# Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune.

## TENDER FOR CONSTRUCTION WORKS: CIVIL & allied WORKS

**TENDER NO:** ईएमआर/६९२२/ता.कॅ.प्रे **for 2023-24**

**CLIENT/ OWNER**

**YASHWANTRAO CHAVAN ACADEMY OF DEVELOPMENT ADMINISTRATION**
**Raj Bhavan Complex, Baner Road, Pune 411 007.**
**Phone No. (020) 25608408/25608409/25608210,**
**Email – estatedepartment@yashada.org**

**Project Management Consultant**

**COEP Technological University Pune (COEP Tech)**
WELLESELY RD, SHIVAJINAGAR, PUNE-411 005.
MAHARASHTRA, INDIA.
TELEPHONE: +91-20-25507203; email - birajdar@coep.ac.in

यशवंतराव चव्हाण विकास प्रशासन प्रबोधिनी
(महाराष्ट्र शासनाची अंगीकृत संस्था)
Yashwantrao Chavan Academy of Development Administration
(A Government of Maharashtra Organisation)
ISO 9001: 2008

# E-TENDER NOTICE NO. ईएमआर/६९२२/ता.कॅ.प्रे for 2023-24

The Registrar, YASHADA, Pune - 411 007 invites bids for following work from Registered as well as unregistered Contractor, and full filling the qualifying criteria for **B-2 Tender Format** as per Maharashtra Government, Public Work Department G.R. No. CAT/2017/Pra.Kra-08/Bldg-2, dt. 27/9/2018 and Public Work Department Matralaya Mumbai Circular No. CAT/2017/Pra.Kra-08/Bldg-2, dt. 22/10/2018. Bids document can be downloaded from website **https://mahatenders.gov.in** Director General reserves all rights to accept or reject bids. Conditional bids will not be accepted.

## NAME OF WORK AND ESTIMATE COST LIST

| Sr. No. | Name of Work | Estimated Cost In Rs. | Earnest Money Deposit | Time limit for Completion | Cost of e-tender Form Fee | Class of Contractor |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA, Pune | 38,95,57,112/- | 19,47,786/- | 18 Months (Including Monsoon) | Rs.3540/- (With GST 18%) | Registered as well as unregistered Contractor ( For Civil work and For Electrical Class) |

## E-tender- Time Table

| | | |
|---|---|---|
| 1 | **Period of Downloading of bid documents/ Sale start and end dates** | **Dt.16-03-2024@ 10.00 hrs. to Dt.02-05-2024@ 18.00 hrs.** |
| 2 | **Pre-bid Meeting In the Office of Director General,YASHADA, Pune - 07.** | **Dt.02-04-2024@ 15.00 hrs.** |
| 3 | **Period of Bid Submission/ Bid Submission Start and End date.** | **Dt.16-03-2024@ 10.00 hrs. to Dt.02-05-2024@ 15.00 hrs.** |
| 4 | **Bid Opening Period** | **Dt.03-05-2024@ 15.00 hrs. (If Possible) (In the office of YASHADA, Pune.)** |

Note :-

1. All eligible/interested contractors are downloading and mandated to get enrolled on e-tendering portal " **https://mahatenders.gov.in**.
2. **For online Payment related issues, Kindly contact 180030702232 for clarifications.**
3. Other term and condition Displayed in online e-tender forms. Right to reject any or all online bid of work without assigning any reasons thereof is reserved.
4. Above Tender Notice is displayed on YASHADA website **"**www.yashada.org**"**
5. Online Blank Tender Downloading fee and Earne,st money shall be paid via online using NEFT/RTGS or payment gateway mode.

**Registrar,**
**YASHADA,**
**Pune 411 007.**

# I N D E X

**Name of Work: Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune**

# INVITATIONS FOR BIDS

# (IFB)

यशवंतराव चव्हाण विकास प्रशासन प्रबोधिनी
(महाराष्ट्र शासनाची अंगीकृत संस्था)
Yashwantrao Chavan Academy of Development Administration
(A Government of Maharashtra Organisation)
ISO 9001: 2008

e-Procurement Notice
INVITATION FOR BIDS (IFB)

Date :
Bid No:

**Director General,YASHADA, Pune** invites Competitive Bids from the contractors in India who fulfill the Qualifying Criteria in this document for construction of work detailed in the Table.

**TABLE**

| Sr. No. | Name of Work | Approximate value of work Rs.(Excluding GST) | Bid Security 0.5% EMD (Rs.) | Cost of Document (Rs.) | Period of completion |
|---|---|---|---|---|---|
| 1. | Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune | 38,95,57,112/- | 19,47,786/- | Rs.3540/- (With GST 18%) | 18 Months (Including Monsoon) |

1. The Tender can be downloaded from **16-03-2024** at **10.00 Hrs upto 02-05-2024** at **18.00 Hrs.** on payment of a nonrefundable fee of **Rs. 3540/- ( Rs. Three thousand Five hundred Forty only )** at the time of download of the Tender.

2. The Proposals must be submitted online at the e-tender portal of the YASHADA, Government of Maharashtra ie.www.mahatenders.gov.in on or **02-05-2024** at 18.00 Hrs.

3. Before submitting the proposal, the bidders shall mandatorily register and enlist themselves (the firm and all key personnel) on www.mahatenders.gov.in. Further, the bidder shall follow the operating procedure as may be prescribed on the said website.

4. **Physical Submission:**
The bidder shall submit the Hard Copy in Sealed Envelopes of Technical & Financial Bids as specified in NIT within 72 hrs. from the online submission ("Bid Lock") along with original Bank guarantees to be submitted in separate Sealed Envelopes super scribing name of work and System Generated E-Tender Number and Name of Agency. **Please read Clause 20.3 for detailed instructions.**

5. The period of availability of online bid / date and time of Pre-bid meeting / date and time of online bid submission and date and time of opening of bids are given below.

6. Bidding documents can be downloaded from the web site https://mahatenders.gov.in, the documents downloaded from the web site should not be tampered, and if any such tempering is detected before or after the opening of bids, the bidder shall be penalized and black listed .

7. Tender form, conditions of contract, specifications and contract drawings can be downloaded from the e-Tendering portal of YASHADA, Government of Maharashtra web site https://mahatenders.gov.in. The Contractors shall make online payment as specified in column 5 of table above using payment gateway. The fees of tender document will be non-refundable.

8. Before submission of on-line bids, bidders must ensure that the scanned copies of all the necessary documents have been attached with bid.

9. The bidders should keep checking the website for any addenda/corrigenda to the notice /bidding documents till the date of on-line submission of bids, and bidders should incorporate the same in their bid documents.

10. The bids will be opened online as per time schedule mentioned in the table above in the presence of bidders who wish to attend on the scheduled date and time in the office of the Registrar, YASHADA, Pune. If the office happens to be closed on the date ofopening of bids as specified, the bids will be opened on the next working day at the same time and venue.

11. Bid documents consisting of qualification information and eligibility criterion for bidders, plans specifications, drawings, the schedule of quantities of the various classes of work to be done and the set of terms and conditions of contract to be complied with by the contractors can be seen on website https://mahatenders.gov.in and scanned copies of the required documents and information as per section 2 (Formats and annexure) should be attached in theTechnical Bid as prescribed in SBD.

12. Uploaded documents of valid successful bidders will be verified with the original before signing the agreement. The valid successful bidder has to provide the original to the concerned authority on receipt of such letter, which will be sent through registered post/email.

13. Bids once submitted cannot be resubmitted or withdrawn after the proposal due date and time.

14. Conditional bids and the bids not meeting the qualification criteria on the date of receipt of bids shall be summarily rejected.

15. The pre-bid meeting will be held as specified in the table above in the office of the **Registrar YASHADA, Pune** to clarify the issues and to answer on any matter that may beraised at that stage as stated in Clause 9.2 of the “instructions to Bidders” bidding document.

**16. Goods and Service Tax (GST)**

As per Section 51 of Maharashtra Goods and Service Act 2017, GST will be levied at source on all contracts given from 01/07/2017. GST will be paid extra on work estimated cost.

TDS will be deducted from Running Account Bills as per the notified rates and from the notified dates by the Government. Bidders are required to submitRegistration Number as supplier under GST.

The rates quoted by the Contractor shall be deemed to be inclusive of all taxes other than Goods & Service Tax 2017 that the contractor will have to pay for performance of this contract. The rates quoted by the contractor shall be exclusive of Goods & Service Tax 2017 which shall be paid extra by the employer at prevailing rates. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

**17. Payment of Stamp Duty**

**It is binding on the contractor to Execute the Agreement in non Judical stamp paper purchased hum amounting to value applicable to tender cost. It is mandatory to pay appropriates of stamp duty to revenue authority by contractor after axxeptance of tender as per Government of Maharashtra , Revenue and forest Department Circular No. 2020 अनोंक्र.01-2016/प्र.क्र.-218/म-1/(धोरण), दि. 18/03/2021**

18. Contractor has to plant minimum 40 numbers of trees at the site shown by Engineer-in-Charge. As per plant approved by Engineer-in-Charge Contractor shall plant the trees within 15 days after receiving the work order, and maintain the trees for period up to Defat liability period. if contractors fails to plant the tree with in one month after receiving work order, Rs. 500/- per plant will be held from Contractors Bill and that amount will be refund after Certification of Engineer-in-Charge for Successful Plantation. Security deposit shall be refunded only after verification of plants and maintained trees. Otherwise Proportionate amount of security deposit is forfeited as deem fit by Engineer-in-Charge**.**

# VOLUME-I

Section 1 to 4

# SECTION - 1

# INSTRUCTIONS TO BIDDERS

# (ITB)

# VOLUME-I

# SECTION 1 – INSTRUCTIONS TO BIDDERS (ITB)

## Table of Clauses

A. GENERAL

**Scope of Bid**

The Employer (named in Appendix to ITB) invites online bids for the constructions of works (as defined in these documents and referred to as "the works") detailed in the table given in IFB. The bidders may submit bids for any or all of the works detailed in the table given inIFB.

The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.

Throughout these bidding documents, the terms 'bid' and 'tender' and their derivatives (bidder / tenderer, bid / tender, bidding / tendering etc.) are synonymous.

**a. Sources of Funds**

2.1 The expenditure on this project will be met from the budget of State Govt. of Maharashtra.

**Eligible Bidders**

This invitation for Bids is open to all bidders.

All bidders shall provide in Tender part-2 Section 2, page No.10 Forms of Bid and Qualification Information, a statement that the Bidder is neither associated, nor has been associated, directly or indirectly, with the Consultant or any other entity that has prepared thedesign, specification, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation of supervision of the works, and any of its affiliates, shall not be eligible to bid.

**Qualification of the Bidder**

All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary. The proposed methodology should include programme of construction backed with equipment planning and deployment duly supported with broad calculations and quality assurance procedures proposed to be adopted justifying their capability of execution and completion of work as per technical specifications, within stipulated period of completion.

All bidders shall include the following information and documents with their bids in Section 2.

(a) Copies of original documents defining the constitution or legal status, place of registration and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder ;

**(b)** Total monetary value of construction work performed for each of the last **Seven Years.**

(c) Experience in work of a similar type of works ( Consisting campus Development + Buildings + Infrastructural work + total Electrification + Landscaping / Gardening ets ) and size for each of the last **Seven** Years and details of works underway or contractually committed and clients who may be contacted for further information on those contracts ;

(d) Major items of construction equipment proposed to carry out the Contract.

(e) Qualifications and experience of key site management and technical personnel proposed for contract ;

**(f)** Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past **Seven Years.**

**(g)** Evidence of access to line(s) of credit and availability of other financial resources facilities (10% of contract value) certified by the Bankers. (Not more than 3 months old); **(To be Applicable for works costing More than Rs.5 Crores.)**

(h) Undertaking that the bidder will be able to invest a minimum cash upto 25% of contract value of work during implementation of work ;

(i) Authority to seek references from the Bidder's bankers ;

(j) Information regarding any litigation, current or during the last **Seven Years,** in the Bidder is involved, the parties concerned and disputed amount ;

(k) Proposals for subcontracting components of the Works amounting to more than 10 percent of the Bid Price (for each, the qualifications and experience of the identified sub contractor in the relevant field should be annexed); and

**(l)** The proposed methodology and programme of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones**. (Applicable for works Costing more than Rs.1.50 Crore)**

(m) Declaration Signed by Contractor in form attached in section 8.

(n) Details of Income Tax Circle or ward of the district in in which the tenderer is assessed to Income Tax, Tenderer's PAN No. and complete postal address with Pin code and telephone Numbers. Scanned copy of Income Tax Return for the immediate previous financial year.

(o) Scanned copy of original valid Goods & Service Tax (GST) Registration Certificate.

(p) Scanned copy of a list of modern machinery and plants immediately available with the tenderer for use on this work and list of machinery proposed to be utilised on this work but not immediately available and manner in which it is proposed to be procured.

(q) Scanned copy Professional Tax Registration Certificate in form PTR and PTE.

(r) Details of work done during last **Seven** years with the value of work unfinished.

(s) Details of work of similar type (as mentioned in 'c') carried out the contractor.

(t) Details of list of works in hand works tenderer for. (Information to be given in Proforma

(u) Details of works carried out in the Interior, Backword and Hilly Area during the preceding 5 years. (if applicable )

(v) Scanned copy of Affidavit in respect of genuineness of documents contained in the Envelope No. 1 in the prescribed proforma proved with tender set on 100 Rs. Bond.

(w) Scanned copy of Declaration Signed by Contractor in the Format Attached in Section 8.

(x) This information shall be given by the contractor in Envelope No. 1 correctly and completely otherwise his Envelope No. 2 will not be opened.

4.3. Bids from Pre-registered consortiums allowed only for electrical & HVAC Work. Registered in stamp office will be accepted as Joint Ventures.

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

To qualify for award of the contract, each Tenderer in his name should have in the **Seven**years.

**(a)** Achieved a minimum annual financial turnover during last **Seven** years for **Rs. 1947.00 lakhs** in any one year. In support of this, attested copy of Annual Audit Report certified by the Chartered Accountant should be produced.

**(b)** Satisfactorily completed ( from start to finish ) during the last **Seven** years as a prime contractor of at least three similar works value not less than for**( Civil Rs. 1282.00 lakhs) (40%) ( Electrical Rs.77.53.00 lakhs ) (40%) or** two similar works value not less than for **(Civil Rs. 1603.00 lakhs ) (50%) ( Electrical Rs.96.92.00 lakhs ) (50%)** or one similar works value not less than for **( Civil Rs. 2565.00 lakhs ) (80%) ( Electrical Rs.155.00 lakhs) (80%)** is not more than one contract of 2022-2023 price level.Financial turnover and cost of completed works of previous years shall be given weightage of 10% per year based on Rupee value to bring them to 2022-2023 price level.

**Special Condition**

(i) Green certified building
The contractor should have satisfactory completed at least one building with 4 stars & above rated Building which is certified from GRIHA / IGBC/ LEEDS. Only completed & certified building will be considered.

(ii) The contractor should have satisfactory completed at least one building having minimum 400 capacity auditorium with required electrical, lighting, acoustical, etc. work.

**(c)** Quantity executed in any one year (during last five years) the following minimum quantities of work (Approximately 30% of the tendered quantity) **as indicated in Appendix.**

**(d)**

## 1. Civil work:

| Sr. No. | Item of work | Unit | 30% QTY |
|---|---|---|---|
| 1 | Concrete M-20 Grade & Above | Cum | **2248.45** |
| 2 | Brickwork+AAC Blockwork | Cum | **377.62** |
| 3 | Brickwork+AAC Blockwork | Sqm | **1896.81** |
| 4 | TMT- Fe - 500 Steel | MT | **250.12** |

| | | | |
|---|---|---|---|
| **5** | Gypsum Plaster | SQM | **3319.91** |
| **6** | Roughcast+Waterproof Plaster | SQM | **2554.97** |
| **7** | Stone crete Plaster | SQM | **1241.13** |
| **8** | Flooring | SQM | **3592.38** |
| **9** | Structural steel | MT | **20.7** |
| **10** | Galvanised PUF Sandwich panel roof | SQM | **532.68** |

**2. Electrical Work:**

| ***Sr. no*** | ***Item*** | ***Quantity*** | ***Unit*** |
|---|---|---|---|
| 1. | SITC of point wiring | 270 | Number |
| 2. | SITC Of 15 Passenger Lifts Or Above Capacity Passenger Lifts- | 2 | Number |
| 3. | Supplying, erecting & marking SPMCB 6A to 32A, C-series | 120 | Number |
| 4. | Supplying, erecting & terminating 2 pair telephone copper cable 0.5 mm dia | 150 | meter |
| 5. | Supplying, installing, testing and commissioning 5 Star split type variable speed Inverter technology room Air conditioning unit 1.5 TR capacity having minimum ISEER value of 5.4 | 16 | Number |

**(d)** Prime Contractor should have Valid **Electrical Contractor License** issued by I.E.& L Deptt. Govt.of Maharashtra / or Agency should have tie-up with most responsive and experts in the relevant field .

**(e)** Prime Contractor should have OEM or valid **authorized dealer /Distributorship for Air conditioning unit** of proposed make / brands OR Valid MAF (Manufacturer authorizations Form) of Air conditioning unit of proposed make / brands. ( prescribed format attached.) / or Agency should have tie-up with most responsive and experts in the relevant field .

**(f)** Prime Contractor should have valid license of **Fire Detection & Fire Suppression System Viz Smoke detection, Heat Detection, UV, Beam detector, manual call point and fire alarm system**. of appropriate class issued by director of Maharashtra fire services Mumbai/ or Agency should have tie-up with most responsive and experts in the relevant field .

**(g)** Prime Contractor should have OEM or valid **authorized dealer /Distributorship for CCTV Surveillance System** of proposed make / brands OR Valid MAF (Manufacturer authorizations Form) of **CCTV Surveillance System** of proposed make / brands. ( prescribed format attached.) / or Agency should have tie-up with most responsive and experts in the relevant field .

**(h)** ~~Prime Contractor should have OEM or valid **authorized dealer /Distributorship for On Grid Solar Roof Top System** of proposed make / brands OR ValidMAF (Manufacturer authorizations Form) of **On Grid Solar Roof Top System** of proposed make / brands. ( prescribed format attached.) or Agency should have tie-up with most responsive and experts in the relevant t field .~~

**(i)** Prime Contractor should have Valid **Lift License for manufacturing and maintenance lifts** of proposed make / brands. issued by I.E.& L Deptt. Government of Maharashtra (List Of Preferred make / brands attached). or Agency should have tie-up with most responsive and experts in the relevant field .

**(j)** Bidder submit the details of Technical Personnel on the roll of the Bidder who will be exclusively spared for this work as per Statement No. IV.

**(k)** Bidder submit the Undertaking that they have not been Blacklisted / Banned / Suspended (rescribed form attached )

**(B) Each Bidder should further demonstrate :**

**(a)** Availability (**either owned or leased**) of the following key and critical equipment for this work.
NOTE : **(To be deleted for works upto 1.50 Crore, above Rs.1.50 Crore applicable )**

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

The bidder should however undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with layout and necessary drawings and calculations (detailed) as stated in clause 4.3.(1) above to allow the employer to review their proposals. The numbers, types and capacities of each plant/equipment shall be shown in the proposals along with the cycle time for each operation for the given production capacity to match the requirements.

**(b)** availability for this work of personnel with adequate experience as required; as per **Annexure-II**

(c) liquid assets and / or availability of credit facilities of no less than amount indicated in Appendix. (Credit lines/letter of credit/certificates from Banks for meeting the funds requirement etc. usually the equivalent of the estimated cash flow for 3 months in peak construction period )
**(For woks above Rs. 1.5 Crore)**

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

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

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

**Assessed Available Bid capacity = (A * N * 2 - B),**

Where,

**A** = Maximum value of Annual Financial turnover in any one year during the last FIVE Years ( updated to 2022-23 level) as of Previous years shall be given weightage 10% per year.

**N** = Number of years prescribed for completion of works for which bid are invited.

**B** = Value of 2022-23 price level, of existing commitments and ongoing work to be completed during the next **18 months.**

**Note :** The statement showing the value of Financial Turnover and ongoing work as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer-in-charge, not below the rank of an Executive Engineer.

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

- made misleading or false representation in the form, statements submitted; and / or
- Records of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc and or
- Participated in the previous bidding for the same work and had quoted unreasonably high prices and could not furnish rational justification to the employer.

**One Bid per Bidder**

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

**Cost of Bidding**

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

**Site Visit**

The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of Works and its surrounding and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The cost of visiting the Site shall beat the Bidder's own expense.

# B. BIDDING DOCUMENTS

### Content of Bidding Documents

The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10.

| Section | Particulars | Volume No. |
|---|---|---|
| | Invitation for Bids | |
| 1 | Instruction to Bidders | I |
| 2 | Qualification information and other forms | |
| 3 | Conditions of Contract | |
| 4 | Contract Data | |
| 5 | Technical Specification | II |
| 6 | Form of Bid | III |
| 7 | Bill of Quantities | |
| 8 | Securities and other forms | |
| 9 | Drawings | IV |
| 10 | Documents to be furnished by bidder | V |

Complete bidding document containing **volumes - I, II, III and IV are available to the bidders on e-tendering portal** https://mahatenders.gov.in Documents to be furnished by the bidder in compliance to section 2 will be by him and uploaded online as " **in "general document "** (Refer clause 12) **.**

The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, technical specifications, bill of quantities, forms, Annexes, Appendixes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 26 hereof, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

### Clarification of Bidding Documents

A prospective bidders requiring any clarification of the biding documents may notify the Employer in writing or by Fax /email at the Employer's address indicated in the invitation to bid before the date and time of the pre-bid meeting specified in the Tender Schedule. The Employer will respond to any request for clarification which he received, earlier than 3 days prior to the Bid due date. Copies of the Employer's response will be uploaded in "edit attachment option" of concern

tender on e-tendering portal and viewable to all tenderer, including a description of the enquiry but without identifying its source.

### Pre-bid meeting

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

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

The bidder is requested to submit any questions in writing by fax or by e-mail to reach the Employer well before the date & time of the pre-bid meeting.

Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted by uploading on e-tender portal without delay for information to all intended bidder. Any modifications of the bidding documents listed in sub clause 8.1 which may become necessary as a result of the pre-bid meeting shall be made bythe Employer exclusively through the issue of an Addendum pursuant to clause 10 and not through the minutes of the pre-bid meeting.

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

### Amendment of Biding Documents

Before the deadline for submission of bids online, the Employer may modify the bidding documents by issuing online addenda.

Any addendum thus issued shall be part of the bidding documents and shall be uploaded in “edit attachment option” of concern tender on e-tendering portal and viewable to all tenderer, including a description of the enquiry but without identifying its source. The uploading of addendum on e-tendering portal shall deemed to be acknowledgement of receipt of each addendum to the employer. The Employer will assume no responsibility for non cognizance by the bidders.

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

# C. PREPARATION OF BIDS

### Language of the Bid

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

### Documents Comprising the Bid

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

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

(i) Bid Security in the form specified in section 8

(ii) Qualification Information and supporting documents as specified in Sect. 2.

(iii) Certificates, undertakings, affidavits as specified in Section 2.

(iv) Any other information pursuant to Claus 4.2 of these instructions.

(v) Undertaking that the bid shall remain valid for the period specified in Cl 15.1.

(vi) Acceptance/ non acceptance of Dispute Review Expert proposed in Cl. 36.1.

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

(i) Form of Bid a specified in Section 6.

(ii) Priced Bill of Quantities for items specified in Section 7.

(iii) Bank Guarantee/Demand Draft of Additional Performance Security Depositspecified in cl. 16.7

The bidder shall prepare two copies of the bid, marking them 'Original' and 'Copy' respectively.

Following documents, which are not submitted with the bid, will be deemed to be part of the bid.

| Section | Particulars | Volume No. |
|---|---|---|
| | Invitation for Bids (IFB) | |
| **1** | Instruction to Bidders | Volume I |
| **3** | Conditions of Contract | |
| **4** | Contract Data | |
| **5** | Specifications | Volume II |
| **6** | Drawings | Volume IV |

**Bid Prices.**

The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.

The bidder shall fill rates in ' Rate Column of BOQ Sheet' in figures only for all items of the Works described in the Bill of Quantities. Items for which no rate is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections of any, shall be made by crossing out, initialing, datingand rewriting.

All duties, taxes and other levies payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.

The rates and prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject for adjustment of any account.

**Currencies of Bid and Payment.**

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

**Bid Validity**.

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

In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidder's responses shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 16 in all respects.

~~* In the case of contracts in which the Contract Price is fixed (not subject to price adjustment), in the event that the Employer requests and the Bidder agrees to an extension of the validity period, the contract price, if the bidder is selected for award shall be the bid price corrected as follows:~~ ~~**(Delete if the contract is for more than 12 months period)**~~

~~The price shall be increased by the factor of 0.2% for each week or part of a week that has elapsed from the expiration of the initial bid validity to the date of issue of letter of acceptance to the successful Bidder.~~

~~Bid evaluation will be based on the bid prices without taking into consideration the above correction~~

## Bid Security

The Bidder shall furnish, as part of his Bid, a Bid security in the amount as shown in column 4 of the table of IFB for this particular work. This bid security shall be in favor of Employer as named in Appendix and shall be in the form as set forth in Sr. No. I - e-tendering procedures under Instructions to Bidders (ITB). **Bid Security Shall be paid via online mode on using Payment gateway mode from the authorized account in the name of the bidder only.**

~~Bank guarantees (and other instruments having fixed validity) issued as surety for the bid shall be valid for 45 days beyond the validity of the bid.~~

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

The Bid Security of unsuccessful bidders will be refunded **within 28 days of the end of the Bid validity period specified in sub clause 15.1**

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

The Bid Security may be forfeited

a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;
b) If the Bidder does not accept the correction of the Bid Price, if applicable; or
c) in the case of a successful Bidder, if the Bidder fails within the specified time limit to
    i. Sign the Agreement; or
    ii. furnish the required Performance Security.

**Additional Security Deposit (Performance Security)**

**(i) The contractor shall have to pay the Additional Performance Security Deposit within 8 days from the date of tender opening**, in the form of Demand Draft / Bank Guarantee of any Nationalized or Scheduled Bank in favor of the **Registrar, YASHADA, Pune** payable at **Pune.** Non submission of Additional performance security or submission of less amount of the Additional Performance Security within stipulated period, shall be liable to summarily rejection of his tender.

**(ii)** Time limit for submission of Additional Performance Security Deposit within 8 days from the date of tender opening, shall not be extended in any case at any level.

**(iii)** If the lowest bidder (L1) fails to submit Additional Performance Security Deposit within stipulated time limit of 8 days from the date of tender opening, his offer shall be considered as non-responsive and treated as cancelled. In that case the Second Lowest Bidder (L2) shall be asked to submit Additional Performance Security Deposit the form of Demand Draft / Bank Guarantee of any Nationalized or Scheduled Bank, if he is (L2) is ready to reduce his offer and

agrees to carry out the work below the percentage rate quoted by the first lowest bidder(L1).

**(iv)** The amount of the Additional Performance Security shall be calculated by the tenderer in accordance with the following manner.

If the tenderer has quoted below the estimated rates, the Additional Performance Security shall be paid additionally as mentioned below.

| | |
|---|---|
| If the offer submitted is below cost put to Tender by upto 10% of the estimated cost put to tender | 1% of the estimated cost put to tender |
| If below by more than 10% to 15% of the estimated cost put to tender | 1% of the estimated cost put to tender plus an amount equal to the percentage by which the offer is below 10% of the estimated cost put to tender. (e.g. if the offer is 15.00% below, the Performance Security will be 1%+(15.00-10) = 6.00% of the estimated cost put to tender. |
| If below by more than 15% of the estimated cost put to tender | 2% of the estimated cost remaining amount put to tender plus an amount equal for to the percentage by which the offer is below 15% of the estimated cost put to tender.<br>e.g. 1 - if the offer is 16% below, the performance security will be (16-15 = 1 x 2= 2) 6+2 = 8% of the estimated cost put to tender.<br>e.g. 2 - if the offer is 19% below, the performance security will be (19-15 = 4 x 2 = 8) 6+8 = 14% of the estimated cost put to tender.<br>e.g. 3 - if the offer is 25% below, the performance security will be (25-15 = 10 x 2 = 20) 6+20 = 26% of the estimated cost put to tender.<br>e.g. 4 - if the offer is 26.25% below, the performance security will be (26.25-15 = 11.25 x 2 = 22.50) 6+22.50 = 28.50% of the estimated cost put to tender. |

The Bank guarantee shall be valid beyond 28 days from the date of expiry of the Defect

**Liability Period.**

In case it is found that the documents/Demand draft/Bank Guarantee submitted by the tenderer are false or misleading, his earnest money shall be forfeited and additionally legal action may be initiated against the tenderer.

The work order shall be given to the concerned tenderer after the clearance of the Demand Draft / Bank Guarantee.

**Refund of Additional Performance Security.**

**The additional Performance Security shall be returned immediately upon satisfactory completion of work; the certificate of which shall be issued by the Executive Engineer before releasing the additional performance security.**.

In case of the lowest successful Bidder (L-1) does not pay the additional performance security within stipulated time (within 8 days from the date of opening of financial bid), their Earnest money deposited will be forfeited.

**Alternative Proposals by Bidders**

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

**Format and Signing of Bid**

The bidder shall be required to Submit the bid on line and upload the Technical and Financial Bid by using his Class III Digital Signature of the person who is authorised to submit the Bid, uploaded

The documents are required to be uploaded in “Edit Attachment Option” online. The bidder is required to ensure that the size of each document does not exceed 5 MB.

In case Bidder would like to provide any Supporting Document(s) as a part of the Bid Response, the Bidder may upload such Supporting Document(s) under “General Document Option” of tender.

19.0 Vide G.R. no. Com-2020/ . . 14/W , 5 7 14/01/2021, Payment of Security Deposit by Bank Guarantee - online Bank Guarantee verification its the contractor wishes to deposit security deposit by Bank Guarantee after tender approval, then it is mandatory for contractor to verify the Bank Guarantee by paying verification fees of Rs. 1,000/- + GST through link provided below - http://onlinebg@mahaYashada.com.

# D. SUBMISSION OF BIDS

**Submission of Bids**

The Bidder shall refer to Section**' Guidelines to Bidders on the operations of Electronic Tendering System of YASHADA'** for details.

The inner, outer, and separate envelopes containing Technical and Financial Bids shall
(a) be addressed to the Employer at the address given in Appendix

**Deadline for Submission of the Bids**

The complete Bids (including Technical and Financial) must be received on e-tendering portal not later than the date indicated in NIT.

The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

In addition to online uploading of document the bidder shall have to submit one set of hard copy of bid document bound with the volume containing the "Technical Bid" and "Financial Bid" in separate Envelope and clearly marked at any of the specified location (office) herein. The Bidder shall seal the technical and financial bid in separate envelopes duly marking the envelopes. This to envelopes (call as inner envelopes) shall then be put inside one outer envelope one hard copy e-tender uploaded on e-portal website should be submitted within 72 hours after "Bid lock". In the event of the specified date for the submission of hard copy declared a holiday by the employer, the bids will be received upto the appointed time on the next working day. **However, hard copies shall be opened only if there are problems in opening / downloading of tender offers.**

Hard copy can be submitted to any of the locations (office) specified herein.

**The Registrar,Yashada, Pune** .

**21. Late Bids**

Any bidder submitting the Bid Security and Cost of Tender Fee document in Original after deadline prescribed in NIT will not be accepted and returned. The bid (including technical and financial) will not be opened. The complete Bids (including Technical and Financial) must be received by the Employer online not later than the deadline indicated in the schedule.

## 22. Modification and Withdrawal of Bids

Bidders may modify or withdraw their bids by giving notice in writing before the deadline prescribed in Clause 20 or pursuant to Clause 23.

Each Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clause 18 & 19, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate.

No bid may be modified after the deadline for submission of Bids except if pursuance of Cl. 23.

Withdrawal or modification of a Bid between the deadline for submission 0f bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 may result in the forfeiture of the Bid security pursuant to Clause 16.

# E. BID OPENING AND EVALUATION

## 23. Bid Opening

The Employer will open all the Bids received (except those received late) in the presence of the Bidders or their representatives who choose to attend at time, date and the place specified in Appendix in the manner specified in Clause 20 In the event of the specified date of Bid opening being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.

Envelopes marked **"WITHDRAWAL"** shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 22 shall not be opened.

The Online "Technical Bid" shall be opened first. The amount, form and validity of the bid security furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the Invitation for Bid (ref. Column 5 and paragraph 3), and has not been furnished in the form specified in Clause 16, the remaining technical bid online will not be opened .

(i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid bid security will be taken up for evaluation with respect to the Qualification Information and other information furnished in Part I of the bid pursuant to Clause 12.1.

(ii) After receipt of confirmation of the bid security, the bidder will be asked in writing (usually within 10 days of opening of the Technical Bid**)** to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects.

(iii) The bidders will respond in not more than 7 days of issue of the clarification letter/online communication, which will also indicate the date, time and venue of opening of the financial Bid.

(iv) Immediately (usually within 3 or 4 days) on receipt of these clarifications the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.

At the time of Online opening of "Financial Bid", the names of the bidders who were found responsive in accordance with Clause 23.4 (iv) will be announced. The bids of only these bidders will be opened. The remaining bids will be rejected online. The e-tendering system shall communicate to the rejected bidders along with reasons for their rejection. The responsive Bidder's names, the Bid prices, the total amount of each bid, will be announced by the Employer at the opening.

In case bids are invited in more than one package, the order for opening of the "Financial Bid" shall be that in which they appear in the "Invitation For Bid".

The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.6. Result of financial bids of all the Bidders shall be made available on e-tendering portal.

In case e-submission of bid could not opened for some reasons then only Hard copy submitted by those bidders will opened else all the bids should be opened on line only.

**Process to be Confidential**

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

**Clarification of Financial Bids**

To assist in the examination, evaluation and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by mail but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 27

Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded.

Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidder's bid.

**Examination of Bids and determination of Responsiveness**

During the detailed evaluation of "Technical Bids" the Employer will determine whether each Bid (a) meets the eligibility criteria defined in clause 3 and 4. (b) has been properly signed, (c) is accompanied by the required securities and, (d) is substantially responsive to the requirements of the Bidding documents. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e. priced bill of quantities, technical specifications and drawings.

A substantially responsive “Financial Bid” is one, which conforms to all the terms, conditions and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works, (b) which limits in any substantial way, inconsistent, with the Bidding documents, the Employer’s rights or the Bidder’s obligations under the Contract, or (c) whose

rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

If a “Financial Bid” is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

### Correction of Errors

“Financial Bids” determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows :

(a) where there is a discrepancy between the rates in figures and in words, the rate in words will govern ; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

The amount stated in the “Financial Bid” will be corrected by the Employer in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner :

(a) If the Bid price increases as a result of these corrections, the amount as stated in the bid will be the ‘bid price’ and the increase will be treated as rebate;

(b) If the bid price decreases as a result of the corrections, the decreased amount will be treated as the ‘bid price’.

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

## 28.0 Deleted

## 29.0 Evaluation and Comparison of Financial Bids

The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Sub-Clause 26.2.

In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

a) Making any correction for errors pursuant to Clause 27; or

(b) Making an appropriate adjustments for any other acceptable variations, deviations; and

(c) Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub-Clause 23.6.

The Employer reserves the right to accept or reject any variation or deviation. Variations and

deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Bid evaluation.

~~The estimated effect of the price adjustment conditions under Clause 47 of the Conditions of contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation~~.

If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineers estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, the Employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

A bid which contains several items in the Bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder, may be rejected as non-responsive.

**30.0 Deleted.**

# F. AWARD OF CONTRACT

**31. Award Criteria**

Subject to Clause 32, the Employer will award the Contract to the Bidder whose Bid has been determined.

(i) To be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid price and

(ii) To be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration.

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

**32. Employers Right to Accept any Bid and to reject any or all Bids.**

Notwithstanding Clause 31, the Employer reserves the right to accept or reject any bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

**33. Notification of Award and Signing of Agreement**

The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by email, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price")

The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 34 and prevailing stamp duty (current rate - 0.1% of the agreement cost) applicable at the time of signing of agreement.

The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and sent to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.

Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

**34. Performance Security:**

Within 10 days of receipt of the letter of Acceptance, the successful bidder/contractor shall deliver to the employer a performance Security in any of the forms given below for an amount equivalent to **2%** of the contract price for a contract period of **18 Months** plus **120 Months** defect liability period total **138** Months plus additional security for unbalanced bids in accordance with clause 29.5 of ITB and clause 52 of conditions of contract :

i) Bank Guarantee in the form given in section 8

**ii)** National Savings Certificate / Fixed Deposit Receipts of Nationalised Bank/Scheduled Bank duly hypothecated in name of **Registrar, YASHADA, Pune**

**If** the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder's option, by a Nationalized or Scheduled Indian bank. or (b) by a foreign bank located in India and acceptable to the Employer

Failure of the successful bidder to comply with the requirement of Sub-Clause 34.1 shall constitute sufficient ground for cancellation of award and forfeiture of the Bid Security.

**35. Advance Payment and Security**

The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to maximum amount, as stated in the Contract data.

**36.0 Dispute Review Expert**

36.1. The Employer proposes that [name of proposed Dispute Review Expert as indicated in Appendix] be appointed as Dispute Review Expert under the Contract, at a daily fee as indicated in Appendix plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If in the Letter of Acceptance, the Employer has not agreed on the appointment of the Dispute Review Expert, the Dispute Review Expert shall be appointed by the Council of Indian Roads Congress at the request of either party.

36.2 For works costing above Rs.5 Crore the procedure for arbitration will be as per G.R of Law & Judiciary Department issued vide Sankirn- 2016/C.R. 20/ Ka-19 dt. 13/10/2016 regarding " Institutional Arbitration Policy".

**37.0 Corrupt or Fraudulent Practices**

37.1. The Employer will reject a proposal for award if it determines that the Bidder Recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract in question and will declare the firm ineligible. either indefinitely or for a stated Period of time, to be awarded a contract with Government of Maharashtra / State YASHADA and any other agencies, if it at any timedetermines that the firm has engaged in Corrupt or fraudulent practices in competing for the contractor, or in execution.

37.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clause 23.2 and Sub- Clause 59.2 of the Conditions of Contract.

# APPENDIX TO ITB

| | | Clause Reference With respect to Section – I. |
|---|---|---|
| 1. | Name of the Employer is **YASHADA, PUNE** | [ Cl. 1.1] |
| 2. | Current year 2023-2024.<br>The last **Seven** years<br>2022-2023<br>2021-2022<br>2020-2021<br>2019-2020<br>2018-2019<br>2017-2018<br>2016-2017 | [Cl. 4.4 A(a)] |
| 3. | The Annual Financial Turn Over Amount is **Rs 1947.00 Lakhs during any of last Seven years ( 50% of the Tender estimated cost )** | [Cl. 4.4 A(a)] |
| 4. | **(a)** Achieved a minimum annual financial turnover during last **Seven** years for **Rs. 1947.00 lakhs** in any one year. In support of this, attested copy of Annual Audit Report certified by the Chartered Accountant should be produced.<br>**(b)** Satisfactorily completed ( from start to finish ) during the last **Seven** years as a prime contractor of at least three similar works value not less than for**( Civil Rs. 1282.00 lakhs) (40%) ( Electrical Rs.77.53.00 lakhs ) (40%) or** two similar works value not less than for **( Civil Rs. 1603.00 lakhs ) (50%) ( Electrical Rs.96.92.00 lakhs ) (50%)** or one similar works value not less than for **( Civil Rs. 2565.00 lakhs ) (80%) ( Electrical Rs.155.00 lakhs) (80%)** is not more than one contract of 2022-2023 price level. Financial turnover and cost of completed works of previous years shall be given weightage of 10% per year based on Rupee value to bring them to 2022-2023 price level. | [Cl. 4.4 A(c)] |

5. **Quantity of work are :** Executed in any one year (during last **Seven** years) the following minimum quantities of work (Approximately 30% of tendered quantities) [Cl. 4.4 A(c)]

**a. Civil Work** [Cl.4.2(h)]

| Sr. No. | Item of work | Unit | 30% QTY |
|---|---|---|---|
| **1** | Concrete M-20 Grade & Above | Cum | **2248.45** |
| **2** | Brickwork+AAC Blockwork | Cum | **377.62** |
| **3** | Brickwork+AAC Blockwork | Sqm | **1896.81** |
| **4** | TMT- Fe - 500 Steel | MT | **250.12** |
| **5** | Gypsum Plaster | SQM | **3319.91** |
| **6** | Roughcast+Waterproof Plaster | SQM | **2554.97** |
| **7** | Stone crete Plaster | SQM | **1241.13** |
| **8** | Flooring | SQM | **3592.38** |
| **9** | Structural steel | MT | **20.7** |
| **10** | Galvanised PUF Sandwich panel roof | SQM | **532.68** |

**Electrical Work:**

| *Sr. no* | *Item* | *Qty* | *Unit* |
|---|---|---|---|
| 1. | SITC of point wiring | 270 | Number |
| 2. | SITC Of 15 Passenger Lifts Or Above Capacity Passenger Lifts- | 2 | Number |
| 3. | Supplying, erecting & marking SPMCB 6A to 32A, C-series | 120 | Number |
| 4. | Supplying, erecting & terminating 2 pair telephone copper cable 0.5 mm dia | 150 | meter |
| 5. | Supplying, installing, testing and commissioning 5 Star split type variable speed Inverter technology room Air conditioning unit 1.5 TR capacity having minimum ISEER value of 5.4 | 16 | Number |

Note : The quantity certificate should be signed by not belowthe rank of Executive Engineer.

6 The cost of electric works is Rs. **19,384,250/-** [Cl. 4.4 A(d)]

7 The cost of water supply/sanitary works is Rs. **21,386,439/-** [Cl. 4.4 A(e)]

| | | |
|---|---|---|
| 8 | **Liquid assets and/or availability of credit facilities is 10%**<br>**Rs. 38,955,711/-** | [Cl.4.4(B)(c)] |
| 9 | Undertaking by the Bidder @ 25% - Rs. **97,389,278/-** | |
| 10 | **Price level of financial year 2022-23** | [Cl. 4.6] |
| 11. | **The Pre-bid meeting will take place at** Office of Director General, YASHADA, Pune on **02-04-2024** at 15.00 Hrs. | [Cl. 9.2.1] |
| 12. | The technical bid will be opened online at the Office of the **Registrar, YASHADA, Pune 03-05-2024** at 15.00 Hrs (if possible) | |
| 13. | Address of the Employer : **Registrar, YASHADA, Pune 411007** | [Cl. .19.2(a)] |
| 14. | **Identification :**.<br>**Bid For- Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune**<br>Bid Reference : No. **Tender Notice No.**<br>Do not open before 0 3 - 0 5 - 2 0 2 4 **upto 10.00 hrs.** | [Cl. .19.2(b)] |
| 15. | The bid should be submitted latest by **02-05-2024 upto 18.00** hours. | [Cl. 20.1] |
| 16. | The Financial bid will be opened after technical scrutiny at place **As Per Notice Inviting Tender** | [Cl.23.1] |
| 17. | The Demand draft/ Bank Guarantee of Scheduled Bank / Nationalized Bank in favor of **The Registrar Yashada , Pune** payable at **Pune** | [Cl.34.1] |
| 18. | The name of Dispute Review Expert Will be **Director General Yashada Pune.** | [Cl.36.1] |

# ANNEXURE – I

**List of Key Plant & Equipment to be deployed on Building & Road Work during the work is in progress.**

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

| Sr. No | Name of Machinery | Nos. |
|---|---|---|
| 1. | Fully Automatic Micro Processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled Concrete Batch Mix Plant (Pan Mixer) Minimum capacity 18 to 20 Cum/Hour **(Owned )** | 1 |
| 2. | Concrete Pump Unit (Capacity for minimum 15 Meter height and for horizontal 30 to 50 meter **(Owned )** | 1 |
| 3. | Transit Mixer of minimum 6 Cubic meter capacity **(Owned )** | 2 |
| 4. | Lift Machine / Mechanical Hoist **(Owned )** | 1 |
| 5. | Arco Steel Centering Plates **(Owned )** | 1000 Sqm |
| 6. | Sand Screening and Washing Machine minimum capacity 4-6 **(Owned )** | 1 |
| 7. | Water Tanker 5000 Litres Capacity **(Owned )** | 1 |
| 8. | Needle Vibrators **(Owned )** | 1 |
| 9. | Plate Vibrator/Screed Vibrator **(Owned )** | 1 |
| 10. | JCB/Excavator **(Owned )** | 1 |
| 11. | Adjustable Jack Props **(Owned )** | 800 |
| 12. | Adjustable Slab Span **(Owned )** | 150 |
| 13. | Truck / Tripper **(Owned )** | 2 |
| 14. | Diesel Generator 52.5 KvA **(Owned )** | 1 |
| 15. | Water Pumps **(Owned )** | 2 |

**The use of Machinery and Equipment will be verified with the respective Purchase invoices**

**a)** The Contractor must own the machinery mentioned above.

**b)** information mentioned in Question -1 above shall have to be attached along with this statement as well as their proof of ownership of machinery ( i.e. scanned copies of invoices) as well as the valid Certificate issued by the Assistant Chief Engineer (Mech.) of YASHADAto the effect that these machineries are in "Efficient Working Condition" and in conformity with M.O.S.T. Specifications.

**2. The above Certificate shall be subject to following conditions as per instructions issued vide Dy. Secretary (Bldg.2), Public Works Deptt., Mantralaya, Mumbai's letter No. Sankirna-2017/CR.2 (H)/Bldg.2, dt. 4/09/2017.**

1. The life of the new machinery will be considered as 15 years.
2. There will no need of checking by Superintending Engineer (Mechanical ) for first 10 years.
3. After 10th year, the machinery shall be checked and certified by its fitness by Superintending Engineer (Mechanical) / Assistant Chief Engineer (Mechanical) every year till be 15th year.
4. After the 16th year, the contractor will get machinery certified every year from Superintending Engineer(Mechanical) / Assistant Chief Engineer (Mechanical) and produce the certificate of fitness. The certificate will be required for machinery where it is necessary and not issued by RTO.

**MEMORANDUM OF UNDERSTANDING (MOU)**

**Between**

**Party No. -1**

**And**

**Party No. - 2**

This Memorandum of Understanding hereinafter..... date .....at Place ..... by and between :

**Name of 1st Party_____,** a company incorporated under the provisions of the Companies Act, 1956, having its registered office at ADDRESS _____ referred to as, **The First Party.**

**Name of 2nd Party, Address_____,** hereinafter referred to as, **The Second Party.**

WHEREAS **Tender Inviting Authority_____(Name of Work**

_____

_____

The First Party and the Second Party hereby agree as under :

1) Prior to bidding on this tender, the parties on mutual consent shall enter into a joint obligations and responsibilities for the execution of this identified project, including the allocation of the scope of works in the indentified project and the parties respectie obligations on the related bidding costs and expenses. And detailed scope of work and pricing.

2) The MOU shall be the part of the tender to be submitted to Tender Inviting Authority.

3) The MOU does not agree the parties to enter into collaboration with any other parties for this particular tender.

4) In case First Party fails to provide the satisfactory results after sale - service in that situation our company will be totally responsible for providing timely effective service support as per tender conditions / DLP Period. We also undertake that parts will be made available to the user departments as and when required to keep the system functional.

5) This MOU shall be governed under Indian Laws. Disputes, if any shall be resolved amicably, otherwise resolved by arbitration in India in accordance with the Indian Arbitration and

Concilliation Act 1996. The language of the arbitration shall be English language.

This Memorandum of Understanding (MOU), signed in duplicate with each party receiving one original document, shall cease to be valid till the bid validity of the tender from the date of the MOU unless mutually extended in writing by the parties.

| | |
|---|---|
| For and on behalf of | For and on behalf of |
| Name of 1st Party | Name of 2nd Party |
| Name | Name |
| Position | Position |

Witnesses :

1.

2.

# ANNEXURE – II

**List of Key Personnel to be deployed on Contract Work [Reference Cl. 4.4 (B) (b)]**

| Sr. No. | Contractor's Technical Staff | Qualification and experience | Number of Tech Staff. |
|---|---|---|---|
| 1. | Project Manager. | BE /B.Tech Civil with Minimum 15 Years experience.(working under you for more than 2 years, EPF proof) | 1 |
| 2. | Project Engineers. | B.E. Civil, with Minimum 10 Years experience. .(working under you for more than 2 years, EPF proof) | 2 |
| 3. | Site Engineer. | Diploma Civil, with Minimum 3 Years experience. .(working under you for more than 2 years, EPF proof) | 6 |
| 4. | Electrical Engineer | B.E./ Diploma Electrical with 5 Years experieance.(working under you for more than 2 years, EPF proof) | 2 |
| 5. | Plant Engineer. | Diploma / ITI, with Minimum 2 Years experience. .(working under you for more than 2 years, EPF proof) | 2 |
| 6. | Safety Engineer. | Diploma / ITI, with Minimum 2 Years experience. .(working under you for more than 2 years, EPF proof) | 1 |

# SECTION – 2

# QUALIFICATION INFORMATION

# **VOLUME-I**

# SECTION – 2

## ***QUALIFICATION INFORMATION***

The information to be filled in by the bidder in the following pages will be used for purposes of post qualification as provided for in clause 4 of the Instructions to bidders. This information will not be incorporated in the contract

1. For Individual Bidders

Constitution or legal status of Bidder

(Attach Copy)

Place of registration: ----------

Principal place of business: ----------

Power of attorney of signatory of bid

(Attach)

Total value of civil Engineering Work

Construction work performed in the last **Seven** years.

2022-2023

2021-2022…….

2020-2021…….

2019-2020……

2018-2019……..

2017-2018…….

2016-2017……...

(Rupees in Lakh)

Work performed as prime contractor, work performed in the past as a nominated sub-contractor will also be considered provided the Sub-contract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last Five years.**

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

** Attach certificate(s) from the Engineer(s)-in-charge.*

*** Immediately preceding the financial year in which bid are received.*

β *Attach certificate(s) from Chartered Accountant.*

# 1.3.2 Quantities of work executed as prime contractor, be considered provided in the bid document, provided further that other qualification criteria are satisfied (in the same name and style) in the last **Seven** years.**

| Year | Name of the work | Name of the Employer* | Quantity of work performed | | | | |
|---|---|---|---|---|---|---|---|
| | | | CONCRETE M-30 | BRICKWORK | PLASTER | STEEL | FLOORING |
| 2016-17 | | | | | | | |
| 2017-18 | | | | | | | |
| 2018-19 | | | | | | | |
| 2019-20 | | | | | | | |
| 2020-21 | | | | | | | |
| 2021-22 | | | | | | | |
| 2022-23 | | | | | | | |

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

(A) Existing commitments and on-going works :

| Description of work | place & State | Contract No. | Name & Address of employer | Value of Contract (Rs. Cr.) | stipulated period of completion | Value of works* remaining to be completed (Rs. Cr.) | Anticipated date of completion. |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | | | | | |

** Attach certificate(s) from the Engineer(s)-in-charge.*

*@ The item of works for which data is requested should tally with that specified in ITB clause 4.5A(C).*

*** Immediately preceding the financial year in which bid are received.*

*# Deleted. if prequalification has been carried out.*

(B) Works for which bids already submitted:

| Description of work | Place & State | Name and Address of Employer | Estimated value of Works ( Rs. Cr. ) | Stipulated period of completion | Date when decision is expected | Remark, if any |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | |

Availability of key items of Contractor's Plant &Equipment essential for carrying out the Works [Ref. Clause 4.5.B].(a) The Bidder should list all the information requested below. Refer also to Sub-Clause 4.3(d) of the Instructions to Bidders.

| Item of Plant &Equipment | Requirement | | Availability Proposal | | | Remark (from whom to be purchased) |
|---|---|---|---|---|---|---|
| | No. | Capacity | Owned /Leased to be procured | Nos./ Capacity | Age / Condition | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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

| Position | Name | Qualification | Year of Experience (General) | Year of Experience in the proposed position. |
|---|---|---|---|---|
| Project Manager. | | | | |
| Project Engineers. | | | | |
| Site Engineers | | | | |
| Plant Engineer. | | | | |
| Safety Engineer | | | | |

Proposed Sub-Contracts and firms involved [Refer ITB Clause 4.3 (K)]

| Sanctions of the works | Value of Sub-Contract | Sub-Contract (Name & Address) | Experience in similar work |
|---|---|---|---|
| | | | |
| | | | |

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

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

Name, address and telephone, telex, email and fax numbers of the bidder's bankers who may provide reference if contacted by the Employer.

Information on litigation history in which the bidder is involved.

| Other party (ies) | Employer | Cause of Dispute | Amount involved | Remarks showing present status |
|---|---|---|---|---|
| | | | | |

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

Proposed work method and schedule. The bidder should attach descriptions, drawings andcharts as necessary to comply with the requirements of the bidding Documents. [Refer ITBClause 4.1 & 4.3(1)]

Programme

Quality Assurance Programme

**2** Deleted

**3** Additional Requirements

Bidders should provide any additional information required to fulfil the requirements of clause 4 of the Instructions to the Bidders, if applicable.

(i) Affidavit

(ii) Undertaking.

(iii) Declaration of the bidder

**(i)** Scanned copy of Affidavit in respect of genuineness of documents contained in the Envelope No. 1 in the prescribed proforma provided with Tender Set on Stamp Paper of Rs. **100**/- ( Proforma of Affidavit is attached with Tender).

**(ii)** This affidavit is also to be submitted physically as per schedule given in the tender in original and will be the part and parcel of contract agreement.

**(iii)** Contractor will be solely responsible and liable for action under Indian Penal Code for uploading or physical submission of any false / fraudulent document / information of Envelope No. 1 and 2.

**(iv)** Contractor will be solely responsible and also liable for action under Indian Penal Code for submission of any false information, false bills/ invoice / vouchers of purchase of material in supporting proof of purchase, proof of testing / test results and any other required documents submitted by his staff / representative or by himself or subletting company / contractor during contract period or even after completion of work till finalization of bill and completion of defect liability period.

**(v)** If false information / documents are submitted as mentioned above, the contractor will be blacklisted and if contract is at initial stage then such contract will be terminated and no any compensation will be payable on any account to the contractor.

**(vi) YASHADA Staff / YASHADA Officers / Divisional Accounts Officer will not be responsible for any complications due to submission of false / fraudulent documents by the contractor as mentioned above.**

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

**(CLAUSE [Cl.4.4(B)(c)]OF ITB)**

**BANK CERTIFICATE**

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

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

_____

(Signature)
Name of Bank
Senior Bank Manager
Address of the Bank

## AFFIDAVIT

I .....Age..... Address .....(Authorized signatory to sign the contract), hereby submit, vide this affidavit in truth, that I am the owner of the contracting firm ...../ authorized signatory and I am submitting the documents in Envelope No. 1 or the purpose of scrutiny of the contract. I hereby agree to the conditions mentioned below :

1. I am liable for action under Indian Penal Code for submission of any false / fraudulent paper / information submitted in Envelope No. 1.
2. The undersigned also hereby certifies that neither our firm M/s. _____ _____ have not abandoned any work on YASHADAnor any contract awarded to us for such works have not been rescinded, during last Three Years prior to the date of this bid.
3. The undersigned hereby authorise(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understand and agrees that further qualifying information may be requested and agrees to furnish any such information at the request of the Department / Project implementing agency.
5. I am liable for action under Indian Penal Code if during contract period and defect liability period, any false information, false bill of purchases, supporting proof of purchase, proof of testing submitted by my staff, subletting company or by myself, I will be liable for action under Indian Penal Code

_____(Signed by Authorised Officer of the Firm)

_____
Title of Officer

_____
Name of Firm

_____
DATE

## UNDERTAKING

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

_____

(Signed by Authorised Officer of the Firm)

_____

Title of Officer

_____

Name of Firm

_____

DATE

## DECLARATION OF THE CONTRACTOR

I / We hereby declare that I/We have made myself / ourselves thoroughly conversant with the subsoil conditions, the local conditions regarding all materials (such as stone, murum, sand etc.) and labour of which I/We have based my/our rates for this work. The specifications, conditions bore results and lead of materials on this work have been carefully studied and understood by me/us before submitting this tender. I/We undertake to use only the best materials approved by the **Yashada Pune** or his duly authorised assistant, before starting the work and to abide by his decision.

I/ We hereby further declare that my / our tender is unconditional in every manner of whatsoever in nature.

I / We hereby undertake to pay the labourers engaged on the work as per Minimum Wages Act. 1948 applicable to the zone concerned.

**Name and Signature of Contractor(s) / Power of attorney holder**
**with complete address.**

# SECTION – 3

# CONDITIONS OF CONTRACT

# **VOLUME-I**

## Conditions of Contract Table of Contents

# CONDITIONS OF CONTRACT

**1. Definitions**

## A. GENERAL

Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Capital initial are used to identify defined terms.

**Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.

**Compensation Events** are those defined in Clause 44 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Engineer in accordance with Sub Clause 55.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the works. It consists of the documents listed in Clause 2.3 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer and includes Technical and Financial bids.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Day** are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

A **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

The **Engineer** is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing the valuing Variations to the Contract, awarding extensions of time and valuing the Compensation Events.

**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

**The Engineers representative is any person authorized by Engineer to act /perform on his behalf.**

The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

**GOM means Government of Maharashtra.**

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The intended Completion Date may be revised only by the Engineer by issuing an extension of time. **Materials** are all supplies, including consumables, used by the contractor for incorporation in the Works.

**Plant** is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

**Site Investigation Reports** are those which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site.

**Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer.

**Superintending Engineer means Superintending Engineer Public Works Circle Pune**

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

**Temporary Works** are works designed, constructed, installed and removed by the Contractor which are needed for construction or installation of the Works.

A **variation** is an instruction given by the Engineer, which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install and turn over to the Employer, as defined in the Contract Data.

**2. Interpretation**

In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about the Conditions of Contract.

If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to

any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole of the Works)

The documents forming the Contract shall be interpreted in the following order of priority:

(1) Agreement
(2) Letter of Acceptance, notice to proceed with the works.
(3) Contractor's Bid
(4) Contract Data
(5) Conditions of Contract including Special Conditions of Contract
(6) Specifications
(7) Drawings
(8) Bill of Quantities and
(9) Any other document listed in the Contract Data as forming part of Contract.
(10) Addendum if any issued by Employer

**3. Language and Law**

The language of the Contract and the law governing the Contract are stated in the Contract Data

**4. Engineer's Decisions**

Except where otherwise specifically stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

**5. Delegation**

The Engineer may delegate any of his duties and responsibilities to other people except to the Adjudicator after notifying the Contractor and may cancel any delegation after notifying the Contractor.

**6. Communications**

Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of India Contract Act).

**7. Sub-Contracting**

The Contractor may sub-contract any portion of work, upto a limit specified in Contract Data, will the approval of the Engineer but may not assign the Contract without the approval of the Employer in writing, Sub-contracting does not alter the Contractor's obligations. (50% of the initial Contract Price).

**8. Other Contractors**

The Contractor shall co-operate and share the Site with other contractors, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractors. The Contractor shall as referred to in Contract Data; also provide facilities and services for them as described in the Schedule. The employer may modify the schedule of other contractors and shall notify the contractor of any such modification.

**9 Personnel**

The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

**10. Employer's and Contractor's Risks**

The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks, which this Contract states are Contractor's risks.

**11. Employer's Risks**

The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in India, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or(b) a cause due solely to the design of the Works, other than the Contractor's design.

**12. Contractor's Risks**

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

**13.00 Insurance**

13.01 The Contractor shall take out Insurance Policy / Policies (viz . Contractor's All Risks Insurance Policy, Erection All Risks Insurance Policy etc. as directed by the Directorate of Insurance) so as to vide adequate insurance cover for execution of the awarded contract work for total contract value and complete contract period **COMPULSORILY** from the "**Directorate of Insurance, Maharashtra State, Mumbai" only. Its postal address for correspondence is " 264, MHADA , First Floor, Opposite Kalanagar, Bandra (East), Mumbai 400 051. "( Telephone No. 022 –26590403 / 26590690 and Fax No. is 022-26592461 /26590403).** Similarly all workmen's appointed to complete the contract work are required to insure under workmen's compensation Insurance Policy. Insurance Policy/ Policies taken out from any other company will not be accepted. If any contractor has not taken out the Insurance Policy from the Directorate of Insurance, Maharashtra State Mumbai or have effected insurance with any Insurance Company, the same will not be accepted and one percent (1%) of the tender amount or such amount of premium calculated by the Government Insurance Fund will be recovered directly from the amount

payable to the Contractor for the executed contract work and paid to the Directorate of Insurance Fund, Maharashtra State, Mumbai. The Director of Insurance reserves the right to distribute the risks of insurance among the other insurers.

.13.2 The contractor shall provide Contractor's All Risk Insurance (CAR) , in the joint names of the Employer and the contract Insurance cover from the Start Date to the end of the Defects Liability Period in the amounts as deductible stated in the Contract Data fro the following events which are due to the Contractor risk.

(a) Los of or damage of the Works, Plant and Materials;

(b) Loss of or damage of Equipment ;

(c) Loss or damage of property (except the Works, Plant, Materials and Equipments in connection with Contract; and

(d) Personal Injury or death of any personnel employed by the contract is during execution and maintenance defect liability period, employee of YASHADA, any person using the facility created by the contract during the construction and defect liability period.

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

13.4 If the Contractor does not provide any of the policies and certificated required, the employee may affect the insurance which the Contractor should have provided and recoverpremiums the Employer has paid from payments otherwise due to the Contractor of it's payment is due, the payment of the premiums shall be a debt due shall be recoverablefrom the bills and deposits of the contractor of any work in Maharashtra and if no dues in work then as arrears of land revenue.

Alterations to the terms of Insurance shall not be made without the approval of the Engineer.

13.5. Both parties shall comply with any conditions of the Insurance Policies.

**14.0 Site Investigation reports**

The contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the Contract Data, supplemented by any information available to the Bidder.

**15.0 Queries about the Contract Data**

The Engineer will clarify queries on the Contract Data.

**16.0 Contractor to Construct the Works**

The Contractor shall construct and install the Works in accordance with the Specification

and Drawings.

**17.0 The Works to be completed by the Intended Completion Date**

The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

**18.0 Approval by the Engineer**

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Engineer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before their use.

**19. Safety**

The Contractor shall be responsible for the safety of all activities on the Site.

**20. Discoveries**

Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

**21. Possession of the Site**

The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities. This will be compensation Event and will be dealt in form of Extention of Time to Time extend for execution of work only.

**22. Access to the Site**

The Contractor shall allow the Engineer and any person authorized by the Engineer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being

manufactured/fabricated/assembled for the works.

**23.0 Instructions**

The contractor shall carry out all instructions of the Engineer pertaining to works which comply with the applicable laws where the Site is located.

The Contractor shall permit the Employer to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Employer, if so required by the Employer.

**24.0 Disputes**

24.1. If the Contractor believes that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to the Dispute Review Expert within 14 days of the notification of the Engineer's decision.

**25.0 Procedure for Disputes**

25.1. The Employer proposes that [name of proposed Dispute Review Expert as indicated in Appendix] be appointed as Dispute Review Expert under Contract at a daily fe ass indicated in Appendix plus reimbursable expenses. the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If in the Letter of Acceptance, the Employer has not agreed on the appointment of the Dispute Review Expert, the Dispute Review Expert shall be appointed by the Council of Indian Roads Congress at the request of either party.

25.2 For Works costing above Rs.5 Crore the procedure for arbitration will be as per G.R. of Law & Judiciary Department issued vide Sankirn.2016/C.R.20/Ka-19 date 13.10.2016 regarding "Institutional Arbitration Policy "

**26.0 Replacement of Dispute Review Expert**

Should the Dispute Review Expert resign or die, or should the Employer and the Contractor agree that the Dispute Review Expert is not fulfilling his functions in accordance with the provisions of the Contract, a new Dispute Review Expert will be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Dispute Review Expert shall be designated by the Appointing Authority designated in the Contract Data at the request of either party, within 14 days of receipt of such request.

# B. TIME CONTROL

## 27.0 Programme

Within the time stated in the Contract Data the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangements, order and timing for all the activities in the Works along with monthly cash flow forecast.

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

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

The Engineer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Engineer again at any time. A revised Programme is to show the effect of Variations and Compensation Events.

## 28.0 Extension of the Intended Completion Date

The Engineer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.

The Engineer shall decide whether and by how much to extend the Intended Completion Date within 35 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to co-operate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

The Engineer shall within 14 days of receiving full justification from the contractor for extension of Intended Completion Date refer to the Employer his decision. The Employer shall in not more than 21 days communicate to the Engineer the acceptance or otherwise of the Engineer's decision. If the Employer fails to give his acceptance, the Engineer shall not grant the extension and the contractor may refer the matter to the Dispute Review

**Extension of contract period due to unavoidable reasons:**

In case of non-availability of land or any other strong reason, the time limit extension shall be granted by the authority competent to accept the tender. In case the tender accepted at Government level, the Chief Engineer shall be final authority to grant extension. The reasons for granting the extension shall be kept on record.

**29.0 Deleted**

**30.0 Delays Ordered by the Engineer**

The Engineer may instruct the Contractor to delay the start or progress of any activity within the Works.

**31. Management Meetings**

Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to al who attended the meeting.

**32. Early Warning**

The Contractor is to warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Engineer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.

The Contractor shall co-operate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.

# C. QUALITY CONTROL

### 33.0 Identifying Defects

The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking neither shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

### 34.0 Tests

If the Engineer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

### 35.0 Correction of Defects

The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

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

### 36.0 Uncorrected Defects

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

# *D. COST CONTROL*

**37.0 Bill of Quantities**

37.1 The Bill of Quantities shall contain items for the construction, installation, testing and commissioning work to be done by the Contractor.

37.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

**38.0 Claim of quantities entered in the tender or estimates as per Govt.Resolution dt. 27/09/2018 & 22/10/2018.**

38.1 Quantities in respect of several items shown in the tender are approximate and no revision in the tendered rate shall be permitted in respect of any of the items so long as, subject to any special provision contained in the specifications prescribing a different percentage of permissible variation in the quantity of the item does not exceed the tender quantity by more than 25 percent and so long as the value of the excess quantity beyond this limit at the rate of the item specified in the tender, is not more than Rs. 5,000/-

38.2 The Contractor shall if ordered in writing by the Engineer so to do, also carry out any quantities in excess of the limit mentioned above in Sub-clause (i) hereof on the same conditions as and in accordance with the specifications in the tender and at the rates (i) derived from the rates entered in current Schedule of Rates and in the absence of such rates (ii) at the rates prevailing in the market. The said rates being increased or decreased as the case may be by the percentage which the total tendered amount bears to the estimated cost of the works as put to tender based upon the schedule of rates applicable to the year in which the tenders were accepted. For this purpose of operation of this Clause, this cost shall be worked out from the prevailing District Schedule of Rates at the time of acceptance of tender.

38.3 Claims arising out of reduction in the tendered quantity of any item beyond 25 percent will be governed when the amount of such reduction beyond 25 percent at the rate of the item specified in the tender is more than Rs. 5,000/- ( the Clause is not applicable to extra items).

38.4 This Clause is not applicable to extra items.

38.5 There is no change in the rate if the excess is more than 25 percent of the tendered quantity. But the value of the excess work at the tendered rates not exceed Rs. 5,000/-

38.6 The quantities to be paid at the tendered rates shall include :

**a)** Tendered quantity plus

**b)** 25% excess of tendered quantity or the excess quantity of the value of Rs. 5,000/- at the tendered rate whichever is more.

**Note :** Excess quantity if required to be executed only after the permission of the Competent Authority

**39.0 Deleted**

**40.0 Deleted**

41.0 **Cash Flow Forecasts**

When the Programme is updated, the contractor is to provide the Engineer with an updated cash flow forecast.

42.0 **Payment Certificates**

The Contractor shall submit to the Engineer monthly statements of the estimate value of the work completed less the cumulative amount certified previously.

The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth in sub-clause 51(3) of the Contract Data (Secured Advance)

The value of work executed shall be determined by the Engineer.

The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

The value of work executed shall include the valuation of Variations and Compensation Events.

The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

43.0 **Payments**

Payments shall be adjusted for deductions for other recoveries in terms of the contract and taxes at source, as applicable under the law. The bill shall be paid after due verification and upon availability of budget. The amount certified by Engineer shall be paid as per availability of funds and no interest shall be payable in case of any delayed payment.

Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

44.0 **Compensation Events**

Compensation shall be applicable and only extension may be considered on merits if not on part of Contractor

The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Engineer .

**45. Tax**

The rates quoted by the Contractor shall be deemed to be inclusive of all taxes other than Goods & Service Tax 2017 that the contractor will have to pay for performance of this contract. The rates quoted by the contractor shall be exclusive of Goods & Service Tax 2017 which shall be paid extra by the employer at prevailing rates. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law. GST at 12% will be paid extra on work estimated cost.

**46. Currencies**

All payments shall be made in Indian Rupees.

47. Price Adjustment

Contract Price shall be adjusted for increase or decrease in rates and prices of Bitumen, Steel and Cement in accordance with the following principles and procedures and as per formula given in the Contract Data.

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

(b) The price adjustment shall be determined during each month from the formula given in the contract data.

**48. Retention**

The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
On Completion of the whole of the Works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the Engineer has certified that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.

On completion of the whole works, the contractor may substitute retention money with an "on demand" Bank guarantee.

## 49. Liquidated Damages

The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

If the intended completion date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

If the contractor fails to comply with the time for completion as stipulated in the tender, then the contractor shall pay to the employer the relevant slum stated in the Contract Data as liquidated damages for such default and not as penalty for everyday or part of day which shall elapse between relevant time for completion and the date stated in the taking over certificate of the whole of the works on the relevant section, subject to the limit stated in the contract data.

The employer may, without prejudice to any other method of recovery deduct the amount of such damages from any monies / sum due or to become due to the contractor. The payment or deduction of such damages shall not relieve the contractor from his obligation to complete the works on from any other of his obligations and liabilities under the contract.

If, before the Time for completion of the whole of the works, or, if applicable, any section, a Taking-Over Certificate has been issued for any part of the Works or of a section, the liquidated damages for delay in completion of the remainder of the works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit there of.

## 50. Deleted.

## 51. Secured Advance

The Engineer shall make advance payment in respect of materials intended for but not yet incorporated in the Works in accordance with conditions stipulated in the Contract Data.

## 52. Securities

The Performance Security (including additional security for unbalanced bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer and denominated in Indian Rupees. The Performance Security shall be valid until a date 28 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date expiry of Defects liability Period.

**53. Deleted**

**54. Cost of Repairs**

Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the contractor at the Contractor's cost if the loss or damage arises from the contractor's acts or omissions.

# E. FINISHING THE CONTRACT

**55.0 Completion**

The Contractor shall request the Engineer to issue a Certificate of Completion of the Works and the Engineer will do so upon deciding that the Work is completed.

**56.0 Taking Over**

The Employer shall take over the Site and the Works within seven days of the Engineer issuing a certificate of Completion.

**57.0 Final Account**

57.1. The Contractor shall supply to the Engineer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.

**58.0 Operating and Maintenance Manuals-**

If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

**59.0 Termination**

The Employer or the Contractor may terminate the Contract if the either party causes a fundamental breach of the Contract.

Fundamental breaches of Contract include, but shall not be limited to the following:

(a) the Contractor stops work for 15 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;

(b) ~~the Engineer instructs the Contractor to delay the progress of the Works and the instruction is not withdrawn within 28 days;~~

(c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) ~~a payment certified by the Engineer is not paid by the Employer to the Contractor within 56 days of the date of the Engineer's certificate;~~

(e) the Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;

(f) the Contractor does not maintain a security which is required;

(g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

(h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

When either party to the Contract gives notice of a breach of contract to the Engineer for a cause other than those listed under Sub Clause 59.2 above, the Engineer shall decide whether the breach is fundamental or not.

