,714/-
4	**Amount of Earnest Money Deposit**	₹ ₹20,62 717 /-
5	**Last date of submission of bid**	Upto 3:00 PM on 16-08-2019

(# To be filled by EMD receiving Officer)

1	**Name of Contactor**		
2	**Form of EMD**		
3	**Amount Earnest Money Deposit**		
4	**Date of submission of EMD**		

Signature, Name and Designation of EMD

Receiving officer (FO. INST)

Along with Office Stamp

CPWD-6 FOR TENDERING

Percentage rate bids are invited on behalf of Institute of Nano Science and Technology, Mohali. Percentage rate bids from competent specialized agencies having experience in installation and commissioning for the work of ": **SITC of Data Networking System at** INST Campus at Sector-81, Knowledge City, Mohali**."**

1. The enlistment of the contractors should be valid on the last date of submission of bids.

   In case the last date of submission of tender is extended, the enlistment of contractor should be valid on the original date of submission of bids.

1.1 The work is estimated to cost ₹ 10,62,71,714/-. This estimate, however, is given merely as a rough guide**.**

2. Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website. Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

3. The time allowed for carrying out the work will be **150 days** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4. (i). The site for the work is available.

   (ii). The architectural & structural drawing shall be made available in phased manner as per requirement of the same as per approved programme of completion submitted by the contractor after award of the work.

5 The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen from website www.eprocure.gov.in or www.inst.ac.in free of cost.

6. When tenders are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.

7. Earnest Money **₹ 20, 62,717 /-** can be paid in the form of Demand Draft or Pay order or Banker's Cheque or Fixed Deposit Receipt (drawn in favour Director, INST, Mohali payable at Mohali) along with Bank Guarantee of any Scheduled Bank wherever applicable in accordance with the Form annexed hereto having validity for 6 months or more from the last date of receipt of tenders shall be submitted with the tender.

   A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money **or ₹ 20 lakh,** whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee of any schedule bank having validity for 6 months or more from the last date of receipt of bids.

The original EMD shall be deposited by the bidder before opening of Eligibility/ Technical Bid in the office of the **Director, Institute of Nano Science and Technology, Mohali,** failing which the tender shall be rejected.

The bank details of INST are as follows:

1. Account Name : **Director, INST Mohali**

2. Name of Bank : **Canara Bank**

3. Bank Address : **Sector-34A,Chandigarh-160022**

4. Type of Account : **Current Account**

5. Account No. : **2452201001102**

6. IFSC Code : **CNRB0002452**
7. MICR Code : **160015003**

Copy of Enlistment Order and certificate of work experience and other documents as specified in the press notice shall be submitted with the tender. However, certified copy of all the documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of the tender opening authority.

Bid/ tender documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited along with the tender and other documents placed envelope are found in order.

8.0 "Submission of Tender"

Tender shall be submitted by the bidders in three envelopes along with letter of transmittal as attached with this document in the following manner:

Envelope No- 1 shall contain the EMD

Envelope No-2 shall contain signed and stamped documents confirming the eligibility of the bidder (Technical Bid)

Envelope No-3 shall contain singed and stamped price bid (Financial Bid).

Bidder shall clearly mention the envelope No. on each envelope. All envelopes shall be put together in one large envelope and submitted. Addressed to the

The Director,

Institute of Nano Science & Technology
Habitat Centre, Sector-64, Phase-X,
Mohali-160062

Sub: NIT No.: 4/INST/2018-19 for the work "**SITC of Data Networking System. For INST at Sector-81, Knowledge City, Mohali (Pb.)**

Opening of technical bid and financial

After evaluation of applications of tenders, a list of short listed bidders will be prepared. Whose eligibility documents are found to be in order?

Thereafter the financial bids of only the verified eligible bidders shall be opened at the notified time, date and place in the presence of the qualified bidders or their representatives.

The bid shall remain valid for a period of 60 days from the date of opening of Technical bid.

The bid submitted shall be opened at 03:30 PM on 16-08-2019

9. The bid/ tender submitted shall become invalid if:

i. The bid is not submitted in three envelopes along with letter of transmittal / not mentioning envelope No. on all the envelopes / not submitted as per instruction given above **"Submission of Tender"**

ii. The bidder does not deposit original EMD with the office of Director INST, Mohali.

iii The bidder does not submit all the documents as required and as mentioned above in **List of Documents to be submitted along with the tender.**

iv If any discrepancy is noticed between the documents at the time of submission of bid by the lowest contractor the bid shall become invalid.

v if a bidder does not quote any percentage above / below on the total amount of the tender or any section / Sub head in percentage rate tender, The tender shall be treat as invalid and will not be considered as lowest tenderer.

vi In the event of tender being submitted by a firm, it must signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender and it must disclose that the firm is duly registered under the Indian Partnership Act.

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

11. The competent authority on behalf of the Director,INST Mohali does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.

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

12. The competent authority on behalf of Director,INST Mohali reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.

13. The contractor shall not be permitted to bid for works in the INST / CPWD Circle responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of Urban

Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

14. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or before submission of the bid or engagement in the contractor's service.

15. The bid for the works shall remain open for acceptance for a period of **Sixty (60) days** from the date of opening of financial bids, if any bidders withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidders shall not be allowed to participate in the re-bidding process of the work.

16. This notice inviting Bid shall form a part of the contract document. The successful bidders/ contractor, on acceptance of his bid by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:

    a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto

    b) Standard C.P.W.D. Form 7 or other Standard C.P.W.D. Form as applicable.

    c) Standard General Condition of Contract for CPWD 2014 (amended upto last date of receipt of tender).

17. GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the contractor and Government will not entertain any claim whatsoever in respect of the same. However, component of GST at time of supply of service (as provided in CGST Act 2017) provided by the contract shall be varied if different from that applicable on the last date of receipt of tender including extension if any.

Pre-Bid conference shall be held on 30-07-2019 at 11:00 AM at Institute of Nano Science and Technology, Habitat Centre, Sector-64, Phase-X, Mohali-160062 to clear the doubts of intending bidders, if any. The tenderers are requested to submit their questions/queries in writing (also in editable excel format) to the Director, Institute of Nano Science and Technology, Mohali and email to niranjan.singh@inst.ac.in / varender@inst.ac.in up to 5:00 PM on 26-07-2019

Director, INST, Mohali

CPWD FORM NO. 7

GOVERNMENT OF INDIA

INSTITUTE OF NANO SCIENCE, PUNJAB.

STATE: Punjab

PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

Tender for the work of: SITC OF **DATA NETWORKING** System, at INST Campus at Sector-81, Knowledge City, Mohali (Punjab) **to be submitted the by** 3:00 PM on 16-08-2019 **to the** Director, INST, Habitat Centre Phase-X, Mohali **to be opened in presence of tenderers who may be present at 3:30 PM on 1**6-08-2019 **in the office of Director, INST, Mohali.**

TENDER

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

I/We hereby tender for the execution of the work specified for the Director, INST, Mohali within the time specified in Schedule 'F', viz. Schedule of Quantities and in accordance in all respects with the Specifications, Designs, Drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of Contract and with such materials as are provided for, by and in respects in accordance with, such conditions so far as applicable.

We agree to keep the tender open for 60 Sixty days from the date of opening of tender and not to make any modifications in its terms and conditions.

A sum of **₹ 20,62,717/-** is hereby forwarded in FDR of a Scheduled Bank/ Demand Draft of a Scheduled Bank/ Bank guarantee issued by a scheduled bank as earnest money. If I/we fail to furnish the prescribed Performance Guarantee within prescribed period, I/we agree that the said Director, INST, Mohali or his successor in office shall without prejudice to any other right or remedy be at liberty to forfeit the said Earnest Money absolutely. Further, if I/we fail to commence work as specified, I/we agree that Director, INST, Mohali or his successors in office shall, without prejudice to any other right or remedy available in law, be at liberty to forfeit the said Performance Guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 & 12.3 of the tender form. Further, I/We agree that in case of forfeiture of earnest money or Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/ We undertake and confirm that eligible similar work(s) has/ have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of INST, Mohali, then I/we shall be debarred for tendering in INST, Mohali in future forever. Also, if such a violation comes to the notice of INST, Mohali before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/ Performance Guarantee.

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

Dated XX

Witness: - .....XX.

Address: - .....XX.

Occupation: - .....XX.

Signature of Contractor......

Postal Address: - .....

Telephone No.

Fax:-

E-Mail:-

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the INST, Mohali for a sum of ₹..... (Rupees.....

The letters referred to below shall form part of

this contract agreement. For & on behalf of INST, Mohali

i) …… XXX Signature.....

ii) …… XXX

iii) …… XXX

iv) …… XXX

Dated: ..... Authorized Signatory, INST

XXX: To be filled by the INST

XX: To be filled by the Contractor

PERFORMA OF SCHEDULES (A TO F)

SCHEDULE 'A'

Schedule of quantities- As per Part –C of Page – 1-3

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

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

SCHEDULE 'C'

Tools and plants to be hired to the contractor

S.No.	Description.	Hire charges per day	Place of Issue
NIL			

SCHEDULE 'D'

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

a) Technical Specifications. - Part – B - Page No. 2 to 35

b) Tender drawings List - Part–B–Annexure -II

SCHEDULE 'E'

Schedule of component of other materials, Labour, POL etc., for price escalation.

CLAUSE 10C : Not Applicable

CLAUSE 10 CA : Not Applicable

CLAUSE 10CC : Not applicable

Name of work : SITC of **Data Networking** System at **INST Campus at Sector-81, Knowledge City, Mohali.**

1. **Reference to General Conditions of Contract:** General Conditions of Contract 2014 with amendments issued up to the last date of submission of tender.

2	Estimated Cost of work	:	₹ 10, 62, 71,714/-
3	Earnest Money performance guarantee).	:	₹ 20, 62, 717 /- (To be returned after receiving
4	Performance Guarantee		5% of tendered value
5	Security Deposit		2.5% of tendered value

SCHEDULE 'F':

General Rules & Directions:

Officer Inviting Tender	: Director, INST, Mohali.
Maximum Percentage for quantity of items Work to be executed beyond which rates are to be determined in accordance with	
Clauses 12.2 & 12.3	: Refer Clause-12 below

Definitions:

Engineer-in-Charge:	**Consultant (Engg), INST**
Accepting Authority:	**Director, INST, Mohali (Pb)**
PMC (Project Management Consultant)	**Tata Consulting Engineers (TCE)**
Architect	**Sikka Architects & Associates**
Percentage on cost of materials and labour To cover all overheads and profits	15%
Standard Schedule of Rates:	Delhi Schedule of Rates 2018(E& M) with correction slips upto date of receipt of tender.
Department :	Institute of Nano Science and Technology, Mohali.
Standard CPWD Contract Form:	Form GCC 2014, CPWD Form 7 modified & duly amended upto date of submission of tender.

Clause-1:

1.	Time allowed for submission of **Performance guarantee** from date of issue of letter of acceptance, in days.	10 days
2.	Maximum allowable extension with late fee @ 0.10% per day of performance guarantee amount beyond the period as provided in (i) above	1 to 5 Days
Clause-2: i	Authority for fixing compensation under clause 2	Director, INST Mohali
ii	Whether Clause 2(A) shall be applicable	Not Applicable

CLAUSE 5	Number of days from the date of issue of letter of acceptance for reckoning date of start.	15 Days
	Mile Stone	Table of Milestones (Refer Part–A, Page No.-23)
	Time allowed for execution of work	150 days
	Authority to decide	
i	**Extension of time**	**Director, INST, Mohali (Pb.)**
ii	**Re-scheduling of Mile stone**	**Director, INST, Mohali (Pb.)**
iii	**Shifting of Date of Start in case of delay in handing over of site**	**Director, INST, Mohali (Pb.)**
Clause 6, 6A		
	Clause applicable – (6 or 6A)	**Clause-6A (Computerize Measurement to be submitted b agency)**
Clause 7	Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment.	**₹ 2.0 Crore**
Clause-10-B (ii):	Whether clause 10-B (ii) shall be applicable	Yes
Clause-10-C	**Component of Labour expressed as percent of total value of work.**	Not applicable
Clause-10 CA:		Not applicable
	Clause 10 CC to be applicable in contracts with stipulated period of completion exceeding the period shown in the next column	Not applicable
Schedule of component of other materials, Labour, POL etc. for price escalation:		
	Component of civil construction materials (except materials covered under clause 10CA) expressed as percent of total value of work Component of Labour expressed as percent of total value of work. Component of P.O.L. expressed as percent of total value of work.	Not applicable

Clause-11	**Specifications to be followed for execution of work**	As per Part B (Page no. 2-35) & C.P.W.D. Specifications 2009 Vo. I & II with up to date correction slips till receipt of tender
Clause-12:	**Type of Work**	**Project and original works**
12.2 & 12.3	**Deviation limit beyond which clause 12.2 & 12.3 shall apply for Building work**	30%
12.5(i)	**Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation works (except earth work)**	**100%**
(ii)	**Deviation limit for items in earth work subhead of DSR or related items**	100%
Clause-16:	**Competent Authority for deciding reduced rates**	**Director, INST, Mohali**

Clause-17:

Defect Liability Period	**24 Months**

Clause-18: List of mandatory machinery tools & Plants to be deployed by the Contractor at site — NA

Clause-25: **Dispute Redressal Committee (DRC)**

Constitution of Dispute Redressal Committee (DRC)	**Competent Authority to appoint DRC.**
DRC Constituted vide No. 15(3)/2019-INST dated 18-03-2019 (Annexure – 2)(Part A page 40)	Director, INST, Mohali

Clause-36 (i)

Sr. No	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from contractor in the event of non-deployment.	
						Figures	Words
1.	Graduate Engineer	Electrical / Electronics/IT	Principal Technical representative	5 Years	1 No	₹ 25,000/- per month	₹Twenty Five thousand only per month
2	Graduate/Diploma Engineer	Electrical / Electronics/IT	Project/Site Engineer	4/3 Years	1 No	₹ 20,000/- per month	₹Twenty thousand only per month

Note:

1. Foremen, Supervisors and Safety Stewards with basic qualification and SHE certificate as per requirement and instruction of Engineer in Charge at site.

2. The recovery, if any, for non-deployment of project manager shall be done from date of start of the project and the recoveries for non-deployment of other staff including technical representatives for E&M works starts ‘After 60 days’ or ‘As per site requirement to be mutually decided in consultation with the EIC’, whichever is earlier.

3. Assistant Engineers retired from Government services who are holding Diploma will be treated at par with Graduate Engineer / Diploma holder with minimum 10 year relevant experience with a reputed construction company can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers.

4. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form -16 or CPF deduction issued to the Engineers employed by him) along with every account bill/final bill and shall produce evidence if at any times so required by the Engineer-in-charge.

5. The CV of technical persons shall be presented to Engineer in charge before deployment in above work for approval. Once inducted they will not be transferred or removed without the permission on Engineer in Charge.

Clause-42:

i) a) Schedule/ Statement for determining **theoretical quantity of cement & bitumen**	**Delhi Schedule of Rates 2018 with correction slips issued up to the date of receipt of tender and as per nomenclature of the items**

ii) Variations permissible on theoretical quantities.

a) Cement — 2% plus/ minus.

b) Steel Reinforcement and structure steel

Sections for each diameter, section and category. — 2% plus/ minus.

c) Bitumen for all work. — 2.5% Plus only & Nil on minus side.

d) All other materials — Nil

TABLE OF MILE STONE (S)

Name of work: SITC of **Data Networking** System.

Sl. No.	Description of Milestone (Physical & Financial)	Time Allotted in days (From date of start)	Amount to be withheld in case of non-achievement of milestone (% of Tendered Amount)
1	Approval of Designs of Drawings	30 days	1.00%
2	Work upto 1/6th of the tendered amount	60 days	1.00%
3	Work upto 3/6th of the tendered amount	90 days	1.00%
4	Work upto 3/4th of the tendered amount	120 days	1.00%
5	Full Work Completed in all respect.	150 days	1.00%

Terms of payment:

Stage payment of the contractor for various components of work shall be regulated as per CPWD specifications. For works for which the % payment is not specially mentioned in the specification, the rate of stage payment shall be decided by Engineer- in charge.

Stage Payment for SITC items, shall be as mentioned below:

a. 50 % Payment within 15 days of supply of the system at site in good condition along with test reports etc.

b. 35% Payment after installation (ready for testing and commissioning)

c. 10% Payment after testing, commissioning.

d. 5% after Handing over to the department for beneficial use.

FORM OF EARNEST MONEY DEPOSIT

(BANK GUARANTEE BOND)

WHEREAS, contractor..... (Name of contractor) (Hereinafter called "the contractor") has submitted his tender dated ..... (Date) for the construction of ..... (Name of work) (Hereinafter called "the Tender")

KNOW ALL PEOPLE by these presents that we..... (Name of bank) having our registered office at..... (hereinafter called "the Bank") are bound unto..... (Name and division of Executive Engineer) (Hereinafter called "the Engineer-in-Charge") in the sum of ₹ ..... (₹ in words .....) for which payment well and truly to be made to the said Engineer-in-Charge the Bank binds itself, his successors and assigns by these presents. SEALED with the Common Seal of the said Bank this .....day of..... 20.....

THE CONDITIONS of this obligation are:

(1) If after tender opening the Contractor withdraws, his tender during the period of validity of tender (including extended validity of tender) specified in the Form of Tender;

(2) If the contractor having been notified of the acceptance of his tender by the Engineer-in-Charge:

(a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to contractor, if required; OR (b) fails or refuses to furnish the Performance Guarantee, in accordance with the provisions of tender document and Instructions to contractor,

We undertake to pay to the Engineer-in-Charge either up to the above amount or part thereof upon receipt of his first written demand, without the Engineer-in-Charge having to substantiates his demand, provided that in his demand the Engineer-in-Charge will note that the amount claimed by him is due to him owing to the occurrence of one or any of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date* ..... after the deadline for submission of tender as such deadline is stated in the Instructions to contractor or as it may be extended by the Engineer-in-Charge, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE..... SIGNATURE OF THE BANK

WITNESS..... SEAL

(SIGNATURE, NAME AND ADDRESS)

*Date to be worked out on the basis of validity period of 6 months from last date of receipt of tender.

FORM OF PERFORMANCE SECURITY

BANK GUARANTEE BOND

In consideration of the President of India (hereinafter called "The Government") having offered to accept the terms and conditions of the proposed agreement between _____ and _____ (hereinafter called "the said contractor(s)" for the work _____ (hereinafter called "The said agreement") having agreed to production of a irrevocable Bank Guarantee for ₹_____ (Rupees _____ only) as security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

We _____ (hereinafter referred to as "the Bank) hereby undertake to (indicate the name of the bank) pay to the Government an amount not exceeding ₹_____ (Rupees _____ only) on demand by the Government.

We _____ do hereby undertake to pay the amounts due and payable (indicate the name of the bank) under this Guarantee without any demure, merely on a demand from the Government 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 ₹_____ (Rupees _____ only).

We, the said bank further undertake to pay to the Government 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 so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.

We _____ further agree that the guarantee herein contained shall (indicate the name of the Bank) 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 the Government 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 the Government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor (s) and accordingly discharges this guarantee.

We _____ further agree with the Government that the government (indicate name of the bank) shall have the fullest liberty without our consent and without effecting 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) form time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

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

We _____ lastly undertake not to revoke this guarantee except (indicate the name of Bank) with the previous consent of the Government in writing.

This guarantee shall be valid upto _____ unless extended on demand by Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to ₹_____ (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 this guarantee shall stand discharged.

Dated the _____ day of_____ for_____.

(Indicate the name of Bank)

INTEGRITYPACT

To,

……,

……,

…….

Sub: NIT No.: 3/INST/2019-20 for the work "**SITC of Data Networking System. for INST at Sector-81, Knowledge City, Mohali (Pb.)**

Dear Sir,

It is hereby declared that Institute of Nano Science & Technology, Mohali is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/ bid documents, failing which the tenderer/ bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity Agreement on behalf of the Institute of Nano Science & Technology, Mohali.

Yours faithfully,

Director,

Institute of Nano Science & Technology, Mohali

INTEGRITY PACT

To,

The Director,

Institute of Nano Science & Technology Habitat Centre, Sector-64, Phase-X, Mohali-160062

Sub: NIT No.: 3/INST/2019-20 for the work "**SITC of Data Networking System.**

for INST at Sector-81, Knowledge City, Mohali (Pb.)

Dear Sir,

I/We acknowledge that Nano Science & Technology, Mohali is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Agreement, which is an integral part of tender documents, failing which / We will stand disqualified from the tendering process. I/We acknowledge that the making of the bid shall be regarded as an unconditional and absolute acceptance of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by Nano Science & Technology, Mohali. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, Nano Science &Technology, Mohali shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid is accordance with terms and conditions of the tender/bid.

Yours faithfully,

(Duly authorized signatory of the Bidder)

To be signed by the bidder and same signatory competent / authorized to sign the relevant contract on behalf of Institute of Nano Science & Technology, Mohali.

INTEGRITY AGREEMENT

This Integrity Agreement is made at ..... on this.....day of.....20…...

BETWEEN

Institute of Nano Science & Technology (Hereinafter referred as the **Principal/Owner**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

..... (Name and Address of the Individual/firm/Company) through..... (Hereinafter referred to as the (Details of duly authorized signatory)

"**Bidder/Contractor**" and which expression shall unless repugnant to the meaning or context here of include its successors and permitted assigns)

Preamble

WHEREAS the Principal / Owner has floated the Tender (NIT No. 4/INST/2018-19) (hereinafter referred to as "**Tender/Bid**") and intends to award, under laid down organizational procedure, contract for "**Sub:** NIT No.: 3/INST/2019-20 for the work "**SITC of Data Networking System for INST at Sector-81, Knowledge City, Mohali (Pb.)**." hereinafter referred to as the "**Contract**".

ANDWHEREAS the Principal/ Owner values full compliance with all relevant laws of and, rules, regulations, economic use of resources and of fairness/ transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses asunder:

Article 1: Commitment of the Principal/Owner

(1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:

(a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

(b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the

same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.

(c) The Principal/Owner shall endeavor to exclude from the Tender process any person, whose conduct in the past has been of biased nature.

(2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/ Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s)/Contractor(s)

(1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.

(2) The Bidder(s)/ Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:

(a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contractor to any third person any material or other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind what so ever during the Tender process or during the execution of the Contract.

(b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.

(c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/ Contract(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

(d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/ representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

(e) The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.

(3) The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

(4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a willful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and /or to influence the procurement process to the detriment of the Government interests.

(5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s) /Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/ Owner's absolute right:

(1) If the Bidder(s)/ Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article2 above or in any other form, such as to put his reliability or credibility in question, the Principal/ Owner after giving 14 days' notice to the contractor shall have powers to disqualify the Bidder(s) Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/ Owner. Such exclusion may be forever or for a limited period as decided by the Principal /Owner.

(2) Forfeiture of EMD/Performance Guarantee/Security Deposit: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated /determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.

(3) Criminal Liability: If the Principal/ Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of Prevention of Corruption Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

(1) The Bidder declares that no previous transgressions occurred in the last 5years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.

(3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and

has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

Article 5: Equal Treatment of all Bidders/Contractors/Associate Agencies

(1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/ Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/ Pact by any of its Associate agencies.

(2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.

(3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is later and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, i.e. Institute of Nano Science & Technology.

Article 7- Other Provisions

(1) This Pact is subject to Indian Law, place of performance and jurisdiction is the headquarters of the division of the Principal/Owner who has floated the tender.

(2) Changes and supplements need to be made in writing. Side agreements have not been made.

(3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium member In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.

(4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to the original intensions.

(5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

Article 8- LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....

(For and on behalf of Principal/Owner)

.....

(For and on behalf of Bidder/Contractor) WITNESSES:

1.....

(Signature, name and address)

2.....

(Signature, name and address) Place:

Dated:

Annexure –1

(On OEM Letter head with seal)

Dated _____

To,

The Director,

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY

Habitat Centre, Sector-64, Phase-X, Mohali-160062

Subject: Undertaking regarding providing complete technical backup and availability of spares to M/s

Dear Sirs,

For the work of "SITC of **Data Networking** System, for Institute of Nano Science & Technology at Sector-81, Knowledge City, Mohali (Punjab)". We hereby assure and give an Undertaking that as a manufacturer of_____ make system, we will provide complete technical support to M/s_____during the execution of work and also ensure technical support and availability of spares during the 5 year maintenance period after successful commissioning of the system.

This is for information and necessary action please.

Thanking you,

Yours faithfully,

(Seal & Signature)

FORM 'A'

FINANCIAL INFORMATION

I. Financial Analysis-Details to be furnished duly supported by figures in balance sheet / profit & loss account for the last five years duly certified and audited by the Chartered Accountants, as submitted by the applicant to the Income Tax Department (Copies to be attached).

S. No.	Description	Financial Years				
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
i)	Gross Annual turnover					
ii)	Turnover on construction works					
iii)	Profit / Loss					

SIGNATURE OF BIDDER(S)

Signature of Chartered Accountant with Seal

FORM "B"

FORM OF BANKERS' CERTIFICATE FROM A SCHEDULED BANK

This is to certify that to the best of our knowledge and information that M/s./ Sh…….having marginally noted address, a customer of our bank are/is respectable and can be treated as good for any engagement upto a limit of Rs……. (Rupees……..)

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature)

For the Bank

NOTE

Banker's certificates should be on letter head of the Bank, sealed in cover addressed to tendering authority.

In case of partnership firm, certificate should include names of all partners as recorded with the Bank.

FORM 'G'
DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING PREVIOUS DAY OF LAST DATE OF SUBMISSION OF TENDERS.

S.No.	Name of work / Project and Location	Owner or sponsoring organization	Gross amount of work done of items/ components mentioned in Cost of work in Crore of rupees	Date of Commencement as per contract	Stipulated date of completion	Actual Date of Completion	Whether the work was done on back to back basis—Yes/No	Litigation / arbitration cases pending / in progress with details *	Name and address/ telephone Number of officer to whom reference may be made
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

FORM 'H'

PERFORMANCE REPORT OF WORKS REFERRED TO IN FORMS "C"

1. Name of work/project & location :

2. Agreement no. :

3. Estimated cost :

4. Tendered cost :

5. Date of start :

6. Date of completion

(i) Stipulated date of completion :

(ii) Actual date of completion :

1. (a)Whether case of levy of compensation

for delay has been decided or not? : Yes / No

(b) If decided, amount of compensation levied

for delayed completion, if any. :

8. Performance Report :

(1) Quality of work : Outstanding/Very Good/Good/Poor

(2) Financial soundness : Outstanding/Very Good/Good/Poor

(3) Technical Proficiency : Outstanding/Very Good/Good/Poor

(4) Resourcefulness : Outstanding/Very

Good/Good/Poor

(5) General Behaviour : Outstanding/Very good/Good/Poor

Executive Engineer or Equivalent

LETTER OF TRANSMITTAL (on letter Head of the bidder)

To,

The Director,

Institute of Nano Science & Technology Habitat Centre, Sector-64, Phase-X, Mohali-160062

Sub: NIT No.: 3/INST/2019-20 for the work "**SITC of Data Networking System.**

for INST at Sector-81, Knowledge City, Mohali (Pb.)

Sir,

Having examined the details given in press notice and bid document for the above work, I/we here-by submit the relevant information in three (3) sealed envelopes as required containing the following documents.

1. I/we have furnished all information and details necessary for eligibility and have no further pertinent information to supply.

It is also certified that I/we shall be liable to be debarred, disqualified/cancellation of enlistment in case any information furnished by me/us found to be incorrect.

Enclosures:

Seal of bidder

Date of submission: Signature(s) of bidder(s).

Annexure – 2

Composition of DRC under Clause 25

Issued vide office order No. 15(3)/2019-INST, Dated: 18.03.2019

In accordance with Clause 25 of Part 'A' of Tender Document of INST for various packages for Construction and Development of Institute Campus at Sector-81, Mohali, the Director, Institute of Nano Science and Technology has been pleased to reconstitute a Dispute Redressal Committee (DRC) for redressal of disputes arisen between the contractors and the Institute on the matters pertaining to the said project. The reconstituted committee along with ToR is as under:

1. Dr. R.K. Sinha, Director, CSIO, Chandigarh : **Chairman**
2. Dr. S.K. Sardana (Retd. IDES), Member Judge, Chandigarh Disputes Redressal Commission, Chandigarh : **Member**
3. Dr. Sandeep Chatterjee, Registrar, IIT Delhi : **Member**
4. Shri Moloy Roy (Civil Engineer), Former Vice President, M/s. JMC Projects India Ltd., Kolkata : **Member**
5. Shri S.K. Srivastava, (Retd. Spl. D.G., CPWD) 370, Asiad Village Complex, Siri fort, New Delhi-110049 : **Member**
6. Shri J.K. Chowdhary (Retd. Chief Engineer, CPWD), C-2/2369, Vasant Kunj, New Delhi-110070 : **Member**

Terms of Reference:

Tenure: Till the completion of the project of Construction & Development of INST Campus at Sector 81, Mohali, or further orders, whichever is earlier.

Quorum: Chairman and three other members

The above order will take immediate effect.

CONSTRUCTION& DEVELOPMENT OFINSTITUTE OF NANO SCIENCE & TECHNOLOGY AT MOHALI

NAME OF WORK: SITC OFDATA NETWORKINGSYSTEM.

INDEX

DATA NETWORKING SYSTEM (PASSIVE COMPONENTS)

All Passive Components should be from the same Original Equipment Manufacturer (OEM).

The structured cabling should be certified to have application support warranty for next 25 years from the Original Equipment Manufacturer (OEM). The warranty would include the following:-

1. System performance warranty:
2. Application assurance warranty
3. Performance commitment
4. Professional installation.

Structured cabling system is defined as:

- An end-to-end Certified Structured Cabling System comprised entirely of new, genuine, passive connectivity and cabling components. This expressly excludes any active equipment, whether in or attached to it, public network interface, or terminal equipment.

- The entire Certified Structured Cabling System must be installed, commissioned, and maintained by an Certified Installer of an approved OEM whose certification is valid at the time of installation, testing or maintenance of the Certified Structured Cabling System.

The installation has been installed and tested in compliance with (a) the practices specified by OEM in its training or in its accepted practices, including the use of an OEM-approved tester that is properly calibrated, that has the correct leads/adapters and tester settings for the test performed, and that has the latest version of tester software, (b) the published edition of TIA/EIA 568, ISO/IEC 11801, EN 50173 or AS/NZ 3080 which is current at the date of installation and which is most recognized by your local industry, (c) the registered category of end-to-end performance, and (d) the published edition of TIA/EIA-569 or ISO/IEC 18010 which is current at the date of installation and which is most recognized by your local industry.

24 Port Edge Switch with SFP+ Uplink

S.No	Specifications	Compliance Yes/No
A)	**Performance Features**	
1	The proposed switch should support minimum switching capacity / Forwarding rate of 128Gbps / 190 Mpps respectively with 4 x 10G uplinks	
2	The proposed switch should have minimum 1 GB RAM and atleast 512MB Flash supporting all requested features including software defined networking capabilities without any performance impact.	
3	The proposed switch shall have minimum 15K MAC Addresses and 500 active Vlans.	

4	The proposed switch should have slot / ports(excluding uplinks) for minimum 80 Gbps of stacking bandwidth with dedicated stacking ports and cables with minimum 8 switches in stack	
5	The proposed switch should be able to support 2800 IPV4, 1400 IPV6 routing table and 1000 multicast route entries	
B)	**General Features**	
1	The proposed switch must support fundamental features such as Layer 2, PBR, Routed Access (RIP, EIGRP Stub/OSPF - 1000 routes), BGP, BGP+, PIM Stub Multicast, etc	
2	The proposed switch should be software defined networking capable and be able to atleast integrate easily with the SDN controller from the same OEM. Overall integration must offer critical benefits such as - 1. Real-time network & application visibility, monitoring / troubleshooting 2. Identify and resolve issues such as client connectivity etc 3. Automatic device provisioning such as configuration-push etc	
3	Switch should be Non blocking Architecure	
4	During system boots, the system's software signatures should be checked for integrity. The proposed system should be capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.	
5	The proposed switch shall support application visibility and traffic monitoring with minimum netFlow / sflow / jflow entries.	
6	The proposed switch should support both front and back beacon LEDs or equivalent for easy identification of the switch being accessed.	
7	The proposed switch should support redundant field replacable platinum rated power supplies.	