Notwithstanding the above, the Employer may terminate the Contract for convenience.

If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site, Soon as reasonably possible.

**60.0 Payment upon Termination**

If the-Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done less advance payments received up to the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.

If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer shall issue a certificate for the value of the work done, the cost of balance material brought by the contractor and available at site, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

**61.0 Property**

All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

**62.0 Release from Performance**

If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

# *F. SPECIAL CONDITIONS OF CONTRACT*

**1. LABOUR:**

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

**2. COMPLIANCE WITH LABOUR REGULATIONS:**

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

## 3. SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTIONWORK.

(a) **Workmen Compensation Act 1923** :- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

(b) **Payment of Gratuity Act 1972** :- Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

(c) **Employees P.P. and Miscellaneous Provision Act 1952**:The Act Provides for monthly contributions by the employer plus workers @ 10%or 8.33%. The benefits payable under the Act are:

(i) Pension or family pension on retirement or death, as the case may be.

(ii) Deposit linked insurance on the death in harness of the worker.

(iii) Payment of P.P. accumulation on retirement/death etc.

(d) **Maternity Benefit Act 1951**:- The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

(e) **Contract Labour (Regulation & Abolition) Act 1970**:- The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take licence from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer, if they employ 20 or more contract labour.

(f) **Minimum Wages Act 1948** :- The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.

(g) **Payment of Wages Act 1936**:- Itlays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

(h) **Equal Remuneration Act 1979** :- The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.

(i) **Payment of Bonus Act 1965** :- The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3S00/-per month or less. The bonus to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/-per month shall be worked out by taking wages as Rs.2500/ -per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

(j) **Industrial Disputes Act 1947** :- The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

(k) **Industrial Employment (Standing Orders) Act 1946** :-It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to *SO).* The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

(l) **Trade Unions Act 1926** :- The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.

(m) **Child Labour (Prohibition & Regulation) Act 1986** :- The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.

(n) **Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979** :- The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.

(0) **The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996** :- All the establishments who carryon any building or other construction work and employs 10 or more workers are covered underthis Act. All such establishments

are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

(p) **Factories Act 1948**:- The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

**4 ARBITRATION**

The Employer proposes that [name of proposed Dispute Review Expert as indicated in Appendix] be appointed as Dispute Review Expert under the Contract, at a daily fee as indicated in Appendix plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If in the Letter of Acceptance, the Employer has not agreed on the appointment of the Dispute Review Expert, the Dispute Review Expert shall be appointed by the Council of Indian Roads Congress at the request of either party.

**5** For works costing above **Rs.5 Crore** the procedure for arbitration will be as **per G.R of Law & Judiciary Department issued vide Sankirn- 2016/C.R. 20/ Ka-19 dt. 13/10/2016 regarding " Institutional Arbitration Policy".**

**6. Goods and Services Tax (GST)**

As per Section 51 of the CGST and MGST Act, TDS will be deducted from Running Account Bills as per the notified rates and from the notified dates by the Government. Bidders are required to submit Registration Number as supplier under GST.

**7. Payment Through electronic medium**

The contractor will have to provide his Bank Account details and Income Tax PAN for effecting electronic payment in the required Format.

**8. Unique Identification Number ( AADHAR) linked Payment by Contractor**

Vide GR No. Govt. Of Maharashtra , YASHADA. Mantralaya Nagpur No. Tender 2016/CN20/ shikana /Bldg -2 dated 09/12/2016 Contractor shall submit a

certificate to the effect that all the payments to the labour / staff are made in bank accounts linked to Unique Identification Number ( AADHAR ). The certification shall be submitted by the contractor within 60 days from the commencement of the contract. If the time period of contract is less than 60 days then such certificate shall be submitted within 15 days from the date of commencement of contract.

**9.** Original Invoice for Asphalt issued by the Manufactures will be retained with the Bills and will not be returned to the contractors.

## 10. Project Specific Special Conditions of Contract :

1.0 The proposed construction of Center of Good Governance – Residential & Academic Building at Baner,Yashada,Pune, external Development, Total Electrical work, Landscaping work etc. is to be done on land of YASHADA, Baner Tal- Pune Dist-Pune. The contractor shall visit site & asses the prevailing working conditions.

2.0 All the workers proposed to be deployed at site must have good character & contractor shall ensure the same.

3.0 The project site is located along the road from Baner , near Rajbhavan at Pune City. Contractor is expected to study the same before bidding. This will not be entertained as cause of delay for execution of the work. Contractor shall deploy his machinery, resources &safety measures accordingly.

4.0 Contractor has to arrange at his own cost all the arrangement for labour camp, theirmovements from site to labour camp etc.

5.0 Contractor shall deposit along with final bill, the bank guarantee amounting 5% of the total Contract amount for the DLP 120 months period. If the defects are not rectified by Contractor in DLP Period, the bank guarantee will be encased and Employee will carry out the rectification of defects.

6.0 Above mentioned Bank Guarantee amounting 5% of the total Contract Amount will be Released year wise after successful completion of all defects and annual maintenance after Obtaining completion certificate from the Executive engineer as below……...

1. On Completion of first year 0.50% amount of total contract amount.
2. On Completion of Second year 0.75% amount of total contract amount.
3. On Completion of Third year 1.00% amount of total contract amount.
4. On Completion of Fourth year 1.25% amount of total contract amount.
5. On Completion of Fifth year 1.50% amount of total contract amount.

7.0 For those items with warranty given by the manufacturer, the warranty received by the Contractor being purchaser of those items shall be transferred back to back in the name of the Client so as to be able to take benefit of warranty.

a) Ten years external paint guarantee bond shall be submitted by the Contractor from manufacturing company.

b) Ten years guarantee bond for sanitary fittings shall be submitted by the Contractor from manufacturing company.

c) Five years fully comprehensive free AMC for following items.

1) Lifts.
2) Firefighting and fire alarm systems.
3) C.C.T.V.
4) Computer Networking systems/Intercom and Telephone systems
5) STP & Water pumping system.
6) Tree plantation & Landscaped areas.
7) Transformer / D.G. Set / H.T. and L.T. Equipment.
8) Street Light.

# SECTION – 4

# CONTRACT DATA

# VOLUME-I

## CONTRACT DATA

| Items marked "N/A" do not apply in this Contract | | | | Clause Reference with respect to Section - 3 |
|---|---|---|---|---|
| 1. | The Employer is<br>Name : **YASHADA, Pune.** | | | [Cl.1.1] |
| 2. | The Engineer is **Head of Estate And Executive Engineer YASHADA, Pune** | | | [Cl.1.1] |
| 3 | The Dispute Review Expert appointed jointly by the Employer and Contractor is<br>Name : **Registrar YASHADA, Pune**<br>Address : **YASHADA, Pune - 411007** | | | |
| 4. | The Defects Liability Period from the date of Completion is **138 Months** | | | [Cl.1.1 & 35] |
| 5. | The Start Date shall be **7 days** from the date of issue of the work order. | | | [Cl.1.1] |
| 6. | The Intended Completion Date for the whole of the Works **is 18 months** including monsoon period after start of work with the following milestones: | | | [Cl.1.1, 17 & 28] |
| | Milestone dates: | | | [Cl.2.2, & 49.1] |
| | Physical Works to be completed | | Period from the start date | |
| i) | Milestone -1 i.e. 20% | | 3 Months | |
| ii) | Milestone- 2 i.e. 40% | | 6 Months | |
| iii) | Milestone-3 i.e. 50% | | 9 Months | |
| iv) | Milestone-4 i.e. 60% | | 12 Months | |
| v) | Milestone-5 i.e. 80% | | 15 Months | |
| vi) | Milestone-6 i.e. 100% | | 18 Months | |
| 7. | **Site Location - This work site is situated near Dange Chauk, Tathawade, PUNE, DIST. PUNE.** | | | [Cl.1.1] |
| 8. | The name and identification number of the Contract is : **Tender Notice No. for 2023-24.** | | | [Cl.1.1] |

## 9.The works consist of

**Name of Work :-** Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune

**General Description**

**Introduction** :- Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune. This work has received administrative approval from the Government of Maharashtra..

**Project Management Consultant :-**

COEP Technological University, Pune.

**MAIN BUILDING :- Auditorium G+2, Guest House with Seminar Hall G+3**

1) As per terrain and geotechnical investigation excavation in hard murum ,soft rock is to be done.
2) Antitermite treatment shall be done at place of plot and periphery of plot.
3) For purpose of lower basement M-30 grade concrete for raft and retaining wall is to be done.
4) Fixing perforated pipe with geofiber below R.C.C basement slab for drainage purpose.
5) Construction of R.C.C basement slab. And to do soling and murum filling in basement.
6) To do work according to R.C.C design M-30 footing , column , beam , slab ,chajja , staircase , pardi.
7) External, internal brickwork is to be done in autoclaved aerated concrete blocks while toilet brickwork is to be done in Burnt Brick Masonary.
8) For internal wall 10-13 mm gypsum plaster and for ceiling POP plaster is to be done.
9) Rough Cast plaster and Stone crete plaster for external walls of building is to be done.
10) Granite, Kota is to be used in flooring of building.Flooring for Staircase of building (tread & riser)should be in Kota.
11) Antiskid flooring shall be done in W.C and Bathroom and dado in ceramic tiles.
12) Doors inside the building should be single and double leaf solid core flush door.
13) Building windows shall be in 3 track aluminium sliding window without box and ventilators in WC and bathrooms.
14) Internal paint shall be done in Luster Paint and external RCC Form Finish And Wall Plaster Stonecrete.
15) Brickbat waterproofing for terrace is to be done.
16) Roof for Auditorium shall be in structural steel truss and G.I PUF panel should be fixed on it.

**UNDER GROUND WATER TANK:-**

1) Excavation of UGWT in soil , soft murum , hard murum , soft rock and hard rock.
2) Antitermite treatment shall be done at place of UGWT and near UGWT.
3) Rubble soling for UGWT shall be done.
4) PCC shall be done in M-10 grade concrete.
5) Raft shall be of M-30 grade concrete for UGWT.
6) Pardi for UGWT shall be of M-30 grade concrete.
7) For pump house M-30 grade of column is to be constructed.
8) For pump house M-30 grade of beam is to be constructed.
9) For pump house M-30 grade of slab is to be constructed.
10) For pump house fly ash brickwork is to be done.
11) Rough cast plaster is to be done for external wall of pump house.
12) Colour shall be done to plastered surface of pump house.

The material Required for this work is available within reasonable lead for this work.

| | | |
|---|---|---|
| | | |
| 10. | The following documents also form part of the Contract:.....<br>(1) Agreement<br>(2) Letter of Acceptance, notice to proceed with the works.<br>(3) Contractor's Bid<br>(4) Contract Data<br>(5) Conditions of Contract including Special Conditions of Contract<br>(6) Specifications<br>(7) Drawings<br>(8) Bill of Quantities and<br>(9) Any other document listed in the Contract Data as forming part of Contract.<br>(10) Addendum if any issued by employer. | [ Cl. 2.3(9) ] |
| 11. | The law, which applies to the Contract, is **the law of Union of India.** | [ Cl. 3.1 ] |
| 12. | The language of the Contract documents is **English** | [ Cl. 3.1 ] |
| 13. | Limit of subcontracting – **50 % of the Initial Contract Price** | [ Cl. 7.1 ] |
| 14. | The Schedule of Other Contractors **– NIL-** | [ Cl. 8 ] |
| 15. | The Schedule of Key personnel - As per Annex-II to section I | [Cl. 9] |
| 16. | The minimum insurance cover for physical property, injury and death is Rs.5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, Contractor will pay additional premium necessary to make insurance valid for four occurrences always. | [Cl. 13] |
| 17. | Site investigation report – To be assessed by the contractor | [Cl. 14] |
| 18. | The site possession Dates shall be within seven days from issue of notice to proceed with the work. | [Cl. 21] |
| 19. | Fees and types of reimbursable expenses to be paid to the Dispute Review expert. (To be inserted later) -Nil- | [Cl. 25] |
| 20. | Appointing Authority for the Dispute Review Expert is Employer. | [Cl. 26] |
| 21. | The period for submission of the programme for approval of Engineer shall be 21 days from the issue of letter of Acceptance | [Cl. 27.1] |
| 22. | The period between programme updates shall be **30 days**. | [Cl. 27.3] |
| 23. | The amount to be withheld for late submission of an update programme shall be **Rs.1.00 Lakh** | [Cl. 27.3] |

| | | | |
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| 24. | The following events shall also be Compensation Events: | | [Cl. 44] |
| | Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document – | | |
| | (i) | Removal of underground utilities detected subsequently | |
| | (ii) | Significant change in classification of soil requiring additional mobilisation by the contractor e.g. ordinary soil to rock excavation | |
| | (iii) | Removal of unsuitable material like marsh, debris dumps etc. not caused by the contractor | |
| | (iv) | Artesian conditions. | |
| | (v) | Seepage, erosion, landslide | |
| | (vi) | River training requiring protection of permanent work | |
| | (vii) | Presence of historical, archaeological or religious structures, monuments interfering with the works | |
| | (viii) | Restriction of access to ground imposed by civil. judicial, or military authority. | |
| 25. | The currency of the Contract is Indian Rupees | | [Cl. 46] |

**25-A.** **Accompaniment to Government Resolution YASHADANo. CAT/06/04/148, Dated 16/05/2005.**

## Price Variation Clause

**(I) STAR Rates:**

| | | | | |
|---|---|---|---|---|
| **(1) Cement** | **:** | **Rs.** | **6,000/-** | **Per M.T.** |
| **(2) T.M.T. Fe 500-D Steel** | **:** | **Rs.** | **61,000/-** | **Per M.T.** |
| **(3) Structural Steel** | **:** | **Rs.** | **62,575/-** | **Per M.T.** |
| **(4) Bitumen** | | **Rs.** | **49,250/-** | **Per M.T.** |

| | | | | |
|---|---|---|---|---|
| 26. | The Proportion of payments retained (retention money) shall be 6 % from each bill subject to a maximum of 5 % of final contract price. | | | [Cl. 48] |
| 27 | Amount of liquidated damages for delay in completion of works | (I) For Whole of work | | [Cl. 49] |
| | | ~~(1/2000)th of the initial contract price rounded off to the nearest thousand per day per day~~<br>To be decided by the Employer/Engineer from time to time to the extent of 1/2000 (subject to 10% contract price.) | | |
| | | | (II) For sectional completion<br>To be decided by the Employer/Engineer from time to time to the extent of 1/2000 (subject to 10% contract price.) | |

| | | | |
|---|---|---|---|
| 28 | Nature of advance | Amount (Rs.)<br>Conditions to be fulfilled | [Cl.51 and 52] |

| | | | | |
|---|---|---|---|---|
| i | *EQUIP-MENT | - Deleted- | | |
| ii | * Secured advance for non-perishable materials brought to site | 75% of Invoice Value or 75% of value assessed by the engineer. | a) The materials are in accordance with the specification for works. | [Cl. 51] |
| | | | b) Such materials have been delivered to site, and are properly stored and protected against damage or deterioration to the satisfaction of the Engineer. The Contractor shall store the bulk material in measurable stacks; | |
| | | | c) The Contractor's records of the requirements, orders, receipt and use of materials are kept in a form approved by the Engineer and such records shall be available for inspection by the Engineer. | |
| | | | d) The contractor has submitted with his monthly statement the estimated value of the materials on site together with such documents as may be required by the Engineer for the purpose of valuation of the materials and providing evidence of ownership and payment thereof. | |
| | | | e) Ownership of such materials shall be deemed to vest in the Employer for which the Contractor has submitted an Indemnity Bond in an acceptable format, and | |
| | | | f) The quantities of materials are not excessive and shall be used within a reasonable time as determined by the Engineer. | |

| | | |
|---|---|---|
| 29. | Repayment of Secured advance | [Cl. 51.4] |
| | The advance shall be repaid from each monthly payments to the extent materials [for which advance was previously paid pursuant to Clause 51.4 of G. C. C. ] have been incorporated into the works. | |

| | | |
|---|---|---|
| 30. | The Securities shall be for the following minimum amounts equivalent as a percentage of the Contract Price: | [Cl. 52] |
| | Performance Security for **2%** of contract price plus Rs ..... (to be decided after evaluation of the bid) as additional security in terms of ITB Clause 34. | |
| | The Standard form of Performance Security acceptable to the Employer shall be an unconditional Bank Guarantee of the type as presented in Section 8 of the Bidding Documents. | |
| 31. | The Schedule of Operating and Maintenance Manuals -- not Applicable | [Cl. 58] |
| 32. | The date by which "as-built' drawings (in scale as directed) in 2 sets are required is within 28 days of issue of certificate of completion of whole or section of the work, as the case may be. | [Cl. 58] |
| 33. | The amount to be withheld for failing to supply "as-built" drawings by the date required is | [Cl. 58] |
| 34. | The following events shall also be fundamental breach of contract : "The Contractor has contravened Sub-Clause 7.1 and Clause 9 of GCC." | [Cl. 59.2] |
| 35. | The Percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the Works shall be 20 percent. | [3, Cl. 60] |

**Accompaniment to Government Resolution**
**YASHADANo. CAT/06/04/148, Dated 16/05/2005.**

## Price Variation Clause

If during the operative period of the Contract as defined in condition (i) below, there shall be any variation, in the Consumer Price Index (New Series) for Industrial Workers for **Pune** Centre as per the Labour Gazette published by the Commissioner of Labour, Government of Maharashtra and / or in the wholesale Price Index for all commodities prepared by the Office of Economic Adviser, Ministry of Industry, Government of India, or in the price of petrol / oil and lubricants and major construction materials like bitumen, cement, steel, various types of metal pipes etc., then subject to the other conditions mentioned below, price adjustment on account of

(1) Labour Component (2) Material Component (3) Petrol, Oil and Lubricants Component (4) Bitumen Component (5) HYSD & Mild Steel Component (6) Cement Component (7) C.I. and D.I. Pipes Component calculated as per the formula hereinafter appearing, shall be made. Apart from these, no other adjustments shall be made to the contract price for any reasons whatsoever. Component percentage as given below is as of the total cost of work put to tender. **Total of Labour, Material and POLcomponents** shall be **100** and **other components** shall be **as per actual**.

| | | | | |
|---|---|---|---|---|
| (1) | Labour Component | : | $K_1$ | **26.00 %** |
| (2) | Material Component | : | $K_2$ | **73.00 %** |
| (3) | POL Component | : | $K_3$ | **01.00 %** |
| | | | | **100.00 %** |
| (4) | T.M.T.Fe 500D Steel | : | Actual | |
| (5) | Cement | : | Actual | |
| (6) | Structural steel | : | Actual | |
| (7) | Asphalt (60/70 grade) | : | Actual | |

**Note :If Cement, Steel, Bitumen, C.I. & D.I. Pipes are supplied on Schedule 'A'** then respective component **shall not be considered**. Also if particular component is not relevant same shall be deleted.

**1. Formulae for Labour Component :**

$$V_1 = 0.85 \times P \times \left( \frac{K_1}{100} \times \frac{L_1 - L_0}{L_0} \right)$$ **Where,**

**$V_1$**= Amount of Price Variation in rupees to be allowed for Labour Component.

**P** = Cost of work done during the quarter under Consideration minus the cost of Cement, HYSD and Mild Steel, bitumen, C.I. and D.I. Pipes calculated at the basic star rates as applicable for the tender, consumed during the quarter under consideration. ***(These star rates shall be specified here)***

**(1) Cement : Rs. 6,000.00 Per M.T.**
**(2) TMT FE 500-D Steel : Rs. 61,000.00 Per M.T.**
**(3) Structural Steel : Rs. 62,575.00 Per M.T.**
**(4) Bitumen : Rs. 49,250.00 Per M.T.**

$K_1$ = Percentage of Labour Component as indicated above.

$L_0$= Basic consumer price index for **Pune** centre shall be average consumer price index for the quarter preceding the month in which the last date prescribed for receipt of tender, falls.

$L_1$= **Average consumer** price index for **Pune** centre for the quarter under consideration.

**2. Formulae for Materials Component :**

$$V_2 = 0.85\ P \left( \frac{K_2}{100} \times \frac{M_1 - M_0}{M_0} \right)$$ **Where,**

$V_2$= Amount of Price Variation in rupees to be allowed for Materials Component.

**P** = Same as worked out for labour component.

$K_2$ = Percentage of Material Component as indicated above.

$M_0$= Basic wholesale price index shall be average wholesale price index for the quarter preceding the month in which the last date prescribed for receipt of tender, falls.

$M_1$= Average wholesale price index during the quarter under consideration.

**3. Formula for Petrol, Oil and Lubricant Component :**

$$V_3 = 0.85\ P \left( \frac{K_3}{100} \times \frac{P_1 - P_0}{P_0} \right)$$ **Where,**

$V_3$= Amount of Price Variation in rupees to be allowed for POL Component.

**P** = Same as worked out for labour component.

$K_3$ = Percentage of Petrol, Oil and Lubricant Component.

$P_0$= Basic wholesale price HSD at **Mumbai** during the quarter preceding the month in which the last date prescribed for receipt of tender, falls.

$P_1$= Average price of HSD at **Mumbai** during the quarter under consideration.

**4. Formulae for Bitumen Component :**

$V_4 = QB\ (B_1 - B_0)$ **Where,**

**$V_4$=** Amount of Price Variation in rupees to be allowed for **Bitumen** Component.

**QB** = Quantity of Bitumen (Grade...) in metric tonnes used in the permanent works and approved enabling works during the quarter under consideration.

**$B_1$** = Current, average ex-refinery price per metric tonne of Bitumen (Grade...) under consideration including taxes (octroi, excise sales tax) during the quarter under consideration.

**$B_0$**= Basic rate of Bitumen in rupees per metric tonne as considered for working out value of P or average ex-refinery price in rupees per metric ton including taxes (octroi, excise sales tax) of Bitumen for the grade of bitumen under consideration prevailing quarter preceding the month in which the last date prescribed for receipt of tender, falls, whichever is higher.

**5. <u>Formulae for H.Y.S.D. and Mild Steel Component</u> :**

$$V_5 = \frac{So\ (SI_1 - SI_0)}{SI_0} \times T$$

**Where,**

**$V_5$**= Amount of Price Variation in rupees to be allowed for **H.Y.S.D. / Mild Steel** Component.

**So** = Basic rate of H.Y.S.D. / Mild Steel in rupees per metric tonne as considered for working out value of P.

**$SI_1$** = Average Steel Index as per RBI Bulletin during the quarter under consideration.

**$SI_0$**= Average of Steel Index as per RBI Bulletin for the quarter preceding the month in which the last date prescribed for receipt of tender, falls.

**T =** Tonnage ofsteel used in the permanent works for the quarter under consideration.

**6. <u>Formulae for Cement Component</u> :**

$$V_6 = \frac{Co\ (CI_1 - CI_0)}{CI_0} \times T$$

**Where,**

**$V_6$**= Amount of Price Escalation in rupees to be allowed for **Cement** Component.

**Co** = Basic rate of cement in rupees per metric tonne as considered for working out value of P.

**$CI_1$** = Average Cement Index published in the RBI bulletin for the quarter under consideration.

**$CI_0$**= Average of Cement Index published in the RBI bulletin for the quarter preceding the month in which the last date prescribed for receipt of tender, falls.

**T =** Tonnage ofcement used in the permanent works for the quarter under consideration.

**7. <u>Formulae for C.I./D.I. Pipe Component</u> :**

$V_7 = Q_d (D_1 - D_0)$ **Where,**

$V_7$= Amount of Price Escalation in rupees to be allowed for C.I./D.I. pipe Component.

$D_0$= Pig Iron basic price in rupees per tonne considered for working out value of P.

$D_1$ = Average Pig Iron price in rupees per tonne during the quarter under consideration (Published by HSCO)

$Q_d$= Tonnage of C.I./D.I. pipes used in the works during the quarter under consideration.

**(II) <u>THE FOLLOWING CONDITIONS SHALL PREVAIL</u> :**

(i) The operative period of the contract shall mean the period commencing from the date of the work order issued to the Contractor and ending on the date on which the time allowed for the completion of the works specified in the Contract for work expires, taking into consideration the extension of time, if any, for completion of the work granted by the Engineer under the relevant clause of the Conditions of Contract in cases other than those where such extension is necessitated on account of default of the Contractor. The decision of the Engineer as regards the operative period of the Contract shall be final and binding on the Contractor. Where any compensation for **liquidated** damages is levied on the Contractor on account of delay in completion or inadequate progress under the relevant Contract provisions, the price adjustment amount for the balance of work from the date of levy of such compensation shall be worked out by pegging the indices **$L_1$, $M_1$, $C_1$, $P_1$, $B_1$, $SI_1$ and $CI_1$** to the levels corresponding to the date from which such compensation is levied.

ii) This price variation clause shall be applicable to all contracts in $B_1$ / $B_2$ and C from but shall not apply to piece works. The price variation shall be determined during each quarter as per formula given above in this clause.

iii) The price variation under this Clause **shall not be payable for the extra items** required to be executed during the completion of the work and also on the excess quantities of items payable under the provisions of Clause 38/37 of the contract form **$B_{-1}/B_2$** respectively. Since the rates payable for the extra items or the extra quantities under Clause 38/37 are to be fixed as per the current D.S.R. or as mutually agreed to yearly revision till completion of such work. In other words, when the completion / execution of extra items as well as extra quantities under Clause 38/37 of the contract from **$B_1/B_2$** extends beyond the operative date of the D.S.R. then rates payable for the same beyond that date shall be revised with reference to the current D.S.R. prevalent at that time on year to year basis or revised in accordance with mutual agreement thereon, as provided for in the Contract, whichever is less.

iv) This clause is **operative both ways**, i.e. if the price variation as calculated above is on the **plus side**, payment on account of the price variation shall be allowed to the contractor and if it is on the **negative side**, the Government shall be entitled to recover the same from the Contractor and the amount shall be deductable from any amounts due and payable under the contract.

v) To the extent that full compensation for any rise or fall in costs to the Contractor is **not entirely covered by the provision of this or other clauses** in the contract, the unit rate and prices included in the contract shall be deemed to include amounts to cover the contingency of such other actual rise or fall in costs.

## Additional Specifications for use of VSI Crushed Sand / Artificial Sand / Fine Aggregates.

.....

1. VSI Crushed sand / Artificially manufactured sand / fine aggregates hereinafter referred to as "Crushed Sand" shall be as defined under Clause 3.1.2 of Indian Standard 383-2016.

2. The properties of "Crushed Sand" shall confirm to the provisions of Indian Standard 383:2016.

3. The "Crushed Sand" shall be free of dust and other Deleterious material.

4. The "Crushed Sand" shall be manufactured using "Automatic Vertical Shaft Impactor "type Crusher only.

5. The quantity of Microfines (Particles below 75 microns) in "Crushed Sand" shall not be more than seven percent.

6. The Contractor shall intimate the Engineer In-Charge regarding the source of supply of "crushed sand". The source of supply of "crushed sand" shall be got approved by the Executive Engineer (Engineer-In-charge) prior to the start of work.

7. Each Load of crushed sand whenever brought on site shall be tested for "Fineness modulus". Fineness modulus shall be within permissible limits, If it doesn't fall within acceptable limits, it shall be rejected.

8. The Test of Compressive strength of concrete / Mortar using "Crushed sand" shall

   be carried out in presence of Department's Engineer as given below…

   a) 100 percent Cube testing in presence of Junior /Asst./Sectional Engineer.

   b) 25 percent Cube testing in the presence of sub divisional Engineer

   c) 5 percent Cube testing in the presence of Executive Engineer. (Engineer-In-charge)

9. The flakiness index and elongation index tests shall be within permissible limits.

10. The Concrete mix design for each grade of concrete using "Crushed sand" shall be carried out only in Government Quality Control laboratory and the same Mix

Design shall be adopted.

11. As far as possible freshly produced "Crushed sand" shall be used. Stored "Crushed sand" shall not be used.

12. For Plastering purpose, if the use of crushed sand is proposed, it shall be used with addition of super plasticizers at the rate of 100 millilitres per bag of cement withoutany extra cost to Government.

13. The following tests shall be carried out for the use of "Crushed sand".

    a) Sieve analysis
    b) Specific gravity
    c) Water absorption
    d) Bulk density
    e) Alkali aggregate reaction
    f) Soundness
    g) Deleterious Material
    h) Organic impurities
    i) Micro fines Content
    j) Test for silt and clay.
    k) Fineness Modulus tests.

14. Necessary Bond regarding the use of "Crushed sand" shall be submitted by the Contractor clearly stating that, if any defects are observed during execution and in defect liability period, the same shall be rectified at his own risk and cost.

15. Grading zone I and II mentioned under Clause 6.3 table 9 of fine aggregates in IS 383:2016 shall only be used for concreting.

16. Reversible drum type / Batch mix plant (pan type) concrete mixer shall be used for concrete.

15. Use of Concrete from Ready Mix Plant (RMC) shall be strictly Prohibited.

16. "Crushed sand" shall not be used for pre stressed concrete works.

# INTEGRITY PACT

Between

Yashwantrao Chavan Academy Of Development Administration ,Pune - 411007 hereinafter referred to as "YASHADA"

And

.....

(Insert the name of sole bidder / Lead Partner of Joint Venture)

Having its Registered Office at,

( Insert Full Address)

……..

And

.....

(Insert the name of Partner (s) of Joint Venture as applicable)

Having its Registered Office at,

( Insert Full Address)

……..

Hereinafter referred to as "The Bidder/Contractor"

## Preamble

YASHADA intends to award, under laid-down organizational procedures,contract(s) for .

-

(insert the name of package)

(Signature)
(For & on behalf of YASHADA)

(Signature)
(For and on half of Bidder / Partner(s) of Joint Venture / Contractor).

Number -

(Insert Specification Number of Package)

YASHADA values full compliance with all relevant laws and regulations, and the principles of economical use of resources and of fairness and transparency in its relations with its Bidder(s) / Contractor(s).

In order to achieve these goals, YASHADA and the above named Bidder / Contractor enter into this agreement called 'Integrity Pact' which will form a part of the bid.

It is hereby agreed by and between the parties as under.

Section-I :- Commitments of YASHADA

(1) YASHADA commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

(a) No employee of YASHADA, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or other benefit which he/she is not legally entitled to.

(b) YASHADA will, during the tender process treat all Bidder(s) with equity and fairness. YASHADAwill 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) YASHADA will exclude from evaluation of Bids its such employee(s) who has any personnel interest in the Companies / Agencies participating in the Bidding / Tendering process.

(2) If Registrar YASHADA obtains information on the conduct of any of YASHADA which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a substantive suspicion in this regard, he will inform its Chief Vigilance Officer and in addition can initiate disciplinary actions under its Rules.

Section-II :- Commitments of the Bidder(s)/ Contractor(s)

(1) The Bidder(s)/ Contractor(s) commit 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.

| | |
|---|---|
| (Signature)<br>(For & On behalf of YASHADA) | (Signature)<br>(For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |

(a) The Bidder(s)/ Contractor(s)will not, directly or through any other person or firm, offer, promise or give to any of YASHADAor to any of YASHADA'S employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is notlegally entitled to, in order to obtain in exchange any advantage during the tender process or during the execution of the contract.

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

(c) The Bidder(s)/ Contractor(s)will not commit any criminal offence under the relevant Anti-Corruption Laws of India; Further the Bidder(s)/ Contractor(s)will not for illegitimate purposes or for purposes of restrictive completion or personal gain, or pass on to others, any information or document provided by YASHADA as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

(d) The Bidder/ Contractor of foreign origin shall disclose the name and address of the Agents/ Representatives in India, if any, involved directly or indirectly in the Bidding, Similarly, the Bidder / Contractor of Indian Nationality shall furnish the name and address of the foreign principles, if any involved directly or indirectly in the Bidding.

(e) The Bidder/ Contractor 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 and / or with the execution of the contract.

(f) The Bidder/ Contractor will not misrepresent facts or furnish false / forged documents / information in order to influence the bidding process or the execution of the contract to the detriment of YASHADA.

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

Section- III :- Disqualification from tender process and exclusion from future contracts.

(1) If the Bidder before contract award, has committed a serious transgression through a violation of Section II or in any other form such as to put his reliability or credibility as Bidder into question, YASHADAmay disqualify the Bidder from the tender process or terminate the contract, if already signed, for such reason.

| | |
|---|---|
| (Signature)<br>(For & On behalf of YASHADA) | (Signature)<br>(For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |

(2) If the Bidder/ Contractor has committed a serious transgression through a violation of Section-II such as to put his reliability or credibility into question, YASHADAmay after following due procedures also exclude the Bidder/ Contractor from future contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the consideration the full case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder/ Contractor and the amount of the damage. The exclusion will be imposed for a minimum of 12 months and maximum of 3 years.

(3) In the Bidder / Contractor can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, YASHADA may revoke the exclusion prematurely.

Section-IV :- Liability for violation of Integrity Pact

(1) In YASHADA has disqualified the Bidder from the tender process prior to the award under Section III, YASHADA may forfeit the Bid Guarantee under the Bid.

(2) If YASHADA has terminated the contract under Section III, YASHADA may forfeit the Contract Performance Guarantee of this contract besides resorting to other remedies under the contract.

Section- V :- Previous Transgression

(1) The Bidder shall declare in his Bid that no previous transgressions occurred in the last 3 years with any other Public Sector undertaking or Government Department 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 the contract, if already awarded, can be terminated for such reason.

Section -VI :- Equal treatments of all Bidders/ Contractors

(1) YASHADA will enter into agreements with identical conditions as thisone with all Bidders.

(2) YASHADA will disqualify from the tender process anybidder who donot sign this Pact or violate its provisions.

| | |
|---|---|
| (Signature)<br>(For & On behalf of YASHADA) | (Signature)<br>(For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |

Section- VII :-Punitive Action against violating Bidders / Contractors

If YASHADA obtains knowledge of conduct of a Bidder or a Contractor or his Subcontractor or of an employee or a representative or an associate of a Bidder/ Contractor or his Subcontractor which constitutes corruption, or if YASHADA has substantive suspicion in this regard, YASHADA willinform the Chief Vigilance Officer. (CVO)

(*) Section VIII :- Independent External Monitor / Monitors

(1) YASHADA has appointed a panel of independent External Monitors (IEMs) for this Pact with the approval of Central Vigilance Commissions (CVC). Government of India, out of which one of the IEMs has been indicated in the NIT / IFB.

(2) The IEM is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement. He has right of access to all project documentation. The IEM may examine any complaint received by him and submit a report to Registrar YASHADA at the earliest. He may also submit a report directly to the CVO and the CVC, in case of suspicion of serious irregularities attracting the provisions of the PC act. However, for ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter shall be referred to the full panel of IEMs who would examine the records, conduct the investigations and submit report to Registrar YASHADA giving joint findings.

(3) The IEM is not subject to instructions by the representatives of the parties and performs

his functions neutrally and independently. He reports to the RegistrarYASHADA,Pune.

(4) The Bidder(s) / Contractors accepts that the IEM has the right to access without restriction to all documentation of YASHADA related to this contract including that provided by the Contractor / Bidder. The Bidder / Contractor will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his documentation. The same is applicable to subcontractors. The IEM is under contractual obligations to treat the information and documents of the Bidder(s)/Contractor(s)/ Subcontractor(s) with confidentiality.

(5) YASHADA will provide to the IEM information as sought by him which could have an impact on the contractual relations between YASHADA and the Bidder / Contractor related to this contract.

| | |
|---|---|
| (Signature)<br>(For & On behalf of YASHADA) | (Signature)<br>(For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |

(6) As soon as the IEM notices, or believes to notice a violation of this agreement , he will so inform the Registrar YASHADA and request the Registrar YASHADA, discontinue or take corrective action ,or to take other relevant action. The IEM can in this regard submit non-binding recommendations. Beyond this the IEM has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action. However the IEM shall give an opportunity to YASHADA and the Bidder / Contractor, as deemed it, to present its case before making its recommendations to YASHADA.

(7) The IEM will submit a written report to the Registrar YASHADA 8 to 10 weeks from the date of reference or intimation to him by YASHADA and should the occasion arise, submit proposals for correcting problematic situations.

(8) IF the IEM has reported to the RegistrarYASHADA substantiated suspicion of an offence under relevant, Anti- Corruption Laws of India, and the Registra YASHADA, Pune not, with in the reasonable time take visible action to processed against such offence or reported it to the CVO the Monitor may also transit this information directly to the CVC Government of India.

(9) The word 'IEM' would include both singular and plural.

(*) This section shall be applicable for only those packages wherein the IEMs have been

identified in Section-I : Invitation for Bid and /or Clause ITB 9.3 in Section-III : Bid Data Sheets of Conditions of Contract, Volume-I of the Bidding Documents.

Section -IX :-Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor after the closure of the contract and for all other Bidder's six months after the contract has been awarded.

Section- X :- Other Provisions.

(1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the establishment of YASHADA.The Arbitration clause provided in the main tender document / contract shall not be applicable for any issue / dispute arising under Integrity Pact.

(2) Changes and supplements as well as termination notices need to be made in writing.

(3) If the Contractoris a partnership firm or a consortium or joint venture, this agreement must be signed by all partners, consortiums members and joint venture partners.

| | |
|---|---|
| (Signature) | (Signature) |
| (For & On behalf of YASHADA) | (For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |

(4) Nothing in this agreement shall affect the rights of the parties available under the General Conditions of Contract (GCC) and Special Conditions of Contract (SCC).

(5) Views expressed or suggestions / submissions made by the parties and the recommendations of the CVO / IEM # in respect of the violation of this agreement, shall not be relied on or introduced as evidence in the arbitral or judicial proceedings (arising out of the arbitral proceedings) by the parties in connection with the disputes / differences arising out of the subject contract.

# CVO shall be applicable for packages wherein IEM are not identified in Section IFB/BDS of Conditions of Contract, Volume-I , IEM shall be applicable for packages wherein IEM are identified in Section IFB / BDS of Conditions of Contract, Volume-I.

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

| | |
|---|---|
| (Signature) | (Signature) |

| (For & On behalf of YASHADA) | (For & On behalf of Bidder / Partner(s) of Joint Venture / Contractor) |
|---|---|
| (Office Seal) | (Office Seal) |
| Name :- | Name :- |
| Designation :- Executive Engineer | Designation:- Proprietor |
| Witness 1 | Witness 1 |
| (Name & Address) | (Name & Address) |
| ..... | ..... |
| ..... | ..... |
| Witness 2 | Witness 2 |
| (Name & Address) | (Name & Address) |
| ..... | ..... |

# VOLUME-II

## Section 5

SECTION – 5

TECHNICAL SPECIFICATIONS

# VOLUME-II

# ***TECHNICAL SPECIFICATIONS***

1.1 **PREAMBLE**

The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified in Volume –I, III & IV.

**SITE INFORMATION**

The information give hereunder and provided elsewhere in these documents is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the informationsupplied by the Employer is erroneous or insufficient.

The area in which the Works are located is plain terrain

**General Climatic Conditions**

The temperature in this region is a under: During summer months, average maximum temperature is above 40$^{o}$C.

The average annual rainfall in the area is of the order of 500mm

**Seismic Zone (Zone III) Exposure condition.**

The Works are located in Seismic Zone II as defined in IRC: 6-2000.

**2 GENERAL REQUIREMENTS**

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following,

**PART- 1- General Technical Specifications**

The General Technical Specifications shall be the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” FIFTH REVISION APRIL 2013, issued by the Ministry of Surface Transport (Road Wing), Government of India and published by the Indian Roads Congress.

Maharashtra State YASHADASpecifications Book.

**PART – II- Supplementary Technical Specifications.**

The Supplementary Technical Specifications shall comprise of various Amendments / Modifications / Additions to the "SPECIFICATION FOR ROAD AND BRIDGE WORKS" referred to in PART–1 above and Additional Specifications for particular item of Works not already covered in PART-1.

A particular clause or a part thereof in "SPECIFICATION FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, APRIL 2013)'' referred in PART-I above, where Amended / Modified / Added upon and incorporated in PART-II, referred to above , such Amended / Modified / Added upon, and incorporated in PART-II, referred to above, such Amendment / Modification / Addition supersedes the relevant Clause or part of the Clause.

The Additional Specifications shall comprises of specifications for particular item of Works not already covered in PART-I.

When an Amended / Modified / Added Clause supersedes a Clause or part thereof in the said Specifications, then any reference to the superseded Clause shall be deemed to refer to the Amended / Modified /Added Clause or part thereof.

In so far as Amended / Modified / Added Clause may come in conflict or be inconsistent with any of the provisions of the said Specifications under reference, the Amended / Modified /Added Clauses shall always prevail.

The following Clauses in the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION APRIL 2013)'' are applicable /Modified for project.

112, 201, 301, 309,401, 404, 408,501, 502, 503,504, 507, 801, 803, 900, 1000, 3000

In the absence of any definite provision on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and specifications of IRC and BIS in that order. Where even these are silent, the construction and completion of the works shall confirm to sound engineering practice as approved by the Engineer and in case of any dispute arising out of the interpretation of the above, the decision of the Engineer shall be final binding on the contractor.

| **Section** | **Respective / Clauses** |
|---|---|
| 100- General | 101 -121- General |
| 112- | 112- Arrangement for traffic during construction |
| 200- Site Clearance | 201- Clearing and grubbing<br>Contractor shall remove and dispose of all materials such as trees, bushes, shrubs, stumps roots not exceeding 150 mm thick from side |

| | |
|---|---|
| | berms as directed by Engineer. |
| **Sub base course** | Bituminous Macadam Work shall be carried out as directed by Engineer In Charge |
| | 408- Shoulder |
| **500- Base & Surface courses** | 501- General requirement for bituminous pavement layers. |
| (Bituminous) | 502- Primer coat over Granular Base. |
| | 503- Tack Coat : Tack coat shall be as specified in the item of work. |
| | 504- Bituminous macadam |
| | 507- Bituminous concrete. |
| | Cement / Lime shall be used as filler Job mix design for bituminous concrete is mandatory and variation in binder content beyond permissible variation of +/- 0.30% by weight of total mix will be assessed and paid accordingly for lower side only. Adjustment in payment will not be allowed for binder content on higher side. |
| 900- Quality Control for Road Works | 10 % of the density tests shall be done on edges. "Stone crushing cum screening plant (cone type) should be deployed for getting proper size and grading of aggregates. Combined flakiness and elongation index shall no be allowed more than the specific limit as mentioned in specifications of respective items " |
| | Complete clause from 901 to 903 is applicable |
| 1000- Material for structure | All material required for various items shall be confirm to Section 1000 |
| 3000- Maintenance of road | The following should be added in this clause. |
| | The following clauses shall apply for routine maintenance during defect liability period. |
| | 3001- General |
| | 3002- Restoration of rain cuts |

3003- Maintenance of earthen shoulders

3004- Bituminous work in connection with maintenance and repairs

All the defects observed during the defect liability period shall be rectified by the Contractor at his own cost within specified time period as per instruction Engineer-In-Charge.

The following Clauses in the “SPECIFICATION FOR ROAD AND BRIDGE WORKS (MAHARASHTRA STATE P.W.D. SPECIFICATION BOOK”) are Applicable /Modified for the Project

Rd 42 Supply of Bitumen VG-30 Grade& VG-10

Rd 47.3. Tack coat Application

Rd 49.3.1 (e) Tack coat

In the absence of any definite provision on any particular issue in the aforesaid Specification reference may be made to the latest codes and specifications of IRC and BIS in that order. Where even these are silent, the construction and completion of the Works shall confirm to sound engineering practice as approved by the Engineer and in case of nay dispute arising out of the interpretation of the above, the decision of the Engineer shall be final binding on the Contractor.

# A. SUPPLEMENTARY SPECIFICATION

## 1. Working Method & Progress Schedule

### Working Method

**a)** The Contractor shall submit within the time stipulated by the Engineer-in-charge in writing the details of actual methods that would be adopted by the Contractor for the execution, of any items as required by Engineer-in –charge at each of the location, supported by necessary detailed drawings and sketches including those of the plant and machinery that would be used, their locations, arrangement for conveying and handling materials etc. and obtain prior approval of the Engineer-in-charge well in advance of starting such items of work.

**b)** The Engineer-in-charge reserves the right to suggest modifications or make corrections in the method proposed by the Contactor, whether accepted previously or not at any stage of the Work to obtain the desire accuracy, quality, safety and progress of Work which shall be binding on the Contractor. The Contractor shall take cognizance of such suggestions / objections and suitably modify his method of construction. No claim on account of such change in method of execution will be entertained by the Government so long as specification of the item remains unaltered.

### Progress Schedule

**a)** The Contractor shall furnish and got approved within twenty one days of the order to start the Work, a programme of Work in quadruplicate indicating the date of actual start, the monthly progress expected to be achieved and the anticipated completion date of each major item of work to be done by him, also indicating date of procurement of materials and setting up of plant and machinery. The programme is to be such as to be practicable o achievement towards the completion of the whole Work in the time limit and of the particular items, if any, on the due dates specified in the Contract. Planning and programme of Work shall be done by the mutual discussion between the Engineer-in-Charge and Contracts representative in charge of work.

**b)** The progress of work shall be reviewed at every mile stone and revised programme shall be drawn up, if necessary. No revised programme shall be operative without the approval of Engineer-in-Charge in writing.

**c)** The Engineer-in-Charge is further empowered to ask for more detailed schedule or schedules say weekly for any item or item in case of urgency of Work as will be directed

by him and the Contractor shall supply the same when asked for.

**d)** Acceptance of the programme or the revised programme, by the Engineer-in-charge shall not relieve the Contractor of his responsibility to complete the whole of the Work by the prescribed time or the extended time if any.

**a)** The Contractor shall furnish sufficient plant, equipment and labour as may be necessary to maintain the progress schedule. The working and shift hours restricted to one shift a day for operations to be done under the Government supervision shall be such as may be approved by the Engineer- in-Charge They shall not be varied without prior approval of the Engineer-in-Charge.

**b)** Night work which requires supervision shall not be permitted except when specifically allowed by Engineer-in-Charge each time, if required by Contractor. The Contractor shall provide necessary lighting arrangement and other measures etc for right Works as directed by Engineers-in Charge without extra cost.

The Contactor shall submit reports on progress of Work in forms and statements etc. at periodical intervals in the form of progress charts forms, statements and /or reports as may be approved by the Engineer-in Charge.

The Contractor shall maintain programme chart, details regarding machinery, equipment, labour, materials and periodical returns thereof in programme to be got approved from the Engineer-in-charge.

**Priorities of Works to be executed**

Priorities for items to be executed shall be determined periodically as deemed fit by the Engineer-in-Charge keeping in view the final time limit allowed for the Work and all the time Schedule fixed for intermediate stages of Works as directed by the Engineer-in-Charge

**2 Setting out for Building Work**

The Engineer-in-charge shall furnish the Contractor with only the four corners of the work site and a level bench mark and the Contractor shall set out the works and shall provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

The Contractor shall provide, fix and be responsible for the maintenance of all stacks, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The Contractor shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and centre line marks, either existing or supplied and fixed by the Contractor. The work shall be set out to the satisfaction of the Engineer-in-charge. The approval thereof or joining with the Contractor by the Engineer-in-charge in setting out the work, shall not relieve the Contractor of any of his responsibilities.

10.1 Before beginning of the work, the Contractor shall at his own cost provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other material for proper lay out of the work in accordance with the scheme for bearing marks acceptable to the Engineer-in-charge. The centre, longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the centre to enable the theodolite to be set over it. No work shall be started until all these points are checked and approved by the Engineer-in-charge in writing but such approval shall not relieve the Contractor of any of his responsibilities. The Contractor shall also provide all labour, material and other facilities, as necessary, for the proper checking of layout and inspection of the points of works under construction.

Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and fenced by the Contractor.

On completion of works, the Contractor must submit the geodetic documents according to which the work was carried out.

The Contractor shall be responsible for

**A)** Accurate setting out of the Work in relation to original points lines, and levels of references given by the Engineer-in-charge in writing

**B)** The correctness of position, levels dimensions and alignments of all parts of the Work

**C)** The provision of all necessary instruments, appliance and labour in connection with forgoing responsibilities.

If at any time during execution of Works any error appears in the position levels, dimensions or alignment of any part of the Work the Contractor on being required so to do by the Engineer-in-Charge shall at his own cost, rectify such error to the satisfaction of the Engineer-in-Charge whatever the case may be as regards the error.

The checking of any setting out or of any line or level by the Engineer-in-charge shall not in any way relive the Contractor of his responsibility for the accuracy. Thereof and the Contractor shall carefully protect and preserve all benchmarks pegs and other materials used in setting out the Works. The Contractor shall give a notice not less than 48 hours in advance of his intention to set out or layout for any part of the Works to the Engineer-in-charge so that checking can be made in time.

**Layout of Work**

**i)** Layout of the work will be done by Contractor in consultation with the Engineer-in-charge of the Department or his representative Some permanent marks should however be established to indicate the demarcation of the structure or any component thereof made to this permanent marks in measurements books and drawing, signed by the Contractor and

departmental officer.

**2.2 Road Work**

The Contractor shall establish working bench marks in the area soon after taking possession of the site. The reference bench mark for the area shall be as directed by the Engineer-in-charge. The working bench marks shall be at the rate of four per Kilometer and also at or near all drainage structure. Over bridges. The working bench marks shall be got approved from Engineer-in-charge. Checks must be made on these bench marks once every month and adjustment if any got approved form Engineer-in-charge and recorded. An up to if date record of all bench marks including approved adjustment, if any shall be maintained by the Contractor and also a copy the supplied to the Engineer-in- charge for this record.

The lines and levels of formulation, side slopes, drainage, carriageways and shoulders shall be carefully set and frequently checked. Care shall be taken to ensue that correct gradients and cross sections are everywhere obtained.

In order to facilitate the setting out the Works, the center line of the carriage way of highway must be accurately established by the Contractor and approved by the Engineer-in-charge. It must then be accurately referred in a manner satisfied to the Engineer-in-charge at every 50m. Intervals in plan and rolling terrain and 20m intervals in hilly terrain and at the curve points as directed by the Engineer-in-charge with marker pegs and change boards set in or near the fence line and a schedule of reference dimension shall be prepared and supplied by the Contractor to the Engineer-in-charge. These markers shall be maintained until the Works reach finished formation level and are accepted by the Engineer-in-charge.

The Works of setting out shall be deemed to be part of general Works, preparatory to the execution of work and no separate payment shall be made for same.

The drawings enclosed with the bidding documents are for general guidance only.

All necessary Registers formatted as per instructions of Engineer-in-charge required for documentation of Works shall be supplied by the Contractor in duplicate before commencement of Work. Record shall be maintained by the Contractor and shall be got verified from time to time by the Engineer-in-charge or his representative.

**Responsibilities of Level and alignment**

The Contractor shall be entirely and exclusively responsibilities for the horizontal and vertical alignment the levels and corrections of every part of work and shall rectify

effectively any errors or imperfection there in such rectification shall be carried out by the Contractor at his own cost when instructions are issued to that effect by the Engineer-in-charge

**Leveling Instrument**

If measurement of item of the work are based on Volumetric measurements, calculated from levels taken before and after construction of the item a sufficient number of leveling instruments staves tapes etc. will have to be kept availability by the Contractor at the site of work for this purpose. Lack of such leveling instruments staves tapes etc. in required number may cause delay in measurement of the work. The Contractor will have therefore to keep sufficient number of these instruments in working condition readily available at the Work site.

## 2.4 Ancillary Works

The Contractor shall submit to Engineer-in-charge in writing the details of all ancillary Works including layout and specifications to be followed for its constructions. Ancillary Works shall not be taken up in hand unless approved by Engineer-in-charge. The Engineer-in-charge reserves the right to suggest modifications or make complete changes in the layout and specifications proposed by the contract at any stage to ensure the safety on the work site. The Contractor shall carry out all such modification to the ancillary Works at his own expenses as ordered by the Engineer-in-charge.

All above conditions are incidental or Works & no extra payment will be made for this.

# ***D R A W I N G S***

**CONTRACT DRAWINGS:-**

The Contract Drawings provided for tendering purpose with the tender documents shall be used as a reference only. Contractor should visualize the nature and type of work contemplated and to ensure that the rates and prices quoted by him in the bill of quantities take due consideration of the complexities of work involved during actual execution / construction as experienced contractors in the field.

The tendered rates / prices for the work shall be deemed to include the cost of preparation, supply and delivery of all necessary drawings, prints, tracings and negatives which the contractor is required to provide in accordance with the contract.

**DOCUMENTATION:**

If so ordered by the Engineer-in-charge, the contractor will prepare drawings of the work as constructed and will supply original and three copies to the Engineer who will verify and certify these drawings.

Final as constructed drawings shall then be prepared by the contractor and applied in triplicate along with a micro-film of the same to Engineer for record and reference purpose at the contractors cost.

# ADDITIONAL TECHNICAL CONDITIONS

The work shall be carried out in the best workmanship like manner and in strict accordance with P.W.D. hand book Volume I & II 1960. Edition supplemented by specification attached and as per Standard Specifications Book of Government of Maharashtra of 1979 and as per specific order of the Executive Engineer or his representative from time to time.

The orders issued by the Government in P.W. Department and the Superintending Engineer, from time to time regarding construction procedure shall be binding on the contractor in addition to the specification contained in P.W.D. hand book Volume I & II and book of standard specification of P.W. Department and the specifications enumerated above.

The contractor shall submit day to day account of the materials issued to him and its use and also monthly progress and programme of work.

**a)** The concrete mix design shall be got approved from Engineer in charge and the mix design shall give preliminary strength of 1.33 times working strength.

**b)** The maximum size of aggregate permissible would be as per A-7 page-8 of Standard Specifications Book 1979 Edition.

The items provided with watering for curing include continuous watering operations throughout the day including lunch hours and also during holidays. For this purpose contractor shall have to construct tank of. 5000 liters capacity near each building and provide necessary Booster Pumps etc. to ensure adequate curing and wetting. Hold fasts coming in contact with R.C.C. columns shall be of sizes 30 cm x 4 cm to be fitted with two rows, nails fixed properly in concrete.

For all sand covering items, use of washed mixer sand (with sand washing machine) is obligatory. No separate claim in this regard will be entertained.

Material testing requirement frequency and type of testing is enclosed separately. Material to be used shall be tested accordingly and cost shall be borne by contractor.

For R.C.C. centering plywood and M.S. sheet of approved quality shall be used and adjustable props and fasteners shall be used.

The execution of any work from external side of the building 'H' frame steel scaffolding shall be used. No separate payment for claims in this regard shall be entertained.

The scaffolding shall not be supported on existing external walls of the building by making holes in it and also the scaffolds shall not rest on any part of the building.

Quality Assurance Manual: Contractor shall prepare the quality assurance manual booklet in consultation with the Executive Engineer. Quality assurance manual shall be comprehensive document covering every aspect of the work. Superintending Engineer shall approve this document. The quality manual document shall be used only after

approval from Superintending Engineer. Provision of the quality manual is binding on the contractor. Quality manual shall be treated as a legal document as per with this contract document. It shall be used till the work is completed in full respect.

## 2. SPECIAL CONDITIONS FOR QUALITY CONTROL TESTS AND FREQUENCY

Overall quality of the work depends on the quality of ingredient material being used in the work and exercising adequate control over it. It is therefore prime responsibility of the Contractor to get the ingredient material and product tested strictly as per the frequencies stipulated in the Annexure.

The Quality Control test shall be carried out at various stages of work wise selection of material to be procured for work, acceptance of procured material before its use on the work, in view of its strength, durability, serviceability etc. and as directed by Engineer-in-charge for any other reason of public interest.

The entire charges towards testing such as sampling, carrying samples to Lab testing of samples etc. will have to be borne by the Contractors.

The right of acceptance/rejection of material/work done specified above is reserved by Engineer-in-charge in view of non confirmation to frequency of testing.

In case of failure to observe the frequency of testing by the contractor the Engineer-in-charge will be at liberty to recover testing charges fixed by the dep't. At penal rate. The penal rate will be two times the prevailing testing charges.

**SAMPLES AND TESTING MATERIALS**

(A) All material to be used on civil construction work shall be got approved in advance from the Engineer-in charge and for furniture work wood, plywood, laminates, veneer etc. from Architect and Engineer in charge and shall pass the lest and / or analysis required by him which will be :

(i) As specified in the specification for the items concerned and / or

(ii) ISI Specifications (whichever and wherever applicable) or

(iii) Such recognized specifications acceptable to Engineer-in-charge as equivalent there to or in absence or such authorized specification.

(iv) Such requirement test and / or. analysis as may be specified by the Engineer -in-charge in order of precedence given above.

(B) The contractor shall at his risk and cost make all arrangements and / or shall provide for all such facilities as the Engineer-in-charge may require for collecting, preparing required number of samples for tests or for analysis at such time and to such place or places as may be directed by the Engineer and bear all charges and cost of testing. Such. samples shall also be deposited with the Engineer-in-charge.

(C) The contractor shall if and when required, submit at his cost the samples of materials to be tested or analysed and if, so directed shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and the materials, finally accepted by the Engineer-in-charge.

(D) The contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of the materials.

(E) The contractor or his authorized representative will be allowed to remain present in the departmental laboratory while testing samples furnished by him. However the results of all the tests carried out in the departmental laboratory in the presence or absence of the contractor or his authorized representative will be binding on the contractor.

(F) The contractor shall at his own cost set up laboratory to carry out the routine tests of materials which are to be used on the work the tests will have to be carried out either in his field laboratory or in an approved laboratory. In case tests are carried out in field laboratory, at least 50% tests should be carried out in nearest control laboratory of the Department.

(G) In case of material procured by the contractor, testing as required by the codes and specifications shall be arranged by him at his own cost. Testing shall be done in the presence of authorized representative of the Engineer-in-charge at the nearest laboratory If additional testing other than as required b) specification is ordered, the testing charges, shall be borne by the Department, if the test results are satisfactory and by the contractor if the same are not satisfactory.

(H) In case of materials supplied by the Government, if the contractor demands, certain testing, the charges thereof shall be paid by contractor if the testing results are satisfactory and by the Department if the same are not satisfactory.

**Frequency Chart for Testing of Materials**

**ANNEXURE- 'A'**

| Sr. No. | Material | Test | Frequency of Testing | Remarks |
|---|---|---|---|---|
| 1. | Sand | i. Fineness Modulus<br>ii. Silt Content | At the beginning and if there is change in source for silt content | Every batch of sand |
| 2. | Metal | i) Crushing value<br>ii) Impact value<br>iii) Abrasion value<br>iv) Water Absorption<br>v) Flakiness Index<br>vi) Stripping value<br>vii) Gradation | One test per 200 Cu.M. or part thereof.<br><br>One test per 100 Cu.m. or part thereof. | YASHADA Hand Book<br>I.S.2386 Part-II |
| 3. | Cement Concrete | I) Compressive Strength | Upto 5 Cu.M 1 set<br>6-15 Cu.M. - 2 sets<br>16-30 - 3 sets<br>31-50 - 4 sets<br>51 & above - 4 sets + One additional set for each additional 50 Cu.M. or part thereof. | M.O.S.T. Specification 1716 |
| 4. | Cement | i) Compo Strength<br>ii) Initial setting time<br>iii) Final setting time<br>iv) Specific Gravity<br>v) Soundness<br>vi) Fineness | One test for each consignment of 50 M.T. (1000 bags) or part thereof. | I.S.269<br>12269 |
| 5. | Steel | i) Weight per Meter<br>ii) Ultimate Tensile stress<br>iii) Yield stress<br>iv) Elongation | One test for every 5.0 M.T. or part thereof for each diameter. | I.S.432 |
| 6. | Water Bound Macadam | i) Aggregate Impact value<br>ii) Gradation<br>iii) Flakiness index & Elongation Index<br>iv) Atterberg limits of binding material | 1 test per 200 Cum.<br><br>1 test per 100 Cum.<br>1 test per 200 Cum.<br><br>One test per 25 M3 of binding material | |

| | | | | |
|---|---|---|---|---|
| | | v) Atterberg limits of portion of aggregates passing 425 Micron. | One test per 100 Cum. | |
| **Sr. No.** | **Material** | **Test** | **Frequency of Testing** | **Remarks** |
| 7. | Prime coat / tack coat / Fog spray | i) Quality of Binder<br>ii) Binder Temperature<br>iii) Rate of spread of binder | No. of samples per lot and tests as per IS-73, IS-217 and IS-8887 as applicable.<br>At regular close intervals.<br>One test per 500 M2 and not less than two tests per day | M.O.S.T. Specification Table900-4. |
| 8. | Seal Coat / Surface Dressing | i) Quality of Binder | No. of samples per lot and tests as per IS-73, IS-217 and IS-8887 as applicable. | M.O.S.T. Specification Table900-4. |
| 9. | Open graded premix surfacing | i) Quality of Binder<br>ii) Impact value / Los Angles Abrasion value<br>iii) Flakiness & Elongation Index | No. of samples per lot and tests as per IS-73, IS-217 and IS-8887 as applicable.<br>1 test per 50 Cum.<br>1 test per 50 Cum. | M.O.S.T. Specification Table900-4. |
| | | iv) Stripping value of aggr. (Immersion tray test)<br>v) Water Absorption<br>vi) Water Sensitivity of mix<br>vii) Gradation<br>viii) Soundness<br>xi) Temp. of binder<br>x) Binder Content<br>xi) Rate of spread of mixed materials. | Initially 1 set of 3 representative samples for each source of supply. Subsequently by change in the quality of aggregates.<br>1 test per 200 Cu.M<br>Initially one determination by each method for each source of supply, then as warranted by change in the quality of aggregate<br>At regular close intervals<br>2 test per 50 M3 and not less than 2 tests per day.<br>1 test per 500 Sqm. | |

| Sr. No. | Material | Test | Frequency of Testing | Remarks |
|---|---|---|---|---|
| 10. | Granular Sub-base | i) Gradation<br><br>ii) CBR | As required<br>1 test per 500 Cum.<br>As required<br>1 test per Km. | |
| 12. | Bituminous Macadam/ Semidense Bituminous concrete/ Bituminous Concrete. | i) Quality of Binder<br><br>ii) Impact value / Abrasion value<br>iii) Flakiness & Elongation Index<br>iv) Stripping value<br><br>v) Water Absorption<br>vi) Water Sensitivity of mix<br>vii) % of fractural faces<br>viii) Sand Equivalent test<br>ix) Plasticity Index<br>x) Mix Grading | No. of samples per lot and tests as per IS-73, IS-217 and IS-8887 as applicable.<br>1 test per 50 Cum.<br><br>1 test per 50 Cum.<br><br>Initially 1 set of 3 representative samples<br>for each source of supply.<br>Subsequently by change in the quality of aggregates.<br>1 test per 25 Cu.M<br>As required.<br>As required.<br>One set of test on individual constituents | M.O.S.T. Specification Table900-4. |
| | | xi) Binder Content<br><br><br><br>xii) Stability of Mix<br><br>xii) Swell Test of Mix<br><br>xiii) Control of Temp. of binder in boiler, aggr. In dryer and mix at the time of laying & rolling.<br>xiv) Control of binder content & grading of mix<br>xv) Rate of spread of mixed material<br><br>xvi) Density of compacted layer. | individual constituents & mix aggregates from dryer mix subject to a minimum of two tests per plant per day.<br>For each400 Tonnes of mix products.<br>As required for Bituminous concrete.<br>At regular close intervals.<br><br><br><br>1 test for each 400 Tonnes of mix subject to minimum of two tests per day per plant.<br>Regular control through checks on the weight of mixed material and layer thickness.<br>1 test per 250 Sqm. Area. | |

| | | | | |
|---|---|---|---|---|
| 13. | Water Bound Macadam | i) Aggregate Impact<br>ii) value<br>iii) Gradation<br>Flakiness index &<br>iv) Elongation Index<br>Atterberg limits of<br>v) binding material<br>Atterberg limits of portion of aggregates passing 425 Micron. | 1 test per 200 Cum.<br>1 test per 100 Cum.<br>1 test per 200 Cum.<br>One test per 25 $M^3$ of binding material<br>One test per 100 Cum. | M.O.S.T. Specification Table 900-3. |
| 14. | Prime coat / tack coat / Fog spray | i) Quality of Binder<br>ii) Binder Temperature<br>iii) Rate of spread of binder | No. of samples per lot and tests as per IS-73, IS-217 and IS-8887 as applicable.<br>At regular close intervals.<br>One test per 500 $M^2$ and not less than two tests per day. | M.O.S.T. Specification Table 900-4. |
| 15. | Seal Coat / Surface Dressing | i) Quality of Binder | Same as mentioned under Sr.No.6 | M.O.S.T. Specification Table 900-4. |
| 16. | Open graded premix surfacing / Close graded premix surfacing | i) Quality of Binder<br>ii) Impact value / Los Angles Abrasion value<br>iii) Flakiness & Elongation Index<br>iv) Stripping value of aggregate. (Immersion<br>v) tray test)<br>vi) Water Absorption<br>Water Sensitivity of mix | Same as mentioned under Sr.No.6.<br>1 test per 50 Cum.<br>1 test per 50 Cum.<br>Initially 1 set of 3 representative samples for each source of supply. Subsequently by change in the quality of aggregates. | M.O.S.T. Specification Table 900-46. |

| | | | | |
|---|---|---|---|---|
| | | vii) Gradation<br><br>viii) Soundness | 1 test per 25 Cu.M.<br><br>Initially one determination by each method for each source of supply , then as warranted by change in the quality of aggregate. | |
| | | ix) Temp. of binder<br><br>x) Binder Content<br><br>xi) Rate of spread of mixed materials.<br><br>xii) Percentage of fractural faces. | At regular close intervals.<br>1 test per 500 $M^3$ and not less than 2 tests per day.<br><br>Regular control through checks of layer thickness.<br><br>When gravel is used one test per 50 Cum. | |
| 17. | Thermoplastic Paint | i) Glass bead contents and grading analysis.<br><br>ii) Reflectance and Yellowness index<br>iii) Flowability<br>iv) Softening Point<br>v) Draying Time. | One Test for 3 Km. Work.<br><br>One Test for 3 Km. Work.<br><br>One Test for 3 Km. Work.<br>One Test for 3 Km. Work.<br>One Test for 3 Km. Work. | |
| 18. | Granular Sub-base | i) Gradation<br>ii) Atterberg limits<br>iii) Moisture content prior to compaction<br>iv) Density of compacted layer<br>v) C.B.R. | One test per 200 Cum.<br>One test per 200 $M^3$<br>One test per 250 $M^3$<br>As required. | M.O.S.T. Specification Table 900-3. |

| | | | | |
|---|---|---|---|---|
| 19. | Bituminous Macadam & Semi-dense Bituminous Concrete. | i) Quality of binder<br>ii) Impact / Abrasion value<br>iii) Flakiness / Elongation Index<br>iv) Stripping value<br>v) Water sensitivity of Mix<br>vi) Water Absorption<br>vii) Soundness<br>viii) % of fractural faces<br>ix) Gradation | Same as per Sr.No. 7<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 9<br>Same as per Sr.No. 0<br>2 tests per day per plant both on individual constituents & mixed aggregates from dryer | M.O.S.T. Specification Table 900-4. |
| | | x) Binder content & aggregate. Grading<br>xi) Control of Temp of binder & aggregates for mixing & of the mix at the time of laying & rolling.<br>xii) Rate of spread of mixed material<br>xiii) Density of compacted layer. | Periodic subject to minimum of 2 tests per day per plant.<br>At regular close intervals.<br>Regular control through checks of layer thickness.<br>One test per 250 Sq.M. | |
| 20. | Interlocking Concrete Paving Block | i) Compressive Strength<br>ii) Water absorption<br>iii) Flexural Test<br>iv) Resistance to wear | A set of 8 blocks for every 10000 blocks.<br>-----do------<br>-----do------<br>-----do------ | |

CEMENT CONCRETE :

a) The contractor shall carry out all preliminary tests to work out grading and proportioning of aggregates in order to obtain and maintain uniform quality of work. The contractor shall supply all materials, labour and testing cost for preparing and testing samples as required by the Engineer. Unless otherwise specified in the detailed itemwise specifications, 3 cubes 150 mm. x 150 mm. x 150mm.will be tested for every 15 cubic metre of concrete or per day whichever is higher.

The contractor shall make field arrangements for slump test, density and bulkage testing and also prepare concrete cubes 150 mm. x 150 mm. x 150 mm. for testing compressive strength, at his cost. The cubes shall be got tested at approved laboratory and the test results shall not fall below those prescribed in P.W.D. Hand Book (Table CV P.412) or as laid down in the specifications. The cost of such cubes and tests shall be entirely borne by the contractor.

b) All concrete shall be machine mixed, unless otherwise directed by theEngineer - in – charge, for controlled or high grade concrete, the grading of aggregate shall be got approved from the Engineer. The correct proportions and the total amount of water for the mix will be determined by means of preliminary tests and shall be got approved by the Engineer - in – charge, however, such approval does not relieve the contractor from his responsibility regarding the minimum works strength requirements. Work test shall be taken in accordance with relevant codes and specifications. The proportioning of aggregate shall be done by weight, if so ordered by the Engineer.

c) All mixing shall be done by mechanical means in approved mixers. The Engineer may at his discretion, allow in writing hand mixing of concrete for minor items where in small quantities are involved but in that case the Contractor shall increase the cement content of the mixture by 10 % without any extra cost.

d) The form work used shall be made invariably of steel / with lining of steel or with plywood lining, wooden shutters may be allowed at the discretion of the Engineer e.g. lintels , small slabs and beams, copping etc.

e) The concrete shall be mechanically vibrated for proper compaction by the method approved by the Engineer.

f) The concrete shall be cured only by a sweet potable water for full 21 days after the time of its placement or as may be directed by Engineer-in-charge.

g) The cement to be used in the various Items must be of ordinary Portland Cement grade for the concrete work.

h) Contractor must have shuttering and formwork of Marine Ply , Acrospan., Aluminum Formwork, The Maximum eight repetitions will be allowed for all types of wooden shuttering material. Contractor shall use adjustable metal props for supporting all R.C.C. elements. The form work design shall be approved by the Engineer In Charge / Officer appointed by Engineer-in- Charge before erection

**4. REINFORCED CONCRETE WORK :**

a) The work included in this contract shall be carried out in addition to this specifications detailed herein, in accordance with specifications and regulations as laid down in the following standard specifications. Standard specifications published by Government of Maharashtra 1985 Edition:
I.S. 8112 :- 1989 - Specification for 43 grade ordinary Portland cement.
I.S. 383 :- 1976 - Specification for coarse and fine aggregate from natural courses for concrete.
I.S. 1786 - 1985 - Specifications for cold twisted bars.
I.S. 432 - 1982 - Specifications for mild steel and medium steel bars.
I.S. 456 - 2000 - Code of practice for plain and reinforced concrete,
Note – 1- 43 grade ordinary Portland cement (Confirming I.S. 8112) shall be used for all RCC and other items where cement is used.
2 Steel for reinforcement shall be procured only from reputed companies.
I.S. 4926-2003 Specifications for Ready Mix Concrete.

If the Standard specifications quoted above fall short for the items quoted in these schedules of this contract, reference shall be made to the latest British Standard Specifications. If any of the items of contract do not fall inreference quoted above, the decision and specifications of the

Engineer shall be final.Steel to be used shall be invariably from the integrated plant steel more specifically TATA, SAIL, JINDAL and the cement to be used shall be of ACC,ULTRATEK or equivalent Pozolana Portland Cement. Any imported material regarding steel,cement will not be allowed.

## 5. ADDITIONAL GENERAL SPECIFICATION FOR ORDINARY AND HIGH GRADECONCRETE.

1. If the concrete strength falls below that specified for the items and if the use can be permitted under clauses 303.3.7 of the I.R.C. Bridge Code Section - III given below, the unit may be accepted at the discretion of the Superintending Engineer concerned as a substandard work at a suitable reduced rate. Reduced rate will be determined by the Executive Engineer concerned according to circumstances of the case and the concerned Superintending Engineer's approval to the reduced rate as mentioned above, is necessary. "Standard Specification and code of Practice for Road Bridges "Section III Cement concrete 303.3.7 standard of acceptance."

I) Full payment should be made when 75 % of the test cube results are equal and above specified strength. Cases failing outside the above limits should be examined and decided by the Engineer - in - charge on merits on each case.

**ii)** The test specimen should be taken by representative of the contractor in presence of a responsible officer of the rank of not lower than an Assistant Engineer / Deputy Engineer.

**iii)** The test specimen should be formed carefully and no claim shall be entertained later on, on the ground that the casting of the test specimen were faulty and that the results of the test specimen did not give correct indication of the actual quality of concrete.

**iv)** The minimum quantity of cement per one Cubic metre of M -15 grade and above concrete should be as per Standard Specification Book Specification B 7 - 4 on page 39 ( 1979 Edition ).

**v)** Payment : (a) The payment of such concrete work will not be made till the strengths are ascertained.

(b) The payment of reinforcement of such affected items will not be made till the strength of the concrete are ascertained.

**vi)** The centering to be used for execution of any concrete items shall be strictly in accordance with specifications for from work and steel Centering given on page 148 to 151 of this documents. No concreting shall be executed without prior approval to the centering from the Engineer-in-Charge.

## 1. Specifications of Machinery For Concreting Work :

(I) Fully Automatic Micro processor based PLC with SCADA Enabled Concrete Batch Mix Plant (Pan Mixer)" of minimum 18 to 20 cum/hr capacity of any standard company.

**It Shall have minimum following FEATURES (Technical Specification )**

- Fully Automatic Micro processor based PLC with SCADA system
- Protected Enclosure for Dusty Atmosphere.
- Facility to use 4 Aggregates. 1 cement and 1 water as standard
- Highly accurate batching material in Air Concept Adjustable batch size.
- Fly ash / Admixture report for each batch.
- Online Water Correction Discrete / Continuous mode.
- Easy calibration of Weighers.
- Stainless steel corrosion resistant Load cells.
- Electronic weighing of all components including water, admixtures etc.
- Automatic Buzzer sound after every production end.
- Interface with computer for Data Backup and print out.

(II) **Sand Screening cum Washing Unit** electrically or diesel operated 4/6 Cubic Metre per hour capacity.

**(iii) Transportation- Transit Mixer / Pumps**
Transit mixers and / or concrete pumps of desired number and capacity with SACADA

**(i) All cement Works, Masonry / Plaster etc.**

**Curing system**
Contractor shall install pressure control water curing system using necessary pumps, UPVC pipe network, water/ flow meter linked with SCADA, etc complete

**(v) CTM**
The contractor shall install Compression Testing Machine (CTM) for the testing cement mortar, concrete at the site, linked with "SCADA"

**GIS MAP**

***Displaying locations of Hot mix Plants, Tippers used for hot mix material transportation, Roller/ compactor and Sprayer on GIS map.***

***Communicate the Data which is beyond the set parameters by SMS and e-mail to the representative of Engineer In charge for all 41.1 to 41.4 above***

**THE OFFER OF THE CONTRACTOR SHALL INCLUDE:**

(1) The cost of procuring, establishing, running, operating & maintaining SCADA including all Censors, Vehicle Tracking System (VTS) and any other instrumentation, automation required to acquire the desired data, mentioned at **41.1 to 41.5** above.

2) Web connectivity to all locations where data is being acquired, transmitted, processed, stored and retrieved with minimum speed of 1 MPBS and 100 % availability. The contactor shall provide the web application in such a manner that it shall first update the above data in real time on YASHADA's works monitoring e-governance web application automatically. The contractor shall put his request to Engineer in charge to get access to the YASHADA e-governance web application.

(3) Web-based application including Computer Software, Hardware etc. to transmit, process, store and retrieve the data in the forms and formats as prescribed by the Engineer In charge.

(4) Arrangement for security of data, Disaster recovery arrangements shall be as per I.T. Industry practice, during the construction period and upto defect liability period.(DLP). Handing over the data on the Web Server after DLP in Electronic form as instructed by Engineer In charge.

(5) Calibration of all SCADA related attachments /accessories as per the specification:- Web based application to monitor the schedule of Calibration of all SCADA related attachment/accessories. The invalidity of calibration shall lead to non-acceptance of work or measurement and the Contractor shall not be paid for such non-accepted work or measurements

(6) Submission of printed and authenticated reports to the Engineer Incharge as and when required.

(7) Point (1) to (6) above shall be arranged and maintained during contract period and defect liability period.

(8) Cost includes rectification, fine tuning, corrections, additions & alterations to the system to the satisfaction of Engineer Incharge.

(9) All data generated as per this special condition of contract shall be the property of YASHADA.

The Contractor shall make all necessary arrangement required under **Clause 41.1 to 41.5** above (Supervising control and data acquisition for Bituminous / WBM / concrete works / all cement works / masonry / plaster / Testing Equipments items) well in advance before starting of the related items of work. All necessary arrangements so made shall be offered for inspection to Engineer In charge one month prior to the start of the related items of work. Changes if any, after his inspection suggested by the Engineer In charge

shall be carried out at no extra cost and within the period of Three days. A fresh request for inspection, of Engineer In charge after such rectifications shall be requested by the Contractor and final approval to the SCADA arrangements as specified in Clause-19 shall be obtained.

### 1.2.5 Web Connectivity-

The contractor shall provide web connectivity through satellite communication supporting mobile devices to the above monitoring system(mobile VSAT). The web connectivity shall have minimum two MBPS internet speed and 99% availability. Software should be intelligent; in case of connectivity failure it should maintain the pending files and send them as soon as it is connected. The contractor shall make sure that the entire software and hardware solution is virus free.

The offer of contractor shall be inclusive of all. He shall not be paid separately.

**Works**

The hot mix work should be carried out from the approved plan and approved machinery only.

Sources of metal to be used for work should be the same through out. Should there be any change, the Contractor will have to obtain approval to the revised job mix formula atleast 15 days prior to the date of its intended use.

Weather restriction to carryout hot mix work shall be as per MORT&H specification

No hot mix Works shall be carried out during Night time unless otherwise permitted by Engineer- in-charge.

The newly land surface shall not be opened to traffic for at least 24 hours after laying and completion of compaction without the expressed approval of Engineer- in-charge in writing.

The necessary grade and camber for the road length under improvement should be strictly observed during execution.

The traffic management during execution of hot mix Works shall be as per MORT&H specification (fourth revision) clause No. 800.

Bituminous materials shall be transported in clean insulated vehicles and unless otherwise agreed by Engineer- in-charge shall be covered while in transit or waiting tipping.

Contractor should note that once the hot mix work is started he will not be allowed to operate his plant for any work other than the Works of YASHADA without the specific permission in writing from Engineer- in-charge.

In case for any reasons, the Works get damaged the Contractor has to carry out the rectification at his risk and cost for full width of carriageway.

The work activity program me considering the start date and completion period shall be

prepared and submitted for approval of Engineer- in-charge. 15 days prior to start of work. No hot mix work shall be undertaken unless such program me is approved by Engineer- in-charge.

The Contractor shall be required to give a trail run of the equipment such as pavers, vibratory roller, sprayer etc. for establishing their capability to achieve the laid down specification and tolerances to the satisfaction to the Engineer- in-charge before commencement of work. All equipment and personnel shall be removed from Worksite without permission of Engineer- in-charge.

Plant mixed bituminous materials for pavement courses shall be weighted on accurate scales approved by the Engineer- in-charge in the presence of representative of Engineer- in-charge. As and when asked for. The weight slips shall be produced for official record. The activity is obligatory to work.

It is obligatory on the part of Contractor to carry out the field tests as required by the Engineer- in-charge. He should have required equipments and trained personnel to carry out such testing and will be the responsibility of Contractor to maintain record of such testing and to furnish such record to the Engineer- in-charge within 3 days fromthe date of testing.

The non-working machinery if any shall not be kept at the site of work. After a days work is over, the working machinery shall be parked in such a manner as not to cause any hindrance or pose danger to the traffic plying on the section of road. The working machinery parked on site should have traffic safety devices

**Roughness Index**

The Contractor shall be responsible to measure the roughness of road surface for which he may use the Roughness Index, Testing machine at his own cost Use of “Towed fifth wheel Bump integrator” shall be made to measure the roughness of the road surface. The calibration of the machine shall be done from time to time as and when warranted, from reputed institution like C.R.R.I., New Delhi and their certificate shall be produced to that effect. The values of roughness so measured shall not exceed the values given below for various types of road surfaces under standard conditions of carrying out the test and as specified below.

| | | | |
|---|---|---|---|
| 1) | Bituminous Concrete | : | 2000 mm / Km. |
| 2) | S.D.B.C. | : | 2200 mm. / Km. |
| 3) | Premix Carpet : | : | 2500 mm. / Km. |
| 4) | B.M. | : | 2500 mm. / Km. |

The Roughness Index test shall be carried out before start of the work and after completion of surface course as directed by Engineer- in-charge.

The result of roughness index test shall be made available to the Engineer- in-charge within 15 days from the test so taken and Engineer in charge shall submit the soft copy of result of roughness index test to the **Registrar YASHADA, Pune** by email on mangesh.joshi@yashada.org shall be commence by the agency only after taking the roughness index test in presence of Engineer-in-charge.

As an outcome of roughness test, where the surface irregularity of wearing surfaces rails outside the tolerances mentioned above, the Contractor shall be liable to rectify the deficiencies in a manner as directed and to the satisfaction of the Engineer- in-charge .

If the Contractor fails to carry out roughness index test the same will be done departmentally and double the cost so incurred will be recovered from him

**General**

Considering the stakes and technical intricacies involved in constructions. It is needless to emphasize that an unfailing control on quality of the work has to be exercised so as to ensure that the structures constructed are stable and sound. Quality of final products depends upon adopting the proper procedure of construction in addition to proper selection of materials. For ensuring the requisites of construction, the materials of work shall be subject to Quality Control test s for ascertaining the quality of material for its approval for construction.

All material to be used all methods adopted and all Works performed shall be strictly in accordance with the requirements of these specifications. The Contractor shall set up a field laboratory at locations approved by the Engineer- in-charge and equip the same with adequate equipments and personnel in order to carry out all required tests and Quality Control work as per specification and /or as directed by the Engineer- in-charge. The interest layout of the laboratory shall be as directed by the Engineer- in-charge. The list of equipment and the facilities to be provided shall be got approved from the Engineer- in-charge in advance and shall be as per MORT&H specification (Fifth Revision) clause No.121.3

The Contractor shall carry out quality control tests on the materials and work to the frequency stipulated in relevant clause of MORT&H specification. In the absence of clear indication about method and or frequency of tests for any item, the instructions of the Engineer- in-charge shall be followed.

For satisfying himself about the quality of the materials and work, quality control tests will also be conducted by the Engineer- in-charge (by himself by his quality control units or by any other agency as deemed fir by the Engineer- in-charge) generally to the frequency set. Additional tests may also conduct where, in the opinion of the Engineer- in-charge, needs for such tests exist.

The Contractor shall provide necessary co-operation and assistance in obtaining the samples for tests and carrying out the field tests as required by the Engineer- in-charge from time to time. This shall include provision of labour, attendants, assistance in packing and dispatching and any other assistance considered necessary in connection with the tests by Engineer- in-charge.

The Contractor shall carry out modifications in the procedure of work, if found necessary, as directed by the Engineer- in-charge during inspection. Works failing short of quality shall either be rectified or redone by the Contractor at his own cost, shall also remove defective work or material from the site of Works.

The cost of laboratory building, including services, essential supplies like water, electricity sanitary services and their maintenance and cost of all equipment, tools,

materials, labour and incidents to perform tests and other operation soft quality control according to the specifications requirements be deemed to be incidental to the work and no extra payment shall be made for the same.

For testing of samples of soils / soils mixes, granular materials and mixes bituminous materials and mixes, cement and concrete cubes, aggregate mixes etc., samples in the required quantity and form shall be supplied to the Government laboratory or any other laboratory as directed by the Engineer- in-charge by the Contractor at his own cost.

For cement bitumen, mild steel, and similar other materials where essential test are to be carried out at the manufacturers plants or at laboratories other that the site laboratory the cost of samples, sampling testing and furnishing of tests certificates shall be borne by the Contractor . He shall also furnish the test certificate to the Engineer- in-charge in reasonable time as directed by the Engineer- in-charge.

All materials which the Engineer- in-charge/representative has determined as not conforming to the requirements of the contract shall be rejected whether in place or not, they shall be removed immediately from the site as directed. Materials, which have been subsequently corrected, shall not be used in the work unless approval is accorded in writing by the Engineer- in-charge. Upon failure of the Contractor to comply with any order of the Engineer/his representative, given under this clause, the Engineer- in- charge/his representative shall have authority to cause the removal of rejected material and to deduct the removal cost thereof from any payments due to the Contractor.

For ensuring the requisite quality of construction, the materials and Works shall be subjected to quality control tests, as described in MOSRT&H specifications (Fourth Revision) section No.900 and 1000 as mentioned in the relevant clauses for all items. The testing frequencies set forth in relevant clauses for all items are the desirable minimum and the Engineer- in-charge shall have the full authority to vary out additional tests as frequently as he may deem necessary, to satisfy himself that the materials and Works comply with the appropriate specifications.

Test procedures for the various quality control tests are indicated in the respective I.S code. Where no specific testing procedure is mentioned, the tests shall be carried out as per the prevalent accepted engineering practice to the directions of the Engineer- in- charge.

**Samples & Method of sampling**

All materials to be used on work such as cement, aggregate steel, bitumen, wood, tiles etc. shall be got approved in advance from the Engineer- in-charge and shall pass the tests and analysis required by him.

The tests shall be

(a) as per specifications of the items concerned and or,

(b) as specified by the Indian Road Congress standard specification and code of practice for road and bridges or,

(c) I.S. specification whichever and wherever applicable

(d) As per specification of Ministry of Road Transport and Highways latest edition 900, 1000, 1700 & 1900 Quality control for road work.

(e) Such recognized specification acceptable to the Engineer- in-charge as equivalent thereto or in the absence of such authorized specification.

(f) Such requirement/tests and or analysis in the order of precedence given above.

The Contractor shall at his cost make all arrangements and/or shall provide for all such facilities as the Engineer- in-charge may require for collecting, preparing and forward required number of samples for testing or for analysis of the materials or product for which laboratory testing is required to the nearest approved Government laboratory as directed by Engineer- in-charge. The Contractor shall bear all charges and cost of tests or analysis of such samples, shall also be deposited with the laboratories as per their prevailing schedule or rates.

The Contractor shall, if and when required, submit at his cost the samples of materials to be tested or analyzed and if so directed, shall not make use or incorporate in the Works any materials to be represented by the sample until the required test or analysis have been made and after the test results of the material finally accepted by the Engineer- in-charge.

The method of sampling and testing of materials shall be as required by the Handbook of Quality control for construction of Roads and Runways'' (IRC: SP:11), relevant I.S. codes and the relevant MOSRT&H Specifications. Where they are contradicting, the provision in these specifications shall be followed. Where they are silent, sound engineering practices shall be adopted. The sampling and testing procedure to be used shall be as approved by the Engineer- in-charge and his decision shall be final and binding on the Contractor.

**Testing of Materials**

The Contractor shall make field arrangements for testing of all materials as per MORT & H specifications or as directed by Engineer- in-charge in the field laboratory.

The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of testing of material.

The quality control tests shall be carried out at various stages of work, viz. selection of material to be procured for work, acceptance of procured material before its use on the work, acceptance of procured material before its use on the work, after completion of work in view of its strength, durability, serviceability, etc, and as directed by Engineer- in-charge for any other reasons of public interest.

The Contractor shall carry out at least 30 % testing from the Regional/District Laboratory of the department. The necessary testing charges for these 30% tests shall be borne by the Contractor shall carry out remaining 70% tests at his own cost in the laboratory established by him for the work. This is subject to the condition that the field laboratory established by the Contractor at site or plant is certified to have set up as mentioned in the clauses hereunder by the Engineer- in-charge. The testing charges shall be as per the prevailing schedule of rates of Vigilance & Quality control Circle.

**Laboratory Setup**

**Field Laboratory**

The Contractor for the purpose of testing of material shall arrange to provide and maintain fully furnished and adequately equipped field laboratory of adequate floor area, as shown in drawing. The field laboratory shall preferably be located adjacent to the site of work. In case of road Works the field laboratory shall either be established at plant site or as directed by the Engineer- in-charge. The field laboratory shall be provided with amenities like water, electric supply etc., to be arranged by Contractor.

(a) The floor space requirement shall include office space for engineer & Contractor's representative storage of samples, installation of equipment, laboratory table, cup boards, working platform of size 1 m x 10 m working space for carrying out various tests. Curing tank, wash basin, toilet etc. and the minimum furniture such as office tables & chairs for material engineers, stools, working tables, store accessories.

(b) The cost of construction of laboratory & site office at work site or plant site as the case may be, and cost of supply of furniture, electrical equipments fittings during the currency of contractor is incidental to work and no separate payment will e made for the same to the Contractor.

(c) The laboratory established by the Contractor shall be manned by a qualified material Engineer/ Civil Engineer assisted by experienced technicians, and the set-up shall be got approved from the Engineer-in-charge.

(d) The Contractor should prepare printed perform for recording readings results of each type of tests. Such formats shall be got approved from the Engineer-in-charge. The Contractor should keep a daily record of all the tests carried out by

him. Two copies of the test results will be returned to the Contractor by Engineer-in-charge for keeping the record of test results in acceptable manner at site of work.

(e) All Quality Control registers / records shall be maintained by the Contractor and checked by the Engineer-in-charge or his representatives regularly. The list of register required to be maintained shall be got approved from Engineer-in-charge in advance.

**Additional General Condition & Specification**

**25 (i) Establishment of field lab**

As per minutes of meeting issued by Public Works Department, Mantralay Mumbai vide Letter No. Meeting-2020/pra.kra.100/Ra.Ma.2, Dated. 10/11/2020, for the works costing more than 1.00 Cr. (Estimated cost put to tender i.e. Work Portion + Testing + Royalty Charges) it is mandatory to install the field Laboratory at site of Work.

The Contractor shall establish the field lab with all the neccsary equipment within 15 days from issue of work order and submit dated geo tag photographs of the lab. Failling which a fine of Rs. 1000/- per day will be imposed till the lab is established. No running account or final bill will be paid to the contractor unless the Executive Engineer has confirmed the establishment of field lab.

**Set up of equipments**

The Contractor shall set up the laboratory equipments for tests to be carried out as per specifications of item or as directed by Engineer-in-charge. Tentative list of equipment shall be as per MORT&H specification (fourth revision) clause no. 121.3

The Contractor shall use calibrated equipment to the latest date in the laboratory so established. The Contractor will have to carry out the calibration of the equipments from the approved agency as and when directed by the Engineer-in-charge at his own cost incases where the calibration validity stands expired.

**Frequency of Test**

Overall quality of the work depends on the quality of ingredient material being used in the work and exercising adequate control over it. It is therefore prime responsibility of the Contractor to get the ingredient material and product tested strictly as per the frequencies stipulated hereunder.

The testing frequency specified hereunder are minimum and Engineer-in-charge shall have full rights to carry out additional tests as may be necessary to satisfy himself that the material and Works comply with requirement of the specifications.

The frequency of the testing shall be conforming to the MORT&H specification under

Chapter 900,1000,1700, &1900

The right of acceptance / rejection of the material / work done is reserved by Engineer-in-charge in view of non conformation of frequency of testing.

The cost involved on account of testing of materials as per the frequency MORT&H specification clause is to be included in the respective tender items. The cost of testing charges as per prevailing schedule of rates VQCC laboratory shall be borne by the Contractor

If the Contractor fails to carryout testing as per the specified frequency, the cost of the testing charges at penal rate equal to ten times the prevailing schedule of rate of VQCC laboratory will be recovered from him to the extent of shortfall. The recovery on account of shortfall in testing with reference to specified frequency will be done from his

immediate bills due for payment and will be credited to Government account.

Various tests (and their frequencies) to be conducted to assure quality control on the work shall be as relevant clauses o MORT&H specification (fourth revision) and as directed by Engineer-in-charge.

**10.0 Training of Personnel**

The contractor shall arrange training camp, Workshops, seminars etc. for his personnel deployed/ being deployed on site and plant and the departmental staff as identified by the Engineer-in-charge, well in advance of likely start of the work, for monitoring quality of work to the optimum level. The Contractor in consultation with Engineer-in-charge shall decide for training program me schedule and the faculty for the training course as soon as the work order is issued to him.

**QUALITY ASSURANCE**

**Quality Assurance**

It is a process which exercises various checks at different stages for a work right from its inception till its acceptance, to put it in service to ensure that the work has been properly designed and constructed as per approved designs, drawings and specifications.

In order that the properties of the completed structure be consistent with the requirements and the assumptions made during planning and the design, adequate Quality Assurance measures should be taken at the site of work.

The construction should result in satisfactory strength, serviceability and long term durability so as to lower the overall life cycle cost.

Quality Assurance Manual: It provides a base document outliving policies, procedure, responsibility, compliance acceptance criteria and documentation. It shall generally cover the following aspects

a). Identification of all persons of Contractor and as well as department side involved

in Quality Assurance and their interrelationship.

b). Internal Quality Assurance system of the Contractor and the Engineer-in-charge.

c). Levels of cross checking, verification including system of inspection and audit.

d). Organization of personnel, responsibilities and lines of reporting.

e). Criteria for acceptance / rejection including identification of authorities for making such decisions.

f). Inspection at the end of Defect Liability Period.

g). Item to be included in maintenance manual

h). All formats for documentations.

Quality Assurance Manual shall be prepared and accepted by the Contractor and the Engineer-in-charge before start of the work.

Quality Assurance manual consisting of quality plans, test plans, checklist for inspection, quality Audit and third party inspection shall be prepared and furnished by the Contractor in pursuant to clause no. 59 of condition of contract and shall confirm to the provision stipulate in " Guideline on Quality system for Roads" – IRC :SP:57-2000.

**12.0 Additional works for Right of Way Integrity**

"In addition to the foregoing the engineer may deem it necessary to instruct the perfo works from time to time during the progress of the Contract go preserve the integrity Way".

**Deductible amount for Non provision of amenities**

| | | |
|---|---|---|
| i) | Field Laboratory at Plant site | Rs.0.25 lakhs |
| ii) | office at Plant site | Rs.0.25 lakhs |
| iii) | Furniture | Rs.0.25 lakhs |

Whether the Government land for establishing field laboratory and site office will be made available ? No.

In case field laboratory and site office along with equipment furniture and amenities is established at Govt. land by the Contractor whether it will be the property of Government. No.

Whether the roughness index test is intended to be carried out by the Contractor? Yes. (before and after of each layer of bitumen)

The laying temperature of the Mix required at the site should be the criteria for distance of the plant .To ensure this temperature , automatic temperature measurement shall be provided .

**14. SPECIAL CONDITIONS**

**(1 ) MORTH Specification for Road and Bridges Work (Fifth revision 2013) :**

MORTH Specification for Road and Bridge Work ( Fifth revision- April 2013**)** shall form part of the contract documents and the contractors shall be legally bound to the various provisions made therein unless and otherwise specifically relaxed or waived wholly or partly by any special clauses in the contract documents.

**(2) Special Condition for B.T. work :**

In respect of Black Top Work, 15% (Fifteen percent) payment of Black Top in a particular km will be retained till completion of side berms / C.D. Works etc. in that km. After completion of other items satisfactorily, the withheld payment will be released finally.

Laying temperature of the mix required at the site should be the criteria for distance of the plant. To ensure this temperature, automatic temperature measurement with video camera or any other suitable technology shall be provided.

The aggregate required for the item of Hot Mix shall be screened in" mechanical Vibratory Screening Unit" so as to comply with the grading requirement as specified in MORT&H specification and then only shall be fed to the Hot Mix Plant for heating and mixing. The Mechanical Vibratory screening unit shall consist of main input hopper to receive raw metal, conveyor belt to transport it to the "Mechanical Vibratory Screening Unit." The Mechanical Vibratory screening unit shall have required number of trays, sieves/decks as directed by Engineer In charge. The output of Mechanical Vibratory Screening unit shall be conveyed to the "storage unit /feeder". The metal so supplied from the "Mechanical Vibratory Screening unit " at site shall not exempt the contractor from carrying out tests as specified in the specifications.

However if the mechanical Vibratory Screening unit is installed at quarry site, the contractor shall provide Vehicle Tracking System for all vehicles used for the particular work. The contractor shall provide web application that will show all vehicles of the contractor on a GIS map along with the hot mix plant .The contractor shall also provide software that will update the entire mapping on the YASHADA e-governance works management system. The system of complete management of VTS for monitoring by the YASHADA staff shall have to be provided by Contractor at his own cost.

Procurement of aggregate For Grade –I /Grade-II / Grade –III / WBM and for BUSG work The metal shall be supplied at site only after screening it on "mechanical vibratory screening unit". The special "mechanical vibratory screening unit" arrangement shall consist of main input hopper to receive raw metal, conveyor belt to transport it to the "mechanical vibratory screening unit". The "mechanical vibratory screening unit" shall have required number of trays, sieves/decks as directed by the Engineering in charge. The output of "mechanical vibratory screening unit" shall be conveyed to "storage Unit" where metal of different sizes, shall be stored separately. Metal so supplied shall undergo all the tests as per the specifications. As a input to the main input hopper, contractor may use hand broken metal or

output of primary crusher of size not less than 24“x18” The metal so supplied from the “mechanical Vibratory screening unit” at site shall not exempt the contractor from carrying out tests as specified in the specifications

**Supervision on Work by Field Officers.**

The Executive Engineer shall remain present and personally supervise the first 200 m length accordingly in presence of Deputy Engineer, Junior Engineer and Contractor/Contractor’s representative.

The Deputy Engineer shall remain present and personally supervise at least 25 % of the area of primer coat / tack coat / seal coat executed .

The Junior Engineer shall remain present and personally supervise cent percent length executed.

The Executive Engineer shall show the check measurement of primer coat / tack coat accordingly in the measurement book for the executed 200 m demo length. This check measurement shall be part of percentage check measurement required by Executive Engineer as per the Maharashtra Public Works Manual, Appendix-24.

The work order book shall be kept to maintain evidence of supervision on work by field officers as mention at Sr.no 2.5.1 to 2.5.4 The measurement of primer coat / tack coat / liquid seal coat of the work shall be recorded by Deputy Engineer only.

The Engineer in charge shall allow the commencement of work after inspection of Hot mix plant, sensor paver and other key equipment, testing of material and approval of quarries job mix design of bituminous macadam and BC/SDBC, establishing temporary bench mark on permanent pillar and leveling.

**Special conditions for Road safety item such as Thermoplastic retro reflective painting, cat eyes, sign boards, W Beam crash barrier.**

i) The work of road marking with Hot applied thermoplastic compound shall be carried out as per specification in Schedule **C** with approved road marking machine and paint of approved manufactures.

ii) The payment of these item shall be made only after furnishing the approved Manufacture’s Test certificates.

iii) The work of thermoplastic retro reflective painting, cat eyes, sign boards, W beam crash barrier shall have to be got executed by approved/ specialized agency empanelled / approved by MORT&H.

The contractor shall not sublet the item of road marking without the approval of the Employer i.e. Chief Engineer, National Highway in writing. Sub contracting does not alter the contractors obligations.

iv) Subletting proposals shall be comprise sublet agreements on Rs.100/- stamp paper mentioning experience of the sub contractor experience certificates & details

of Machinery and material to be use

## Additional General Conditions and Specifications.

### Shuttering Requirement

1. Contractor must have shuttering and formwork of Marine Ply / Steel plates, Acrospan., Aluminum Formwork, The Maximum eight repetitions will be allowed for all types of wooden shuttering material. Contractor shall use adjustable metal props for supporting all R.C.C. elements. The form work design shall be approved by the Engineer In Charge / Officer appointed by Engineer-in- Charge before erection.

2. The contractor shall setup a material testing Laboratory at site with all necessary equipment.

3. For all concrete works Fully Automatic Micro processor based PLC with SCADA Enabled **Fully Automatic Micro processor based PLC with SCADA enabled concrete Batch Mix Plant (Pan Mixer)** of minimum 18 to 20 Cubic Metre per hour capacity of any standard company with appropriate number r and pumps with diesel or electric operated with minimum size of 150 litres automatic water measuring system and integral weigher Hydraulic /Pneumatic type. The Engineer may at his discretion, allow in writing hand mixing of concrete for minor items where small quantities are involved but in that case the Contractor shall increase the cement content of the mixture by 10% without any extra cost.

4. The cement to be used in the various Items must be of O.P.C.grade and for the concrete work Fly Ash can be used at maximum 17% of total cementious content.

5. The natural sand to be used in various items shall be as per IS 383- 1970 .

6. All the cementations work should be properly cured as per the requirement of the item.

7. The placement of the concrete and the shuttering shall be as per relevant I.S Codes.

8. The contactor should submit the system of quality control at the AAC Block / Fly ash Brick manufacturing unit.

9. The planning Engineer at site must be well acquainted with MS Project software.

10. All the required equipment / connectivity/software/hardware should be supplied by the Contractor to his personnel at site. The system of software should be compatible with the, then YASHADA Software and interface. Contractor shall

construct the Site office for the Government Staff having minimum area of

200.00 Square Metre. With out claiming for any extra cost. The Office should be equipped with latest communication systems like video conferencing etc.

11. The contactor shall coordinate with, local authority. And shall appoint one liasoning officer for the routine interactions with various departments, amoung the team member.

## 2. Staff safety.

**1.** While executing the work, necessary precautions regarding safety of labour, supervisory staff, public and traffic users shall be taken by the agency according to rules and regulations specified by the Government of India / Government of Maharashtra and as directed by District Court, Pune..

**2.** Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period works as can be done safely from ladders. When ladder is used an extra mazdoor shall be engaged to hold the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 to 4 ( 1 horizontal and 4 vertical).

**3.** Scaffolding or staging more than 3.25 m. above the ground or floors, swing or suspended from an overhead support or erected with stationary support, shall have a guard rail properly attached, bolted, braced and otherwise assured atleast 1 m. high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

**4.** Working platform, gangways and stairways shall be so constructed that they do not sag unduly or is more than 3.25 m. above ground level or floor level, it shall be closely boarded , have adequate width and be suitably fenced as described in 2 above.

**5.** Every opening in floor of the building or in a working platform shall be provide with suitable protection to prevent fall of persons or materials by providing suitable fencing or railing with minimum height of 1 metre.

**6.** Safe means of access shall be provided to all working platform and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m. in length , width between side rails in a rung ladder shall in no case be less than 30 cm. for ladders upto and including 3 m. in length. For longer ladders with width shall be increased atleast 6 mm. for each additional 30 cm. of length. Uniform step spacing shall not exceed 30 cm.

**7.** Adequate precautions shall be taken to prevent danger from electrical

equipments. No materials on any of the site shall be stacked or placed as to

cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precaution and to pay any damages and costs which may be awarded in any such suit, action or proceeding to any such person or which may with the consent of the Contractor, to be paid to compromise any claim by any such person.

**8.** For the construction work of upper floors safety nets should be provided on the floor beneath it.

**9.** All the Staff ,labour at site sould be protected with the appropriate safety measures.

**10.** Contractor should use New centering material for all the concreting work with the maximum repetition shall not exceed 8 Numbers.At the same time the Centering material shall be got approved from the Engineer -In-Charge PMC/ Officer appointed by Engineer-in-Charge.in advance.

**11.** Steel to be used shall be invariably from the **integrated plant steel** more specifically TATA,SAIL,JINDAL etc. and the cement to be used shall be of ACC,ULTRATEK or equivalent.Any imported material regarding steel,cement will not be allowed.

**12.** For steel cutting,bending,shuttering and allied works specific location shall be earmarked at site.All the transportation vehicle shall be equipped with vehicle tracker.Proper care to be taken to avoid the corrosion of the steel at store / yard by applying cement slurry without claiming for any extra cost.

**13.** Contractor shall provide a mock up room at site.

**14.** While excavation care should be taken by the contractor regarding noise level at night. No excavation activity shall extend beyond 10 PM at night. Contractor should follow the traffic rules regarding the conveyance of material at night.

**15.** It is on the part of contractor to take necessary permission from the Traffic Police regarding the conveyance of material.

**16.** While conveyance of the material contractor shall observe that there should not be any inconvenience to the traffic and no material should drop on road.

**17.** Contractor shall provide web based integrated project management software like Think Project,/Prologue or similar Systems for complete monitoring of the project.

## 3. Additional Conditions for Green Building Norms:

The contractor shall follow the following guidelines laid here under so that the GRIHA rating is not suffered on account of acts and action, omission, negligence of the contractor or his team:-

**Preserve and protect landscape during construction & Soil conservation till post-construction:**

1. The contractor shall preserve the topsoil and existing vegetation. The contractor shall by proper planning of timing of construction activity shall be minimize site disturbance such as soil pollution due to spilling of the construction material and its mixing rain water. The contractor shall use staging and spill prevention and control plan to restrict the spilling of the contaminated material on site. The contractor shall also control erosion and sedimentation.

2. The contractor shall restrict the construction to pre-planned/pre-designated areas with approval from Engineer-in-Charge. The contractor shall submit site plan showing staging and spill prevention measures, erosion and sedimentation control measures along with photographic records to show that other areas have not been disrupted during construction and to show erosion and sedimentation control measures adopted. The contractor shall submit site plan showing demarcate areas on site from which top soil has to be gathered, designate area where it will be stored, measures adopted for top soil preservation.

3. The contractor shall immediately after award of work shall excavate the topsoil for a depth of 200 mm and re-store the same at pre-designated space (in consultation with Engineer-in-Charge) and also take measures (stockpiling, mulching) that this topsoil is not disturbed till the same is utilized or the work is completed. The payment for excavation and preservation of topsoil shall be paid in the respective items of the agreement.

4. The contractor shall Vegetate / mulch areas where vehicles do not ply. The contractor shall apply gravel /landscaping rock to the areas where mulching /paving is impractical. The contractor shall indentify roads on side that would be used for vehicular traffic. The contractor shall upgrade vehicular roads (if these are unpaved) by increasing the surface strength by improving particle size, shape, and mineral types that make up the surface and base. Add surface gravel to reduce source of dust emission and Limit amount of fine particles (smaller than 0.075 mm) to 10%–20%.

5. The contractor shall limit vehicular speed on-site to 10 km/h.

6. The contractor shall reduce air pollution by wetting the surface by spraying water

(i) on any dusty materials before transferring, loading, and unloading,
(ii) areas where demolition work is being carried out,

(iii) any unpaved main-haul road, and
(iv) Areas where excavation or earth-moving activities are to be carried out.

7. The contractor shall minimize the disruption of the natural ecosystem.

8. The Contractor shall Plant a minimum of 1500 trees of variety as described by the PMC in the Campus. Whereas for the same the Contractor shall initially develop and maintain a nursery at such a place as directed by the Engineer- in – Charge. /PMC/ Officer appointed by Engineer-in-Charge

**Provide minimum level of sanitation/safety facilities for construction workers:**

9. The contractor shall strictly follow the provisions contained in Clause-18 & its sub-clause; Clause-19 & its sub-clauses of GCC-2010 for providing basic amenities to the workers. The contractor shall ensure cleanliness of workplace with regard to the disposal of waste and efficient provide clean drinking water and latrines and urinals as per applicable standard. The contractor shall strictly follow the “CYASHADA SAFETY CODE” of GCC-2010.

10. The contractor shall comply with the National Building Code 2005 norms on construction safety for ensuring safety during construction. The National Building Code 2005 have provisions for clean and hygienic accommodation, toilet facilities, purified drinking water, general store, a subsidized canteen, medical facilities, day care centre and onsite safety equipments, etc.

11. The contractor shall adopt additional best practices and prescribed norms as in NBC 2005.

12. The contactor shall submit sufficient documentary & photographic evidences in compliance to above three paras.

**Reduce air pollution during construction :**

13. The contractor shall ensure proper screening, covering stockpiles, covering brick and loads of dusty materials, wheel-washing facility and water spraying facility to reduce air pollution during construction. The site roads should be regularly sprayed with water and wheels of all vehicles should be washed to prevent air pollution. The contractor shall transfer, handle / store dry loose materials such as bulk cement and dry pulverized flay ash inside a totally enclosed system.

14. The contractor shall install dust screen (at least 3 M high) around the disturbed area to prevent air pollution and spillage to undisturbed site area.

15. The contractor shall undertake the responsibility to prevent air pollution (dust & smoke), ensure availability of adequate water supply for dust suppression, devise methodology to minimize impact of dust on the surrounding environment and ensure that these methods are implemented. The contractor shall provide documentary evidence regarding the method of working, plant equipment and air-pollution-control system being adopted on the site.

16. The contractor shall efficiently use the natural resources (water, energy & materials) and takes measures to conserve the natural resources.

**Efficient water use during construction :**

17. The contractor shall prevent wastage of water during curing. The contractor shall also make efforts to minimize use of potable water during construction by proper & efficient construction water management on site.

18. The contractor shall construct Sedimentation tank for collecting of excess curing water.

**Reduction in waste during construction, Efficient waste segregation, Storage and disposal of wastes & Resource recovery from waste :**

19. The contractor shall ensure maximum resource recovery and safe disposal of wastes generated during construction and reduce the burden on landfill. The contractor shall segregate inert, chemical and hazardous wastes separately. The contractor shall make all efforts to recycle/safe disposal of segregated wastes (oil, paint, batteries & asbestos). The contractor shall dispose-off the inert waste at landfill sites duly approved by local body/Engineer-in-charge.

20. The contractor shall keep record of all waste generated during construction activity and storage facility for segregated inert and hazardous waste before recycling and disposal.

21. The contractor shall use multi-colored bins for waste segregation at source at his own cost.

22. The contractor shall (in consultation with Engineer-in-charge) allocate separate space for the collected waste before transferring to the recycling/disposal stations.

23. The contractor shall make arrangements for recycling of waste through local (Junk) dealers. The contractor shall also keep record of such transactions and provide the same to the department as and when required.

24. The contractor shall make all efforts for achieving zero waste generation by adopting appropriate resource recovery measures.

**Use low-VOC paints/adhesives/sealants ;**

25. The contractor shall use zero/low-VOC paints duly approved by Engineer-in-charge. The contractor shall use water-based acrylic paints duly approved by Engineer-in-charge and shall not use solvent based oil paints. The contractor shall also submit certificates & vouchers from suppliers/manufacturers that the paint used are zero/low-VOC paints.

The prescribed VOC limits for paints to be used are given in the table below:-

• *VOC Limits for paints*

| Paint application | | VOC Limits (g of VOC per litre) |
|---|---|---|
| Interior coating | Flat | <50 |
| | Non Flat | <100 |
| Exterior coating | Flat | <200 |
| | Non Flat | <100 |
| Anti corrosive | Gloss/semi Gloss/Flat | <250 |

• *VOC Limits for paints*

| Coatings | VOC Limits (g of VOC per litre) |
|---|---|
| Clear wood finishes | 350 |
| • Varnish | 550 |
| • Lacquer | |
| Floor coating | 100 |
| Stains | 250 |

26. The contractor shall use water based low-VOC sealants (acrylics, silicones and siliconized acrylics) & adhesives (acrylics or phenolic resins) duly approved by Engineer-in-charge. The solvent oil based/low in oil solvent content sealants (urethanes and butyls) & adhesives shall not be used in the construction. The contractor shall also submit certificates & vouchers from suppliers/manufacturers that the sealants/ adhesives used are low-VOC sealants/adhesives.

27. The contractor shall not use wood in construction. The composite wood products shall be free from urea-formaldehyde resins. The flush door proposed to be used as per the item of this NIT shall confirm to CYASHADA Specification 2009 with upto date correction slips. The contractor shall also submit certificates & vouchers from suppliers/manufacturers that the composite wood products are free from urea-formaldehyde resins.

**Minimize ozone depleting substances :**

28. The contractor shall employ 100% zero ODP (ozone depletion potential), HCFC (hydrochloro-fluorocarbon) free and CFC (chloro-fluorocarbon) free insulation such as HCFC free rigid form insulation, mineral fibre cellulose insulation, glass fibre, wood fibre board, cork wool, expanded (bead) polystyrene, recycled newspaper and jute & cotton duly approved by Engineer-in-charge. The contractor shall not use materials which are not inherently zero-ODP such as polyurethane foams and

polyisocyanurates. The contractor shall also submit certificates & vouchers from suppliers/manufacturers that the insulation used are ODP/CFC/HCFC free.

**Ensure water quality :-**

29. The contractor shall ensure that water used in construction meets the water quality norms as prescribed in the Indian Standards for various applications. The contractor shall get the water tested with regard to its suitability of use in the works and get written approval from the Engineer-in-charge before he proceeds with the use of same of execution of works. If the water is not suitable, the contractor shall arrange Municipal water or from any other sources at his own cost and nothing extra shall be paid to thecontractor on this account. The water shall be got tested at frequency specified in latest CYASHADA specifications/BIS code.

## 47. PRESERVATION OF EXISTING TREES.

It is obligatory on the part of Contractor to take utmost care to preserve the existing trees as it is and in no case contractor shall be allowed to cut the existing trees or the branches there of, without written permission of the Engineer-in-Charge and the competent authority. The Existing trees shall be protected by erecting 1.2 m high temporary half brick partition wall in the form of tree guard, at no extra cost.

**4.** Entry and exit of the construction vehicle shall be properly maintain by merging in and diverging out so as to avoid the accidents .

**5.** The contractor shall display the board at site showing the name of work,Project cost, Project duration, Name of contractor.etc. as directed by Engineer-In - Charge.

**6.** Contractor shall be fully responsible for any mishaps / accidents during construction at the time of construction. He should make all necessary safety arrangements to ensure safety of existing building users. He should get necessary insurance cover. Offer of contractor shall be inclusive of allcosts for making such insurance cover and safety arrangements. He shall not be paid separately for making such necessary arrangements.

**7.** Any damages to the existing structure shall be made good by the contractor at his cost , as per the instructions of engineer in charge. He shall not be paid separately for making such necessary repairs to damages. Offer of contractor shall be inclusive of all costs for making such necessary repairs.

**8.** The contractor should make adequate provision and make preventive arrangement to avoid dust and noise pollution in the premises at his own cost

# ELECTRICAL INSTALLATIONS ( SPECIAL CONDITIONS)

## SCOPE OF WORK

Scope of work covered under this tender shall be as mentioned but not limited to following :

i) Internal Electrification design, Supply, Installation, testing & Commissioning.

ii) The necessary permission along with the approved plans for Electrical installation shall be got approved from appropriate authority/ authorities by Entrepreneur & on completion of these works further NOC / Permission for use of those also be obtained by the entrepreneur and submitted to Engineer-in-charge.

iii) The electrical supply for the other activities than these will have to be obtained separately from electric supply company by the contractor.

**STANDARDS FOR ELECTRICAL WORK**

All Electrical Work shall be carried out as per

i) The relevant Indian Standards formulated by Bureau of Indian Standards New Delhi.

ii) Indian Electricity Rules 1956 (Revised)\
iii) National Electrical Code.
iv) Chapter 16 of YASHADA Hand Book – Government of Maharashtra
v) Development Control Regulations.
vi) Development Control Regulation of Maharashtra State and rules of local bodies pertaining of E.I. works.

**WIRING ON SURFACE OF WALL / CEILING**

**(I) Wiring in PVC casing capping**

PVC casing-n- capping type wiring to be adopted with its accessories such as T, bends, elbows etc.

PVC casing-n-capping and its accessories shall be confirm to IS 14927 Part I. The route of casing-n-capping on wall and ceiling should be approved prior to fixing by Engineer-in-charge.

**(II) Wiring in PVC conduit**

Conduit wiring system with Rigid Non-metallic conduit to be fixed on wall and ceiling as per design requirement. The conduit shall conform to IS:9537 (Part-3) and corresponding accessories shall conform to IS :3419. Conduits shall be joined by means or compiling. For long urns, an junction inspection type couplers, junction boxes shall be provided at intervals not exceeding junction.

**Bunching of Insulated Wires**

1) Conductors for concealed and wiring on surface of all ceiling in conduits shall be bunched. The number of insulated cables that may be drawn into single conduits is given in the following table. In this table the space factor should not exceed 40%.

| | **Size of conduit (mm) outside diameter.** | | | | |
|---|---|---|---|---|---|
| Nominal cross section area mm. | 20 | 25 | 32 | 38 | 50 |

| | No. of cables, Max. | | | | |
|---|---|---|---|---|---|
| 2.5 | 5 | 10 | 14 | -- | -- |
| 4.0 | 3 | 6 | 10 | 14 | -- |
| 6 | 2 | 5 | 8 | 11 | -- |
| 10 | -- | 4 | 7 | 9 | -- |
| 16 | -- | 2 | 4 | 5 | 12 |
| 25 | -- | -- | 2 | 2 | 6 |
| 35 | -- | -- | -- | 2 | 5 |
| 50 | -- | -- | -- | 2 | 3 |

Design of wiring, Mains shall be such that voltage drop shall be limited to 1% of the system voltage for single phase & 1.5% of the system voltage for motor load like Pumps. Lifts etc. and 2% of the system voltage for other three phase loads.

2) Conductors for surface wiring in casing-n-capping shall be restricted to occupy not more than 60% the space in casing-n-capping on it fixing position on wall ceiling.

**MINIATURE CIRUIT BREAKER'S DISTRIBUTION BOARD :**

Distribution boards along with the controlling MCB's / Fuse or Isolator as shown shall be fixed in sheet enclosure suitable for recessed mounting in wall. Distribution boards shall be made of 16 WG sheet steel duty rust inhibited through a process of degreasing acid pickling and spay painted to an approved colour over a coat of red oxide primer.

Three Phase boards shall have phase barriers and a wire channel on three sides Neutral bar shall be a solid tinned copper bar with tapped holes and chase headed screws. For three phase DB's independent neutral bars shall be provided.

All DB's shall be internally pre-wired using PVC insulated copper wires brought to a terminal grip of appropriate rating for outgoing feeders.

Conduit knockouts shall be provided as required / shown on drawings and the entire boards shall be rendered dusts and vermin proof with necessary rubber gaskets.

MCB's shall have quick make and break non welding self wiping silver alloy contacts for 10 K.A. short circuit both on the manual and automatic operation. Each pole of the breaker shall be provided both inverse time thermal over load and instantaneous over current tripping with trip free mechanism. In case of multi pole breakers, the tripping must on all the poles and operating shall be common to IS:8828.

Pressure clamp terminals for stranded /solid conductor insertions are acceptable upto 4 Sq.mm. Aluminium of 2.5 Sq.mm. copper and for high ratings, the terminals shall be suitable shrouded wherever MCB isolators are specified they are without the tripping elements.

Fuse shall be HRC links, Bottle type fuse are not acceptable. Fuse carrier terminals shall be suitable shrouded rewireable fuse carrier shall be porcelain.

Distribution boards shall have HRC / Rewirable fuses as shown on the schedule and drawing. Board shall be with the requirements of IS:2675 and making arrangement of bus bars shall be in accordance with IS: 2675 bus bars shall be suitable for the incomer switch rating and sized for a temperature rise of $35^0$ C over ...ambient. Each board shall have two separate earthing terminals. Circuit diagram indicating the load distribution shall be posted on the inside of the DBs as instructed. One earthing terminal for single phase and two terminal for 3 phases DB's shall be provided with an earth strip connecting the brass studs and outgoing ECC earth bars.

In case of MB distribution boards, the backup fuses wherever shown shall be not less than 63 Amp. with a delayed characteristic and a minimum pre arcing time of 0.5 sec. at 9 KA fault current.

All outgoing feeders shall terminate on a terminal strip which in turn is interconnected to the

MCB Fuse base by means of insulated single conductor copper wire as follows :

| | | | |
|---|---|---|---|
| Upto 15 Amps. | - | 2.5 | Sq.mm. |
| 25 Amps. | - | 4.0 | Sq.mm. |
| 63 Amps. | - | 10 | Sq.mm. |

**EARTHING**

Earthing shall be done in accordance with IS-3043 of 1987
**Systems of earthing –**

Equipment and portion of installation shall be deemed to be earthed only if earthed in accordance with the directed earthing system. In all cases, the relevant provisions of Rule 33 and 61 of the Indian Electricity Rules, 1956, shall be complied with.

**Earth Electrodes**

| | | |
|---|---|---|
| Type | : | Earth plate electrodes shall be provided and they shall not be less than 60 cm. x 60 cm. x 6 mm. copper as per Clause 9.2 of IS-3043. |
| Installation | : | Electrodes shall as far as possible be embedded below permanent moisture level. In addition, they shall be buried at a depth of not less than 3 M. Complete installation shall be as per IS-3043 and as per plate No. 4 of Chapter 16 of YASHADA Handbook. |

Earth station shall be 60 cm. x 60 cm. x 6 mm. copper buried in

Specifically prepared earth pit so as to keep top of earth plate 3 M. below ground with 40 Kgs. each charcoal and salt ( with alternate layers of charcoal and salt) with 19 mm. dia. GI pipe provide with funnel with a wire mesh for watering and brick masonry block, CI cover etc. complete as per Para 9 of IS-3043 of 1987 with necessary length of double copper earth strip of adequate size bolted with lug to the plate and covered in adequate size GI pipe 2.5 M. long complete connected to the switch gear with end socket as per direction and duly tested by earth tester and recording results.

Difference between two earth pits shall not be less than 6 Metres i.e. double the depth of each electrode.

**General Rules Applying to All Systems of Earthing**

Method of Earthing :

**A. Connection of Earthing conductors :**

1) Main earthing copper strip shall be laid from the earth station provide in the sub station, H.T. Equipment , VBC, Stabilizer and Transformer shall be earthed in the sub stations as per the provision of IS 3043 - 1987.

2) Main LT panel connection shall be taken from earth electrode provided near main LT panel room.

3) There will be copper strip of vertical risers from the earth pits independently provided for earthing of distribution floor panels located at different floors.

4) Interloping of sub panels to room DB's shall be done with PVC insulated copper conductor of

appropriate size.

**B) Cable sheathing and armouring :**

These shall be earthed at the ends adjacent to switch boards at which they originate or otherwise at the commencement of the run by an earthing conductor connected to an earth clip, clamp or gland in effective electrical contract with cable sheathing and armouring.

**C) Earthing Conductor :**

Every earthing conductor shall be either stranded strips or circular or rectangular bar. Protection against mechanical injury shall be provide where necessary. The earth conductor may be of high conductivity copper. The size of earthing conductors shall corresponds to the load current as given below.

Size of earth conductors form main switchboard to sub main switches or DB's.

| Cross sectional area of current carrying conductor copper | Cross section area of current carrying conductor copper. | |
|---|---|---|
| (Sq.mm.) | (Sq.mm.) | (Sq.mm. |
| 4 | 4 | 12 |
| 6 | 4 | 12 |
| 10 | 6 | 10 |
| 16 | 10 | 8 |
| 25 | 16 | 8 |
| 35 | 16 | 8 |
| 50 | 25 | 6 |
| 70 | 35 | 2 |
| 95 | 50 | 20 x 3 mm. |
| 120 | 70 | 25 x 3 mm. |

**LIST OF APPROVED MATERIALS TO BE USED ON WORK**

| | | |
|---|---|---|
| | PVC Rigid conduits / PVC Trunking (Casing-n-ncapping) | Precision, Diamond, Pressfit |
| | PVC Copper wires FR /FRLS grade | Polycab, RR Cables, L &T, KEI |
| | MCB (All poles), ElCB (All Poles), RCCB (All Poles), RCBO (All Poles) MCB Distribution boards) | Havells, L&T, Siemens, Legrand. |
| | MCCB (All Poles) | Havells, Merlin-Gerin, Schneider, L&T, Legrand. |

| | | |
|---|---|---|
| | MCCB Distribution Boards | Havells, Merlin-Gerin, Schneider, L&T, Legrand. |
| | Fluorescent / T-8, T-5 fittings | Wipro,Crompton, Philips, Havells, GR, K-Lite, Tulip |
| | Ceiling Fans, Exhaust Fans, Bracket Fans, Wall Mounting Fans. | Cromption, Bajaj, Anchor, Havells, Almonard. |
| | Wiring Accessories<br>1. Modular type switches, sockets, accessories | Crabtree, Legrand, MK India. |
| | Fluorescent tubes, MF/GF Lamps | Osram, Crompton, Bajaj, Philips. |
| | PVC /XLPE armoured Alluminium / Copper cables | Polycab, RR Cables, Finolex |
| | Engineering Plastic Body Storage type Water Heater | Racold, Sperehot, Bajaj |
| | Decorative Wall Fittings / Mirror Light Fittings | Eglo, Massive, Phillips |

# QUALITY CERTIFICATION STANDRDS AND TESTING FOR GRID-CONNECTED ROOFTOP SOLAR PV SYSTEMS/POWER PLANTS

Quality certification and standards for grid-connected rooftop solar PV system are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism adherence to these standards. Hence all components of grid-connected rooftop solar PV system/plant must conform to the relevant standards and certification given below.

| | |
|---|---|
| **Solar PV Modules / Panels** | |
| IEC 61215/<br>lS 14286 | Design Qualification and Type Approval for Crystalline Silicon Terrestrial<br>Photovoltaic (PV) Modules |
| lEC 61701 | Salt Mist Corrosion Testing of Photovoltaic (PV) Modules |
| lEC 61853-<br>Part 1 lS<br>16170 Part 1 | Photovoltaic (PV) Modules performance testing and energy rating<br>irradiance and temperature performance measurements and power rating |
| lEC 62716 | Photovoltaic (PV) Modules - Ammonia (NH3) Corrosion Testing (As per the site condition like dairies toilets) |
| lEC 61730 - 1, 2 | Photovoltaic (PV) Modules Safety Qualification - Part 1 : Requirements for construction Part 2 : Requirements for Testing |
| **Solar PV Inverters** | |
| lEC 62109-1 | Safety of power converters for use in photovoltaic power system<br>Part 1 : General requirement and Safety of power converters for use in photovoltaic power systems<br>Part 2 : Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting IP 54 for Indoor mounting) |
| lEC/lS<br>61683 (as applicable) | Photovoltaic Systems - Power conditioners : Procedure for Measuring Efficiency (10%,<br>25%, 50%, 75%, & 90-100% Loading Conditions) |
| lEC 62116 UL 1741 /<br>lEEE1547 (as | Utility - interconnected Photovoltaic Inverters - Test Procedure of lslanding Prevention<br>Measures |
| lEC 60255-27 | Measuring relays & protection equipment - Part 27 : Product safety requirements |
| lEC 60068 - / lEC 62093 (as applicable) | Environmental Testing of PV System - Power Conditioners and Inverters |
| **Fuses** | |

| | |
|---|---|
| lS/lEC 60947<br><br>(Part 1,2 & 3) EN50521 | General Safety requirements for connectors switches circuit breakers (AC/DC)<br>a) Low -voltage Switch gear and Control-gear Part 1 : General rules<br>b) Low -voltage Switchgear and Control-gear Part 2 : Circuit Breakers<br>c) Low -voltage Switchgear and Control-gear Part 3 : Switches disconnectors, |

| | |
|---|---|
| | switch - disconnectors and fuse - combination units<br>d) EN 50521 : Connectors for Photovoltaic system - Safetyrequirements and tests |
| lEC 60269-6 | Low - voltage fuses - Part 6 : Supplementary requirements for fuse - links for the protection of solar photovoltaic energy systems |
| **Surge Arrestors** | |
| BFC 17 - 102 : 2011 | Lightening Protection Standard |
| lEC 60364-5-53/lS 15086-5(SPD) | Electrical Installation of buildings - Part 5-53 Selection and erection of electrical equipment - solution switching and control |
| lEC 61643 - 11 2011 | Low - voltage surge protective devices - Part 11 Surge protectivedevices connected to low -voltage power systems<br>Requirements and test methods |
| **Cables** | |
| lEC 60227/lS694 lEC 60502/lS1554 (Part 1 & 2) /lEC 69947 (as applicable) | General test and measuring method for PVC (Polyviny chloride) insulated cables (for working voltages up to and including 1100 V and UV resistant for outdoor installation) |
| BS EN 50618 | Electric cables for photovoltaic system (BT (DE/NOT) 258) mainly forDC Cables |
| **Earthing / Lightning** | |
| lEC 62561 Series (Chemial earthing ) (as applicable) | lEC 62561-1<br>Lightning protection system components (LPSC) - Part 1 : Requirements for connection componentslEC 62561-2<br>Lightning protection system components (LPSC) - Part 2 : Requirements for conductors and earth electrodes<br>lEC 62561-7 : Lighting protection system components(LPSC) - Part 7 : Requirements for earthing enhancing |
| Junction Boxes | |
| lEC 60529 | Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with lP 65 protection for outdoor use and lP 54 protection for indoor use |
| Energy Meter | |
| lS 16444 or as specified bythe DISCOMS | A.C Static direct connected watt-hour Smart Meter Class 1 and 2Specification (with lmport & Export / Net energy measurements) |
| **Solar PV Roof Mounting Structure** | |
| lS 2062 / lS 4759 | Material for the Structure mounting |

**Note -** Equivalent standards may be used for different system components of the plants

## LIST OF STANDARDS

The following list records those standards which are acceptable as 'good practice' and 'accepted standards' in the fulfilment of the requirements of the code. The latest version of a standard shall be adopted at the time of enforcement of the code. The standards listed may be used by the Authority as a guide in conformance with the requirements of the referred clauses in the code.

| | *IS No.* | *Title* |
|---|---|---|
| (1) | 14671:1999 | Code of practice for installation and maintenance of hydraulic lifts |
| (2) | 14665 | Electric Traction Lifts |
| | (Part 1): 2000 | Guidelines for outline dimensions of passenger, goods, service and hospital lifts |
| | (Part 3/ Sec 1 & 2) : 2000 | Safety rules, Section 1 Passenger and goods lifts, Section 2 Service lifts |
| | (Part 4/ Sec 1 to 9) : 2001 | Components, Section 1 Lift Buffers, Section 2 Lift Guide Rails and Guide Shoes, Section 3 Lift Carframe, Car, Counterweight and Suspension, Section 4 Lift Safety Gears and Governors, Section 5 Lift Retiring Cam, Section 6 Lift Doors and Locking Devices and Contacts, Section 7 Lift Machines and Brakes, Section 8 Lift Wire Ropes, Section 9 Controller and Operating Devices |
| (3) | 14665 (Part 4/ Sec 1 to 9) : 2001 | Electric Traction lifts : Part 4 Components Section 1 Lift Buffers, Section 2 Lift Guide Rails and Guide Shoes, Section 3 Lift Carframe, Car, Counterweight and Suspension, Section 4 Lift Safety Gears and Governors, Section 5 Lift Retiring Cam, Section 6 Lift Doors and Locking Devices and Contacts, Section 7 Lift Machines and Brakes, Section 8 Lift Wire Ropes, Section 9 Controller and Operating Devices |
| (4) | 14665 (Part 2/ Sec 1 & 2):2000 | Electric Traction Lifts : Part 2 Code of practice for installation, operation and maintenance, Section 1 Passenger and goods lifts, Section 2 Service lifts |
| (5) | 962:1989 | Code of practice for architectural and building drawings (*second revision*) |
| (6) | 3043:1987 | Code of practice for earthing |
| (7) | IS/IEC 60529:2001 | Degrees of protection provided by enclosures (IP CODE) |
| (8) | 14665 (Part 3/ Sec 1 & 2): 2000 | Electric Traction Lifts : Part 3 Safety rules, Section 1 Passenger and goods lifts, Section 2 Service lifts |
| (9) | IS 15785 : 2009 | Code of practice for Installation and maintenance of lifts without conventional machine |

| | | |
|---|---|---|
| | | room |
| (10) | IS 15330:2003 | Code of practice for Installation and maintenance of lifts for handicapped persons |
| (11) | IS 8216:1976 | Guide For Inspection Of Wire Ropes |
| (12) | NBC-2016 | National Building Code of India 2016 Volume-2 Part 8 Building Services Section 5 & 5a Installation Of Lifts, |
| (13) | Lift ACT & Rules | The Maharashtra Lift, Escalators & Moving Walkway Act And Relevant Rules |
| (14) | Local Authority Rules | The Development Control Regulations Of The Local Aut |

## ADDITIONAL TENDER CONDITIONS
## SPECIAL ATTENTION TO CONTRACTORS

1. As the contract includes work of Electrical Installation with the civil work the Civil Contractor should have requisite registrations.
2. Agencies (Civil Contractor) not having the registration for carrying out above mentioned Electrical work may go in for an agreement of Joint Venture for execution of Electrical work included in the Tender with Licensed Electrical Contractor (LEC) having valid registration certificate issued by Executive Engineer (Electrical) YASHADA in Maharashtra State and registered with Chief Engineer (Electrical), YASHADA Mumbai, duly **Notarised & Registered.**
3. The agreement should be made with concerned LEC for erection, testing, commissioning till the work is handed over. Attested copy of agreement should be enclosed in envelope no. 1. However, the entire responsibility to complete the work (Civil, & Electrical) will lie with the Civil Contractor only.
4. While submitting the tender, Civil Contractor should submit the consent letters of concerned LEC from as per Proforma attached with the tender, from whom he has proposed to execute the electrical work. The consent letter shall be enclosed in envelope no. 1.
5. After opening the tender the successful Tenderer should submit the Original agreement of duly registered Joint Venture with LEC from whom the consent letter was already taken and submitted in envelope No. 1. The Joint Venture documents submitted by the successfull Tenderer shall be got checked & verified from Executive Engineer (Electrical), P W Electrical Division, Pune. The Civil Contractor entering into Joint Venture will not be allowed to change the LEC subsequently.
6. On completion of work, the Electrical Contractor shall submit the Test Report of the installation to the Engineer-in-charge. The final payment to the Contractor will be released only after the submission of Test Report.
7. All the requisite permissions along with the approved plan (drawings) shall be obtained from the appropriate authority/authorities by the Contractor and on completion of work; further NOC/Permission for use of those also shall be

obtained by the Contractor. All the NOC/Permissions along with approved plan (drawings) shall be submitted to the Engineer-in-charge.

8. Defect liability period of **electrical items** will be for 12 months.
   **and 36 months for LED fixtures** from the date of installations.

9. Successful Tenderer has to furnish copies of original bills of purchase of material with details of taxes made against this tender work to the Executive Engineer (Electrical), P W Electrical Division, Pune for verification of genuineness of material in the interest of Government work.
10. The makes/brands mentioned in the tender for various items shall not be changed. If any unavoidable condition arises, the deviation in makes/brands should be got approved from Superintending Engineer, Pune Regional Electrical Circle, Pune prior to its use on the work.
11. The excess in quantity, extra items, will be governed by the rules under YASHADA manual. However the Price Escalation Clause (i.e. PVC) will be governed by the formulae with the values prevailing in the CSR for electrical items.
12. Before starting electrical work, if, Civil contractor intends to get Electrical work done through another agency (LEC other than with whom the original agreement is executed) **Or** if, Department directs Civil Contractor to get the Electrical work from another agency (LEC) due to bad work/slow work, etc., by the original agency (LEC), then, in such case Civil Contractor will enter into an agreement with new agency (LEC) for Electrical portion of work after pre-qualification by Executive Engineer (Electrical), P W Electrical Division, Pune, as to experience of new agency and final standing valid registration in appropriate class and nature and magnitude of similar works executed with Govt. department. A copy such agreement will be submitted to the Executive Engineer (Electrical), P W Electrical Division, Pune, who will then accord permission to proceed with the work from the new agency.

# LETTER OF CONSENT

To

The Registrar,
YASHADA,Pune.

Subject : **Your office e-tender Tender Notice No 20 of 2023-24**
**Name of Work : Tender for Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune**

Sir,

I / We _____

am / are ready to execute the said electrical installation on behalf of the _____

_____

(Civil Contractor) as per the terms and conditions agreed between the Yashada

Pune and the _____

----------(Civil Contractor) .
which will be valid till thedefects liability period of this contract.

Date : Name of Firm and address

Place :

# GENERAL GUIDELINES FOR WATERPROOFING WORK FOR REFERENCE OF CONTRACTOR

**( NOTE : The Contractor is required to give detailed specifications for each item of waterproofing work).**

## 1. Roof Slab and Terrace :

Providing average 112 mm. thick cement based waterproofing treatment with brick bat coba bedding by keeping the treatment minimum 75 mm. thick at the rain water pipe point and keeping the gradient not flatter then 1 in 100.

a) Cleaning the surface to the requirements.

b) Giving a coat of wash mixed with cement.

c) Providing 12 mm. thick cement mortar bed with admixture of waterproofing compound to form a bed for brick bats. Special care shall be taken at the junction of parapet and terrace slabs to ensure gaps, if any, are properly sealed.

d) Placing brickbats of varying sizes ( average 80 mm thick ) to a proper slope and grouting their joints with chemical process in cement mortar with 2% with waterproofing compound.

e) Providing all around the terrace large waterproof wattas (roundings) upto a height of 30 cm. in P.C.C. or as directed above the finished level of waterproof treatment.

f) Finishing and curing for 14 days.

g) Carrying out the test. Payment for the item shall be released only after results of pond test are satisfactory.

## 2. Toilets :

a) Cleaning the surface to the Department's requirements.

b) Giving a coat of wash mixed with cement.

c) Providing 25 mm. thick waterproof treatment to the bottom of toilet floors.

d) Providing 20 mm. to 25 mm. thick cement mortar waterproof treatment to the walls of toilets upto the height of 1.00 metre above the finished floor level.

e) Providing waterproof wattas all around the toilets.

f) Grouting the mouths of inlets and outlets.

g) Filling sunk portion with brick bats including water proof mortar and the top surface left rough to form a key for tiles.

**OVERHEAD TANK :**

The work under some items in Schedule "B" of the tender pertains to construction of underground / overhead water tank. After completion of the work, water tank as a while shall be tested for water tightness and leakages , if any, shall be rectified forthwith without any extra cost to the Department.

## GENERAL CONDITIONS / SPECIFICATIONS FOR WATERPROOFING

**Rates for respective items shall include for the additional specifications :**

1. The work of waterproofing described in the following items shall be carried out by the contractor only through a renowned specialist waterproofing agency using cement waterproofing compounds, as approved in writing by the Executive Engineer.

2. The Contractor shall give before actual execution, detailed specifications for each item of work of waterproofing to be executed according to the specifications of the specialist agency he proposes to employ, for approval. The work shall not be started unless approval in writing is given by the Engineer-in-charge to the said specification.

3. The contractor shall give a guarantee bond on requisite stamp paper for a minimum period of 10 years for all the items of waterproofing done. During the guarantee period, the contractor shall entirely be responsible to rectify any defect at his own cost to maintain the work in waterproof condition. The waterproofing contractor shall also have rectification work at his own cost. The form of written guarantee shall be on a legal stamped agreement acceptable to the Government. The Guarantee shall be given within one month from the date of completion of waterproofing treatment but any delay in furnishing the guarantee shall not relieve the contractor from the implications of this clause.

4. DELETED.

5. The waterproofing agency shall provide and install at its own cost the following for its own use and remove the same after completion of the work :

i) Two pumps electrical / diesel operated for watering and curing at any level in the building. Curing for all items shall be carried out for a minimum period of 14 days.

ii) Temporary Mild Steel water storage tanks.

iii) Temporary galvanized iron pipings and fittings for water line.

iv) Flexible hose lengths.

v) Cement godown , site office.

6. Injections to reinforced cement concrete slab, wherever required have to be undertaken by the contractor free of cost.

7. Before starting the waterproofing work, the surface receiving the treatment shall

be cleaned properly.

8. The item of waterproofing as given in the Schedule "B" applies for work in any position and on any floor and at any height. The lift of the materials shall not form any criteria for extra payment.

9. For the reference of contractor, guideline specifications for waterproofing are attached herein with the General Specifications for waterporrfing.

**GUARANTEE BOND FOR WATERPROOFING AND POLYURETHANE**

**( On Stamp Paper worth Rs. 100/- )**

**NAME OF WORK :**

**NAME OF AGENCY :**

**Agreement No.**

The Contractor thereby declared that the waterproofing work carried out under this contract shall be of the best quality and workmanship and shall be strictly in accordance with the specifications and particulars contained / mentioned in the clause hereof and the contractor hereby guarantee that the said work would continue to conform to the description and quality aforesaid for a period of ten years from the date of handing over the said work to the Department and notwithstanding the fact that the Department may have inspected and or approved the said work. If during the aforesaid period of ten years, the said work be discovered not to conform to the description and quality aforesaid or have deteriorated ( and the decision of the Engineer-in-charge in that behalf will be final and conclusive) the Department will be entitled to reject the said work or such portion thereof as may be discovered not to conform to the said description and quality. On such rejection, the work will be at the Contractor's risk and all the provisions herein contained relating to rejection of work etc. shall apply. The contractor shall, if so called upon have to make good the work etc. or such portion thereof, as is rejected by the Engineer-in-charge, otherwise the contractor shall pay to the Department, such damages, as may arise by the reason of the breach of the condition herein contained. Nothing herein contained shall prejudice any other right of the Department in that behalf under this contract or otherwise.

**Date :**

**Place :** **Contractor**

# SECTION – 6

FORM OF BID

**VOLUME-III**

# FORM OF BID

| Description of the Work | :- | Construction of Center for Good Governance[CGG] – Residential & Academic Building at YASHADA, Pune |
|---|---|---|

*To,*

*Executive Engineer,*

*YASHADA, Pune*

1. We offer to execute the works described above and remedy any defects therein in conformity with the conditions of contract, specification, drawings, Bill of Quantities and Addenda for the sum(s) of .....
2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence and to complete the whole of the Works comprised in the Contract within the time stated in the document.
3. We agree to abide by this Bid for the period of 75 days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a format Agreement is prepare and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.
6. We accept the appointment of Shri .....as the Dispute Review Expert.

---

Dated this ..... day of ..... 20.....
Signature_____in the capacity of_____duly authorised sign bids for and on behalf of
..... (in block capitals or typed)
Address
.....
. Witness
.....
Address
.....
Occupation
.....
.....

*# Note-The bidder will submit this form online without his financial offer. The bidder shall fill the rates online in the BOQ sheet provided in the e-tender portal only.*

SECTION – 7

BILL OF QUANTITIES

# VOLUME-III

# Attached separately in soft copy) –

# Envelope II

# SECTION – 8

# SECURITIES AND OTHER FORMS

# VOLUME-III

PERFORMANCE BANK GUARANTEE

To,

**Registrar,**
**YASHADA, Pune**

WHEREAS_____[name and address of Contractor] (hereafter called "The Contractor") has undertaken, in pursuance of Contract No. _____dated_____to execute_____[name of Contract and brief description of Works] (hereinafter called "the Contractor")

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee.

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of_____[amount of guarantee]*_____(in words), such sums being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of_____[amount of guarantee] as aforesaid without your needing to prove or to show ground or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid 28 days from the date of expiry of the Defect Liability Period.

Signature and Seal of the Guarantor _____

Name of Bank _____

Address _____

Date _____

---

* An Amount shall be inserted by the Guarantor, representing the percentage the contract price specified in the Contract including additional security for unbalanced Bids, if any and denominated in Indian Rupees.

INDENTURE FOR SECURED ADVANCES

FROM 31

(For use in cases in which the contract is for finished work and the contractor has entered into an agreement for the execution of a certain specified quantity of work in a given time.)

This indenture made the_____day of_____, 20_____BETWEEN _____(hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his executors, administrators and assigns) or the one part and the employer of the Other Part.

Whereas by an agreement dated_____(hereinafter called the said agreement) the contractor has agreed.