C)	**High availabity & Resilliency**	
1	The proposed switch should support LACP for bonding multiple ports/ethernetlinks into a single logical link	
2	The proposed switch should support software patching for critical defects such that when any critical defects hit the switches operating system instead of waiting for the new maintenance release from the OEM, the OEM should release a patch only for the defected feature set and that could be put on the switch instead. Same should also apply for new features.	
3	The switch ASICs on the proposed models should have the capability to be reprogrammed such that enabling new feature sets on the H/W does not require bank to procure new switches in the near future or equivalent functionalities.	

4	After a reboot when power is restored to a switch, switch should start delivering power to endpoints without waiting for the operating system to fully load.	

D)	**L2 Features**	
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors	
2	The switch should support IEEE 802.1Q VLAN encapsulation	
3	The proposed switch should support Spanning-tree PortFast and BPDU guard for fast convergence	
4	The proposed switch should support STP advanced technologies to help ensure quick failover recovery, enhancing overall network stability and reliability	
5	The proposed switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.	
6	The proposed switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth	
7	The proposed switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.	
8	The proposed switch should support detection of unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.	
9	The proposed switch should support IGMP v1, v2 Snooping	
10	The proposed switch should support IPv4 and IPv6. It should be able to discover (on both IPv4 & IPv6 Network) the neighboring device giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.	

E)	**Network security features**	
1	The proposed switch should support IEEE 802.1x providing user authentication, authorization and CoA.	
2	The proposed switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	
3	The proposed switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	
F)	**Quality of Service**	
1	The proposed switch should support 802.1p Class of Service (CoS) and Differentiated Services Code Point (DSCP) field classification, Round Robin (Shaped or Weighted) scheduling, Committed Information Rate (CIR) with eight egress queues per port.	

1	The proposed switch should support Statitc routing protocols	
2	The proposed switch should support IP Multicast and PIM, PIM Sparse Mode, & Source-Specific Multicast for Wired and Wireless Clients.	
3	The proposed switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2).	
4	The proposed switch should support Inter-VLAN routing.	
5	The proposed switch should support VRRP for IPv4 & IPv6.	
6	The proposed switch should support VRRPv3.	
7	The proposed switch should support uRPF for IPv4 and IPv6.	

H) Certifications

1	Safety certifications - IEC 60950-1, UL 60950-1, CAN/CSA C22.2 No. 60950-1, EN 60950-1, Class I Equipment.	
2	Electromagnetic emissions certifications - EN61000-3-3, EN 55022 Class A,	
3	Environmental - Reduction of Hazardous Substances (ROHS) and above	

I) Operating Temperature Range

1	The proposed switch must have an operating temperature in the range of 0*C to 45*C	

J) Smart operation

1	The proposed switch should support WebUI as device management tool to provision the device for simplfying the device deployment and manageability. It should help to build configurations, monitor and troubleshoot the device without having CLI expertise.	

24 Port PoE Edge Switch with SFP+ Uplink

S.No	Specifications	Compliance
		Yes/No
A	**Performance Features**	
1	The proposed switch should support minimum switching capacity / Forwarding rate of 128Gbps / 190 Mpps respectively with 4 x 10G uplinks	
2	The proposed switch should have minimum 1 GB RAM and atleast 512 MB Flash supporting all requested features without any performance impact.	
3	The proposed switch shall have minimum 15K MAC Addresses and 500 active Vlans.	

4	The proposed switch should have slot / ports(excluding uplinks) for minimum 80 Gbps of stacking bandwidth with dedicated stacking ports and cables with minimum 8 switches in stack	
5	The proposed switch should be able to support 2800 IPV4, 1400 IPV6 routing table and 1000 multicast route entries	
B	**General Features**	
6	The proposed switch must support fundamental features such as Layer 2, PBR, Routed Access (RIP, EIGRP Stub/OSPF - 1000 routes), BGP, BGP+,, PIM Stub Multicast,	
7	Switch should be Non blocking Architecure.	
8	During system boots, the system's software signatures should be checked for integrity. The proposed system should be capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.	
9	The proposed switch shall support application visibility and traffic monitoring with minimum netFlow / sflow / jflow entries.	
10	The proposed switch should support both front and back beacon LEDs or equivalent for easy identification of the switch being accessed.	
C	**High availabity & Resilliency**	
11	The proposed switch should support redundant field replacable platinum rated power supplies.	
12	The proposed switch should support LACP for bonding multiple ports/ethernetlinks into a single logical link	
13	The proposed switch should support software patching for critical defects such that when any critical defects hit the switches operating system instead of waiting for the new maintenance release from the OEM, the OEM should release a patch only for the defected feature set and that could be put on the switch instead. Same should also apply for new features.	
14	The switch ASICs on the proposed models should have the capability to be reprogrammed such that enabling new feature sets on the H/W does not require bank to procure new switches in the near future or equivalent functionalities.	
15	After a reboot when power is restored to a switch, switch should start delivering power to endpoints without waiting for the operating system to fully load.	

D	**L2 Features**	
16	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors	
17	The switch should support IEEE 802.1Q VLAN encapsulation	
18	The proposed switch should support Spanning-tree PortFast and BPDU guard for fast convergence	
19	The proposed switch should support STP advanced technologies to help ensure quick failover recovery, enhancing overall network stability and reliability	
20	The proposed switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.	
21	The proposed switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth	
22	The proposed switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.	
23	The proposed switch should support detection of unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.	
24	The proposed switch should support IGMP v1, v2 Snooping	
25	The proposed switch should support IPv4 and IPv6. It should be able to discover (on both IPv4 & IPv6 Network) the neighboring device giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.	
E	**Network security features**	
26	The proposed switch should support IEEE 802.1x providing user authentication, authorization and CoA.	
27	The proposed switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	
28	The proposed switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	
F	**Quality of Service**	

29	The proposed switch should support 802.1p Class of Service (CoS) and Differentiated Services Code Point (DSCP) field classification, Round Robin (Shaped or Weighted) scheduling, Committed Information Rate (CIR) with eight egress queues per port.	
30	The proposed switch should support IP Multicast and PIM, PIM Sparse Mode, & Source-Specific Multicast for Wired and Wireless Clients.	
31	The proposed switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2).	
32	The proposed switch should support Inter-VLAN routing.	
33	The proposed switch should support VRRP for IPv4 & IPv6.	
34	The proposed switch should support VRRPv3.	
35	The proposed switch should support uRPF for IPv4 and IPv6.	
H	**Certifications**	
36	Safety certifications - IEC 60950-1, UL 60950-1, CAN/CSA C22.2 No. 60950-1, EN 60950-1, Class I Equipment.	
37	Electromagnetic emissions certifications - EN61000-3-3, EN 55022 Class A,	
38	Environmental - Reduction of Hazardous Substances (ROHS) and above	
I	**Operating Temperature Range**	
39		
40	The proposed switch must have an operating temperature in the range of 0*C to 45*C	
J	**Smart operation**	
42	The proposed switch should support WebUI as device management tool to provision the device for simplfying the device deployment and manageability. It should help to build configurations, monitor and troubleshoot the device without having CLI expertise.	

Distribution switch with 10G Ports

S.No	Specifications	Compliance
		Yes/No
A	**Hardware &Performance Features**	
1	The proposed switch should be fixed configuration 1 RU platform or modular to support atleast 40 port 10G and additional slot to add 4 x 40 uplink ports in future. Switch should be provided with SFP as per solution proposed	

2	The proposed switch should have field replaceable redudant power supplies and FAN trays from day-1	
3	The proposed switch should support switching capacity / Forwarding rate of upto 960Mbps / 720Mpps respectively	
4	The proposed switch should have minimum 4GB RAM and atleast 1GB Flash supporting all requested features without any performance impact.	
5	The proposed switch should support NSF/SSO/IRF or equivalent when connected in virtual stack	
B	**L2 Features**	
7	The proposed switch should support minimum 60K Mac address and 4000 active vlans	
8	The proposed switch should support VLANs based on ports, MAC address and IP-Subnet.	
9	The proposed switch must support UDLD or equivalent , CDP / LLDP.	
C	**L3 Features**	
10	The proposed switch should support minimum 4K multicast routes	
11	The proposed switch should support VRRP/HSRP	
12	The proposed switch should support VRF/MPLS, Policy based routing	
D	**QoS features**	
13	The propsed switch should support 8 queues per port	
14	The propsed switch should support IPv4 and IPv6 QoS classification and policing	
15	The propsed switch should support IEEE 1588v2/NTPV4 for clocking precision	
E	**Security**	
16	The proposed switch should support at least 3K hardware based ACL	
17	The proposed switch should support IP Source guard, Dynamic ARP inspection, DHCP Snooping and MAcfiltering (AES encryption)	
18	The proposed switch should support real time data collection with line rate hardware based netflow/sflow.	
F	**High Availability & Resiliency, Management and Troubleshooting, Others**	
19	The proposed switch should support telnet, SSH, SNMPv3, configuration rollback feature for ease of management	
20	The proposed switch should support API Driven configuration.	

21	The proposed switch should support port mirroring based on Inbound & outbound, mirroring based on ports, VLANs, RSPAN/ERSPAN etc	
22	The proposed switch must support software upgrade without any downtime to network.	
23	The proposed switch should support SNMP notification for dynamic change in MAC table	

Core switch

S.No	Specifications	Compliance
		Yes/No
A	**Hardware &Performance Features**	
1	The proposed switch should be fixed configuration 1 RU platform or modular to support atleast 24 port 10/25 and additional slot to add 4 x 40/100G uplink ports in future. SFPs to be provisioned as per proposed solution	
2	The proposed switch should have field replaceable redudant power supplies and FAN trays from day-1	
3	The proposed switch should support switching capacity / Forwarding rate of 2Tbps / 1Bpps respectively	
4	The proposed switch should have minimum 4GB RAM and atleast 1 GB Flash supporting all requested features including software defined networking capabilities without any performance impact.	
5	The proposed switch should support NSF/SSO/IRF or equivalent when connected in virtual stack	
B	**L2 Features**	
6	The proposed switch should support minimum 30K Mac address and 4000 active vlans	
7	The proposed switch should support VLANs based on ports, MAC address and IP-Subnet.	
8	The proposed switch must support UDLD or equivalent , CDP / LLDP or equivalent.	
C	**L3 Features**	
9	The proposed switch should support minimum 60K IPv4 and 40K IPv6 route entries	
10	The proposed switch should support up to 4K multicast routes	

11	The proposed switch should support routing protocols like BGPv4, OSPF(v2, v3) Static, ECMP, source based multicast (or SSM), Distance vector multicast routing protocol/PIM-DM, etc	
12	The proposed switch should support VRRP/HSRP	
13	The proposed switch should support VRF/MPLS, Policy based routing	
D	**QoS features**	
14	The propsed switch should support 8 queues per port	
15	The propsed switch should support IPv4 and IPv6 QoS classification and policing	
16	The propsed switch should support priority queuing, DSCP, traffic shaping, WRED or equivalent	
17	The propsed switch should support control plane policing to protect switch CPU from DoS attack	
18	The propsed switch should support IEEE 1588v2/NTPV4 for clocking precision	
E	**Security**	
19	The proposed switch should support at least 3K hardware based ACL	
20	The proposed switch should support IP Source guard, Dynamic ARP inspection, DHCP Snooping and IEEE 802.1ae based MACSEC /GRE (AES encryption)	
21	The proposed switch should support 802.1x for user authentication and authorization, Dynamic VLAN assignment, Guest VLAN assignment, MAC based authentication	
22	The proposed switch should support real time data collection with line rate hardware based netflow/sflow.	
23	During system boots, the system's software signatures should be checked for integrity. The proposed system should be capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.	
F	**High Availability & Resiliency, Management and Troubleshooting, Others**	
24	The proposed switch should able to integrate with netFlow/sflow/jflow based collector/anaylsis solution for threat detection solution. Should able to support threat detection within encrypted traffic	
25	The proposed switch should support telnet, SSH, SNMPv3, configuration rollback feature for ease of management	

26	The proposed switch should support API Driven configuration	
27	The proposed switch should support port mirroring based on Inbound & outbound, mirroring based on ports, VLANs, RSPAN/ERSPAN etc	
28	The proposed switch must support software upgrade without any downtime to network. It should be able to support linux based container to run applications	
29	The proposed switch should support SNMP notification for dynamic change in MAC table	

Wireless Controller: -

S.No	Specifications	Compliance
		Yes/No
A	**Hardware Features**	
1	The proposed wireless lan controller (or mobility controller) must be compliant with IEEE CAPWAP or equivalent for controller-based WLANs.	
2	The proposed wireless lan controller should have atleast 2 x 10 Gigabit Ethernet interface. However, the proposed controller should be capable of supporting both 1G and 10 G SPFs on same network I/O ports	
3	The proposed wlc should support both centralized as well as distributed traffic forwarding architecture with L3 roaming support from day 1. It should be IPv6 ready from day one.	
5	The proposed controller should support minimum 16K concurrent users/devices	
6	The proposed WLAN controller should be supplied with minimum 200 AP license from Day-1 and can scale upto 500 APs without change / additional hardware. Additional AP license will be procured in future.	
7	The wireless access points must securely download image from WLC and should be configured from WLC only.	
8	The proposed WLAN controller should provide Application visibility with both traffic forwarding mode i.e when traffic coming to controller and when traffic moving locally from AP to connected access switch. Admin should have option to create policies to allow or deny access based on applications.	

9	The proposed mobiility controller should support AP License Migration from one WLC to another	
10	The proposd mobility controller should support minimum 4000 VLANs	
11	The proposed mobility controller must support TFTP, FTP and SFTP transfer mode.	
B	**Wireless Controller Features & Functionalities**	
12	The proposed mobility controller must support stateful switchover between active and standby controller in a < 1 second time frame.	
13	The proposed WLC should support L2 and L3 roaming for IPv4 and IPv6 clients	
14	The proposed WLC should support guest-access functionality for IPv6 clients.	
15	The proposed wlc should support IEEE 802.1p priority tag.	
16	The proposed wlc should ensure WLAN reliability by proactively determining and adjusting to changing RF conditions.	
17	The proposed wlc should provide real-time radio power adjustments based on changing environmental conditions and signal coverage adjustments. It should also adjust radio channel automatically as soon interference is detected in real-time	
18	The proposed wlc should support client load balancing to balance the number of clients across multiple APs to optimize AP and client throughput.	
19	The proposed wlc should support policy based forwarding to classify data traffic based on ACLs	
20	Should support flexible DFS to prevent additional 20/40 Mhz channels from going unused	
21	Should support dynamic bandwidth selection among 20Mhz, 40 Mhz and 80Mhz channels, ensuring one access point on 20Mhz and another on 80 Mhz channel connected on the same controller at same WLAN group.	
22	The proposed controller should support minimum 500 WLANs	
23	The proposed controller should support dynamic VLAN assignment	
24	Shall support Hot Spot 2.0	
25	To deliver optimal bandwidth usage, reliable multicast must use single session between AP and Wireless Controller.	

26	The proposed mobility controller should able to do static/dynamic channel bonding based on interference detected on particular channel.	
27	The proposed system must support coverage hole detection and correction that can be adjusted on a per WLAN basis.	
28	Must support RF Management with 40 MHz and 80 Mhz channels with 802.11n & 802.11ac	
29	The proposed wlc should provide visibility to network airtime in order to set the airtime policy enforcement	
30	The proposed wlc must support dynamic Airtime allocation on per WLAN, per AP, Per AP group basis.	
31	The proposed wlc must support configuration to restrict the number of logins per user.	
C	**Wireless Security**	
32	Should support web-based authentication to provide a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant.	
33	WLC should support web based authentication in different traffic forwarding modes i.e Central switching and Local switching when traffic move locally from AP to connected switch.	
34	Should support port-based and SSID-based IEEE 802.1X authentication.	
35	Should support MAC authentication to provide simple authentication based on a user's MAC address.	
36	WLC should be able to exclude clients based on excessive/multiple authentication failure.	
37	Shall support AES or TKIP encryption to secure the data integrity of wireless traffic	
38	Shall able to provide an air quality index for ensuring the better performance	
39	Shall able to provide real time chart showing interference per access point on per radio and per-channel basis.	
40	Should support AP location-based user access to control the locations where a wireless user can access the network	
41	Should support Public Key Infrastructure (PKI) to control access	
42	Must be able to set a maximum per-user bandwidth limit on a per-SSID basis.	
43	WLC Shall support WIDS/WIPS, and spectral analysis from day 1.	

44	WLC should detect if someone connect a Rogue Acess Point in network and able to take appropriate action to contain rogue Acess point.	
45	WLC should detect and protect an Ad-hoc connection when a connected user forming a network with other system without an AP or try enabling bridging between two interface	
46	WLC should detect if a user try to impersonate a management frame.	
47	WLC should detect and take appropriate containment action if a smartphone user using tethering to connect other device.	
48	WLC should detect and protect if a user try to spoof mac address of valid client or AP for unauthorized acess/authentication.	
49	WLC should detect if a user trying to do internet sharing through a valid system to an unauthorized device.	
D	**Management & QoS**	
50	Should support SNMPv3, SSHv2 and SSL for secure management.	
51	Should support encrypted mechanisum to securely upload/download software image to and from Wireless controller.	
52	Should provide visibility between a wired and wireless network using IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and sFlow/equivalent.	
53	Should support AP Plug and Play (PnP) deployment with zero-configuration capability	
54	Should support AP grouping to enable administrator to easily apply AP-based or radio-based configurations to all the APs in the same group	
55	Should support selective firmware upgrade APs, typically to a group of APs minimize the impact of up-gradation	
56	Should have a suitable serial console port.	
57	Should have Voice and Video Call Admission and Stream prioritization for preferential QOS	
58	Controller should support deep packet inspection for all user traffic across Layer 4-7 network to analyses information about applications usage, peak network usage times for all access points from day one with different traffic forwarding modes i.e central switching with WLC and local switching when traffic move locally from AP to connected switch.	

59	Should be able to do application visibility for application running behind HTTP proxy.	
60	Support profiling of wireless devices based on known protocols like http and dhcp to identify clients	
61	Should support visibily and control based on the type of applications	
E	**Guess Access and Analytics Integration with Wifi Controller**	
62	For future purpose solutions like guess access and Wifi analytics should be seamlessly integrated with proposed controller. Additional software or license component can be procured as required later.	
63	Guest Access Solution - 1. Integrated/ External Solution must provide Self registeration based Guest access workflow for minimum 4000 users. Bidder must quote necessary compute for external solution. 2. Should support sponsored based Guest access workflow. Should Support different custom branding of captive portal for Laptop and mobile. 3. Should support RADIUS authentication 4. Should support integration with SMS gateway for OTP.	
64	Analytics Solution - 1. The system shall offer API to integrate mobile App, to integrate proximity based service, like push notification service 2. The system shall provide location Analytic service that provides real-time live analytic of demographic information 3. The system shall have an ability to have an analytics solution that provides device counts by floor 4. The system shall have an ability to have an analytics solution that provides counts of number of WIFI devices detected in a specific custom defined zones 5. The system shall have an ability to create analytics zones in on premise analytics solutions and schedule analytics reports that can be viewed by PDF. 6. The system shall have an ability to export analytics reports in XLS format	

Indoor Access Point: -

S. No.	Specification	
1	Access Points proposed must include radios for 2.4 GHz and 5 GHz with	

S. No.	Specification	
	802.11ac Wave 2.	
2	An access point must include a standard OEM provided Mounting brackets for mounting on Celing or Roof top.	
3	Access Point shall support Console port that uses Standard Port (RJ-45) type connection	
4	Should have two RJ-45 auto-sensing 10/100/1000 Mbps LAN port	
5	Access Point should have USB port for future requirement.	
6	Must have atleast 3 dBi Antenna gain on each radios	
7	Must support 4x4:4 Multi User MIMO for both 802.11ac and 802.11n client	
8	Must support minimum of 21dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.	
9	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.	
10	Must incorporate radio resource management for power, channel and performance optimization	
11	Must have -96 dB or better Receiver Sensitivity.	
12	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
13	Must support Management Frame Protection.	
14	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).	
15	Access Points must support Hardware-based encrypted user data and management traffic between controller and Access point for better security.	
16	Must support the ability to serve clients and monitor the RF environment concurrently.	
17	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
18	Must be plenum-rated (UL2043).	
19	Must support 16 WLANs per AP for SSID deployment flexibility.	

S. No.	Specification	
20	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.	
21	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.	
22	Must support Power over Ethernet and power injectors.	
23	802.11e and WMM	
24	Must support Reliable Multicast to Unicast conversion to maintain video quality at AP level	
25	Must support QoS and Video Call Admission Control capabilities.	
26	Access Point should 802.11 DFS certified	

Network Management System: -

S.No	Specification
1	NMS has to be preferably from the same OEM as of Switches, Wireless LAN Controllers and Wireless Access Points.
2	Management system should provide a single integrated solution for comprehensive lifecycle management of the Wired and Wireless LAN (of same OEM) and should support rich visibility into end-user connectivity and application performance assurance issues
3	Management system should be licensed for proposed network devices which should have flexibility to be shared among wire and wireless devices like switches and Wireless access Points etc. of same OEM. Management system should have scalability to manage 1000 managed devices
4	The NMS solution should be dedicated hardware based appliance which should have with 500 device Lic. from Day-1. NMS and other network active devices are from same OEM for better integration and manageability.
5	The solution should support fault, configuration, accounting, performance, and security management for complete network and compute environments
6	The solution should support discovery and classifies application-visibility readiness in network device hardware and software
7	The solution should support automated new device deployment using Zero Touch Provisioning capabilities.
8	The solution should support compliance engine, which provides the ability to specify the network configuration and perform an audit of the network devices against the configuration archive or the device configuration. The audit report identifies devices that are out of compliance. Administrator can remediate the devices that are out of compliance

S. No.	Specification	
	with the desired configuration.	
9	The solution should support customize alarms based on the operational needs. Customizable syslog based alarms provides the ability to custom create new alarms and prioritize operator response	

Next Generation Firewall: -

S.No	Specifications
1	**Industry Certifications and Evaluations**
	Firewall solution offered from OEM must be rated as leaders in the latest Magic Quadrant for Enterprise Firewall and NGIPS published by Gartner
2	**Hardware Architecture**
	The appliance based security platform should be capable of providing NGFW capability (firewall, application visibility, and IPS functionality) and Advance malware,URL filtering in a single appliance
	The appliance should support atleast 8 * 10 Gigabit Ethernet SFP+ ports from Day one and should be scalable to additional 8 x 10G or 4 x 40G ports. Required 10G DAC/Transreceiver should be loaded from Day-1.
	The appliance hardware should be a multicore CPU architecture with a hardened 64 bit operating system to support higher memory
	Proposed Firewall should not be proprietary ASIC based in nature & should be open architecture based on multi-core cpu's to protect & scale against dynamic latest security threats.
3	**Performance & Scalability**
	Should support atleast 12Gbps of FW performance throughput (includes FW & Application Visibility)
	Should support at least 10 Gbps of NGFW performance throughput (includes IPS + Application Visibility)
	L7 Firewall and NGFW throughput difference should not be more than 70%
	NG Firewall should support at least 9 million concurrent session
	NG Firewall should support at least 68000 connections per second with Application visibility
4	**High-Availability Features**
	Firewall should support Active/Standby failover
	Firewall should support etherchannel functionality for the failover control & data interfaces for provide additional level of redundancy
	Firewall should support redundant interfaces to provide interface level redundancy before device failover
	Firewall should support 802.3ad Etherchannel functionality to increase the bandwidth for a segment.
	Firewall should support VXLAN
5	**NGFW Firewall Features**

S. No.	Specification	
	Solution must be capable of passively gathering information about network hosts and their activities, such as operating system, services, open ports, client applications, and vulnerabilities, to assist with multiple activities, such as intrusion event data correlation, elimination of false positives, and policy compliance.	
	Firewall should support creating access-rules with IPv4 & IPv6 objects simultaneously	
	Firewall should support operating in routed & transparent mode	
	Should support Static, RIP, OSPF, OSPFv3 and BGP	
	Firewall should support manual NAT and Auto-NAT, static nat, dynamic nat, dynamic pat	
	Firewall should support Nat66 (IPv6-to-IPv6), Nat 64 (IPv6-to-IPv4) & Nat46 (IPv4-to-IPv6) functionality	
	Firewall should support Multicast protocols like IGMP, PIM, etc	
	Should support security policies based on security group names in source or destination fields or both	
	Should support capability to limit bandwidth on basis of apps / groups, Networks / Geo, Ports, etc	
	Should be capable of dynamically tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.	
	Should be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.	
	Proposed solution should have capability block BOT/CnC conenction (anti-bot) from day one	
	Should be able to link Active Directory and/or LDAP usernames to IP addresses related to suspected security events.	
	Should be capable of detecting and blocking IPv6 attacks.	
	Solution should support full-featured NBA capability to detect threats emerging from inside the network. This includes the ability to establish “normal” traffic baselines through flow analysis techniques (e.g., NetFlow) and the ability to detect deviations from normal baselines. If the functionality not support on the same appliance, vendor can quote separate device for the same.	
	The solution must provide IP reputation feed that comprised of several regularly updated collections of poor reputation of IP addresses determined by the proposed security vendor	
	Solution must support IP reputation intelligence feeds from third party and custom lists of IP addresses including a global blacklist.	
	Should must support URL and DNS threat intelligence feeds to protect against threats	
	Should support safe search and YouTube EDU enforcement	
	Solution must be capable of passively gathering details unique to mobile devices traffic to identify a wide variety of mobile operating systems, mobile applications and associated mobile device hardware.	
	Should support more than 4000 application layer and risk-based controls that can invoke tailored intrusion prevention system (IPS) threat detection policies to optimize security effectiveness.	
	Must be capable of providing network-based detection of malware by checking the disposition of known files in the cloud using the SHA-256 file-hash as they transit the network and capabilityto do dynamic analysis on-premise (if required in future) on purpose built-appliance. License not require from day one.	

S. No.	Specification	
	NGFW OEM must have its own threat intelligence analysis center and should use the global footprint of security deployments for more comprehensive network protection.	
	The detection engine should support capability of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, etc.).	
	Should be able to identify attacks based on Geo-location and define policy to block on the basis of Geo-location	
	The detection engine should support the capability of detecting variants of known threats, as well as new threats	
	The detection engine must incorporate multiple approaches for detecting threats, including at a minimum exploit-based signatures, vulnerability-based rules, protocol anomaly detection, and behavioral anomaly detection techniques. Identify and explain each type of detection mechanism supported.	
	Should support Open based Applicaion ID for access to community resources and ability to easily customize security to address new and specific threats and applications quickly	
	Proposed Firewall should have URL filtering with 80+ categories and more than 280 million URL database	
6	**Management**	
	The management platform must be accessible via a web-based interface and ideally with no need for additional client software	
	The management platform must provide a highly customizable dashboard.	
	The management platform must be capable of integrating third party vulnerability information into threat policy adjustment routines and automated tuning workflows	
	The management platform must be capable of role-based administration, enabling different sets of views and configuration capabilities for different administrators subsequent to their authentication.	
	Should support REST API for monitoring and config programmability	
	The management platform must provide multiple report output types or formats, such as PDF, HTML, and CSV.	
	The management platform must support multiple mechanisms for issuing alerts (e.g., SNMP, e-mail, SYSLOG).	
	The management platform must provide robust reporting capabilities, including a selection of pre-defined reports and the ability for complete customization and generation of new reports.	
	The management platform must risk reports like advanced malware, attacks and network	
	The management platform must include an integration mechanism, preferably in the form of open APIs and/or standard interfaces, to enable events and log data to be shared with external network and security management applications, such as Security Information and Event Managers (SIEMs), and log management tools.	

DATA NETWORKING SYSTEM (PASSIVE COMPONENTS):

Note: To avail 25 years performance warranty its mandatory to have all the passive components (end to end connectivity) from single make as per approved list complying to technical specification/performance parameter as mentioned below**.**

1.	**Contractor to submit the Datasheets along with Compliance and Test Reports at the time of submittals.**

1. Specification for CAT 6 LSZH U/UTP Cable

Standard Compliance	**Compliance (Yes/No)**	**Remarks**
The Category 6/Class E UTP system shall comply with the following standards		
ISO/IEC 11801		
EN 50173 Part 1 through Part5: 2010 and 2011		
ANSI/TIA 568C.2		
The Category 6/ Class E UTP system should support the following IEEE Ethernet applications		
Channel Performance		
The SCS must consist of individual components provided by the same manufacturer. “Mix and Match” products are not allowed as there is no guarantee that the overall channel will meet Category 6 Channel requirements if constructed with components from different vendors.		
The Category 6 cable and Category 6 channel components shall be manufactured by a single manufacturer. The manufacturer shall warrant the Category 6 channel cable, components, and applications for a period of 25 years.		
Should support a minimum of 4 connector Channel with a minimum 6 dB guaranteed NEXT over and above the standard TIA 568 C.2. Bidder to furnish 3rd Party test report of minimum 16000 nodes all having above 6 dB NEXT margin from a single project. If required original file format may be required to be submitted.		
Should support 6 connector Channel with a minimum 4 db guaranteed NEXT. ETL or UL 6 Connector test report to be submitted demonstrating 6 connections.		
The Delay Skew on the 100 meter channel shall not exceed 30 ns		
Should support 117 meters with a 4 connector channel design for IEEE 802.3ab 1000BASE-T		
Horizontal Cable		
The Cable should meet ANSI/TIA 568C.2 Category 6		

Specifications		
The cable should consist of Eight 23 AWG copper conductors. Copper Clad Aluminum or any other combinations are not allowed		
The weight of the cable box of 1000 Feet should not be less than 25.6 lbs		
The nominal Jacket thickness should be 0.020 inches		
The nominal Outside diameter should be 0.233 inches		
The cable should support the installation temperature: 0 to 60 ^{0} C		
It should support Operating temperature of -20 to 60 ^{0} C		
Should have ETL verified CMR, CMG		
The Cable should be LSZH and should comply to the following standard:		
ISO/IEC 60332-3-22 Vertical Flame spread test		
ISO/IEC 60754-2Acidity		
ISO/IEC 61034-2 Smoke Density		
The cable and cordage shall be UTP components that do not include internal or external shields, screened components or drain wires.		
The horizontal cable shall have a unique print string on the cable jacket. This unique identifier shall also be used for on-line reference to a full set of factory tests that were performed on a sample from the same mater reel. The test parameters shall include NEXT, PSNEXT, Return Loss, Attenuation, ELFEXT and PSELFEXT. The on-line reference must be available on the SCS vendor public website, such that it can be accessed at any time.		

2. Specification for Category 6 Gigabit Information Outlets

Standard Compliance	**Compliance (Yes/No)**	**Remarks**
All Category 6 outlets shall meet or exceed Category 6 transmission requirements for connecting hardware, as specified in TIA/EIA 568-B.C.2 Commercial Building Telecommunications Cabling Standard and ISO/IEC 11801:2002 Second Edition.		
The Category 6 outlets shall be backward compatible with Category 5E, 5 and 3 cords and cables.		
The Category 6 outlets shall be of a universal design supporting T568 A & B wiring.		

The Category 6 outlets shall be capable of being installed at either a 45i or a 90i angle in any M-series modular faceplate, frame, or surface-mounted box avoiding the need for special faceplates.		
The Category 6 outlets shall have improved pair splitters and wider channel for enhanced conductor placement. The outlet shall also have a low-profile wire cap, which protects against contamination and secures the connection. Multicolored identification labels shall be available to assure accurate installation.		
General specifications:		
a. Meets or exceeds the mechanical, electrical, and clearance specifications in FCC Rules and Regulations, Part 68, Subpart F		
b. Meet or exceed the Category 6 requirements in ISO/IEC 11801, CENELEC EN 50173, and TIA/EIA568B		
C. Certifications: UL Listed		
The 8-pin modular (RJ-45) jacks shall comply with IEC 60603-7-4.		
The information outlet shall have a Current Rating of 1.5 A at 20°C		
The information outlet will have insertion life of 750 cycles minimum.		
The information outlet must be able to accept termination of solid conductors with nominal diameter of between 0.40 mm to 0.64 mm (26 to 22 AWG).		
The Outlets should support 1.5Amp current further to support the PoE and PoE+ applications		

3. Specification for CAT 6 LSZH U/UTP RJ45 Patch Cords

Standard Compliance	**Compliance (Yes/No)**	**Remarks**
Patch Cords shall be equipped with 8-pin modular plugs on each end.		
All cords shall be round, and consist of copper conductors, tightly twisted into individual pairs.		
Nominal cordage diameter shall not exceed 6.020 mm.		
Plugs shall be designed with an anti-snag latch to facilitate easy removal during move, add and change processes.		
The patch cord should be LSZH and should comply to the following standard:		
ISO/IEC 60332-3-22: Vertical Flame Spread		
ISO/IEC 60754-2: Acidity		
ISO/IEC 61034-2: Smoke Density		

The cordage shall be UTP components that do not include internal or external shields, screened components or drain wires.		
The patch cords will have insertion life of 750 cycles minimum.		
The Patch cords shall be available in Stranded and solid core construction		

4. Specification for CAT 6 Jack Panel

Standard Compliance	**Compliance (Yes/No)**	**Remarks**
The ganged adapter style patch panel will utilize increments of six RJ-45 style jacks in a common moulded component.		
The patch panel type shall be compliant with IEC 60603-7-4.		
The ganged adapters shall have RJ45 jack in the front and Insulation Displacement Connector (IDC) at the rear of the module.		
The panel must be capable of supporting an upgrade to an intelligent systemwithout any interruption to service due to patch cord removal or terminal block re-termination.		
The upgrade to an intelligent system shall be performed through the addition of an overlay panel that does not require tools for installation.		
Termination managers must be provided with the panel. These termination managers provide proper pair positioning, control, and strain relief features to the rear termination area of the panel.		
When configured in worst-case 100 meter channels with full cross-connects and consolidation points with the other products proposed in this tender, the panel shall be capable of delivering the minimum guaranteed channel performance.		

5. 12 CORES –Singlemode OS2 OUTSIDE PLANT FIBER CABLE: -

S. No.	**PARAMETER**	**SPECIFICATIONS**		
1	**Type of Cable**	**12F Outdoor Corrugated Steel tape armor, Gel Free, Outdoor Stranded Loose Tube Cable with 2 Rip Cords**		
2	**MINIMUM**	**ANSI/ICEA S-87-640, EN187105,**		

	SPECIFICATIONS	**Telcordia GR-20**		
3	FIBER TYPE SOLUTION	**BEND INSENSITIVE SINGLE MODE FIBER (AS PER G.652D, G.657.A1, OS2)**		
a)	Fiber Size	9/125/250 µm		
b)	Fiber Per Subunit, Quantity	12F		
c)	Jacket Material	PE		
d)	Total Fiber Count	12 Core		
e)	Jacket Color	Black		
f)	Jacket UV Resistance	UV Stabilized		
4	**DIMENSIONS**			
a)	Buffer Tube/Subunit Diameter	2.50 mm | 0.10 in		
b)	Cable Weight	110.0 kg/km | 74.0 lb/kft		
c)	Diameter Over Jacket	11.50 mm | 0.45 in		
5	**PHYSICAL SPECIFCATIONS**			
a)	Cladding Diameter	125.0 µm		
b)	Cladding Diameter Tolerance	± 0.7 µm		
c)	Cladding Non-Circularity, maximum	0.7 %		
d)	Coating Diameter (Colored)	253 µm		
e)	Coating Diameter (Uncolored)	240 µm		
f)	Coating Diameter Tolerance (Colored)	±7 µm		

g)	Coating Diameter Tolerance (Uncolored)	±5 µm		
h)	Coating/Cladding Concentricity Error, maximum	12 µm		
i)	Core/Clad Offset, maximum	0.5 µm		
a)	Minimum Bend Radius, Loaded	17.3 cm | 6.8 in		
b)	Minimum Bend Radius, Unloaded	11.5 cm | 4.5 in		
c)	Tensile Load, Long term, maximum	800 N | 180 lbf		
d)	Tensile Load, Short term, maximum	2700 N | 607 lbf		
e)	Vertical Rise, maximum	740.0 m | 2429.0 ft		
6	**ENVIRONMENTAL SPECIFICATIONS**			
a)	Environmental Space	Aerial, lashed | Buried		
b)	Installation Temperature	-30 deg. C to +70 deg. C (-22 deg. F to + 158 deg. F)		
c)	Operating Temperature	-40 deg. C to +70 deg. C (-40 deg. F to + 158 deg. F)		
d)	Storage Temperature	-40 deg. C to +75 deg. C (-40 deg. F to + 167 deg. F)		
7	**MECHANICAL TEST SPECIFCATIONS**			
a)	Compression	250 lb/in | 44 N/mm		
b)	Compression Test Method	FOTP-41 | IEC 60794-1 E3		
c)	Flex	35 Cycles		

d)	Flex Test Method	FOTP-104 | IEC 60794-1 E6		
e)	Impact	4.41 N-m | 3.25 ft lb		
f)	Impact Test Method	FOTP-25 | IEC 60794-1 E4		
g)	Twist	10 Cycles		
h)	Twist Test Method	FOTP-85 | IEC 60794-1 E7		
i)	Water Penetration	24 h		
j)	Water Penetration Test Method	FOTP-82 | IEC 60794-1 F5		
8	**OPTICAL SPECIFICATIONS, WAVELENGTH SPECIFIC**			
a)	Standards Compliance	ITU-T G.652.D | ITU-T G.657.A1 | TIA-492CAAB (OS2)		
b)	Attenuation, maximum	0.22 dB/km @ 1550 nm 0.23 dB/km @ 1575 nm 0.27 dB/km @ 1490 nm 0.27 dB/km @ 1625 nm 0.31 dB/km @ 1385 nm 0.34 dB/km @ 1310 nm 0.35 dB/km @ 1650 nm 0.45 dB/km @ 1270 nm		
c)	Dispersion, maximum	18 ps(nm-km) at 1550 nm | 3.5 ps(nm-km) from 1285 nm to 1330 nm at 1310 nm		
d)	Mode Field Diameter	9.2 µm @ 1310 nm 9.6 µm @ 1385 nm 10.4 µm @ 1550 nm		

e)	Mode Field Diameter Tolerance	±0.3 µm @ 1310 nm | ±0.5 µm @ 1550 nm | ±0.6 µm @ 1385 nm		
f)	Index of Refraction	1.467 @ 1310 nm 1.468 @ 1385 nm 1.468 @ 1550 nm		
g)	Polarization Mode Dispersion Link Design Value, maximum	0.04 ps/sqrt(km)		
h)	Backscatter Coefficient	-82.1 dB @ 1550 nm -79.6 dB @ 1310 nm		
9	**REGULATORY COMPLIANCE**	RoHS		

6. 6 CORES – Multimode OM3 OUTSIDE PLANT FIBER CABLE: -

S. No.	PARAMETER	SPECIFICATIONS	Compliance [Y/N]	
1	**Type of Cable**	**6F Outdoor Corrugated Steel tape armor, Gel Free, Outdoor Stranded Loose Tube Cable with 2 Rip Cords**		
2	**MINIMUM SPECIFICATIONS**	**ANSI/ICEA S-87-640, EN187105, Telcordia GR-20**		
3	FIBER TYPE SOLUTION	**BEND INSENSITIVE OM3**		
a)	Fiber Size	50/125/250 µm		
b)	Fiber Per Subunit, Quantity	6F		
c)	Jacket Material	PE		
d)	Total Fiber Count	6 Core		

e)	Jacket Color	Black		
f)	Jacket UV Resistance	UV Stabilized		
4	**DIMENSIONS**			
a)	Buffer Tube/Subunit Diameter	2.50 mm | 0.10 in		
b)	Cable Weight	110.0 kg/km | 74.0 lb/kft		
c)	Diameter Over Jacket	11.50 mm | 0.45 in		
5	**PHYSICAL SPECIFCATIONS**			
a)	Cladding Diameter	125.0 µm		
b)	Cladding Diameter Tolerance	± 0.7 µm		
c)	Cladding Non-Circularity, maximum	0.7 %		
d)	Coating Diameter (Colored)	253 µm		
e)	Coating Diameter (Uncolored)	245 µm		
f)	Coating Diameter Tolerance (Colored)	±7 µm		
g)	Coating Diameter Tolerance (Uncolored)	±10 µm		
h)	Coating/Cladding Concentricity Error, maximum	12 µm		
i)	Core/Clad Offset, maximum	1.5 µm		
a)	Minimum Bend Radius, Loaded	17.3 cm | 6.8 in		
b)	Minimum Bend Radius, Unloaded	11.5 cm | 4.5 in		

c)	Tensile Load, Long term, maximum	800 N | 180 lbf		
d)	Tensile Load, Short term, maximum	2700 N | 607 lbf		
e)	Vertical Rise, maximum	740.0 m | 2429.0 ft		
6	**ENVIRONMENTAL SPECIFICATIONS**			
a)	Environmental Space	Aerial, lashed | Buried		
b)	Installation Temperature	-30 deg. C to +70 deg. C (-22 deg. F to + 158 deg. F)		
c)	Operating Temperature	-40 deg. C to +70 deg. C (-40 deg. F to + 158 deg. F)		
d)	Storage Temperature	-40 deg. C to +75 deg. C (-40 deg. F to + 167 deg. F)		
7	**MECHANICAL TEST SPECIFCATIONS**			
a)	Compression	250 lb/in | 44 N/mm		
b)	Compression Test Method	FOTP-41 | IEC 60794-1 E3		
c)	Flex	35 Cycles		
d)	Flex Test Method	FOTP-104 | IEC 60794-1 E6		
e)	Impact	4.41 N-m | 3.25 ft lb		
f)	Impact Test Method	FOTP-25 | IEC 60794-1 E4		
g)	Twist	10 Cycles		
h)	Twist Test Method	FOTP-85 | IEC 60794-1 E7		
i)	Water Penetration	24 h		

j)	Water Penetration Test Method	FOTP-82 | IEC 60794-1 F5		
8	**OPTICAL SPECIFICATIONS, WAVELENGTH SPECIFIC**			
a)	Standards Compliance	TIA-492AAAC (OM3)		
b)	Attenuation, maximum	1.00 dB/km @ 1300 nm 3.00 dB/km @ 850 nm		
c)	Dispersion, maximum	18 ps(nm-km) at 1550 nm | 3.5 ps(nm-km) from 1285 nm to 1330 nm at 1310 nm		
f)	Index of Refraction	1.479 @ 1300 nm 1.483 @ 850 nm		
h)	Backscatter Coefficient	-75.7 dB @ 1300 nm -68.0 dB @ 850 nm		
9	**REGULATORY COMPLIANCE**	RoHS		

7. Rack Mounted Fiber Optic Patch Panel and Components

Sr. No.	Specifications	Compliance (Y/N)	Remarks
1	1U low-profile, high density fiber optic shelf shall be proposed that can be used for a combination of splicing and termination of fiber optic building cable or outside plant (OSP) cables.		
2	The 1U height fully enclosed shelves shall include integrated front cable management trough and features a slide-out tray for easy access.		
3	The Panel shall accommodate up to 48 fibers to be spliced / terminated		
4	The front plate of the panel shall be included in the proposal that can support LC-Style Duplex adapters		
5	The alignment sleeve of the LC Duplex adapter shall be of Phosphor Bronze. This allows better retention and alignment of fiber connectors on patch cords and pigtails.		
6	The MM adapter shall support OM3 as well as OM4		

	fibers / patch cords. SM adapters should support OS2 fibers / patch cords.			
7	The panel shall accommodate fusion splice trays that can support splicing up to 48 fibers			
8	Adequate number of Fusion splice holder trays should be included either integrated or separate.			
	Cable assemblies - Pigtails and Patch Cords			
9	The Pigtail shall be assembled with 50 µm multimode fiber (OM4) for MM fier cabling System and with SM fiber for SM fiber cabling system			
10	The pigtail shall be assembled using 900 micron buffered fiber			
11	The pigtails shall be terminated with MM LC-style connector for MM cabling systems and SM LC-Style connector for SM cabling system			
12	The pigtails shall have a Cable Retention Strength, maximum	3.00 lb @ 90 ° C		
13		6.00 lb @ 0 ° C		
14	The LC connector on the pigtail shall meet Optical Components Standard ANSI/TIA-568-C.3. please append data sheet			
15	The Patch cord proposed shall be duplex, 1.6mm jacketed, and shall be of 50 µm multimode fiber (OM4) for MM and SM fiber for SM			
	Warranty			
16	The Extended Product Warranty should cover all passive SCS components (i.e., cable and connectivity components that make up the passive data and telecommunications signal transmission infrastructure).			
17	In addition to product warranty the Application Assurance shall cover the SCS compliant channels to support operations of the application(s) that the system was designed to support. The supplier warrants that the SCS will be free from defects that prevent operation of the specific application(s) for which the Registered SCS was initially designed as long as the design is in compliance with the SCS Performance Specifications for said applications and is in compliance with all other terms and conditions of this warranty			
18	The warranty shall be for a minimum of 25 years.			

Specification for Networking Racks

S. No.	Specification		

1	**12U Wall mounting cabinets**. with all standard accessories. Width (mm) 600, Depth (mm) - 500, Approx.Net Wt (kg) - 32, CRCA 'D' Grade thickness (mm) - 1.2, Glass - 4mm Toughened Glass Door, Accessories:, Cooling Fan (230V A/C 90 CFM) - 2 Nos, PDU 230VAC - 1 No, Cable Manager Metal - 3 Nos, Earthling Strips 150mm H - 1 No, Mounting Hardware (20 sets of M6 screws, washer, cage nuts - 1 No, Wall Screws (4 sets of 2" screws, washer, rubber grommet - 1 No, Door Lock - 1 No, Front Metal Band -1 No. In the rack there must be maintained1 U = 1.75 inches space. Nos. 20 etc complete as required		
2	**42U Cabinet** Size 2026 X 800 X 800 mm (HXWXD) following accessories, Width (mm) 800, Depth (mm) 800, Approx. Net Wt (kg) 150, CRCA 'D' Grade thickness (mm) 1.2, Glass: 4mm Toughened Glass Door, Injected one piece polyurethane gasket on frame, Accessories: Cooling Fan (230V A/C 90 CFM) - 4 Nos, Cable Manager Metal- 4 Nos, PDU 230VAC - 1 No (12 nos. 6A/16A sockets with plugs 6A/16A - 1/1pc & MCB 16A/32A - 0/1 Pc), Cable Channel 100mm wide 42U- 2 Nos, Heavy Duty Stationary Shelf 600mmW x 475mmD - 1 No., Mounting Hardware (20 sets of M6 screws, washer, cage nuts - 3 Nos., Earthling Strips 150mm H - 1 No, Door Lock - 1 No, Castor Wheels (with Brake) - 2 Nos, Castor Wheels (without Brake) – 2 Nos, Front Metal Band - 1 No. In the rack there must be maintained 1 U = 1.75 inches space. Nos. 1 etc complete as required		

****

LIST OF APPROVED MAKES

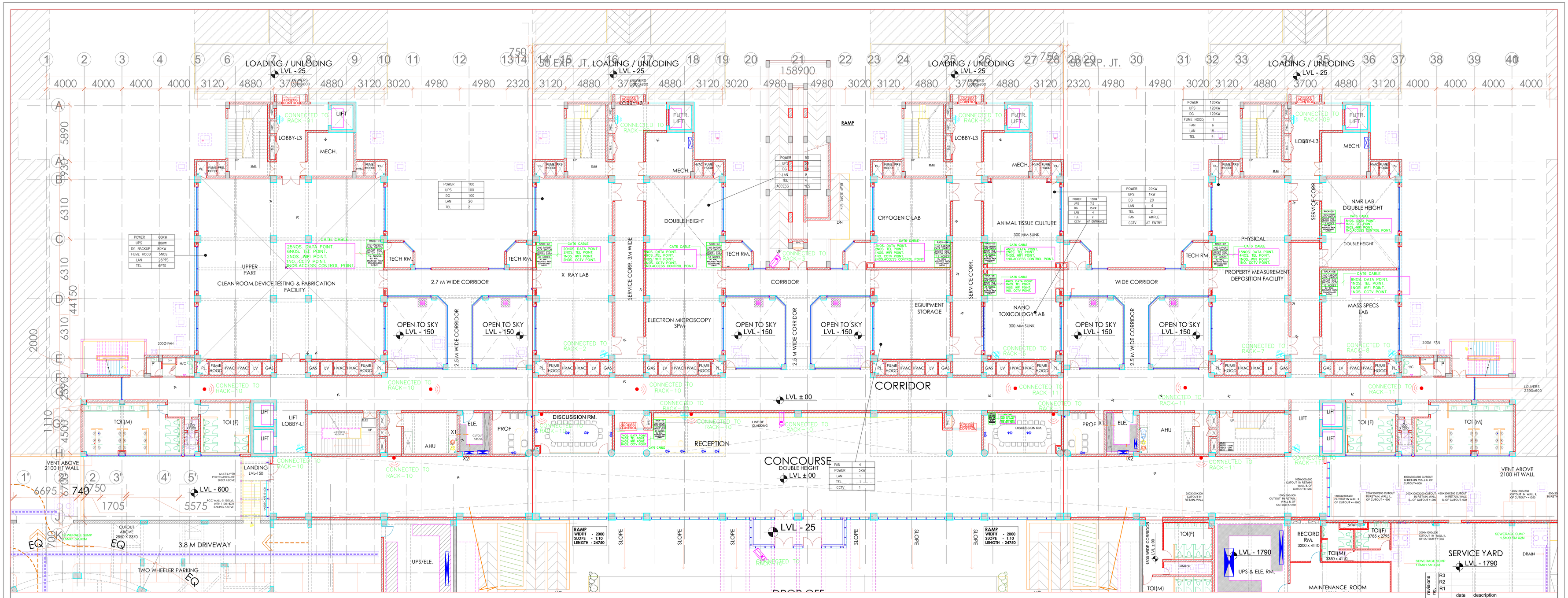
	Equipment	Approved makes
	CCTV SYSTEM	
	DATA NETWORKING SYSTEM	
1	Cat 6 UTP Cable	Systimax / Corning/ AMP / Molex
2	Face Plate	Systimax / Corning/ AMP / Molex
3	24 Port Cat-6 Patch Panel	Systimax / Corning/ AMP / Molex
4	Cat 6 UTP Patch Cord	Systimax / Corning/ AMP / Molex
5	Single Mode OFC 24 Core	Systimax / Corning/ AMP/ Molex
6	Multimode OFC 6/12/24 Core OM3	Systimax / Corning/ AMP/ Molex
7	Fibre Optic LIU	Systimax / Corning/ AMP/ Molex
8	SC/ LC Coupler / Adapter	Systimax / Corning/ AMP/ Molex
9	Single Mode OS1/OS2 Pigtails	Systimax / Corning/ AMP/ Molex
10	L2 /L3/PoE Switch	HP / Cisco/ Ruckus / Extreme networks
11	Fire Wall	Palo Alto/ Fortinet/ Cisco
12	Wireless access points	Aruba / Cisco/ Ruckus / Extreme networks
13	Network Rack	Netrack / Walrack / Rittal / Legrand

Note: It is the intent of the Institute of fully comply to DOT PPP MII notification dated 29th Aug 2018.

As comprehensive list of makes of Domestic local manufacturers(OEM's)in all categories is not available hence list of approved makes, for products earmarked in DOT PPP MII notification dated 29thAug2018, shall be considered to include, all Domestic local manufacturers (OEM's) who shall be given preference subject to them meeting the following qualification / specification criteria:

- Experience of supply and commissioning of the products in 3 similar jobs in last 3 years with successful commissioning certificate from reputed Govt agencies.
- All products shall comply to GR/IR and have certification from Indian bodies i.e, TEC/ TSEC, STQC, BIS as applicable.
- Meeting the domestic value addition as specified in the policy for each product.

0-0-0-



CCTV NOTES:-

1. LOCATION OF CCTV'S ARE SHOWN ON DRAWINGS.
2. CABLES FROM CCTV'S SHALL BE TERMINATED IN NVR LOCATED IN LV SHAFT.
3. CCTV,NVR,DATA RACKS,CCTV CABLES ARE NOT PART OF THIS TENDER DOCUMENT.
4. CONRACTOR TO INSURE THAT CONDUITINTG SHALL BE DONE UPTO EVERY CCTV FROM NVR.

SYMBOL	LEGEND DESCRIPTION
AD	CCTV DOME TYPE
	CCTV BULLET TYPE
ACCESS CONTROL	ACCESS CONTROL SYSTEM
	WIFI
TTB	TELPHONE TAG BLOCK

revisions	date	description
no.		
R3		
R2		
R1		

issue status: GFC DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sika associates architects — urban design, master planning, architecture, interior design, engineering, project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)40528200, Fax: (011)26194981 Web: www.sikaindia.net Email: sika@sikaindia.net

consultant-1: STRUCTURAL CONSULTANT
VINECH CONSULTANTS — G-56, PANCHIM ENCLAVE, NEW DELHI-110045, CONSULTING ENGINEERS & PROJECT MANAGERS, TEL: 25155777/8877, FAX: 25155778, E-MAIL : VINECH@VINECHCONSULTANTS.COM
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156, Fax: 46026052
Email: shubham_mehro@rediffmail.com

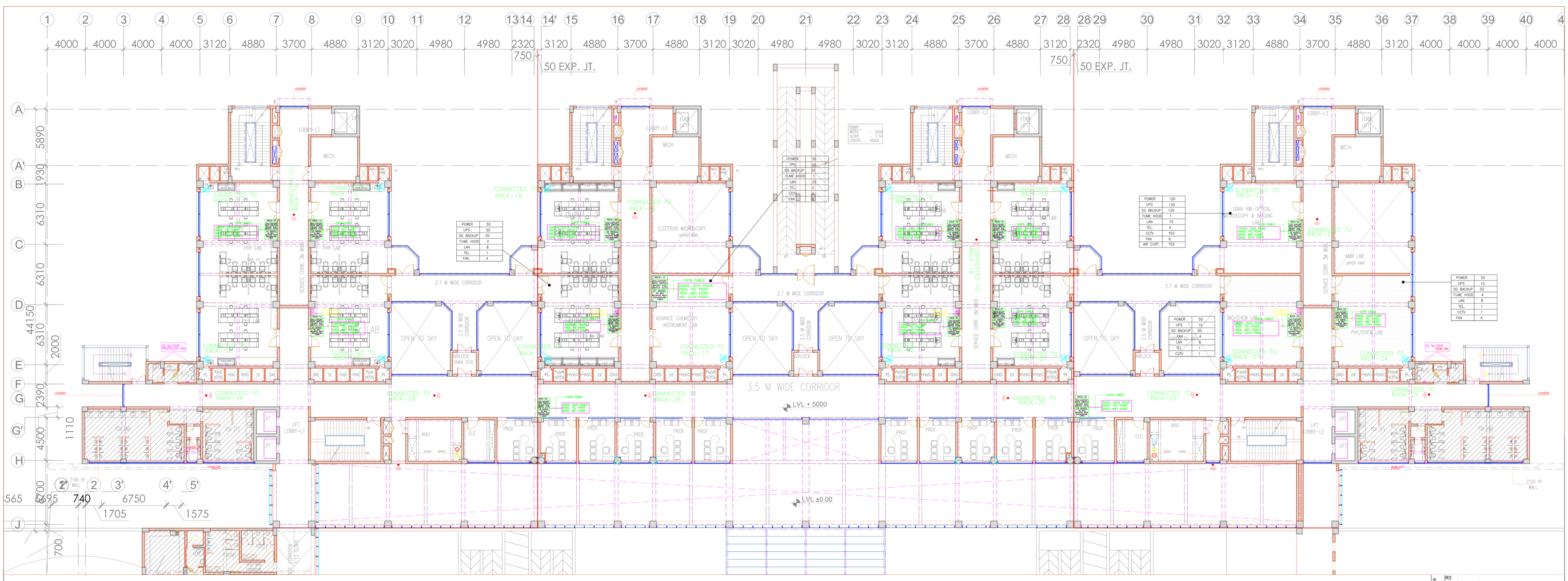
consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon88@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:etc_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: LAB BLOCK

dwg type: GROUND FLOOR CCTV & NETWORKING LAYOUT PLAN

dwg. no.: INST/LB/EL-01 (CCTV)

scale: 1:150 @1100X600
date: 05.04.2019
drawn: HARDEEP KAMBOJ
checked by: SANDEEP NEGI



CCTV NOTES:–

1. LOCATION OF CCTV'S ARE SHOWN ON DRAWINGS.
2. CABLES FROM CCTV'S SHALL BE TERMINATED IN NVR LOCATED IN LV SHAFT.
3. CCTV,NVR,DATA RACKS,CCTV CABLES ARE NOT PART OF THIS TENDER DOCUMENT.
4. CONRACTOR TO INSURE THAT CONDUITINTG SHALL BE DONE UPTO EVERY CCTV FROM NVR.

SYMBOL	LEGEND DESCRIPTION
AD	CCTV DOME TYPE
	CCTV BULLET TYPE
ACCESS CONTROL	ACCESS CONTROL SYSTEM
	WIFI
TTB	TELPHONE TAG BLOCK

revisions no.

no.	date	description
R3		
R2		
R1		

issue status: GFC DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sika associates architects
urban design · master planning · architecture · interior design · engineering · project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)40528200, Fax:- (011)26174851 Web:- www.sikaindia.com Email:-sika@sikaindia.com

consultant-1:
STRUCTURAL CONSULTANT
VINTECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
Mehro Consultants
A-1/56, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

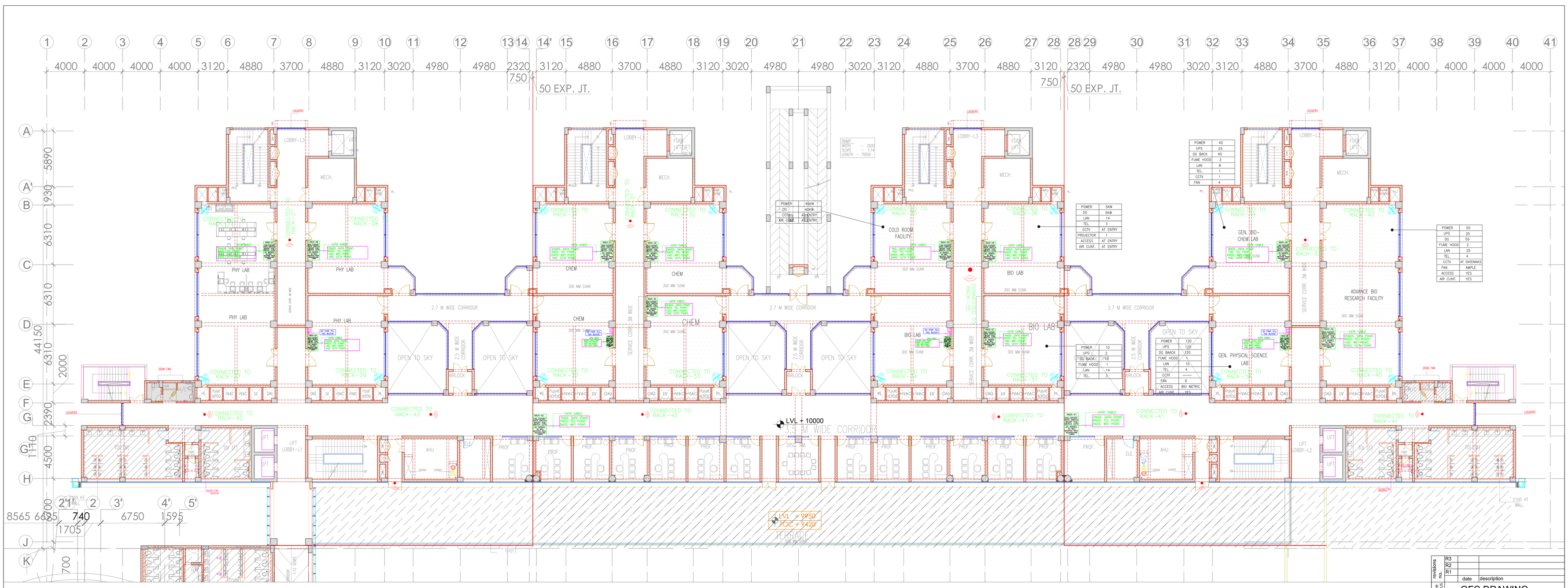
consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants — email:escon56@gmail.com
Plumbing and fire: Techno Engineering Consultants — email:sab_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants — email:ahcon@ahcon.in

dwg title: LAB BLOCK

dwg type: FIRST FLOOR CCTV & NETWORKING LAYOUT PLAN

dwg. no.: INST/LB/EL-02 (CCTV)

scale: 1:150 @1100X600
date: 05.04.2019
drawn by: HARDEEP KAMBOJ
checked by: SANDEEP NEGI



CCTV NOTES:-

1. LOCATION OF CCTV'S ARE SHOWN ON DRAWINGS.
2. CABLES FROM CCTV'S SHALL BE TERMINATED IN NVR LOCATED IN LV SHAFT.
3. CCTV,NVR,DATA RACKS,CCTV CABLES ARE NOT PART OF THIS TENDER DOCUMENT.
4. CONRACTOR TO INSURE THAT CONDUITINTG SHALL BE DONE UPTO EVERY CCTV FROM NVR.