AND WHEREAS the contractor has applied to the Employer that he may be allowed advanced on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said agreement for use in the construction of such of the works as he has undertaken to executive at rates fixed for the finished works (inclusive of the cost of materials and labour and other charges)

AND WHEREAS the Employer has agreed to advance to the Contractor the sum of Rupees_____on the security of materials the quantities and other particulars of which are detailed in Accounts of Secured Advances attached to the Running Account bill for the said works signed by the Contractor on _____and the Employer has reserved to himself the option of making any further advance or advance on the security of other materials brought by the Contractor to the site of the said works.

Now THIS INDENTURE WINTNESSE that in pursuance of the said agreement and in consideration of the sum of Rupees_____on or before the execution of these presents paid to the Contractor by the Employer (the receipt where of the Contractor doth hereby acknowledge) and of such further advance (if any) as may be made to him as a for said the Contractor doth hereby covenant and agree with the President and declare as follows :

(1) That the said sum of Rupees_____so advanced by the Employer to the Contractor as aforesaid and all or any further sum or sums advanced as aforesaid shall be employed by the Contractor in or towards expending the execution of the said works and for no other purpose whatsoever.

(2) That the materials details in the said Account of Secured Advances which have been offered to and accepted by the Employer as security are absolutely the Contractor's own propriety and free from encumbrances of any kind the contractor will not make any application for or receive a further advance of the security of materials which are not absolutely his own property and free from encumbrances of any kind and the contractor indemnified the Employer against all claims to any materials in respect of which an advance has be made to him as aforesaid.

(3) That the materials detailed in the said account of Secured Advance and all other materials on the security of which any further advance or advance may hereafter be made as aforesaid (hereafter called the said materials) shall be used by the Contractor solely in the execution of the said works in accordance with the directions of the Engineer.

(4) That the Contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protection against all risks of the said materials and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and on his own responsibility and shall at all times be open to inspection by the Engineer or any officer authorised by him. In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a grater degree than is due to reasonable use and wear thereof the Contractor will forthwith replace the same with other materials of like quality or repair and make good the same required by the Engineer.

(5) That the said materials shall not be any account be removed from the site of the said works except with the written permission of the Engineer or an officer authorized by him on that behalf

(6) That the advance shall the Employer of the price payable in full when or before the Contractor receives payment from the Employer of the price payable to him for the said works under the terms and provisions of the said agreement. Provided that if any intermediate payment are made to the Contractor on account of work done than on the occasion of each such payment the Employer will be at liberty to make a recovery from the contractor's bill for such payment by deducting there from the value of the said materials than actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates are which the amounts of the advances made under these presents were calculated.

(7) That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing of the

Employer shall immediately on the happening of such default be repayable by the Contractor to be the Employer together with interest thereon at twelve percent per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the Contractor and the Contractor hereby covenants and agrees with the Employer to reply and pay the same respectively to him accordingly.

(8) That the contractor hereby charges all the said materials with the repayment to the Employer of the said sum of Rupees_____and any further sum or sums advanced as aforesaid and all costs, charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the power contained therein if and whenever the covenant for payment and repayment here-in-before contained shall become enforceable and the money owing shall not be paid in accordance there with the Employer may at any time thereafter adopt all or any of the following courses as he may deem best :

(a) Seize and utilise the said materials or any part thereof in the completion of the said works on behalf of the contractor in accordance with the provisions in that behalf contained in the said agreement debiting the contractor with the actual cost of effecting such completion and the amount due to the contractor with the value of work done as if he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the contractor, he is to pay same to the Employer on demand.

(b) Remove and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the Contractor.

(c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said advance shall not be payable.

(9) That except in the event of such default on the part of the contractor as aforesaid interest on the said advance shall not be payable.

(10) That in the event of any conflict between the provisions of these presents and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has

not been here-in-before expressly provided for the same shall be referred to the Employer whose decision shall be final and the provision of the Indian Arbitration Act for the time being in force shall apply to any such reference.

Letter of Acceptance

(Letterhead paper of the Employer)

To,

_____[name and address of the Contractor]

_____

_____

Dear Sirs,

This is to notify you that your online bid dated_____for execution of the_____(name of he contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees _____(_____) (amount in words and figures), as corrected and modified in accordance with the Instructions to Bidders[1] is hereby accepted by our agency.

We accept / do not accept that_____be appointed as the Adjudicator[2]. You are hereby requested to furnish Performance Security, in the form detailed in Para 34.1 of ITB for an amount equivalent to Rs._____within 07 days of the receipt of the letter of acceptance valid up to 28 days from the date of expiry of defects Liability Period i.e. up to_____and sign the contract, failing which action as stated in Para 34.2 of ITB will be taken.

Yours faithfully,

Authorised Signature

Name and title of Signatory

Name of Agency

[1] Delete “Corrected and” or “and modified” if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.

[2] To be used only if the contractor disagrees in his Bid with the Adjudicator proposed by the Employer in the “ Instructions to Bidders”.

Issue of Notice to proceed with the work

(Letter head paper of the Employer)

_____(Date)

To,

_____[name and address of the Contractor]

_____

_____

Dear Sirs,

Pursuant to your furnishing the requisite security as stipulated in ITB Clause 34.1 and signing of the Contract for the work of .....

.....

.....

Bid Price of Rs._____.

You are hereby instructed to proceed with the execution of the said works in accordance with the documents.

Yours faithfully,

Registrar,

YASHADA, Pune

AGREEMENT FORM

Agreement

This agreement, made the_____day of_____between _____(name and address of the Employer) [hereinafter called "the Employer] and _____(name and address of contractor) hereinafter called "the Contractor" of the other part.

Whereas the employer is desirous that the Contractor execute _____(name and identification number of Contractor) (hereinafter called "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein, at a cost of Rs_____

NOW THIS AGREEMENT WITNESSTH as follows :

(1) In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read and construed as part of this Agreement.

(2) In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to all aspects with the provisions of the contract.

(3) The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

(4) The following documents shall be deemed to form and be ready construed as part of this agreement viz.

- i) Letter of Acceptance
- ii) Notice to proceed with the works
- iii) Contractor's Bid
- iv) Condition of contract : General and Special
- v) Contract Date
- vi) Additional condition
- vii) Drawings
- viii) Bill of Quantities and
- ix) Any other documents listed in the Contract Data as forming part of the Contract.

In witnessed whereof the parties there to have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____ was hereunto affixed in the presence of :

Signed, Sealed and Delivered by the said _____

in the presence of :

Binding Signature of Employer _____

Binding Signature of Contractor _____

UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s. _____ _____agree to abide by this bid for a period_____days for the date fixed for receiving the same and it shall be binding on us and may be accepted at any time before the expiration of that period.

_____

(Signed by an Authorized Officer of the Firm)

_____

Title of Officer

_____

Name of Firm

_____

DATE

# LETTER OF CONSENT

To

Registrar,
YASHADA, Pune

Subject : **Your office e-tender Tender Notice No of 2023-24**
**Name of Work : Tender for Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune**

Sir,

I / We _____

am / are ready to execute the said electrical installation on behalf of the _____

_____

(Civil Contractor) as per the terms and conditions agreed between the Yashada Pune and the Chief Engineer, Public WorksRegion, Pune and the _____ ----------(Civil Contractor) . Further it is hereby agreed that I / We ----------(Name of Firm) will go into joint venture with _____ under the joint supervision of Executive Engineer, Public Works (North) Division, Pune / Executive Engineer, Pune Electrical Division, Pune which will be valid till the defects liability period of this contract.

Date : Name of Firm and address

Place :

# AFFIDAVIT
# (on Rs. 100/- Stamp Paper)(English)

| **Name of work:-** | **Tender for Construction of Convention Center (Auditorium And Guest House with Seminar Hall) at Tathawade Campus,YASHADA,Pune** |
|---|---|

I .....Age.....Address..... ..... (Authorized signatory to sign the contract), hereby submit, vide this affidavit in truth, that I am the owner of the contracting firm ...../ authorized signatory and I am submitting the documents in Envelope No. 1 or the purpose of scrutiny of the contract. I hereby agree to the conditions mentioned below

1. I am liable for action under Indian Penal Code for submission of any false /fraudulent paper / information submitted in Envelope No. 1.

2. I am liable for action under Indian Penal Code if during contract period and defect liability period, any false information, false bill of purchases, supporting proof of purchase, proof of testing submitted by my staff, subletting company or by myself, I will be liable for action under Indian Penal Code.

3. I am liable for action under Indian Penal Code if any paper are found false /fraudulent during contract period and even after the completion of contract(finalisation of final bill ).

**(Signature of Contractor)**
**(Seal of company)**

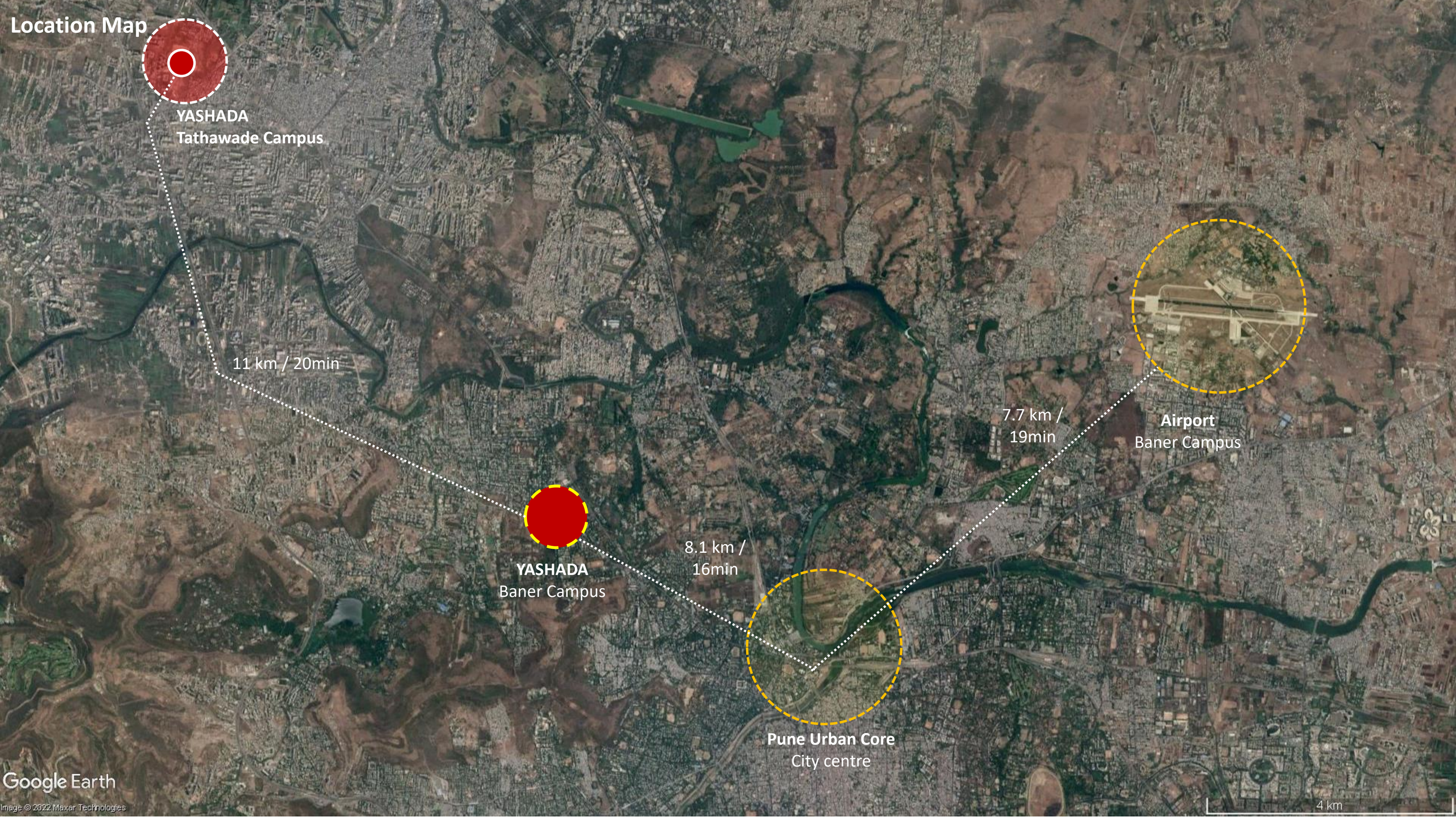
# VOLUME-IV

Section 9

# SECTION – 9

## DRAWINGS

## **VOLUME-IV**


Location Map
YASHADA
Tathawade Campus
11 km / 20min
YASHADA
Baner Campus
8.1 km /
16min
Pune Urban Core
City centre
7.7 km /
19min
Airport
Baner Campus
Google Earth
Image © 2022 Maxar Technologies
4 km

**Name of Work:-**

**Convention Centre (Auditorium)**

## SCHEDULE-A

Schedule showing (approximately) the materials to be supplied from the departmental store for work contracted to be executed and preliminary and ancillary works and the rates at which they are to be charged for.

| Sr No. | Particulars | Quantity | Unit | Rate of recovery | Place of delivery |
|---|---|---|---|---|---|
| NILL | | | | | |

Note:- 1) All the required materials for the work has to be brought by the contractor at his own cost.

| Name of Work:- | | | Convention Centre (Auditorium) |
|---|---|---|---|
| | | | **SCHEDULE-B & SPECIFICATIONS** |
| **BOQ No.** | **Estimated Quantity** | **Unit** | **Description of Item** |
| **1.1** | 3450.00 | Square Metre | Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150mm in thickness. (Item No. 2.09) |
| **1.2** | 632.24 | Cubic Metre | Excavation for foundation in earth, soil of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50m. beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift upto 1.5m.) By Mechanical Means (Item No. 21.02) |
| **1.3** | 1264.48 | Cubic Metre | Excavation for foundation in Hard murum including removing the excavated material upto a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift from 1.5 to 3.0m.) By Mechanical Means (Item No. 21.08) |
| **1.4** | 632.24 | Cubic Metre | Excavation for foundation in Hard rock by chiselling, wedging, line drilling, etc. including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the building area stacking as directed, dewatering and back filling with available earth/murum watering, ramming etc. complete.(Lift upto 1.5 m). By Mechanical Means (Item No. 21.20) |
| **1.5** | 2684.32 | Square Metre | Providing preconstructional antitermite treatment as per I.S. 6313(Part-II) by treating the bottom surface and sides of excavation at the rate of 5 litres of emulsion concentrate of 1.0 percent of chlorophyrifos per square meter of surface area covering 10 years guarantee on bond paper. (Item No. 21.22) |
| **1.6** | 3450.00 | Square Metre | Providing preconstructional antitermite treatment as per I.S. 6313(Part-II) by treating the top surface of plinth filling at the rate of 5 litres of emulsion concentrate at 1.0 percent of clorophyrifos per square metre of surface area covering ten years guarantee on bond paper. (Item No. 21.24) |
| **1.7** | 790.97 | Cubic Metre | Providing and laying Cast in situ/Ready Mix cement concrete in M-10 of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, Steel centering, formwork, laying/pumping, compacting, roughening them if special finish is to be provided, finishing if required and curing complete, with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 24.01) |
| **1.8** | 63.55 | Cubic Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:6 in foundations and plinth of inner walls/in plinth external walls including bailing out water manually, striking joints on unexposed faces, raking out joints on exposed faces and watering etc. Complete. (Item No. 27.01) |
| **1.9** | 641.35 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including Steel centering formwork, cover blocks laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.15) |

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|---|---|---|---|
| **1.10** | 237.35 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. columns as per detailed designs and drawing or as directed including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.35) |
| **1.11** | 137.12 | Cubic Metre | ... (Item No. 25.35, First Floor) |
| **1.12** | 296.84 | Cubic Metre | ... (Item No. 25.35, Second Floor) |
| **1.13** | 42.41 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/granite/quartzite/gneiss metal for R.C.C. pardi of required thickness including steel centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.19) |
| **1.14** | 2022.88 | Cubic Metre | Filling in plinth and floors with approved excavated material in 15cm. to 20cm. Layers including watering and compacting etc. complete. (Item No. 21.36) |
| **1.15** | 674.29 | Cubic Metre | Filling in plinth and floors with contractors material/brought from outside and approved by Engineer incharge in layers of 15cm to 20cm including watering and compaction etc. complete. (Item No. 21.37) |
| **1.16** | 690.00 | Cubic Metre | Providing dry/trap/granite/quartzite/gneiss rubble stone soling 15cm to 20cm thick including hand packing and compacting etc. complete. (Item No. 21.38) |
| **1.17** | 254.94 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. beams and lintels as per detailed designs and drawings or as directed including steel centering, formwork, cover blocks, laying/pumping, compactionand roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.54) |
| **1.18** | 188.73 | Cubic Metre | ... (Item No. 25.54, First Floor) |
| **1.19** | 126.12 | Cubic Metre | ... (Item No. 25.54, Second Floor) |
| **1.20** | 234.52 | Metric Tonne | Providing and fixing in position TMT-FE-500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete. (Item No. 26.33) |

| | | | |
|---|---|---|---|
| **1.21** | 80.15 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. slabs and landings as per detailed designs and drawings including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.74) |
| **1.22** | 111.43 | Cubic Metre | ... (Item No. 25.74, First Floor) |
| **1.23** | 97.01 | Cubic Metre | ... (Item No. 25.74, Second Floor) |
| **1.24** | 20.13 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/quartzite/granite/gneiss metal for R.C.C. Waist slab, and steps of staircases as per detailed design and drawings or as directed including steel centering, plywood/steel formwork, steel props, laying/pumping, compaction, finishing uneven and honeycombed surface with C.M. 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement, including cover block).(Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc.) with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.26) |
| **1.25** | 10.07 | Cubic Metre | ... (Item No. 26.26, First Floor) |
| **1.26** | 132.92 | Square Metre | Providing and laying damp proof course 50mm thick in M20 cement concrete layer and bitumen/using cement with waterproofing compound curing, formwork etc. complete. (Item No. 31.01) |
| **1.27** | 132.45 | Square Metre | ... (Item No. 31.01, First Floor) |
| **1.28** | 83.66 | Square Metre | ... (Item No. 31.01, Second Floor) |
| **1.29** | 75.06 | Cubic Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.15) |
| **1.30** | 311.75 | Cubic Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.15, First Floor) |
| **1.31** | 151.33 | Cubic Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.15, Second Floor) |

| | | | |
|---|---|---|---|
| **1.32** | 52.74 | Cubic Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:6 in superstructure including striking joints, raking out joints, watering and scaffolding etc. Complete (Item No. 27.05, First Floor) |
| **1.33** | 3225.82 | Square Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in Half brick thick wall including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.16, First Floor) |
| **1.34** | 39.88 | Cubic Metre | Providing and laying Cast in situ/Ready Mix cement concrete in M-20 of trap/granite/quartzite/gneiss metal for R.C.C.coping to plinth or parapet and sill of doors and windows moulded as per detailed drawings or chamfered as approved by the Engineer including steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.23) |
| **1.35** | 55.57 | Cubic Metre | ... (Item No. 26.23, First Floor) |
| **1.36** | 25.10 | Cubic Metre | ... (Item No. 26.23, Second Floor) |
| **1.37** | 431.52 | Square Metre | Providing and applying gypsum plaster(with Gypsum material) with finishing with gypsum material in 10 to 13 millimeter thickness to previously plastered surface/or on newly brick surface(Excluding rough cast plaster) in all position including preparing and Finishing the surface scaffolding etc.complete. (Item No. 32.31) |
| **1.38** | 4227.68 | Square Metre | ... (Item No. 32.31, First Floor) |
| **1.39** | 363.56 | Square Metre | ... (Item No. 32.31, Second Floor) |
| **1.40** | 47.39 | Square Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6mm diameter/2 hoop iron strips 25mm X 1.6mm placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete. (Item No. 27.06) |
| **1.41** | 471.13 | Square Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6mm diameter/2 hoop iron strips 25mm X 1.6mm placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete.. (Item No. 27.06, First Floor) |
| **1.42** | 55.92 | Square Metre | Providing waterproof plaster in W.C. and bath 12mm thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 Kilogram. per bag of cement of approved make and manufacturer and curing etc. complete.(Excluding Tiles)(As directed by Engineer in Charge) (Item No. |
| **1.43** | 2151.09 | Square Metre | ... (Item No. 31.06, First Floor) |
| **1.44** | 0.10 | Cubic Metre | Providing and fixing frame with/without ventilator of size as specified with Country cut teak wood for doors and windows including chamfering, rounding, rebating, iron holdfast of size 300mm x 40mm x 5mm with oil painting, etc. complete (Item No. 39.01) |

| | | | |
|---|---|---|---|
| **1.45** | 0.05 | Cubic Metre | ... (Item No. 39.01, First Floor) |
| **1.46** | 0.47 | Cubic Metre | ... (Item No. 39.01, Second Floor) |
| **1.47** | 5.04 | Square Metre | Providing and fixing solid core flush door shutter in single leaf 32mm thick decorative type of exterior grade as per detailed drawings approved face veneers 3mm thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.09) |
| **1.48** | 82.32 | Square Metre | ... (Item No. 39.09, First Floor) |
| **1.49** | 18.90 | Square Metre | ... (Item No. 39.09, Second Floor) |
| **1.50** | 5.67 | Square Metre | Providing and fixing solid core flush door shutter in double leaf 32mm thick decorative type of exterior grade as per detailed drawings approved face veneers 3mm thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.95, First Floor) |
| **1.51** | 25.20 | Sqm | Providing and fixing 12mm toughened glass door shutter with fittings etc complete. |
| **1.52** | 2.10 | Square Metre | Providing and Fixing 30MM thick BOTH SIDE PRELAMINATED SOLID PANEL PVC DOOR SHUTTER consisting of frame made out of M.S tubes of 19 guage thickness and, size 19 x 19mm for styles and 15 x15mm for the top and bottom rails, M.S frame shall have a coat of metel primer of approved make and manufacture. M.S frame shall be covered with heat mouled PVC 'C' channel made from 5mm(+/0.25) thick prelaminated sheet of density 600 Kilogram/cbm, of size 30mm thickness 70mm width out of which 50mm shall be flat and 20mm shall be tapered in 45? angle on either side forming stiles ; and 5mm thick, 95mm wide PVC sheet out of which 75mm shall be falt and 20mm shall be tapered in 45 on the inner side to form top and bottom rail and 115mm wide PVC sheet out of which 75mm shall be falt and 20mm shall be tapered on both sides to form lock rail.Top, bottom and lock rail shall be provided either side of the panel. An additional 5mm(+/0.25) thick PVC strip of 20mm width is to be stuck on the bottom side of the ' c ' channel prelaminated paneling of 5mm(+/0.25) thick PVC sheet to be fitted inside the M.S. frame welded/sealed to the styles and rails with 5mm(+/0.25) x 30mm PVC sheet beading on either side and joined together with solvent cement adhesive etc, 10mm thickness(5mm(+/0.25) x 2 nos) 20mm wide cross PVC sheet as gap insert for the rail and bottom rail. Door to be fixed to frames with 3 nos M.S.powder coated but hinges of size 100mm x 25MM x 2mm using 32mm long steel screws drilled suitable to pass through both the walls of the M.S tube. Other hardwares (Item No. 39.47) |
| **1.53** | 16.17 | Square Metre | ... (Item No. 39.47, First Floor) |

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| **1.54** | 15.12 | Sqm | Providing and fixing MS powder coated door including all material and labour etc complete. |
| **1.55** | 76.03 | Square Metre | Providing and laying telephone black/Amba White/Cadburybrown/Ruby red/Ocean Brown granite stone of 18 to 20mm thick for door frame/dado/window boxing etc. On C.M. 1:6 including filling joints with polymer base filler nosing/moulding the sharp edges wherever necessary, curing, etc. complete. (Item No. 33.68) |
| **1.56** | 94.65 | Square Metre | ... (Item No. 33.68, First Floor) |
| **1.57** | 8.83 | Square Metre | ... (Item No. 33.68, Second Floor) |
| **1.58** | 10.00 | Square Metre | Providing and fixing in position.(as per I.S.1868/1982) Aluminium sliding window of two tracks with rectangular pipe having overall dimension 63.50 x 38.10 x 1.02mm at weight 0.547 Kilogram/running metre. and window frame bottom track section 61.85 x 31.75 x 1.20mm at weight 0.695 Kilogram/running metre. Top and side track section 61.85 x 31.75 x 1.30mm at weight 0.659 Kilogram/running metre. The shutter should be of bearing bottom 40 x 18 x 1.25mm at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10mm at weight 0.469 Kilogram/running metre. And handle section 40 x 18 x 1.25mm at weight 0.417 Kilogram/running metre. and top section 40 x 18 x 1.25mm at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineer in charge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5mm thick plain glass with all required screws and nuts etc, complete. With powder coating with box (Item No. 39.39) |
| **1.59** | 9.60 | Square Metre | Providing and fixing in position(as per 1868/1982) Alluminium sliding window of three tracks with rectangular pipe 95 x 38.10 x 0.90mm at weight 0.637 Kilogram/running metre. with window frame bottom track section 92 x 31.75 x 1.30mm at weight 1.070 Kilogram/running metre.. Top and side track section 92 x 31.75 x 1.30mm at weight 0.933 Kilogram/Running metre. The shutter should be of bearing bottom 40 x 18 x 1.25mm at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10mm at weight 0.469 Kilogram/Running metre. and handle and top section 40 x 18 x 1.25mm at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineerincharge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5mm thick plain glass and aluminium mosquito net shutter with stainless steel jail with all required screws and nuts etc, complete. With colour Anodising with box (Item No. 39.41) |
| **1.60** | 62.34 | Square Metre | ... (Item No. 39.41, First Floor) |
| **1.61** | 14.40 | Square Metre | ... (Item No. 39.41, Second Floor) |
| **1.62** | 1.44 | Square Metre | Providing and fixing in position powder coated aluminium louvered windows/ventilator of various sizes with powder coating as per detailed drawing and specifications including aluminium frames 80 x 38mm x 1.22mm box type, 5mm thick sheet glass louvers, of approved quality etc. complete. (Item No. 39.68) |

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| **1.63** | 13.64 | Square Metre | ... (Item No. 39.68, First Floor) |
| **1.64** | 1350.69 | Square Metre | Providing and applying interior wall finish luster of approved make on internal wall surface as detailed below Scrapping the surface with emery paper and wipe clean wall primer with brush with mineral turpentine with brush 8 to 10% and oil 15 to 20% with roller and allowing to dry for a period 6 to 8 hours. wall putty with appropriate proportion of water allowing to dry for period 4 to 6 hours. Scrapping with Emery paper 180 and wipe clean. Applyingwall primer with brush with mineral turpentine 8 to 10% and oil 15 to 20% with roller Scrapping Emery paper 320 and wipe clean, interior wall finish luster 1st coat with brush/rubber/spray with mineral turpentine 7 to 9% and Oil with roller 19 to 21% After 8 hours of activity Applying 2nd coat or wall finish Lustre with mineral turpentine 7 to 9 % with brush and Oil with roller 19 to 21% after allowing dry for the period of 6 to 8 hours activity.(With prior approval of S.E.) (Item No. 36.20) |
| **1.65** | 4488.25 | Square Metre | ... (Item No. 36.20, First Floor) |
| **1.66** | 520.02 | Square Metre | ... (Item No. 36.20, Second Floor) |
| **1.67** | 171.95 | Square Metre | Providing internal cement plaster 20mm thick in Single coats in cement mortar 1:5 without neeru finish, to concrete, brick surface, in all positions including scaffolding and curing etc. complete (Item No. 32.06) |
| **1.68** | 213.43 | Square Metre | ... (Item No. 32.06, First Floor) |
| **1.69** | 222.50 | Square Metre | ... (Item No. 32.06, Second Floor) |
| **1.70** | 171.95 | Square Metre | Providing and applying white-wash in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scaffolding and preparing the surface by brushing and brooming down etc. complete. (Item No. 36.03) |
| **1.71** | 213.43 | Square Metre | ... (Item No. 36.03, First Floor) |
| **1.72** | 222.50 | Square Metre | ... (Item No. 36.03, Second Floor) |
| **1.73** | 35.27 | sq.m. | Providing and fixing high polished granite stone for wall cladding having stones 25mm to 30mm thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. |
| **1.74** | 912.39 | Square Metre | Providing and laying polished hand cut Kotah Stone flooring 25mm to 30mm thick and 45cm to 55cm wide in plain/diamond pattern on a bed of 1:6 C.M. including cement float, filling joints with neat cement slurry, curing, polishing and cleaning complete. (Item No. 33.08) |
| **1.75** | 699.56 | Square Metre | ... (Item No. 33.08, First Floor) |
| **1.76** | 168.76 | Square Metre | ... (Item No. 33.08, Second Floor) |

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| **1.77** | 34.77 | Square Metre | Providing and laying machine cut machine polished machine cut Kota stone slabs 20 to 25mm thick for treads and risers of steps and staircases, with rounded nosing for the treads on a bed of 1:4 cement mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning etc. complete. (Item No. 33.18) |
| **1.78** | 143.62 | Square Metre | ... (Item No. 33.18, First Floor) |
| **1.79** | 34.77 | Square Metre | ... (Item No. 33.18, Second Floor) |
| **1.80** | 561.68 | Square Metre | Providing and laying in position flooring of telephone black/Amba White/Cat bary brown/Ruby red/Ocean Brown granite stone of approved shade and size 18mm to 20mm thick on bed 1:6 cement mortar including cement floats striking joints, pointing in C.M. 1:3 curing and cleaning etc. complete. (Item No. 33.34, First Floor) |
| **1.81** | 120.04 | Square Metre | ... (Item No. 33.34) |
| **1.82** | 212.16 | Square Metre | Providing and fixing machine cut machine polished 18mm to 20mm thick telephone black/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone for treads and risers of steps and staircases of approved colour and shade with full moulding and three grooved line for the treads on bed of 1:4 Cement mortar including float filling joints with neat cement slurry curing polishing and cleaning etc. complete. (Item No. 33.35) |
| **1.83** | 31.48 | Square Metre | Providing and laying vitrified matt fininsh tiles having size 590mm to 605mm x to 605mm of 8 to 10mm thickness and confirming IS. 15622-2006(Group Bla) of approved make, shade and pattern for flooring in required position laid on a bed of 1:4 cement morar including neat cement float, filling joints, curing and cleaning etc. complete. (Item No. 33.42) |
| **1.84** | 183.66 | Square Metre | ... (Item No. 33.42, First Floor) |
| **1.85** | 59.74 | Square Metre | Providing and laying ceramic tiles having size 30cm. x 45cm. confirming to corresponding I.S. for dado and skirting in required position with readymade adhesive mortar of approved quality on plaster of 1:2 cement mortar including joint filling with white/colour cement slurry cleaning curing etc. complete. (Item No. 33.2) |
| **1.86** | 604.61 | Square Metre | ... (Item No. 33.26, First Floor) |
| **1.87** | 22.24 | Square Metre | Providing and fixing in required position skirting or dado of polished Kotah Stone slab 25mm to 30mm thick fixed on base on plaster of cement mortar 1:4 including cement float, filling joints with cement slurry, curing rubbing, polishing and cleaning complete. (Item No. 33.81) |
| **1.88** | 67.69 | Square Metre | ... (Item No. 33.81, First Floor) |
| **1.89** | 14.74 | Square Metre | ... (Item No. 33.81, Second Floor) |

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| **1.90** | 31.20 | Square Metre | Providing and fixing machine cut mirror polished 18mm to 20mm thick telephone black granite/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone partition with full moulding the edges etc. complete . Both side polish (Item No. 33.36) |
| **1.91** | 5.25 | Square Metre | Providing sills of required material 20mm to 25mm thick, on a bed of cement mortar 1:4 including cement float, filling joints with neat cement slurry, curing, moulding edges, polishing, cleaning complete. b) Granite (Item No. 33.22) |
| **1.92** | 170.75 | Square Metre | Providng and fixing in position anodised extruded aluminum partitions, partly glazed and partly laminated having frame made out of extruded tubular section of size 40mm x 60mm with 12mm thick three layered flat pressed teak wood particle board bonded with BWP type exterior grade phenol formaldehyde synthetic resin conforming to IS 128231990, laminated on both sides, Novateakor equivalent and 5mm thick selected quality plain/float glass panels fixed with aluminum glass clips 12mm x 12mm and rubber cushioning beading to glass partitions as per approved drawing etc. compete (Item No. 39.72, First Floor) |
| **1.93** | 51.68 | sq.m. | Providing and Fixing MS railing with top pipe of 50mm dia. and vertical pipe of 38mm dia at 0.60m c/ c or as required and horizontal pipes of 25mm dia in three rows, all pipes of 2mm thick including buffing, fabricating fixtures and fastening including pipe base of appropriate diameter and ball base of 75mm dia above newel post of 75mm diameter etc.The handrail, horizontal pipes, verticles, bends to be finished with three coats of approved synthetic enamel paint from approved make inclusive of all surface preparation with Zinc chromate primer as specific etc complete. |
| **1.94** | 3391.06 | Square Metre | Providing cement based water proofing treatment to terraces(Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in C.M.1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with C.M.1:3 admixed with approved water proofing compound and finally top finishing with average 20mm. thick layers of same mortar added with jute fiber at 1Kilogramper bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. Marking finished surface with false squares of 300mm x 300mm. making the junctions at the parapet rounded and tapered top for required height, with drip mould at the junction of plaster and parapet and curing and covering 10 years Guarantee against leakproofness on Court fee stamp paper of Rs. 500/-including ponding test etc. complete. (Item No. 31.04, Second Floor) |
| **1.95** | 55.10 | Cubic Metre | Providing waterproofing in W.C. and bath including brick bat coba in all position including providing and laying 12mm bedding in cement mortor 1:3 on vergin concrete slab with waterproofing compound @ 1Kilogram/per bag of cement laying brick bat coba of required thickness incm 1:5 with waterproofing compound 1 Kilogram/bag of cement grouting and finishing the top layer with 20mm thick brick bedding incm mortor 1:3 with waterproofing compound 1 Kilogram/per bag of cement and testing the treated portion for 48 hours by pond test and covering ten years' guarantee on requisite stamp paper including curing etc. complete. (Item No. 31.26) |
| **1.96** | 709.01 | Square Metre | Providing rough cast cement plaster externally in two coats to concrete, brick or stone masonry surfaces in all positions with base coat of 12 to 15mm thick in C.M. 1:4 and rough cast treatment 12mm thick in proportion 1:1 1/2:3 including scaffolding and fourteen days curing complete. (Item No. 32.12) |
| **1.97** | 585.46 | Square Metre | ... (Item No. 32.12, First Floor) |
| **1.98** | 792.98 | Square Metre | ... (Item No. 32.12, Second Floor) |

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| **1.99** | 1556.67 | sq.m. | Supplying & providing approved colour washed stone crete plaster 1:0:5:2 (1cement: 0.5 dolomite powder: 2 stone chipping 10mm nominal size) in panels all around as per approved pattern including scrubbing and washing, the top layer with<br>brushes and water to expose the stone chippings, complete as per specification and direction of Engineer in 50% white cement and 50% ordinary grey cement in |
| **1.100** | 31.48 | Square Metre | Providing and Fixing of GI Lay in Plain metal ceiling consisting of 600x600mm Lay in tiles of pre coated galvanized steel in 0.5mm thickness in Global white color tile to be laid on grid systems with 15mm wide T-section flanges color white having rotary stitching on the Main Runner, 1200mm and 600mm Cross Tees.Providing and Fixing of GI Lay in Plain metal ceiling consisting of 600x600mm Lay in tiles of pre coated galvanized steel in 0.5mm thickness in Global white color tile to be laid on grid systems with 15mm wide T-section flanges color white having rotary stitching on the Main Runner, 1200mm and 600mm Cross Tees.products approved as per GRIHA and BS 476 etc. complete. (Item No. 38.48) |
| **1.101** | 183.66 | Square Metre | ... (Item No. 38.48, First Floor) |
| **1.102** | 1006.10 | Running Metre | Providing and fixing chicken mesh of 22 gauge, with about 30cm. width at the junction of R.C.C members and brick work, of approved quality including fixing mesh in position by necessary drilling in concrete/B.B.masonry and or tying by binding wire etc. complete. (Item No. 32.26) |
| **1.103** | 1006.10 | Running Metre | ... (Item No. 32.26, First Floor) |
| **1.104** | 1006.10 | Running Metre | ... (Item No. 32.26, Second Floor) |
| **1.105** | 256.25 | Square Metre | Providing and applying a base coat comprising of 1KilogramPolydee-MC and 1Kilogramfresh cement after wetting the surface followed by drying the surface for 2 days, apply primer coat of TP-40 and after drying, applying Polydee-11 two component(mixing ratio 2 A : 1 B)) Antibacterial food grade coating inside drinking water tank in two coats with time interval of minimum 8 hrs. covering 7 years guarantee on Court Fee Stamp Paper of Rs. 100/-etc. complete. (Item No. 31.11) |
| **1.106** | 263.44 | sq.m. | Providing and fixing terracota tiles for wall cladding in tile adhesive including filling joints, cleaning, etc complete. (First Floor) |
| **1.107** | 179.86 | sq.m. | Providing and fixing 12mm thick clear toughened glass cladding with supporting frame in aluminium sections including all necessary fittings, labour, transportation, Scaffolding etc. complete. As directed by engineer in charge. |
| **1.108** | 51.00 | Metric Tonne | Providing structural steel work of rectangular hollow steel section for steel trusses, other similar trussed items like purlin and members with all bracing, gusset plates etc. as per detailed designs and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted/bolted/welded connections and one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade complete. (Item No. 23.11) |

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| **1.109** | 1775.60 | sq.m. | 1.Roofing Sheet (Top Layer): Supply and fixing of MxSeam(R) Standing Seam Profile (Factoryroll formed length upto 12 mtr.) of Maxroof having nominal 480 mm effective cover width and46 mm corrugation depth in Bare Galvalume Steel materials. The feed material is manufactured out of nominal 0.55 mm Total coated thickness (TCT), High tensile steel with250 to 300 MPa yield strength, metallic hot dipped coated with Aluminium- Zinc alloy coating(55% Aluminium, 43.3% Zinc & 1.6% Silicon) as per AS 1397 AZ150 having min. 150 grams/ sq. m. total on both sides. The roof panels shall be side lapped with seaming process involvesthe male and female ribs snuggly anchored on the special designed GI Clip Head and clips are fixed to structural members by self- drilling screws. (Tata BlueScope or Jsw Make Base Coils) Color: Wind Spray (Profile- MxSEAM) MAKE - CLASSIC ZIP400 2.Insulation layer: Rockwool Insulation layer having 100 mm thick, 48 kg/m3 density. 3.Vapour Control Layer: Supply & Installation of vapour control layer upto 150 micron thickness to be laid below rockwool insulation. 4.Top Hat Bracket with Z Type Spacer: Supply & Installation of 40 mm height Top Hat Bracket with 40 mm Height Z GI Sub-girt to be fixed with help of self tapping screws at every Top Hat Bracket location over liner sheets to accommodate 100 mm thick insulation, the height of 100 mm will cater the thickness of insulation. (Size - 40x50x40x1.5mm Thk). 5.Liner Roofing Sheet (Bottom Layer): Linear Color Coated Galvalume Roofing Sheet in MxLine 1050 profile fixed over purlins with self tapping screws. The feed material is manufactured out of nominal 0.42 mm Base Metal thickness (BMT) 0.47 mm Total coated thickness (TCT) |
| **1.110** | 255.57 | sq.m. | Flashings: Supply & fixing of 0.55mm thick colour coated Galvalume flashing for above matching profile upto 600mm Girth. Supply length would be 2.5m.(Tata Blue Scope Steel Ltd Make Base Coil) |
| **1.111** | 88.31 | sq.m. | Providing and fixing poly carbonate sheet 10mm thick for dome including providing and fixing clip, putti necessary fitting etc. complete |
| **1.112** | 1137.29 | Square Metre | Providing and fixing heavy duty inter locking concrete Grey paving blocks of 60mm thickness of having a strength of 300 Kilogram/Sq.cm. of approved quality and shape on a bed of crushed sand of 25 to 30mm thick including skirting joints and cleaning etc. complete. (Item No. 33.49) |
| **1.113** | 94.40 | Square Metre | Providing leather finished polishing to Kota/Marble/Shahabad/Kadappa Stone slab by continuous grinding in 4 coats of different bits to receive rough and matty finish including buffing process before laying and fixing of stone as per drawing and design, including cleaning, washing and finishing etc. complete. (Item No. 33.57) |
| **2.1** | 505.30 | Square Metre | Providing & Fixing in position, Acoustical Panelling made from Wood-wool board 20mm on, 50 x 50mm Sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 Gsm synthetic wool 50mm thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.02, First Floor) |
| **2.2** | 81.08 | Square Metre | Providing & Fixing in position, Acoustical Panelling made from 12mm wp Ply wood & 1.5mm laminate on, 50 x 50mm Sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 Gsm synthetic wool 50mm thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.04, First Floor) |

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| **2.3** | 56.54 | Square Metre | Providing & Fixing in position Acoustical Doors along with 150 x 150mm teak wood frame, doors made from 50mm Teak wood frame 600 x600 c to c filled with 1000 Gsm synthetic wool 50mm thick and 3mm Tecsound from both sides, 12mm waterproof ply & veneer from both sides, including 150mm heavy duty SS hinges(Geze/Dorma or eq.) 4 no each leaf, with Door-closer(Dorma/Geze or eq.) including cost of required Cut-Outs, decorative mouldings/finishing-items/melamine polish & Scaffolding as per Architectural & Acoustical Design & Instructions & Complete in all aspects .including all materials labour, finishing etc complete (Item No. 51.05, First Floor) |
| **2.4** | 848.38 | Square Metre | Providing & Fixing in position, Acoustical Ceiling made from Gypsum Plain Panels on approved heavy duty G.I. frame ceiling channels at 450 c to c, & intermediate channels not more than 1200 c to c, along with ply wood forms suspended with Hangers from Roof, in front of 1000 Gsm synthetic wool 50mm thick, with Paint, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.07, First Floor) |
| **2.5** | 468.62 | Square Metre | Providing & Fixing in position, Acoustical Ceiling made from Rigitone 8/18 perforated panels on approved heavy duty G.I. frame, ceiling channels at 300 c to c, & intermediate channels not more than 1200 c to c, suspended with Hangers from Roof, in front of 1000 Gsm synthetic wool 50mm thick, with Paint, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.09, First Floor) |
| **2.6** | 319.32 | Square Metre | Providing & Fixing in position, Acoustical Panelling made from 12mm thick Agro wood strips of 50, 75 7 100mm width on 50 x 50mm Sal-wood frame of 600 x 600 c to c having supports from wall of required length, in front of 1000 gsm synthetic wool 50mm thick with approved coloured fabric on strips side & chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/Melamine Polish & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.10, First Floor) |
| **2.7** | 1141.69 | Square Metre | Providing & Fixing in position, Carpet more than 800+ gsm, made with100% stain proof fibres of approved make along with 5mm underlay as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.13, First Floor) |
| **2.8** | 626.22 | Square Metre | Providing & Fixing in position, Fabric wrapped Compressed polyester fibre nonwoven 9mm panels above the wood wool board panelling or existing sal wood frame, using adhesive, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.11, First Floor) |
| **2.9** | 249.69 | Square Metre | Providing & fixing in position Stage flooring Made from 18mm plywood 1200 x 2400 & 18mm Teakwood planks 100 x 800 having tongue & grove on Sal-wood frame of 50 x 100 at 600mm c to c on stage surface including cost of required Cut-Outs, decorative mouldings/finishing-items/polish etc., as per Architectural & Acoustical Design & Instructions & Complete in all aspects. .including all materials labour, finishing etc complete (Item No. 51.06, First Floor) |
| **2.10** | 100.00 | Number | Providing & Fixing in position, 1000mm wide Auto-glow Aluminium extruded strips on auditorium steps as per Design & Instructions & Complete in all aspects. Make Piccolo or Nexus (Item No. 51.14, First Floor) |
| **2.11** | 274.88 | Square Metre | Providing & Fixing in position, Acoustical Panelling made from Fabric wrapped Compressed polyester fibre nonwoven 9mm panels on, 50 x 50mm sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 gsm synthetic wool 50mm thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.01, First Floor) |

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| **2.12** | 350.32 | Square Metre | Providing & Fixing in position, Acoustical Ceiling made from Compressed polyester fibre nonwoven 9mm panels on approved heavy duty GI frame 300mm c to c & intermediate channels at 1200mm c to c, suspended with Hangers from Roof, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.08, First Floor) |
| **2.13** | 69.43 | Square Metre | Providing & Fixing in position, 12mm wp Ply wood & 1.5mm laminate panels above the fabricated frame on one side, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.15, First Floor) |
| **2.14** | 96.34 | sq.m | Providing & Fixing in position, Acoustical Panelling made from Gypsum plain 12mm panels above the existing wooden or fabricated frame on one side , as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour,finishing etc complete (First Floor) |
| **2.15** | 1413.26 | Square Metre | Providing & Fixing in position, Under Deck insulation for metal deck using 1000 Gsm synthetic wool with fixed to deck using adhesive and chicken mesh. (Item No. 51.17, First Floor) |
| **2.16** | 83.60 | Square Metre | Providing and Fixing Soft Fibre Acoustical Suspended Ceiling System with Optra(Bevelled Tegular) Edge Tiles of size 15mm Exposed Grid. The tiles should have Humidity Resistance(RH) of 95%, NRC 0.9-1.0, Light Reflectance ?85%, Colour White, Fire Performance UK Class 0/Class 1(BS 476 pt-6 &7) in module size of 600 x 600 x 15mm, suitable for Green Building application, with Recycled content of 66% GW and 74% RW. The tile shall be laid on precoated G.I channel 32 with 15mm wide T-section flanges colour white having rotary stitching on all T sections i.e. the Main Runner, 1200mm and 600mm Cross Tees with a web height of 32mm and a load carrying capacity of 7 Kilograms/M2 with a minimum pull out strength of 100 Kilograms. The T Sections have a Galvanizing of 90 grams per M2 and need to be installed with Suspension system The Tile and Grid system used together should carry a 10 year warranty. products approved as per GRIHA and BS 476 etc. complete. (Item No. 38.47, First Floor) |
| **2.17** | 10.00 | Metric Tonne | Providing structural steel work in trusses, other similar trussed purlins and members with all bracing, gusset plates etc. as per detailed designs and drawings or as directed including cutting, fabricating, hoisting, erecting fixing in position, Making riveted/bolted/welded connection and one coat of anticorrosive paint and over it 2 coats of oil painting approved quality and shade etc. complete. (Item No. 23.04, First Floor) |
| **2.18** | 2.00 | Number | Free Standing Table @ 1200Lx600Dx750HT Providing and fixing Table of Size 1200 x 600 x 750mm. Top: made from 25mm Prelaminated Particle board. All edges are covered by 2mm. Thk. PVC edge bands glued by hot melt glue applied by auto edge banding machine. Legs : C Shape made from CRCA Sheet with Powder Coat finish. Modesty panel : Made from 18mm both side prelaminated particle boards.All edges are covered by 0.8mm PVC edge bands glued by hot melt glue applied by auto edge banding machine.KEYBOARD TRAY(WITHOUT MOUSE TRAY) :-Metal Powder Coated-Black Color, CPU TROLLEY :-Metal Powder Coated-Black Color, 3 DRAWER PEDESTAL UNIT having overall size 392L x 450D x 680Ht.mm. with central lock and key. Drawers and body are complete metal with powder coat finish, facia in 18mm prelaminated particle board, |
| **2.19** | 6.00 | Number | ... (Item No. 51.28, First Floor) |

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| **2.20** | 1052.00 | No. | Providing & fixing in position, heavy duty fully upholstered Auditorium chairs 575 mm c to c tip-up type. Height of back should be less than 1000 mm with plastic protective cover on back and bottom having teak wood handles with tablet. The auditorium chairs should be of following specifications 1. Powder Coated Heavy duty MS Stand. 2. Individually moulded , ergonomically designed seat and back cushions. 3.Moulded Polyurethane Foam cushion. PU foam density 48 – 52 Kilograms/cu.mtr 4. Moulded Polyurethane Foam manufactured in certified ISO 9001 facility to ensure consistency in density for longevity .5.Upholstered in Foam laminated stretch sandwich Fabric for clean finish and soft comfortable feel as per the colour & pattern selected by the client. 6.Seat and Back should have moulded synthetic protective cover. 7. Teak Wooden or PU armrest 65mm x 20mm - 330mm long . 8.Mounted using Anchor fasteners. 9. With auto glow row & chair numbering. Approved makes Wipro/ Penwworkers/ TSI/ NeelKamal |
| | | | **Work Portion Total (A)** |
| **3.1** | 1917.97 | Cubic Metre | Supply of Rubble, Murum, Soil, 60mm./40mm. metal(Hand broken), royalty charges are not included in the rates.Any revision in Royalty charges and surcharge shall be included in the rate analysis of the respective item. If there is variation in these rates the difference shall be paid extra over the items to the contractor and shall be recovered if these rates are reduced by Govt. i.e. Revenue department. The Government of Maharashtra, Revenue and Forest Departments Gazette No.146 Dt. 04 June 2021 States that the Royalty charges of Rs. 216.18/cum. are to be considered. The surcharge levied on Royalty shall also be payable to the contractor |
| | | | **Royalty Total (B)** |
| **4.1** | | | Carrying out below mentioned tests on CEMENT as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 28.00 | TEST | Standard Consistency Fineness, Specific Gravity, Setting Time ( Initial & Final), Compressive Strength, Soundness |
| **4.2** | | | Carrying out below mentioned tests on WATER as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 1.00 | TEST | PH Value, Sulphate & Chloride Content |
| **4.3** | | | Carrying out below mentioned tests on CRUSHED SAND as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 1.00 | TEST | Fineness Modulus (Sieve Analysis), Silt & Clay Content |
| | 1.00 | TEST | Chloride & Sulphate Content |
| | 1.00 | TEST | Silt Factor |
| **4.4** | | | Carrying out below mentioned tests on BRICKS as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 3.00 | TEST | Water Absorption (Set of 5 Bricks) , Compressive Strength (Set of 5 Bricks), Efflorescence (Set of 5 Bricks) |
| **4.5** | | | Carrying out below mentioned tests on MURUM-HARD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 2.00 | TEST | Liquid Limit & Plastic Limit |

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| **4.6** | | | Carrying out below mentioned tests on RUBBLE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Crushing Value/Compressive Strength, Water Absorption & Specific Gravity |
| **4.7** | | | Carrying out below mentioned tests on STEEL as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 48.00 | TEST | Upto 16 mm (Set of 3 Bars) |
| | 48.00 | TEST | Above 16 mm (Set of 3 Bars) (Tensile strength, %, Elongation, Yield Stress, Weight-Per Meter, Bend / Rebend Test, Proof Stress.) |
| | 48.00 | TEST | Nitrol Solution Test. (Set of 3 Bars) |
| **4.8** | | | Carrying out below mentioned tests on AAC BLOCK as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 5.00 | TEST | Compressive strength, Water Absorption (Set of 8 Blocks), Flexural Test (Set of 8 Blocks ), Resistance to wear (Set of 8 Blocks ) |
| **4.9** | | | Carrying out below mentioned tests on TEAK WOOD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 3.00 | TEST | Density, Moisture Content |
| **4.10** | | | Carrying out below mentioned tests on FLUSH DOOR as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Knife Test, Adhesion Test, End Immersion Test |
| **4.11** | | | Carrying out below mentioned tests on GRANITE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 5.00 | TEST | Water Absorption, Specific Gravity |
| **4.12** | | | Carrying out below mentioned tests on ALUMINIUM as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 29.00 | TEST | Thickness,Mass per Running Meter. |
| | 29.00 | TEST | Test on Powder Coating |
| **4.13** | | | Carrying out below mentioned tests on KOTA as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 8.00 | TEST | Water Absorption, Specific Gravity |
| **4.14** | | | Carrying out below mentioned tests on POLISH SHAHABAD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Water Absorption, Specific Gravity |

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| **4.15** | | | Carrying out below mentioned tests on CERAMIC as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 4.00 | TEST | Water Absorption, Modulus of Rupture ( Set of 6 Tiles) |
| **4.16** | | | Carrying out below mentioned tests on PAVING BLOCK as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 9.00 | TEST | Compressive strength, Water Absorption (Set of 8 Blocks), Flexural Test (Set of 8 Blocks ), Resistance to wear (Set of 8 Blocks ) |
| **4.17** | | | Carrying out below mentioned tests on CEMENT CONCRETE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 67.00 | TEST | Compressive strength of C.C.Cube (Set of 3 cubes) |
| | 2.00 | TEST | Concrete Mix Design by Normal Method (With all Tests on basic materials ) |
| **4.18** | | | Carrying out below mentioned tests on CEMENT CONCRETE AGGREGATE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 14.00 | TEST | Water Absorption, Specific Gravity, Impact Value, Crushing Value |
| | 14.00 | TEST | Sieve Analysis |
| | 14.00 | TEST | Flakiness Index & Elongation Index |
| **4.19** | | | Carrying out below mentioned tests on FLUSH DOOR as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 12.00 | TEST | Knife Test, Adhesion Test, End Immersion Test |
| **4.20** | | | Carrying out below mentioned tests on PLY WOOD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 100.00 | TEST | Determination of Resistance to dry heat, Determination of Moisture Content, Determination of Density, Thickness of Plywood |
| | 100.00 | TEST | Test for Glue Adhesion |
| **4.21** | | | Carrying out below mentioned tests on PARTICLE BOARD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 18.00 | TEST | Determination of Moisture Content, Determination of Density |
| **4.22** | | | Carrying out below mentioned tests on ALUMINIUM as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 12.00 | TEST | Thickness,Mass per Running Meter. |
| | 12.00 | TEST | Test on Powder Coating |

**Name of Work:-**

**Convention Centre (Auditorium)**

**SCHEDULE-C & SPECIFICATIONS**

| BOQ No. | Description of Item | Reference No. | Standard Specification |
|---|---|---|---|
| **1.1** | Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300metresm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150metresilimetres in thickness. (Item No. 2.09) | MORTH 201 | MORTH 201 |
| **1.2** | Excavation for foundation in earth, soil of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift upto 1.5 metres) By Mechanical Means (Item No. 21.02) | BDA 1 | Bd.A.1 Page Number 259 |
| **1.3** | Excavation for foundation in Hard murum including removing the excavated material upto a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift from 1.5 to 3.0 metres) By Mechanical Means (Item No. 21.08) | BDA 2 | Bd.A.2 Page Number 259 |
| **1.4** | Excavation for foundation in Hard rock by chiselling, wedging, line drilling, etc. including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the building area stacking as directed, dewatering and back filling with available earth/murum watering, ramming etc. complete.(Lift upto 1.5 m). By Mechanical Means (Item No. 21.20) | BDA 6 | Bd.A.6 Page Number 260 |
| **1.5** | Providing preconstructional antitermite treatment as per Indian Standards 6313(Part-II) by treating the bottom surface and sides of excavation at the rate of 5 litres of emulsion concentrate of 1.0 percent of chlorophyrifos per square meter of surface area covering 10 years guarantee on bond paper. (Item No. 21.22) | BDW | As directed by Engineer in charge. |
| **1.6** | Providing preconstructional antitermite treatment as per Indian Standards 6313(Part-II) by treating the top surface of plinth filling at the rate of 5 litres of emulsion concentrate at 1.0 percent of clorophyrifos per square metre of surface area covering ten years guarantee on bond paper. (Item No. 21.24) | BDW | As directed by Engineer in charge. |
| **1.7** | Providing and laying Cast in situ/Ready Mix cement concrete in M-10 of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, Steel centering, formwork, laying/pumping, compacting, roughening them if special finish is to be provided, finishing if required and curing complete, with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 24.01) | BDE 1 | Bd. E. 1 Page Number 287 |
| **1.8** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:6 in foundations and plinth of inner walls/in plinth external walls including bailing out water manually, striking joints on unexposed faces, raking out joints on exposed faces and watering etc. Complete. (Item No. 27.01) | BDG 1 | Bd.G. 1 Page Number 313 |
| **1.9** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete work in foundations like raft, strip foundations, grillage and footings of R.Cement Concrete columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including Steel centering formwork, cover blocks laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel). with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.15) | BDF 3 | Bd.F.3 Page Number 298 and B.7, Page Number38 |

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| **1.10** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete columns as per detailed designs and drawing or as directed including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel). with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.35) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.11** | ... (Item No. 25.35, First Floor) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.12** | ... (Item No. 25.35, Second Floor) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.13** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete pardi of required thickness including steel centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.19) | BDF 11 | Bd.F.11 Page Number 304 and B.7, Page Number 38 |
| **1.14** | Filling in plinth and floors with approved excavated material in 15 centimetres. to 20 centimetres. Layers including watering and compacting etc. complete. (Item No. 21.36) | BDA 10 | Bd.A.10 Page Number 262 |
| **1.15** | Filling in plinth and floors with contractors material/brought from outside and approved by Engineer incharge in layers of 15 centimetres to 20 centimetres including watering and compaction etc. complete. (Item No. 21.37) | BDA 11 | Bd.A.11 Page Number 263 |
| **1.16** | Providing dry/trap/granite/quartzite/gneiss rubble stone soling 15 centimetres to 20 centimetres thick including hand packing and compacting etc. complete. (Item No. 21.38) | BDA 12 | Bd.A. 12 Page Number 264 |
| **1.17** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete beams and lintels as per detailed designs and drawings or as directed including steel centering, formwork, cover blocks, laying/pumping, compactionand roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.54) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.18** | ... (Item No. 25.54, First Floor) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.19** | ... (Item No. 25.54, Second Floor) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.20** | Providing and fixing in position T Metric Tonnes-FE-500 bar reinforcement of various diameters for R.Cement Concrete pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete. (Item No. 26.33) | BDF 17 | Bd.F.17, Page Number 306 |
| **1.21** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete slabs and landings as per detailed designs and drawings including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.74) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |
| **1.22** | ... (Item No. 25.74, First Floor) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |
| **1.23** | ... (Item No. 25.74, Second Floor) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |

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| **1.24** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/quartzite/granite/gneiss metal for R.Cement Concrete Waist slab, and steps of staircases as per detailed design and drawings or as directed including steel centering, plywood/steel formwork, steel props, laying/pumping, compaction, finishing uneven and honeycombed surface with Cement Mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement, including cover block).(Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc.) with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.26) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.25** | ... (Item No. 26.26, First Floor) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.26** | Providing and laying damp proof course 50metresilimetres thick in M20 cement concrete layer and bitumen/using cement with waterproofing compound curing, formwork etc. complete. (Item No. 31.01) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.27** | ... (Item No. 31.01, First Floor) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.28** | ... (Item No. 31.01, Second Floor) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.29** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972) (Item No. 27.15) | BDG | As directed by engineer in charge |
| **1.30** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972). (Item No. 27.15, First Floor) | BDG | As directed by engineer in charge |
| **1.31** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972) (Item No. 27.15, Second Floor) | BDG | As directed by engineer in charge |
| **1.32** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:6 in superstructure including striking joints, raking out joints, watering and scaffolding etc. Complete (Item No. 27.05, First Floor) | BDG 5 | Bd.G.5 Page Number 315 |
| **1.33** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in Half brick thick wall including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972) (Item No. 27.16, First Floor) | BDG | As directed by engineer in charge |
| **1.34** | Providing and laying Cast in situ/Ready Mix cement concrete in M-20 of trap/granite/quartzite/gneiss metal for R.Cement Concretecoping to plinth or parapet and sill of doors and windows moulded as per detailed drawings or chamfered as approved by the Engineer including steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.23) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.35** | ... (Item No. 26.23, First Floor) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.36** | ... (Item No. 26.23, Second Floor) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.37** | Providing and applying gypsum plaster(with Gypsum material) with finishing with gypsum material in 10 to 13 millimeter thickness to previously plastered surface/or on newly brick surface(Excluding rough cast plaster) in all position including preparing and Finishing the surface scaffolding etc.complete. (Item No. 32.31) | BDL | As directed by Engineer in charge. |

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| **1.38** | ... (Item No. 32.31, First Floor) | BDL | As directed by Engineer in charge. |
| **1.39** | ... (Item No. 32.31, Second Floor) | BDL | As directed by Engineer in charge. |
| **1.40** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6milimetres diameter/2 hoop iron strips 25milimetres X 1.6milimetres placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete. (Item No. 27.06) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.41** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6milimetres diameter/2 hoop iron strips 25milimetres X 1.6milimetres placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete.. (Item No. 27.06, First Floor) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.42** | Providing waterproof plaster in W.C. and bath 12milimetres thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 Kilogra metres per bag of cement of approved make and manufacturer and curing etc. complete.(Excluding Tiles)(As directed by Engineer in Charge) (Item No. 31.06) | BDJ | As directed by Engineer in charge. |
| **1.43** | ... (Item No. 31.06, First Floor) | BDJ | As directed by Engineer in charge. |
| **1.44** | Providing and fixing frame with/without ventilator of size as specified with Country cut teak wood for doors and windows including chamfering, rounding, rebating, iron holdfast of size 300metresilimetres x 40metresilimetres x 5milimetres with oil painting, etc. complete (Item No. 39.01) | BDT | As directed by Engineer in charge. |
| **1.45** | ... (Item No. 39.01, First Floor) | BDT | As directed by Engineer in charge. |
| **1.46** | ... (Item No. 39.01, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.47** | Providing and fixing solid core flush door shutter in single leaf 32milimetres thick decorative type of exterior grade as per detailed drawings approved face veneers 3milimetres thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.09) | BDT-34 | BD-T-34 Page Number 499 |
| **1.48** | ... (Item No. 39.09, First Floor) | BDT-34 | BD-T-34 Page Number 499 |
| **1.49** | ... (Item No. 39.09, Second Floor) | BDT-34 | BD-T-34 Page Number 499 |
| **1.50** | Providing and fixing solid core flush door shutter in double leaf 32milimetres thick decorative type of exterior grade as per detailed drawings approved face veneers 3milimetres thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.95, First Floor) | BDT | As directed by Engineer in charge. |
| **1.51** | Providing and fixing 12milimetres toughened glass door shutter with fittings etc complete. | | |

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| **1.52** | Providing and Fixing 30MM thick BOTH SIDE PRELAMINATED SOLID PANEL Polyvinyl chloride DOOR SHUTTER consisting of frame made out of M.S tubes of 19 guage thickness and, size 19 x 19milimetres for styles and 15 x15milimetres for the top and bottom rails, M.S frame shall have a coat of metel primer of approved make and manufacture. M.S frame shall be covered with heat mouled Polyvinyl chloride 'C' channel made from 5mm(+/0.25) thick prelaminated sheet of density 600 Kilogram/cbm, of size 30metresilimetres thickness 70metresilimetres width out of which 50metresilimetres shall be flat and 20metresilimetres shall be tapered in 45? angle on either side forming stiles and 5milimetres thick, 95milimetres wide Polyvinyl chloride sheet out of which 75milimetres shall be falt and 20metresilimetres shall be tapered in 45 on the inner side to form top and bottom rail and 115milimetres wide Polyvinyl chloride sheet out of which 75milimetres shall be falt and 20metresilimetres shall be tapered on both sides to form lock rail.Top, bottom and lock rail shall be provided either side of the panel. An additional 5mm(+/0.25) thick Polyvinyl chloride strip of 20metresilimetres width is to be stuck on the bottom side of the ' c ' channel prelaminated paneling of 5mm(+/0.25) thick Polyvinyl chloride sheet to be fitted inside the Mild Steel frame welded/sealed to the styles and rails with 5mm(+/0.25) x 30metresilimetres Polyvinyl chloride sheet beading on either side and joined together with solvent cement adhesive etc, 10metresilimetres thickness(5mm(+/0.25) x 2 nos) 20metresilimetres wide cross Polyvinyl chloride sheet as gap insert for the rail and bottom rail. Door to be fixed to frames with 3 nos Mild Steelpowder coated but hinges of size 100metresilimetres x 25MM x 2milimetres using 32milimetres long steel screws drilled suitable to pass through both the walls of the M.S tube. Other hardwares (Item No. 39.47) | BDT | As directed by Engineer in charge. |
| **1.53** | ... (Item No. 39.47, First Floor) | BDT | As directed by Engineer in charge. |
| **1.54** | Providing and fixing MS powder coated door including all material and labour etc complete. | | |
| **1.55** | Providing and laying telephone black/Amba White/Cadburybrown/Ruby red/Ocean Brown granite stone of 18 to 20metresilimetres thick for door frame/dado/window boxing etc. On Cement Mortar 1:6 including filling joints with polymer base filler nosing/moulding the sharp edges wherever necessary, curing, etc. complete. (Item No. 33.68) | BDM | As directed by Engineer-In-Charge |
| **1.56** | ... (Item No. 33.68, First Floor) | BDM | As directed by Engineer-In-Charge |
| **1.57** | ... (Item No. 33.68, Second Floor) | BDM | As directed by Engineer-In-Charge |
| **1.58** | Providing and fixing in position.(as per Indian Standards1868/1982) Aluminium sliding window of two tracks with rectangular pipe having overall dimension 63.50 x 38.10 x 1.02milimetres at weight 0.547 Kilogram/running metre. and window frame bottom track section 61.85 x 31.75 x 1.20metresilimetres at weight 0.695 Kilogram/running metre. Top and side track section 61.85 x 31.75 x 1.30metresilimetres at weight 0.659 Kilogram/running metre. The shutter should be of bearing bottom 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10metresilimetres at weight 0.469 Kilogram/running metre. And handle section 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/running metre. and top section 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineer in charge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5milimetres thick plain glass with all required screws and nuts etc, complete. With powder coating with box (Item No. 39.39) | BDT | As directed by Engineer in charge. |

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| **1.59** | Providing and fixing in position(as per 1868/1982) Alluminium sliding window of three tracks with rectangular pipe 95 x 38.10 x 0.90metresilimetres at weight 0.637 Kilogram/running metre. with window frame bottom track section 92 x 31.75 x 1.30metresilimetres at weight 1.070 Kilogram/running metre.. Top and side track section 92 x 31.75 x 1.30metresilimetres at weight 0.933 Kilogram/Running metre. The shutter should be of bearing bottom 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10metresilimetres at weight 0.469 Kilogram/Running metre. and handle and top section 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineerincharge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5milimetres thick plain glass and aluminium mosquito net shutter with stainless steel jail with all required screws and nuts etc, complete. With colour Anodising with box (Item No. 39.41) | BDT | As directed by Engineer in charge. |
| **1.60** | ... (Item No. 39.41, First Floor) | BDT | As directed by Engineer in charge. |
| **1.61** | ... (Item No. 39.41, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.62** | Providing and fixing in position powder coated aluminium louvered windows/ventilator of various sizes with powder coating as per detailed drawing and specifications including aluminium frames 80 x 38milimetres x 1.22milimetres box type, 5milimetres thick sheet glass louvers, of approved quality etc. complete. (Item No. 39.68) | BDT | As directed by Engineer in charge. |
| **1.63** | ... (Item No. 39.68, First Floor) | BDT | As directed by Engineer in charge. |
| **1.64** | Providing and applying interior wall finish luster of approved make on internal wall surface as detailed below Scrapping the surface with emery paper and wipe clean wall primer with brush with mineral turpentine with brush 8 to 10% and oil 15 to 20% with roller and allowing to dry for a period 6 to 8 hours. wall putty with appropriate proportion of water allowing to dry for period 4 to 6 hours. Scrapping with Emery paper 180 and wipe clean. Applyingwall primer with brush with mineral turpentine 8 to 10% and oil 15 to 20% with roller Scrapping Emery paper 320 and wipe clean, interior wall finish luster 1st coat with brush/rubber/spray with mineral turpentine 7 to 9% and Oil with roller 19 to 21% After 8 hours of activity Applying 2nd coat or wall finish Lustre with mineral turpentine 7 to 9 % with brush and Oil with roller 19 to 21% after allowing dry for the period of 6 to 8 hours activity.(With prior approval of S.E.) (Item No. 36.20) | BDP | As directed by Engineer in charge. |
| **1.65** | ... (Item No. 36.20, First Floor) | BDP | As directed by Engineer in charge. |
| **1.66** | ... (Item No. 36.20, Second Floor) | BDP | As directed by Engineer in charge. |
| **1.67** | Providing internal cement plaster 20metresilimetres thick in Single coats in cement mortar 1:5 without neeru finish, to concrete, brick surface, in all positions including scaffolding and curing etc. complete (Item No. 32.06) | BDL 4 | Bd.L.4 Page Number 368 |
| **1.68** | ... (Item No. 32.06, First Floor) | BDL 4 | Bd.L.4 Page Number 368 |
| **1.69** | ... (Item No. 32.06, Second Floor) | BDL 4 | Bd.L.4 Page Number 368 |
| **1.70** | Providing and applying white-wash in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scaffolding and preparing the surface by brushing and brooming down etc. complete. (Item No. 36.03) | BDP 1A | Bd. P. I Page Number 411 |
| **1.71** | ... (Item No. 36.03, First Floor) | BDP 1A | Bd. P. I Page Number 411 |
| **1.72** | ... (Item No. 36.03, Second Floor) | BDP 1A | Bd. P. I Page Number 411 |
| **1.73** | Providing and fixing high polished granite stone for wall cladding having stones 25milimetres to 30metresilimetres thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. | | |
| **1.74** | Providing and laying polished hand cut Kotah Stone flooring 25milimetres to 30metresilimetres thick and 45 centimetres to 55 centimetres wide in plain/diamond pattern on a bed of 1:6 Cement Mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning complete. (Item No. 33.08) | BDM | Bd.M.3 Page Number380 |
| **1.75** | ... (Item No. 33.08, First Floor) | BDM | Bd.M.3 Page Number380 |
| **1.76** | ... (Item No. 33.08, Second Floor) | BDM | Bd.M.3 Page Number380 |
| **1.77** | Providing and laying machine cut machine polished machine cut Kota stone slabs 20 to 25milimetres thick for treads and risers of steps and staircases, with rounded nosing for the treads on a bed of 1:4 cement mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning etc. complete. (Item No. 33.18) | BDM 22B | Bd.M.22 Page Number 390 |