SYMBOL	LEGEND DESCRIPTION
CCTV DOME	CCTV DOME TYPE
CCTV BULLET	CCTV BULLET TYPE
ACCESS CONTROL	ACCESS CONTROL SYSTEM
WIFI	WIFI
TTB	TELPHONE TAG BLOCK

revisions

	date	description
R3		
R2		
R1		

issue status: GFC DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1 , Attica Avenue, Safdarjung Enclave, New Delhi-110029.
tel:91-11-42525555, Fax: 91-11-26194481 mail:-mail@ sasindia.net Email: sasindia@sasindia.net

consultant-1:
STRUCTURAL CONSULTANT
VINECH CONSULTANTS PVT. LTD.
CIVIL, KANPUR, BROADWAY
CONSULTING ENGINEERS & PROJECT MANAGERS
TEL: 0512-2320999, 2321999, FAX: 0512-2320998
E-MAIL: VINECHKNP@VINECHINDIA.COM
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169337/26172156 Fax: 46023552
Email: shubham_mehro@rediffmail.com

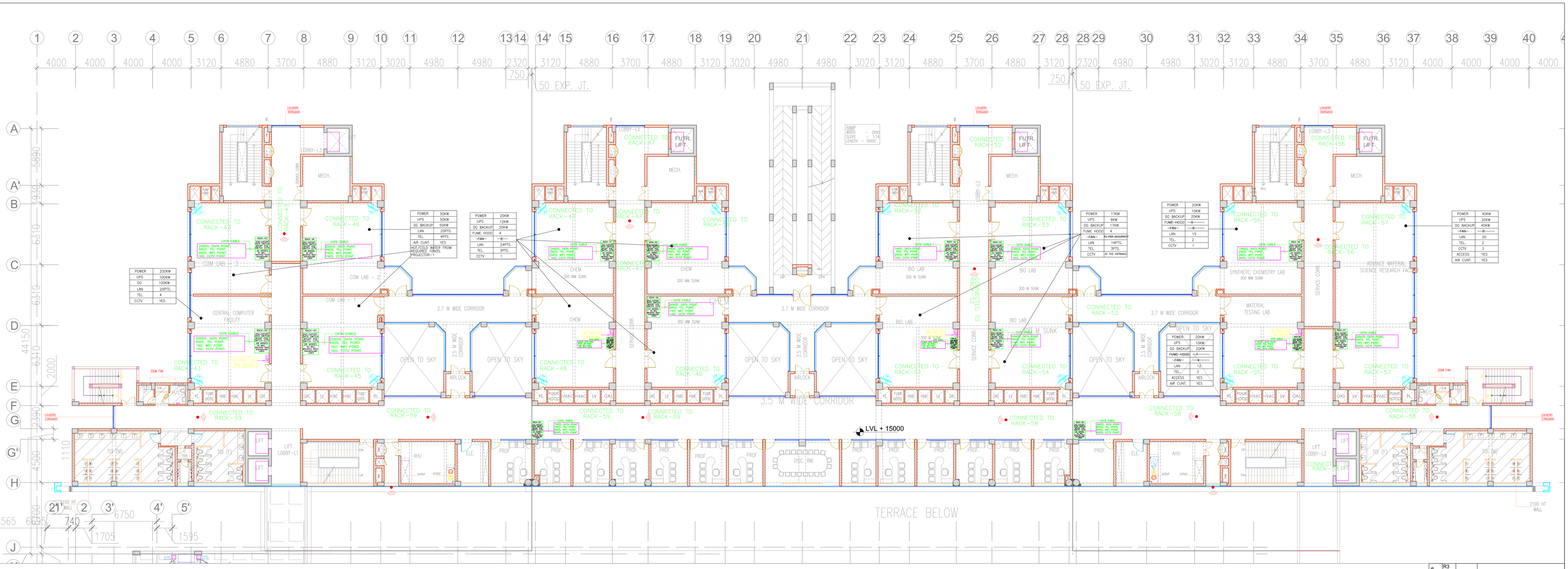
consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon999@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:tec_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: LAB BLOCK

dwg type: SECOND FLOOR CCTV & NETWORKING LAYOUT PLAN

dwg. no: INST/LB/EL-03 (CCTV)

scale: 1:150 @1100X600
date: 05.04.2019
dwn: HARDEEP KAMBOJ
checked by: SANDEEP NEGI



CCTV NOTES:-

1. LOCATION OF CCTV'S ARE SHOWN ON DRAWINGS.
2. CABLES FROM CCTV'S SHALL BE TERMINATED IN NVR LOCATED IN LV SHAFT.
3. CCTV,NVR,DATA RACKS,CCTV CABLES ARE NOT PART OF THIS TENDER DOCUMENT.
4. CONRACTOR TO INSURE THAT CONDUITINTG SHALL BE DONE UPTO EVERY CCTV FROM NVR.

SYMBOL	LEGEND DESCRIPTION
AD	CCTV DOME TYPE
	CCTV BULLET TYPE
ACCESS CONTROL	ACCESS CONTROL SYSTEM
	WIFI
TTB	TELPHONE TAG BLOCK

revisions	R3	
	R2	
	R1	
	date	description

issue status: GFC DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)40555555, Fax: (011)26194441 Web: www.sasindia.net Email: sas@sasindia.net

consultant-1: STRUCTURAL CONSULTANT
VINECH CONSULTANTS Pvt. Ltd.
CONSULTING ENGINEERS & PROJECT MANAGERS
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169337/26172156 Fax: 46026552
Email: shubham_mehro@rediffmail.com

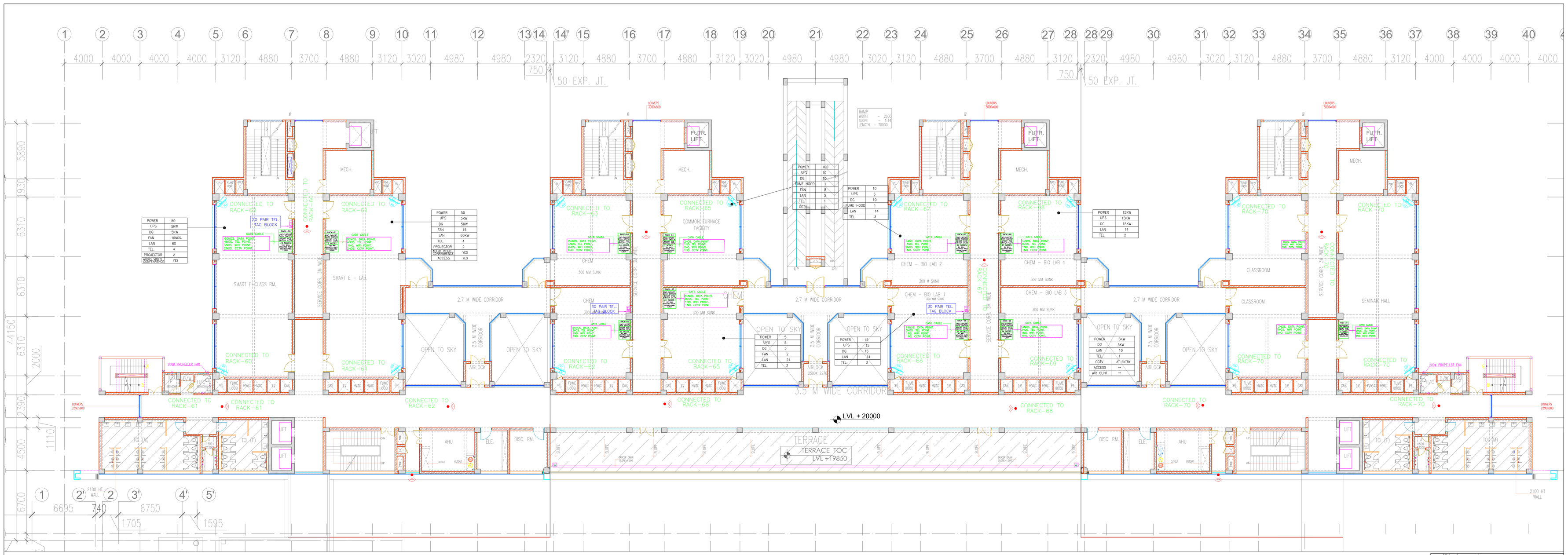
consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon99@gmail.com
Planning and fire: Techno Engineering Consultants, email:tek_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: LAB BLOCK

dwg type: THIRD FLOOR CCTV & NETWORKING LAYOUT PLAN

dwg. no: INST/LB/EL-4 (CCTV)

scale: 1:150 @1100X600
date: 05.04.2019
dwn: HARDEEP KAMBOJ
checked by: SANDEEP NEGI



POWER	50
UPS	5KW
DG	5KW
FAN	15NOS.
LAN	60
TEL.	4
PROJECTOR	2
ROOM CONTROL	YES

POWER	50
UPS	5KW
DG	5KW
FAN	15
LAN	60KW
TEL.	4
PROJECTOR	2
ROOM CONTROL	YES
ACCESS	YES

POWER	100
UPS	10
DG	10
FUME HOOD	1
FAN	8
LAN	2
TEL.	1
CCTV	

POWER	10
UPS	5
DG	10
FUME HOOD	1
LAN	14
TEL.	3

POWER	5
UPS	5
DG	5
FAN	2
LAN	24
TEL.	3

POWER	15
UPS	15
DG	15
LAN	14
TEL.	3

POWER	15KW
UPS	15KW
DG	15KW
LAN	14
TEL.	2

POWER	5KW
DG	5KW
LAN	10
TEL.	1
CCTV	AT-ENTRY
ACCESS	**
AIR CUNT.	**

CCTV NOTES:–

1. LOCATION OF CCTV'S ARE SHOWN ON DRAWINGS.
2. CABLES FROM CCTV'S SHALL BE TERMINATED IN NVR LOCATED IN LV SHAFT.
3. CCTV,NVR,DATA RACKS,CCTV CABLES ARE NOT PART OF THIS TENDER DOCUMENT.
4. CONRACTOR TO INSURE THAT CONDUITINTG SHALL BE DONE UPTO EVERY CCTV FROM NVR.

SYMBOL	L E G E N D
	DESCRIPTION
CAD	CCTV DOME TYPE
	CCTV BULLET TYPE
ACCESS CONTROL	ACCESS CONTROL SYSTEM
	WIFI
TTB	TELPHONE TAG BLOCK

revisions

	date	description
R3		
R2		
R1		

issue status

GFC DRAWING

owner

INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects

sikka associates architects
urban design
masterplanning
architecture
interior design
project management
environmental management
A-2/1, Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)40108800, Fax: (011)26164411 Web: www.sadindia.net Email: sad@sadindia.net

STRUCTURAL CONSULTANT

VINECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-106, PAMPOSH ENCLAVE
GROUND FLOOR, NEW DELHI - 110048
TEL: 29241135,29250196 FAX: 29250196
E-MAIL: vinech@vinechconsultants.com

consultant-1

Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/26170156 Fax: 46023652
Email: shubham_mehro@rediffmail.com

consultant-2

SERVICES CONSULTANTS

Electrical: Engineering Services Consultants, email:escon99@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:sab_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg. title

LAB BLOCK

dwg. type

FOURTH FLOOR
CCTV & NETWORKING
LAYOUT PLAN

dwg. no

INST/LB/EL-5 (CCTV)

scale	1:150 @1100X600
date	05.04.2019
draft:	HARDEEP KAMBOJ
checked by:	SANDEEP NEGI

LAB BLOCK

BLOCK–D | BLOCK–C | BLOCK–B | BLOCK–A

FOURTH FLOOR | THIRD FLOOR | SECOND FLOOR | FIRST FLOOR | GROUND FLOOR

2NOS.12CORE SINGLE MODE FIBER CABLE

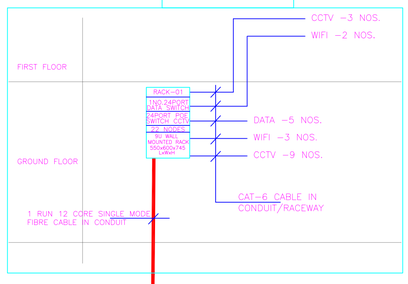
2 RUN 12 CORE SINGLE MODE FIBRE CABLE IN CONDUIT

2 RUN 12 CORE SINGLE MODE FIBRE CABLE IN CONDUIT

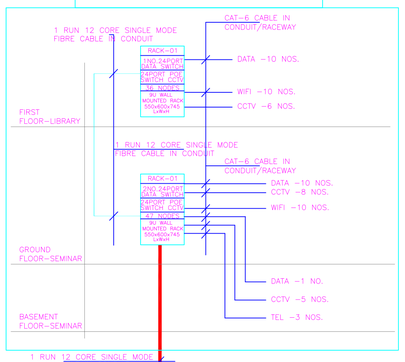
1NOS.10G– L2 MANAGED SWITCH LOCATED AT MAIN DATA ROOM (ADMIN BASEMENT) FOR DATA,WIFI,ACCESS&CCTV POINTS

MAIN DATA RACK

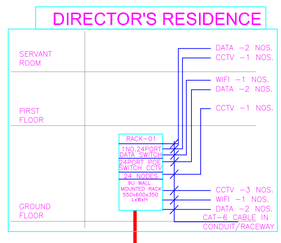
GUEST HOUSE



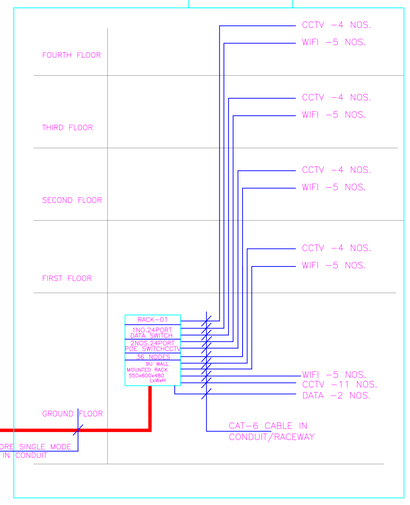
SEMINAR & LIBRARY BLOCK



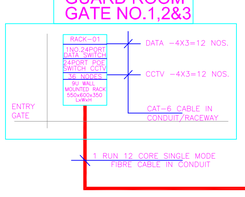
DIRECTOR'S RESIDENCE



HOSTEL -1



GUARD ROOM GATE NO.1,2&3



12 CORE SINGLE MODE FIBRE CABLE.

36 CORE SINGLE FIBRE CABLE.

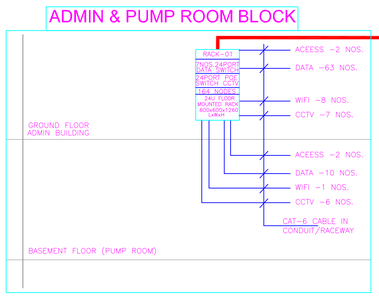
24 CORE SINGLE FIBRE CABLE.

ADMIN BLOCK
MAIN DATA CENTRE LOCATED IN BASEMENT

24 CORE SINGLE MODE FIBRE CABLE.

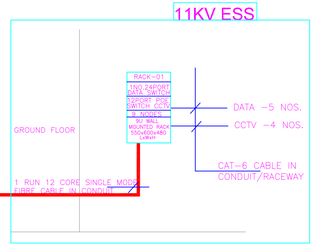
12 CORE SINGLE FIBRE CABLE.

ADMIN & PUMP ROOM BLOCK



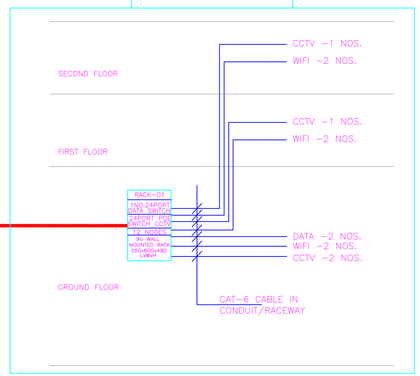
HUB

11KV ESS



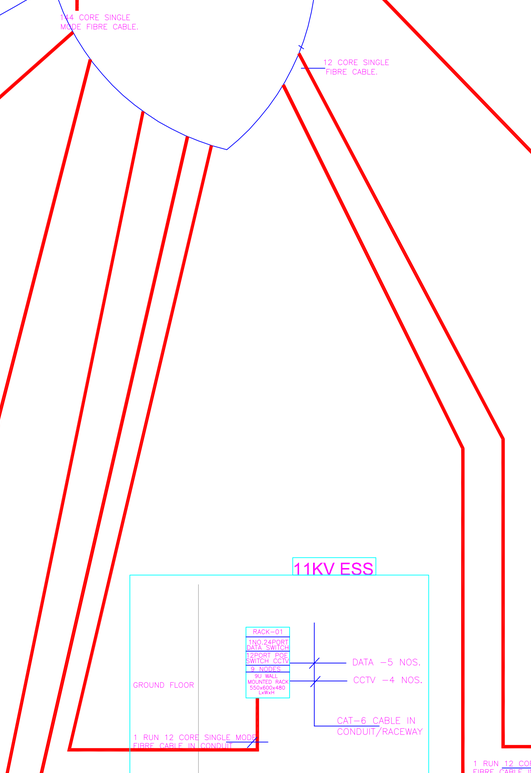
HOSTEL -2

MARRIED HOSTEL

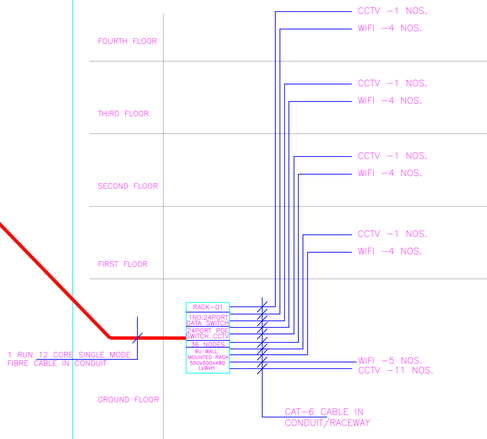


STAFF HOUSING

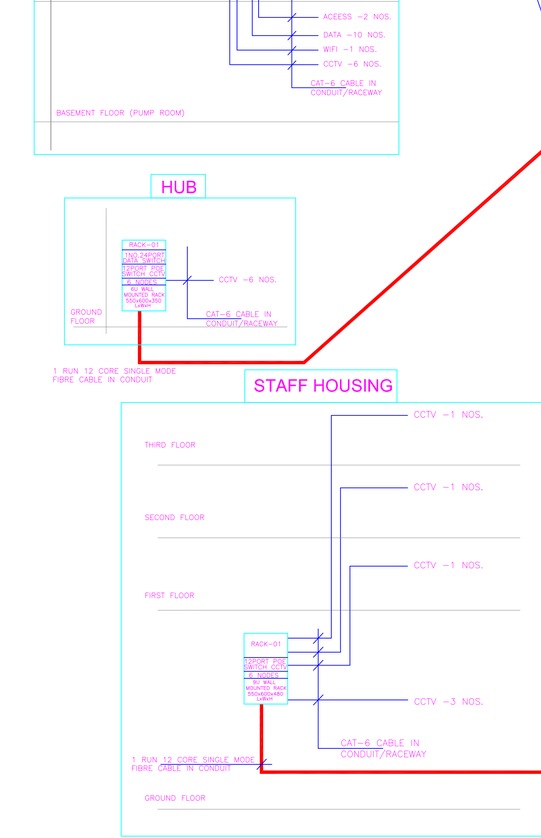
OFFICER HOUSING-2



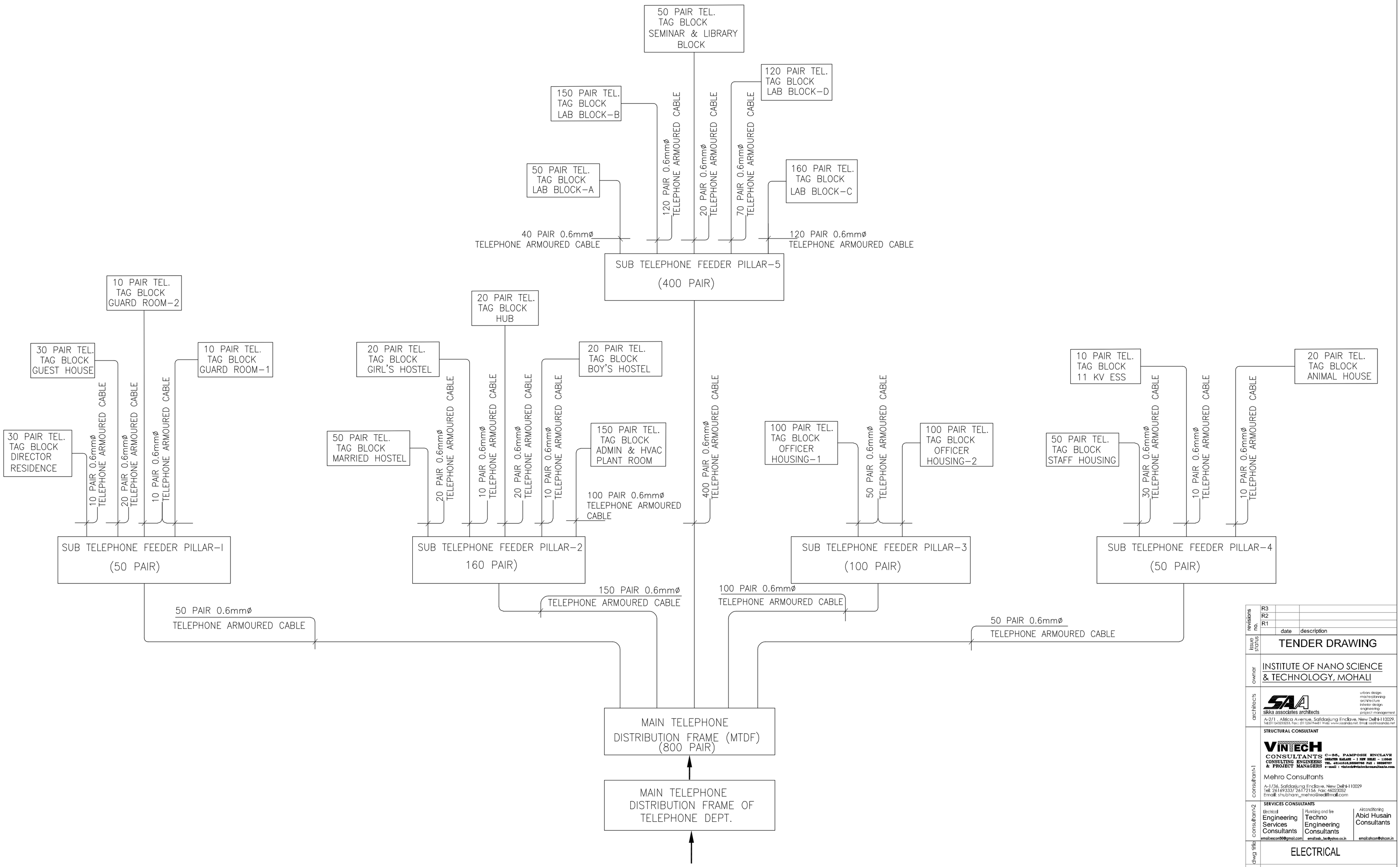
ANIMAL HOUSE



OFFICER HOUSING-1



revisions no.	R3 R2 R1
	date description
issue status	TENDER DRAWING
owner	INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI
architects	sikka associates architects A-2/1, Attica Avenue, Safdarjung Enclave, New Delhi-110029.
consultant-1	STRUCTURAL CONSULTANT VINTECH CONSULTANTS CONSULTING ENGINEERS & PROJECT MANAGERS Mehro Consultants A-I/56, Safdarjung Enclave, New Delhi-110029 Tel: 26169333/ 26572156 Fax: 46020082 Email: shubham_mehro@rediffmail.com
consultant-2	SERVICES CONSULTANTS Electrical: Engineering Services Consultants, email:escon56@gmail.com Plumbing and fire: Techno Engineering Consultants, email:seb_bc@yahoo.co.in Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in
dwg title	ELECTRICAL
dwg type	SINGLE LINE DIAGRAMM FOR DATA, CCTV, WIFI, ACCESS CONTROL NETWORK
dwg. no	scale NTS date 17.04.2019 dealt: HARDEEP KAMBOJ checked by: PAMIT SHARMA



revisions no.	R3	
	R2	
	R1	
	date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects — urban design, master planning, architecture, interior design, engineering, project management
A-2/1, Attica Avenue, Satdarjung Enclave, New Delhi-110029. Tel:(011)43233233, Fax:(011)26194481 Web: www.saadindia.net, Email: saa@saadindia.net

consultant-1: STRUCTURAL CONSULTANT
VINCECH CONSULTANTS C-85, PAMPOSH ENCLAVE GREATER KAILASH - I NEW DELHI - 110048
CONSULTING ENGINEERS & PROJECT MANAGERS TEL. 4314150,26899700 FAX : 26899707 e-mail : vinlech@vinlechconsultants.com
Mehro Consultants
A-1/36, Satdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156, Fax: 46023262
Email: shubham_mehro@rediffmail.com

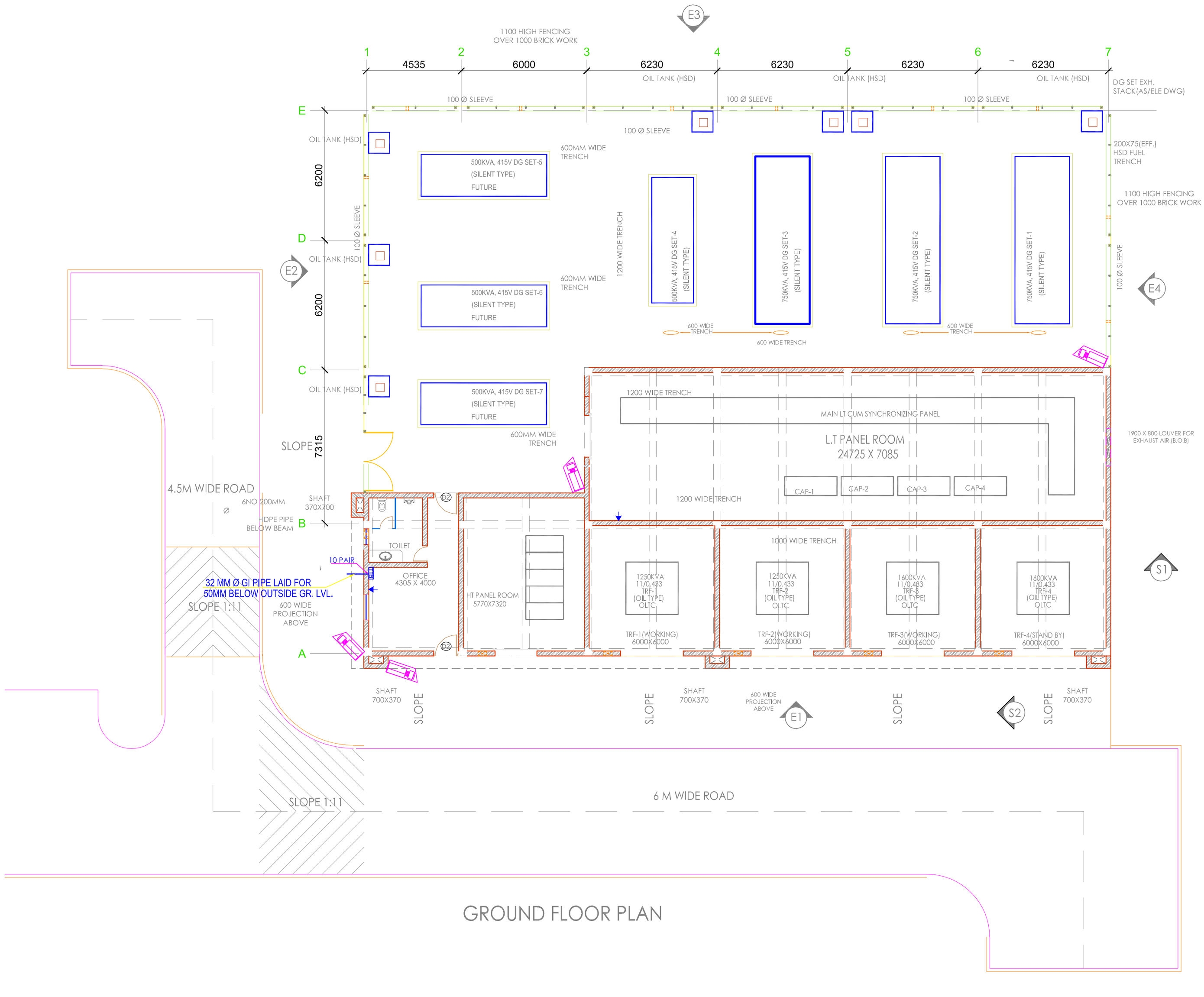
consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, emailescon56@gmail.com
Plumbing and fire: Techno Engineering Consultants, emailseb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, emailahcon@ahcon.in

dwg title: ELECTRICAL

dwg type: SINGLE LINE DIAGRAM
FEEDER PILLAR FOR TELEPHONE SYSTEM

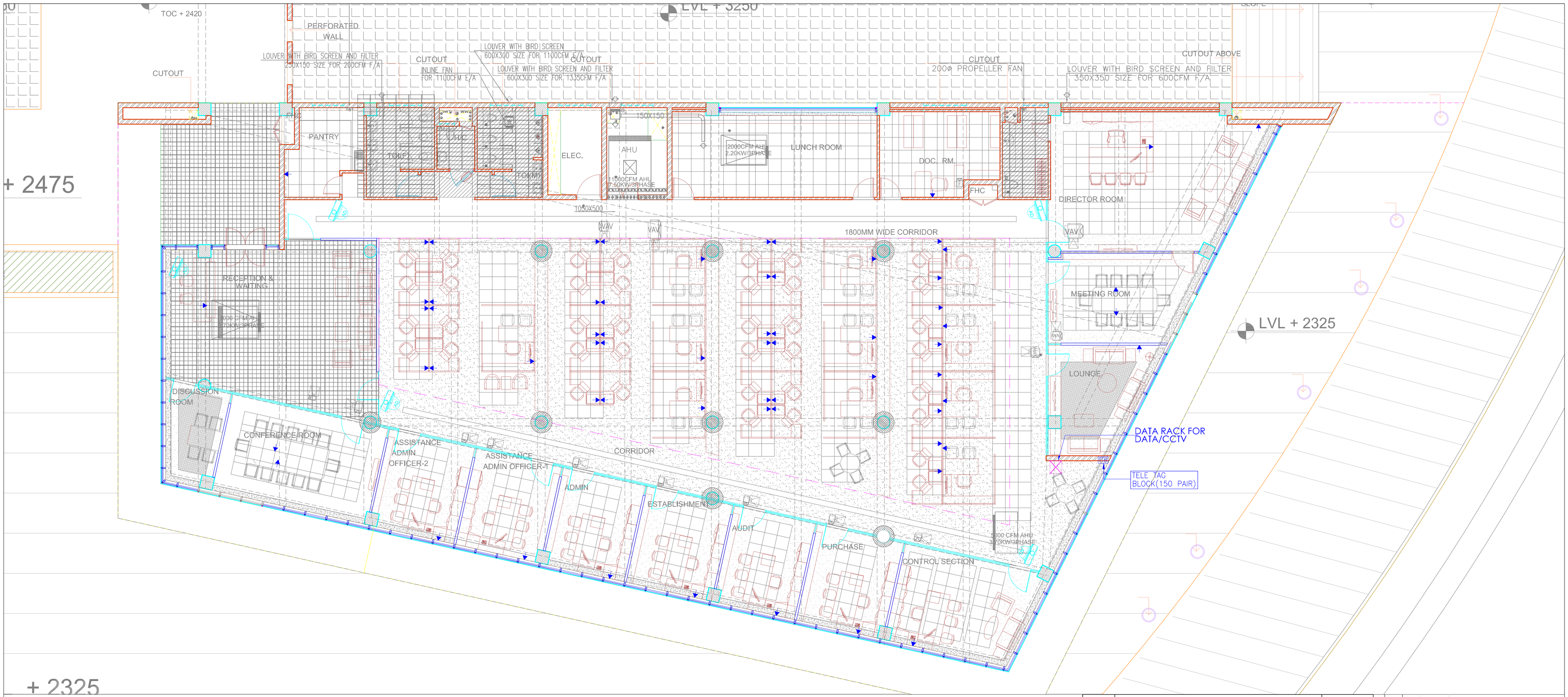
dwg. no: INST/TEL/SLD-02
scale: NTS
date: 17.04.2019
dealt: HARDEEP
check: SANDEEP NEGI

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA(DOME TYPE)	–
	CCTV CAMERA BULET TYPE	–



GROUND FLOOR PLAN

revisions no.	date description
issue status	TENDER DRAWING
owner	INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI
architects	sikka associates architects — urban design, masterplanning, architecture, interior design, engineering, project management. A-2/1, Africa Avenue, Safdarjung Enclave, New Delhi-110029. Tel:(011)42539335, Fax: (011)26194481 Web: www.saadelhi.net, Email: sos@saadelhi.net
consultant-1	STRUCTURAL CONSULTANT — VINTECH CONSULTANTS, CONSULTING ENGINEERS & PROJECT MANAGERS. C-85, PAMPOSH ENCLAVE GREATER KAILASH - I NEW DELHI - 11004 TEL. 41416161,26920795 FAX : 26920797 e-mail : vintech@vintechconsultants.com. Mehro Consultants, A-1/36, Safdarjung Enclave, New Delhi-110029 Tel: 26169333/ 2617 2156 Fax: 46025052 Email: shubham_mehro@rediffmail.com
consultant-2	SERVICES CONSULTANTS — Electrical: Engineering Services Consultants, email:escon86@gmail.com; Plumbing and fire: Techno Engineering Consultants, email:eab_tec@yahoo.co.in; Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in
dwg title	ELECTRIC SUBSTATION BUILDING(ESS)
dwg type	TELEPHONE & CCTV LAYOUT
dwg. no	INST/ESS/LV-01
	scale 1:125 @ A2
	date 17.04.2019
	dealt: HARDEEP KAMBOJ
	checked by: SANDEEP NEGI



SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
↓	TELEPHONE OUTLET (RJ–11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA(DOME TYPE)	

revisions no.	date	description
R3		
R2		
R1		

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1, Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)43233233, Fax:(011)26194481 Web: www.saanda.net, Email:sa@saanda.net

STRUCTURAL CONSULTANT
VINTECH CONSULTANTS CONSULTING ENGINEERS & PROJECT MANAGERS
C-98, PAMPOSH ENCLAVE GREATER KAILASH – I NEW DELHI – 110048
TEL. 41414162/26228706 FAX : 26228707
e-mail : vintech@vintechconsultants.com

consultant-1: Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

SERVICES CONSULTANTS
consultant-2:
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:sab_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

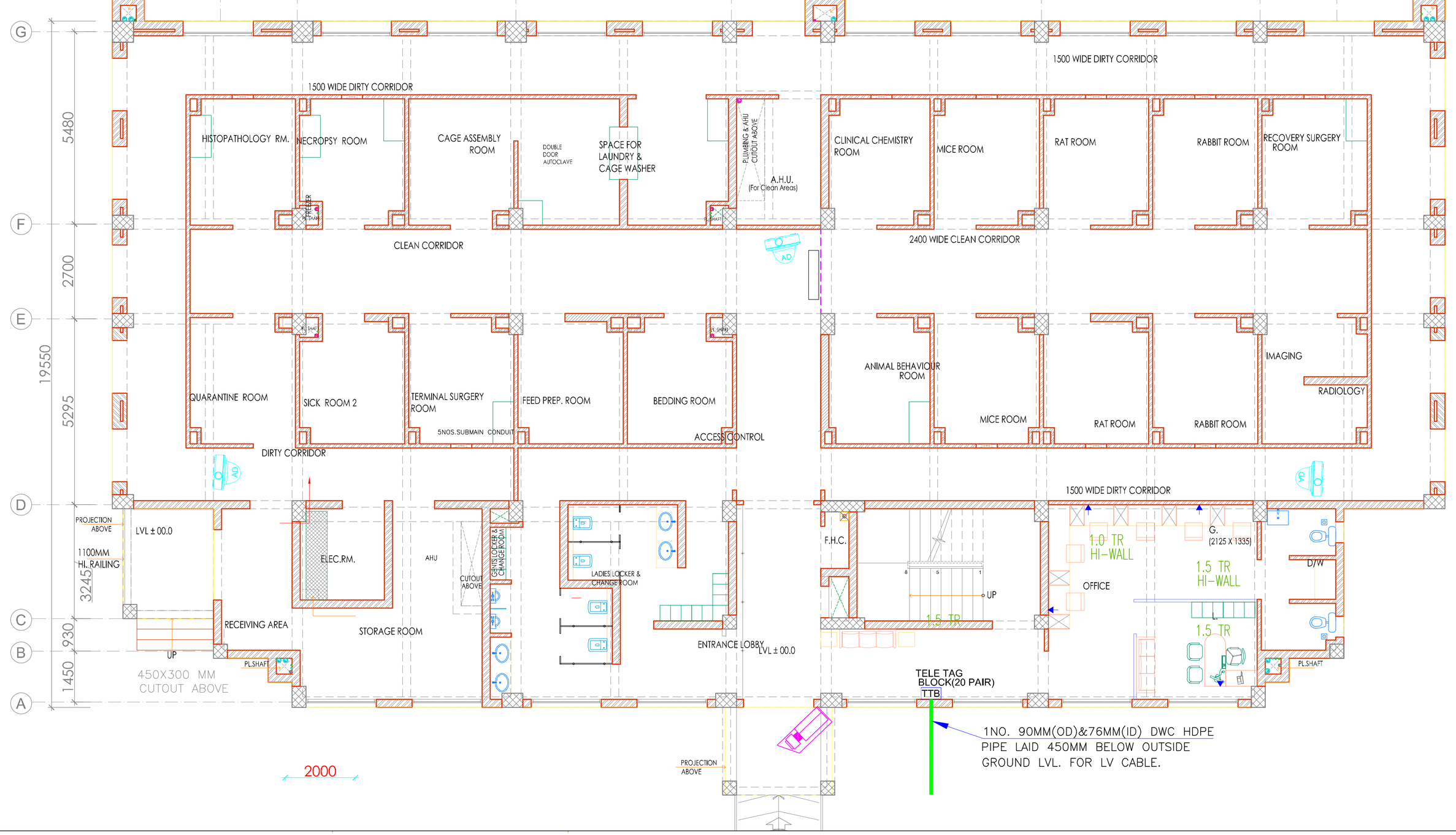
dwg title: ADMIN BLOCK

dwg type: LV LAYOUT TELEPHONE & CCTV GROUND FLOOR PLAN

dwg. no: INST/AB/LV-01

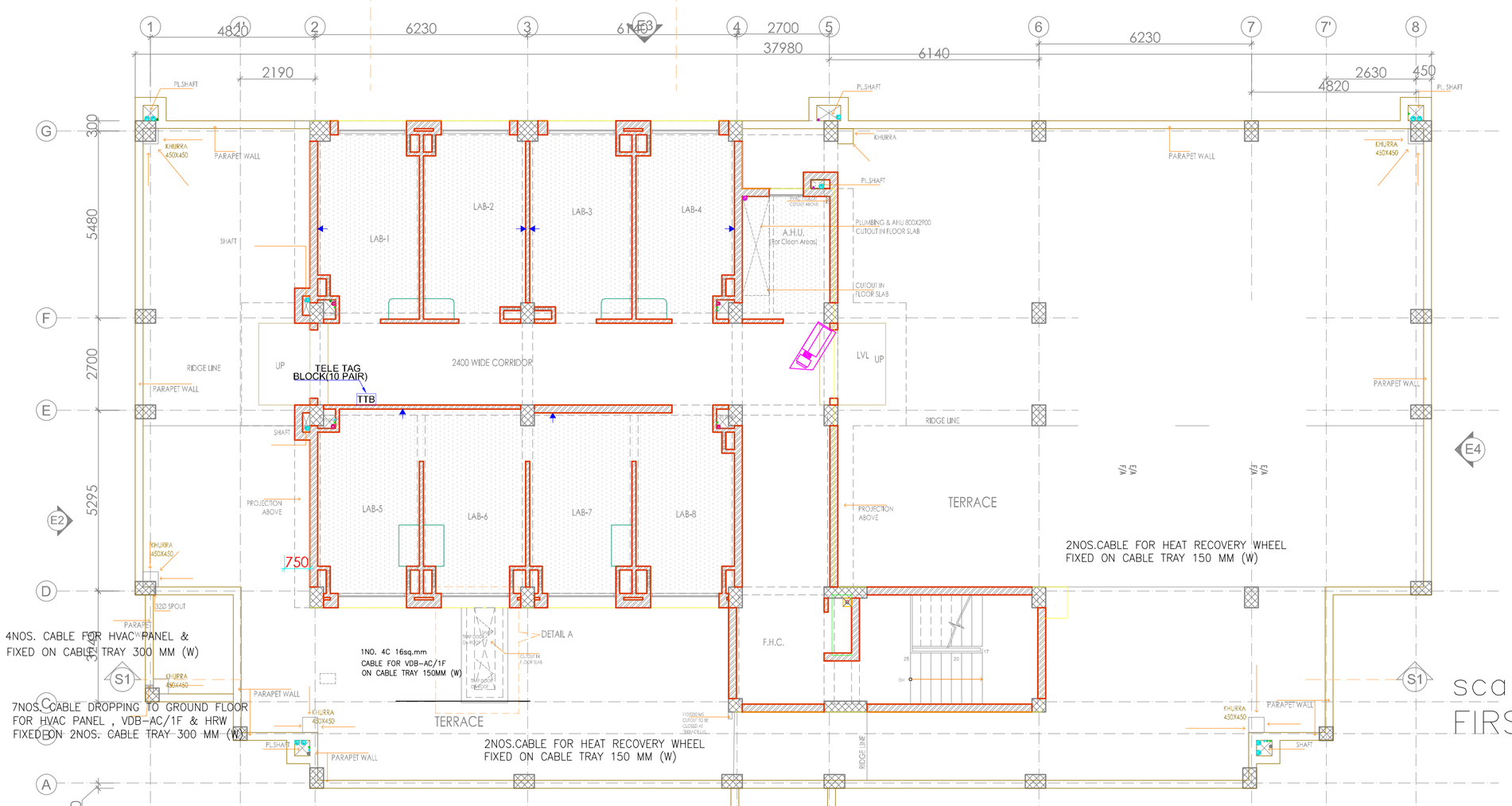
scale: 1:125 @A1
date: 17.04.2019
dealt: HARDEEP KAMBOJ
checked by: SANDEEP NEGI

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–



GROUND FLOOR PLAN

scale: 1:75



scale: 1:100
FIRST FLOOR PLAN

revisions no.	R3	
	R2	
	R1	
	date	description
issue status	TENDER DRAWING	
owner	INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI	

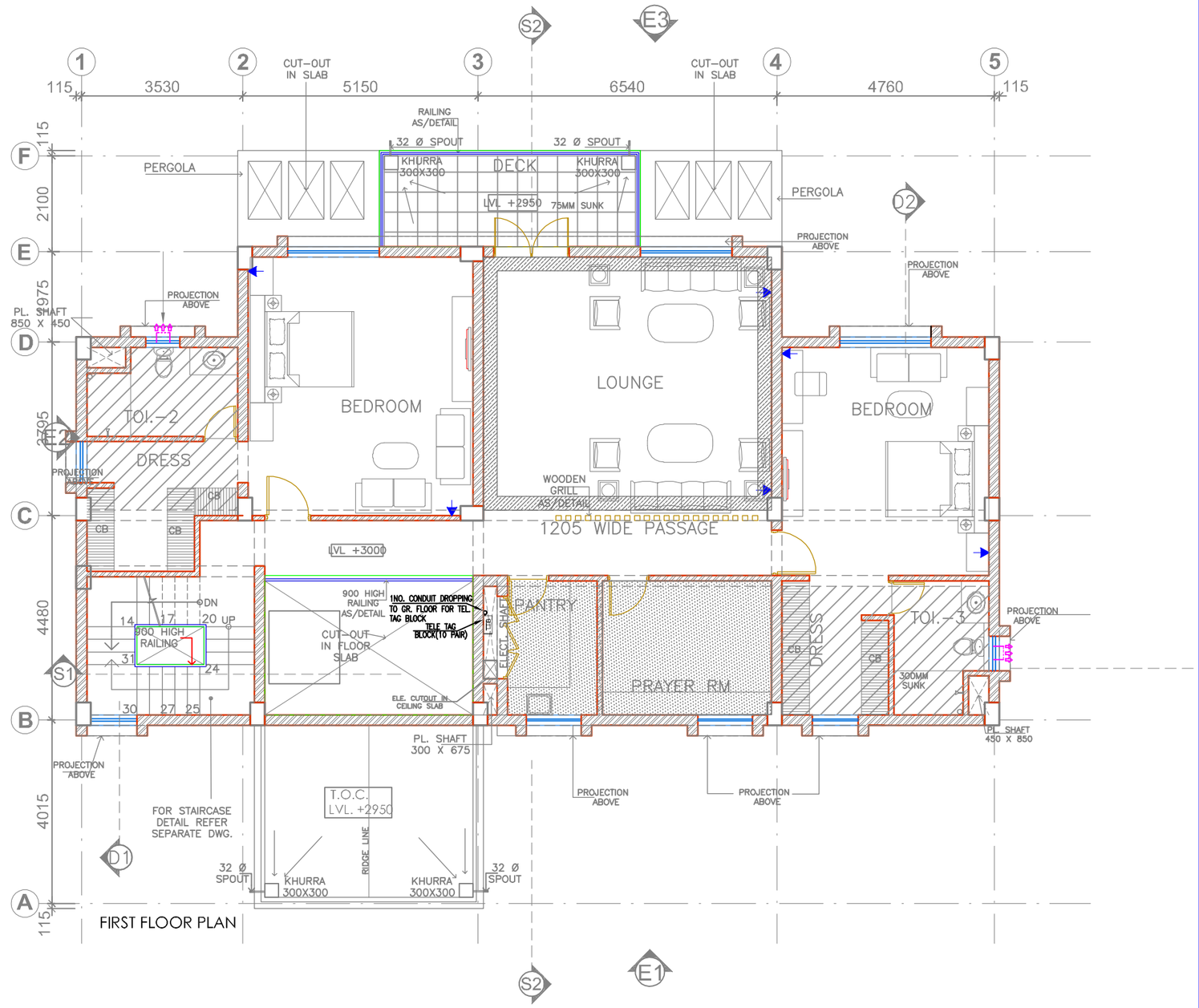
architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)45253535, Fax: (011)26194481 Web: www.saaindia.net, Email: saa@saaindia.net

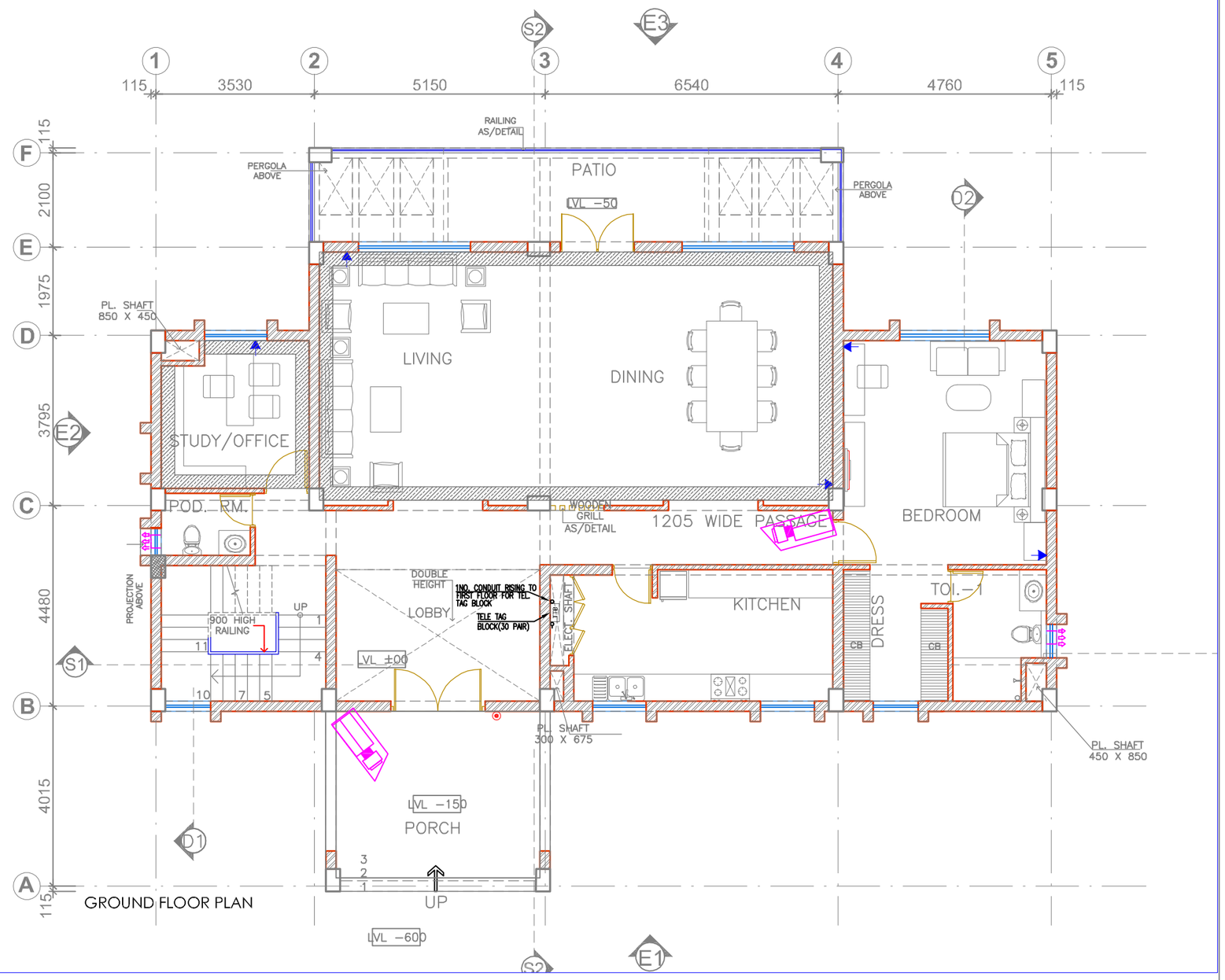
consultant-1: STRUCTURAL CONSULTANT
VINTECH CONSULTANTS CONSULTING ENGINEERS & PROJECT MANAGERS
C-98, PAMPOSH ENCLAVE GREATER KAILASH – I NEW DELHI – 110048
TEL. 6914510,6469998 FAX : 6469797
e-mail : vintech@vintechconsultants.com

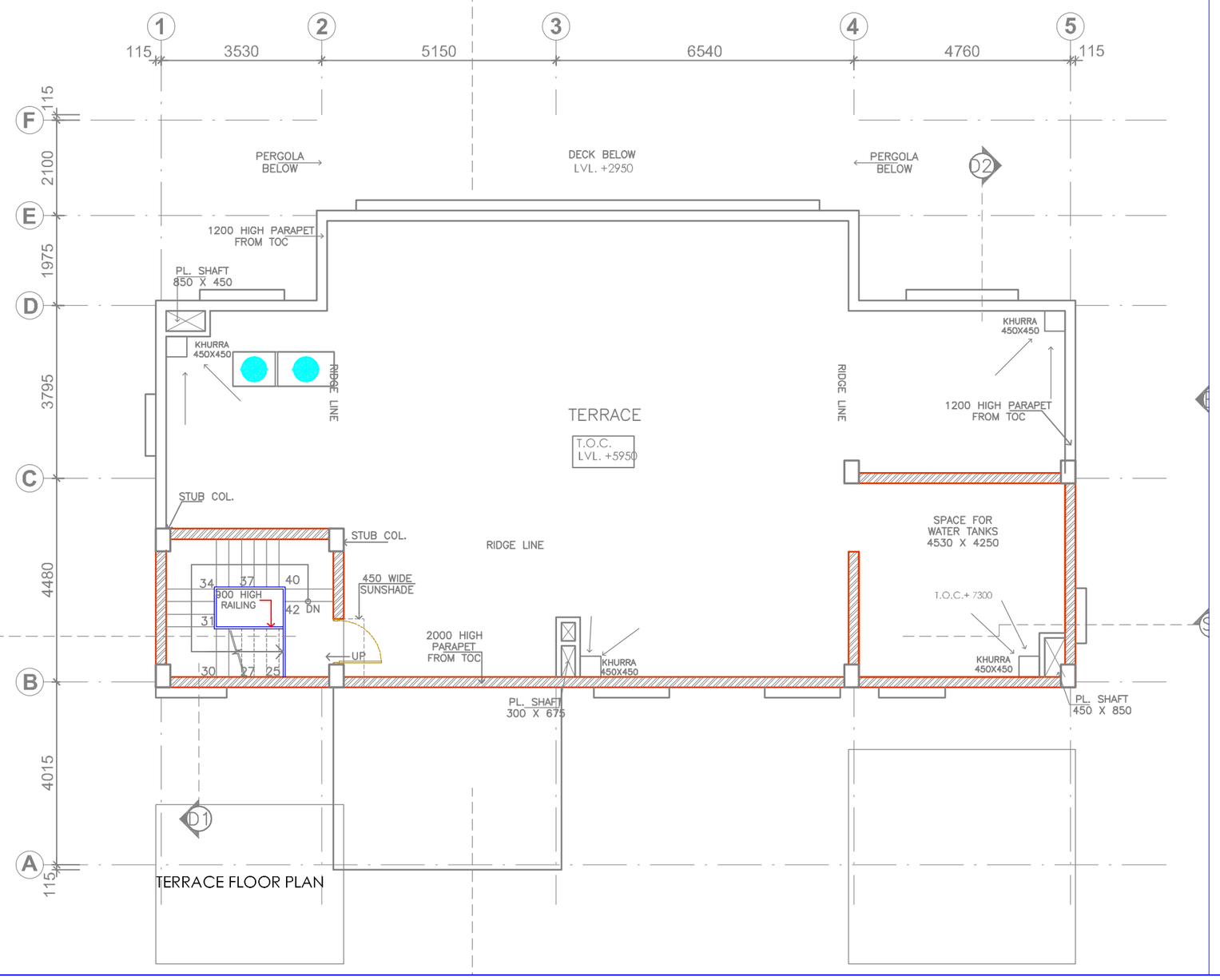
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title	ANIMAL HOUSE
dwg type	LV LAYOUT TELEPHONE & CCTV GROUND & FIRST FLOOR PLAN
dwg. no	INST/AH/LV-01
	PAPER SIZE: A1
	date 17.04.2019
	dealt HARDEEP / check. SANDEEP NEGI







SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions no.		date	description
	R3		
	R2		
	R1		

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects:
sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
tel:(011)43035335, fax: (011)26194481 Web: www.saanda.net, Email: sa@saanda.net

consultant-1:
STRUCTURAL CONSULTANT
VINTECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-85, PAMPOSH ENCLAVE
GREATER KAILASH - I NEW DELHI - 110048
TEL. 41415151,26220706 FAX : 26220707
e-mail : Vintech@vintechconsultants.com
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

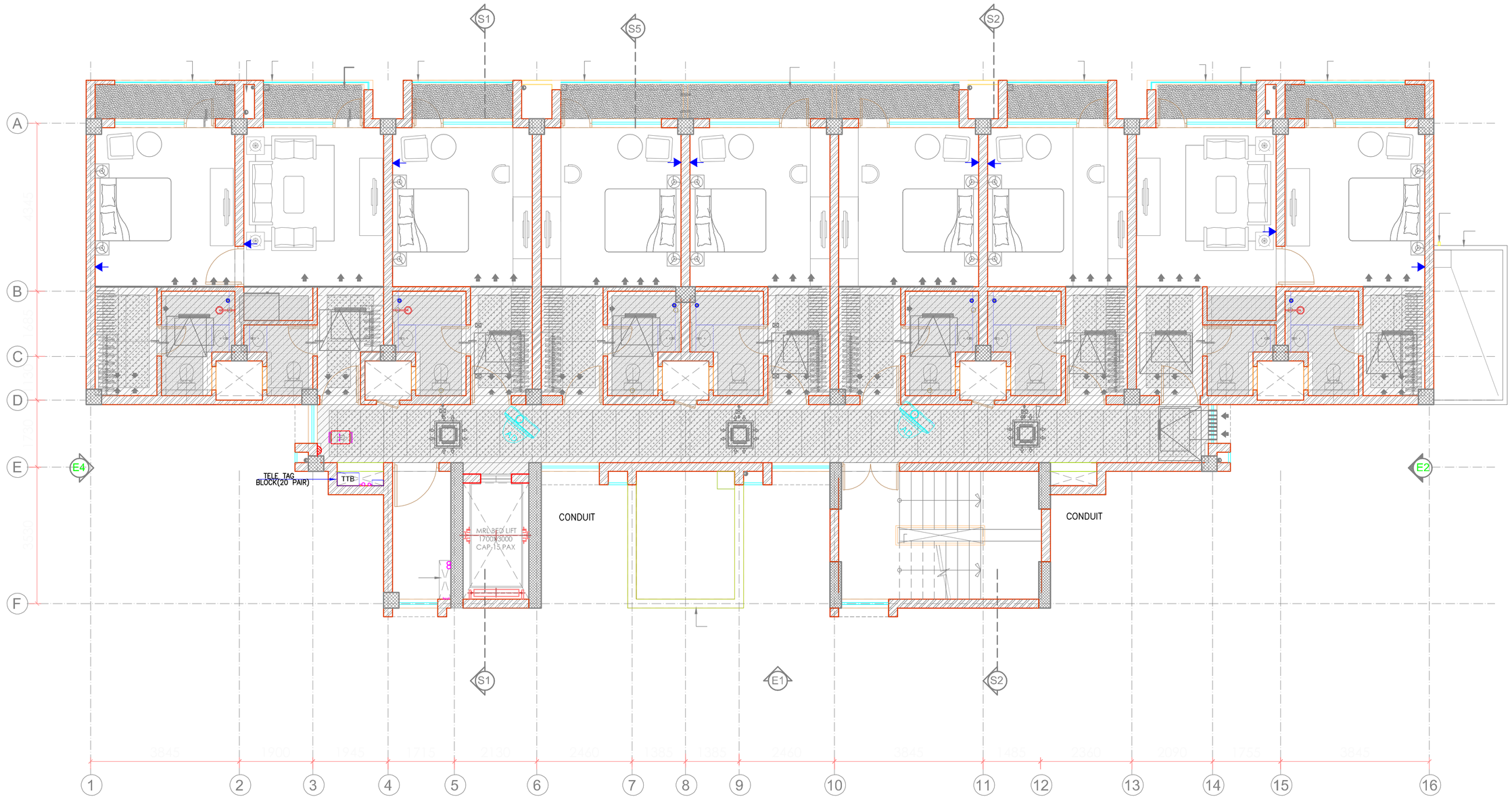
consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

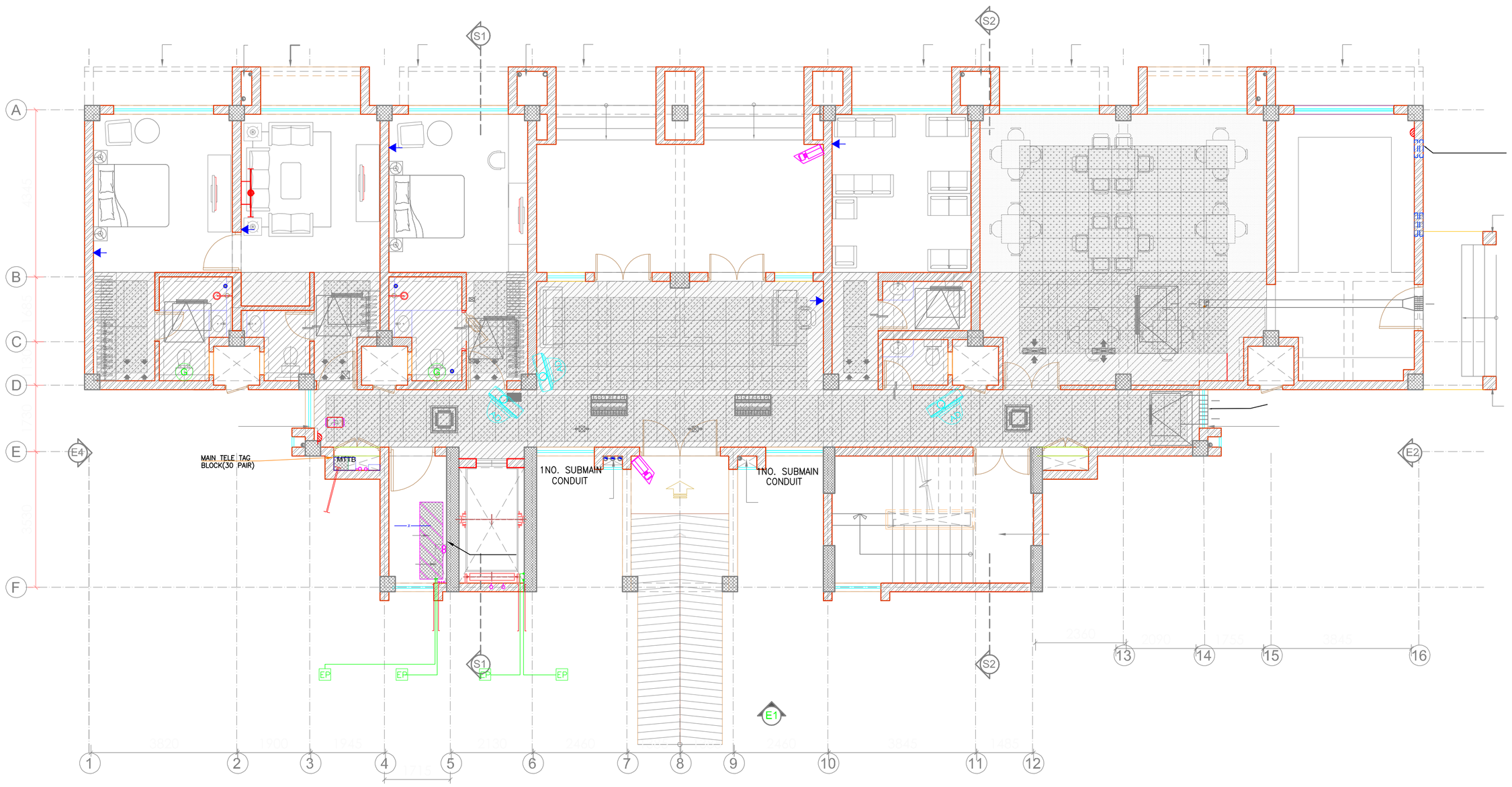
dwg title: DIRECTOR'S RESIDENCE

dwg type: LV LAYOUT
TELEPHONE & CCTV
GROUND, FIRST & TERRACE
FLOOR PLAN

dwg. no: INST/DR/LV -01

scale 1:100 @ A2
date 17.04.2019
dealt: HARDEEP
checked by:SANDEEP





SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions no.		date	description
	R3		
	R2		
	R1		

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: SAA sikka associates architects
urban design, masterplanning, architecture, interior design, engineering, project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(0-11)42525253, Fax: (0-11)26194481 Web: www.saadnet.net, Email: saa@saadnet.net

consultant-1:
STRUCTURAL CONSULTANT
VINECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-30, PAMPOSH ENCLAVE GREATER KAILASH - I NEW DELHI - 110048
TEL. 41416516,26626765 FAX : 26260797
e-mail : vinech@vinechconsultants.com
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46020052
Email: shubham_mehro@rediffmail.com

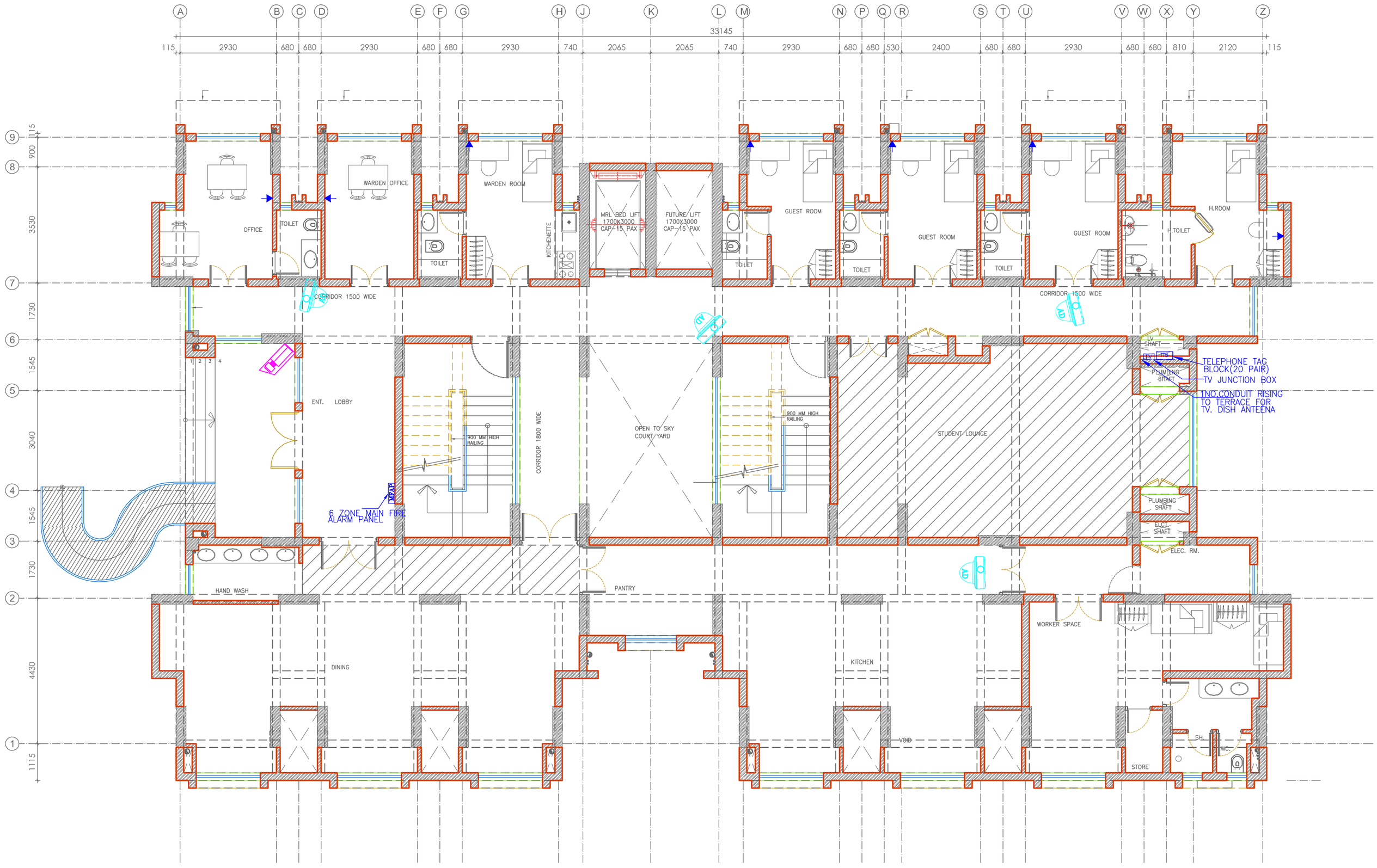
consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:seb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: GUEST HOUSE

dwg type: LV LAYOUT
TELEPHONE & CCTV
GROUND & FIRST FLOOR PLAN

dwg. no: INST/GH/LV-01

scale 1:75@ A1
date 17.04.2019
dealt HARDEEP check. SANDEEP NEGI



SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions no.		
R2		
R1		
	date	description

issue status: GFC DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects:
sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)43235235, Fax:: (011)26194481 Web: www.saaindia.net, Email: saa@saaindia.net

consultant-1:
STRUCTURAL CONSULTANT
VINTECH CONSULTANTS CONSULTING ENGINEERS & PROJECT MANAGERS
C-35, PAMPOSH ENCLAVE GREATER KAILASH - I NEW DELHI - 110048
TEL. 43141516,26296766 FAX : 26296767
e-mail : vintech@vintechconsultants.com
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

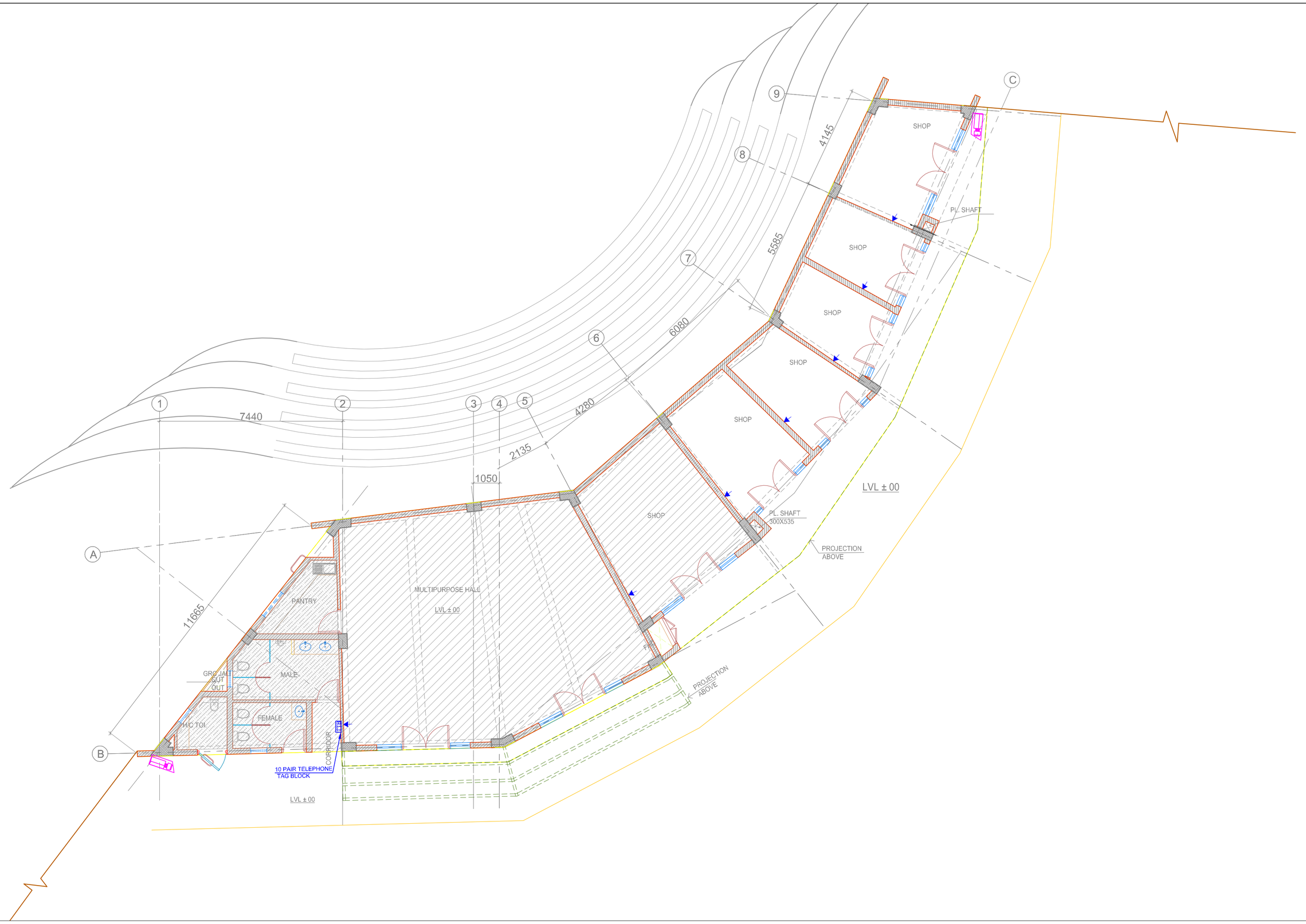
consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: HOSTEL

dwg type: LV LAYOUT TELEPHONE & CCTV GROUND & FIRST FLOOR PLAN

dwg. no: INST/H/LV-01

scale 1:100 @ A2
date 17.04.2019
dealt: HARDEEP
checked by: SANDEEP



SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions

no.	date	description
R3		
R2		
R1		

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects:
sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
tel(011)43253235, Fax: (011)26194481 Web: www.saaindia.net, Email: saa@saaindia.net

consultant-1:
STRUCTURAL CONSULTANT
VINTECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-98, PAMPOSH ENCLAVE GREATER KAILASH - I NEW DELHI - 110048
TEL. 41541515,29239750 FAX : 26239757
e-mail : vintech@vintechconsultants.com
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2: SERVICES CONSULTANTS

Electrical	Plumbing and Fire	Airconditioning
Engineering Services Consultants	Techno Engineering Consultants	Abid Husain Consultants
email:escon86@gmail.com	email:seb_tec@yahoo.co.in	email:ahcon@ahcon.in

dwg title: HUB

dwg type: LV LAYOUT
TELEPHONE & CCTV
GROUND FLOOR PLAN

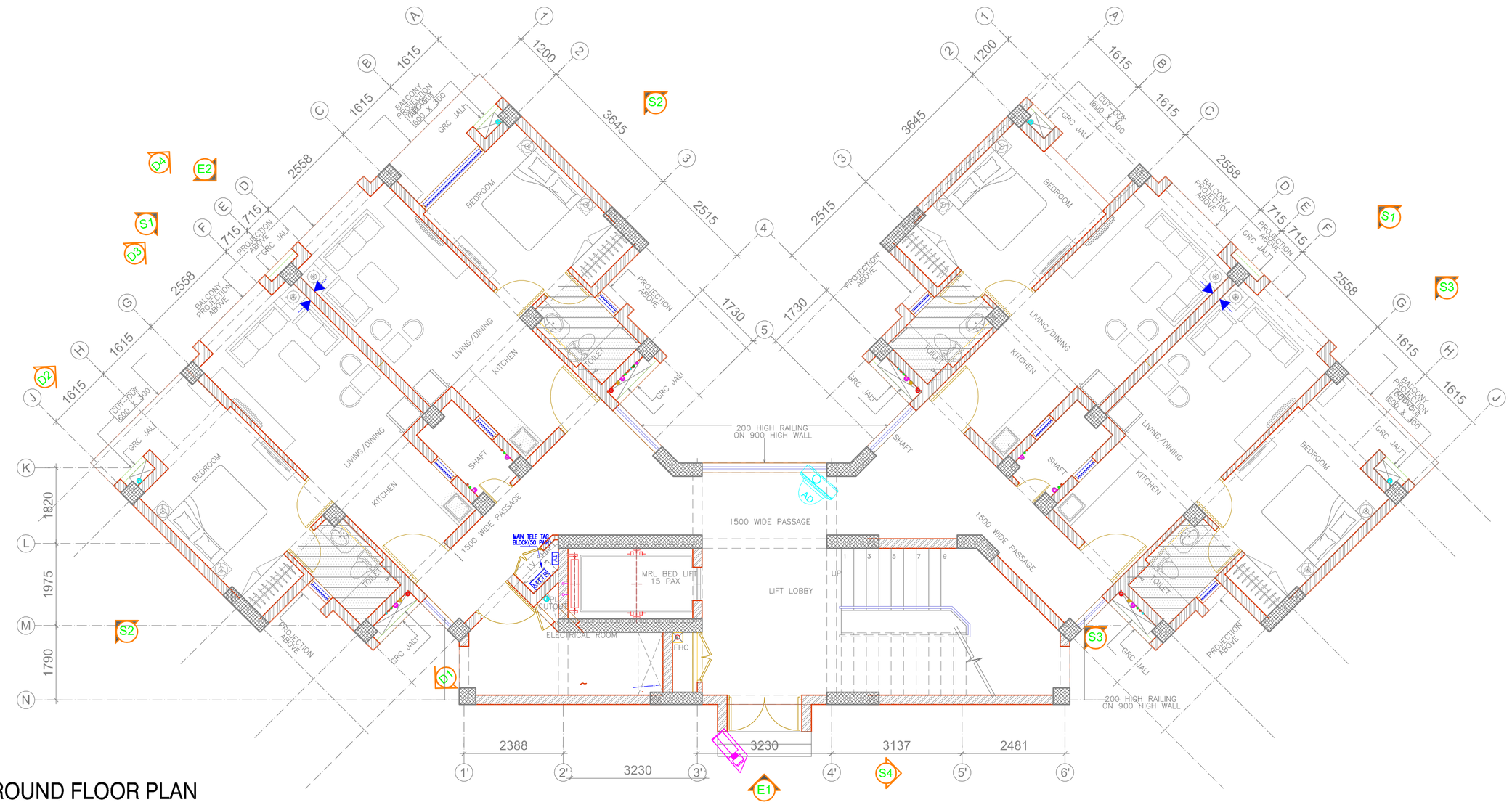
dwg. no: INST/HUB/LV-01

SCALE: 1:100@A1

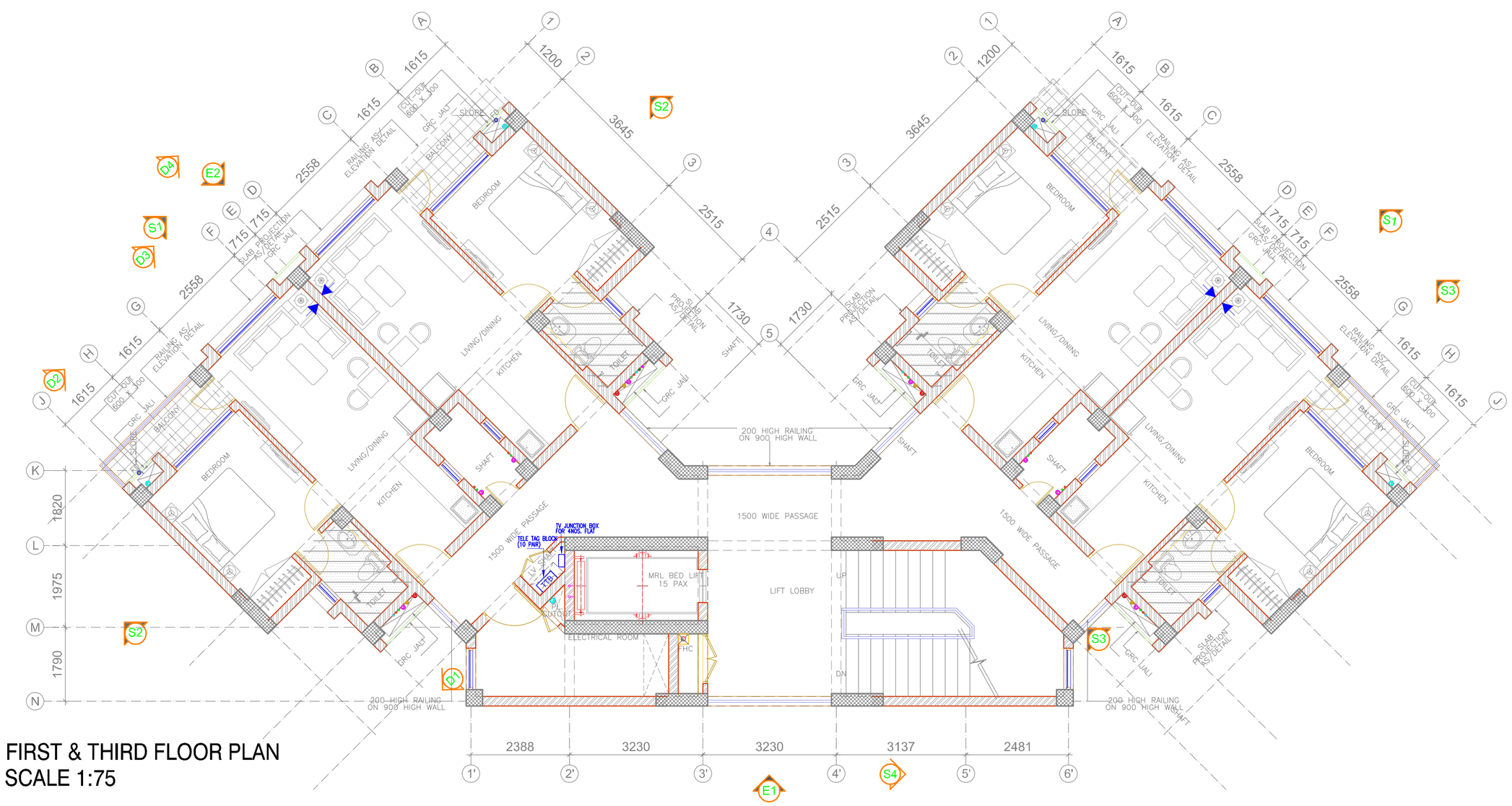
date: 17.04.2019

dealt HARDEEP

check. SANDEEP NEGI



GROUND FLOOR PLAN
SCALE 1:75



FIRST & THIRD FLOOR PLAN
SCALE 1:75

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions

no.	date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1, Attica Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)43235235, Fax: (011)26194481 Web: www.saandas.net, Email: sa@saandas.net

STRUCTURAL CONSULTANT
VINECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-86, PAMPOSH ENCLAVE
consultant-1: Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

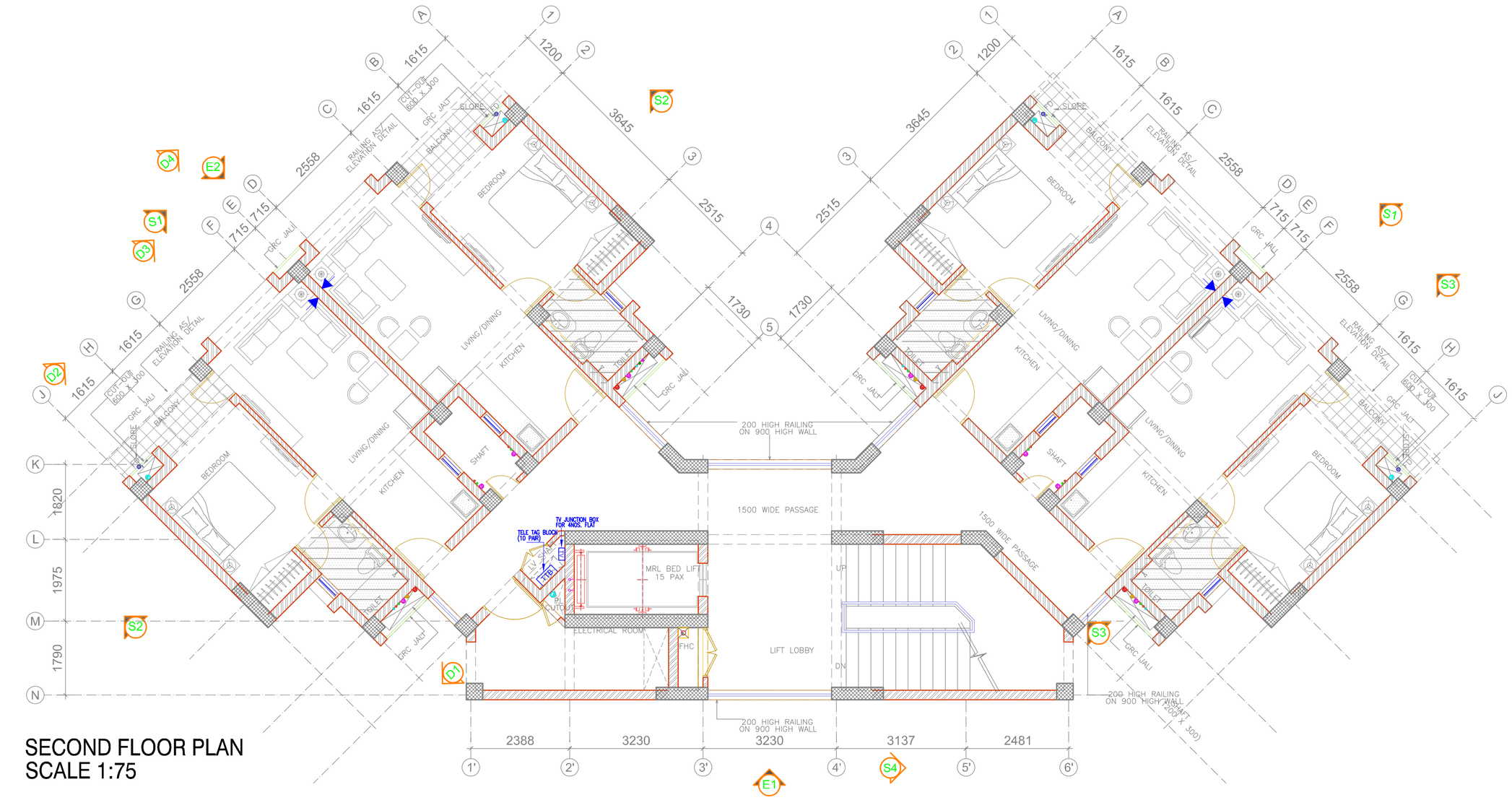
SERVICES CONSULTANTS
consultant-2:
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

dwg title: MARRIED SCHOLARS' HOSTEL

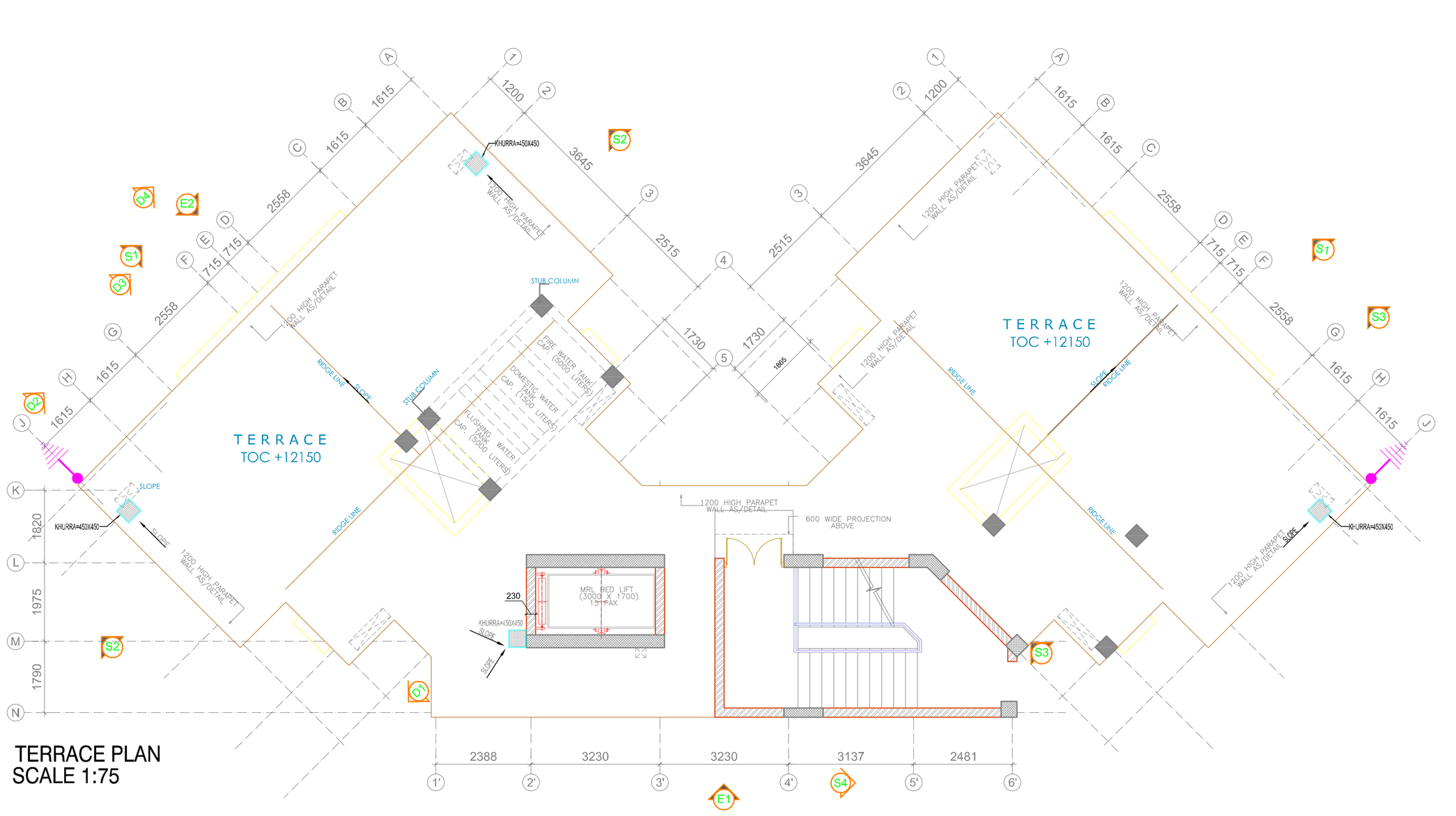
dwg type: LV LAYOUT
TELEPHONE & CCTV
GROUND & FIRST FLOOR PLAN
(TYPICAL FOR 3RD FLOOR PLAN)

dwg. no: INST/MSH/LV-01

scale 1:75 @ A1
date 17.04.2019
dealt: HARDEEP
checked by:SANDEEP



SECOND FLOOR PLAN
SCALE 1:75



TERRACE PLAN
SCALE 1:75

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–

revisions

date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design
masterplanning
architecture
interior design
engineering
project management
A-2/1, Attica Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)43235235, Fax: (011)26194481 Web: www.saanda.net, Email: sa@saandia.net

consultant-1
STRUCTURAL CONSULTANT
VINECH CONSULTANTS
CONSULTING ENGINEERS & PROJECT MANAGERS
C-96, PAMPOSH ENCLAVE
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants, email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants, email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in

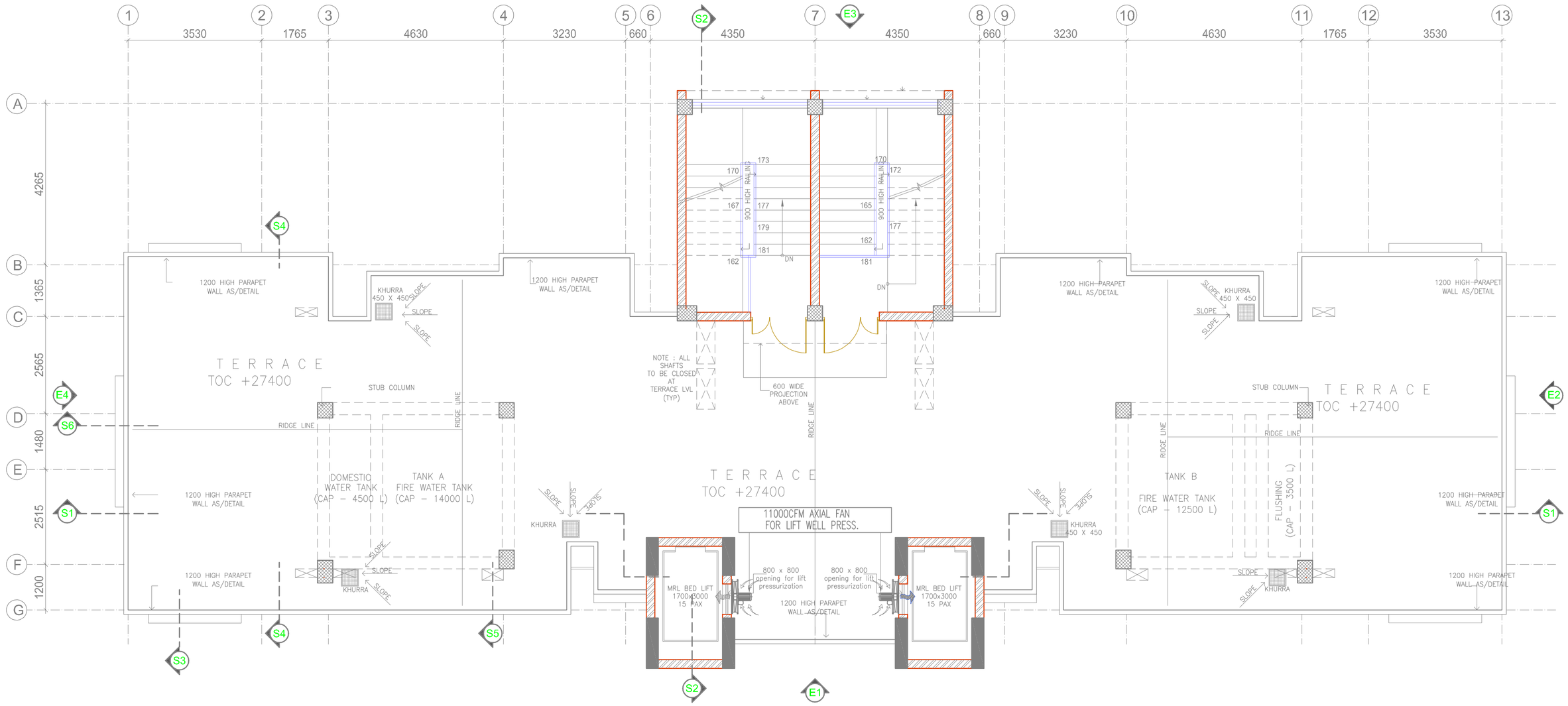
dwg title: MARRIED SCHOLARS' HOSTEL

dwg type: LV LAYOUT
TELEPHONE & CCTV
SECOND , TERRACE FLOOR PLAN

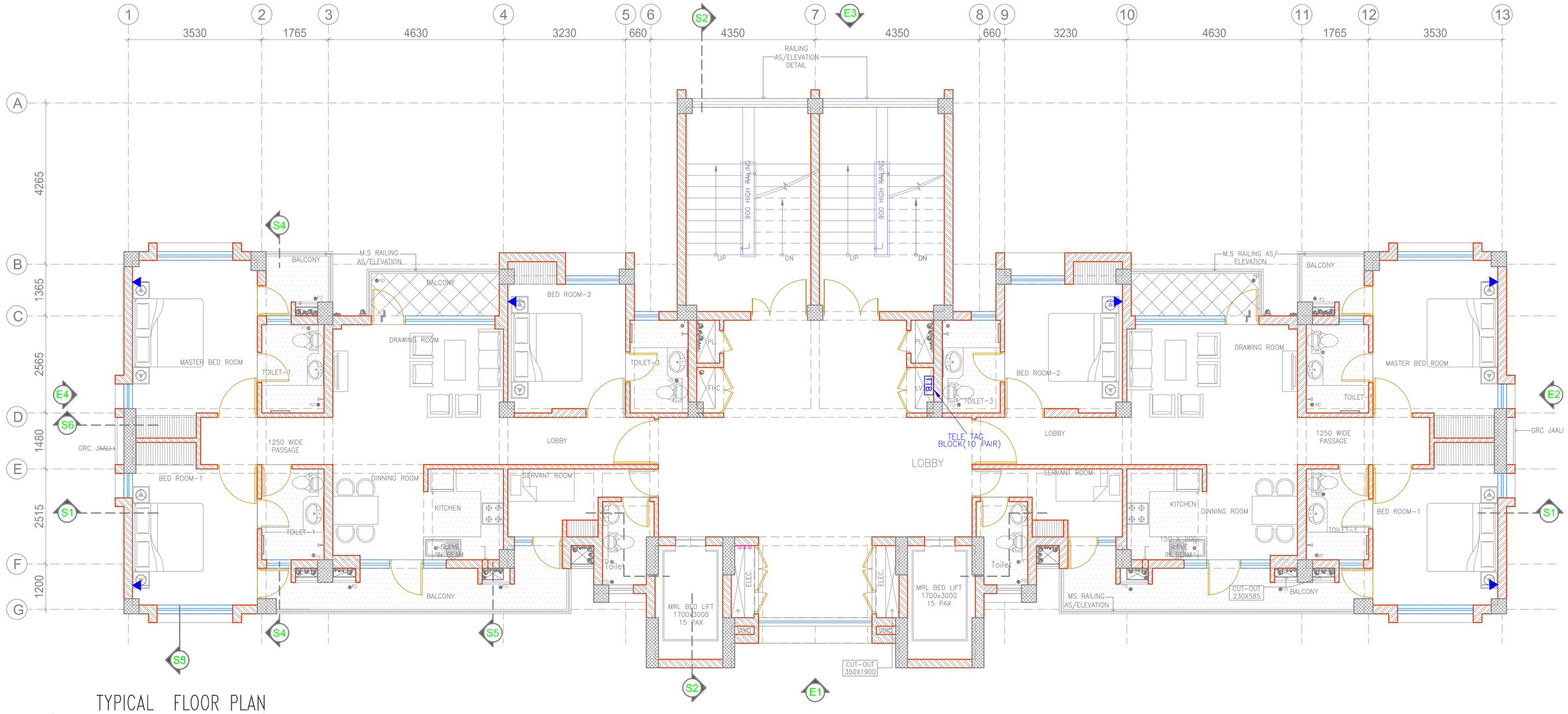
dwg. no: INST/MSH/LV-02

scale 1:75 @ A1
date 17.04.2019
dealt: HARDEEP
checked by:SANDEEP

SYMBOL	LEGEND DESCRIPTION	MOUNTIN HEIGHT F FIN. FLR. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA(DOME TYPE)	–
	CCTV BULLET TYPE	–