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| **1.78** | ... (Item No. 33.18, First Floor) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.79** | ... (Item No. 33.18, Second Floor) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.80** | Providing and laying in position flooring of telephone black/Amba White/Cat bary brown/Ruby red/Ocean Brown granite stone of approved shade and size 18milimetres to 20metresilimetres thick on bed 1:6 cement mortar including cement floats striking joints, pointing in Cement Mortar 1:3 curing and cleaning etc. complete. (Item No. 33.34, First Floor) | BDM 3 | Bd.M. 3 B/Page Number 380 |
| **1.81** | ... (Item No. 33.34) | BDM 3 | Bd.M. 3 B/Page Number 380 |
| **1.82** | Providing and fixing machine cut machine polished 18milimetres to 20metresilimetres thick telephone black/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone for treads and risers of steps and staircases of approved colour and shade with full moulding and three grooved line for the treads on bed of 1:4 Cement mortar including float filling joints with neat cement slurry curing polishing and cleaning etc. complete. (Item No. 33.35) | BDM 22 | Bd. M.22 B/Page Number 390 |
| **1.83** | Providing and laying vitrified matt fininsh tiles having size 590metresilimetres to 605milimetres x to 605milimetres of 8 to 10metresilimetres thickness and confirming Indian Standards. 15622-2006(Group Bla) of approved make, shade and pattern for flooring in required position laid on a bed of 1:4 cement morar including neat cement float, filling joints, curing and cleaning etc. complete. (Item No. 33.42) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.84** | ... (Item No. 33.42, First Floor) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.85** | Providing and laying ceramic tiles having size 30 centimetres. x 45 centimetres. confirming to corresponding Indian Standards for dado and skirting in required position with readymade adhesive mortar of approved quality on plaster of 1:2 cement mortar including joint filling with white/colour cement slurry cleaning curing etc. complete. (Item No. 33.26) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.86** | ... (Item No. 33.26, First Floor) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.87** | Providing and fixing in required position skirting or dado of polished Kotah Stone slab 25milimetres to 30metresilimetres thick fixed on base on plaster of cement mortar 1:4 including cement float, filling joints with cement slurry, curing rubbing, polishing and cleaning complete. (Item No. 33.81) | BDM | As directed by Engineer in Charge |
| **1.88** | ... (Item No. 33.81, First Floor) | BDM | As directed by Engineer in Charge |
| **1.89** | ... (Item No. 33.81, Second Floor) | BDM | As directed by Engineer in Charge |
| **1.90** | Providing and fixing machine cut mirror polished 18milimetres to 20metresilimetres thick telephone black granite/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone partition with full moulding the edges etc. complete . Both side polish (Item No. 33.36) | BDM 35 | Bd.M.35 B/Page Number393 |
| **1.91** | Providing sills of required material 20metresilimetres to 25milimetres thick, on a bed of cement mortar 1:4 including cement float, filling joints with neat cement slurry, curing, moulding edges, polishing, cleaning complete. b) Granite (Item No. 33.22) | 0 | Spec.Number: Bd.M.31/Page Number393 |
| **1.92** | Providng and fixing in position anodised extruded aluminum partitions, partly glazed and partly laminated having frame made out of extruded tubular section of size 40metresilimetres x 60metresilimetres with 12milimetres thick three layered flat pressed teak wood particle board bonded with BWP type exterior grade phenol formaldehyde synthetic resin conforming to Indian Standards 128231990, laminated on both sides, Novateakor equivalent and 5milimetres thick selected quality plain/float glass panels fixed with aluminum glass clips 12milimetres x 12milimetres and rubber cushioning beading to glass partitions as per approved drawing etc. compete (Item No. 39.72, First Floor) | BDT | As directed by Engineer in charge. |
| **1.93** | Providing and Fixing MS railing with top pipe of 50metresilimetres dia. and vertical pipe of 38milimetres dia at 0.60metres c/ c or as required and horizontal pipes of 25milimetres dia in three rows, all pipes of 2milimetres thick including buffing, fabricating fixtures and fastening including pipe base of appropriate diameter and ball base of 75milimetres dia above newel post of 75milimetres diameter etc.The handrail, horizontal pipes, verticles, bends to be finished with three coats of approved synthetic enamel paint from approved make inclusive of all surface preparation with Zinc chromate primer as specific etc complete. | | |

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| **1.94** | Providing cement based water proofing treatment to terraces(Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in Cement Mortar1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with Cement Mortar1:3 admixed with approved water proofing compound and finally top finishing with average 20 milimetres thick layers of same mortar added with jute fiber at 1Kilogramper bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. Marking finished surface with false squares of 300metresilimetres x 300 milimetres making the junctions at the parapet rounded and tapered top for required height, with drip mould at the junction of plaster and parapet and curing and covering 10 years Guarantee against leakproofness on Court fee stamp paper of Rs. 500/- including ponding test etc. complete. (Item No. 31.04, Second Floor) | BDJ | As directed by Engineer in charge. |
| **1.95** | Providing waterproofing in W.C. and bath including brick bat coba in all position including providing and laying 12milimetres bedding in cement mortor 1:3 on vergin concrete slab with waterproofing compound @ 1Kilogram/per bag of cement laying brick bat coba of required thickness in centimetres 1:5 with waterproofing compound 1 Kilogram/bag of cement grouting and finishing the top layer with 20metresilimetres thick brick bedding in centimetres mortor 1:3 with waterproofing compound 1 Kilogram/per bag of cement and testing the treated portion for 48 hours by pond test and covering ten years' guarantee on requisite stamp paper including curing etc. complete. (Item No. 31.26) | BDJ | As directed by Engineer in charge |
| **1.96** | Providing rough cast cement plaster externally in two coats to concrete, brick or stone masonry surfaces in all positions with base coat of 12 to 15milimetres thick in Cement Mortar 1:4 and rough cast treatment 12milimetres thick in proportion 1:1 1/2:3 including scaffolding and fourteen days curing complete. (Item No. 32.12) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.97** | ... (Item No. 32.12, First Floor) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.98** | ... (Item No. 32.12, Second Floor) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.99** | Supplying & providing approved colour washed stone crete plaster 1:0:5:2 (1cement: 0.5 dolomite powder: 2 stone chipping 10metresilimetres nominal size) in panels all around as per approved pattern including scrubbing and washing, the top layer with brushes and water to expose the stone chippings, complete as per specification and direction of Engineer in 50% white cement and 50% ordinary grey cement in top layer including scaffolding staging etc complete. | | |
| **1.100** | Providing and Fixing of Galvanized Iron Lay in Plain metal ceiling consisting of 600x600metresilimetres Lay in tiles of pre coated galvanized steel in 0.5milimetres thickness in Global white color tile to be laid on grid systems with 15milimetres wide T-section flanges color white having rotary stitching on the Main Runner, 1200metresilimetres and 600metresilimetres Cross Tees.Providing and Fixing of Galvanized Iron Lay in Plain metal ceiling consisting of 600x600metresilimetres Lay in tiles of pre coated galvanized steel in 0.5milimetres thickness in Global white color tile to be laid on grid systems with 15milimetres wide T-section flanges color white having rotary stitching on the Main Runner, 1200metresilimetres and 600metresilimetres Cross Tees.products approved as per GRIHA and British Standard 476 etc. complete. (Item No. 38.48) | BDR | As directed by Engineer in charge. |
| **1.101** | ... (Item No. 38.48, First Floor) | BDR | As directed by Engineer in charge. |
| **1.102** | Providing and fixing chicken mesh of 22 gauge, with about 30 centimetres. width at the junction of R.C.C members and brick work, of approved quality including fixing mesh in position by necessary drilling in concrete/B.B.masonry and or tying by binding wire etc. complete. (Item No. 32.26) | BDL | As directed by Engineer in Charge: |
| **1.103** | ... (Item No. 32.26, First Floor) | BDL | As directed by Engineer in Charge: |
| **1.104** | ... (Item No. 32.26, Second Floor) | BDL | As directed by Engineer in Charge: |

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| **1.105** | Providing and applying a base coat comprising of 1KilogramPolydee-MC and 1Kilogramfresh cement after wetting the surface followed by drying the surface for 2 days, apply primer coat of TP-40 and after drying, applying Polydee-11 two component(mixing ratio 2 A : 1 B)) Antibacterial food grade coating inside drinking water tank in two coats with time interval of minimum 8 hrs. covering 7 years guarantee on Court Fee Stamp Paper of Rs. 100/-etc. complete. (Item No. 31.11) | BDJ | As directed by Engineer in charge |
| **1.106** | Providing and fixing terracota tiles for wall cladding in tile adhesive including filling joints, cleaning, etc complete. (First Floor) | | |
| **1.107** | Providing and fixing 12milimetres thick clear toughened glass cladding with supporting frame in aluminium sections including all necessary fittings, labour, transportation, Scaffolding etc. complete. As directed by engineer in charge. | | |
| **1.108** | Providing structural steel work of rectangular hollow steel section for steel trusses, other similar trussed items like purlin and members with all bracing, gusset plates etc. as per detailed designs and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted/bolted/welded connections and one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade complete. (Item No. 23.11) | | Spec. Number As directed byEngineer in Charge. |
| **1.109** | 1.Roofing Sheet (Top Layer): Supply and fixing of MxSeam(R) Standing Seam Profile (Factoryroll formed length upto 12 mtr.) of Maxroof having nominal 480 milimetres effective cover width and46 milimetres corrugation depth in Bare Galvalume Steel materials. The feed material is manufactured out of nominal 0.55 milimetres Total coated thickness (TCT), High tensile steel with250 to 300 MPa yield strength, metallic hot dipped coated with Aluminium- Zinc alloy coating(55% Aluminium, 43.3% Zinc & 1.6% Silicon) as per Australian Standard 1397 AZ150 having min. 150 grams/ square metres total on both sides. The roof panels shall be side lapped with seaming process involvesthe male and female ribs snuggly anchored on the special designed Galvanized Iron Clip Head and clips are fixed to structural members by self- drilling screws. (Tata BlueScope or Jsw Make Base Coils) Color: Wind Spray (Profile- MxSEAM) MAKE - CLAustralian StandardSIC ZIngress Protection400 2.Insulation layer: Rockwool Insulation layer having 100 milimetres thick, 48 kilogram/m3 density. 3.Vapour Control Layer: Supply & Installation of vapour control layer upto 150 micron thickness to be laid below rockwool insulation. 4.Top Hat Bracket with Z Type Spacer: Supply & Installation of 40 milimetres height Top Hat Bracket with 40 milimetres Height Z Galvanized Iron Sub-girt to be fixed with help of self tapping screws at every Top Hat Bracket location over liner sheets to accommodate 100 milimetres thick insulation, the height of 100 milimetres will cater the thickness of insulation. (Size - 40x50x40x1.5milimetres Thk). 5.Liner Roofing Sheet (Bottom Layer): Linear Color Coated Galvalume Roofing Sheet in MxLine 1050 profile fixed over purlins with self tapping screws. The feed material is manufactured out of nominal 0.42 milimetres Base Metal thaickness (B Metric Tonnes) 0.47 milimetres Total coated thickness (TCT), High tensile steel with minimum 550 MPa yield strength, metallic hot | | |
| **1.110** | Flashings: Supply & fixing of 0.55milimetres thick colour coated Galvalume flashing for above matching profile upto 600metresm Girth. Supply length would be 2.5 metres(Tata Blue Scope Steel Ltd Make Base Coli) | | |
| **1.111** | Providing and fixing poly carbonate sheet 10metresilimetres thick for dome including providing and fixing clip, putti necessary fitting etc. complete | | |
| **1.112** | Providing and fixing heavy duty inter locking concrete Grey paving blocks of 60metresilimetres thickness of having a strength of 300 Kilogram/ Square centimetres. of approved quality and shape on a bed of crushed sand of 25 to 30metresilimetres thick including skirting joints and cleaning etc. complete. (Item No. 33.49) | BDM | A directed by Engineer in charge |
| **1.113** | Providing leather finished polishing to Kota/Marble/Shahabad/Kadappa Stone slab by continuous grinding in 4 coats of different bits to receive rough and matty finish including buffing process before laying and fixing of stone as per drawing and design, including cleaning, washing and finishing etc. complete. (Item No. 33.57) | BDM | As directed by Engineer in charge |

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| **2.1** | Providing & Fixing in position, Acoustical Panelling made from Wood-wool board 20metresilimetres on, 50 x 50metresilimetres Sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 Gsm synthetic wool 50metresilimetres thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.02, First Floor) | | As directed by Engineer-in-charge |
| **2.2** | Providing & Fixing in position, Acoustical Panelling made from 12milimetres wp Ply wood & 1.5milimetres laminate on, 50 x 50metresilimetres Sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 Gsm synthetic wool 50metresilimetres thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.04, First Floor) | | As directed by Engineer-in-charge |
| **2.3** | Providing & Fixing in position Acoustical Doors along with 150 x 150metresilimetres teak wood frame, doors made from 50metresilimetres Teak wood frame 600 x600 c to c filled with 1000 Gsm synthetic wool 50metresilimetres thick and 3milimetres Tecsound from both sides, 12milimetres waterproof ply & veneer from both sides, including 150metresilimetres heavy duty SS hinges(Geze/Dorma or eq.) 4 no each leaf, with Door-closer(Dorma/Geze or eq.) including cost of required Cut-Outs, decorative mouldings/finishing-items/melamine polish & Scaffolding as per Architectural & Acoustical Design & Instructions & Complete in all aspects .including all materials labour, finishing etc complete (Item No. 51.05, First Floor) | | As directed by Engineer-in-charge |
| **2.4** | Providing & Fixing in position, Acoustical Ceiling made from Gypsum Plain Panels on approved heavy duty Galvanised Iron. frame ceiling channels at 450 c to c, & intermediate channels not more than 1200 c to c, along with ply wood forms suspended with Hangers from Roof, in front of 1000 Gsm synthetic wool 50metresilimetres thick, with Paint, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.07, First Floor) | | As directed by Engineer-in-charge |
| **2.5** | Providing & Fixing in position, Acoustical Ceiling made from Rigitone 8/18 perforated panels on approved heavy duty Galvanised Iron. frame, ceiling channels at 300 c to c, & intermediate channels not more than 1200 c to c, suspended with Hangers from Roof, in front of 1000 Gsm synthetic wool 50metresilimetres thick, with Paint, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.09, First Floor) | | As directed by Engineer-in-charge |
| **2.6** | Providing & Fixing in position, Acoustical Panelling made from 12milimetres thick Agro wood strips of 50, 75 7 100metresilimetres width on 50 x 50metresilimetres Sal-wood frame of 600 x 600 c to c having supports from wall of required length, in front of 1000 gsm synthetic wool 50metresilimetres thick with approved coloured fabric on strips side & chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/Melamine Polish & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.10, First Floor) | | As directed by Engineer-in-charge |
| **2.7** | Providing & Fixing in position, Carpet more than 800+ gsm, made with100% stain proof fibres of approved make along with 5milimetres underlay as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.13, First Floor) | | As directed by Engineer-in-charge |
| **2.8** | Providing & Fixing in position, Fabric wrapped Compressed polyester fibre nonwoven 9milimetres panels above the wood wool board panelling or existing sal wood frame, using adhesive, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.11, First Floor) | | As directed by Engineer-in-charge |

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| **2.9** | Providing & fixing in position Stage flooring Made from 18milimetres plywood 1200 x 2400 & 18milimetres Teakwood planks 100 x 800 having tongue & grove on Sal-wood frame of 50 x 100 at 600metresilimetres c to c on stage surface including cost of required Cut-Outs, decorative mouldings/finishing-items/polish etc., as per Architectural & Acoustical Design & Instructions & Complete in all aspects. .including all materials labour, finishing etc complete (Item No. 51.06, First Floor) | | As directed by Engineer-in-charge |
| **2.10** | Providing & Fixing in position, 1000metresilimetres wide Auto-glow Aluminium extruded strips on auditorium steps as per Design & Instructions & Complete in all aspects. Make Piccolo or Nexus (Item No. 51.14, First Floor) | | As directed by Engineer-in-charge |
| **2.11** | Providing & Fixing in position, Acoustical Panelling made from Fabric wrapped Compressed polyester fibre nonwoven 9milimetres panels on, 50 x 50metresilimetres sal-wood frame of 600 x 600 c to c having wooden supports from wall of required length, in front of 1000 gsm synthetic wool 50metresilimetres thick with chicken mesh on wall side, including cost of required Cut-Outs, decorative mouldings/finishing-items/paint & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects.including all materials labour, finishing etc complete (Item No. 51.01, First Floor) | | As directed by Engineer-in-charge |
| **2.12** | Providing & Fixing in position, Acoustical Ceiling made from Compressed polyester fibre nonwoven 9milimetres panels on approved heavy duty Galvanized Iron frame 300metresilimetres c to c & intermediate channels at 1200metresilimetres c to c, suspended with Hangers from Roof, including cost of required Cut-Outs, decorative mouldings/finishing-items & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.08, First Floor) | | As directed by Engineer-in-charge |
| **2.13** | Providing & Fixing in position, 12milimetres wp Ply wood & 1.5milimetres laminate panels above the fabricated frame on one side, as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour, finishing etc complete (Item No. 51.15, First Floor) | | As directed by Engineer-in-charge |
| **2.14** | Providing & Fixing in position, Acoustical Panelling made from Gypsum plain 12milimetres panels above the existing wooden or fabricated frame on one side , as per Architectural & Acoustical Design & Instructions & Complete in all aspects. including all materials labour,finishing etc complete (First Floor) | | |
| **2.15** | Providing & Fixing in position, Under Deck insulation for metal deck using 1000 Gsm synthetic wool with fixed to deck using adhesive and chicken mesh. (Item No. 51.17, First Floor) | | As directed by Engineer-in-charge |
| **2.16** | Providing and Fixing Soft Fibre Acoustical Suspended Ceiling System with Optra(Bevelled Tegular) Edge Tiles of size 15milimetres Exposed Grid. The tiles should have Humidity Resistance(RH) of 95%, NRC 0.9-1.0, Light Reflectance ?85%, Colour White, Fire Performance UK Class 0/Class 1(British Standard 476 pt-6 &7) in module size of 600 x 600 x 15mm, suitable for Green Building application, with Recycled content of 66% GW and 74% RW. The tile shall be laid on precoated Galvanised Iron channel 32 with 15milimetres wide T-section flanges colour white having rotary stitching on all T sections i.e. the Main Runner, 1200metresilimetres and 600metresilimetres Cross Tees with a web height of 32milimetres and a load carrying capacity of 7 Kilograms/M2 with a minimum pull out strength of 100 Kilograms. The T Sections have a Galvanizing of 90 grams per M2 and need to be installed with Suspension system The Tile and Grid system used together should carry a 10 year warranty. products approved as per GRIHA and British Standard 476 etc. complete. (Item No. 38.47, First Floor) | BDR | As directed by Engineer in charge. |
| **2.17** | Providing structural steel work in trusses, other similar trussed purlins and members with all bracing, gusset plates etc. as per detailed designs and drawings or as directed including cutting, fabricating, hoisting, erecting fixing in position, Making riveted/bolted/welded connection and one coat of anticorrosive paint and over it 2 coats of oil painting approved quality and shade etc. complete. (Item No. 23.04, First Floor) | BDC 8 | Bd.C.8 Page Number 278 |

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| **2.18** | Free Standing Table @ 1200Lx600Dx750HT Providing and fixing Table of Size 1200 x 600 x 750 milimetres Top: made from 25milimetres Prelaminated Particle board. All edges are covered by 2 milimetres Thk. Polyvinyl chloride edge bands glued by hot melt glue applied by auto edge banding machine. Legs : C Shape made from CRCA Sheet with Powder Coat finish. Modesty panel : Made from 18milimetres both side prelaminated particle boards.All edges are covered by 0.8milimetres Polyvinyl chloride edge bands glued by hot melt glue applied by auto edge banding machine.KEYBOARD TRAY(WITHOUT MOUSE TRAY) :-Metal Powder Coated-Black Color, CPU TROLLEY :-Metal Powder Coated-Black Color, 3 DRAWER PEDESTAL UNIT having overall size 392L x 450D x 680Ht. milimetres with central lock and key. Drawers and body are complete metal with powder coat finish, facia in 18milimetres prelaminated particle board, (Item No. 51.28, First Floor) | | As directed by Engineer-in-charge |
| **2.19** | ... (Item No. 51.28, First Floor) | | As directed by Engineer-in-charge |
| **2.20** | Providing & fixing in position, heavy duty fully upholstered Auditorium chairs 575 milimetres c to c tip-up type. Height of back should be less than 1000 milimetres with plastic protective cover on back and bottom having teak wood handles with tablet. The auditorium chairs should be of following specifications 1. Powder Coated Heavy duty MS Stand. 2. Individually moulded , ergonomically designed seat and back cushions. 3.Moulded Polyurethane Foam cushion. PU foam density 48 52 Kilograms/cu.mtr 4. Moulded Polyurethane Foam manufactured in certified Indian StandardsO 9001 facility to ensure consistency in density for longevity .5.Upholstered in Foam laminated stretch sandwich Fabric for clean finish and soft comfortable feel as per the colour & pattern selected by the client. 6.Seat and Back should have moulded synthetic protective cover. 7. Teak Wooden or PU armrest 65milimetres x 20metresilimetres - 330metresilimetres long . 8.Mounted using Anchor fasteners. 9. With auto glow row & chair numbering. Approved makes Wipro/ Penwworkers/ TSI/ NeelKamal | | |

| **Name of Work :** Providing internal Electrification - Yashada Pune | | |
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| **Sr. No.** | **Specification Code** | **Technical Specification** |
| 1 | SW-SWR/MCB | Material :- General Specifications for MCB's • MCB's shall be of current limiting type, ISI marked confirms to IS 8828 – 1996. • The power loss per pole shall be low and shall be in accordance with IS 8828 – 1996. • All cable entries shall be either from bottom or top. • MCB's shall be of C- curve characteristic & shall have quick make & break non-welding self wiping silver alloy contacts for 10 kA short circuit both on the manual & automatic operation.<br>• All the active, live parts of MCB's should be out of human reach, ensuring safety & confirms to IP: 55 degree of protection. • The MCB's must house transparent label holder to ensure circuit identification. • The MCB's must have fully insulated safety shutters. • The MCB's shall have lockable switching lever. • The Minimum electrical endurance shall be 20,000 operations. • The housing of the MCB shall be mounted self-extinguishing DMC (Dough Moulding Compound). • The short circuit Current shall be brought to zero within 4 to<br>5 milliseconds from the time they are established. • All MCB's shall have a minimum short circuit Capacity of 10kA RMS. Material : Single Pole / Single pole with Neutral / Double Pole<br>/ Triple pole / Four pole: MCB, ISI marked as per IS 8828 : 1996 (IEC 60898) with hammer trip and watch mechanism15 arc plates,10 KA capacity with nominal rating of 240/415V. Lugs: Copper lugs of suitable size as per (CB-CL/CU) in chapter 7.10 for Cable<br>Construction :- MCB shall be erected in provided enclosure / distribution board and terminating the provided wires by copper lugs (crimping type) and connecting the same. |
| 2 | SW-SWR/MCBDB | Material :- General Specifications for MCBDB's • DB's shall be prewired and shall be fabricated as per IS: 8623. • Suitable for flush mounting & surface mounting, with 100 A copper bus bar (For Horizontal type DB), neutral bar, earth bar & cable ties for cable management. • In case of Vertical DB the bus bar shall be of 200 A rating. • DB's shall be of IP – 43 degree of protection. • All the MCB distribution boards shall be fabricated out of 18 SWG thick sheet steel duly rust inhibited through a process of degreasing, pickling, phosphating & powder coating to an approved colour over primer & shall be of the totally enclosed dust proof type suitable for wall mounting. • All components shall be mounted on DIN rails & covered totally with a sheet steel cover rendering it finger-safe. Access to the internal connections shall be only through removing the cover sheet. • All DB's shall be internally prewired using copper insulated high temperature PVC wires. • Bus bars & neutral bar shall be fully insulated with standard colour code. • Bus bar withstanding capacity shall be 10kA. • DB's must have facility of reversing door without modification, pan assembly for ease of installation & convertible locking. Material : Horizontal/Vertical type MCBDB: ISI marked as per IS 8623, of specified ways (poles), surface/flush mounting, with/without door, suitable for 230 V / 415 V. Lugs – Copper lugs of suitable size as per (CB-CL/CU) in chapter<br>7.10 for Cable Iron work: Suitable size of angle/flat. Hardware: SM screws, rawl plug, gutties, etc.<br>Construction :- MCBDB shall be erected at designated location and directed by site engineer and terminating the provided wires by copper lugs (crimping type) and connecting the same. |

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| 3 | CB-LT/AL | Material :- Cables: Cables shall be PVC / XLPE of aluminium conductor as per Table no. 7/3 and of required construction, colour, shall carry ISI mark, IS No, manufacturer's name, size, duly embossed / screen printed at every metre and having the total count of progressive length in meter at each mark. Earth wire: Galvanized Iron (G I) wire of appropriate gauge as per Table No 7/1. Glands: As per specification (CB-GL) Lugs: As per specification (CB-CL/AL) Saddles: Saddles fabricated from GI sheet of required gauge and size depending on dia of cable either galvanized or painted with superior quality enamel black paint with necessary shearing mechanical strength, semi circular shaped with extended piece having suitable holes for fixing. G I Strip: 22 g x 25 mm width G I Strip. Clamps: MS Clamps fabricated of required length and shape, having the size of 3/6 mm thick mild steel having 25/50 mm width (as per size of cable), rounded ends with wooden / resin cast grip for holding the cable. Identification tags: For identifying root, connection position GI strip with identification mark / name embossed / painted with arrangement to tie should be fix on cable or arrangement of ferrulesto be done. Hardware: Sheet Metal (SM) screws of required sizes, plugs / wooden gutties, etc.<br>Construction :- General: a) Irrespective of method of construction the cable ends shall be terminated with appropriate size & type of glands with lugs duly crimped, as directed by Site engineer. b) Wherever the cable has to be bent, the turning radius shall be as mentioned in Table No 7/2. Grouping of cables shall be done with adequate distance between cables as mentioned in IS so as to minimize de-rating. Cables shall be tagged/ferruled with identification name / mark at the point from where distribution starts and at ends. Bare earth wire of appropriate size as per Table no. 7/1 shall run along with the cable. Earth wire running with the cable shall be terminated at the earth terminal nearest to cable termination. Erection of Cable on Surface: Erection shall be done as per the routes and layout finalized, in perfect level and in plumb. Before fixing the cable shall be straightened as far as possible for good aesthetics look, continuous bare GI earth wire of required gauge as per Table No 7/1 shall be run. Cable with G I wire shall be fixed by saddles firmly clipped on cable and shall be fixed to wall with minimum 50 x 8 mm SM screws with plugs/wooden gutties, etc. (Distance between two supports / saddles shall be maximum 450 mm). Wooden gutties shall be used wherever required (Especially for stone wall).The entries made in wall, floor slab, etc for laying the cable shall be made good by filling and finishing with plastering the same. Erection of Cable on Trusses: Cable along with bare GI earth wire, while erecting on trusses, shall be firmly clamped by wrapping GI strip of 22 g, 25 mm width of required length fixed to truss with nuts and bolts. Erection of Cable on Pole: Cable along with bare GI earth wire, while erecting on pole, shall be firmly clipped by suitable wooden / epoxy resin cast grips, clamped with 25 x 3 mm or50x6 mm MS strip of required lengthand fixed to pole with nuts and bolts. Laying of Cable in provided Trench/Pole: While laying Cable along with bare GI earth wire, utmost care shall be taken to prevent damage to the insulation of the cable and to the open end. Cable shall be brought out from trench vertically straight (minimum 1.0 metre above G L). Care shall be taken to inspect the trench so that depth of cable shall not be less than as shown in Table No 7/4. Suitable size of cable loopsshall be provided near termination point at adequate depth. Erecting cable in constructed Trench / duct: Erection of cable/s in constructed trench / duct, shall be as per guide lines of IS 1255. Erection of cable/s on trays: Cable/s shall be tied with PVC tags on GI |

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| | | trays. At bending point care shall be taken so that sharp edges of sheet will not damage insulation of cable. |
| 4 | CB-LT/CU | Material :- Cables: Cables shall be PVC / XLPE with Copper conductor as per Table no. 7/3 and of required construction, colour, shall carry ISI mark, IS No, manufacturer's name, size, duly embossed / screen printed at every metre and having the total count of progressive length in meter at each mark. Earth wire: Galvanized Iron (G I) wire of appropriate gauge as per Table No 7/1. Glands: As per specification (CB-GL) Lugs: As per specification (CB-CL/CU) Saddles: Saddles fabricated from GI sheet of required gauge and size depending on dia of cable either galvanized or painted with superior quality enamel black paint with necessary shearing mechanical strength, semi circular shaped with extended piece having suitable holes for fixing. G I Strip: 22 g x 25 mm width G I Strip. Clamps: MS Clamps fabricated of required length and shape, having the size of 3/6 mm thick mild steel having 25/50 mm width (as per size of cable), rounded ends with wooden / resin cast grip for holding the cable. Identification tags: For identifying root, connection position GI strip with identification mark / name embossed / painted with arrangement to tie should be fix on cable or arrangement of ferrulesto be done. Hardware: Sheet Metal (SM) screws of required sizes, plugs / wooden gutties, etc.<br>Construction :- General: a) Irrespective of method of construction the cable ends shall be terminated with appropriate size & type of glands with lugs duly crimped, as directed by Site engineer. b) Wherever the cable has to be bent, the turning radius shall be as mentioned in Table No 7/2. Grouping of cables shall be done with adequate distance between cables as mentioned in IS so as to minimize de-rating. Cables shall be tagged/ferruled with identification name / mark at the point from where distribution starts and at ends. Bare earth wire of appropriate size as per Table no. 7/1 shall run along with the cable. Earth wire running with the cable shall be terminated at the earth terminal nearest to cable termination. Erection of Cable on Surface: Erection shall be done as per the routes and layout finalized, in perfect level and in plumb. Before fixing the cable shall be straightened as far as possible for good aesthetics look, continuous bare GI earth wire of required gauge as per Table No 7/1 shall be run. Cable with G I wire shall be fixed by saddles firmly clipped on cable and shall be fixed to wall with minimum 50 x 8 mm SM screws with plugs/wooden gutties, etc. (Distance between two supports / saddles shall be maximum 450 mm). Wooden gutties shall be used wherever required (Especially for stone wall).The entries made in wall, floor slab, etc for laying the cable shall be made good by filling and finishing with plastering the same. Erection of Cable on Trusses: Cable along with bare GI earth wire, while erecting on trusses, shall be firmly clamped by wrapping GI strip of 22 g, 25 mm width of required length fixed to truss with nuts and bolts. Erection of Cable on Pole: Cable along with bare GI earth wire, while erecting on pole, shall be firmly clipped by suitable wooden / epoxy resin cast grips, clamped with 25 x 3 mm or50x6 mm MS strip of required lengthand fixed to pole with nuts and bolts. Laying of Cable in provided Trench/Pole: While laying Cable along with bare GI earth wire, utmost care shall be taken to prevent damage to the insulation of the cable and to the open end. Cable shall be brought out from trench vertically straight (minimum 1.0 metre above G L). Care shall be taken to inspect the trench so that depth of cable shall not be less than as shown in Table No 7/4. Suitable size of cable loopsshall be provided near termination point at adequate depth. Erecting cable in constructed Trench / duct: Erection of cable/s in |

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| | | constructed trench / duct, shall be as per guide lines of IS 1255. Erection of cable/s on trays: Cable/s shall be tied with PVC tags on GI trays. At bending point care shall be taken so that sharp edges of sheet will not damage insulation of cable. |
| 5 | WG-MA/BOX | Material :- PVC Trunking (Box type): PVC Trunking (Box type) ISI mark, minimum 1.2 mm thick, with push-fit joints/ accessories for PVC trunking such as couplers, elbows, internal / external angles, junction boxes of required ways of the same make. Hardware: Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, rawl / PVC / fill type plugs, wooden gutties, etc.<br>Construction :- Erection of PVC Trunking (Box type): Erection shall be done as per the final approved layout. The Trunking shall be in perfect level and plumb. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing. In case of stonewalls wooden gutties shall be grouted in wall for fixing of screws of Trunking. Distance between 2 screws shall not be more than 600 mm. Size of Trunking shall be correct depending on number of wires to be drawn. Adequate use of accessories shall be made at joints and at required locations. |
| 6 | WG-MA/CC | Material :- Rigid Steel conduit: Rigid HG steel screwed conduit, minimum 20mm dia. and higher depending on No. of wires to be drawn as per Table No. 1/1, 16 gauge, ERW grade duly processed for anti-rust treatment and painted with black enamel paint, accessories for rigid steel conduits such as check nuts, long bends, deep junction boxes for slab, regular junction boxes for walls; of required ways, all of the same make. Earth continuity wire: GI wire of 2.5 sq. mm; GI earth clips 22g, 10mm width, for fixing earth wire along the conduits. Junction boxes / Draw-in boxes: Junction box shall be 5 sided with removable top plate and of suitable size to accommodate No. of entries; fabricated from 16g CRCA sheet steel with earth terminal duly treated with antirust treatment and painted with two coats of red oxide paint. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix cover plate on it. Hardware: U' nails, plumbing and general use nails of required sizes, washers, check-nuts, steel binding wire 20g, fish wire, etc. Other material for Surface finishing: Cement, sand, putty and water.<br>Construction :- Concealing of Rigid steel Conduits: General: Work shall be done in co-ordination with civil work to suite final approved layout. Conduit shall be duly screwed and size of conduit shall be correct depending on number of wires to be drawn. (Table No.1/1, for Steel conduits) Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution and also for wiring for other utilities like data, telephone, TV cabling, etc. for which distance between pipes shall not be less than 300 mm or anti electrostatic partition is to be provided. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of corresponding conduit with colour coding as per Table No. 1/4. (For visual identification). Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires. All bending of conduits shall be done approved manner without changing the cross-section. In RCC work: Work shall be commenced after fixing of steel (re-enforcement) on centering material. Conduits shall be firmly fixed with steel in slab by binding wire. Fixing of conduits shall be possibly done with welding tags so that it will |

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| | | remain rigid during casting of slab, beam, and column even after use of vibrator. Deep junction boxes and other draw-in boxes shall be such that their open end and centering material will not have gap in between so as to avoid concrete entering inside even after fixing covers to steel re-enforcement; and be filled with dry sand. Open ends of conduits; to be concealed in walls, shall be provided with couplers / sockets at ends and be flush with bottom of beam, and located at the center of the beam. As far as possible bunching / grouping of conduits shall be avoided so that it will not affect strength of RCC work especially in beams. Suitable steel fish wire shall be drawn through the conduits for drawing of wires later on. Concealing of Rigid Steel Conduits in walls/ flooring: Chases shall be made in walls of adequate width, with cutter and chiseling through it. Necessary finishing of the wall surface shall be done. Work in flooring shall not disturb RCC work, Conduits of adequate size shall be erected with use of appropriate accessories, and hardware like 'U' nails, etc. Draw-in / inspection boxes shall be fixed with check-nut, flush with surrounding surface and earthed.<br>Testing :- Earth continuity: Earth continuity shall be ensured at termination point of Earth wire, between the ends of metal conduit. |
| 7 | WG-MA/BW | Material :- Wires: in conduits / trunking / panel boards Mains / Sub-mains / Circuit mains (comprising phase and neutral wires): PVC insulated wire of specified size, minimum FR grade insulation, copper conductor of electrolytic tough pitch (ETP) grade, having insulation of 1.1 kV grade, ISI marked, of required colour coding as per Table No 1/5. Wires: open PVC insulated and PVC sheathed wire of specified size, minimum FR grade insulation, copper conductor of electrolytic tough pitch (ETP) grade, having insulation of 1.1 kV grade, ISI marked, of required colour coding as per Table No 1/5. Earth Continuity Wire: PVC insulated wire minimum FR grade insulation copper conductor of electrolytic grade, having insulation of 1.1 kV grade, of green / green yellow colour, ISI marked, of specified size but not less than 2.5 Sqmm as per Table No 1/5. Lugs: Copper lugs of appropriate size & type Other material: Rubber grommet, bush, harnessing material, flexible conduit etc.<br>Construction :- Drawing of wires: General Specified wires shall be drawn with adequate care. Correct colour coding as per Table No. 1/5, shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped only within circuit. For lighting load or single-phase distribution wires of two different phases shall not be drawn in single pipe. Wires shall be terminated in the terminals of accessories only, with appropriate type and size of lugs. Drawing of wires: through PVC conduits Bush shall be used at pipe opening to protect wire insulation from getting damaged due to sharp edges. Number of wires shall not exceed with respect to size of pipe as per Table No. 1/2. Drawing of wires: through Rigid Steel conduits Bush shall be used at pipe opening to protect wire insulation from getting damaged due to burrs / sharp edges. Number of wires shall not exceed with respect to size of pipe as per Table No. 1/1. Open Wire bunch: Open wires shall be erected with due care so as to avoid chances of any mechanical injury. Harnessing shall be done with required material in an approved manner in panel boards or where ever necessary. For covering lead wires flexible conduit shall be used with gland as per necessity.<br>Testing :- Insulation resistance test: All wiring shall be tested with 500V Meggar between phases, phase – neutral and to Earth. IR value shall not be less than 1M-ohm. Earth continuity: Earth continuity shall be ensured between termination points of Earth wire. Polarity Test: Test shall be carried out for ensuring the correct polarity in switch and plug. |

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| 8 | WG PW/CW | Material :- PVC conduit: PVC pipe of minimum 20mm dia and above depending No. of wires to be drawn (refer Table No 1 / 2); ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; such as Spacers & Saddles, Couplers, Bends, deep / normal Junction boxes of required ways and resin / adhesive to make all joints rigid. Black pipe shall not be used for surface type wiring. Rigid Steel conduit: Rigid steel screwed conduit minimum 20mm dia. and higher depending on No. of wires to be drawn as per Table No.1/1, 16 gauge, ISI mark, ERW grade duly processed for anti-rust treatment and painted with black enamel paint, accessories for rigid steel conduits such as sockets, bends, deep / normal junction boxes of required ways all of the same make. Sheet metal Junction boxes / Draw-in boxes: Junction box shall be 5 sided with removable top plate, fabricated from 16g CRCA sheet steel with earth terminal duly treated with antirust treatment and painted with two coats of red oxide paint. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix surface cover plate on it. Cover plate shall be made up of fire resistant PVC material / 3mm thick laminate / Bakelite / Hylam / transparent acrylic sheet painted from inside to match colour of wall with duly tapered edges. Wires: phase and neutral wires PVC insulated wires of specified size, 1.1 kV, & minimum FR grade insulation, electrolytic tough pitch (ETP) copper conductor, ISI marked, of required colour coding as per Table No 1/5 Earth Continuity Wire: PVC insulated minimum FR grade copper wires of electrolytic grade, having insulation of 1.1 kV grade, of green colour, ISI marked, 2.5 Sqmm or bare copper wire of 14g Lugs: Pin type Copper lugs. Accessories: Switch: 1 or 2 way Modular type switch 6/10A. Outlet: Modular type 6A angle / batten lamp holder or 3 plate ceiling-rose or Bakelite / porcelain 3 way connector or if plug point, 6A, 3-pin plug shuttered socket. Boards: Switchboards shall comprise of; concealed type box of required modules made of sheet metal or Polypropylene material, mounting plate and cover plate. The required modules shall be worked out on the basis of points, plug socket/sockets, step type fan regulator, etc are to be fixed. For every blank module, 1 way blank plate shall be fixed. All the above accessories shall be of same make, as that of switch. Hardware: Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, rawl / PVC / fill type plugs / wooden gutties, 'U' nails, plumbing nails, steel binding wire, fish wire 20g, rubber / PVC bushes etc. Other material for Surface finishing: Sand, Cement, water etc.<br>Construction :- Point wiring (Concealed): Concealing of conduits: General: Work shall be done in co-ordination with civil work and to suite final approved layout. Size of conduit shall be correct depending on number of wires to be drawn. (Table No. 1/1 for Steel conduits & Table No 1/2 for PVC conduits) Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution and also for wiring for other utilities like data, telephone, TV cabling, etc. The distance between pipes shall not be less than 300 mm. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of corresponding conduit with colour coding as per Table No. 1/4. (For Visual identification) Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires. All the bends shall be done with Bending Spring. Concealing of conduits: In RCC work Work shall be commenced after fixing of steel (re-enforcement) on centering material. Conduits shall be firmly fixed on steel of RCC work by binding wire. Fixing of conduits shall be such that it will remain rigid during casting of slab, beam, and column even |

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| | | after use of vibrator. Deep junction boxes and other draw-in boxes shall be such that their open end and centering material will not have gap in between so as to avoid concrete entering inside even after fixing covers to steel re-enforcement; and be filled with dry sand. Open ends of conduits; to be concealed in walls, shall be provided with couplers / sockets at ends and be flush with bottom of beam, and at located at the center of the beam. As far as possible bunching / grouping of conduits shall be avoided so that it will not affect strength of RCC work especially in beams. Suitable steel fish wire shall be drawn through in the conduits for drawing of wires later on. Concealing of Conduits: In walls Chases shall be made in walls of adequate width, with cutter and chiseling through it. Necessary finishing of the surface shall be done. Conduits of adequate size shall be erected with use of appropriate accessories and 'U' nails. Drawing of wires: Use of Steel fish wire shall be made for drawing of wires. Wires shall be drawn with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate<br>Testing :- Insulation resistance test: All wiring shall be tested with 500V Meggar between phases, phase – neutral and to Earth. IR value shall not be less than 1M-ohm. Earth continuity: Earth continuity shall be ensured at all earth terminals of plug outlets and at earth terminals of metal enclosures. Polarity test: Polarity test shall be carried out for ensuing the correct polarity in switch and plug. |
| 10 | FG-ODF/FL. | Material :- Fitting: ISI marked Energy efficient T-5 2X14 & 2X24 Street Light fitting complete with electronic ballast, transparent cover made out of 3mm thick acrylic sheet, gear cum reflector tray, canopy and lamp holder duly wired for use on 240 volt AC single phase 50 Hz without T-5 lamp. Canopy shall be made of Aluminum sheet of width 3" minimum per lamp. Gear cum reflector tray (GCRT) shall be made of either CRCA sheet of 0.8 mm thick or Aluminum sheet of 1.25 mm thick.Fitting shall be suitable for mounting up to a height of 15 meters and shall be able to withstand wind load test. It shall conform to class-1 of IS: 10322 (part 5/sec 3)/87 with amdt 1 and IP-65 protection i) Various component of fittings shall conform to IS specification as noted below. a) Electronic ballast (EB) to IS: 13021:Part-1:1991 with Amendment No.1, IS:13021: Part-2:1991 with Amendment Nos.1 and<br>2 and additional requirement as per the b) Bi-pin lamp holders to IS:3323/80 with amendment No.1/ c) PVC cables to IS:694/90 with amdt.No.1 & 2. ii) Surface of CRCA Steel and Aluminum sheets used shall be properly phosphatised and stove enameled white on the reflector side, tray side and other surface stove enameled grey. iii) The street light fittings shall be required with socket bore of 30mm or 40 mm or 50mm for side entry/top entry type fittings. The socket bore, however, will be specified by the indenters at the time of placement of supply order. iv) All wire leads to be adequately covered with sleeves for protection against accidental contracts. v) All hardware parts used should be zinc coated or nickel/chromium plated so as to be corrosion resistant. vi) Fitting shall be wired with multi-stranded copper wire terminating on suitable connectors. The wiring shall be properly clamped.<br>Construction :- The complete fitting with all the above accessories shall be erected with provided bracket, on wall/street light pole or at any place as directed by Site engineer, duly connected and giving necessary testing. |
| 11 | FG-FN/CF | Material :- Ceiling Fan: Electric Ceiling fan capacitor type with double ball bearing complete with capacitor, 300 mm down rod, canopies, shackles, reel insulator, half threaded bolts of<br>9.53 mm (3/8") dia 62.5 mm (2-1/2") to 88 mm (3-1/2") long and |

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| | | 7.94 mm (5/16") dia 44.5 mm (1-3/4") to 57 mm (2-1/4") long with nuts, with lock type split pin, spring & plate washers, etc.; three number blade made of Aluminium alloy, suitable for single phase, AC 210 volts, 50 Hz supply and conforming to class I of IS : 374/1979 with amendment no 1 to 6 except for performance parameters to the extent modified as details in general requirements. The down rod shall be capable to withstand a tensile load of 1000 kg without breakdown and a torsion load of 500 kg.cm without breakage as per Clause 10.14.1 of IS: 374/1979 with amendment no.1 to 6. Electrical motor should be single phase permanent capacitor type with no. of poles 12/14/16/18 (As per sweep), Class-I with basic insulation. Class of insulation shall be B class. The winding wire used for fan should be synthetic enamelled of 30 to 38 SWG. Connection wire: Flat / round Two core flexible stranded copper wire cord 24/0.2mm ISI marked. Paint: Superior quality enamel paint of specified colour for marking Sr. No and date of erection.<br>Construction :- Blades of ceiling fan shall be properly fixed. Down rod, clamp shall be carefully fixed with nut bolt and split pin. Canopies shall be tightened on down rod keeping sufficient clearance. Wiring connections shall be made with required wire leads. Regulator of fan shall be erected on provided switchboard with required wire leads.<br>Testing :- After erection fan shall be tested by connecting to supply at all positions of regulator. Also steadiness of fan shall be checked at full speed, so that there is no wobbling. |
| 13 | AP-UPS | Material :- Equipment manufactured as per standard manufacturer's specification and as tabulated in Table No. 3.7/2. The unit housed in powder coated CRCA sheet enclosure with following fault protection on mains / UPS mode: ? Under voltage on mains mode ? Over voltage on mains mode ? Charger protection on mains mode ? Overload on UPS mode ? Short circuit on UPS mode ? Low battery on UPS mode ? Battery reverse on UPS mode ? Under voltage on UPS mode ? Over voltage on UPS mode ? LED & LCD display for above fault protection ? Alarm for above fault protection ? Batteries shall be of Sealed Maintenance Free type (Tubular). The selection of number of batteries required shall be as per Table No 3.7/1 The UPS shall comply with specifications as indicated in the following table 3.7/2 given in Specification book.<br><br>Construction :- To be erected at designated place duly connected, tested, as per the directions of Site Engineer |
| 14 | EA-EP | Material :- Earth Plate: Galvanised cast iron / Copper earth plate or G.I. pipe as per specifications given in Table No 9.1/1 of Specification book. CI Cover: As per specifications given in Table No 9.1/1 of Specification book. Earthing Conductor: Copper/G.I strip/Annealed bare copper wire/G.l. earth wire of size as per specifications given in Table No<br>9.1/1 of Specification book. GI Pipe: As per specification (CW-PLB/GP) mentioned chapter no. 17.5 for watering, and as enclosure for Earth wire, refer specifications given in Table No<br>9.1/1 of Specification book. Hardware: Screw / nut bolts with required washer of dimensions, Rawl plug / clip/ 'U' nails and material as per specifications given in Table No 9.1/1 of Specification book. Filling material: Coal /Charcoal/ salt as per specifications given in Table No 9.1/1 of Specification book. as per specifications given in Table No 9.1/1 of Specification book. Lugs: As per specification (CB-LG/AL, CB-LG/CU) mentioned chapter 7.9 & 7.10 Copper/ Aluminium lugs as per specifications given in Table No 9.1/1 of Specification book. |

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| | | Construction :- Pit is to be dug of required dimension and depth for the earthing at site, and laying of Galvanised cast iron / Copper earth plate or G.I. pipe shall be as per Table No 9.1/1 in Specification book. The earth connection to equipment/ switch gear and earthing electrode shall be connected as shown in the diagram and as per IS 3043 amended up to-date. The connections shall be made either by strip or double run of earth wire with drilling, welding, riveting, brazing and nut bolting to plate or pipe, where ever required in an approved manner. As far as possible continuous strip shall be used, but where ever jointing of strip is unavoidable, the overlap portion must not be less than 21/2 times the width of the strip either welded/ brazed/soldered by all sides or 6 inches overlap with two nut bolts/ riveting of adequate size with required washer and covered by anti-corrosive paint as per approved jointing practice in the industry and as per directives from site engineer in charge. Pit shall then be filled with screened soil with alternate layer of coal and salt, and if, necessary brick masonry work ( Where ever applicable) shall be done as specified in IS: 3043, with laying wires in PVC/ G.I. pipe and watering arrangement as per diagram and covered with C.I. Cover ( Where ever applicable). Where ever requires or as specified by Site Engineer, a Test link shall be provided for facilitating the testing of resistance of earth electrode.<br>Testing :- The value of each earth electrode shall be measured by earth tester in presence of site Engineer and record to be submitted. |

| Providing Street Lighting - Yashada Pune | | |
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| 1 | FG-ODF/FL S2 | Material :- Fitting: ISI marked Energy efficient T-5 2X14 & 2X24 Street Light fitting complete with electronic ballast, transparent cover made out of 3mm thick acrylic sheet, gear cum reflector tray, canopy and lamp holder duly wired for use on 240 volt AC single phase 50 Hz without T-5 lamp. Canopy shall be made of Aluminum sheet of width 3" minimum per lamp. Gear cum reflector tray (GCRT) shall be made of either CRCA sheet of 0.8 mm thick or Aluminum sheet of 1.25 mm thick.Fitting shall be suitable for mounting up to a height of 15 meters and shall be able to withstand wind load test. It shall conform to class-1 of IS: 10322 (part 5/sec 3)/87 with amdt 1 and IP-65 protection i) Various component of fittings shall conform to IS specification as noted below. a) Electronic ballast (EB) to IS: 13021:Part-1:1991 with Amendment No.1, IS:13021: Part-2:1991 with Amendment Nos.1 and<br>2 and additional requirement as per the b) Bi-pin lamp holders to IS:3323/80 with amendment No.1/ c) PVC cables to IS:694/90 with amdt.No.1 & 2. ii) Surface of CRCA Steel and Aluminum sheets used shall be properly phosphatised and stove enameled white on the reflector side, tray side and other surface stove enameled grey. iii) The street light fittings shall be required with socket bore of 30mm or 40 mm or 50mm for side entry/top entry type fittings. The socket bore, however, will be specified by the indenters at the time of placement of supply order. iv) All wire leads to be adequately covered with sleeves for protection against accidental contracts. v) All hardware parts used should be zinc coated or nickel/chromium plated so as to be corrosion resistant. vi) Fitting shall be wired with multi-stranded copper wire terminating on suitable connectors. The wiring shall be properly clamped.<br>Construction :- The complete fitting with all the above accessories shall be erected with provided bracket, on wall/street light pole or at any |

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| | | place as directed by Site engineer, duly connected and giving necessary testing. |
| 2 | CB-LT/CU | Material :- Cables: Cables shall be PVC / XLPE with Copper conductor as per Table no. 7/3 and of required construction, colour, shall carry ISI mark, IS No, manufacturer's name, size, duly embossed / screen printed at every metre and having the total count of progressive length in meter at each mark. Earth wire: Galvanized Iron (G I) wire of appropriate gauge as per Table No 7/1. Glands: As per specification (CB-GL) Lugs: As per specification (CB-CL/CU) Saddles: Saddles fabricated from GI sheet of required gauge and size depending on dia of cable either galvanized or painted with superior quality enamel black paint with necessary shearing mechanical strength, semi circular shaped with extended piece having suitable holes for fixing. G I Strip: 22 g x 25 mm width G I Strip. Clamps: MS Clamps fabricated of required length and shape, having the size of 3/6 mm thick mild steel having 25/50 mm width (as per size of cable), rounded ends with wooden / resin cast grip for holding the cable. Identification tags: For identifying root, connection position GI strip with identification mark / name embossed / painted with arrangement to tie should be fix on cable or arrangement of ferrulesto be done. Hardware: Sheet Metal (SM) screws of required sizes, plugs / wooden gutties, etc.<br>Construction :- General: a) Irrespective of method of construction the cable ends shall be terminated with appropriate size & type of glands with lugs duly crimped, as directed by Site engineer. b) Wherever the cable has to be bent, the turning radius shall be as mentioned in Table No 7/2. Grouping of cables shall be done with adequate distance between cables as mentioned in IS so as to minimize de-rating. Cables shall be tagged/ferruled with identification name / mark at the point from where distribution starts and at ends. Bare earth wire of appropriate size as per Table no. 7/1 shall run along with the cable. Earth wire running with the cable shall be terminated at the earth terminal nearest to cable termination. Erection of Cable on Surface: Erection shall be done as per the routes and layout finalized, in perfect level and in plumb. Before fixing the cable shall be straightened as far as possible for good aesthetics look, continuous bare GI earth wire of required gauge as per Table No 7/1 shall be run. Cable with G I wire shall be fixed by saddles firmly clipped on cable and shall be fixed to wall with minimum 50 x 8 mm SM screws with plugs/wooden gutties, etc. (Distance between two supports / saddles shall be maximum 450 mm). Wooden gutties shall be used wherever required (Especially for stone wall).The entries made in wall, floor slab, etc for laying the cable shall be made good by filling and finishing with plastering the same. Erection of Cable on Trusses: Cable along with bare GI earth wire, while erecting on trusses, shall be firmly clamped by wrapping GI strip of 22 g, 25 mm width of required length fixed to truss with nuts and bolts. Erection of Cable on Pole: Cable along with bare GI earth wire, while erecting on pole, shall be firmly clipped by suitable wooden / epoxy resin cast grips, clamped with 25 x 3 mm or50x6 mm MS strip of required lengthand fixed to pole with nuts and bolts. Laying of Cable in provided Trench/Pole: While laying Cable along with bare GI earth wire, utmost care shall be taken to prevent damage to the insulation of the cable and to the open end. Cable shall be brought out from trench vertically straight (minimum 1.0 metre above G L). Care shall be taken to inspect the trench so that depth of cable shall not be less than as shown in Table No 7/4. Suitable size of cable loopsshall be provided near termination point at adequate depth. Erecting cable in constructed Trench / duct: Erection of cable/s in constructed trench / duct, shall be as per guide lines of IS 1255. Erection of cable/s on trays: Cable/s shall be tied with PVC tags on GI |

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| | | trays. At bending point care shall be taken so that sharp edges of sheet will not damage insulation of cable. |
| 3 | OH-PL/BKT | Material :- Pole Bracket: MS pole bracket fabricated as per specifications in Table 8.4/1. Thickness and size of channel is to be checked from the steel table. D' type Clamps: MS Flat of 50x6mm, 15 mm MS nut bolts Paint: Silver paint, Red oxide paint<br>Construction :- The cross arm shall be made up of size of channel mentioned in table given in Specification book. The length shall be as stated in table given in Specification book. The cross arm shall be complete with pole clamp of size 50X6 mm MS flat and holes required for pin / shackle insulator. For MS pole bracket with guarding extension, an extension piece of same size of length 300 mm shall be welded to bracket as per drawing attached herewith. The cross arm and pole clamp shall be painted with one coat of red oxide and two coat silver enamel paint any other colour paint (as per the instructions of engineer in-charge). Cross arm shall be fabricated as per drawing. |
| 4 | EA-EP | Material :- Earth Plate: Galvanised cast iron / Copper earth plate or G.I. pipe as per specifications given in Table No 9.1/1 of Specification book. CI Cover: As per specifications given in Table No 9.1/1 of Specification book. Earthing Conductor: Copper/G.I strip/Annealed bare copper wire/G.l. earth wire of size as per specifications given in Table No<br>9.1/1 of Specification book. GI Pipe: As per specification (CW-PLB/GP) mentioned chapter no. 17.5 for watering, and as enclosure for Earth wire, refer specifications given in Table No<br>9.1/1 of Specification book. Hardware: Screw / nut bolts with required washer of dimensions, Rawl plug / clip/ 'U' nails and material as per specifications given in Table No 9.1/1 of Specification book. Filling material: Coal /Charcoal/ salt as per specifications given in Table No 9.1/1 of Specification book. as per specifications given in Table No 9.1/1 of Specification book. Lugs: As per specification (CB-LG/AL, CB-LG/CU) mentioned chapter 7.9 & 7.10 Copper/ Aluminium lugs as per specifications given in Table No 9.1/1 of Specification book.<br>Construction :- Pit is to be dug of required dimension and depth for the earthing at site, and laying of Galvanised cast iron / Copper earth plate or G.I. pipe shall be as per Table No 9.1/1 in Specification book. The earth connection to equipment/ switch gear and earthing electrode shall be connected as shown in the diagram and as per IS 3043 amended up to-date. The connections shall be made either by strip or double run of earth wire with drilling, welding, riveting, brazing and nut bolting to plate or pipe, where ever required in an approved manner. As far as possible continuous strip shall be used, but where ever jointing of strip is unavoidable, the overlap portion must not be less than 21/2 times the width of the strip either welded/ brazed/soldered by all sides or 6 inches overlap with two nut bolts/ riveting of adequate size with required washer and covered by anti-corrosive paint as per approved jointing practice in the industry and as per directives from site engineer in charge. Pit shall then be filled with screened soil with alternate layer of coal and salt, and if, necessary brick masonry work ( Where ever applicable) shall be done as specified in IS: 3043, with laying wires in PVC/ G.I. pipe and watering arrangement as per diagram and covered with C.I. Cover ( Where ever applicable). Where ever requires or as specified by Site Engineer, a Test link shall be provided for facilitating the testing of resistance of earth electrode.<br>Testing :- The value of each earth electrode shall be measured by earth tester in presence of site Engineer and record to be submitted. |

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| Providing LV System (Networking, Telephone, FAS, PA & CCTV) work | | |
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| 1 | WG-MA/CC | Material :- Rigid Steel conduit: Rigid HG steel screwed conduit, minimum 20mm dia. and higher depending on No. of wires to be drawn as per Table No. 1/1, 16 gauge, ERW grade duly processed for anti-rust treatment and painted with black enamel paint, accessories for rigid steel conduits such as check nuts, long bends, deep junction boxes for slab, regular junction boxes for walls; of required ways, all of the same make. Earth continuity wire: GI wire of 2.5 sq. mm; GI earth clips 22g, 10mm width, for fixing earth wire along the conduits. Junction boxes / Draw-in boxes: Junction box shall be 5 sided with removable top plate and of suitable size to accommodate No. of entries; fabricated from 16g CRCA sheet steel with earth terminal duly treated with antirust treatment and painted with two coats of red oxide paint. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix cover plate on it. Hardware: U' nails, plumbing and general use nails of required sizes, washers, check-nuts, steel binding wire 20g, fish wire, etc. Other material for Surface finishing: Cement, sand, putty and water.<br>Construction :- Concealing of Rigid steel Conduits: General: Work shall be done in co-ordination with civil work to suite final approved layout. Conduit shall be duly screwed and size of conduit shall be correct depending on number of wires to be drawn. (Table No.1/1, for Steel conduits) Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution and also for wiring for other utilities like data, telephone, TV cabling, etc. for which distance between pipes shall not be less than 300 mm or anti electrostatic partition is to be provided. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of corresponding conduit with colour coding as per Table No. 1/4. (For visual identification). Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires. All bending of conduits shall be done approved manner without changing the cross-section. In RCC work: Work shall be commenced after fixing of steel (re-enforcement) on centering material. Conduits shall be firmly fixed with steel in slab by binding wire. Fixing of conduits shall be possibly done with welding tags so that it will remain rigid during casting of slab, beam, and column even after use of vibrator. Deep junction boxes and other draw-in boxes |

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| | | shall be such that their open end and centering material will not have gap in between so as to avoid concrete entering inside even after fixing covers to steel re-enforcement; and be filled with dry sand. Open ends of conduits; to be concealed in walls, shall be provided with couplers / sockets at ends and be flush with bottom of beam, and located at the center of the beam. As far as possible bunching / grouping of conduits shall be avoided so that it will not affect strength of RCC work especially in beams. Suitable steel fish wire shall be drawn through the conduits for drawing of wires later on. Concealing of Rigid Steel Conduits in walls/ flooring: Chases shall be made in walls ofadequate width, with cutter and chiseling through it. Necessary finishing of the wall surface shall be done. Work in flooring shall not disturb RCC work, Conduits of adequate size shall be erected with use of appropriate accessories, and hardware like 'U' nails, etc. Draw-in / inspection boxes shall be fixed with check-nut, flush with surrounding surface and earthed.<br>Testing :- Earth continuity: Earth continuity shall be ensured at termination point of Earthwire, between the ends of metal conduit. |
| 2 | WG-MA/BOX, | Material :- PVC Trunking (Box type): PVC Trunking (Box type) ISI mark, minimum 1.2 mm thick, with push-fit joints/ accessories for PVC trunking such as couplers, elbows, internal / external angles, junction boxes of required ways of the same make. Hardware: Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, rawl / PVC / fill typeplugs, wooden gutties, etc.<br>Construction :- Erection of PVC Trunking (Box type): Erection shall be done as per the final approved layout. The Trunking shall be in perfect level and plumb. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing. In case of stonewalls wooden gutties shall be grouted in wall for fixing of screws of Trunking. Distance between 2 screws shall not be morethan 600 mm. Size of Trunking shall be correct depending on number of wires to be drawn. Adequate use of accessories shall be made at joints and at required locations. |
| 3 | WG-TW/TC | Material :- PVC Telephone cable: PVC insulated Tinned copper solid conductor with minimum 0.5 mm dia. (Single & Multi pair) properly paired and colour coded, shall be terminated on KRONE module with suitable tool.<br>Construction :- Use of Steel fish wire shall be made for drawing of wires. Wires shall be drawn with adequate care. Wires shall not have intermediate joint in between terminals of the accessories. Wires shall be terminated in the terminals of accessories only. Adequate extra length shall be left at termination points. |
| 4 | WG-COC/N C | Material :- UTP Cable : 4 pairs,100 ohms, unshielded twisted pair (UTP), each pair separatedby a PE former (Star shaped) solid 23 AWG tinned copper conductor rated for temperature of 750 C, PVC insulated grey colour with types as in the table 1.12/1 and as per detailed specifications mentioned in Specification book.<br>Construction :- The cable shall be laid in provided separate casing n capping/ PVC conduit/ trunking 400mm away from electrical cables wherever required without sharp bends. Thecable shall be spliced at both the ends for punching/ crimping at keystone jacks/ UTP connectors. |
| 5 | WG-COC/O FC | Material :- Optical Fibre Cable : Dielectric & metallic sheath armoured multimode optical fibre cable for underground/ aerial |

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| | | applications, fibres separated into binder groups inside a Industry standard 3mm gel filled buffer tubes standard around a central strength member; water blocked with dry water blocking material, making access & handling individual tubes easier & craft-friendly cable core; operating temperature of 40 - 700 C, crush resistance of 44N/m, as per table 1.12/3 and as per detailed specifications mentioned in Specification book. Hardware: Sheet Metal (SM) screws of required sizes, plugs, wooden gitties, clips etc.<br>Construction :- As per the method of construction of PVC armoured cable. But these cables shall be tagged as "OFC" every metre length & can be laid in trench side by side. For underground cable laying cable indicator mentioning "Optical Fibre Cable" is a must. |
| 6 | WG-COC/FP C | Material :- Fibre Patch Cord : FRLS duplex fibre patch cord/ pigtails 1mtr in length with LC/ SC/ ST termination consisting of 1.6mm/ 3.0mm dia. 62.5um fibre with minimum bandwidth of 200MHz- km at 850nm & 500MHz at 1300nm with following specifications, as per table 1.12/4 and as per detailed specifications mentioned in Specification book.<br>Construction :- Supplying & plugging FRLS duplex fibre patch cord/ pigtails into the LC/ SC/ ST termination of LIU & fibre module/ fibre switch port complete. |
| 7 | WG-NAS/IO | Material :- Information Outlet Flush/ Surface type: Spring shuttered front access, high impact plastic body FR grade with high performance unshielded RJ-45 keystone jack (conforming to EIA/TIA 568-B.2-1 Cat 6), 15 milliohms contact resistance, gold over nickel spring contact, 1.5A current carrying capacity, with T568A/T568B wiring option, insulation displacement connector for cable crimping to accept 22-26AWG solid wire for connections up to Gigabit Ethernet. Hardware: Sheet Metal (SM) screws of required sizes, plugs, wooden gitties, etc.<br>Construction :- The Information outlet shall be fixed on the wall with sheet metal (SM) screws, rawl plugs/wooden gitties and making due connections as per EIA/TIA 568 B.2-1 by splicing the UTP cable, untwisted up to 12mm & punching the 4 pairs in the keystone jack with the help of punching tool. Not a single wire shall be left without connections. |

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| 8 | WG-NAS/LI U | Material :- Lightguide Interconnect Unit: Wall mount type Lightguide Interconnect Unit with dimensions shown in the table, an interfacing unit for fibre cables coming in from field & those originating from the equipments. consisting of fibre spools to provide minimum bending radius & splice trays as splice cover for pigtail splicing, two compartment design with adaptor panel in the centre, compartmentalizing the box, complete aluminium housing, fully powder coated, two doors enclosure with lock & key, rubber grommets at the cable entry points for tight sealing; Splice trays of 140 x125 x 10mm complete aluminium body fully powder coated with provision for fibre splices fully cushioned splice holder containing grooves for fixing splice protective sleeves; FR grade high impact resistance plastic two halves design stackable sufficient room for excess cable. Hardware: Sheet Metal (SM) screws of required sizes, plugs, wooden gitties, etc. Construction :- Supplying & erecting Lightguide Interconnect Unit (LIU) on wall with cable termination complete with sheet metal screws of required size, plugs/ wooden gitties. |

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| Providing HVAC System | | |
| 1 | AP-AC/WA C | Material :- Compressor: The room air conditioners shall be fitted with hermetically sealed type suction cooled (Reciprocating) or discharge cooled (Rotary) compressor with suitable rated capacitor start electric motor. It should start unloaded and shall be equipped with overload protection. The compressor shall be mounted on resilient mountings for quiet operation. The compressor shall conform to IS.10617 (part-1): 1983 with amendment 1 & 2. Cooling capacity for Compressors shall be as under: For 1.5 Ton - Minimum 4750 kcal/hourFor 2.0 Ton - Minimum 6250 kcal/hour Energy efficiency ratio for Compressor shall be minimum 2.625 kcal/hour/watt. Cabinet: The cabinet of the air conditioner be made from either galvanized MS sheet of 1mm thickness or aluminium alloy sheet of 1.2mm thickness. The sheets shall be suitably stiffened by embossing the fabrication work and shall be of suitable workmanship. The sheets shall be suitably phosphate and protected by powder coated paint. The galvanized steel sheets shall conform to IS: 277:2003 and have a |

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| | | coating grade of 120 gm/m2. Air Filter: The air filters provided shall be of cleanable type and made of synthetic material. Thermostat: The air-conditioner shall be fitted with thermostat suitable for a working range from 16 degree Centigrade to 35 degree Centigrade with a differential of +/-1 degree Centigrade, with operational voltage as 240V and current rating not exceeding 25 amps. The thermostat shall conform to IS: 11338:1985. Condenser: As per (FG-FG/AS7) specified in chapter 2.4 Paint: Superior quality enamel paint of specified colour.<br>Construction :- The AC unit shall be fixed in the recess/window with necessary materials. The outer frame shall be fitted to recess or cutout made in window making the recess/window air tight, duly connecting the unit to power supply by means of metal clad switch & plug and giving satisfactory trials |
| 2 | WG-MA/BW | Material :- Wires: in conduits / trunking / panel boards Mains / Sub-mains / Circuit mains (comprising phase and neutral wires): PVC insulated wire of specified size, minimum FR grade insulation, copper conductor of electrolytic tough pitch (ETP) grade, having insulationof 1.1 kV grade, ISI marked, of required colour coding as per Table No 1/5. Wires: open PVC insulated and PVC sheathed wire of specified size, minimum FR grade insulation, copperconductor of electrolytic tough pitch (ETP) grade, having insulation of 1.1 kV grade, ISImarked, of required colour coding as per Table No 1/5. Earth Continuity Wire: PVC insulated wire minimum FR grade insulation copper conductor of electrolytic grade, having insulation of 1.1 kV grade, of green / green yellow colour, ISI marked, of specified size but not less than 2.5 Sqmm as per Table No 1/5. Lugs: Copper lugs of appropriate size & type Other material: Rubber grommet, bush, harnessing material, flexible conduit etc.<br>Construction :- Drawing of wires: General Specified wires shall be drawn with adequate care. Correct colour coding as per Table No. 1/5, shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped only within circuit. For lighting load or single-phase distribution wires of two different phases shall not be drawn in single pipe. Wires shall be terminated in the terminals of accessories only, with appropriate type and size of lugs. Drawing of wires: through PVC conduits Bush shall be used at pipe opening to protect wire insulation from getting damaged due to sharp edges. Number of wires shall not exceed with respect to size of pipe as per Table No. 1/2. Drawing of wires: through Rigid Steel conduits Bush shall be used at pipe opening to protect wire insulation from getting damaged due to burrs / sharp edges. Number of wires shall not exceed with respect to size of pipe as per Table No. 1/1. Open Wire bunch: Open wires shall be erected with due care so as to avoid chances of any mechanical injury. Harnessing shall be done with required material in an approved manner in panel boards or where ever necessary. For covering lead wires flexible conduit shall be used with gland as per necessity.<br>Testing :- Insulation resistance test: All wiring shall be tested with 500V Meggar between phases, phase – neutral and to Earth. IR value shall not be less than 1M-ohm. Earth continuity: Earth continuity shall be ensured between termination points of Earth wire. Polarity Test: Test shall be carried out for ensuring the correct polarity in switch and plug |

LIST OF PREFERRED MATERIALS FOR THIS WORKS

| Sr.No | ITEMS | MAKE/BRANDS -- SUBSTANTIALLY EQUIVELANT |
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| 1 | PVC CABLES (COPPER)/ ALLUM | FINOLEX, RR KABLES, HAVELLS ,KEI |
| 2 | PVC INULATED ALUMINUM / COPPER WIRE WITH STRANDED CONDUCTORS. (FRLS/FR / HFFR) | FINOLEX, RR KABLES, HAVELLS ,KEI |
| 3 | PVC RIGID CONDUITS / CASING-N- CAPPING | FINOLEX , PRECISION, DIAMOND, MODI |
| 4 | ELECTRICAL FITTINGS (FLUORESCENT, CFL, MV, METAL HALIDE ETC.) | PHILIPS, BAJAJ, CROMPTON, WIPRO, HAVELLS |
| 5 | CEILING FANS, EXHAUST FANS | CROMPTON, ORIENT, HAVELLS, USHA, ALMONARD |
| 6 | HRC SWITCH FUSE UNIT | L&T, SIEMENS , HAVELLS, C & S |
| 7 | CABLE GLAND & LUGS | SIEMENS, DOWELS, BRACO |
| 8 | INDUSTRIAL SOCKETS | CROMPTON, SIEMENS, HAVELLS ,STANDARD , LEGRAND, INDOASIAN |
| 9 | FLUORESCENT TUBES & BULBS | PHILIPS, CROMPTON, BAJAJ, WIPRO, HAVELLS |
| 10 | ELECTRONIC FAN REGULATOR (STEP TYPE) | ROMA, GREATWHITE, LEGRAND, HAVELLS |
| 11 | MCCB'S & RCCB, RCBO ( ALL POLS) | L&T, SIEMENS, SCHNEIDER ELECTRIC (MG), ABB, LEGRAND |
| 12 | MS & GI CONDUITS | AKG OR ISI MARKED APPROVED BY C.E. (ELECT.)PWD MUMBAI |
| 13 | ISOLATORS, DISTRIBUTION BOXES | L&T, SIEMENS, CROMPTON, SCHNEIDER ELECTRIC (MG), ABB, LEGRAND, HAVELLS, STANDARD, C & S |
| 14 | WIRING ACCESSORIES: 1) PIANO TYPE SWITCHED, SOCKETS, ACCESSORIES. 2) MODULAR TYPE SWITCHES SOCKETS, ACCESSORIES. MODULAR TV / TELEPHONE SOCKET | LEGRAND, , ROMA, GEM, SCHNEIDER |
| 15 | FLUORESCENT TUBES, MF/GF LAMPS | CROMPTON, BAJAJ, PHILIPS , WIPRO |
| 16 | L.E.D. FITTING INDOOR & OUTDOOR | CROMPTON, PHILIPS, BAJAJ, HAVELLS, WIPRO , STURLITE |
| 17 | WATER PUMP | CROMPTON GREAVES, KSB, , KIRLOSKAR, CRI, GRAND FOSS |
| 18 | HT CABLE | RR CABLES, FINOLEX , HAVELLS, KEI |
| 19 | HT SWITCHGEARS | SIMENS, SCHNEIDER, ABB, L&T , LEGRAND |
| 20 | AIR CONDITIONING UNITS | VOLTAS, CARRIER, DAIKIN , MITUBHISHI, BLUESTAR |
| 21 | FIRE PUMPS : | KIRLOSKAR BROS. LTD / MATHER & PLATT / GRUNDFOS |
| 22 | G.I./ M.S. PIPES : | JINDAL( HISSAR) / TATA / ZENITH / APPOLO |
| 23 | PIPE FITTINGS : | BHARAT FORGE / TUBE PRODUCTS / M.S. FITTINGS / VS |
| | | BRAND / GOYAL / SANJAY FORGE / B & M |
| 24 | BUTTERFLY VALES : | AUDCO / KEY STONE / BDK / FOURESS / INTERVALVE I/NEW AGE / KARTAR / NVR /ZOLOTO |
| 25 | NON – RETURN VALVES : | H. SARKER / CRESENT / HAWA / KARTAR / NVR |
| 26 | GATE VALVES (SCREWED END) : | LEADER / ZOLOTO / ITAP / KARTAR / NVR |
| 27 | BALL VALES (SCREWED END) : | LEADER / ZOLOTO / ITAP/ KARTAR / NVR |
| 28 | DG SET WITH AMF PANEL | KIROSKAR / GREAVES / MAHINDRA / CUMMINS |
| 29 | STRAINERS : | GUJRAT OTO FILT / GRAND FRIX / TEL FLOW / KARTAR |
| 30 | C.I. GATE VALVES : | H. SARKER / CRESENT / UPADHAYA / HAWA/ KARTAR |
| 31 | FLOW METRE : | FORBES MARSHALL / EUREKA |
| 32 | PRESSURE SWITCH : | INDFOS / SWITZER / DELTA CONTROL |
| 33 | PRESSURE GAUGE : | H. GURU / FIEBIG / PRICOL / BELLS CONTROL/DONE FOSS/FIBE/UDAY. |
| 34 | ANTICORROSIVE MATERIAL : | I W L / RUSTECH |
| 35 | HYDRANT VALVES : | NEWAGE / WINCO / SHAHBHOGILAL / MINIMAX / ARIHANT / PARSHAW / ESSEL |
| 36 | BRANCH PIPE WITH NOZZLE : | NEWAGE / WINCO/ SHAHBHOGILAL /MINIMAX / ARIHANT/ PARSHAW / ESSEL |
| 37 | FIRE HOSES | NEWAGE / CRC /RAHINO / ESSEL |
| 38 | HOSE COUPLINGS | NEWAGE / WINCO/ SHAHBHOGILAL / MINIMAX / ARIHANT/ |