TERRACE PLAN



TYPICAL FLOOR PLAN
(2nd, 4th, 6th & 8th Floor)

revisions			
	R3		
	R2		
	no.	date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029
Tel:(011)43235235, Fax:: (011)26194481 Web: www.saidnda.net, Email: saidlisaidnda

consultant-1: STRUCTURAL CONSULTANT
Mehro Consultants
A-1/34, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2: SERVICES CONSULTANTS

Electrical	Plumbing and fire	Airconditioning
Engineering Services Consultants	Techno Engineering Consultants	Abid Husa Consultan
email:escon86@gmail.com	email:ssb_tec@yahoo.co.in	email:ahcon@ahco

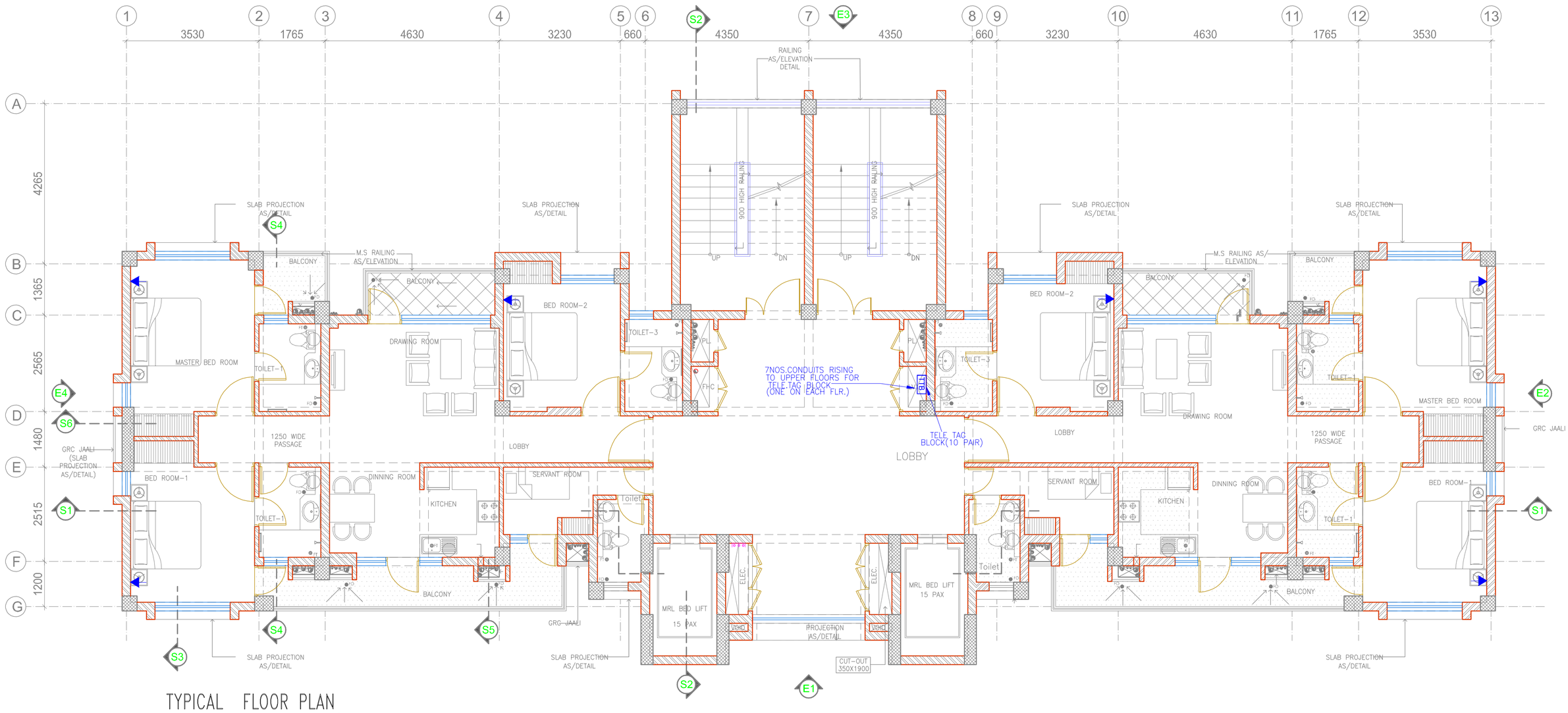
dwg title: OFFICERS' HOUSING

dwg type: LV LAYOUT
TELEPHONE & CCTV PLAN
(TYPICAL FOR 2nd, 4th,6th & 8th FLOOR PLAN)

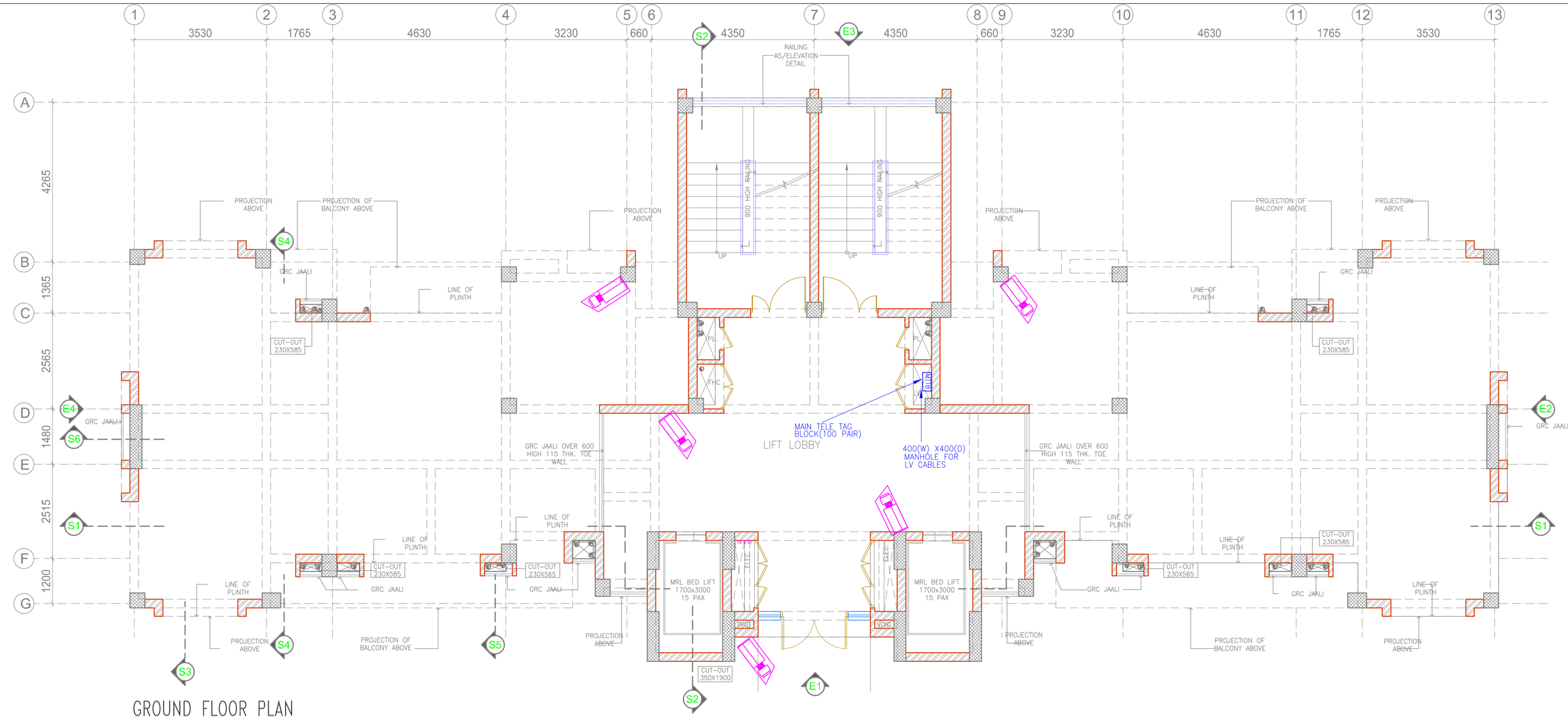
dwg. no: INST/OH/LV-02

scale 1:75 @ A1
date 17.04.2019
dealt HARDEEP

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA(DOME TYPE)	–
	CCTV BULLET TYPE	–



TYPICAL FLOOR PLAN
(1st, 3rd, 5th & 7th Floor)



GROUND FLOOR PLAN

revisions			
	R3		
	R2		
	R1		
	no.	date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)43233233, Fax:: (011)26194481 Web: www.saaindia.net, Email: saa@saaindia.net

consultant-1: STRUCTURAL CONSULTANT
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156, Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants — email:escon66@gmail.com
Plumbing and fire: Techno Engineering Consultants — email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants — email:ahcon@ahcon.in

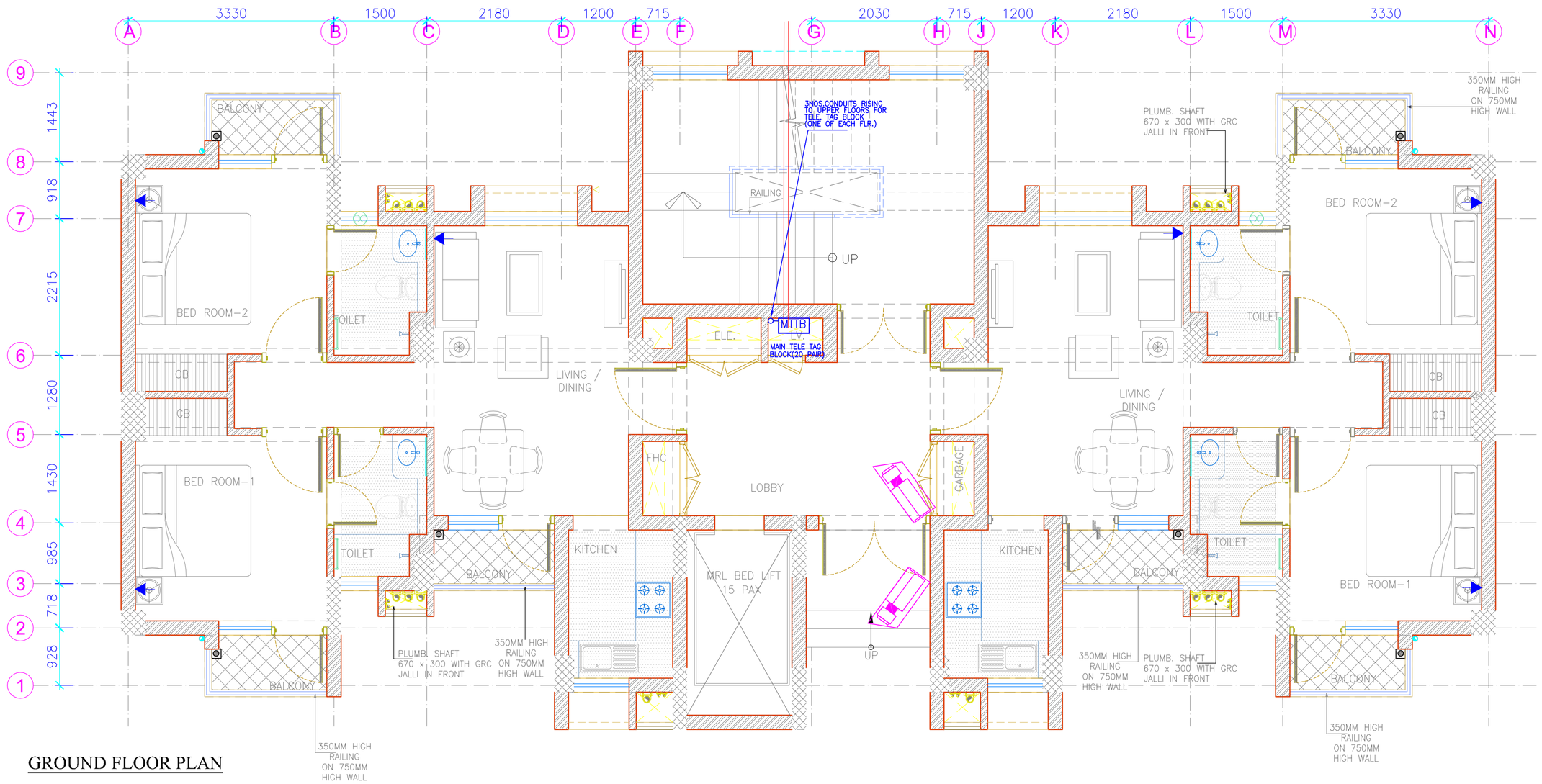
dwg title: OFFICERS' HOUSING

dwg type: LV LAYOUT
TELEPHONE & CCTV PLAN
GROUND FLOOR
(TYPICAL FOR 1ST,3rd,5th,7th FLOOR PLAN)

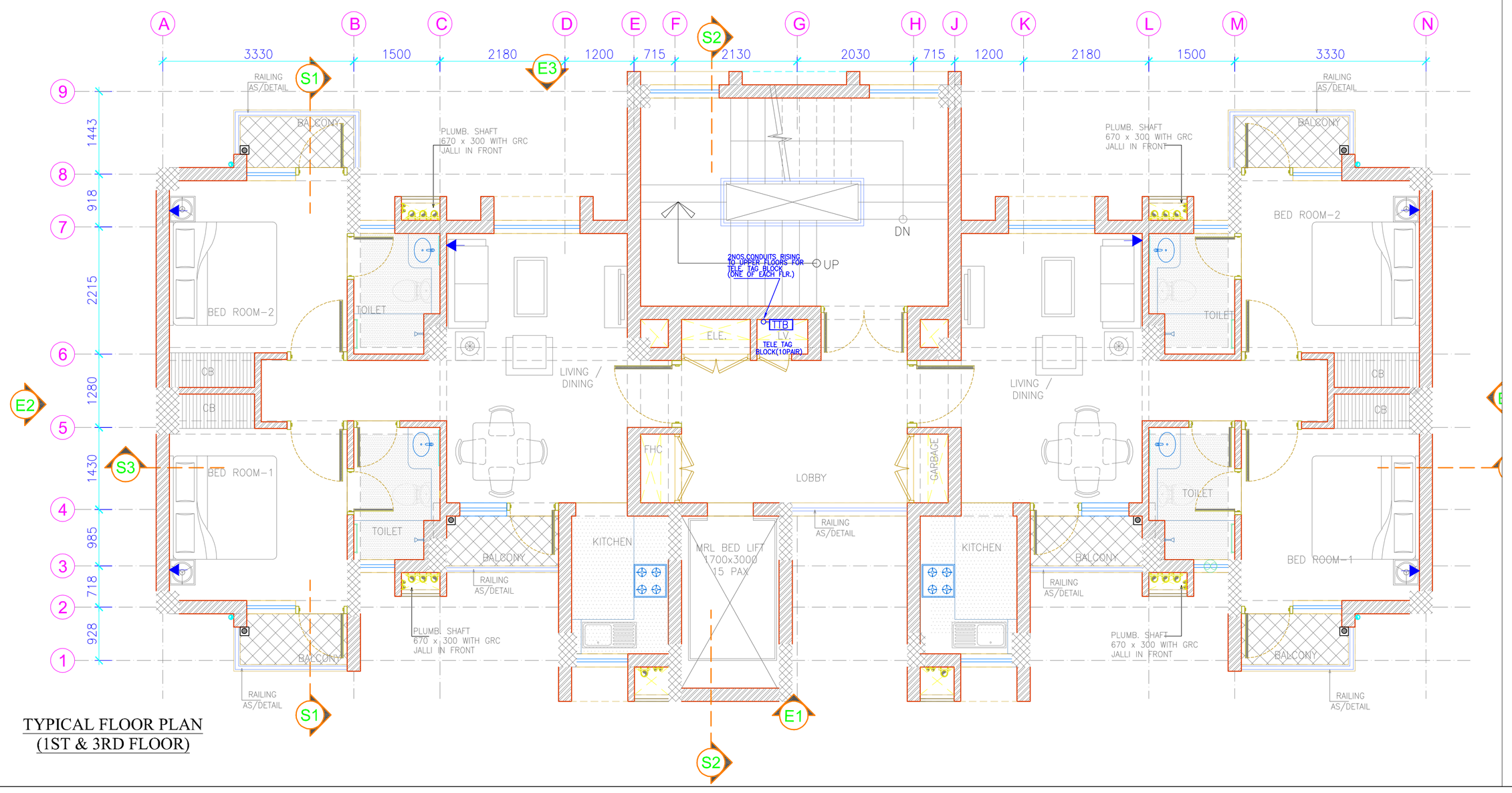
dwg. no: INST/OH/LV-01

scale: 1:75 @ A1
date: 17.04.2019
dealt: HARDEEP

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA (DOME TYPE)	–
	IP CCTV CAMERA (BULLET TYPE)	–



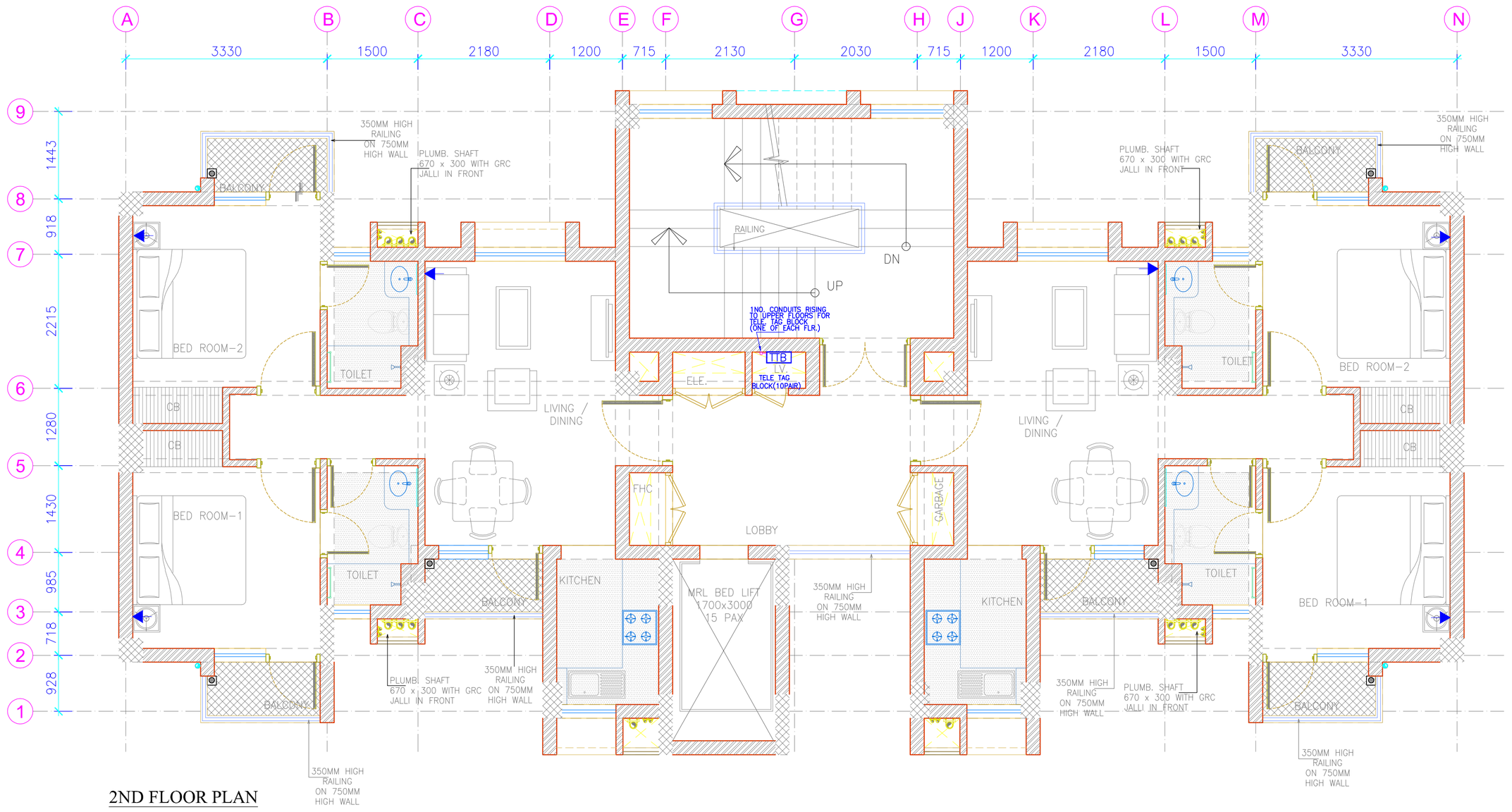
GROUND FLOOR PLAN



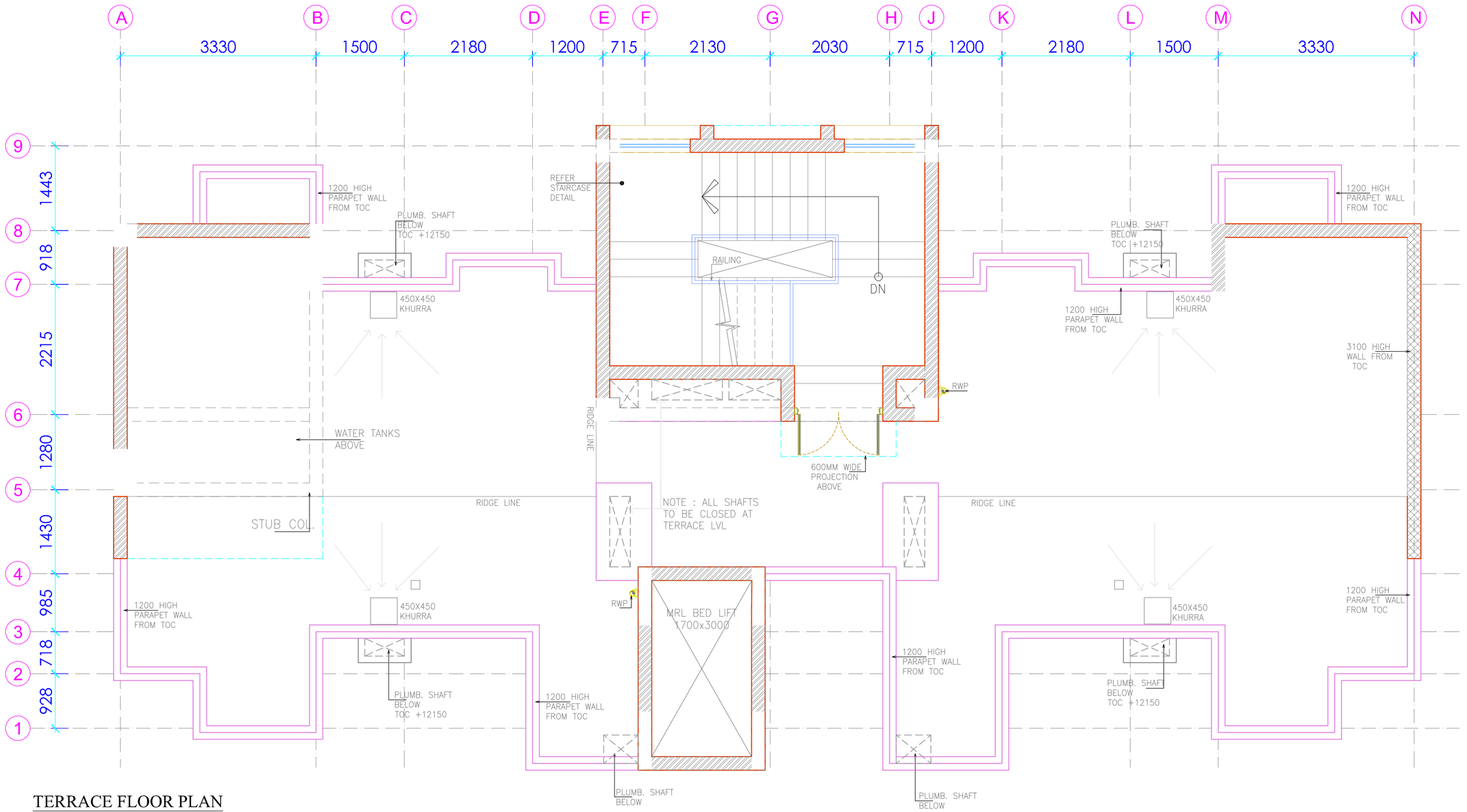
TYPICAL FLOOR PLAN
(1ST & 3RD FLOOR)

issue status	TENDER DRAWING		
revisions	R3		
	R2		
	R1	09.01.2018	COMMENT INCORPORATED AS PER INTERIOR DWG.
	no.	date	description
owner	INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI		
architects	sikka associates architects urban design masterplanning architecture interior design engineering project management A-2/1 , Attica Avenue, Safdarjung Enclave, New Delhi-110029. tel:(011)46020555, Fax:(011)26174481, Web: www.sikkaarchitects.com		
consultant-1	STRUCTURAL CONSULTANT Mehro Consultants A-1/36, Safdarjung Enclave, New Delhi-110029 Tel: 26169333/ 26172156 Fax: 46023052 Email: shubham_mehro@rediffmail.com		
consultant-2	SERVICES CONSULTANTS Electrical: Engineering Services Consultants, email:escon55@gmail.com Plumbing and fire: Techno Engineering Consultants, email:tele_tec@yahoo.co.in Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in		
dwg title	STAFF HOUSING		
dwg type	LV LAYOUT TELEPHONE & LV LAYOUT GROUND & FIRST FLOOR PLAN (TYPICAL FOR 3RD FLOOR PLAN)		
dwg. no	INST/SH/LV-01	scale 1:50 @ A1 date 17.04.2019 dealt HARDEEP	

SYMBOL	LEGEND DESCRIPTION	MOUNTING HEIGHT FROM FIN. FLR. LVL. IN mm.
	TELEPHONE OUTLET (RJ-11).	230
TTB	TELEPHONE TAG BLOCK	450
MTTB	MAIN TELEPHONE TAG BLOCK	450
	IP CCTV CAMERA(DOME TYPE)	–

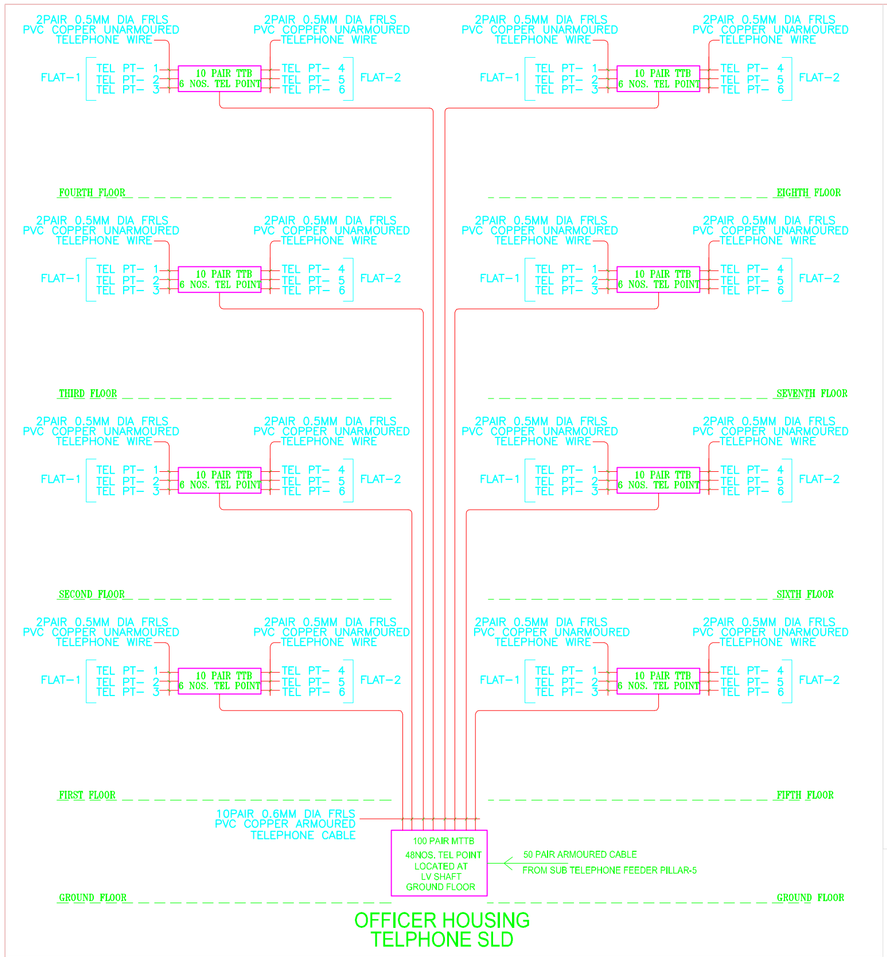


2ND FLOOR PLAN

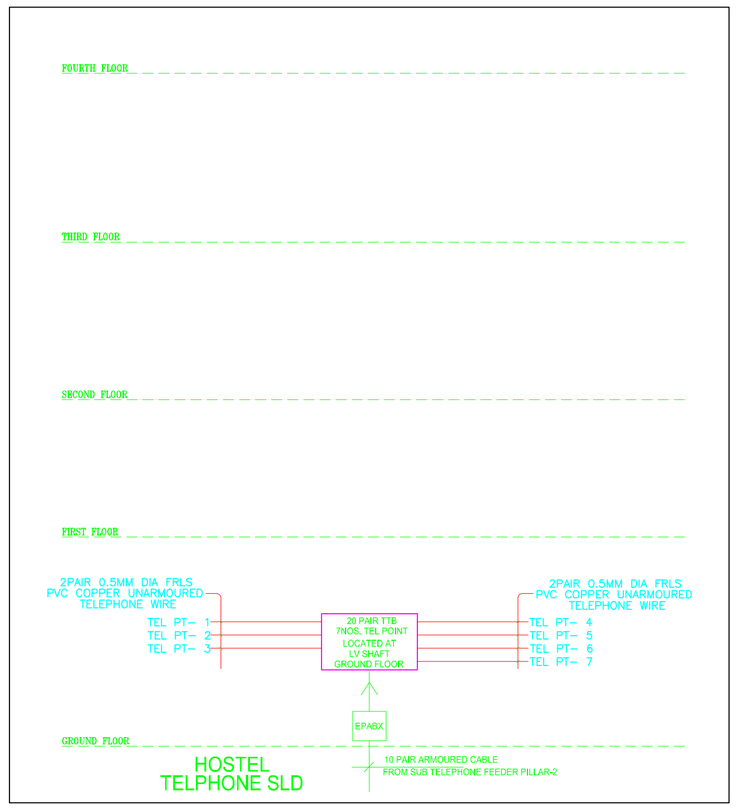


TERRACE FLOOR PLAN

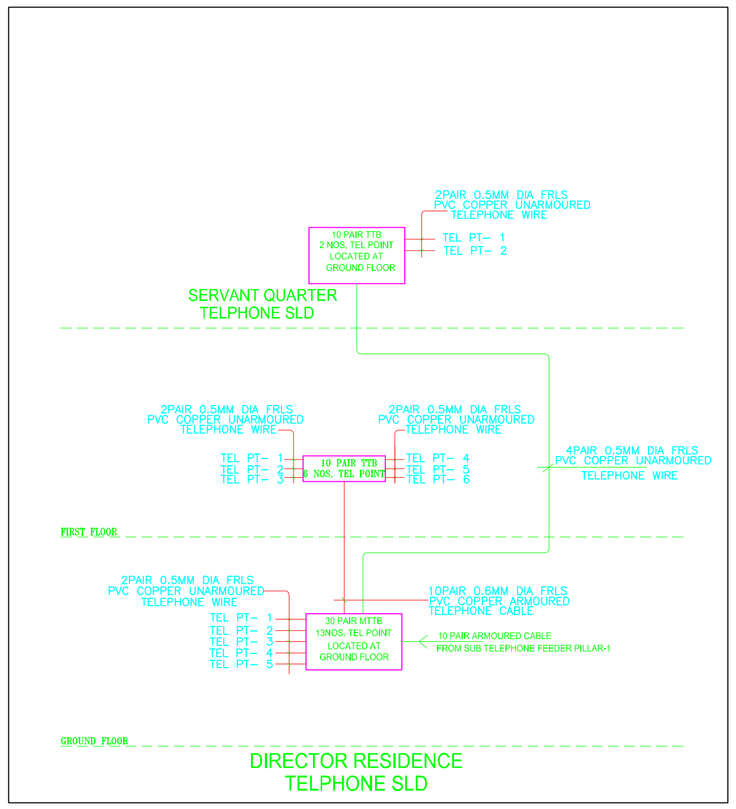
revisions	no.	date	description
issue status	TENDER DRAWING		
owner	INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI		
architects	sikka associates architects — urban design, masterplanning, architecture, interior design, engineering, project management. A-2/1, Africa Avenue, Safdarjung Enclave, New Delhi-110029. tel:(0)-14620926, Fax: (0)-26474481. Web: www.sikkaassociates.com, E-mail: sikkaassociates@gmail.com		
consultant-1	STRUCTURAL CONSULTANT: Mehro Consultants, A-1/36, Safdarjung Enclave, New Delhi-110029, Tel: 26169333/ 26172156, Fax: 46023052, Email: shubham_mehro@rediffmail.com		
consultant-2	SERVICES CONSULTANTS: Electrical: Engineering Services Consultants, email:escon08@gmail.com; Plumbing and fire: Techno Engineering Consultants, email_tec@vsnl.in; Airconditioning: Abid Husain Consultants, email:ahcon@ahcon.in		
dwg title	STAFF HOUSING		
dwg type	LV LAYOUT TELEPHONE & CCTV SECOND & TERRACE FLOOR PLAN		
dwg. no	INST/SH/LV-02	scale 1:50 @ A1 date 17.04.2019 dealt HARDEEP	



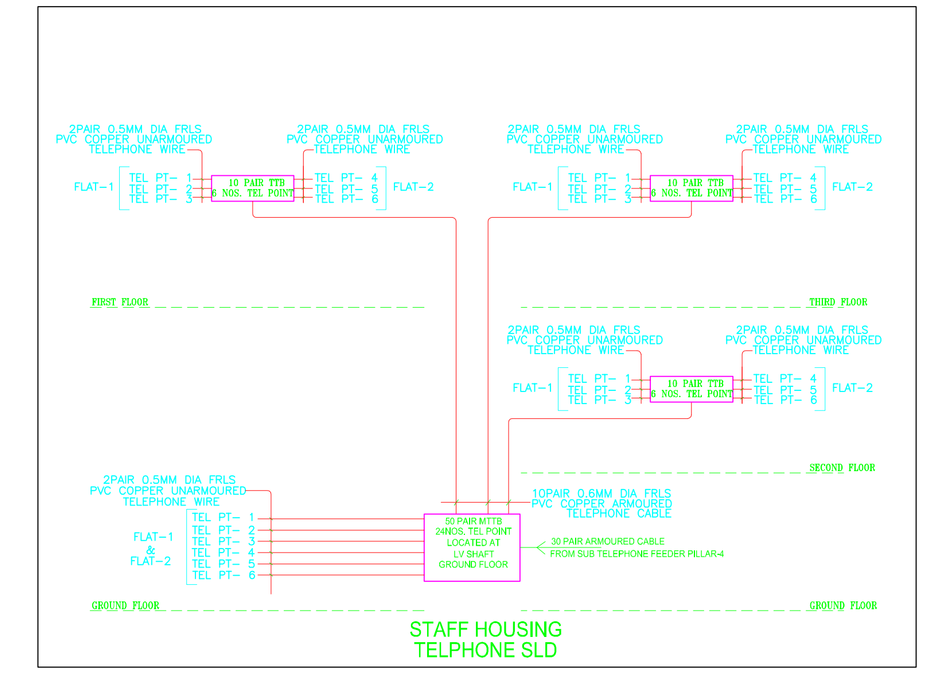
OFFICER HOUSING
TELPHONE SLD



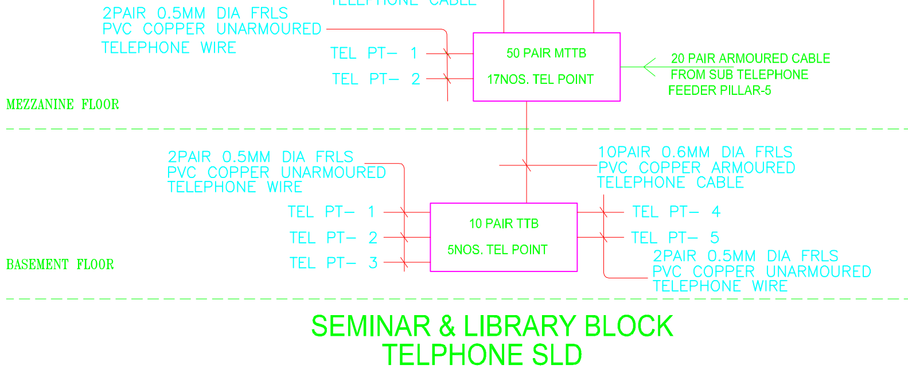
HOSTEL
TELPHONE SLD



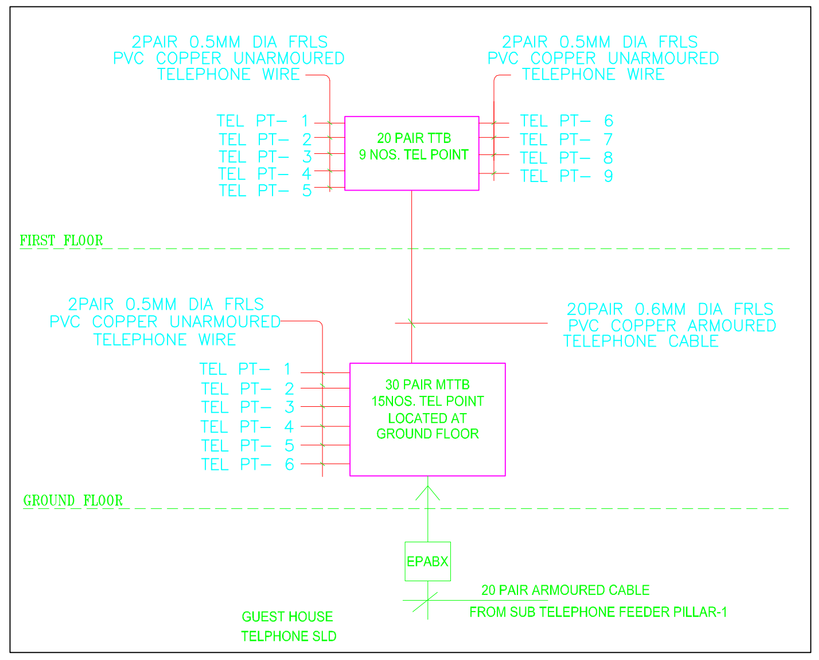
DIRECTOR RESIDENCE
TELPHONE SLD



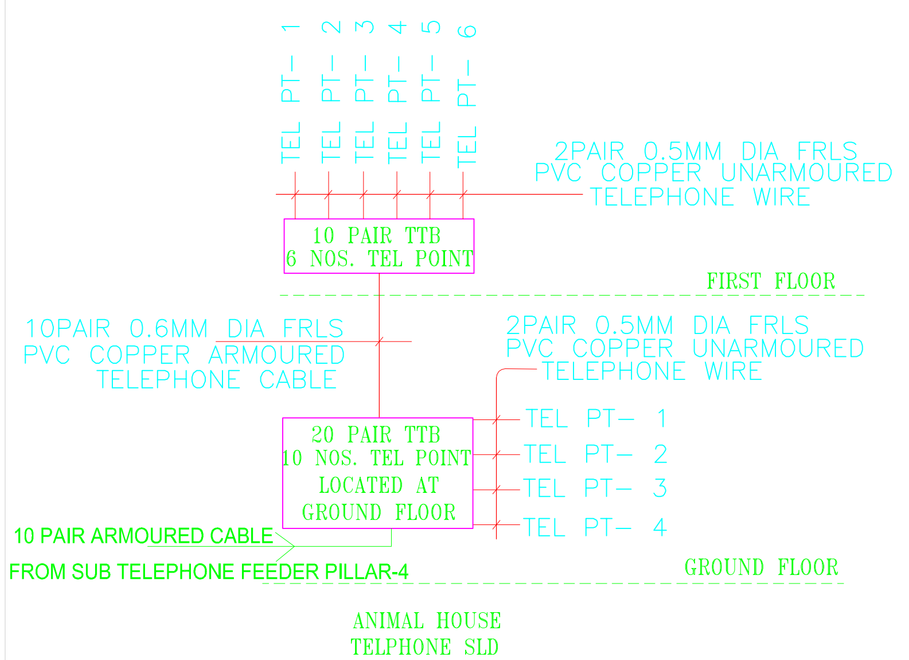
STAFF HOUSING
TELPHONE SLD



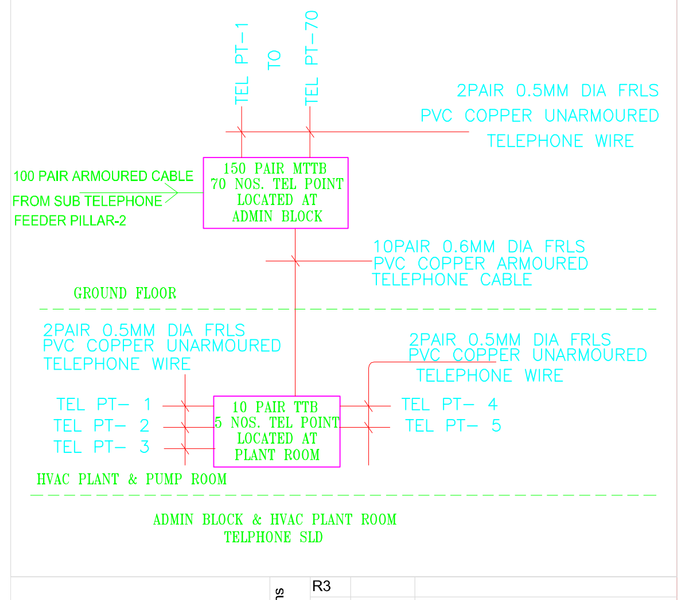
MARRIED HOSTEL
TELPHONE SLD



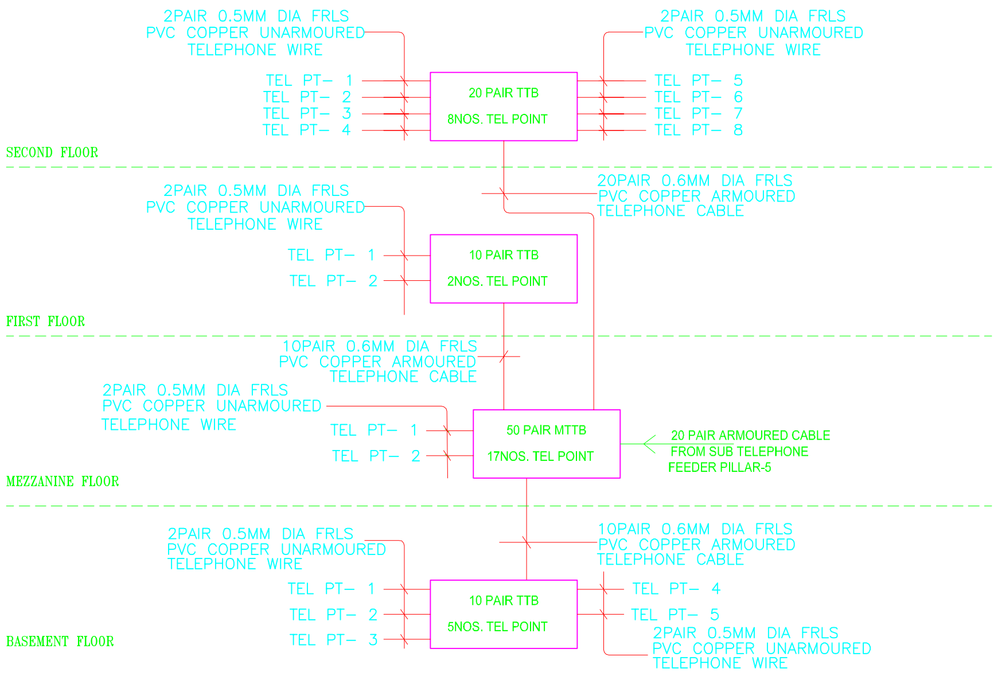
GUEST HOUSE
TELPHONE SLD



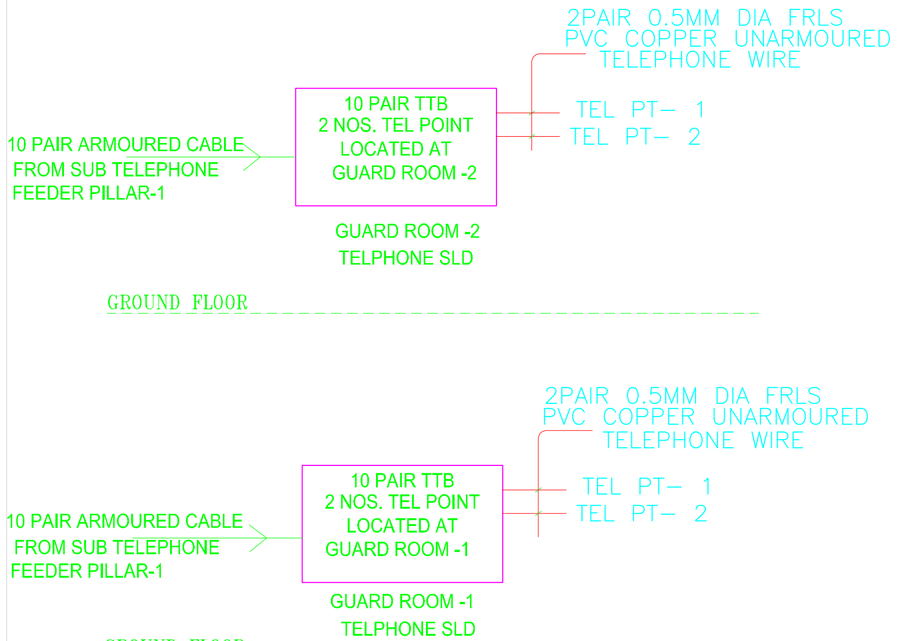
ANIMAL HOUSE
TELPHONE SLD



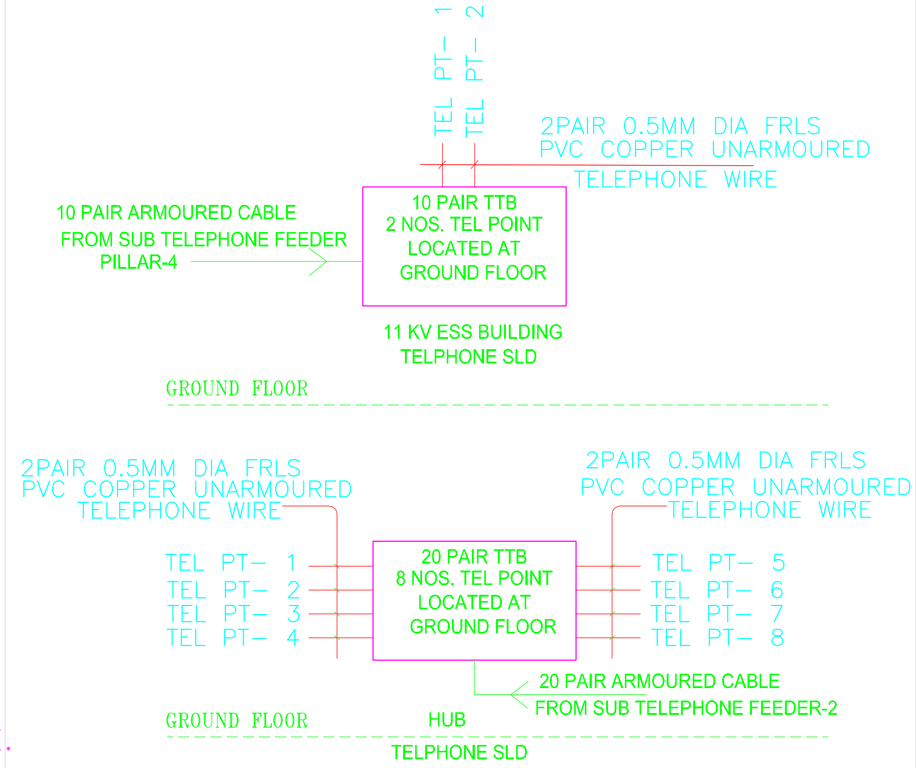
ADMIN BLOCK & HVAC PLANT ROOM
TELPHONE SLD



SEMINAR & LIBRARY BLOCK
TELPHONE SLD



NOTE-:
ALL TELEPHONE OUTLETS SHALL BE WIRE WITH 2PAIR 0.5MM DIA FRLS PVC CU UNARMOURED TELEPHONE WIRE IN CONDUIT FOR FLOOR WISE TELEPHONE TAG BLOCK.



revisions no.			
	R3		
	R2		
	R1		
		date	description

issue status: TENDER DRAWING

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects
urban design masterplanning architecture interior design engineering project management
A-2/1 , Africa Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)24323233, Fax: (011)26194481 Web: www.saaindia.net, Email: saa@saaindia.net

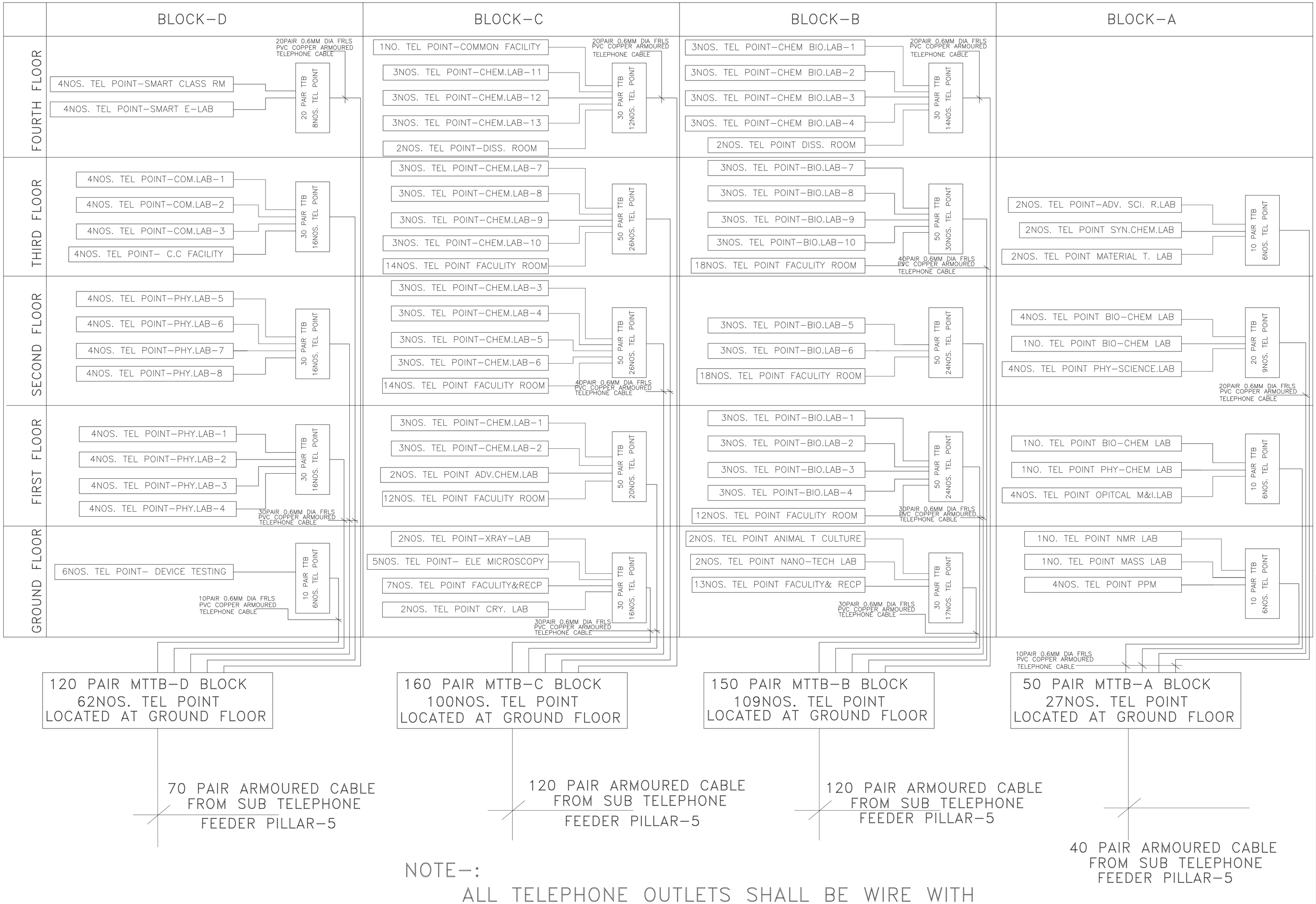
consultant-1:
STRUCTURAL CONSULTANT
VINTECH CONSULTANTS C-56, PAMPOSH ENCLAVE CONSULTING ENGINEERS & PROJECT MANAGERS GREATER KAILASH - I NEW DELHI - 110048
Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2:
SERVICES CONSULTANTS
Electrical: Engineering Services Consultants — email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants — email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants — email:ahcon@ahcon.in

dwg title: ELECTRICAL

dwg type:
SINGLE LINE DIAGRAM
TELEPHONE SYSTEM
. OFFICER HOUSING
. HOSTEL
. DIRECTOR RESIDENCE & SERVANT QUARTER
. STAFF HOUSING
. MARRIED HOSTEL
. GUEST HOUSE
. ANIMAL HOUSE
. SEMINAR & LIBRARY BLOCK
. ADMIN BLOCK & HVAC PLANT ROOM
. GUARD ROOM -1 & GUARD ROOM -2
. HUB & 11 KV ESS BUILDING

dwg. no: INST/TEL/SLD-01
scale: NTS
date: 17.04.2019
dealt: LOVEPREET
check: SANDEEP NEGI



NOTE–:

ALL TELEPHONE OUTLETS SHALL BE WIRE WITH 2PAIR 0.5MM DIA FRLS PVC CU UNARMOURED TELEPHONE WIRE IN CONDUIT FOR FLOOR WISE TELEPHONE TAG BLOCK.

NOTES:

1. ALL DIMENSION ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. NO DIMENSION IS TO BE SCALED OFF THE DRAWING
3. DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVENT DRAWINGS & SPECIFICATIONS.

revisions	no.	date	description
	R3		
	R2		
	R1		

issue status: **TENDER DRAWING**

owner: INSTITUTE OF NANO SCIENCE & TECHNOLOGY, MOHALI

architects: sikka associates architects — urban design, masterplanning, architecture, interior design, engineering, project management
A-2/1 , Atica Avenue, Safdarjung Enclave, New Delhi-110029.
Tel:(011)42025535, fax: (011)26194481 Web: www.saarchi.net, Email: ssa@saarchi.net

consultant-1: STRUCTURAL CONSULTANT
VINTECH CONSULTANTS — CONSULTING ENGINEERS & PROJECT MANAGERS
C-35, PAMPOSH ENCLAVE GREATER KAILASH – I NEW DELHI – 110048 TEL. 4314150,26209705 FAX : 26209707 e-mail : vintech@vintechconsultants.com

consultant-1: Mehro Consultants
A-1/36, Safdarjung Enclave, New Delhi-110029
Tel: 26169333/ 26172156 Fax: 46023052
Email: shubham_mehro@rediffmail.com

consultant-2: SERVICES CONSULTANTS
Electrical: Engineering Services Consultants — email:escon86@gmail.com
Plumbing and fire: Techno Engineering Consultants — email:ssb_tec@yahoo.co.in
Airconditioning: Abid Husain Consultants — email:ahcon@ahcon.in

dwg title: ELECTRICAL

dwg type: SINGLE LINE DIAGRAM TELEPHONE SYSTEM LAB BLOCK

dwg. no: INST/LB/TEL-01 (SLD)

scale: NTS @ A1
date: 17.04.2019
dealt: HARDEEP

Schedule of Quantities for Data Networking system for Institute of Nano Science & Technology at Knowlede city, Sector-81 Mohali, Punjab					
Item No.	**Description**	**Unit**	**Qty**	**Rate (In Rs.)**	**Amount (in Rs)**
1	**2**	**3**	**4**	**5**	
I	**DATA NETWORKING SYSTEM**				
A	**Supply, Installation, Testing and Commissioning of Active for CCTV & DATA**				
1.0	SITC of LAYER 2 PoE Access Switch, 24 x10/100/1000BaseT PoE Ports, with 4 x 10G SFP+ ports and dedicated Stacking ports with 3 Years Product Warranty.	Nos.	108	**181189.00**	**19568412**
2.0	SITC of LAYER 2 Access Switch, 24 x10/100/1000BaseT Ports, with 4 x 10G SFP+ ports and dedicated Stacking ports with 3 Years Product Warranty.	Nos.	45	**148619.00**	**6687855**
3.0	SITC of LAYER 3 Distribution Switch, with 40-10Gig ports with 2*40G QSFP ports with 3 Years Product Warranty Included,	Nos.	4	**1915900.00**	**7663600**
4.0	SITC of LAYER 3 Core Switch, with 24-10/25Gig SFP+ ports with 3 Years Product Warranty Included,	Nos.	2	**1560090.00**	**3120180**
5.0	SITC of 10GBASE-LR SFP Module, Single Mode	Nos.	68	**90321.00**	**6141828**
6.0	SITC of 1G-SR-SFP Module, Multimode	Nos.	294	**31202.00**	**9173388**
7.0	SITC of Firewall in HA with 10G SFP+ Ports and 10G DAC Cables from Day-1	Nos.	2	**5742226.00**	**11484452**
B	**Supply, Installation, Testing and Commissioning of WiFi**				
1.0	SITC of dual-band 802.11abgn/ac Wave2 Wireless Access Point. Mounts to ceiling and all accessories as per tender specifications.	Nos.	203	**93058.00**	**18890774**
2.0	SITC of Wireless Hardware Based AP Controller, BASE licensed for up to 200 Access Points. Controller can be upgraded to support up to 500 APs with AP license upgrades. All accessories included. 3 Years Product warranty Support included	Nos.	1	**2134860.00**	**2134860**
3.0	NMS for above Devices scalable upto 500 devices	Nos.	1	**2173884.00**	**2173884**
C	**Supply, Installation,Testing and Commissioning of Passive CAT-6 for CCTV & DATA**				
1.0	ETL Verified Category 6 U/UTP Cable, low smoke zero halogen (IEC 60332-3-22), white jacket, 4 pair count, 1000 ft (305 m) length, 23 AWG.	Boxes	300	**16148.00**	**4844400**
2.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Yellow Jacket, 7 Feet	Nos	628	**493.00**	**309604**

Item No.	Description	Unit	Qty	Rate (In Rs.)	Amount (in Rs)
3.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Blue Jacket, 3 Feet	Nos	1291	**350.00**	**451850**
4.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Blue Jacket, 7 Feet	Nos	1291	**492.00**	**635172**
5.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Red Jacket, 3 Feet	Nos	396	**350.00**	**138600**
6.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Red Jacket, 3 Feet	Nos	375	**350.00**	**131250**
7.0	CAT 6, Stranded, Low Smoke Zero Halogen (IEC 60332-1), Patch Cord, Blue Jacket, 7 Feet	Nos	276	**493.00**	**136068**
8.0	Category 6 U/UTP Information Outlet, white	Nos	1742	**602.00**	**1048684**
9.0	Category 6 U/UTP Patch Panel, Straight, 24 port	Nos	152	**9251.00**	**1406152**
D	**Supply, Installation, Testing and Commissioning of Passive OFC for CCTV & DATA**				
1	12Fiber, Singlemode, OS2, Single Jacket/Single Armor, Gel-Free, Outdoor Stranded Loose Tube Cable	Mtrs	4000	**252.00**	**1008000**
2	6 Fiber, Multimode, OM3, Single Jacket/Single Armor, Gel-Free, Outdoor Stranded Loose Tube Cable	Mtrs	4000	**377.00**	**1508000**
3	3*3, Square faceplate Single port	Nos	505	**142.00**	**71710**
4	2-Port Faceplate Shuttered Square type White color	Nos	851	**153.00**	**130203**
5	1U Sliding Face Plate shelf, up to 24 Duplex LC ports, with Splice Trays	Nos	100	**33900.00**	**3390000**
6	LC Duplex Adapter, Multimode OM3	Nos	460	**625.00**	**287500**
7	OM3/OM4 LC to Unconnectorized, Fiber Pigtail, 0.9 mm LSZH	Nos	920	**950.00**	**874000**
8	LC-LC, MM Patch Cord, LSZH, 10 Feet 50/125	Nos	145	**4175.00**	**605375**
9	SMOUV Splice protectors Sleeve, PK of 100	Nos	10	**7500.00**	**75000**
10	Singlemode, OS2, LC to Unconnectorized, Fiber Pigtail, 0.9 mm LSZH	Nos	250	**2250.00**	**562500**
11	LC-LC, SM Patch Cord, LSZH, 10 Feet	Nos	42	**4250.00**	**178500**
12	SMOUV Splice protectors Sleeve, PK of 100	Nos	5	**4352.00**	**21760**
E	**Supply, Installation, Testing and Commissioning of Network Racks**				
1	15U Rack Frame, 600 mm(W) X 500 mm (D) X 498 mm (H), Pre-configured 19" Wall-Mount Enclosure for networks, Passive ventilation with vent slots, Wall-Mount Enclosure with front glass door, Key lock arrangement, Top and bottom with vents, 4 rubber grommets for cable entry, Ø 50 mm, Mounting provision with two fans	Nos	3	**19159.00**	**57477**

Item No.	Description	Unit	Qty	Rate (In Rs.)	Amount (in Rs)
2	9U Rack Frame, 600 mm(W) X 500 mm (D) X 498 mm (H), Pre-configured 19" Wall-Mount Enclosure for networks, Passive ventilation with vent slots, Wall-Mount Enclosure with front glass door, Key lock arrangement, Top and bottom with vents, 4 rubber grommets for cable entry, Ø 50 mm, Mounting provision with two fans.	Nos	89	**11441.00**	**1018249**
3	Outdoor 9U Rack Frame, 600 mm(W) X 500 mm (D) X 498 mm (H), Pre-configured 19" Wall-Mount Enclosure for networks, Passive ventilation with vent slots, Wall-Mount Enclosure with front glass door, Key lock arrangement, Top and bottom with vents, 4 rubber grommets for cable entry, Ø 50 mm, Mounting provision with two fans	Nos	5	**19953.00**	**99765**
4	24U Rack Frame, 600 mm(W) X 500 mm (D) X 498 mm (H), Pre-configured 19" Wall-Mount Enclosure for networks, Passive ventilation with vent slots, Wall-Mount Enclosure with front glass door, Key lock arrangement, Top and bottom with vents, 4 rubber grommets for cable entry, Ø 50 mm, Mounting provision with two fans	Nos	1	**47898.00**	**47898**
5	42U Rack Frame, Width: 800 mm, Height: 1200 mm, Depth: 1000 mm, Load capacity:10000 N, Sheet steel, Doors, roof and side panels: Dipcoat-primed and powder-coated, Glazed door: Single-pane safety glass, 3 mm Enclosure with front glass door, Key lock arrangement, Top and bottom with vents, 4 rubber grommets for cable entry, Ø 50 mm, Mounting provision with two fans	Nos	2	**97382.00**	**194764**
	Total In Figures				**106271714.00**
	Quoted Rates in Figures(Percentage)	**Less(-)/Above(+)**			
	Quoted Rates in Words (Percentage)				