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| | | PARSHAW / ESSEL |
| 39 | HOSE REEL | EVERSAFE / TYCO / NEWAGE MINIMAX / MITRAS / SHREE |
| 40 | HOSE BOX / FIRE DUCT SHUTTER | EVERSAFE / TYCO / NEWAGE / MINIMAX |
| 41 | FIRE EXTINGUISHERS | SAFEX / ACE FIRE / MINIMAX / VIJAY / EVERSAFE |
| 42 | SPRINKLERS | TYCO / VIKING / KIDDE/ NEWAGE / H.D. |
| 43 | SPRINKLER ALARM VALVE | HD / TYCO / VIKING / KIDDE |
| 44 | FLOW SWITCH | SYSTEM SENSOR / POTTER / SWITZER/ LEVCON |
| 45 | PAINT | ASIAN / BERGER |
| 46 | AIR RELEASE VALVES | LEADER / BAJAJ / HAWA /ZOLOTO |
| 47 | WELDING ELECTRODES | ESAB 28/ ADVANI |
| 48 | FLEXIBLE DROPS | EASYFLEX / DONGA FLEX / ANY UL LISTED/FM APPROVED MATERIAL |
| 49 | ELECTRIC MOTORS | KIRLOSKAR ELECTRIC / CROMPTON GREAVES / SIEMENS / ABB |
| 50 | BATTERY | EXIDE / STANDARD / AMRON |
| 51 | MOTOR CONTROL CENTER | PRAGATHI CONTROLS / LOAD CONTROLS / DYNAMO / |
| | | BRIGHT ENGINEERING/ELLINS / LOTUS |
| 52 | CONTROL / POWER CABLES | CCI/ FINOLEX /HAVELL / RRKABEL |
| 53 | CONTROL MCB | ABB/LEGRAND / SIEMENS / HAVELL / MDS /CROMPTON |
| | | GREAVES / LEGRAND |
| 54 | VOLT METER SELECT SWITCH | SALZER / L & T / KAYCEE |
| 55 | VOLTMETER ( AC / DC) | MECO / AE |
| 56 | AMMETER ( AC / DC) | MECO / AE |
| 57 | POWER CONTACTORS | ABB/LEGRAND / SIEMENS / HAVELL / MDS / LEGRAND / L & T |
| 58 | INDICATING LAPS ( LED TYPE) | VINAY / TEKNIC / L& T |
| 59 | PUSH BUTTONS | TEKNIC / SIEMENS / L&T |
| 60 | AUTO / MANUAL SELECTOR | SALZER / KAYCEE / L&T |
| 61 | TIMERS | EAPL / AE / L & T |
| 62 | TERMINAL BLOCKS | ELMEX / WAGO |
| 63 | CURRENT TRANSFORMERS | KALPA / VOLTAMPS / KAPPA |
| 64 | OVER LOAD RELAY | L & T / SIEMENS |
| 65 | SINGLE PHASE PREVENTORS | MINILEC / AE /SIEMENS |
| 66 | ENGINE CONTROL SELECTOR | SALZER / KAYCEE / L&T |
| 67 | MAIN SUPPLY SELECTOR – DPMCB | SIEMENS / LEGRAND /ABB/ L&T |
| 68 | BATTERY CHARGING SELECTOR | SALZER / L & T/ KAYCEE |
| 69 | BATTERY CHARGER | KAYBEE POWEREC / HBL-NIFE/ AFCO/CHABBI |
| 70 | SIREN / HOOTER | KHERAJ/EQUI |
| 71 | TOGGLE SWITCH | JAY / EQUI |
| 72 | END TERMINATIONS | DOWEWLS / MULTI |
| 74 | SMOKE DETECTORS | NOTIFIER / EST (EDWARDS) / SIMPLEX / APPOLO |
| | | /HONEYWELL / SIEMENS / MIRTONE / SECUTRON / AGNI |
| 75 | HEAT DETECTORS | NOTIFIER / EST / SIMPLEX / APPOLO / HONEYWELL / |
| | | SIEMENS / MIRTONE / SECUTRON / AGNI |
| 76 | MAIN CONTROL PANEL | NOTIFIER / EST / SIMPLEX / APPOLO / HONEYWELL / |
| | | SIEMENS / MIRTONE / SECUTRON / AGNI |
| 77 | MANUAL PULL STATIONS | NOTIFIER / EST / SIMPLEX / APPOLO / HONEYWELL / |

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| | | SIEMENS / MIRTONE / SECUTRON / AGNI |
| 78 | HOOTERS / STROBES | NOTIFIER / EST / SIMPLEX / APPOLO / HONEYWELL / |
| | | SIEMENS / MIRTONE / SECUTRON / AGNI |
| 79 | MODULES | NOTIFIER / EST / SIMPLEX / APPOLO / HONEYWELL / |
| | | SIEMENS / MIRTONE / SECUTRON/ AGNI |
| 80 | BATTERY | HITACHI / DRYSIL / JOHNSON / EXIDE / STANDRD |
| 81 | COPPER CONDUCTOR CONTROL CABLE / WIRES | HAVELLS /KEI /FINOLEX |
| 82 | COMMUNICATION WIRES | HAVELLS /KEI /FINOLEX |
| 83 | P.A. SPEAKERS | PHILIPS / AHUJA / AKG / BOSCH |
| 84 | P.A.CONSOLE | TYCO / KIDDE / FIRE PRO / CHERY TECH / BOSCH |
| 86 | DATA CABLE(CAT 6, CAT6+) | AMP, D LINK, MOLEX, SYSTIMAX |
| 87 | PROJECTOR | SONY / BENQ |
| 88 | SOLAR INVERTER | FRONIOUS , POLYCAB , GROWAATT , ZEROVER , ABB |
| 89 | SOLAR “ON GRID” SYSTEM / SOLAR “OFF GRID” SYSTEM | VIKRAM,,GREENBRILLIENCE, TATA POWER SOLAR SYSTEMS LTD. GOLD SOLAR PVT LTD , WAAREE SOLAR |
| 90 | SOLAR PANEL | VIKRAM,,GREENBRILLIENCE, TATA POWER SOLAR SYSTEMS LTD. GOLDIGREEN , WAAREE SOLAR |
| 91 | LINE ARRAY SPEAKER , LINE ARRAY SUB WOOFER ,TWP WAY STAGE MONITOR | BOSE /BOSCH /SONY |
| 92 | POWER AMPLIFIER (FOR LINE ARRAY) , POWER | BOSE /BOSCH /SONY |
| 93 | EQUALISER (31+31) | BOSCH / YAMAHA /SOUNDCRAFT/ BOSE |
| 94 | LIVE MIXER | BOSCH / YAMAHA /BOSE |
| 95 | ACTIVE CROSS OVER STEREO | BOSCH / YAMAHA |
| 96 | DIGITAL SIGNAL PROCESSOR DRIVE RACK | DBX/AHUJA |
| 97 | HANGING MICROPHONE | SHURE/AKG/SENNHEISER /BOSCH |
| 98 | PODIUM GOOSENECK MICROPHONE | SHURE/AKG/SENNHEISER /BOSCH |
| 99 | BOUNDARY MICROPHONE | SHURE/AKG/SENNHEISER /BOSCH |
| 101 | WIRELESS HANDHELD MICROPHONE , WIRELESS | SHURE/AKG/SENNHEISER /BOSCH |
| 102 | NVR & NVR SOFTWARE | SONY, SAMSUNG, HONEYWELL |
| 103 | SEMI OPEN HEADPHONE | AKG/SENNHEISER/YAMAHA |
| 104 | SURVEILLANCE HARD DIST | SEAGATE, WD |
| 105 | ROOM MONITOR SPEAKER | BOSCH / BOSE/SONY |
| 107 | SUB WOOFER FOR FLY MOUNTS SPEAKER MOUNTING BRACKETS | BOSCH / BOSE/SONY |
| 108 | GIGABYTE POE & ETHERNET SWITCHES | CISCO, ALCATEL, JUNIPER, D-LINK |
| 109 | DVD PLAYER | SONY/PHILIPS/SAMSANG |
| 110 | UTP CABLE, FIBER OPTIC CABLE, I/O, PATCH | CISCO, SYSTIMAX, AMP, D-LINK |
| 111 | MICROPHONE CABLE | FALCON/DELTA/SUNPLAST |
| 112 | RACKS | APW, WQ, VALLRACK, AMS NET TECH, NET RACK |
| 113 | SPEAKER CABLE | FALCON/DELTA/SUNPLAST |
| 114 | UPS | EMERSON, MICROTECK |
| 115 | MICROPHONE PATCH PANEL , SPEAKER PATCH PANEL | MX/NEUTRIK/LEO |
| 116 | OCTAGONAL POLES / HIGH MAST POLES | BAJAJ, WALLMOUNT, CROMPTON, MAGNETIC, TRANSRAIL |
| 117 | TRANSFORMER | VOLTAMP, STATIC, DELTRON , MAHATI, CROMPTON PACTIL |
| 118 | TELEPHONE CABLE | FINOLEX, HAVELLS, D-LINK |
| 119 | TELEPHONE INSTRUMENTS | PANASONIC, BEETEL, SIEMENS |
| 120 | MDF BOX | LEGRAND |
| 121 | KRONE MODULE | KRONE OR ISI MARKED APPROVED BY C.E. (ELECT.)PWD MUMBAI. |

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| 122 | CO-AXIAL RG11 CABLE | FINOLEX, RPG |
| 123 | SOLAR HOT WATER SYSTEM | RACOLD SOLAR WATER HEATING SYSTEM , KOTAK URJA PVT. LTD, PHOTON ENERGY SYSTEMS LTD , VIKRAM SOLAR PVT. LTD , WAAREE ENERGIES LTD , V.GUARD , SKYLARK SOLAR , LAXMI SOLAR |
| 124 | LED TV SET | BARCO / SAMSUNG / CHRISTI |
| 125 | EXTENDER SWITCHES, CONTROLLER , CABLE , CABLE TERMINALS | LIGHTWEL / KRAMER / EXTRON |
| 126 | MIC , AMPLIFIRE , DIGITAL SINGLE PROCESSOR (DSP) | SCNNHEISER / XILICA / KRAMER |
| 127 | CAMERA / PTZ CAMERA | SONY , SAMSUNG , HONEYWELL |
| 128 | FAÇADE LIGHTING | PHILIPS , HAVELLS , ORIENT, BAJAJ |
| 129 | HEAT PUMP | AO SMITH , KORLOSKAR, STIEBEL, ELTRON, BLUEBOX, EMERSON, |
| | | V-GARD |
| 130 | LINE ARRAY SPEAKER , LINE ARRAY SUB WOOFER , TWO WAY STAGE MONITOR | JBL , MARTIN, BSS |
| 131 | AMPLIFIER | CROWN. DBX, JBL |
| 132 | MICROPHONE | AKG , SHURE , AUDIOTECHNICA , SENNHEISER |
| 133 | MIXER | SOUND CRAFT , YAMAHA , |
| 134 | DIGITAL SIGNAL PROCESSOR DRIVE RACK | DBX, BSS, CROWN |
| 135 | MIC STAND | MX, AHUJA , AKG |
| 136 | MICROPHONE CABLE | FALCON, DELTA,KRYSTAL |
| 137 | SPEAKER CABLE | FALCON, KRYSTAL FINOLEX |
| 138 | RACKS | VAL RACK, AMS NET TECH, NET RACK,D-LINK |
| 139 | MICROPHONE PATCH PANEL , SPEAKER PATCH PANEL | MX/NEUTRIK/CUSTOM |
| | STAGE LIGHTING AND STAGE CRAFT | |
| 140 | LIGHTS | LEKSA LIGHTING,MARKRICH,AULTRA LIGHTING |
| 141 | DMX CABLE | FALCON, GURUASTRONICS, BELDEN |
| 142 | POWER AND DMX CONNECTOR | LEKSA LIGHTING,MX, |
| 143 | POWER PANELS | LEGRAND, SIEMENS, CUSTOM, LEKSA LIGHTING |
| 144 | CONSOLE / SPLITTER | LEKSA LIGHTING,MARKRICH,AULTRA LIGHTING |
| 145 | GEAR BOX | KISCO GEAR , LEKSA LIGHTING |
| 146 | MOTOR | NAVJOT , CROMPTON , LAKSA LIGHTING |
| Note: Makes other than the above if not available in market, prior approval from Engineer -in-change is essential and the make shall be either from the approved list by Chief Engineer (Electrical), PWD, Mumbai or shall have ISI mark | | |

**Name of Work:-**

**Convention Centre (Guest House with Seminar hall)**

**SCHEDULE-A**

Schedule showing (approximately) the materials to be supplied from the departmental store for work contracted to be executed and preliminary and ancillary works and the rates at which they are to be charged for.

| Sr No. | Particulars | Quantity | Unit | Rate of recovery | Place of delivery |
|---|---|---|---|---|---|
| NILL | | | | | |

Note:- 1) All the required materials for the work has to be brought by the contractor at his own cost.

| Name of Work:- | | | Convention Centre (Guest House with Seminar Hall) |
|---|---|---|---|
| | | | **SCHEDULE-B & SPECIFICATIONS** |
| **BOQ No.** | **Estimated Quantity** | **Unit** | **Description of Item** |
| **1.1** | 2118.00 | Square Metre | Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150mm in thickness. (Item No. 2.09) |
| **1.2** | 570.98 | Cubic Metre | Excavation for foundation in earth, soil of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50m. beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift upto 1.5m.) By Mechanical Means (Item No. 21.02) |
| **1.3** | 1141.95 | Cubic Metre | Excavation for foundation in Hard murum including removing the excavated material upto a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift from 1.5 to 3.0m.) By Mechanical Means (Item No. 21.08) |
| **1.4** | 570.98 | Cubic Metre | Excavation for foundation in Hard rock by chiselling, wedging, line drilling, etc. including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the building area stacking as directed, dewatering and back filling with available earth/murum watering, ramming etc. complete.(Lift upto 1.5 m). By Mechanical Means (Item No. 21.20) |
| **1.5** | 1198.06 | Square Metre | Providing preconstructional antitermite treatment as per I.S. 6313(Part-II) by treating the bottom surface and sides of excavation at the rate of 5 litres of emulsion concentrate of 1.0 percent of chlorophyrifos per square meter of surface area covering 10 years guarantee on bond paper. (Item No. 21.22) |
| **1.6** | 1785.84 | Square Metre | Providing preconstructional antitermite treatment as per I.S. 6313(Part-II) by treating the top surface of plinth filling at the rate of 5 litres of emulsion concentrate at 1.0 percent of clorophyrifos per square metre of surface area covering ten years guarantee on bond paper. (Item No. 21.24) |
| **1.7** | 2068.50 | Cubic Metre | Filling in plinth and floors with approved excavated material in 15cm. to 20cm. Layers including watering and compacting etc. complete. (Item No. 21.36) |
| **1.8** | 689.50 | Cubic Metre | Filling in plinth and floors with contractors material/brought from outside and approved by Engineer incharge in layers of 15cm to 20cm including watering and compaction etc. complete. (Item No. 21.37) |
| **1.9** | 357.00 | Cubic Metre | Providing dry/trap/granite/quartzite/gneiss rubble stone soling 15cm to 20cm thick including hand packing and compacting etc. complete. (Item No. 21.38) |
| **1.10** | 260.72 | Cubic Metre | Providing and laying Cast in situ/Ready Mix cement concrete in M-10 of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, Steel centering, formwork, laying/pumping, compacting, roughening them if special finish is to be provided, finishing if required and curing complete, with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 24.01) |

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| **1.11** | 470.91 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including Steel centering formwork, cover blocks laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.15) |
| **1.12** | 385.31 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. columns as per detailed designs and drawing or as directed including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.35) |
| **1.13** | 145.51 | Cubic Metre | ... (Item No. 25.35, First Floor) |
| **1.14** | 101.85 | Cubic Metre | ... (Item No. 25.35, Second Floor) |
| **1.15** | 128.04 | Cubic Metre | ... (Item No. 25.35, Third Floor) |
| **1.16** | 252.15 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. beams and lintels as per detailed designs and drawings or as directed including steel centering, formwork, cover blocks, laying/pumping, compactionand roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.54) |
| **1.17** | 333.10 | Cubic Metre | ... (Item No. 25.54, First Floor) |
| **1.18** | 240.83 | Cubic Metre | ... (Item No. 25.54, Second Floor) |
| **1.19** | 241.94 | Cubic Metre | ... (Item No. 25.54, Third Floor) |

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| **1.20** | 430.28 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix C.C. M-30 of trap metal for RCC rectangular grid beam with slab as per detailed design and drawing or as directed including dewatering if necessary, steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them to form surface with C.M. 1:3 of sufficient minimum thickness to give smooth and even surface or roughening them if special finish is to be provided and curing complete(Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled concrete batch mix plant(pan mixer). With fine aggregate(Crushed sand VSI Grade) (Item No. 26.62) |
| **1.21** | 798.98 | Cubic Metre | ... (Item No. 26.62, First Floor) |
| **1.22** | 180.84 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.C.C. slabs and landings as per detailed designs and drawings including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 25.74) |
| **1.23** | 87.80 | Cubic Metre | ... (Item No. 25.74, First Floor) |
| **1.24** | 128.09 | Cubic Metre | ... (Item No. 25.74, Second Floor) |
| **1.25** | 158.20 | Cubic Metre | ... (Item No. 25.74, Third Floor) |
| **1.26** | 10.23 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/quartzite/granite/gneiss metal for R.C.C. Waist slab, and steps of staircases as per detailed design and drawings or as directed including steel centering, plywood/steel formwork, steel props, laying/pumping, compaction, finishing uneven and honeycombed surface with C.M. 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening the surface if special finish is to be provided and curing etc. complete.(Excluding einforcement, including cover block).(Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc.) with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.26) |
| **1.27** | 10.23 | Cubic Metre | ... (Item No. 26.26, First Floor) |
| **1.28** | 10.23 | Cubic Metre | ... (Item No. 26.26, Second Floor) |

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| **1.29** | 10.23 | Cubic Metre | ... (Item No. 26.26, Third Floor) |
| **1.30** | 128.86 | Cubic Metre | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/granite/quartzite/gneiss metal for R.C.C. pardi of required thickness including steel centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.19) |
| **1.31** | 28.94 | Cubic Metre | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete in M-20 of trap/granite/quartzite/gneiss metal for R.C.C.coping to plinth or parapet and sill of doors and windows moulded as per detailed drawings or chamfered as approved by the Engineer including steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand VSI Grade) (Item No. 26.23) |
| **1.32** | 26.42 | Cubic Metre | ... (Item No. 26.23, First Floor) |
| **1.33** | 59.59 | Cubic Metre | ... (Item No. 26.23, Second Floor) |
| **1.34** | 59.59 | Cubic Metre | ... (Item No. 26.23, Third Floor) |
| **1.35** | 599.22 | Metric Tonne | Providing and fixing in position TMT-FE-500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete. (Item No. 26.32) |
| **1.36** | 8.00 | Metric Tonne | Providing and fabricating structural steel work in rolled sections like joists, channels, angles, tees etc. as per detailed design and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted/bolted/welded connections without connecting plates, braces etc. and including one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade etc. complete. (Item No. 23.01, First Floor) |
| **1.37** | 522.90 | sq.m. | Providing and fixing 18mm plywood above MS stage, etc complete |
| **1.38** | 54.08 | Square Metre | Providing and laying damp proof course 50mm thick in M20 cement concrete layer and bitumen/using cement with waterproofing compound curing, formwork etc. complete. (Item No. 31.01) |
| **1.39** | 52.25 | Square Metre | ... (Item No. 31.01, First Floor) |

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| **1.40** | 123.59 | Square Metre | ... (Item No. 31.01, Second Floor) |
| **1.41** | 123.59 | Square Metre | ... (Item No. 31.01, Third Floor) |
| **1.42** | -3.32 | Cubic Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:6 in foundations and plinth of inner walls/in plinth external walls including bailing out water manually, striking joints on unexposed faces, raking out joints on exposed faces and watering etc. Complete. (Item No. 27.01) |
| **1.43** | 139.52 | Cubic Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.15) |
| **1.44** | 134.38 | Cubic Metre | ... (Item No. 27.15, First Floor) |
| **1.45** | 97.37 | Cubic Metre | ... (Item No. 27.15, Second Floor) |
| **1.46** | 282.47 | Cubic Metre | ... (Item No. 27.15, Third Floor) |
| **1.47** | 248.11 | Square Metre | Providing Autoclaved Aerated Concrete Block masonary of conforming to IS:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in Half brick thick wall including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to IS:6441(Part I)-1972) (Item No. 27.16) |
| **1.48** | 547.96 | Square Metre | ... (Item No. 27.16, First Floor) |
| **1.49** | 382.77 | Square Metre | ... (Item No. 27.16, Second Floor) |
| **1.50** | 384.66 | Square Metre | ... (Item No. 27.16, Third Floor) |
| **1.51** | 323.36 | Square Metre | Providing second class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6mm diameter/2 hoop iron strips 25mm X 1.6mm placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete. (Item No. 27.06) |
| **1.52** | 226.24 | Square Metre | ... (Item No. 27.06, First Floor) |
| **1.53** | 465.51 | Square Metre | ... (Item No. 27.06, Second Floor) |

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| **1.54** | 465.51 | Square Metre | ... (Item No. 27.06, Third Floor) |
| **1.55** | 1006.10 | Running Metre | Providing and fixing chicken mesh of 22 gauge, with about 30cm. width at the junction of R.C.C members and brick work, of approved quality including fixing mesh in position by necessary drilling in concrete/B.B.masonry and or tying by binding wire etc. complete. (Item No. 32.26) |
| **1.56** | 1006.10 | Running Metre | ... (Item No. 32.26, First Floor) |
| **1.57** | 1006.10 | Running Metre | ... (Item No. 32.26, Second Floor) |
| **1.58** | 1006.10 | Running Metre | ... (Item No. 32.26, Third Floor) |
| **1.59** | 1411.13 | Square Metre | Providing and applying gypsum plaster(with Gypsum material) with finishing with gypsum material in 10 to 13 millimeter thickness to previously plastered surface/or on newly brick surface(Excluding rough cast plaster) in all position including preparing and Finishing the surface scaffolding etc.complete. (Item No. 32.31) |
| **1.60** | 412.53 | Square Metre | ... (Item No. 32.31, First Floor) |
| **1.61** | 2106.96 | Square Metre | ... (Item No. 32.31, Second Floor) |
| **1.62** | 2112.84 | Square Metre | ... (Item No. 32.31, Third Floor) |
| **1.63** | 2123.96 | Square Metre | Providing and applying interior wall finish luster of approved make on internal wall surface as detailed below Scrapping the surface with emery paper and wipe clean wall primer with brush with mineral turpentine with brush 8 to 10% and oil 15 to 20% with roller and allowing to dry for a period 6 to 8 hours. wall putty with appropriate proportion of water allowing to dry for period 4 to 6 hours. Scrapping with Emery paper 180 and wipe clean. Applyingwall primer with brush with mineral turpentine 8 to 10% and oil 15 to 20% with roller Scrapping Emery paper 320 and wipe clean, interior wall finish luster 1st coat with brush/rubber/spray with mineral turpentine 7 to 9% and Oil with roller 19 to 21% After 8 hours of activity Applying 2nd coat or wall finish Lustre with mineral turpentine 7 to 9 % with brush and Oil with roller 19 to 21% after allowing dry for the period of 6 to 8 hours activity.(With prior approval of S.E.) (Item No. 36.20) |
| **1.64** | 984.21 | Square Metre | ... (Item No. 36.20, First Floor) |
| **1.65** | 2492.05 | Square Metre | ... (Item No. 36.20, Second Floor) |
| **1.66** | 2492.87 | Square Metre | ... (Item No. 36.20, Third Floor) |
| **1.67** | 329.89 | Square Metre | Providing and applying white-wash in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scaffolding and preparing the surface by brushing and brooming down etc. complete. (Item No. 36.03) |
| **1.68** | 321.84 | Square Metre | ... (Item No. 36.03, First Floor) |
| **1.69** | 241.38 | Square Metre | ... (Item No. 36.03, Second Floor) |

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| **1.70** | 241.38 | Square Metre | ... (Item No. 36.03, Third Floor) |
| **1.71** | 621.62 | Square Metre | Providing and laying in position flooring of telephone black/Amba White/Cat bary brown/Ruby red/Ocean Brown granite stone of approved shade and size 18mm to 20mm thick on bed 1:6 cement mortar including cement floats striking joints, pointing in C.M. 1:3 curing and cleaning etc. complete. (Item No. 33.34) |
| **1.72** | 1045.26 | Square Metre | Providing and laying polished hand cut Kotah Stone flooring 25mm to 30mm thick and 45cm to 55cm wide in plain/diamond pattern on a bed of 1:6 C.M. including cement float, filling joints with neat cement slurry, curing, polishing and cleaning complete. (Item No. 33.08) |
| **1.73** | 1406.74 | Square Metre | ... (Item No. 33.08, First Floor) |
| **1.74** | 1292.10 | Square Metre | ... (Item No. 33.08, Second Floor) |
| **1.75** | 1339.84 | Square Metre | ... (Item No. 33.08, Third Floor) |
| **1.76** | 101.64 | Square Metre | Providing and laying vitrified matt fininsh tiles having size 590mm to 605mm x to 605mm of 8 to 10mm thickness and confirming IS. 15622-2006(Group Bla) of approved make, shade and pattern for flooring in required position laid on a bed of 1:4 cement morar including neat cement float, filling joints, curing and cleaning etc. complete. (Item No. 33.42) |
| **1.77** | 92.79 | Square Metre | ... (Item No. 33.42, First Floor) |
| **1.78** | 108.71 | Square Metre | ... (Item No. 33.42, Second Floor) |
| **1.79** | 108.71 | Square Metre | ... (Item No. 33.42, Third Floor) |
| **1.80** | 257.48 | Square Metre | Providing and laying ceramic tiles having size 30cm. x 45cm. confirming to corresponding I.S. for dado and skirting in required position with readymade adhesive mortar of approved quality on plaster of 1:2 cement mortar including joint filling with white/colour cement slurry cleaning curing etc. complete. (Item No. |
| **1.81** | 182.24 | Square Metre | ... (Item No. 33.26, First Floor) |
| **1.82** | 378.49 | Square Metre | ... (Item No. 33.26, Second Floor) |

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| **1.83** | 378.49 | Square Metre | ... (Item No. 33.26, Third Floor) |
| **1.84** | 41.37 | Square Metre | Providing and fixing in required position skirting or dado of polished Kotah Stone slab 25mm to 30mm thick fixed on base on plaster of cement mortar 1:4 including cement float, filling joints with cement slurry, curing rubbing, polishing and cleaning complete. (Item No. 33.81) |
| **1.85** | 51.69 | Square Metre | ... (Item No. 33.81, First Floor) |
| **1.86** | 79.29 | Square Metre | ... (Item No. 33.81, Second Floor) |
| **1.87** | 79.29 | Square Metre | ... (Item No. 33.81, Third Floor) |
| **1.88** | 14.01 | Square Metre | Providing sills of required material 20mm to 25mm thick, on a bed of cement mortar 1:4 including cement float, filling joints with neat cement slurry, curing, moulding edges, polishing, cleaning complete. b) Granite (Item No. 33.22) |
| **1.89** | 16.28 | Square Metre | ... (Item No. 33.22, First Floor) |
| **1.90** | 7.70 | Square Metre | ... (Item No. 33.22, Second Floor) |
| **1.91** | 7.70 | Square Metre | ... (Item No. 33.22, Third Floor) |
| **1.92** | 71.28 | Square Metre | Providing and fixing machine cut machine polished 18mm to 20mm thick telephone black/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone for treads and risers of steps and staircases of approved colour and shade with full moulding and three grooved line for the treads on bed of 1:4 Cement mortar including float filling joints with neat cement slurry curing polishing and cleaning etc. complete. (Item No. 33.35) |
| **1.93** | 105.01 | Square Metre | Providing and laying machine cut machine polished machine cut Kota stone slabs 20 to 25mm thick for treads and risers of steps and staircases, with rounded nosing for the treads on a bed of 1:4 cement mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning etc. complete. (Item No. 33.18) |
| **1.94** | 96.76 | Square Metre | ... (Item No. 33.18, First Floor) |
| **1.95** | 96.76 | Square Metre | ... (Item No. 33.18, Second Floor) |

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| **1.96** | 96.76 | Square Metre | ... (Item No. 33.18, Third Floor) |
| **1.97** | 39.73 | Square Metre | Providing and laying telephone black/Amba White/Cadburybrown/Ruby red/Ocean Brown granite stone of 18 to 20mm thick for door frame/dado/window boxing etc. On C.M. 1:6 including filling joints with polymer base filler nosing/moulding the sharp edges wherever necessary, curing, etc. complete. (Item No. 33.68) |
| **1.98** | 39.84 | Square Metre | ... (Item No. 33.68, First Floor) |
| **1.99** | 52.81 | Square Metre | ... (Item No. 33.68, Second Floor) |
| **1.100** | 52.81 | Square Metre | ... (Item No. 33.68, Third Floor) |
| **1.101** | 44.73 | Square Metre | Providing and fixing solid core flush door shutter in double leaf 32mm thick decorative type of exterior grade as per detailed drawings approved face veneers 3mm thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.95) |
| **1.102** | 66.15 | Square Metre | ... (Item No. 39.95, First Floor) |
| **1.103** | 14.70 | Square Metre | ... (Item No. 39.95, Second Floor) |
| **1.104** | 14.70 | Square Metre | ... (Item No. 39.95, Third Floor) |
| **1.105** | 3.78 | Square Metre | Providing and fixing solid core flush door shutter in single leaf 32mm thick decorative type of exterior grade as per detailed drawings approved face veneers 3mm thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.09) |
| **1.106** | 9.45 | Square Metre | ... (Item No. 39.09, First Floor) |
| **1.107** | 56.70 | Square Metre | ... (Item No. 39.09, Second Floor) |
| **1.108** | 52.50 | Square Metre | ... (Item No. 39.09, Third Floor) |

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| **1.109** | 56.88 | Square Metre | Providing and fixing in position(as per 1868/1982) Alluminium sliding window of three tracks with rectangular pipe 95 x 38.10 x 0.90mm at weight 0.637 Kilogram/running metre. with window frame bottom track section 92 x 31.75 x 1.30mm at weight 1.070 Kilogram/running metre.. Top and side track section 92 x 31.75 x 1.30mm at weight 0.933 Kilogram/Running metre. The shutter should be of bearing bottom 40 x 18 x 1.25mm at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10mm at weight 0.469 Kilogram/Running metre. and handle and top section 40 x 18 x 1.25mm at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineerincharge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5mm thick plain glass and aluminium mosquito net shutter with stainless steel jail with all required screws and nuts etc, complete. With colour Anodising with box (Item No. 39.41) |
| **1.110** | 65.04 | Square Metre | ... (Item No. 39.41, First Floor) |
| **1.111** | 85.92 | Square Metre | ... (Item No. 39.41, Second Floor) |
| **1.112** | 85.92 | Square Metre | ... (Item No. 39.41, Third Floor) |
| **1.113** | 2.12 | Cubic Metre | Providing and fixing frame with/without ventilator of size as specified with Country cut teak wood for doors and windows including chamfering, rounding, rebating, iron holdfast of size 300mm x 40mm x 5mm with oil painting, etc. complete (Item No. 39.01) |
| **1.114** | 2.27 | Cubic Metre | ... (Item No. 39.01, First Floor) |
| **1.115** | 2.65 | Cubic Metre | ... (Item No. 39.01, Second Floor) |
| **1.116** | 2.50 | Cubic Metre | ... (Item No. 39.01, Third Floor) |
| **1.117** | 2.16 | Square Metre | Providing and fixing in position powder coated aluminium louvered windows/ventilator of various sizes with powder coating as per detailed drawing and specifications including aluminium frames 80 x 38mm x 1.22mm box type, 5mm thick sheet glass louvers, of approved quality etc. complete. (Item No. 39.68) |
| **1.118** | 1.08 | Square Metre | ... (Item No. 39.68, First Floor) |
| **1.119** | 6.48 | Square Metre | ... (Item No. 39.68, Second Floor) |
| **1.120** | 6.48 | Square Metre | ... (Item No. 39.68, Third Floor) |

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| **1.121** | 9.45 | Square Metre | Providing and Fixing 30MM thick BOTH SIDE PRELAMINATED SOLID PANEL PVC DOOR SHUTTER consisting of frame made out of M.S tubes of 19 guage thickness and, size 19 x 19mm for styles and 15 x15mm for the top and bottom rails, M.S frame shall have a coat of metel primer of approved make and manufacture. M.S frame shall be covered with heat mouled PVC 'C' channel made from 5mm(+/0.25) thick prelaminated sheet of density 600 Kilogram/cbm, of size 30mm thickness 70mm width out of which 50mm shall be flat and 20mm shall be tapered in 45? angle on either side forming stiles ; and 5mm thick, 95mm wide PVC sheet out of which 75mm shall be falt and 20mm shall be tapered in 45 on the inner side to form top and bottom rail and 115mm wide PVC sheet out of which 75mm shall be falt and 20mm shall be tapered on both sides to form lock rail.Top, bottom and lock rail shall be provided either side of the panel. An additional 5mm(+/0.25) thick PVC strip of 20mm width is to be stuck on the bottom side of the ' c ' channel prelaminated paneling of 5mm(+/0.25) thick PVC sheet to be fitted inside the M.S. frame welded/sealed to the styles and rails with 5mm(+/0.25) x 30mm PVC sheet beading on either side and joined together with solvent cement adhesive etc, 10mm thickness(5mm(+/0.25) x 2 nos) 20mm wide cross PVC sheet as gap insert for the rail and bottom rail. Door to be fixed to frames with 3 nos M.S.powder coated but hinges of size 100mm x 25MM x 2mm using 32mm long steel screws drilled suitable to pass through both the walls of the M.S tube. Other hardwares (Item No. 39.47) |
| **1.122** | 7.56 | Square Metre | ... (Item No. 39.47, First Floor) |
| **1.123** | 39.69 | Square Metre | ... (Item No. 39.47, Second Floor) |
| **1.124** | 39.69 | Square Metre | ... (Item No. 39.47, Third Floor) |
| **1.125** | 17.50 | Square Metre | Providing and fixing Country cut teak wood double or single leaf second class fully panelled door shutter with 35mm thick style and rail with 25mm thick panels with openable fan light as per detailed drawings. Excluding the door frame 60mm x 100mm stainless steel fixtures and fastening and finishing the wood work with oil painting 3 coats.(Excluding the door frame) (Item No. 39.04) |
| **1.126** | 20.48 | sq.m. | Providing and fixing MS powder coated door including all material and labour etc complete. |
| **1.127** | 14.40 | Square Metre | Providing and fixing aluminium grill diamond mesh type DG202 of 7.5mm thick including fixing in position anodised aluminium frame section of 80 x 38mm x 1.22mm size box, cutting to the required size with all wastage, labour, lead lift etc. complete. (Item No. 39.76, Second Floor) |
| **1.128** | 14.40 | Square Metre | ... (Item No. 39.76, Third Floor) |
| **1.129** | 30.86 | sq.m. | Providing and fixing high polished kota stone for wall cladding having stones 25mm<br>to 30mm thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. |
| **1.130** | 46.43 | sq.m. | Providing and fixing high polished granite stone for wall cladding having stones 25mm to 30mm thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. |

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| **1.131** | 89.28 | sq.m. | Providing and Fixing MS railing with top pipe of 50mm dia. and vertical pipe of 38mm dia at 0.60m c/ c or as required and horizontal pipes of 25mm dia in three rows, all pipes of 2mm thick including buffing, fabricating fixtures and fastening including pipe base of appropriate diameter and ball base of 75mm dia above newel post of 75mm diameter etc.The handrail, horizontal pipes, verticles, bends to be finished with three coats of approved synthetic enamel paint from approved make inclusive of all surface preparation with Zinc chromate primer as specific etc complete |
| **1.132** | 423.35 | Square Metre | Providing cement based water proofing treatment to terraces(Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in C.M.1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with C.M.1:3 admixed with approved water proofing compound and finally top finishing with average 20mm. thick layers of same mortar added with jute fiber at 1Kilogramper bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. Marking finished surface with false squares of 300mm x 300mm. making the junctions at the parapet rounded and tapered top for required height, with drip mould at the junction of plaster and parapet and curing and covering 10 years Guarantee against leakproofness on Court fee stamp paper of Rs. 500/-including ponding test etc. complete. (Item No. 31.04, Second Floor) |
| **1.133** | 1203.93 | Square Metre | ... (Item No. 31.04, Third Floor) |
| **1.134** | 7.50 | Cubic Metre | Providing waterproofing in W.C. and bath including brick bat coba in all position including providing and laying 12mm bedding in cement mortor 1:3 on vergin concrete slab with waterproofing compound @ 1Kilogram/per bag of cement laying brick bat coba of required thickness incm 1:5 with waterproofing compound 1 Kilogram/bag of cement grouting and finishing the top layer with 20mm thick brick bedding incm mortor 1:3 with waterproofing compound 1 Kilogram/per bag of cement and testing the treated portion for 48 hours by pond test and covering ten years' guarantee on requisite stamp paper including curing etc. complete. (Item No. 31.26) |
| **1.135** | 29.85 | Cubic Metre | ... (Item No. 31.26, First Floor) |
| **1.136** | 7.35 | Cubic Metre | ... (Item No. 31.26, Second Floor) |
| **1.137** | 7.35 | Cubic Metre | ... (Item No. 31.26, Third Floor) |
| **1.138** | 478.67 | Square Metre | Providing waterproof plaster in W.C. and bath 12mm thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 Kilogram. per bag of cement of approved make and manufacturer and curing etc. complete.(Excluding Tiles)(As directed by Engineer in Charge) (Item No. |
| **1.139** | 320.94 | Square Metre | ... (Item No. 31.06, First Floor) |
| **1.140** | 421.05 | Square Metre | ... (Item No. 31.06, Second Floor) |

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| **1.141** | 421.05 | Square Metre | ... (Item No. 31.06, Third Floor) |
| **1.142** | 100.02 | Square Metre | Providing and Fixing of GI Lay in Plain metal ceiling consisting of 600x600mm Lay in tiles of pre coated galvanized steel in 0.5mm thickness in Global white color tile to be laid on grid systems with 15mm wide T-section flanges color white having rotary stitching on the Main Runner, 1200mm and 600mm Cross Tees.Providing and Fixing of GI Lay in Plain metal ceiling consisting of 600x600mm Lay in tiles of pre coated galvanized steel in 0.5mm thickness in Global white color tile to be laid on grid systems with 15mm wide T-section flanges color white having rotary stitching on the Main Runner, 1200mm and 600mm Cross Tees.products approved as per GRIHA and BS 476 etc. complete. (Item No. 38.48) |
| **1.143** | 91.83 | Square Metre | ... (Item No. 38.48, First Floor) |
| **1.144** | 98.05 | Square Metre | ... (Item No. 38.48, Second Floor) |
| **1.145** | 98.05 | Square Metre | ... (Item No. 38.48, Third Floor) |
| **1.146** | 888.73 | Square Metre | Providing rough cast cement plaster externally in two coats to concrete, brick or stone masonry surfaces in all positions with base coat of 12 to 15mm thick in C.M. 1:4 and rough cast treatment 12mm thick in proportion 1:1 1/2:3 including scaffolding and fourteen days curing complete. (Item No. 32.12) |
| **1.147** | 631.84 | Square Metre | ... (Item No. 32.12, First Floor) |
| **1.148** | 448.80 | Square Metre | ... (Item No. 32.12, Second Floor) |
| **1.149** | 611.05 | Square Metre | ... (Item No. 32.12, Third Floor) |
| **1.150** | 2580.43 | sq.m. | Supplying & providing approved colour washed stone crete plaster 1:0:5:2 (1cement: 0.5 dolomite powder: 2 stone chipping 10mm nominal size) in panels all around as per approved pattern including scrubbing and washing, the top layer with brushes and water to expose the stone chippings, complete as per specification and direction of Engineer in 50% white cement and 50% ordinary grey cement in top layer including scaffolding staging etc complete. |

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| **1.151** | 30.56 | Square Metre | Supply and installation of cubicles of width and depth as per Athena Lite-SS Series Cubicles-Std Sizes(W x D x H): 900mm x 1550mm x 2105mm, (Height is including 100mm gap from bottom, Door Width-600mm specifications/site drawings). Cubicle height to be 2105mm. Made from solid grade compact high pressure laminate as per IS:2046 and EN-438 manufactured under high specific pressure > 5 MPa and temperature >120°C, All doors will be of single colour and made of 12mm thick Merino HPL compact panel. The doors will have chamfered edges. Each door will be supported by 3 stainless steel made hinges affixed to the pilasters. Size of panels to be as per drawing. HARDWARE & ACCESSORIES are H shaped(Top) head frame structure made of extruded Aluminium grade 6063 T5-50 micron epoxy powder coated for surface protection, Size to be 125x70x5T. Corner joinery section, Size to be 40x16.5x1.8T. U-Channel Wall joinery section, Size to be 22x16x1.6T. Door stopper section, Size to be 21x12.5x1.6T. Spring loaded Butt Hinges made from Stainless steel grade 304. Surface finish to be matt type. Covers to be lacor coated.etc complete. (Item No. 51.162) |
| **1.152** | 24.83 | Square Metre | ... (Item No. 51.162, First Floor) |
| **1.153** | 776.25 | Square Metre | Providing and applying a base coat comprising of 1KilogramPolydee-MC and 1Kilogramfresh cement after wetting the surface followed by drying the surface for 2 days, apply primer coat of TP-40 and after drying, applying Polydee-11 two component(mixing ratio 2 A : 1 B)) Antibacterial food grade coating inside drinking water tank in two coats with time interval of minimum 8 hrs. covering 7 years guarantee on Court Fee Stamp Paper of Rs. 100/-etc. complete. (Item No. 31.11, Third Floor) |
| **1.154** | 14.04 | Square Metre | Providing and fixing machine cut mirror polished 18mm to 20mm thick telephone black granite/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone partition with full moulding the edges etc. complete . Both side polish (Item No. 33.36) |
| **1.155** | 12.48 | Square Metre | ... (Item No. 33.36, First Floor) |
| **1.156** | 20.00 | Square Metre | Providing leather finished polishing to Kota/Marble/Shahabad/Kadappa Stone slab by continuous grinding in 4 coats of different bits to receive rough and matty finish including buffing process before laying and fixing of stone as per drawing and design, including cleaning, washing and finishing etc. complete. (Item No. 33.57) |
| **1.157** | 160.15 | Square Metre | Providing & Fixing in position, Partition made from 12mm thick Gypsum from both sides on 50 x 50mm Sal-wood frame of 600 x 600 c to c, having of 800 gsm synthetic wool 50mm thick in between, including cost of required Cut-Outs & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.12) |
| **1.158** | 89.41 | Square Metre | ... (Item No. 51.12, First Floor) |
| **1.159** | 248.16 | sq.m. | Providing and fixing 12mm thick clear toughened glass cladding with supporting frame in aluminium sections including all necessary fittings, labour, transportation, Scaffolding etc. complete. As directed by engineer in charge. |
| | | | **Work Portion Total (A)** |

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| **2.1** | 1229.01 | Cubic Metre | Supply of Rubble, Murum, Soil, 60mm./40mm. metal(Hand broken), royalty charges are not included in the rates.Any revision in Royalty charges and surcharge shall be included in the rate analysis of the respective item. If there is variation in these rates the difference shall be paid extra over the items to the contractor and shall be recovered if these rates are reduced by Govt. i.e. Revenue department. The Government of Maharashtra, Revenue and Forest Departments Gazette No.146 Dt. 04 June 2021 States that the Royalty charges of Rs. 216.18/cum. are to be considered. The surcharge levied on Royalty shall also be payable to the contractor. |
| | | | **Royalty Total (B)** |
| **3.1** | | | Carrying out below mentioned tests on MURUM-HARD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 2.00 | TEST | Liquid Limit & Plastic Limit |
| **3.2** | | | Carrying out below mentioned tests on RUBBLE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Crushing Value/Compressive Strength, Water Absorption & Specific Gravity |
| **3.3** | | | Carrying out below mentioned tests on CEMENT as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 41.00 | TEST | Standard Consistency Fineness, Specific Gravity, Setting Time ( Initial & Final), Compressive Strength, Soundness |
| **3.4** | | | Carrying out below mentioned tests on WATER as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | PH Value, Sulphate & Chloride Content |
| **3.5** | | | Carrying out below mentioned tests on CRUSHED SAND as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Fineness Modulus (Sieve Analysis), Silt & Clay Content |
| | 1.00 | TEST | Chloride & Sulphate Content |
| | 1.00 | TEST | Silt Factor |
| **3.6** | | | Carrying out below mentioned tests on STEEL as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 121.00 | TEST | Upto 16 mm (Set of 3 Bars) |
| | 121.00 | TEST | Above 16 mm (Set of 3 Bars) (Tensile strength, %, Elongation, Yield Stress, Weight-Per Meter, Bend / Rebend Test, Proof Stress.) |
| | 121.00 | TEST | Nitrol Solution Test. (Set of 3 Bars) |
| **3.7** | | | Carrying out below mentioned tests on BRICKS as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 3.00 | TEST | Water Absorption (Set of 5 Bricks) , Compressive Strength (Set of 5 Bricks), Efflorescence (Set of 5 Bricks) |

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| **3.8** | | | Carrying out below mentioned tests on AAC BLOCK as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 3.00 | TEST | Compressive strength, Water Absorption (Set of 8 Blocks), Flexural Test (Set of 8 Blocks ), Resistance to wear (Set of 8 Blocks ) |
| **3.9** | | | Carrying out below mentioned tests on GRANITE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 4.00 | TEST | Water Absorption, Specific Gravity |
| **3.10** | | | Carrying out below mentioned tests on KOTA as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 22.00 | TEST | Water Absorption, Specific Gravity |
| **3.11** | | | Carrying out below mentioned tests on CERAMIC as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 7.00 | TEST | Water Absorption, Modulus of Rupture ( Set of 6 Tiles) |
| **3.12** | | | Carrying out below mentioned tests on POLISH SHAHABAD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Water Absorption, Specific Gravity |
| **3.13** | | | Carrying out below mentioned tests on FLUSH DOOR as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 15.00 | TEST | Knife Test, Adhesion Test, End Immersion Test |
| **3.14** | | | Carrying out below mentioned tests on ALUMINIUM as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 34.00 | TEST | Thickness,Mass per Running Meter. |
| | 34.00 | TEST | Test on Powder Coating |
| **3.15** | | | Carrying out below mentioned tests on TEAK WOOD as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 32.00 | TEST | Density, Moisture Content |
| **3.16** | | | Carrying out below mentioned tests on TIMBER as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 1.00 | TEST | Density, Moisture Content |
| | 1.00 | TEST | ... |
| **3.17** | | | Carrying out below mentioned tests on CEMENT CONCRETE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |

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| | 73.00 | TEST | Compressive strength of C.C.Cube (Set of 3 cubes) |
| | 2.00 | TEST | Concrete Mix Design by Normal Method (With all Tests on basic materials ) |
| **3.18** | | | Carrying out below mentioned tests on CEMENT CONCRETE AGGREGATE as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete. |
| | 15.00 | TEST | Water Absorption, Specific Gravity, Impact Value, Crushing Value |
| | 15.00 | TEST | Sieve Analysis |
| | 15.00 | TEST | Flakiness Index & Elongation Index |
| **3.19** | | | Carrying out below mentioned tests on FLUSH DOOR as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 27.00 | TEST | Knife Test, Adhesion Test, End Immersion Test |
| **3.20** | | | Carrying out below mentioned tests on ALUMINIUM as per frequency, in the Govt. laboratory as per relevant standards. Submitting test results and retesting if required including all charges etc complete |
| | 40.00 | TEST | Thickness,Mass per Running Meter. |
| | 40.00 | TEST | Test on Powder Coating |

**Name of Work:-**

**Convention Center (Guest House with Seminar Hall)**

**SCHEDULE-C & SPECIFICATIONS**

| BOQ No. | Description of Item | Reference No. | Standard Specification |
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| **1.1** | Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300metresm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150metresilimetres in thickness. (Item No. 2.09) | MORTH 201 | MORTH 201 |
| **1.2** | Excavation for foundation in earth, soil of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift upto 1.5 metres) By Mechanical Means (Item No. 21.02) | BDA 1 | Bd.A.1 Page Number 259 |
| **1.3** | Excavation for foundation in Hard murum including removing the excavated material upto a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete.(Lift from 1.5 to 3.0 metres) By Mechanical Means (Item No. 21.08) | BDA 2 | Bd.A.2 Page Number 259 |
| **1.4** | Excavation for foundation in Hard rock by chiselling, wedging, line drilling, etc. including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the building area stacking as directed, dewatering and back filling with available earth/murum watering, ramming etc. complete.(Lift upto 1.5 m). By Mechanical Means (Item No. 21.20) | BDA 6 | Bd.A.6 Page Number 260 |
| **1.5** | Providing preconstructional antitermite treatment as per Indian Standards 6313(Part-II) by treating the bottom surface and sides of excavation at the rate of 5 litres of emulsion concentrate of 1.0 percent of chlorophyrifos per square meter of surface area covering 10 years guarantee on bond paper. (Item No. 21.22) | BDW | As directed by Engineer in charge. |
| **1.6** | Providing preconstructional antitermite treatment as per Indian Standards 6313(Part-II) by treating the top surface of plinth filling at the rate of 5 litres of emulsion concentrate at 1.0 percent of clorophyrifos per square metre of surface area covering ten years guarantee on bond paper. (Item No. 21.24) | BDW | As directed by Engineer in charge. |
| **1.7** | Filling in plinth and floors with approved excavated material in 15 centimetres. to 20 centimetres. Layers including watering and compacting etc. complete. (Item No. 21.36) | BDA 10 | Bd.A.10 Page Number 262 |
| **1.8** | Filling in plinth and floors with contractors material/brought from outside and approved by Engineer incharge in layers of 15 centimetres to 20 centimetres including watering and compaction etc. complete. (Item No. 21.37) | BDA 11 | Bd.A.11 Page Number 263 |
| **1.9** | Providing dry/trap/granite/quartzite/gneiss rubble stone soling 15 centimetres to 20 centimetres thick including hand packing and compacting etc. complete. (Item No. 21.38) | BDA 12 | Bd.A. 12 Page Number 264 |

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| **1.10** | Providing and laying Cast in situ/Ready Mix cement concrete in M-10 of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, Steel centering, formwork, laying/pumping, compacting, roughening them if special finish is to be provided, finishing if required and curing complete, with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 24.01) | BDE 1 | Bd. E. 1 Page Number 287 |
| **1.11** | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete work in foundations like raft, strip foundations, grillage and footings of R.Cement Concrete columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including Steel centering formwork, cover blocks laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel). with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.15) | BDF 3 | Bd.F.3 Page Number 298 and B.7, Page Number38 |
| **1.12** | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete columns as per detailed designs and drawing or as directed including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel). with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.35) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.13** | ... (Item No. 25.35, First Floor) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.14** | ... (Item No. 25.35, Second Floor) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |
| **1.15** | ... (Item No. 25.35, Third Floor) | BDF 5 | Bd.F.5 Page Number 300 and B.7, Page.Number 38 |

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| **1.16** | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete beams and lintels as per detailed designs and drawings or as directed including steel centering, formwork, cover blocks, laying/pumping, compactionand roughening the surface if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.54) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.17** | ... (Item No. 25.54, First Floor) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.18** | ... (Item No. 25.54, Second Floor) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.19** | ... (Item No. 25.54, Third Floor) | BDF 6 | Bd.F.6 Page Number 300 and B.7, Page Number38 |
| **1.20** | Providing and laying Cast in situ/Exposed form finish Ready Mix Cement Concrete M-30 of trap metal for RCement Concrete rectangular grid beam with slab as per detailed design and drawing or as directed including dewatering if necessary, steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them to form surface with Cement Mortar 1:3 of sufficient minimum thickness to give smooth and even surface or roughening them if special finish is to be provided and curing complete(Excluding reinforcement and structural steel). with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled concrete batch mix plant(pan mixer). With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.62) | BDF 41 | Bd.F.6, Page Number300/Bd.F.8, Page Number302 and B.7 Page Number 38. |
| **1.21** | ... (Item No. 26.62, First Floor) | BDF 41 | Bd.F.6, Page Number300/Bd.F.8, Page Number302 and B.7 Page Number 38. |
| **1.22** | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete slabs and landings as per detailed designs and drawings including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 25.74) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |

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| **1.23** | ... (Item No. 25.74, First Floor) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |
| **1.24** | ... (Item No. 25.74, Second Floor) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |
| **1.25** | ... (Item No. 25.74, Third Floor) | BDF 8 | Bd.F.8 Page Number 302 and B.7, Page Number38 |
| **1.26** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/quartzite/granite/gneiss metal for R.Cement Concrete Waist slab, and steps of staircases as per detailed design and drawings or as directed including steel centering, plywood/steel formwork, steel props, laying/pumping, compaction, finishing uneven and honeycombed surface with Cement Mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening the surface if special finish is to be provided and curing etc. complete.(Excluding einforcement, including cover block).(Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc.) with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.26) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.27** | ... (Item No. 26.26, First Floor) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.28** | ... (Item No. 26.26, Second Floor) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.29** | ... (Item No. 26.26, Third Floor) | BDF 13A | Bd. F. 13 Page Number 305/I.S. 456(2000 |
| **1.30** | Providing and laying Cast in situ/Exposed Form Finish Ready Mix cement concrete in M-30 of trap/granite/quartzite/gneiss metal for R.Cement Concrete pardi of required thickness including steel centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.19) | BDF 11 | Bd.F.11 Page Number 304 and B.7, Page Number 38 |

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| **1.31** | Providing and laying Cast in situ/Exposed form finish Ready Mix cement concrete in M-20 of trap/granite/quartzite/gneiss metal for R.Cement Concretecoping to plinth or parapet and sill of doors and windows moulded as per detailed drawings or chamfered as approved by the Engineer including steel centering, formwork, cover blocks, laying/pumping, compacting, curing, finishing and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based Programmable Logic Controller with Supervisory Control and Data Acquisition enabled reversible Drum Type mixer/concrete Batch mix plant(Pan mixer) etc. complete. With fine aggregate(Crushed sand Vertical Shaft Impactor Grade) (Item No. 26.23) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.32** | ... (Item No. 26.23, First Floor) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.33** | ... (Item No. 26.23, Second Floor) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.34** | ... (Item No. 26.23, Third Floor) | BDF 12 | Bd. F. 12 Page Number 304 and B-7, Pg 38 |
| **1.35** | Providing and fixing in position T Metric Tonnes-FE-500 bar reinforcement of various diameters for R.Cement Concrete pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete. (Item No. 26.33) | BDF 17 | Bd.F.17, Page Number 306 |
| **1.36** | Providing and fabricating structural steel work in rolled sections like joists, channels, angles, tees etc. as per detailed design and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted/bolted/welded connections without connecting plates, braces etc. and including one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade etc. complete. (Item No. 23.01, First Floor) | BDC 2 | Bd.C.2 Page Number 275 |
| **1.37** | Providing and fixing 18milimetres plywood above MS stage, etc complete | | |
| **1.38** | Providing and laying damp proof course 50metresilimetres thick in M20 cement concrete layer and bitumen/using cement with waterproofing compound curing, formwork etc. complete. (Item No. 31.01) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.39** | ... (Item No. 31.01, First Floor) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.40** | ... (Item No. 31.01, Second Floor) | BDJ 2 | Bd.J.2 Page Number 355 |
| **1.41** | ... (Item No. 31.01, Third Floor) | BDJ 2 | Bd.J.2 Page Number 355 |

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| **1.42** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:6 in foundations and plinth of inner walls/in plinth external walls including bailing out water manually, striking joints on unexposed faces, raking out joints on exposed faces and watering etc. Complete. (Item No. 27.01) | BDG 1 | Bd.G. 1 Page Number 313 |
| **1.43** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972) (Item No. 27.15) | BDG | As directed by engineer in charge |
| **1.44** | ... (Item No. 27.15, First Floor) | BDG | As directed by engineer in charge |
| **1.45** | ... (Item No. 27.15, Second Floor) | BDG | As directed by engineer in charge |
| **1.46** | ... (Item No. 27.15, Third Floor) | BDG | As directed by engineer in charge |
| **1.47** | Providing Autoclaved Aerated Concrete Block masonary of conforming to Indian Standards:2185(Part 3)-1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in Half brick thick wall including striking joints, raking out joints and scaffolding etc. Complete.(The test shall be carried out conforming to Indian Standards:6441(Part I)-1972) (Item No. 27.16) | BDG | As directed by engineer in charge |
| **1.48** | ... (Item No. 27.16, First Floor) | BDG | As directed by engineer in charge |
| **1.49** | ... (Item No. 27.16, Second Floor) | BDG | As directed by engineer in charge |
| **1.50** | ... (Item No. 27.16, Third Floor) | BDG | As directed by engineer in charge |
| **1.51** | Providing second class Burnt Brick masonry with conventional/Indian Standards type bricks in cement mortar 1:4 in half brick thick wall including mild steel longitudinal reinforcement of 2 bars of 6milimetres diameter/2 hoop iron strips 25milimetres X 1.6milimetres placed at every third course, properly bent and bonded at ends scaffolding, racking out joints and watering etc. complete. (Item No. 27.06) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.52** | ... (Item No. 27.06, First Floor) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.53** | ... (Item No. 27.06, Second Floor) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.54** | ... (Item No. 27.06, Third Floor) | BDG 7 | Bd.G.7 Page Number 316 |
| **1.55** | Providing and fixing chicken mesh of 22 gauge, with about 30 centimetres. width at the junction of R.C.C members and brick work, of approved quality including fixing mesh in position by necessary drilling in concrete/B.B.masonry and or tying by binding wire etc. complete. (Item No. 32.26) | BDL | As directed by Engineer in Charge: |
| **1.56** | ... (Item No. 32.26, First Floor) | BDL | As directed by Engineer in Charge: |

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| **1.57** | ... (Item No. 32.26, Second Floor) | BDL | As directed by Engineer in Charge: |
| **1.58** | ... (Item No. 32.26, Third Floor) | BDL | As directed by Engineer in Charge: |
| **1.59** | Providing and applying gypsum plaster(with Gypsum material) with finishing with gypsum material in 10 to 13 millimeter thickness to previously plastered surface/or on newly brick surface(Excluding rough cast plaster) in all position including preparing and Finishing the surface scaffolding etc.complete. (Item No. 32.31) | BDL | As directed by Engineer in charge. |
| **1.60** | ... (Item No. 32.31, First Floor) | BDL | As directed by Engineer in charge. |
| **1.61** | ... (Item No. 32.31, Second Floor) | BDL | As directed by Engineer in charge. |
| **1.62** | ... (Item No. 32.31, Third Floor) | BDL | As directed by Engineer in charge. |
| **1.63** | Providing and applying interior wall finish luster of approved make on internal wall surface as detailed below Scrapping the surface with emery paper and wipe clean wall primer with brush with mineral turpentine with brush 8 to 10% and oil 15 to 20% with roller and allowing to dry for a period 6 to 8 hours. wall putty with appropriate proportion of water allowing to dry for period 4 to 6 hours. Scrapping with Emery paper 180 and wipe clean. Applyingwall primer with brush with mineral turpentine 8 to 10% and oil 15 to 20% with roller Scrapping Emery paper 320 and wipe clean, interior wall finish luster 1st coat with brush/rubber/spray with mineral turpentine 7 to 9% and Oil with roller 19 to 21% After 8 hours of activity Applying 2nd coat or wall finish Lustre with mineral turpentine 7 to 9 % with brush and Oil with roller 19 to 21% after allowing dry for the period of 6 to 8 hours activity.(With prior approval of S.E.) (Item No. 36.20) | BDP | As directed by Engineer in charge. |
| **1.64** | ... (Item No. 36.20, First Floor) | BDP | As directed by Engineer in charge. |
| **1.65** | ... (Item No. 36.20, Second Floor) | BDP | As directed by Engineer in charge. |
| **1.66** | ... (Item No. 36.20, Third Floor) | BDP | As directed by Engineer in charge. |
| **1.67** | Providing and applying white-wash in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scaffolding and preparing the surface by brushing and brooming down etc. complete. (Item No. 36.03) | BDP 1A | Bd. P. I Page Number 411 |
| **1.68** | ... (Item No. 36.03, First Floor) | BDP 1A | Bd. P. I Page Number 411 |
| **1.69** | ... (Item No. 36.03, Second Floor) | BDP 1A | Bd. P. I Page Number 411 |
| **1.70** | ... (Item No. 36.03, Third Floor) | BDP 1A | Bd. P. I Page Number 411 |

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| **1.71** | Providing and laying in position flooring of telephone black/Amba White/Cat bary brown/Ruby red/Ocean Brown granite stone of approved shade and size 18milimetres to 20metresilimetres thick on bed 1:6 cement mortar including cement floats striking joints, pointing in Cement Mortar 1:3 curing and cleaning etc. complete. (Item No. 33.34) | BDM 3 | Bd.M. 3 B/Page Number 380 |
| **1.72** | Providing and laying polished hand cut Kotah Stone flooring 25milimetres to 30metresilimetres thick and 45 centimetres to 55 centimetres wide in plain/diamond pattern on a bed of 1:6 Cement Mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning complete. (Item No. 33.08) | BDM | Bd.M.3 Page Number380 |
| **1.73** | ... (Item No. 33.08, First Floor) | BDM | Bd.M.3 Page Number380 |
| **1.74** | ... (Item No. 33.08, Second Floor) | BDM | Bd.M.3 Page Number380 |
| **1.75** | ... (Item No. 33.08, Third Floor) | BDM | Bd.M.3 Page Number380 |
| **1.76** | Providing and laying vitrified matt fininsh tiles having size 590metresilimetres to 605milimetres x to 605milimetres of 8 to 10metresilimetres thickness and confirming Indian Standards. 15622-2006(Group Bla) of approved make, shade and pattern for flooring in required position laid on a bed of 1:4 cement morar including neat cement float, filling joints, curing and cleaning etc. complete. (Item No. 33.42) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.77** | ... (Item No. 33.42, First Floor) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.78** | ... (Item No. 33.42, Second Floor) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.79** | ... (Item No. 33.42, Third Floor) | BDM 12 | Bd.M.12 Page Number 385 |
| **1.80** | Providing and laying ceramic tiles having size 30 centimetres. x 45 centimetres. confirming to corresponding Indian Standards for dado and skirting in required position with readymade adhesive mortar of approved quality on plaster of 1:2 cement mortar including joint filling with white/colour cement slurry cleaning curing etc. complete. (Item No. 33.26) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.81** | ... (Item No. 33.26, First Floor) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.82** | ... (Item No. 33.26, Second Floor) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.83** | ... (Item No. 33.26, Third Floor) | BDM 13 | Bd.M.13 Page Number 386. |
| **1.84** | Providing and fixing in required position skirting or dado of polished Kotah Stone slab 25milimetres to 30metresilimetres thick fixed on base on plaster of cement mortar 1:4 including cement float, filling joints with cement slurry, curing rubbing, polishing and cleaning complete. (Item No. 33.81) | BDM | As directed by Engineer in Charge |
| **1.85** | ... (Item No. 33.81, First Floor) | BDM | As directed by Engineer in Charge |
| **1.86** | ... (Item No. 33.81, Second Floor) | BDM | As directed by Engineer in Charge |
| **1.87** | ... (Item No. 33.81, Third Floor) | BDM | As directed by Engineer in Charge |

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| **1.88** | Providing sills of required material 20metresilimetres to 25milimetres thick, on a bed of cement mortar 1:4 including cement float, filling joints with neat cement slurry, curing, moulding edges, polishing, cleaning complete. b) Granite (Item No. 33.22) | 0 | Spec.Number: Bd.M.31/Page Number393 |
| **1.89** | ... (Item No. 33.22, First Floor) | 0 | Spec.Number: Bd.M.31/Page Number393 |
| **1.90** | ... (Item No. 33.22, Second Floor) | 0 | Spec.Number: Bd.M.31/Page Number393 |
| **1.91** | ... (Item No. 33.22, Third Floor) | 0 | Spec.Number: Bd.M.31/Page Number393 |
| **1.92** | Providing and fixing machine cut machine polished 18milimetres to 20metresilimetres thick telephone black/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone for treads and risers of steps and staircases of approved colour and shade with full moulding and three grooved line for the treads on bed of 1:4 Cement mortar including float filling joints with neat cement slurry curing polishing and cleaning etc. complete. (Item No. 33.35) | BDM 22 | Bd. M.22 B/Page Number 390 |
| **1.93** | Providing and laying machine cut machine polished machine cut Kota stone slabs 20 to 25milimetres thick for treads and risers of steps and staircases, with rounded nosing for the treads on a bed of 1:4 cement mortar including cement float, filling joints with neat cement slurry, curing, polishing and cleaning etc. complete. (Item No. 33.18) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.94** | ... (Item No. 33.18, First Floor) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.95** | ... (Item No. 33.18, Second Floor) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.96** | ... (Item No. 33.18, Third Floor) | BDM 22B | Bd.M.22 Page Number 390 |
| **1.97** | Providing and laying telephone black/Amba White/Cadburybrown/Ruby red/Ocean Brown granite stone of 18 to 20metresilimetres thick for door frame/dado/window boxing etc. On Cement Mortar 1:6 including filling joints with polymer base filler nosing/moulding the sharp edges wherever necessary, curing, etc. complete. (Item No. 33.68) | BDM | As directed by Engineer-In-Charge |
| **1.98** | ... (Item No. 33.68, First Floor) | BDM | As directed by Engineer-In-Charge |
| **1.99** | ... (Item No. 33.68, Second Floor) | BDM | As directed by Engineer-In-Charge |
| **1.100** | ... (Item No. 33.68, Third Floor) | BDM | As directed by Engineer-In-Charge |
| **1.101** | Providing and fixing solid core flush door shutter in double leaf 32milimetres thick decorative type of exterior grade as per detailed drawings approved face veneers 3milimetres thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.95) | BDT | As directed by Engineer in charge. |

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| **1.102** | ... (Item No. 39.95, First Floor) | BDT | As directed by Engineer in charge. |
| **1.103** | ... (Item No. 39.95, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.104** | ... (Item No. 39.95, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.105** | Providing and fixing solid core flush door shutter in single leaf 32milimetres thick decorative type of exterior grade as per detailed drawings approved face veneers 3milimetres thick on both faces or as directed, all necessary beads, mouldings and lipping, wrought iron hold fasts, chromium plated fixtures and fastenings, with brass mortise lock, chromium plated handles on both sides, and finishing with French Polish etc. complete. (Item No. 39.09) | BDT-34 | BD-T-34 Page Number 499 |
| **1.106** | ... (Item No. 39.09, First Floor) | BDT-34 | BD-T-34 Page Number 499 |
| **1.107** | ... (Item No. 39.09, Second Floor) | BDT-34 | BD-T-34 Page Number 499 |
| **1.108** | ... (Item No. 39.09, Third Floor) | BDT-34 | BD-T-34 Page Number 499 |
| **1.109** | Providing and fixing in position(as per 1868/1982) Alluminium sliding window of three tracks with rectangular pipe 95 x 38.10 x 0.90metresilimetres at weight 0.637 Kilogram/running metre. with window frame bottom track section 92 x 31.75 x 1.30metresilimetres at weight 1.070 Kilogram/running metre.. Top and side track section 92 x 31.75 x 1.30metresilimetres at weight 0.933 Kilogram/Running metre. The shutter should be of bearing bottom 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/running metre. Inter locking section 40 x 18 x 1.10metresilimetres at weight 0.469 Kilogram/Running metre. and handle and top section 40 x 18 x 1.25milimetres at weight 0.417 Kilogram/Running metre. As per detailed drawings and as directed by Engineerincharge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5milimetres thick plain glass and aluminium mosquito net shutter with stainless steel jail with all required screws and nuts etc, complete. With colour Anodising with box (Item No. 39.41) | BDT | As directed by Engineer in charge. |
| **1.110** | ... (Item No. 39.41, First Floor) | BDT | As directed by Engineer in charge. |
| **1.111** | ... (Item No. 39.41, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.112** | ... (Item No. 39.41, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.113** | Providing and fixing frame with/without ventilator of size as specified with Country cut teak wood for doors and windows including chamfering, rounding, rebating, iron holdfast of size 300metresilimetres x 40metresilimetres x 5milimetres with oil painting, etc. complete (Item No. 39.01) | BDT | As directed by Engineer in charge. |
| **1.114** | ... (Item No. 39.01, First Floor) | BDT | As directed by Engineer in charge. |

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| **1.115** | ... (Item No. 39.01, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.116** | ... (Item No. 39.01, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.117** | Providing and fixing in position powder coated aluminium louvered windows/ventilator of various sizes with powder coating as per detailed drawing and specifications including aluminium frames 80 x 38milimetres x 1.22milimetres box type, 5milimetres thick sheet glass louvers, of approved quality etc. complete. (Item No. 39.68) | BDT | As directed by Engineer in charge. |
| **1.118** | ... (Item No. 39.68, First Floor) | BDT | As directed by Engineer in charge. |
| **1.119** | ... (Item No. 39.68, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.120** | ... (Item No. 39.68, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.121** | Providing and Fixing 30MM thick BOTH SIDE PRELAMINATED SOLID PANEL Polyvinyl chloride DOOR SHUTTER consisting of frame made out of M.S tubes of 19 guage thickness and, size 19 x 19milimetres for styles and 15 x15milimetres for the top and bottom rails, M.S frame shall have a coat of metel primer of approved make and manufacture. M.S frame shall be covered with heat mouled Polyvinyl chloride 'C' channel made from 5mm(+/0.25) thick prelaminated sheet of density 600 Kilogram/cbm, of size 30metresilimetres thickness 70metresilimetres width out of which 50metresilimetres shall be flat and 20metresilimetres shall be tapered in 45? angle on either side forming stiles and 5milimetres thick, 95milimetres wide Polyvinyl chloride sheet out of which 75milimetres shall be falt and 20metresilimetres shall be tapered in 45 on the inner side to form top and bottom rail and 115milimetres wide Polyvinyl chloride sheet out of which 75milimetres shall be falt and 20metresilimetres shall be tapered on both sides to form lock rail.Top, bottom and lock rail shall be provided either side of the panel. An additional 5mm(+/0.25) thick Polyvinyl chloride strip of 20metresilimetres width is to be stuck on the bottom side of the ' c ' channel prelaminated paneling of 5mm(+/0.25) thick Polyvinyl chloride sheet to be fitted inside the Mild Steel frame welded/sealed to the styles and rails with 5mm(+/0.25) x 30metresilimetres Polyvinyl chloride sheet beading on either side and joined together with solvent cement adhesive etc, 10metresilimetres thickness(5mm(+/0.25) x 2 nos) 20metresilimetres wide cross Polyvinyl chloride sheet as gap insert for the rail and bottom rail. Door to be fixed to frames with 3 nos Mild Steelpowder coated but hinges of size 100metresilimetres x 25MM x 2milimetres using 32milimetres long steel | BDT | As directed by Engineer in charge. |
| **1.122** | ... (Item No. 39.47, First Floor) | BDT | As directed by Engineer in charge. |
| **1.123** | ... (Item No. 39.47, Second Floor) | BDT | As directed by Engineer in charge. |

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| **1.124** | ... (Item No. 39.47, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.125** | Providing and fixing Country cut teak wood double or single leaf second class fully panelled door shutter with 35milimetres thick style and rail with 25milimetres thick panels with openable fan light as per detailed drawings. Excluding the door frame 60metresilimetres x 100metresilimetres stainless steel fixtures and fastening and finishing the wood work with oil painting 3 coats.(Excluding the door frame) (Item No. 39.04) | BDT 7 and 8 | BD-T-7 and 8 Page Number 481-82 |
| **1.126** | Providing and fixing MS powder coated door including all material and labour etc complete. | | |
| **1.127** | Providing and fixing aluminium grill diamond mesh type DG202 of 7.5milimetres thick including fixing in position anodised aluminium frame section of 80 x 38milimetres x 1.22milimetres size box, cutting to the required size with all wastage, labour, lead lift etc. complete. (Item No. 39.76, Second Floor) | BDT | As directed by Engineer in charge. |
| **1.128** | ... (Item No. 39.76, Third Floor) | BDT | As directed by Engineer in charge. |
| **1.129** | Providing and fixing high polished kota stone for wall cladding having stones 25mm to 30metresilimetres thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. | | |
| **1.130** | Providing and fixing high polished granite stone for wall cladding having stones 25milimetres to 30metresilimetres thick and required width in 1:3 cement mortar including cement float, filling joints with neat cement slurry, curing, cleaning complete. | | |
| **1.131** | Providing and Fixing MS railing with top pipe of 50metresilimetres dia. and vertical pipe of 38milimetres dia at 0.60metres c/ c or as required and horizontal pipes of 25milimetres dia in three rows, all pipes of 2milimetres thick including buffing, fabricating fixtures and fastening including pipe base of appropriate diameter and ball base of 75milimetres dia above newel post of 75milimetres diameter etc.The handrail, horizontal pipes, verticles, bends to be finished with three coats of approved synthetic enamel paint from approved make inclusive of all surface preparation with Zinc chromate primer as specific etc complete. | | |

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| **1.132** | Providing cement based water proofing treatment to terraces(Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in Cement Mortar1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with Cement Mortar1:3 admixed with approved water proofing compound and finally top finishing with average 20 milimetres thick layers of same mortar added with jute fiber at 1Kilogramper bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. Marking finished surface with false squares of 300metresilimetres x 300 milimetres making the junctions at the parapet rounded and tapered top for required height, with drip mould at the junction of plaster and parapet and curing and covering 10 years Guarantee against leakproofness on Court fee stamp paper of Rs. 500/-including ponding test etc. complete. (Item No. 31.04, Second Floor) | BDJ | As directed by Engineer in charge. |
| **1.133** | ... (Item No. 31.04, Third Floor) | BDJ | As directed by Engineer in charge. |
| **1.134** | Providing waterproofing in W.C. and bath including brick bat coba in all position including providing and laying 12milimetres bedding in cement mortor 1:3 on vergin concrete slab with waterproofing compound @ 1Kilogram/per bag of cement laying brick bat coba of required thickness in centimetres 1:5 with waterproofing compound 1 Kilogram/bag of cement grouting and finishing the top layer with 20metresilimetres thick brick bedding in centimetres mortor 1:3 with waterproofing compound 1 Kilogram/per bag of cement and testing the treated portion for 48 hours by pond test and covering ten years' guarantee on requisite stamp paper including curing etc. complete. (Item No. 31.26) | BDJ | As directed by Engineer in charge |
| **1.135** | ... (Item No. 31.26, First Floor) | BDJ | As directed by Engineer in charge |
| **1.136** | ... (Item No. 31.26, Second Floor) | BDJ | As directed by Engineer in charge |
| **1.137** | ... (Item No. 31.26, Third Floor) | BDJ | As directed by Engineer in charge |
| **1.138** | Providing waterproof plaster in W.C. and bath 12milimetres thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 Kilogra metres per bag of cement of approved make and manufacturer and curing etc. complete.(Excluding Tiles)(As directed by Engineer in Charge) (Item No. 31.06) | BDJ | As directed by Engineer in charge. |
| **1.139** | ... (Item No. 31.06, First Floor) | BDJ | As directed by Engineer in charge. |
| **1.140** | ... (Item No. 31.06, Second Floor) | BDJ | As directed by Engineer in charge. |
| **1.141** | ... (Item No. 31.06, Third Floor) | BDJ | As directed by Engineer in charge. |

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| **1.142** | Providing and Fixing of Galvanized Iron Lay in Plain metal ceiling consisting of 600x600metresilimetres Lay in tiles of pre coated galvanized steel in 0.5milimetres thickness in Global white color tile to be laid on grid systems with 15milimetres wide T-section flanges color white having rotary stitching on the Main Runner, 1200metresilimetres and 600metresilimetres Cross Tees.Providing and Fixing of Galvanized Iron Lay in Plain metal ceiling consisting of 600x600metresilimetres Lay in tiles of pre coated galvanized steel in 0.5milimetres thickness in Global white color tile to be laid on grid systems with 15milimetres wide T-section flanges color white having rotary stitching on the Main Runner, 1200metresilimetres and 600metresilimetres Cross Tees.products approved as per GRIHA and British Standard 476 etc. complete. (Item No. 38.48) | BDR | As directed by Engineer in charge. |
| **1.143** | ... (Item No. 38.48, First Floor) | BDR | As directed by Engineer in charge. |
| **1.144** | ... (Item No. 38.48, Second Floor) | BDR | As directed by Engineer in charge. |
| **1.145** | ... (Item No. 38.48, Third Floor) | BDR | As directed by Engineer in charge. |
| **1.146** | Providing rough cast cement plaster externally in two coats to concrete, brick or stone masonry surfaces in all positions with base coat of 12 to 15milimetres thick in Cement Mortar 1:4 and rough cast treatment 12milimetres thick in proportion 1:1 1/2:3 including scaffolding and fourteen days curing complete. (Item No. 32.12) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.147** | ... (Item No. 32.12, First Floor) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.148** | ... (Item No. 32.12, Second Floor) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.149** | ... (Item No. 32.12, Third Floor) | BDL 8 | Bd.L.8 Page Number 370 |
| **1.150** | Supplying & providing approved colour washed stone crete plaster 1:0:5:2 (1cement: 0.5 dolomite powder: 2 stone chipping 10metresilimetres nominal size) in panels all around as per approved pattern including scrubbing and washing, the top layer with brushes and water to expose the stone chippings, complete as per specification and direction of Engineer in 50% white cement and 50% ordinary grey cement in top layer including scaffolding staging etc complete. | | |

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| **1.151** | Supply and installation of cubicles of width and depth as per Athena Lite-SS Series Cubicles-Std Sizes(W x D x H): 900metresilimetres x 1550metresilimetres x 2105mm, (Height is including 100metresilimetres gap from bottom, Door Width-600metresilimetres specifications/site drawings). Cubicle height to be 2105 milimetres Made from solid grade compact high pressure laminate as per Indian Standards:2046 and EN-438 manufactured under high specific pressure > 5 MPa and temperature >120C, All doors will be of single colour and made of 12milimetres thick Merino HorsepowerL compact panel. The doors will have chamfered edges. Each door will be supported by 3 stainless steel made hinges affixed to the pilasters. Size of panels to be as per drawing. HARDWARE & ACement ConcreteESSORIES are H shaped(Top) head frame structure made of extruded Aluminium grade 6063 T5-50 micron epoxy powder coated for surface protection, Size to be 125x70x5T. Corner joinery section, Size to be 40x16.5x1.8T. U-Channel Wall joinery section, Size to be 22x16x1.6T. Door stopper section, Size to be 21x12.5x1.6T. Spring loaded Butt Hinges made from Stainless steel grade 304. Surface finish to be matt type. Covers to be lacor coated.etc complete. (Item No. 51.162) | | As directed by Engineer-in-charge |
| **1.152** | ... (Item No. 51.162, First Floor) | | As directed by Engineer-in-charge |
| **1.153** | Providing and applying a base coat comprising of 1KilogramPolydee-MC and 1Kilogramfresh cement after wetting the surface followed by drying the surface for 2 days, apply primer coat of TP-40 and after drying, applying Polydee-11 two component(mixing ratio 2 A : 1 B)) Antibacterial food grade coating inside drinking water tank in two coats with time interval of minimum 8 hrs. covering 7 years guarantee on Court Fee Stamp Paper of Rs. 100/- etc. complete. (Item No. 31.11, Third Floor) | BDJ | As directed by Engineer in charge |
| **1.154** | Providing and fixing machine cut mirror polished 18milimetres to 20metresilimetres thick telephone black granite/Amba White/Cat bary brown/RBI red/Ocean Brown granite stone partition with full moulding the edges etc. complete . Both side polish (Item No. 33.36) | BDM 35 | Bd.M.35 B/Page Number393 |
| **1.155** | ... (Item No. 33.36, First Floor) | BDM 35 | Bd.M.35 B/Page Number393 |
| **1.156** | Providing leather finished polishing to Kota/Marble/Shahabad/Kadappa Stone slab by continuous grinding in 4 coats of different bits to receive rough and matty finish including buffing process before laying and fixing of stone as per drawing and design, including cleaning, washing and finishing etc. complete. (Item No. 33.57) | BDM | As directed by Engineer in charge |
| **1.157** | Providing & Fixing in position, Partition made from 12milimetres thick Gypsum from both sides on 50 x 50metresilimetres Sal-wood frame of 600 x 600 c to c, having of 800 gsm synthetic wool 50metresilimetres thick in between, including cost of required Cut-Outs & Scaffolding, as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete (Item No. 51.12) | | As directed by Engineer-in-charge |
| **1.158** | ... (Item No. 51.12, First Floor) | | As directed by Engineer-in-charge |

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| **1.159** | Providing and fixing 12milimetres thick clear toughened glass cladding with supporting frame in aluminium sections including all necessary fittings, labour, transportation, Scaffolding etc. complete. As directed by engineer in charge. | | |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
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| **Part-A** : Total cost of work without GST, with items from SSR 2022-23 only (ie excluding RA, MJP DSR, and Garden DSR and Royalty) | | | | | |
| | | | | **C P & Sanitary Fixtures & Fittings** | |
| 1 | 43.19 | Specfications | 23 | Providing and fixing European type white glazed earthenware water closet pan with UPVC seat and lid with chromium plated brass hinges and rubber buffers including UPVC and vent pipe up to the outside face of wall 10 litre enameled low level flushing cistern with fittings pipe stop tap brackets for fixing cistern 32 mm dia. UPVC flush pipe with fittings and clamps ,20 mm dia.UPVC overflow pipe ,mosquito proof couplings G.I. chain and pulley,with water Jet and fitting including cutting and making good to the walls and floors testing etc. complete.(prior approval of sample and brand by Ex. Engineer is necessary before use) | One Number |
| 2 | 48.38 | As directed by Engineer in charge | 13 | Providing and fixing Orissa Pan of size 580 X 445 X 260 mm with approved make flush valve including trap, C.I. soil and vent pipe upto outside face of wall including 100mm dia. C.I. plug, bend and necessary pipe connection, etc complete. As directed by Engineer in charge. | One Number |
| 3 | 48.40 | As directed by Engineer in charge | 12 | Providing and fixing Ivory wash basin with half pedestal of size 515mm X 615mm X 460 mm including pillar cock auto-closing system CP angular stop cock long thread of approved make continental including S.S. bottle trap of necessary pipe connection upto the outside face of the wall. | One Number |
| 4 | 48.35 | As directed by Engineer in charge | 25 | Providing and fixing Oval Type Under Counter Wash Hand Basin of 420 x 590 x 195mm size with pillar cock, C.P.Angular stop cock, long thread of approved make continental including SS bottle trap of necessary pipe connection up to the outside face of the wall, having Telephonic Black / Colour Granite of 180 mm thick fixed on Black Kadappa Framework, etc. Complete as directed by Engineer in charge. | One Number |
| 5 | 48.31 | As directed by Engineer in charge | 48 | Providing and fixing Ivory glazed urinal with Pressmatic auto closing valve having flow rate up to 4.0 Litr/Minute of Jaquar / Cera / Hindware / Perryware or equivalent make with P.V.C. waste pipe with fitting arrangement etc.complete as directed by Engineer in charge. ( Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 6 | 42.79 | As directed by Engineer in charge | 37 | Providing and fixing C.P. Angular stop clock with wall flange of approved make continental including necessary sockets/union nut etc. complete. | One Number |
| 7 | 48.28 | As directed by Engineer in charge | 12 | Providing and fixing C.P. BIB cock with wall flange of approved make including necessary sockets/ union nut etc. complete as directed by Engineer in charge. | One Number |
| 8 | 48.27 | As directed by Engineer in charge | 23 | Providing and fixing C.P. 2 Way BIB cock with wall flange of approved make including necessary sockets/ union nut etc. complete as directed by Engineer in charge. | One Number |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
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| 9 | 43.39 | As Directected By Engineer Incharge | 23 | Providing and fixing 15 mm diameter PVC Aqua kraft type of approved make super jet spray with flange 2 in 1 faucet 1.50 metre long including all accessories etc complete | One Number |
| 10 | 48.33 | As directed by Engineer in charge | 8 | Providing and fixing divertor with overhead shower,shower arm,spout,hand shower with wall bracket having flow rate up to 12 liters/minutes of Jaquar/Cera/Hindware /Perryware or equivalent make including all necessary pipes,fittings etc.complete as directed by Engineer In Charge.( Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 11 | 48.25 | As directed by Engineer in charge | 1 | Providing and fixing sink cock with regular swinging spout (Wall / floor Mounted Model) with wall flange having flow rate up to 6.0 Litr/Minute of Jaquar / Cera / Hindware / Perryware or equivalent make incluidng other necessary fitting, etc. complete as directed by Engineer in charge. (Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 12 | 42.20 | As directed by Engineer in charge. | 37 | Providing and fixing 450mm x 550mm size superior type Belgium mirror with 16mm dia. nickel plated towel rod etc. complete. | One Number |
| 13 | 51.89 | As directed by Engineer-in-charge | 5 | Grab bars-Providing SS grab bars set for accessible toilets comprising of 4 nos. Grab bars as specified below.(1 nos. wing grab bar + 1 nos. L shaped grab bar + 2 nos. straight grab bars = 1 typical set) 27a) Swing grab bar (1 NOS) Providing a S.S. 304 SWING HANDICAP GRAB BAR - 700 mm and of DIA: 32MM and thickness 1.5mm of the roved brand and make. 27b) L Shaped grab bar (1 NOS) Providing S.S. 304 L SHAPED DISABLED GRAB BAR of SIZE - 600mm (H) X 600mm (D) and 32mm DIA. and thickness mm of the approved brand and make. 27c) Straight grab bar (2 NOS) Providing S.STEEL 304 GRAB RAIL (600 MM),32MM DIA. and thickness 1.5mm of the approved brand and make. | One Number |
| | | | | **Total of C P & Sanitary Fixtures & Fittings** | |
| | | | - | **Internal & External SWR System** | |
| 14 | 42.51 | As directed by Engineer in charge. | 302 | Providing and fixing 75 mm dia stabiliser pipe/ P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete | One Running Metre |
| 15 | 42.52 | As directed by Engineer in charge. | 47 | Providing and fixing 100 mm dia stabiliser pipe/ P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
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| 16 | 42.85 | As directed by Engineer Incharge | 47 | Providing and fixing P.V.C. Rain water pipes of 160mm & above (preffitied 250mm) outer diameter and having wall thickness of 2.2 to 2.7 mm confirming to I.S. 13592-1992 including proper rainwater receiving recess with P.V.C. plug, bend, necessary fittings, such as, offsets, shoes, inluding fixing the pipe on wall using approved wooden cleats projecting 25mm to 40mm from face of wall a fixing with clips of approved quality and One Number ,filing the joint using rubber gasket with solvent cement and properly resting the shoe of pipes on C.C. or masonry blocks, including necessary scaffolding and maintenance for 3 yrs for any leakages or dislocations of pipes. All the P.V.C. fittings and additional 2 piece socket clips shall be got approved from engineer in charge etc. complete. | One Running Metre |
| 17 | 42.87 | As directed by Engineer Incharge | 125 | Providing and fixing P.V.C. Rain water pipes of 160mm outer diameter and having wall thickness of 2.2 to 2.7 mm confirming to I.S. 13592-1992 including proper rainwater receiving recess with P.V.C. plug, bend, necessary fittings, such as, offsets, shoes, inluding fixing the pipe on wall using approved wooden cleats projecting 25mm to 40mm from face of wall a fixing with clips of approved quality and One Number ,filing the joint using rubber gasket with solvent cement and properly resting the shoe of pipes on C.C. or masonry blocks, including necessary scaffolding and maintenance for 3 yrs for any leakages or dislocations of pipes. All the P.V.C. fittings and additional 2 piece socket clips shall be got approved from engineer in charge etc. complete. | One Running Metre |
| 18 | 43.18 | Specfications | 78 | Providing and fixing 15 cm rigid PVC Nahani trap including PVC grating ,bend,connectingpiece of UPVC pipe up to the outside face of wall ,making the good damaged surface and testing etc. complete ( Prior approval of sample and brand by Ex. Engr. is necessary before use) | One Number |
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| | | | - | **Water Supply System** | |
| 19 | 42.56 | BD.V 5 page 551 and as directed by Engineer in charge | 367 | Providing and fixing on walls/ceiling/floor 20 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 20 | 42.57 | BD.V 5 page 551 and as directed by Engineer in charge | 62 | Providing and fixing on walls/ ceiling/ floor 25 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 21 | 42.58 | BD.V 5 page 551 and as directed by Engineer in charge | 163 | Providing and fixing on walls/ ceiling/ floor 32 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| 22 | 42.59 | BD.V 5 page 551 and as directed by Engineer in charge | 97 | Providing and fixing on walls /ceiling/ floor 40 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 23 | 42.60 | BD.V 5 page 551 and as directed by Engineer in charge | 169 | Providing and fixing on walls/ ceiling/ floor 50 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. | One Running Metre |
| 24 | 42.66 | BD.V 5 page 551 and as directed by Engineer in charge | 90 | Providing and laying in trenches 50mm dai. CPVC pipe including necessary excavation, fittings. Refilling trenches etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 25 | 43.15 | Bd.V.5 Page One Number 551 | 150 | Providing and laying in trenches 80 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 10.15 Kilogram/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 26 | 41.44 | Bd.V.9 Page One Number 555 | 6 | Providing and fixing screw down for 20 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 27 | 41.45 | Bd.V.9 Page One Number 555 | 17 | Providing and fixing screw down for 25 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 28 | 41.46 | Bd.V.9 Page One Number 555 | 5 | Providing and fixing screw down for 32 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 29 | 41.47 | Bd.V.9 Page One Number 555 | 11 | Providing and fixing screw down for 40 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 30 | 41.48 | Bd.V.9 Page One Number 555 | 6 | Providing and fixing screw down for 50 mm dia. wheeled stop tap of brass including necessary sockets/ union nut complete. | One Number |
| 31 | 41.30 | Bd.V.7 Page One Number 554 | 2 | Providing and fixing 50mm diameter water meter with non-return valve including strainer,sockets/ union nut and including water meter box making locking arrangement and lock. [without chamber] | One Number |
| 32.00 | 42.77 | Bd.V. 4 page 551 | 1 | Providing and making ISI Mark ferrule connection of 50 mm dia. to water main including ferrule coupling cast iron bell mouth cover, built in non return valve and fixing including excavation and reinstatement complete. | One Number |
| 33.00 | 42.36 | As directed by Engineer in charge. | 4 | Providing and fixing 40 mm. dia Ball cock medium type with PVC float including sockets and necessary fittings and tested as per municipal requirements etc. complete. | One Number |
| 34.00 | 41.56 | Bd. V. 19 Page One Number 559 | 18 | Providing and fixing 45 cm wide mild steel ladder of 40mm x 6 mm mild steel flat stringers and steps of 18 mm dia. mild steel bar for water tank including fixing it in (1:2:4) M-15 cement concrete block 60cm x 30cm x 30cm and painting the ladder complete. (Anti Corossive Paint) | One Running Metre |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
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| 35.00 | 42.54 | As directed by engineer-in- charge. | 5,000 | Providing and fixing H.D.P container one piece moulded water tank made out of low density polythyler and built corrugation including of delivery up to destination hoisting and fixing of accessories such as inlet, outlet overflow of all tanks capacity above 1000 to 20,000 litres | One Litre |
| | | | | **Total of Internal & External SWR System** | |
| | | | | **External Drainage & Rain Water System** | |
| 36.00 | 43.27 | Specfications | 27 | Providing , constructing and fixing 250 mm dia. Inspection chamber made up of UPVC material of thickness 3.5 mm and height of 259 mm with inlet and outlet of 110 mm dia. with 75 mm dia. U Trap, Ultra shaft pipe of Upvc material having height of 470 mm and fixing Ultra 250 mm dia. UPVC cover and frame in 150 mm thick in c.c.1:2:4, having crushed sand bed of 100 mm thick of size 550 mm dia. Including excavation and refilling the sides of chamber by crushed sand cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc. complete. | One Number |
| 37 | 43.28 | As Directected By Engineer Incharge | 27 | Providing , constructing and fixing 450 mm dia. Inspection chamber made up of Polypropylene / polyethylene material of thickness 3.5 mm and height of 388 mm with 160 or 200 mm main inlet (s) outlet and 110 and / or 160 mm branch inlets, with 450 mm dia. Ultra shaft pipe of HDPE material having height of 460 mm, having R.C.C. cover and frame fixing in 150 mm thick in c.c.1:2:4, having crushed sand bed of 150 mm thick of size 750 mm dia. Including excavation and refilling the sides of chamber by sand crushed cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc. complete. | One Number |
| 38 | 43.29 | As Directected By Engineer Incharge | 15 | Providing , constructing and fixing 600 mm dia. Inspection chamber made up of Polypropylene / polyethylene material Having 315 mm diameter inlet(s)/outlets and with eccentric reducers as per requirement to connect 160 mm and 200 mm pipes having thickness of 5 mm and 600 mm in height, with inbuilt shaft achieve the invert depth as per site condition of wall thickness of 5 mm having R.C.C. cover and frame fixing in 150 mm thick in c.c.1:2:4, having crushed sand bed of 150 mm thick of size 750 mm dia. Including excavation and refilling the sides of chamber by ?sand crushed cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc.complete. | One Number |
| 39 | 43.30 | As Directected By Engineer Incharge | 49 | Providing , laying and fixing ,jointing Eco- drain 110 mm SN 8 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees, coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated material etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| 40 | 43.31 | As Directected By Engineer Incharge | 168 | Providing , laying and fixing ,jointing Eco- drain 160 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees , coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete. | One Running Metre |
| 41 | 43.32 | As Directected By Engineer Incharge | 96 | Providing , laying and fixing ,jointing Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete. | One Running Metre |
| 42 | 42.02 | Bd.V.38, Page One Number 572 | 27 | Providing and fixing 15cm x 10cm salt glazed stoneware gully trap in cement concrete 1:4:8 outside the building including cast iron grating in the sink, connecting glazed stoneware pipe, brick masonry chamber with cast iron lid and cast iron grating for the gully trap. | One Number |
| 43 | 42.08 | Bd.V.41, Page One Number 573 | 114 | Providing and laying concrete pipes of I.S.NP. class of 225mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete. | One Running Metre |
| 44 | 42.09 | Bd.V.41, Page One Number 573 | 96 | Providing and laying concrete pipes of I.S.NP. class of 300mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete. | One Running Metre |
| 45 | 11.08 | CD.7 Page.No. 162 | 30 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 450mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |
| 46 | 11.09 | CD.7 Page.No. 162 | 12 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 600mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |
| 47 | 11.11 | CD.7 Page.No. 162 | 12 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 900mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |
| 48 | 50.85 | As directed by Engineer-in-charge | 600 | Providing and fixing Ductile iron Man Hole Covers/ Strom Water Grating and Grating with frame of Various sizes, weight and types and load bearing capacity as per EN-124, equivalent NECO with prior approval of concerned Superitending Engineer. | One Kilogram |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| 49 | 48.47 | As directed by Engineer in charge | 1 | RWH - Recharge Pit<br>Providing and constructing recharge pit of 2.0m deep and 1.0m dia of pre-cast RCC rings with 6.5" dia x 25m deep borewell at the floor of recharge pit including installation of combination of solid/perforated PVC casing pipe wrapped around with netlon mesh including 300mm thick sidefilling around outside of RCC rings (annular space) with 40mm size boulders including filling of recharge pit up to 0.5m depth with 25-75mm clean washed gravels from bottom up followed by 0.5m depth of 10-25mm of clean washed stones followed by 0.5m of washed river fine aggregate (natural sand/crushed sand VSI grade finely washed etc.) including netlon mesh between each gravel/fine aggregate (natural sand/crushed sand VSI grade finely washed etc.) media layer including covering with RCC slab, manhole frame & cover, PVC rungs, PVC end-caps, fittings etc. including arrangement for inlet & outlet pipe excavation & backfilling as shown in the drawing.The rate shall be inclusive of all labour, material, wastage, scaffolding, transportation, taxes, including all leads, lifts at all levels. All material should be of approved make. All works complete as per the drawing, technical specification and direction of the Engineer in charge. | One Number |
| 50 | 48.49 | As directed by Engineer in charge | 30 | Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well-casing pipe of 150mm dia, conforming to IS:12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per the direction of Engineer in charge. | One Running Metre |
| | | | - | **MJP 22-23** | |
| 51 | MJP-2022-23, Section-L, 6 | | 4 | Providing and constructing on sewer, B.B. masonry circular manhole with concentric cone 1.2 M dia. at bottom and 0.5 M dia. at top and upto a depth of 2.00 M with 23 cm brick work in CM 1:4 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56 cm dia.etc. complete as directed by Engineerin-charge. | Nos |
| 52 | MJP-2022-23, Section-L, 6a | | 2 | Rebate for every decrease in depth of 50 cm (Rebate to be taken in proportionate to decerease in depth) | 50cm depth |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| 53 | MJP-2022-23, Section-L, 7 | | 2 | Providing and constructing on sewer, B.B. masonry circular manhole concentric cone 1.5 M dia. at bottom and 0.5 M dia. at top and upto a depth of 5.00 M with 23 cm brick work, upto depth of 2 M from top and 35 cm thick brick work for balance depth in CM 1:4 proportion with 20 mm thick smooth plaster on both sides in CM 1:2 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C frame and cover of 56 cm dia. etc. complete as directed by Engineerin-charge. | Nos |
| 54 | MJP-2022-23, Section-L, 7a | | 2 | Rebate for every decrease in depth of 50 cm (Rebate to be taken in proportionate to decerease in depth) | 50cm depth |
| 55 | MJP 2022-23, Section-L, 2 C | | - | Valve chamber with cast iron manhole frame and covers Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion, 12 mm thick cement plaster in CM 1:4 proportion on both sides with providing and fixing C.I. manhole frame and cover in RCC 1:2:4 coping or RCC 1:2:4 proportion x 15 cm thick slab, etc. complete as directed by Engineer-in-charge. | |
| | i) | | 24 | As above of 90 x 60 cm internal size and depth upto 1.2 M with 90 x 60 cm size CI manhole frame and cover of 50 kg. | Nos |
| | ii) | | 6 | Add for every increase in depth of 30 cm or part thereof | 30cm depth |
| 56 | MJP 2022-23, Section-L, 2 D | | - | Valve chamber with cast iron manhole frame and covers Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion, 12 mm thick cement plaster in CM 1:4 proportion on both sides with providing and fixing C.I. manhole frame and cover in RCC 1:2:4 coping or RCC 1:2:4 proportion x 15 cm thick slab, etc. complete as directed by Engineer-in-charge. | |
| | iii) | | 6 | As above of 90 x 90 cm internal size and depth upto 1.2 M with 53 cm dia CI manhole frame and cover of 90 kg. fixed in RCC slab. | Nos |
| | iv) | | 2 | Add for every increase in depth of 30 cm or part thereof | 30cm depth |
| | | | | **Total of External Drainage & Rain Water System** | |
| | | | - | **Electrical CSR 22-23** | |
| 57 | 13.8.13 | | 1 | Supplying and erecting 20/25mm dia gun metal air release cock, with necessary G.I. coupling to be fitted on top of air vessel or on wet riser complete as per specification no. FF-FFA/ARV | Each |
| 58 | 16.6.19 | | 1 | Supplying and erecting non return valve 25 mm dia in position made of gun metal complete. | Each |
| 59 | 16.6.20 | | 2 | Supplying and erecting non return valve 40 mm dia in position made of gun metal complete. | Each |
| 60 | 16.6.21 | | 1 | Supplying and erecting non return valve 50 mm dia in position made of gun metal complete. | Each |
| | | | - | **CPWD DSR 2021** | |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| 61 | CPWD Electrical -2022 16.7.4 | | - | Providing & Fixing Y Strainer (screwed / flanged) with stainless steel fin wire mesh perforated sheet basket with necessary flange / uionons nuts, bolts and wahsers complete as required. All work Complete as per direction of the Engineer-in-Charge. | |
| | 16.7.4.8 | | - | i) 40mm dia. | Each |
| | 16.7.4.7 | | 2 | ii) 50mm dia. | Each |
| | 3.3.10 | | 12 | Supplying, erecting, testing and commissioning self contained water cooler 230/250V 50Hz nominal cooling capacity of 150 litres per hour and storage capacity 150 litres with partially stainless steel body as per specification no. AP-WCR/WC | Each |
| | 3.5.1 | | 12 | Supplying and erecting ultra violet storage type water purifier (RO+UV+UF) with softener for safe drinking water consisting of UV germicidal tube of 8W capacity choke made of copper wire and two indicator lamps with output of purified water minimum 0.33 litre/min with activated carbon filter and softener operating on 230V, single phase A.C. supply with UV fail & filter change indication system .(for TDS more than 200) | Each |
| | 12.4.7 | | 12 | Supplying and erecting pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3 phase pumps. | Each |
| | 12.4.14 | | 6 | Supplying & erecting Water level controller 230/415 V, A.C. , Two way under ground tank operation only. | Each |
| | 12.4.15 | | 6 | Supplying & erecting Water level controller 230/415 V, A.C. , Four way under ground & Over head tank operation only. | Each |
| | 12.4.16 | | 18 | Supplying & erecting PVC coated 5 mm dia. Brass sensor/ electrode duly wired with nuts & bolts complete (Set of 3 Nos) | Each |
| | | | | Pumping System Conventional Centre Building | |
| | 12.3.4 | | 2 | Supplying and erecting minimum Three & above star rated submersible pump set suitable for erection on open well of 5.625 KW/7.5 HP with 415 V 50 c/s. A.C. supply, having delivery head from 57 to 22 m and discharge from 120 to 900 litres. . per minute & pipe of Suction 75 mm/Delivery 65 mm diameter erected with necessary H type clamps as per specification No. WP-OSP | Each |
| | 12.5.3 | | 2 | Supplying & erecting Dewatering Monoblock pump set 415V, 3 phase, 50C/s, A.C. supply of 5.5KW/ 7.5 H.P., of 21 to 36 m head with 910 to 190 LPM discharge, 14.5mm Solid Handling Capacity, non-clogging minimised abrasive wear, large impeller clearance & maintenance free pump set with water proof cable duly sealed with epoxy material built in protection to prevent the motor from burn out due to abnormal operation. specially designed high efficiency motor with F class insulation & the pump mechanically sealed in the oil chamber,. etc. complete as per specification no. DWP-SMP | Each |

| Name of Work: Convention Centre (Auditorium) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Office Quantity | Work Description | Unit |
| | | | | | |
| | 12.4.23 | | 4 | Supplying & erecting automatic control panel for 3 Ph, 415 volt, A.C. Submersible/centrifugal pump set up to 30 HP consisting of Star Delta starter having relay range 30-50 Amp, S.P.P., Combined ammeter/ voltmeter, phase indicating lamp enclosed in CRCA powder coated Vibration proof enclosure with IP 54 protection. Control Panel should offer single phasing, phase reversal, phase imbalance etc. | Each |
| | | | | **Total of Electrical CSR 22-23** | |
| | | | | **Market Analysis Items** | |
| 62 | MRA-1 | As directed by Engineer in charge | 78 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass Grating (Viking 41615) of Rectangular type with openable circular lid 150 mm nominal size square 100 mm diameter of the inner hinged round grating. including setting in floor with cement motor to match with floor finish as per architect requirement complete including all accessories. All work Complete as per direction of the Engineer-in-Charge. | Nos |
| 63 | MRA-2 | As directed by Engineer in charge | 39 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass Grating of Close on Top type (Viking 45290) with openable circular lid 150 mm nominal size square 100 mm diameter of the inner hinged round grating. including setting in floor with cement motor to match with floor finish as per architect requirement complete including all accessories. All work Complete as per direction of the Engineer-in-Charge. | Nos |
| 64 | MRA-3 | As directed by Engineer in charge | 60 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass P Trap 40mm Size for wash basin, Urinal & Kitchen Sinks. (Viking-5898 V6 H12) with all necessary fixtures and fitting etc complete as directed by the Engineer-in-Charge. (Fixtures and fittings as per Approved C.P & Sanitary Product sheet). All work Complete as per direction of the Engineer-in-Charge. | Nos |
| 65 | MRA | As directed by Engineer in charge | 60 | Providing and fixing 600 mm long MS hot dip galvanized Puddel Flange fabricated out of 6 mm thick MS plates of suitable size and pipe shall be confirming to IS:1239 heavy class pipes properly fixed in walls / top slab of tanks. The entire fittings shall be hot dipped galvanized after fabrication. Length shall be minimum 600 mm or wall thickness plus 200 mm on either side (which ever is more). Each Puddle shall be flange at outer side for connection of pipe / fittings. All work Complete as per direction of the Engineer-in-Charge. | |
| 65.1 | MRA-10 | | 2 | i) 25 mm dia | Nos |
| 65.2 | MRA-11 | | 4 | ii) 50 mm dia | Nos |
| 65.3 | MRA-12 | | 2 | iii) 65mm dia | Nos |
| 65.4 | MRA-13 | | 4 | iv) 80mm dia | Nos |
| 65.5 | MRA-14 | | 4 | v) 100mm dia | Nos |
| 65.6 | MRA-15 | | 4 | vi) 150mm dia | Nos |
| 65.7 | MRA-16 | | 2 | vii) 200mm dia | Nos |
| 65.8 | MRA-17 | | 2 | viii) 250mm dia | Nos |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| **Part-A** : Total cost of work without GST, with items from SSR 2022-23 only (ie excluding RA, MJP DSR, and Garden DSR and Royalty) | | | | | |
| | | | | **C P & Sanitary Fixtures & Fittings** | |
| 1 | 48.37 | As directed by Engineer in charge | 93 | Providing and fixing Ivory Opal series European type wall-hung of size 400 mm X 370 mm X 575mm with approved make flush valve including soil pipe, vent pipe upto outside face of wall, 100mm dia C.I. plug bend inlet pipe all fittings, cutting & making good walls, floors etc as directed by Engineer in charge. | Number |
| 2 | 48.38 | As directed by Engineer in charge | 1 | Providing and fixing Orissa Pan of size 580 X 445 X 260 mm with approved make flush valve including trap, C.I. soil and vent pipe upto outside face of wall including 100mm dia. C.I. plug, bend and necessary pipe connection, etc complete. As directed by Engineer in charge. | One Number |
| 3 | 48.40 | As directed by Engineer in charge | 72 | Providing and fixing Ivory wash basin with half pedestal of size 515mm X 615mm X 460 mm including pillar cock auto-closing system CP angular stop cock long thread of approved make continental including S.S. bottle trap of necessary pipe connection upto the outside face of the wall. | One Number |
| 4 | 48.35 | As directed by Engineer in charge | 26 | Providing and fixing Oval Type Under Counter Wash Hand Basin of 420 x 590 x 195mm size with pillar cock, C.P.Angular stop cock, long thread of approved make continental including SS bottle trap of necessary pipe connection up to the outside face of the wall, having Telephonic Black / Colour Granite of 180 mm thick fixed on Black Kadappa Framework, etc. Complete as directed by Engineer in charge. | One Number |
| 5 | 48.31 | As directed by Engineer in charge | 16 | Providing and fixing Ivory glazed urinal with Pressmatic auto closing valve having flow rate up to 4.0 Litr/Minute of Jaquar / Cera / Hindware / Perryware or equivalent make with P.V.C. waste pipe with fitting arrangement etc.complete as directed by Engineer in charge. ( Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 6 | 41.78 | As directed by Engineer in charge. | 4 | Providing and constructing granite kitchen platform with fixing of stainless steel sink 600 mm x 450 mm size as per detailed drawing including vertical both side polished kadappah stone 25 to 30 mm thick supports with kadappah top 35 to 40 mm thick and polished granite 16 to 20 mm top with side strips of granite at front and both sides of platform raised with two vertical granite supports 15 cm height and top granite of 75 x 40 cm including cutting, opening for sink of required size in kadappah as well as granite etc. complete. (Platform top size 5.00 m x 0.60 m and height is 0.75 m) | One Square Metre |
| 7 | 42.79 | As directed by Engineer in charge | 98 | Providing and fixing C.P. Angular stop clock with wall flange of approved make continental including necessary sockets/union nut etc. complete. | One Number |
| 8 | 48.28 | As directed by Engineer in charge | 1 | Providing and fixing C.P. BIB cock with wall flange of approved make including necessary sockets/ union nut etc. complete as directed by Engineer in charge. | One Number |
| 9 | 48.27 | As directed by Engineer in charge | 93 | Providing and fixing C.P. 2 Way BIB cock with wall flange of approved make including necessary sockets/ union nut etc. complete as directed by Engineer in charge. | One Number |
| 10 | 43.39 | As Directected By Engineer Incharge | 93 | Providing and fixing 15 mm diameter PVC Aqua kraft type of approved make super jet spray with flange 2 in 1 faucet 1.50 metre long including all accessories etc complete | One Number |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 11 | 48.33 | As directed by Engineer in charge | 68 | Providing and fixing divertor with overhead shower,shower arm,spout,hand shower with wall bracket having flow rate up to 12 liters/minutes of Jaquar/Cera/Hindware /Perryware or equivalent make including all necessary pipes,fittings etc.complete as directed by Engineer In Charge.( Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 12 | 48.25 | As directed by Engineer in charge | 4 | Providing and fixing sink cock with regular swinging spout (Wall / floor Mounted Model) with wall flange having flow rate up to 6.0 Litr/Minute of Jaquar / Cera / Hindware / Perryware or equivalent make incluidng other necessary fitting, etc. complete as directed by Engineer in charge. (Make shall conform to manufacturer's Green product and shall got approved from the Engineer In Charge.) | One Number |
| 13 | 42.20 | As directed by Engineer in charge. | 98 | Providing and fixing 450mm x 550mm size superior type Belgium mirror with 16mm dia. nickel plated towel rod etc. complete. | One Number |
| 14 | 51.89 | As directed by Engineer-in-charge | 2 | Grab bars-Providing SS grab bars set for accessible toilets comprising of 4 nos. Grab bars as specified below.(1 nos. wing grab bar + 1 nos. L shaped grab bar + 2 nos. straight grab bars = 1 typical set) 27a) Swing grab bar (1 NOS) Providing a S.S. 304 SWING HANDICAP GRAB BAR - 700 mm and of DIA: 32MM and thickness 1.5mm of the roved brand and make. 27b) L Shaped grab bar (1 NOS) Providing S.S. 304 L SHAPED DISABLED GRAB BAR of SIZE - 600mm (H) X 600mm (D) and 32mm DIA. and thickness mm of the approved brand and make. 27c) Straight grab bar (2 NOS) Providing S.STEEL 304 GRAB RAIL (600 MM),32MM DIA. and thickness 1.5mm of the approved brand and make. | One Number |
| | | | | **Total of C P & Sanitary Fixtures & Fittings** | |
| | | | | **Internal & External SWR System** | |
| 15 | 42.51 | As directed by Engineer in charge. | 1,117 | Providing and fixing 75 mm dia stabiliser pipe/ P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete | One Running Metre |
| 16 | 42.52 | As directed by Engineer in charge. | 716 | Providing and fixing 100 mm dia stabiliser pipe/ P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete. | One Running Metre |
| 17 | 42.85 | As directed by Engineer Incharge | 144 | Providing and fixing P.V.C. Rain water pipes of 160mm & above (preffitied 250mm) outer diameter and having wall thickness of 2.2 to 2.7 mm confirming to I.S. 13592-1992 including proper rainwater receiving recess with P.V.C. plug, bend, necessary fittings, such as, offsets, shoes, inluding fixing the pipe on wall using approved wooden cleats projecting 25mm to 40mm from face of wall a fixing with clips of approved quality and One Number ,filing the joint using rubber gasket with solvent cement and properly resting the shoe of pipes on C.C. or masonry blocks, including necessary scaffolding and maintenance for 3 yrs for any leakages or dislocations of pipes. All the P.V.C. fittings and additional 2 piece socket clips shall be got approved from engineer in charge etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 18 | 42.87 | As directed by Engineer Incharge | 203 | Providing and fixing P.V.C. Rain water pipes of 160mm outer diameter and having wall thickness of 2.2 to 2.7 mm confirming to I.S. 13592-1992 including proper rainwater receiving recess with P.V.C. plug, bend, necessary fittings, such as, offsets, shoes, inluding fixing the pipe on wall using approved wooden cleats projecting 25mm to 40mm from face of wall a fixing with clips of approved quality and One Number ,filing the joint using rubber gasket with solvent cement and properly resting the shoe of pipes on C.C. or masonry blocks, including necessary scaffolding and maintenance for 3 yrs for any leakages or dislocations of pipes. All the P.V.C. fittings and additional 2 piece socket clips shall be got approved from engineer in charge etc. complete. | One Running Metre |
| 19 | 43.18 | Specfications | 189 | Providing and fixing 15 cm rigid PVC Nahani trap including PVC grating ,bend,connectingpiece of UPVC pipe up to the outside face of wall ,making the good damaged surface and testing etc. complete ( Prior approval of sample and brand by Ex. Engr. is necessary before use) | One Number |
| | | | | **Total of Internal & External SWR System** | |
| | | | | **Water Supply System** | |
| 20 | 42.56 | BD.V 5 page 551 and as directed by Engineer in charge | 943 | Providing and fixing on walls/ceiling/floor 20 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 21 | 42.57 | BD.V 5 page 551 and as directed by Engineer in charge | 329 | Providing and fixing on walls/ ceiling/ floor 25 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 22 | 42.58 | BD.V 5 page 551 and as directed by Engineer in charge | 184 | Providing and fixing on walls/ ceiling/ floor 32 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 23 | 42.59 | BD.V 5 page 551 and as directed by Engineer in charge | 120 | Providing and fixing on walls /ceiling/ floor 40 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 24 | 42.60 | BD.V 5 page 551 and as directed by Engineer in charge | 90 | Providing and fixing on walls/ ceiling/ floor 50 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. | One Running Metre |
| 25 | 42.66 | BD.V 5 page 551 and as directed by Engineer in charge | 90 | Providing and laying in trenches 50mm dai. CPVC pipe including necessary excavation, fittings. Refilling trenches etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 26 | 43.14 | Bd.V.5 Page One Number 551 | 60 | Providing and laying in trenches 50 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 6.33 Kilogram/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
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| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 27 | 43.15 | Bd.V.5 Page One Number 551 | 180 | Providing and laying in trenches 80 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 10.15 Kilogram/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete. | One Running Metre |
| 28 | 41.44 | Bd.V.9 Page One Number 555 | 74 | Providing and fixing screw down for 20 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 29 | 41.45 | Bd.V.9 Page One Number 555 | 6 | Providing and fixing screw down for 25 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 30 | 41.46 | Bd.V.9 Page One Number 555 | 13 | Providing and fixing screw down for 32 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 31 | 41.47 | Bd.V.9 Page One Number 555 | 12 | Providing and fixing screw down for 40 mm dia. wheeled stop tap of brass including necessary sockets/union nut complete. | One Number |
| 32 | 41.48 | Bd.V.9 Page One Number 555 | 7 | Providing and fixing screw down for 50 mm dia. wheeled stop tap of brass including necessary sockets/ union nut complete. | One Number |
| 33 | 41.30 | Bd.V.7 Page One Number 554 | 2 | Providing and fixing 50mm diameter water meter with non-return valve including strainer,sockets/ union nut and including water meter box making locking arrangement and lock. [without chamber] | One Number |
| 34.00 | 42.77 | Bd.V. 4 page 551 | 1 | Providing and making ISI Mark ferrule connection of 50 mm dia. to water main including ferrule coupling cast iron bell mouth cover, built in non return valve and fixing including excavation and reinstatement complete. | One Number |
| 35.00 | 42.36 | As directed by Engineer in charge. | 8 | Providing and fixing 40 mm. dia Ball cock medium type with PVC float including sockets and necessary fittings and tested as per municipal requirements etc. complete. | One Number |
| 36.00 | 41.56 | Bd. V. 19 Page One Number 559 | 22 | Providing and fixing 45 cm wide mild steel ladder of 40mm x 6 mm mild steel flat stringers and steps of 18 mm dia. mild steel bar for water tank including fixing it in (1:2:4) M-15 cement concrete block 60cm x 30cm x 30cm and painting the ladder complete. (Anti Corossive Paint) | One Running Metre |
| 37.00 | 42.54 | As directed by engineer-in- charge. | 5,000 | Providing and fixing H.D.P container one piece moulded water tank made out of low density polythyler and built corrugation including of delivery up to destination hoisting and fixing of accessories such as inlet, outlet overflow of all tanks capacity above 1000 to 20,000 litres | One Litre |
| | | | | **Total of Water Supply System** | |
| | | | | **External Drainage & Rain Water System** | |
| 38.00 | 43.27 | Specfications | 10 | Providing , constructing and fixing 250 mm dia. Inspection chamber made up of UPVC material of thickness 3.5 mm and height of 259 mm with inlet and outlet of 110 mm dia. with 75 mm dia. U Trap, Ultra shaft pipe of Upvc material having height of 470 mm and fixing Ultra 250 mm dia. UPVC cover and frame in 150 mm thick in c.c.1:2:4, having crushed sand bed of 100 mm thick of size 550 mm dia. Including excavation and refilling the sides of chamber by crushed sand cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc. complete. | One Number |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 39 | 43.28 | As Directected By Engineer Incharge | 10 | Providing , constructing and fixing 450 mm dia. Inspection chamber made up of Polypropylene / polyethylene material of thickness 3.5 mm and height of 388 mm with 160 or 200 mm main inlet (s) outlet and 110 and / or 160 mm branch inlets, with 450 mm dia. Ultra shaft pipe of HDPE material having height of 460 mm, having R.C.C. cover and frame fixing in 150 mm thick in c.c.1:2:4, having crushed sand bed of 150 mm thick of size 750 mm dia. Including excavation and refilling the sides of chamber by sand crushed cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc. complete. | One Number |
| 40 | 43.29 | As Directected By Engineer Incharge | 10 | Providing , constructing and fixing 600 mm dia. Inspection chamber made up of Polypropylene / polyethylene material Having 315 mm diameter inlet(s)/outlets and with eccentric reducers as per requirement to connect 160 mm and 200 mm pipes having thickness of 5 mm and 600 mm in height, with inbuilt shaft achieve the invert depth as per site condition of wall thickness of 5 mm having R.C.C. cover and frame fixing in 150 mm thick in c.c.1:2:4, having crushed sand bed of 150 mm thick of size 750 mm dia. Including excavation and refilling the sides of chamber by ?sand crushed cushioning 150 mm thickness, connecting all required UPVC fittings with rubber lubricant etc.complete. | One Number |
| 41 | 43.30 | As Directected By Engineer Incharge | 24 | Providing , laying and fixing ,jointing Eco- drain 110 mm SN 8 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees, coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated material etc. complete. | One Running Metre |
| 42 | 43.31 | As Directected By Engineer Incharge | 90 | Providing , laying and fixing ,jointing Eco- drain 160 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees , coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete. | One Running Metre |
| 43 | 43.32 | As Directected By Engineer Incharge | 108 | Providing , laying and fixing ,jointing Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete. | One Running Metre |
| 44 | 42.02 | Bd.V.38, Page One Number 572 | 12 | Providing and fixing 15cm x 10cm salt glazed stoneware gully trap in cement concrete 1:4:8 outside the building including cast iron grating in the sink, connecting glazed stoneware pipe, brick masonry chamber with cast iron lid and cast iron grating for the gully trap. | One Number |
| 45 | 42.08 | Bd.V.41, Page One Number 573 | 90 | Providing and laying concrete pipes of I.S.NP. class of 225mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete. | One Running Metre |
| 46 | 42.09 | Bd.V.41, Page One Number 573 | 150 | Providing and laying concrete pipes of I.S.NP. class of 300mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete. | One Running Metre |
| 47 | 11.08 | CD.7 Page.No. 162 | 60 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 450mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 48 | 11.09 | CD.7 Page.No. 162 | 42 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 600mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |
| 49 | 11.11 | CD.7 Page.No. 162 | 12 | Providing and laying cement concrete pipe of IS 458:2003 NP-2 class of 900mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | One Running Metre |
| 50 | 50.85 | As directed by Engineer-in-charge | 500 | Providing and fixing Ductile iron Man Hole Covers/ Strom Water Grating and Grating with frame of Various sizes, weight and types and load bearing capacity as per EN-124, equivalent NECO with prior approval of concerned Superitending Engineer. | One Kilogram |
| 51 | 48.47 | As directed by Engineer in charge | 1 | RWH - Recharge Pit<br>Providing and constructing recharge pit of 2.0m deep and 1.0m dia of pre-cast RCC rings with 6.5" dia x 25m deep borewell at the floor of recharge pit including installation of combination of solid/perforated PVC casing pipe wrapped around with netlon mesh including 300mm thick sidefilling around outside of RCC rings (annular space) with 40mm size boulders including filling of recharge pit up to 0.5m depth with 25-75mm clean washed gravels from bottom up followed by 0.5m depth of 10-25mm of clean washed stones followed by 0.5m of washed river fine aggregate (natural sand/crushed sand VSI grade finely washed etc.) including netlon mesh between each gravel/fine aggregate (natural sand/crushed sand VSI grade finely washed etc.) media layer including covering with RCC slab, manhole frame & cover, PVC rungs, PVC end-caps, fittings etc. including arrangement for inlet & outlet pipe excavation & backfilling as shown in the drawing.The rate shall be inclusive of all labour, material, wastage, scaffolding, transportation, taxes, including all leads, lifts at all levels. All material should be of approved make. All works complete as per the drawing, technical specification and direction of the Engineer in charge. | One Number |
| 52 | 48.49 | As directed by Engineer in charge | - | Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well-casing pipe of 150mm dia, conforming to IS:12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per the direction of Engineer in charge. | One Running Metre |
| | | | | **MJP 22-23** | |
| 53 | MJP-2022-23, Section-L, 6 | | 7 | Providing and constructing on sewer, B.B. masonry circular manhole with concentric cone 1.2 M dia. at bottom and 0.5 M dia. at top and upto a depth of 2.00 M with 23 cm brick work in CM 1:4 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56 cm dia.etc. complete as directed by Engineerin-charge. | Nos |
| 54 | MJP-2022-23, Section-L, 6a | | 2 | Rebate for every decrease in depth of 50 cm (Rebate to be taken in proportionate to decerease in depth) | 50cm depth |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 55 | MJP-2022-23, Section-L, 7 | | 4 | Providing and constructing on sewer, B.B. masonry circular manhole concentric cone 1.5 M dia. at bottom and 0.5 M dia. at top and upto a depth of 5.00 M with 23 cm brick work, upto depth of 2 M from top and 35 cm thick brick work for balance depth in CM 1:4 proportion with 20 mm thick smooth plaster on both sides in CM 1:2 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C frame and cover of 56 cm dia. etc. complete as directed by Engineerin-charge. | Nos |
| 56 | MJP-2022-23, Section-L, 7a | | 2 | Rebate for every decrease in depth of 50 cm (Rebate to be taken in proportionate to decerease in depth) | 50cm depth |
| 57 | MJP 2022-23, Section-L, 2 C | | | Valve chamber with cast iron manhole frame and covers Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion, 12 mm thick cement plaster in CM 1:4 proportion on both sides with providing and fixing C.I. manhole frame and cover in RCC 1:2:4 coping or RCC 1:2:4 proportion x 15 cm thick slab, etc. complete as directed by Engineer-in-charge. | |
| | i) | | 8 | As above of 90 x 60 cm internal size and depth upto 1.2 M with 90 x 60 cm size CI manhole frame and cover of 50 kg. | Nos |
| | ii) | | - | Add for every increase in depth of 30 cm or part thereof | 30cm depth |
| 58 | MJP 2022-23, Section-L, 2 D | | | Valve chamber with cast iron manhole frame and covers Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion, 12 mm thick cement plaster in CM 1:4 proportion on both sides with providing and fixing C.I. manhole frame and cover in RCC 1:2:4 coping or RCC 1:2:4 proportion x 15 cm thick slab, etc. complete as directed by Engineer-in-charge. | |
| | iii) | | 10 | As above of 90 x 90 cm internal size and depth upto 1.2 M with 53 cm dia CI manhole frame and cover of 90 kg. fixed in RCC slab. | Nos |
| | iv) | | 5 | Add for every increase in depth of 30 cm or part thereof | 30cm depth |
| | | | | **Total of External Drainage & Rain Water System** | |
| | | | | **Electrical CSR 22-23** | |
| 59 | 13.7.17 | | 2 | Supplying and erecting 50 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 60 | 13.7.18 | | 2 | Supplying and erecting 65 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 61 | 13.7.19 | | 2 | Supplying and erecting 80 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 62 | 13.7.20 | | 1 | Supplying and erecting 100 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 63 | 13.8.13 | | 4 | Supplying and erecting 20/25mm dia gun metal air release cock, with necessary G.I. coupling to be fitted on top of air vessel or on wet riser complete as per specification no. FF-FFA/ARV | Each |
| 64 | 13.7.5 | | 2 | Supplying and erecting 75/80 mm dia Cast Iron end line strainer of Y-type flanged end pattern, PN16 pressure rating, SS screen, end connection with Flanged / Screwed / Socket Weld / Butt Weld End etc with standard OAR (open area Ratio) for positive suction complete as per specification no. FF-VL/ELS | Each |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 65 | 16.6.19 | | 25 | Supplying and erecting non return valve 25 mm dia in position made of gun metal complete. | Each |
| 66 | 16.6.20 | | 4 | Supplying and erecting non return valve 40 mm dia in position made of gun metal complete. | Each |
| 67 | 16.6.21 | | 2 | Supplying and erecting non return valve 50 mm dia in position made of gun metal complete. | Each |
| 68 | 16.6.22 | | 2 | Supplying and erecting non return valve 65 mm dia in position made of gun metal complete. | Each |
| | | | | **CPWD DSR 2021** | |
| 69 | CPWD DSR-2021 18.9 | | | Providing and Fixing Chlorinated Polyvinyl Chloride (CPVC) Pipes of ___ mm nominal inner dia Pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer. | |
| 69.1 | 18.9.7 | | 108 | Providing and Fixing Chlorinated Polyvinyl Chloride (CPVC) Pipes of 65 mm nominal inner dia Pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer. | Rmt |
| 69.2 | 18.9.8 | | 30 | Providing and Fixing Chlorinated Polyvinyl Chloride (CPVC) Pipes of 75 mm nominal inner dia Pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer. | Rmt |
| 70 | CPWD Electrical -2022 16.7.4 | | | Providing & Fixing Y Strainer (screwed / flanged) with stainless steel fin wire mesh perforated sheet basket with necessary flange / uionons nuts, bolts and wahsers complete as required. All work Complete as per direction of the Engineer-in-Charge. | |
| 70.1 | 16.7.4.8 | | 2 | i) 40mm dia. | Each |
| 70.2 | 16.7.4.7 | | 6 | ii) 50mm dia. | Each |
| 70.3 | 16.7.4.6 | | 2 | iii) 65mm dia. | Each |
| 70.4 | 16.7.4.5 | | 5 | iv) 80mm dia. | Each |
| 70.5 | 16.7.4.4 | | 1 | v) 100mm dia | Each |
| 71 | 12.3.2 | 4 | | Supplying and erecting minimum Three & above star rated submersible pump set suitable for erection on open well of 3.75 KW/5 HP with 415 V 50 c/s. A.C. supply, having delivery head from 43 to 11m and discharge from 120 to 840 litres. per minute & pipe of Suction 65mm / Delivery 50 mm diameter erected with necessary H type clamps as per specification No. WP-OSP | Each |
| 72 | 12.4.17 | 4 | | Supplying & erecting automatic control panel for 3 Phase , 415 volt, A.C, Submersible/centrifugal pump set up to 7.5 HP consisting of DOL starter having relay range 9-14 AMP,S.P.P., Combined ammeter/ voltmeter, phase indicating lamp enclosed in CRCA powder coated Vibration proof enclosure with IP 54 protection. Control Panel should offer single phasing, phase reversal, phase imbalance etc . | Each |
| 73 | 12.6.3 | 4 | | Supplying & erecting Pressure Booster Pump, single phase, 50C/s, A.C. supply of 1.125 KW/1.5 H.P., With discharge of 480 to 31 LPM for 10 to 50 Mtr Head & 25 mm suction/ 25 mm delivery pipe, for Domestic Pressure boosting applications. | Each |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 74 | 4.2.18 | 100 | | Supplying and erecting 20/25 mm (ID/OD) Chlorinated polyvinyl chloride pipe (CPVC), thickness 2.6 mm conforming to IS 15778 (CTS Series) with necessary CPVC fittings and solvent cement for Solar Water Heater System as per specification No. ESD-HWP/CPVC | m |
| 75 | 4.2.20 | 100 | | Supplying and erecting 32/40 mm (ID/OD) Chlorinated polyvinyl chloride pipe (CPVC), thickness 3.8 mm conforming to IS 15778 (CTS Series) with necessary CPVC fittings and solvent cement for Solar Water Heater System as per specification No. ESD-HWP/CPVC | m |
| 76 | 4.2.12 | 100 | | Supplying and erecting elastomeric nitrile rubber / foam tube type sleeves for coating and insulating on provided PC / copper pipes having 9 mm thickness and inner diameter / sizes 22 mm for solar water heater/AC system. | m |
| 77 | 4.2.15 | 100 | | Supplying and erecting elastomeric nitrile rubber / foam tube type sleeves for coating and insulating on provided PC / copper pipes having 9 mm thickness and inner diameter / sizes 42 mm for solar water heater/AC system. | m |
| 78 | 16.5.5 | 50 | | Supplying and erecting ISI mark GI pipe 40 mm. dia. 'B' class at position with accessories complete as per specification no. CW-PLB/GP. | m |
| 79 | 16.6.20 | 4 | | Supplying and erecting non return valve 40 mm dia in position made of gun metal complete. | Each |
| 80 | 16.6.14 | 4 | | Supplying and erecting 40 mm. dia. gun metal sluice valve at position with necessary materials complete. | Each |
| 81 | 4.6.3 | 4 | | Supplying, installing, testing and commissioning of Monoblock Heat pump, having dimension: 995 x 785 x 1700 (mm), Input power: 2.22 kW, 400 V, 3 Ph, 50 Hz, Output power: 8 kW having hot water temperature range 35°C to 75°C and ambient temperature range for max. efficiency 7°C to 43°C, with glass lining hot water tank of 455 ltr. and min. 220 Kg at rated pressure 10 bar with two emergency heating elements operated on three operational mode: Efficiency mode, Hybrid turbo mode and Standard mode with Adaptive Energy System (AES), LED display with necessary accessories complete with 5 years ON-SITE warranty. | Each |
| | | | | **Total of Electrical CSR 22-23** | |
| | | | | **Market Analysis Items** | |
| 82 | MRA-1 | As directed by Engineer in charge | 125 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass Grating (Viking 41615) of Rectangular type with openable circular lid 150 mm nominal size square 100 mm diameter of the inner hinged round grating. including setting in floor with cement motor to match with floor finish as per architect requirement complete including all accessories. All work Complete as per direction of the Engineer-in-Charge. | Nos |
| 83 | MRA-2 | As directed by Engineer in charge | 63 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass Grating of Close on Top type (Viking 45290) with openable circular lid 150 mm nominal size square 100 mm diameter of the inner hinged round grating. including setting in floor with cement motor to match with floor finish as per architect requirement complete including all accessories. All work Complete as per direction of the Engineer-in-Charge. | Nos |

| Name of Work: Convention Centre (Guest House with Seminar Hall) | | | | | |
|---|---|---|---|---|---|
| **Abstract for Plumbing Work** | | | | | |
| Sr. No. | SSR Item | Spec. No. | Total Quantity | Work Description | Unit |
| | | | | | |
| 84 | MRA-3 | As directed by Engineer in charge | 86 | Providing and Fixing it in position, Alighning to correct position, testing and commissioning of CP brass P Trap 40mm Size for wash basin, Urinal & Kitchen Sinks. (Viking-5898 V6 H12) with all necessary fixtures and fitting etc complete as directed by the Engineer-in-Charge. (Fixtures and fittings as per Approved C.P & Sanitary Product sheet). All work Complete as per direction of the Engineer-in-Charge. | Nos |
| 85 | MRA | As directed by Engineer in charge | | Providing and fixing 600 mm long MS hot dip galvanized Puddel Flange fabricated out of 6 mm thick MS plates of suitable size and pipe shall be confirming to IS:1239 heavy class pipes properly fixed in walls / top slab of tanks. The entire fittings shall be hot dipped galvanized after fabrication. Length shall be minimum 600 mm or wall thickness plus 200 mm on either side (which ever is more). Each Puddle shall be flange at outer side for connection of pipe / fittings. All work Complete as per direction of the Engineer-in-Charge. | |
| 85.1 | MRA-10 | | 4 | i) 25 mm dia | Nos |
| 85.2 | MRA-11 | | 8 | ii) 50 mm dia | Nos |
| 85.3 | MRA-12 | | 4 | iii) 65mm dia | Nos |
| 85.4 | MRA-13 | | 8 | iv) 80mm dia | Nos |
| 85.5 | MRA-14 | | 8 | v) 100mm dia | Nos |
| 85.6 | MRA-15 | | 8 | vi) 150mm dia | Nos |
| 85.7 | MRA-16 | | 4 | vii) 200mm dia | Nos |
| 85.8 | MRA-17 | | 2 | viii) 250mm dia | Nos |

**WORK - ABSTRACT**

**Estimate No**

**Name of work** :- Providing internal Electrification for Auditorium

| Sr. No. | Qty. | Item No. | ITEM DESCRIPTION | Unit |
|---|---|---|---|---|
| | | | **1. ELECTRICAL WORKS** | |
| 1 | 60 | 5.3.2 | Supplying, erecting & marking SPMCB 6A to 32A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 2 | 124 | 5.3.3 | Supplying, erecting & marking SPMCB 6A to 32A, B-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 3 | 5 | 5.3.8 | Supplying, erecting & marking DP MCB 40A to 63A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-MCB | Each |
| 4 | 12 | 5.3.10 | Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 5 | 5 | 5.3.11 | Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 6 | 1 | 5.5.1 | Providing & erecting 3 Pole MCCB, 415 V, 100A, rated short-circuit breaking capacity 25 kA (Ics=100% of Icu), adjustable thermal (overload) setting and fixed | Each |
| 7 | 1 | 5.5.2 | Providing & erecting 3 Pole MCCB, 415V, 200A, rated short-circuit breaking capacity 25 kA (Ics=100% of Icu), adjustable thermal (overload) setting and | Each |
| 8 | 3 | 5.4.1 | Supplying & erecting triple pole and neutral distribution board (TPNDB), SPMCB of 4 ways/phase (12 poles), with door, 1.2mm thickness | Each |
| 9 | 4 | 5.4.2 | Supplying & erecting triple pole and neutral distribution board (TPNDB),SPMCB of 8 ways / phase (24 poles), with door, 1.2mm thickness surface/flush mounted, IP 43 Protection on iron/GI frame (horizontal busbar type) asper specification no. SW-SWR/MCBDB | Each |

| | | | | |
|---|---|---|---|---|
| 10 | 2 | 5.4.5 | Supplying & erecting triple pole and neutral distribution board (TPNDB),<br>SP/TP MCBs total 8 ways /24 poles, with door, 1.2mm thickness surface/flush<br>mounted, IP 43 Protection on iron/GI frame (vertical busbar type) as per<br>specification no. SW-SWR/MCBDB | Each |
| 11 | 1 | 5.4.6 | Supplying & erecting triple pole and neutral distribution board (TPNDB), SP/TP MCBs total 12 ways /36 poles, with door, 1.2mm thickness surface/flush mounted, IP 43 Protection on iron/GI frame (vertical busbar type) as per specification no. SW-SWR/MCBDB | Each |
| 12 | 2 | 5.4.8 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 6 ways (6 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | Each |
| 13 | 4 | 5.4.9 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 10 ways (10 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | Each |
| 14 | 20 | 5.4.14 | Supplying and erecting blanking plate of suitable size on MCBDB. | Each |
| 15 | 5 | 5.6.1 | Supplying, erecting & commissioning 2 pole RCCB 16/25A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 16 | 11 | 5.6.2 | Supplying, erecting & commissioning 2 pole RCCB40A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 17 | 150 | 7-1-22 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½core 185 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 18 | 15 | 7-1-18 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½ core 70 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |

| | | | | |
|---|---|---|---|---|
| 19 | 40 | 7-1-17 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½ core 50 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 20 | 160 | 7-2-31 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 4 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 21 | 155 | 7-2-32 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 22 | 240 | 7-2-33 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 10 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 23 | 115 | 7-2-34 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 16 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 24 | 245 | 7-2-15 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 4 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 25 | 45 | 7-2-16 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 26 | 10 | 7-2-17 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 10 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |

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| 27 | 40 | 1.2.14 | Supplying and erecting PVC box trunking of size 100x50 mm. with accessories on wall/ceiling as per specification No: WG-MA/BOX | Mtr |
| 28 | 374 | 1.1.9 | Supplying and erecting HMS PVC conduit FRLS grade 25 mm dia. with necessary accessories in wall/floor with chiselling appropriately as per specification No: WG-MA/CC. | Mtr |
| 29 | 550 | 1.1.10 | Supplying and laying HMS PVC conduit FRLS grade 25 mm dia with necessary accessories in RCC work/false ceiling/false flooring as per specification No. WG-MA/CC. | Mtr |
| 30 | 2271 | 1.3.2 | Supplying and erecting mains with 2x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | Mtr |
| 31 | 2271 | 1.3.2 | Supplying and erecting mains with 1x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW **(NOTE 3)** | Mtr |
| 32 | 538 | 1.3.3 | Supplying and erecting mains with 2x4 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places.as per specification No: WG-MA/BW | Mtr |
| 33 | 538 | 1.3.3 | Supplying and erecting mains with 1x4 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places.as per specification No: WG-MA/BW **(NOTE 3)** | Mtr |
| 34 | 20 | 1.3.9 | Supplying and erecting mains with 3x10 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places as per specification No: WG-MA/BW | Mtr |
| 35 | 42 | 1.6.1 | Supplying and erecting modular type switch 6A / 10A duly erected on provided plate and box with wiring connections complete. | Each |
| 36 | 76 | 1.6.2 | Supplying and erecting modular type switch 16A duly erected on provided plate and box with wiring connections complete. | Each |
| 37 | 4 | 1.6.6 | Supplying and erecting modular type switch 16 / 20 A with indicator, duly erected on provided plate and box with wiring connections complete | Each |
| 38 | 42 | 1.6.10 | Supplying and erecting modular type 3 pin 6A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete | Each |
| 39 | 76 | 1.6.11 | Supplying and erecting modular type 3 pin 6 / 16A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |

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| 40 | 25 | 1.6.24 | Supplying and erecting modular type blanking plate one module, duly erected on provided plate & box. | Each |
| 41 | 6 | 1.6.35 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 2 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 42 | 118 | 1.6.36 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 3 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 43 | 6 | 1.6.37 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 4 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 44 | 2 | 1.6.38 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 6 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 45 | 2 | 1.6.39 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 8 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match thebackground | Each |
| 46 | 2 | 1.6.40 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 12 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 47 | 222 | 1.7.5 | Point wiring for light/bell concealed type in min 20 mm FRLS grade HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification No: WG PW/CW | Point |
| 48 | 33 | 1.7.6 | Point wiring for ceiling fan concealed type in min 20 mm HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification no. WG-PW/CW | Point |

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| 49 | 408 | 1.7.22 | Secondary point wiring for additional light/ bell point, concealed type in min 20 mm FRLS grade PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires with required accessories as per specification No: WG-PW/CW | Point |
| 50 | 16 | 1.7.25 | Wiring for plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification No: WG-PW/CW | Point |
| 51 | 6 | 2.1.2 | Supplying and erecting LED square / circular Max. 7W down lighter/ Panel<br>Light having pressure die-cast aluminium housing, polystyrene diffuser having<br>system lumens output of Min. 770 Lumens, min. efficacy of 110 lumen/W,<br>CRI>80, CCT upto 6500K, Beam Angle of 120 deg., max. ripple of 5%,<br>THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV,<br>Life class of 50,000 Hrs. at L70B50, including driver, having mounting<br>arrangement with board for surface type or spring loaded mounting clips<br>complete with 3 years warranty. | Point |
| 52 | 12 | 2.1.16 | Supplying and erecting anodized aluminium corridor / passage / mirror light LED fitting (2 feet) Max. 12W with high transitivity diffuser with min. system lumens output of 1200 lumens, min. efficacy of 100 lumen/W, CRI>80, CCT upto 6000K, Beam Angle of 110 deg., Ripple<5%, THD<10%, p.f. >0.95, operating range of 200-270V, surge protection of 2 kV, Life class of 50,000 Hrs. at L70B50, including driver with end caps on provided PVC Block / wooden board with 3 years warranty. (Mirror) | Each |
| 53 | 182 | 2.1.4 | Supplying and erecting LED square / circular Max. 14 W down lighter / Panel Light having pressure die-cast aluminium housing, polystyrene diffuser having system lumens output of Min. 1500 Lumens, min. efficacy of 110 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., max. ripple of 5%, THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips complete with minimum 2 years warranty as per specification No. FG-IDF/LED. | Each |

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| 54 | 292 | 2.1.6 | Supplying and erecting LED square / circular Max. 25 W down lighter/<br>Panel Light having pressure die-cast aluminium housing, polystyrene diffuser<br>having system lumens output of Min. 2750 Lumens, min. efficacy of 110<br>lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., max. ripple of<br>5%, THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of<br>2.5 kV, Life class of 50,000 Hrs. at L70B50, including driver, having mounting<br>arrangement with board for surface type or spring loaded mounting clips<br>complete with 3 years warranty. | Each |
| 55 | 86 | 2.1.10 | Supplying and erecting LED Strip light 5m Length Max. 45 W IP20 class having minimum lumens output of 800 Lumens/m, min. efficacy of 90 lumen/W, CRI>80, CCT upto 5000K, Beam Angle of 110 deg., THD<10%, p.f.>0.95, operating range of 230-270V, Life class of 30,000 Hrs. at L70B50, including driver/SMPS 120W, Housing material - Aluminium LLS-12WFT 50mmx70mm Led Light Fixtures ( 12 foot ) EMPTY with suspension Kit, with 1 year warranty | Each |
| 56 | 1 | 2.4.13 | Supplying and erecting integrated LED flood light fitting Max. 50W IP65 & IK07 class having pressure die-cast aluminium housing, having system lumens output of Min. 5000 Lumens, min. efficacy of 100 lumen/W, CRI>70, CCT upto 6500K, THD<10%, p.f. >0.90, operating range of 140-270V, inbuilt surge protection of 4 kV, Life class of 50,000 Hrs at L70B50 including driver with U shaped bracket with minimum 2 Years warranty as per specification No. FG-ODF/FL. | Each |
| 57 | 5 | 2.11.5 | Supplying and erecting fan hook box of 10 mm M.S. round bar bounded to the R.C.C. bars upto 50 mm length each side and pierced through a 16 S.W.G. thick aluminium/M.S. Bowl 100 mm dia. or equivalent square size and having depth upto 75 mm complete erected with duly painted by one coat of red oxide paint and two coats of paint erected in position and without any leakage of slurry of cement concrete on either side of the box and positioned to the bottom level of the slab. | Each |
| 58 | 5 | 2.11.6 | Supplying and erecting 'B' class G.I .pipe / M.S. pipe down rod duly painted for fan complete erected with PVC three core flexible cable 1 sq. mm copper PVC wire. | Each |

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| 59 | 33 | 2.10.22 | Supplying and erecting Energy Saving BLDC Ceiling fan 230 V A.C. 50 cycles 1200 mm, max. energy consumption of 28W having service ratio (CMM/W) of Min. 8 , PF>0.9, THD | Each |
| 60 | 34 | 2.10.14 | Supplying and erecting exhaust fan medium duty 230 V A.C. 50 cycles 225 mm. 1400 RPM with condenser complete erected in position with necessary materials. Fan motor with moisture proof treatment and 'E' class insulation. | Each |
| 61 | 50 | 7.11.7 | Providing & erecting hot dipped galvanised ladder type cable tray manufactured from 16 SWG (1.6 mm thick) GI sheet of 200 mm width & 75 mm height complete with necessary coupler plates & hardware. | Mtr |
| 62 | 1 | 3.7.7 | Supplying,erecting, testing & commisioning of 10 kVA capacity on line pure sine wave,PWM,IGBT based UPS with 0.9 to unity output pf ,3 phase input &3 phase output complete with all protections as per specification no. AP-UPS (Without batteries) | Each |
| 63 | 30 | 3.8.10 | Supplying and erecting 12V/42Ah SMF battery with battery terminal wire, duly charged with 24 months warranty complete for 30 minutes. | Each |
| 64 | 280 | 7.6.7 | Supplying & laying (including excavation) reinforced cement concrete pipe of NP-2 class of 250 mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | Mtr |
| 65 | 24 | 42.12 CIVIL SSR | ProvidingandconstructingBrickMasonryInspectionChamber60cmx45cmx90cmincluding1:4:8cementconcretefoundation1:2:4cementconcretechannelshalfroundG.S.W.pipes,BrickMasonry,plasteringfrominsideandwithframefixedincement concrete with R.C.C. Cover medium duty 140Kilogramwith frame etc complete. | Each |
| 66 | 12 | 5.4.13 | Supplying & erecting CRCA sheet metal one way enclosures of 1.2mm thickness suitable for **DP MCB /TP MCB/FP MCB/RCCB/RCBO** complete erected on angle iron/GI frame. | Each |
| 67 | 8 | 9.1.5 | Supplying, installation and testing of maintenance free earthing comprising of Electrode of 17.2 mm diameter Low Carbon Steel with 250 micron molecular copper bonded earthing rod of Length 3m along with 25 kg Carbon based environment friendly back fill ground enhancing compound required to fill up the excavated earth with required quantity complete, and recording the results Specification no. EA-MOBI | Each |

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| 68 | 7 | 9-3-1 | Supplying & erecting conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 40 mm dia copper pipe of standard length with 5 Nos. copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation complete. | Each |
| 69 | 80 | 9.2.4 | Supplying and erecting annealed bare copper wire of high purity of required sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws complete. | kg |
| 70 | 1 | Non DSR | Supply, Installation, testing and commissioning of cubical type MV Panel conform to IEC:61439-I as per technical specifications,single line diagram & approval of Drawings prior to manufacturing, packed in wooden crates with PVC sheets inner packing, transport to site, compartmental cubicle type freestanding with appropriate cable entries, front operating, front maintained wherever required complete with base frame etc. erected in 14 gauge CRCA sheet and surface treated with phosphating seven tank process and duly powder coated with MSEDCl approved color, feeder piller should be with supporting angles, self-locks, gasket and slanting top to be erected on provided foundation<br>'Auditorium Main Panel Name: Auditorium<br>Duty: Indoor Type (IP 42)<br>Location: Auditorium<br>Incomer: 2 Nos 300A FP MCCB with LSI release with R, Y, B & On , OFF, Trip indications and required accessories. 300A ATS with MFM.<br>Busbar: 400A AL busbar.<br>Outgoing: 4 No of 100A TPN MCCB.<br>1 No of 200A TPN MCCB<br>6 No of 32A TPN MCB.<br>1 Nos 63A TP MCB<br>All outgoing with Dual Source MFM | Each |

**WORK - ABSTRACT**

**Estimate No**

**Name of work :- Providing Lifts**

| Sr. No. | Item No. | Qty. | ITEM DESCRIPTION | Unit |
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| **2. Lifts** | | | | |
| 1 | 17.1.4 | 1 | SITC of Electric Traction Passenger Lift with 1299498<br>· Rated capacity :- 10 Passenger/680Kg<br>· Floors :- G+2 floor (3 Stops/3 Landings)<br>· Travel :- 3 to 4.2 mtrs<br>· Location of Lift Machine:- MR/MRL<br>· Rated speed :- 1.0mps VS<br>· Car/Landing door clear opening of 800 mm wide x 2000 mm high<br>· Clear Car size of 1350 mm wide x 800 mm deep x 2250mm high | Job |
| | | | · Doors type :- COPO/TOPO Doors with frame made from SS 304 grade solid(non-cladded) sheet of 1.5mm thick in hairline finish for car and all landing doors with SS door architraves/frames The lift doors shall have minimum 1 hour fire rating (with submission of necessary valid test certificate issued by NABL accredited or Independent test laboratory). | |
| | | | · Lift car enclosure made from SS 304 grade solid (non-cladded) sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. The lift car interior design shall be done as per the directions of engineer in charge. | |
| | | | • COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio-visual alarm, VAS in Marathi, Hindi & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor | |
| | | | • Clear Car size of 1000 mm wide x 2400 .mm deep x2000 .mm high | |

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| | | | • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings | | |
| | | | • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class | | |
| | | | • ARD complete with necessary SMF VRLA batteries<br>• Fireman controller having fireman switch at fire Landing, | | |
| | | | • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge. | | |
| | | | • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength | | |
| | | | • Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work | | |

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| | | | • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT.<br><br>· General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector(Lifts) with submission to the Engineer In Charge.<br>· The above rate includes Fully Comprehensive AMC for one year from the date of commissioning. | |
| | | | A2 - For Lift having 800mm wide x 2000mm high clear entrance in 1.5mm thick SS 304 grade solid (non-cladded) landing door [Two panel], this includes all necessary accessories like LOP's with UP/DN buttons-arrows-indicators, extension of guide rails, shaft wiring with trunking, traveling cables, main hoisting ropes/belts, & OSG rope landing doors with all accessories etc. necessary for the normal safe functioning of lift installation complete. for 6Floor | |
| 2 | 1.3.2 | 5.00 | Supplying and erecting mains with 2x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | 62.00 |
| 3 | 1.3.2 | 5.00 | Supplying and erecting mains with 1x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | 31.00 |
| 4 | 1.6.1 | 4.00 | Supplying and erecting modular type switch 6A / 10A duly erected on provided plate and box with wiring connections complete. | 72.00 |
| 5 | 1.6.2 | 4.00 | Supplying and erecting modular type switch 16A duly erected on provided plate and box with wiring connections complete. | 106.00 |
| 6 | 1.6.10 | 4.00 | Supplying and erecting modular type 3 pin 6A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | 112.00 |

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| **7** | 1.6.11 | 4.00 | Supplying and erecting modular type 3 pin 6 / 16A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | 160.00 |
| | 1.6.30 | 4.00 | Supplying and erecting PVC Surface modular switch box with double mounting plate for 6 module duly erected. | 222.00 |
| | 1.6.23 | 1.00 | Supplying and erecting modular type (two module) electronic step regulator for fan, duly erected on provided plate and box with wiring connections complete. | 382.00 |
| | 1.7.26 | 1.00 | Wiring for plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification No: WG-PW/CW | 386.00 |
| | 1.7.6 | 1.00 | Point wiring for ceiling fan concealed type in min 20 mm HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification no. WG-PW/CW | 803.00 |
| 8 | 1.7.5 | 2.00 | Point wiring for light/bell concealed type in min 20 mm FRLS grade HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification No: WG PW/CW | 717.00 |
| 9 | 2.1.15 | 4.00 | Supplying and erecting bulk head LED fitting max. 10W with high transitivity diffuser with system lumens output of min. 1100 lumens, min. efficacy of 110 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., THD<10%, p.f. >0.95, operating range of 140-260V, in built surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50, including driver, IP66, IK09 rated on provided PVC Block / wooden board with 3 years warranty. | 1416.00 |
| 10 | 2.1.17 | 2.00 | Supplying and erecting CRCA powder coated corridor/passage light LED fitting (4 feet) Max. 17W with high transitivity diffuser with system lumens output of Min. 2000 lumens , min. efficacy of 120 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., Ripple<5%, THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of 4 kV, Life class of 50,000 Hrs. at L70B50, including driver, with end caps on provided PVC Block / wooden board with 3 years warranty. | 619.00 |

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| 11 | 2.11.11 | 1.00 | Providing recess in brick wall suitable for erection of exhaust fan up to 450mm. sweep complete with grouting of nut, bolts, plastering and colour washing to match the colour of the wall for the wall thickness of 225 mm. | 381.00 |
| 12 | 2.11.14 | 1.00 | Supplying & erecting 22 SWG G.I sheet metal cawl sector shaped with 25 x 25 x 3 (mm) angle iron frame, metal mesh to avoid birds entry with necessary material, suitable for exhaust fan of 300 mm as per specification no FG-FAS/MSC | 1060.00 |
| 13 | 2.10.13 | 1.00 | Supplying and erecting exhaust fan medium duty 230 V A.C. 50 cycles 225 mm. 1400 RPM with condenser complete erected in position with necessary materials. Fan motor with moisture proof treatment and 'E' class insulation. | 2032.00 |
| 14 | 2.10.22 | 1.00 | Supplying and erecting Energy Saving BLDC Ceiling fan 230 V A.C. 50 cycles 1200 mm, max. energy consumption of 28W having service ratio (CMM/W) of Min. 8 , PF>0.9, THD<10% with IR remote control/compatible speed regulator, Temperature Rise of Max. 40 deg. C, having external mounted control PCB completely erected in position as per specification no. FG-FN/CF | 3811.00 |
| 15 | 5.3.2 | 3.00 | Supplying, erecting & marking SPMCB 6A to 32A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | 174.00 |
| 16 | 5.3.3 | 3.00 | Supplying, erecting & marking SPMCB 6A to 32A, B-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | 173.00 |
| 17 | 5.6.1 | 1.00 | Supplying, erecting & commissioning 2 pole RCCB 16/25A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | 2088.00 |
| 18 | 5.4.8 | 1.00 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 6 ways (6 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | 1214.00 |

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| 19 | 5.6.6 | 1.00 | Supplying, erecting & commissioning 4 pole RCCB 63A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | 2914.00 |
| 20 | 5.4.13 | 1.00 | Supplying & erecting CRCA sheet metal one way enclosures of 1.2mm thickness suitable for DP MCB /TP MCB/FP MCB/RCCB/RCBO complete erected on angle iron/GI frame. | 400.00 |
| 21 | 6.1.19 | 10.00 | Supplying and erecting iron work, sheet metal work consisting of CRCA sheets, various sections of iron, plates, chequered plates, rods, bars, MS pipes, etc. for panel board or any other purpose with bending, cutting, drilling and welding complete erected at the position with necessary materials duly painted with one coat of red oxide and two coats of enamel paint to match the switchgears or as per directions by the authority. | 186.00 |
| 22 | 7.2.32 | 40.00 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | 396.00 |
| 23 | 7.6.2 | 3.00 | Supplying & erecting G.I. pipe 'A' class 40 mm dia. erected for enclosing XLPE armoured cable on wall/pole as per specification no. CB-CE | 337.00 |
| 24 | 9.1.5 | 2.00 | Supplying, installation and testing of maintenance free earthing comprising of Electrode of 17.2 mm diameter Low Carbon Steel with 250 micron molecular copper bonded earthing rod of Length 3m along with 25 kg Carbon based environment friendly back fill ground enhancing compound required to fill up the excavated earth with required quantity complete, and recording the results Specification no. EA-MOBI | 13805.00 |
| 25 | 9.2.4 | 10.00 | Supplying and erecting annealed bare copper wire of high purity of required sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws complete. | 844.00 |

**WORK - ABSTRACT**

**Estimate No. :-**

**Name of work** :- Providing LV System (Networking, Telephone, FAS, PA & CCTV) work for Convention Centre

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
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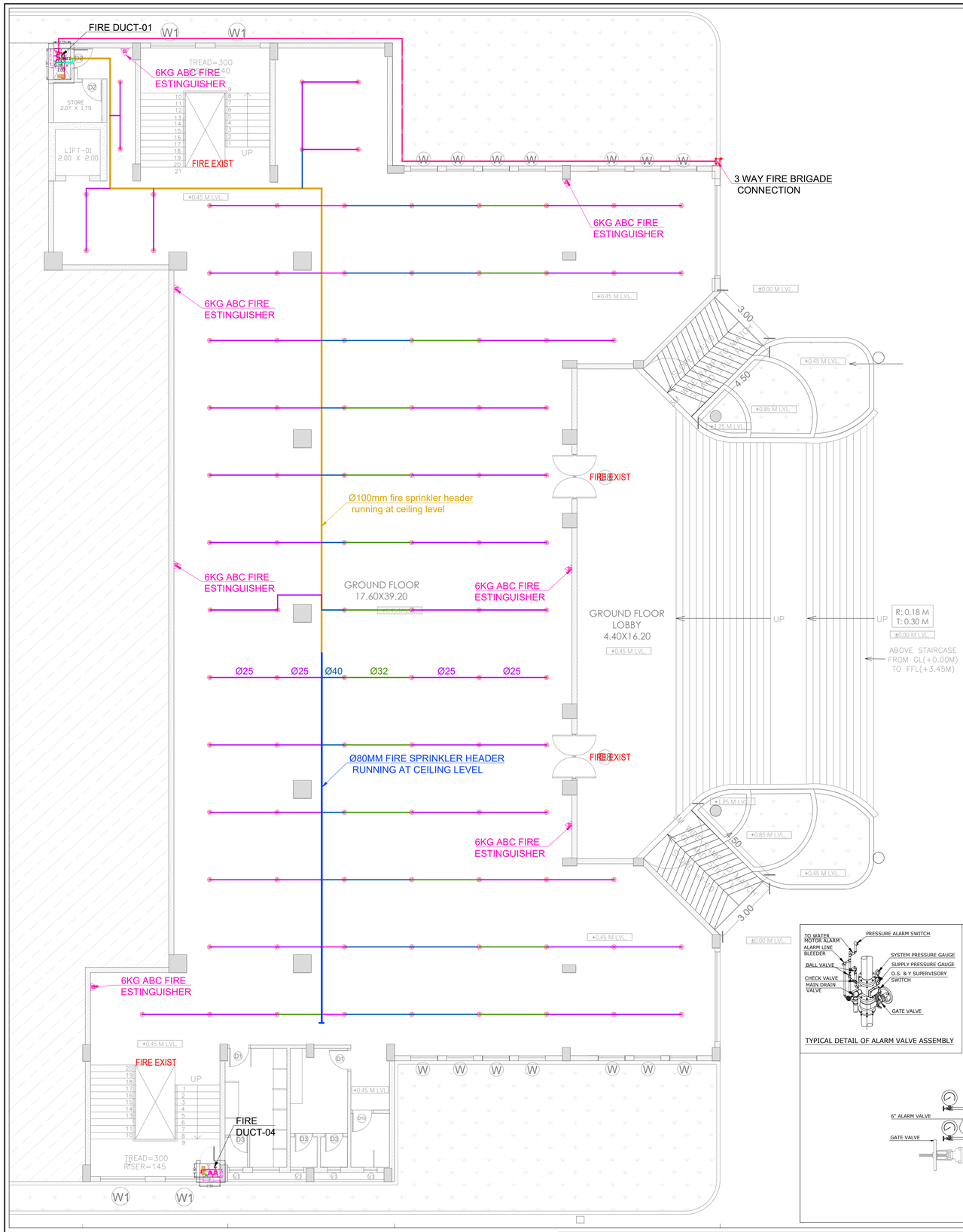
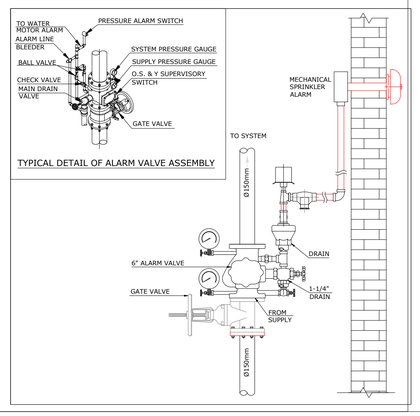
| ELV WORKS | | | | |
| ORKING & TELEPHONE SYSTEM) | | | | |
| 1 | 1-1-9 | 2075 | Supplying & erecting **HMS PVC conduit 25mm dia**. with necessary accessories in wall/floor with chiselling appropriately as per specification no. **WG-MA/CC**. | m |
| 2 | 1-2-2 | 85 | Supplying and erecting **25 mm dia. corrugated flexible polypropylene conduit** | m |
| 3 | 1-2-14 | 5 | Supplying and erecting **PVC box trunking of size 100x50 mm**. with accessories on wall/ceiling as per specification No: **WG-MA/BOX .** | m |
| 4 | 1-6-15 | 6 | Supplying and erecting **modular** type **telephone socket one gang** with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |
| 5 | 1-6-24 | 6 | Supplying and erecting **modular** type **blanking plate one module**, duly erected on provided plate & box. | Each |
| 6 | 1-8-1 | 450 | Supplying, erecting & terminating **2 pair telephone copper cable 0.5 mm dia**. with high density polyethylene insulation, polyester taped, nylon rip cord & grey colour sheathed with FR PVC, confirming to ITD specification S/WS 113C laid in provided PVC casing-n-capping/conduit as per specification no. **WG-TW** | m |
| 7 | 1-8-17 | 1 | Supplying & erecting **0.5 mm dia, copper jumper wire** as per specification No. WG-TW | m |
| 8 | 1-8-18 | 850 | Supplying, erecting & terminating **co-axial copper cable low voltage grade** tri-shielded **RG-11** as per specification no. WG-TW | m |
| 9 | 1-8-21 | 1 | Supplying, erecting & terminating **3 m HDMI cord low voltage grade minimum 4k compliant** to be laid in provided conduits with male/female 19pin HDMI connectors complete. | m |
| 10 | 1-9-11 | 1 | Supplying, erecting & commissioning **10 pairs FR junction box with moulded plastic enclosure** as per specification no. **WG-TA** | m |
| 11 | 1-9-29 | 6 | Supplying, installing, testing & commissioning **push button telephone instrument** desk top unit as per specification complete | Each |
| 12 | 1-10-1 | 400 | Supplying and installing **cat-6 cable** suitable for networking as per specification no. **WG-COC/NC** | m |
| 13 | 1-10-16 | 10 | Supplying and fixing **1 m 24 AWG multi stranded UTP patch cord** with RJ-45 factory crimped connector of **Cat 6 type**, compliant ANSI/TIA-568.2-D standards in position as per specification no. WG-ELVC/PC | m |
| 14 | 1-12-2 | 5 | Supplying and fixing **tool-less IO (ethernet)** flush/surface type in provided modular box as per specification no. WG-NAS/IO | Each |
| 15 | 1-12-4 | 1 | Supplying and fixing **24 port patch panel with tool-less keystone jacks** in provided U Rack complete as per specification no. **WG-NAS/PP** | Each |
| 16 | 1-12-16 | 1 | Supplying and fixing **power distribution unit for networking rack comprises of 6/16A (6 Nos. sockets), 16A modular MCB**, appropriate rating, enclosed in black powder coated metal with necessary arrangement for fixing complete. | Each |
| 17 | 1-12-20 | 1 | Supplying and fixing **15U wall mount rack** (Dimension-DxWxH – 500x550x747 mm) as per specification no. WG-NAS/RAK | Each |
| 18 | Non CSR | 6 | Supplying and fixing **2 m Telephone patch cord of RJ11** type | Each |

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **TOTAL FOR SECTION- I** | | | | |
| **SECTION- II (CCTV SYSTEM-ANALOGUE)** | | | | |
| 19 | Non CSR | 8 | Supply Installation, testing & commissining of **2MP Analog HD Dome type Camera, 2.8 mm Fixed lens**, IR-20mtr with power supply adaptor & required accessories. | Each |
| 20 | Non CSR | 5 | Supply Installation, testing & commissining of **2MP Analog HD Bullet type Camera, 2.8 mm Fixed lens**, IR-20mtr with power supply adaptor & required accessories. | Each |
| 21 | Non CSR | 1 | Supply Installation, testing & commissining of **16 Channel, 1080P HD DVR (Digital Video Recorder),** Auto Adaptive HDCVI/AHD/TVI/CVBS/IP signals, Max 128Mbps Incoming Bandwidth, H.264+ / H.264 dual-stream video compression, HDMI / VGA Simultaneous Video Output, Support 2 SATA HDD up to 16TB, 2 USB Ports, with required accessories. | Each |
| 22 | Non CSR | 26 | Supplying & erecting of **BNC Connector** with required accessories. | Each |
| 23 | Non CSR | 3 | Supply Installation, testing & commissining of 12VDC/5A SMPS Power supply for Camera | Each |
| 24 | Non CSR | 850 | Supplying, erecting, testing and commissioning of multistrand annealed bare copper conductor, **PVC insulated 2C x 1.5 sqmm cable** in provided trunking/conduit etc. | m |
| 25 | Non CSR | 1 | Supplying & erecting **8 TB internal Surveillance HDD suitable for SATA Port** of DVR/NVR, interface transfer rate 6 GB/S, maximum sustained transfer rate 210 MB/Sec to 213 MB/S. Drive bay supported 08+, Cameras supported up to 64, Cache (MB) 256, Load/Unload Cycle -3000000, Work Load Rating per Year 180TB, MTBF 1000000 Hrs. HTTPS. RoHS, UL, CE certified, duly erected in position in provided NVR as per specification no. CCTV-HDD | Each |
| 26 | Non CSR | 1 | Supplying & erecting 32" professional LED Monitor with 1920*1080 (Full HD) Display, suitable for 16 channel NVR and following features<br>Brightness: minimum 250 Cd/m2<br>Contrast Ratio: minimum 1000:1<br>Viewing angle: 178/178 deg.<br>Response time: maximum 8 ms<br>Inputs: HDMI, VGA, BNC, USB, Audio In,<br>Built-in speakers maximum 2 W,<br>Suitable to operate on 100-240 V 50 Hz AC supply and 24/7 Duty Cycle duly erected on wall or table top with standard accessories like wall mount stand and wiring connections etc. complete as per specifications no. CCTV-MON | Each |
| **TOTAL FOR SECTION- II** | | | | |

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **SECTION- III (CONVENTIONAL FIRE ALARM SYSTEM)** | | | | |
| 27 | 13-9-4 | 6 | Supplying, erecting testing and commissioning **beam smoke detector** four wire **single ended reflected type** with 8 " receiver having digital display for easy alignment, adjustable sensitivity & heater kit for transmitter/receiver and reflector with necessary connections on suitable back box. **The protection range of beam detector is 5 to 70 m**. | Each |
| 28 | 13-9-9 | 25 | Supplying, installing, testing and commissioning **remote response indicators** suitable to operate on 5 - 28 V dc supply having FR Polymer ABS Housing complete as per specification no. FF-FAAS/RRI | Each |
| 29 | 13-9-10 | 1720 | Supplying, installing, testing and commissioning **FRLS, XLPE armoured cable 2 core 1.5 sq.mm**. **copper conductor** complete erected on wall/ ceiling complete as per specification no. CB-LT/CU | m |
| 30 | 13-10-2 (New) | 1 | Supplying, installing, testing and commissioning of **micro processor based intelligent addressable main fire alarm panel**, central processing unit with the **2 loop capacity** and **capable of supporting upto 250 devices and detectors perloop**, with on-board LCD display with min 16 lines of text, operating at 230 V 50HZ - AC with inbuilt Battery Backup of a minimum 24 hours in normal condition and 30 min in alarm condition, suitable provision for network connectivity, interfacing with third party equipment via a MODBUS/ OPC/ L-ON interface etc. conforming to IS 15908:2021, IS 2189: 2008, EN 54 & VDS / FM/ UL 864 (10th edition) with 3 years replacement warranty FF-AFAS/CP. | Each |
| 31 | 13-10-6 (New) | 120 | Supplying, installing, testing and commissioning of **addressable optical smoke detector**, single/twin LED's with 360 degree view, suitable for low voltage 15 to 32 V DC two wires supply, in-built locking mechanism to check the removal and pilferage of the detector, in built isolation mode, start up current 300µA and alarm condition current shall be maximum 6.5 mA, operating temperature 0°C to 50°C, humidity 0-95% RH, IP 41, conforming to IS 2189: 2008, 11360_1985_Reff2020 EN 54 or UL Approved with 3 years equipment replacement warranty FF AFAS/SD . | Each |
| 32 | 13-10-9 (New) | 15 | Supplying, installing, testing and commissioning of **addressable manual call points** ( break glass type/pull station type), made of addressable break glass plastic square in shape surface/flush mounted with "Break Glass" massage embedded on the glass, complete erected with mounting base and required accessories conforming to EN 54 or UL listed with 3 years equipment replacement warranty FF-AFAS/MCP. | Each |
| 33 | 13-10-10 (New) | 4 | Supplying, installing, testing and commissioning of **addressable fire control/relay module** complete as required, with 3 years equipment replacement warranty conforming to IS 5051Part 2 (Sec 1 to 3) : 1982 reed relays, EN 54 or UL Listed FF-AFAS/CRM | Each |
| 34 | 13-10-11 (New) | 8 | Supplying, installing, testing and commissioning of **addressable fire monitor module** complete as required. EN 54 or UL Listed with 3 years equipment replacement warranty conforming to IS 5051Part 2 (Sec 1 to 3) : 1982 Reed relays FF-AFAS/MM | Each |
| 35 | 13-10-12 (New) | 12 | Supplying, installing, testing and commissioning of **addressable fire isolator module** complete as required. EN 54 /FM or UL Listed with 3 years equipment replacement warranty conforming to IS 5051Part 2 (Sec 1 to 3) : 1982 Reed relays FF-AFAS/ISM | Each |
| 36 | 13-10-13 (New) | 15 | Supplying, installing, testing and commissioning of **addressable horn cum strobe sound/ hooter**, output frequency 500 to 1000 Hz with dB as per Chart given in IS 15908:2021, with flashing at 1 Hz over the strobe's entire operating voltage range EN 54, conforming to IS 2189: 2008, IS 15908:2021 standards with 3 years equipment replacement warranty FF-AFAS/SSH. | Each |
| **TOTAL FOR SECTION- III** | | | | |

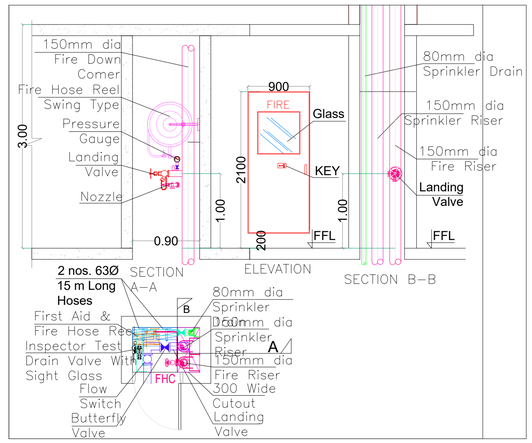
| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **SECTION- IV (PUBLIC ADDRESS SYSTEM)** | | | | |
| 37 | Non CSR | 1 | Supply & installation of **15U** 600mm x 650mm(D) **Floor mount Rack** with Front Glass Door, Fan Tray on Top, Perforated Rear Doors, Openable Entry at the Bottom for the Cable entry, Cable Basket for Cable Dressing & 2 Nos Vertical Power Strip with all necessary accessories & hardware (**for mounting Amplifier, Zone controller etc**) | Each |
| 38 | Non CSR | 58 | Supply, installation, testing & commissioning of **6 Watt Cone type Ceiling Mounted metal grill Speakers** with line matching transformer, Power tapping: 1.5W/3W/6W, Frequency response: 100-20000 Hz. SPL (1W 1m) 92 dB, including screw clamp mounting with required accessories. (Colour - White) | Each |
| 39 | Non CSR | 13 | Supply, Installation, testing and commissioning of **6 Watt column/wall mount Box type speaker** with line matching transformer, Power tapping: 3W/6W, fire protected **ABS or Metal cabinet**, includes a steel U-bracket, with adjustable inclination and easy installation with required accessories. | Each |
| 40 | Non CSR | 1 | Supply, installation, testing & commissioning of EN-54 Certified **Digital EVAC PA controller** with **built in audio message generator** (multi message)**,** capable of adding **8 Zones** in the system and expandable upto 400 zones with 14x 4 Audio matrix withAudio matrix with full DSP functionality. 8 audio inputs, 4 audio outputs, 4 channel output matrix. amplifier redundany, 4 x 100V audio inputs and built in 8 zone speaker line outputs. 8000 fault, warning and event conditions log. Built in message manager for 100 emergency/business calls up to 85 minutes. Should be able to send 2 different pre-recorded messages simultaneously (**message should be in 2 languages English & Hindi**). Shall be able to handle up to 2000Watt load, 10 routers, 6 call stations, 128 speaker zones. The controller should integrates multiple functions such as audio storage, playback, zone control, audio monitoring, scheduled broadcast and fault diagnosis, audio playing, zone control, fault monitoring, log recording, volume control and amplifier switchover etc. complete with cords, connectors, power supply & required accessories. | Each |
| 41 | Non CSR | 1 | Supply, installation, testing & commissioning of EN-54 certified Digital **1 x 500W Class D**, **high efficiency amplifier**. 70/100V loudspeaker output voltages, galvanically separated, 4 automatic selectable audio inputs on RJ45, local input, Audio input level limiter, RMS output power limiter, high temperature, DC, short circuit, mains undervoltage protection, DC supply undervoltage protection, inrush current limiter with cords, connectors, power supply & required accessories. | Each |
| 42 | Non CSR | 1 | Supply, installation, testing & commissioning of **Call Station** (**upto 8 zones**) , built in numerical keypad, LCD display, gooseneck microphone with supervised electret microphone, five menu/function keys, 15 customizable function and speed dial buttons. Possible to use keys for Zone select, source select, level control, emergency on/off, message on/off, failure acknowledge / reset, Switching output trigger on/off or 0 to 10V, select scheduled events, scheduled event on/off. Call Station is supervised by system controller can be expanded by connecting 5 additional extention keypads with required accessories. | Each |
| 43 | 13-11-10 | 925 | Supplying, erecting, testing and commissioning of multistrand annealed bare copper conductor, transparent **PVC insulated 2C x 1.5 sqmm speaker wire** in provided trunking/conduit etc.complete as per specification no. PA-TSPWR | m |

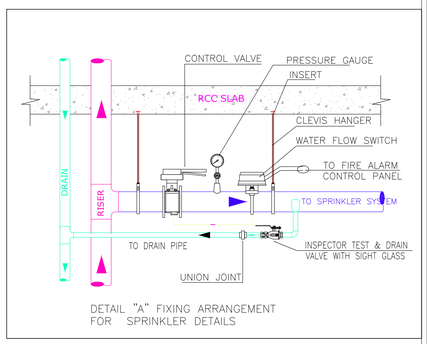


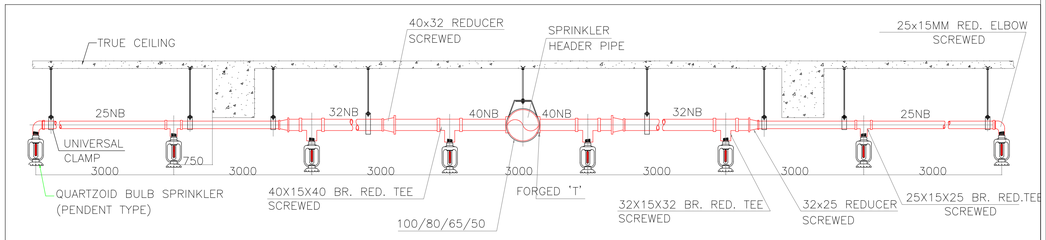

FIRE FIGHTING LEGEND:–

| | | | |
|---|---|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | | 50mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 150mmø SPRINKLER RISER (G.I. 'C' CLASS WELDED JOINT) | | 40mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 80mmø SPRINKLER DRAIN (G.I. 'C' CLASS WELDED JOINT) | | 32mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| UPRIGHT SPRINKLER | | 25mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| SPRINKLER 68° | | 100mm DiaSPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 150mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | | 6kg ABC DRY POWDER EXTINGUISHERS | |
| 80mm Dia SPRINKLER DRAIN LINE (G.I. 'C' CLASS WELDED JOINT) | | 4.5kg CARBON DI OXIDE EXTINGUISHERS | |
| 80mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | | BUTTERFLY VALVE | |
| 65mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | | FLOW SWITCH | |



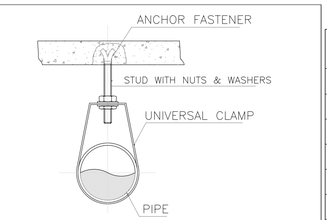

DETAIL "A" FIXING ARRANGEMENT FOR SPRINKLER DETAILS




FIXING DETAILS OF SPRINKLERS AT CEILING LEVEL

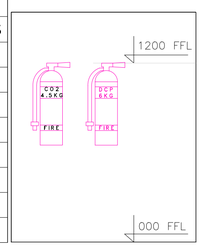
## PIPE SUPPORT DETAILS

| PIPE SIZE | DISTANCE BETWEEN HANGERS | STUD ROD SIZES |
|---|---|---|
| 25 MMø | 3.0 M. | 10 MM. |
| 32 MMø | 3.0 M. | 10 MM. |
| 40 MMø | 3.0 M. | 10 MM. |
| 50 MMø | 3.0 M. | 10 MM. |
| 65 MMø | 3.0 M. | 10 MM. |
| 80 MMø | 3.0 M. | 10 MM. |
| 100 MMø | 2.5 M. | 12 MM. |
| 150 MMø | 2.5 M. | 12 MM. |




TYPICAL PIPE SUPPORT

| PIPING SCHEDULE FOR SPRINKLER SYSTEM | |
|---|---|
| PIPE DIA | NO. OF SPRINKLERS |
| 25mm | 2 SPRINKLERS |
| 32mm | 3 SPRINKLERS |
| 40mm | 06 SPRINKLERS |
| 50mm | 09 SPRINKLERS |
| 65mm | 18 SPRINKLERS |
| 80mm | 40 SPRINKLERS |
| 100mm | 100 SPRINKLERS |
| 150mm | 275 SPRINKLERS |






ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS IN METERS, UNLESS OTHERWISE SPECIFIED. THE DRAWING IS NOT BE SCALED THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.DISCREPANCIES IF ANY SHALL BE IMMEDIATELY BROUGHT TO THE NOTICE OF THE CONSULTANT.

| R.NO. | DATE | REVISION |
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PLUMBING & FIRE FIGHTING CONSULTANTS
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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT: College of engineering, pune

JOB TITLE: Yashawantrao chavan academy of development administration

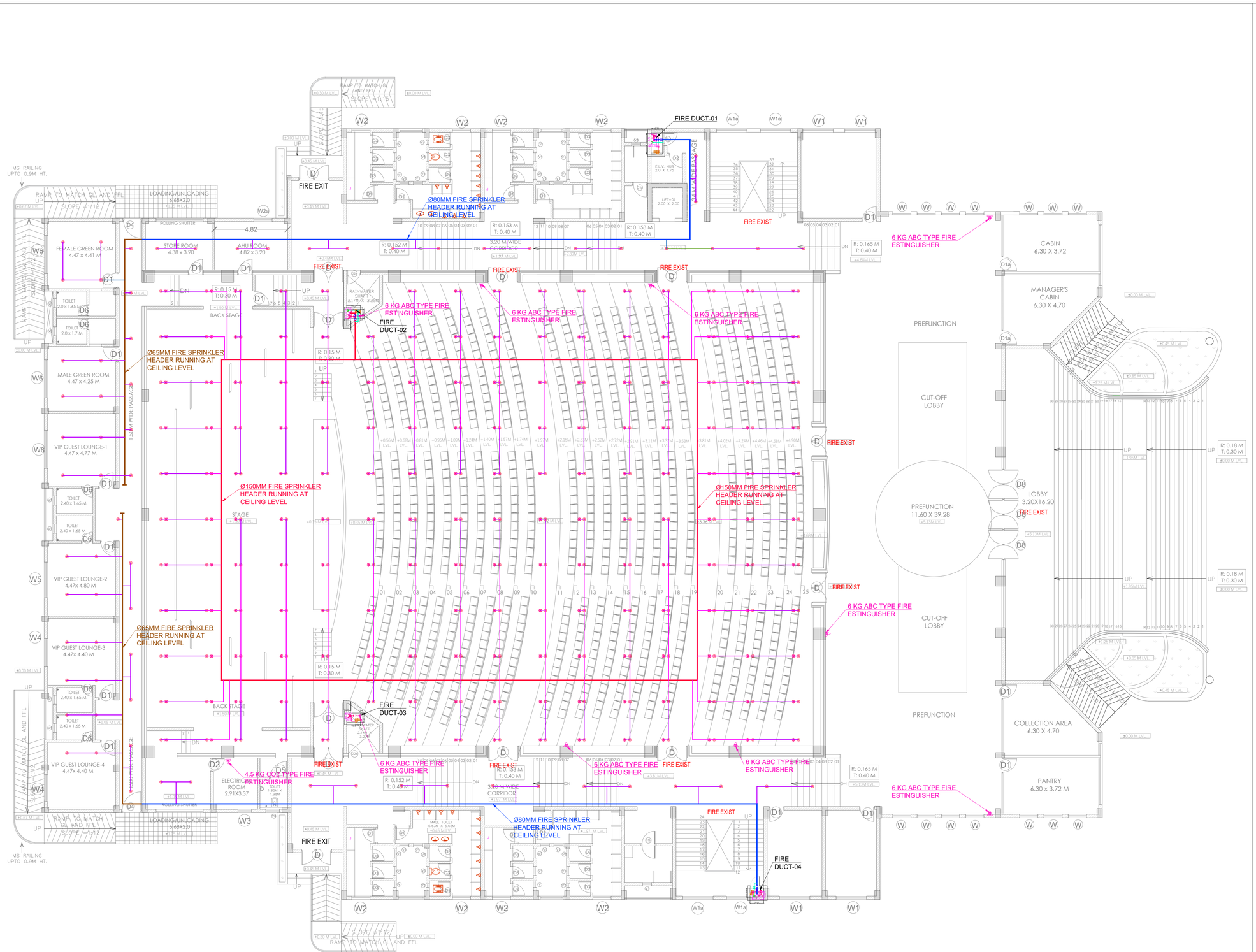
DRAWING TITLE: FF SERVICES FOR CONVENTION CENTE GROUND FLOOR PLAN

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:100 | AS | ND |

ISSUE FOR: FOR APPROVAL

DATE OF ISSUE: 04 MAR 2024

| PROJECT NO. | SHEET NUMBER | REV. # | PAPER SIZE |
|---|---|---|---|
| SCS/24/445 | C_FF_200 | R1 | A1 |




| FIRE FIGHTING LEGEND:– | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 150mmø SPRINKLER RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 80mmø SPRINKLER DRAIN (G.I. 'C' CLASS WELDED JOINT) | |
| UPRIGHT SPRINKLER | |
| SPRINKLER 68° | |
| 150mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 80mm Dia SPRINKLER DRAIN LINE (G.I. 'C' CLASS WELDED JOINT) | |
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| 40mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
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| 100mm DiaSPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |
| BUTTERFLY VALVE | |
| FLOW SWITCH | |

| PIPING SCHEDULE FOR SPRINKLER SYSTEM | |
|---|---|
| PIPE DIA | NO. OF SPRINKLERS |
| 25mm | 2 SPRINKLERS |
| 32mm | 3 SPRINKLERS |
| 40mm | 06 SPRINKLERS |
| 50mm | 09 SPRINKLERS |
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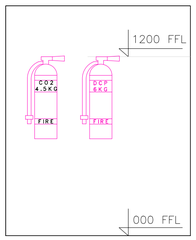




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CLIENT
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JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
FF SERVICES FOR CONVENTION CENTER FIRST FLOOR PLAN

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:125 | AS | ND |

ISSUE FOR:
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DATE OF ISSUE
04 MAR 2024

| PROJECT NO. | SHEET NUMBER | REV. # | PAPER SIZE |
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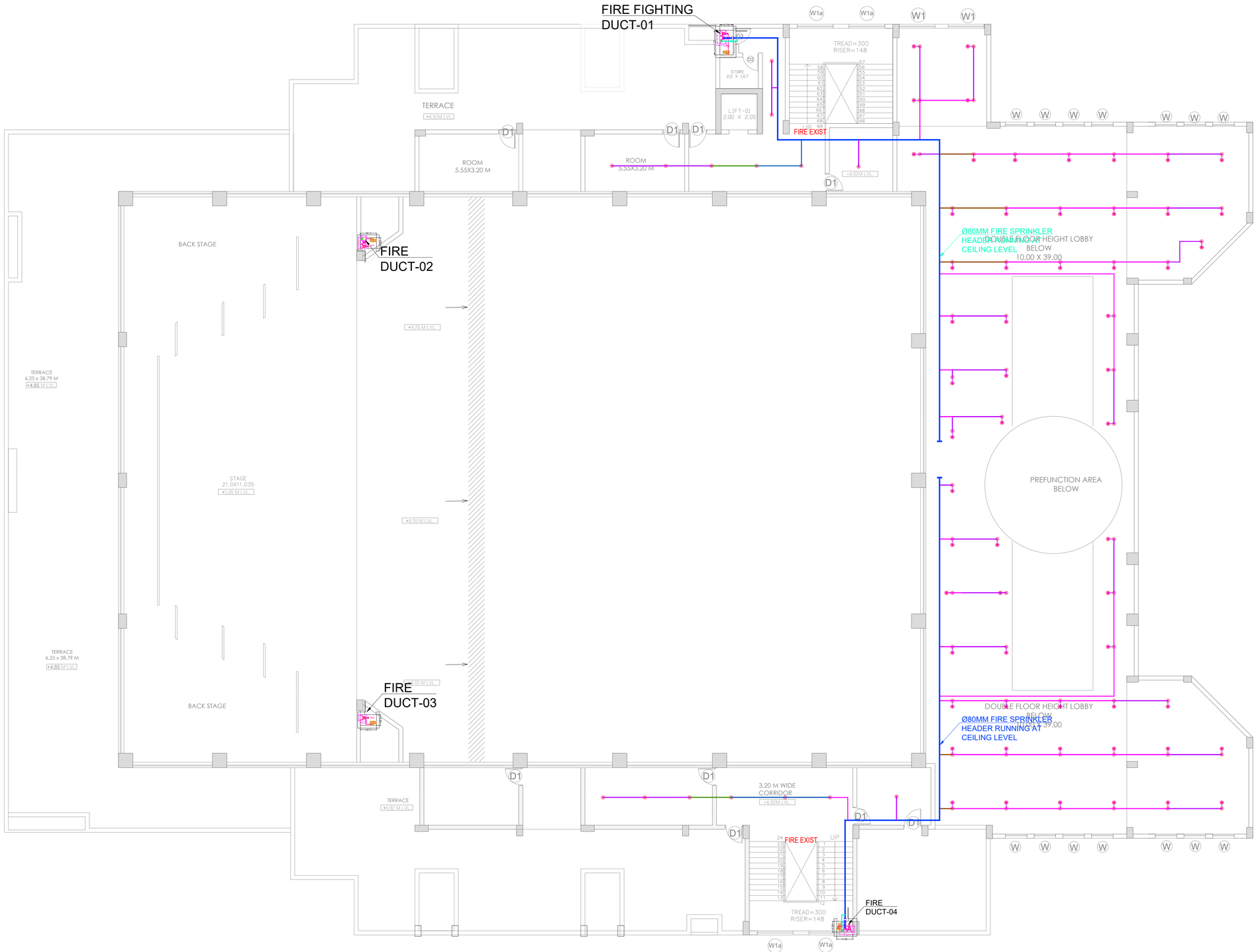
| SCS/24/445 | C_FF_201 | R1 | A1 |




2ND FLOOR PLAN

FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
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| 50mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 40mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
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| BUTTERFLY VALVE | |
| FLOW SWITCH | |

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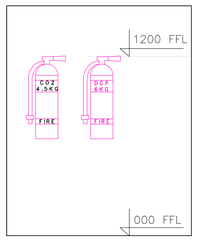




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Yashawantrao chavan academy of development administration

DRAWING TITLE:
FF SERVICES FOR CONVENTION CENTER 2ND FLOOR PLAN

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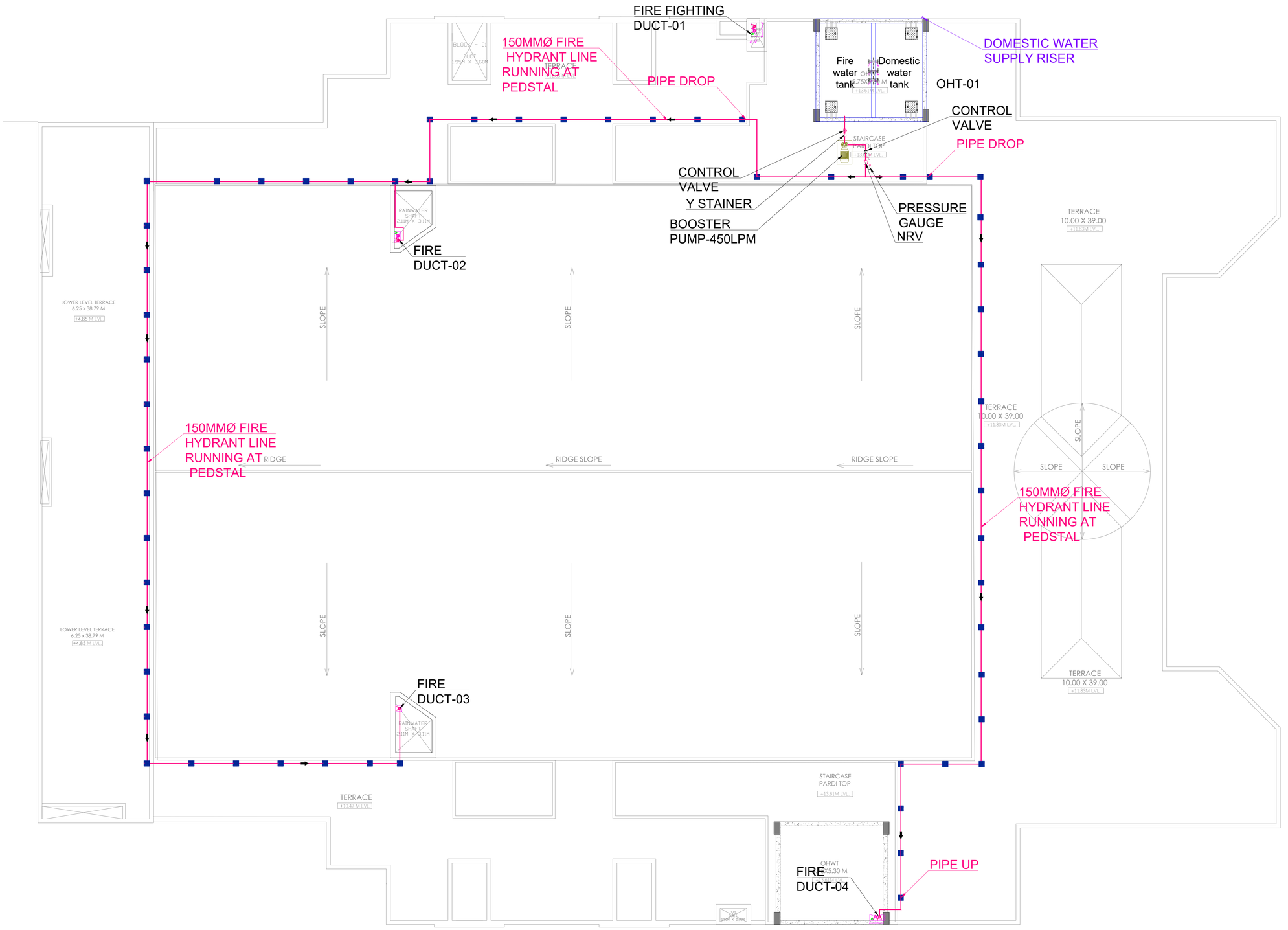
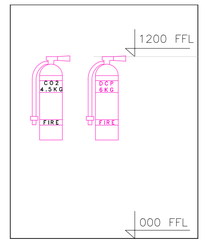



OHT LVL. FLOOR PLAN

FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 150mmø SPRINKLER RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 80mmø SPRINKLER DRAIN (G.I. 'C' CLASS WELDED JOINT) | |
| UPRIGHT SPRINKLER | |
| SPRINKLER 68° | |
| 150mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 80mm Dia SPRINKLER DRAIN LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 80mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 65mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 50mm Dia SPRINKLER HEADER LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 40mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 32mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 25mm DiaSPRINKLER BRANCH LINE (G.I. 'C' CLASS THREADED JOINT) | |
| 100mm DiaSPRINKLER HEADER LINE (G.I. 'C' CLASS WELDED JOINT) | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |
| BUTTERFLY VALVE | |
| FLOW SWITCH | |

| PIPING SCHEDULE FOR SPRINKLER SYSTEM | |
|---|---|
| PIPE DIA | NO. OF SPRINKLERS |
| 25mm | 2 SPRINKLERS |
| 32mm | 3 SPRINKLERS |
| 40mm | 06 SPRINKLERS |
| 50mm | 09 SPRINKLERS |
| 65mm | 18 SPRINKLERS |
| 80mm | 40 SPRINKLERS |
| 100mm | 100 SPRINKLERS |
| 150mm | 275 SPRINKLERS |



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CLIENT
College of engineering, pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
FF SERVICES FOR CONVENTION CENTER OHT LVL. FLOOR PLAN

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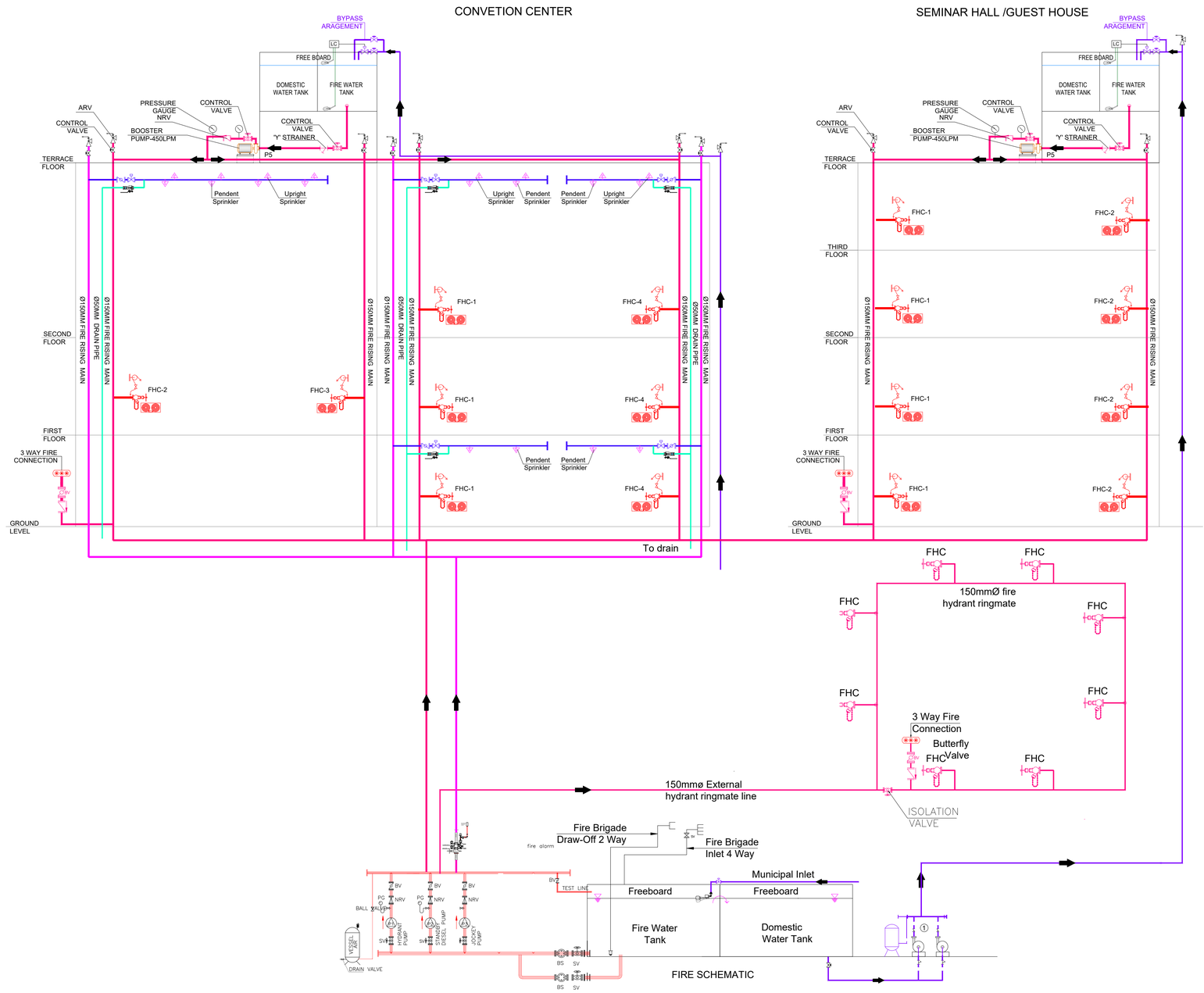
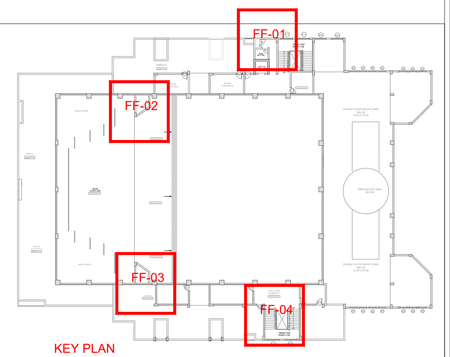



FIRE SHEMATIC DETAIL

FIRE LEGEND

| | |
|---|---|
| | FIRE WATER RISING MAIN |
| | SPRINKLER RISING MAIN |
| | SPRINKLER DRAIN |
| CV | CONTROL VALVE |
| NRV / NV | NON RETURN VALVE |
| YS | 'Y' STRAINER |
| ARV | AIR REALEASE VALVE |
| WM | WATER METER |
| SV | SLUICE VALVE |
| AV | AIR VESSEL |
| | SOLENOID VALVE |
| | INSPECTOR TEST & DRAIN VALVE WITH SIGHT GLASS |
| | BALL COCK VALVE |
| | FLOW SWITCH |
| | PENDANT TYPE SPRINKLER |
| | PRESSURE GAUGE WITH SYPHONE TUBE |
| | FOOT VALVE |
| | GLOBE / BALL VALVE |
| BV | BUTTERFLY VALVE |




KEY PLAN



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DRAWING TITLE: FF SERVICES FOR CONVENTION FIRE SCHEMATIC DETAIL

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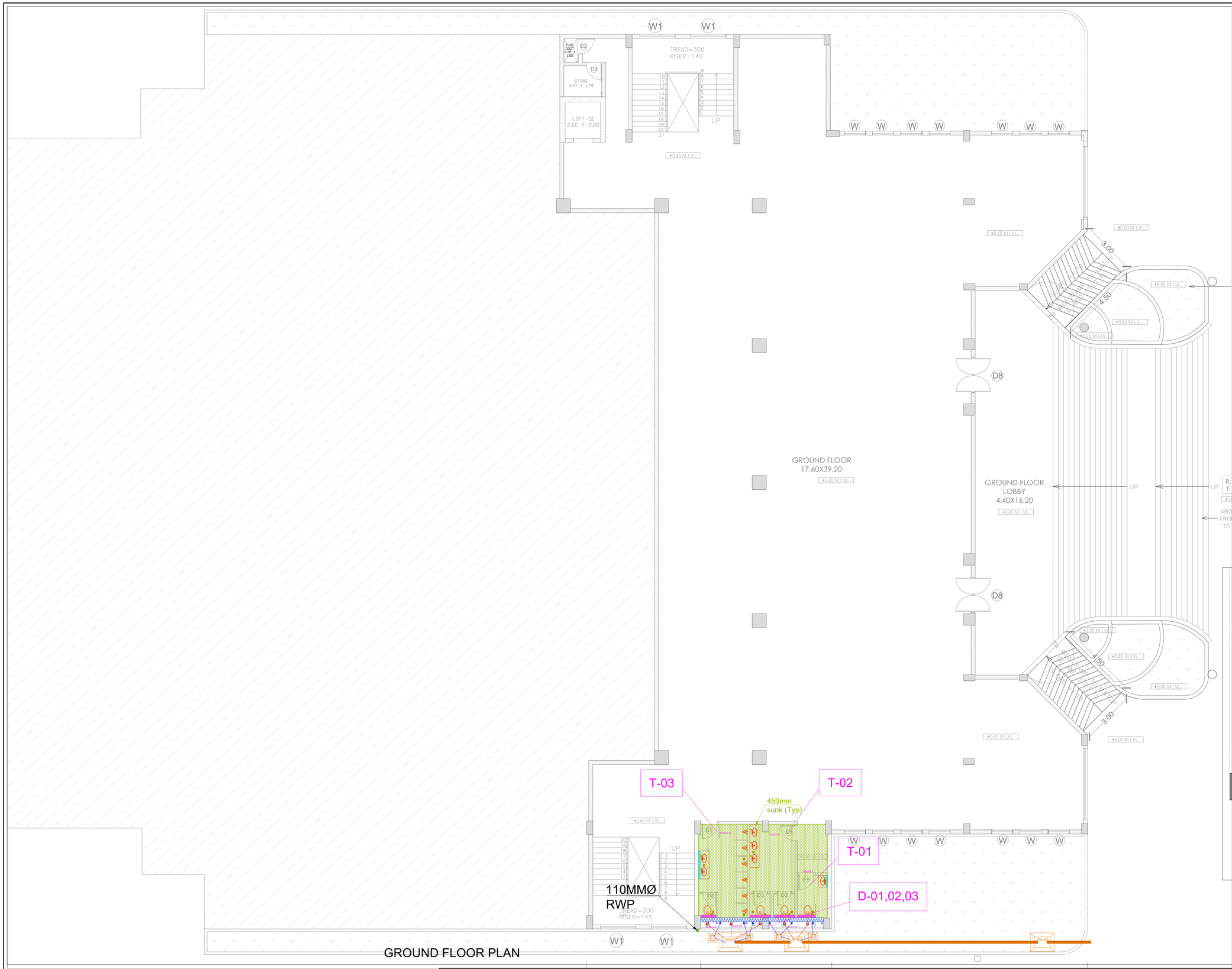
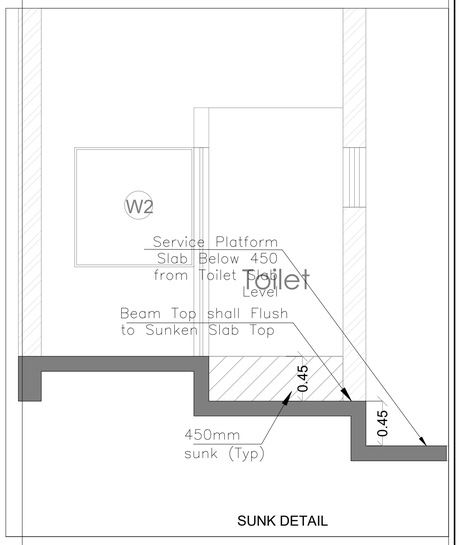



## PLUMBING LEGEND

| | |
|---|---|
| 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) | |
| 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) | |
| 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) | |
| 4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) | |
| 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) | |
| 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD-40, SOLVENT JOINT) | |
| | 300MM SUNK |
| | 450MM SUNK |
| | 250MM RAISE |
| | FOR EASY CROSSINGS OF PLUMBING PIPES THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP) |
| | PEDESTAL 300mm @ 2500MM SPACING |

## LEGEND

| | |
|---|---|
| | EXTERNAL DRAINAGE LINE |
| | EXTERNAL STORM WATER LINE |
| GT | 300mm X 300mm GULLY TRAP CHAMBER |
| 300x600 | 900mm x 600mm DRAINAGE CHAMBER |
| 600x600 | 600MM X 600MM STORM WATER CHAMBER |
| 900x900 | 900MM X 900MM STORM WATER CHAMBER |




SUNK DETAIL



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| JOB TITLE | Yashawantrao chavan academy of development administration |
| DRAWING TITLE: | PHE SERVICES FOR CONVENTION CENTER GROUND FLOOR PLAN |
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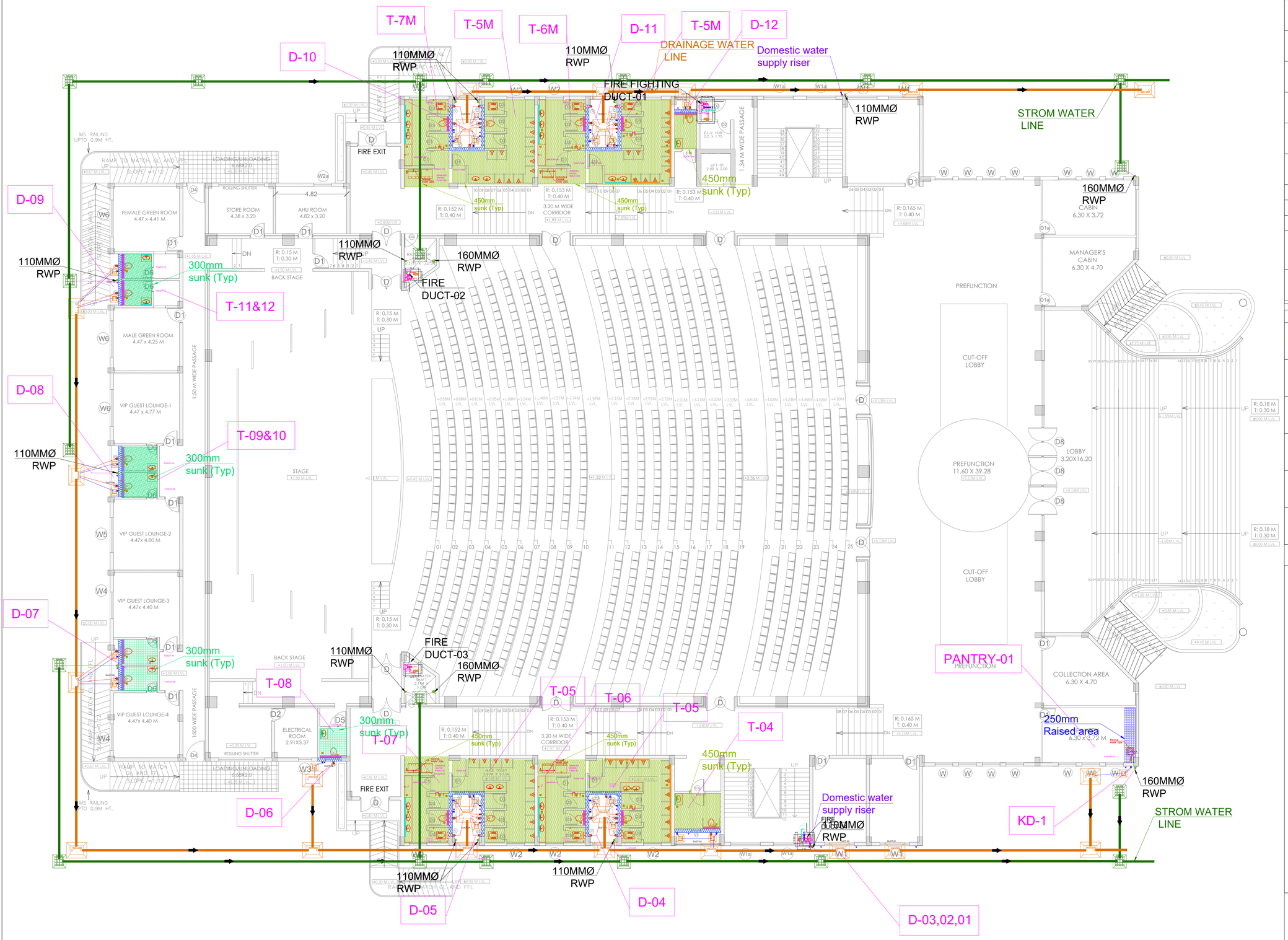



1ST FLOOR PLAN

## PLUMBING LEGEND

1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT)
10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT)

300MM SUNK

450MM SUNK

250MM RAISE

FOR EASY CROSSINGS OF PLUMBING PIPES THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP)

PEDESTAL 300mm @ 2500MM SPACING

## LEGEND

EXTERNAL DRAINAGE LINE

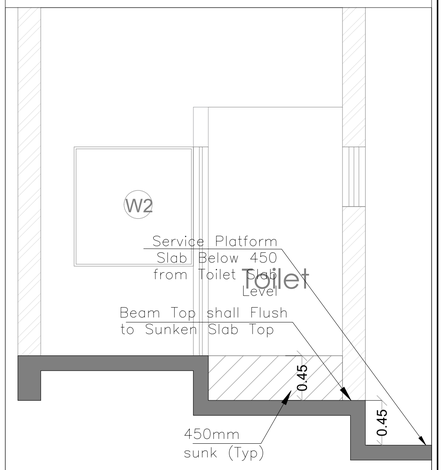
EXTERNAL STORM WATER LINE

300mm X 300mm GULLY TRAP CHAMBER

900mm x 600mm DRAINAGE CHAMBER

600MM X 600MM STORM WATER CHAMBER

900MM X 900MM STORM WATER CHAMBER

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DRAWING TITLE: PHE SERVICES FOR CONVENTION CENTER FIRST FLOOR PLAN

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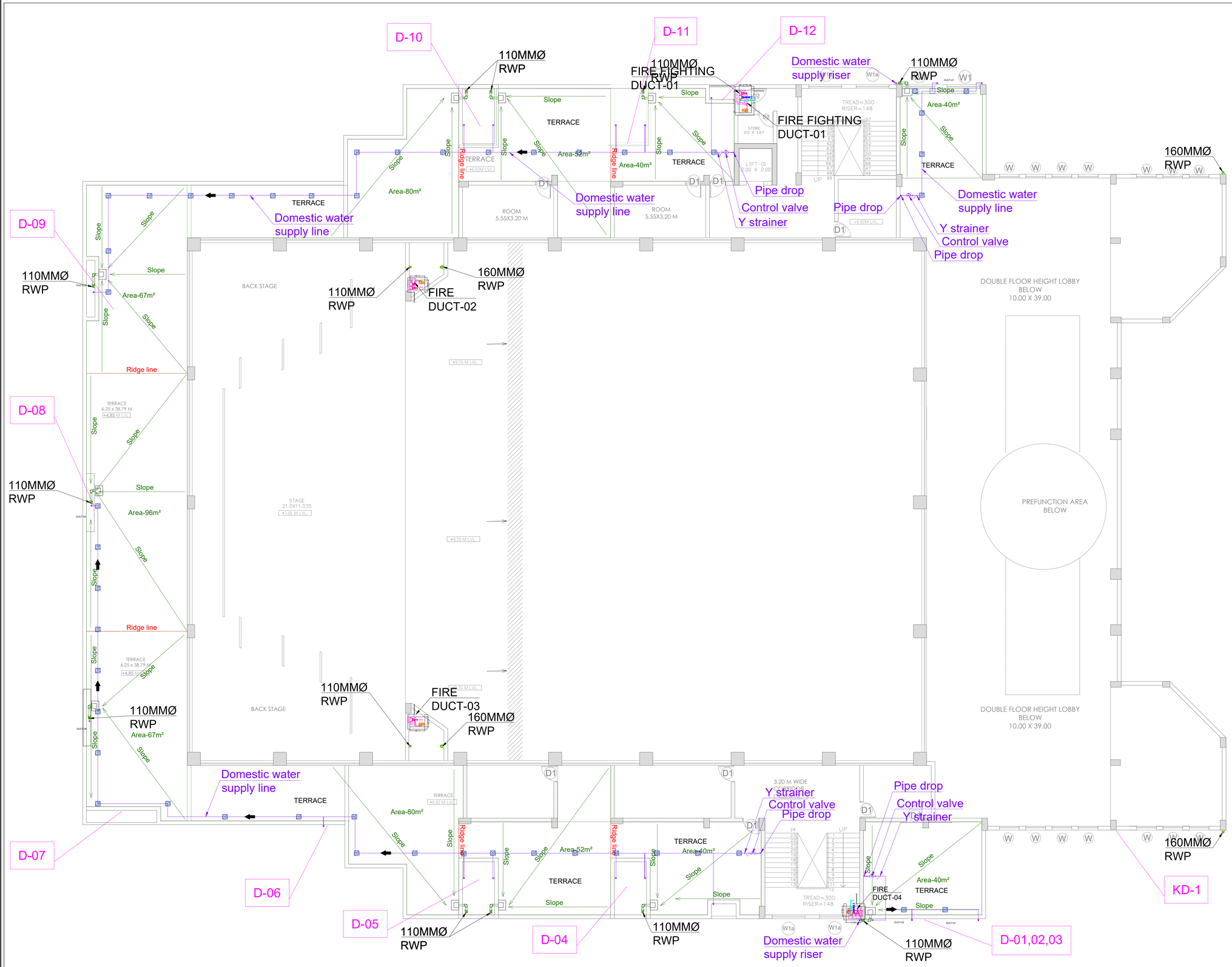
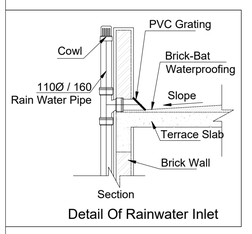


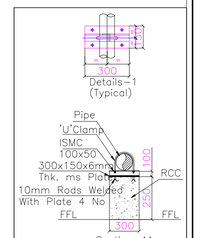

2ND FLOOR PLAN

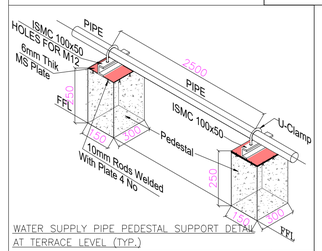
## PLUMBING LEGEND

| | |
|---|---|
| 1. | 110mmØ SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| 2. | 75mmØ WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| 4. | 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| 4A. | 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| 5. | DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| 10. | DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT) |

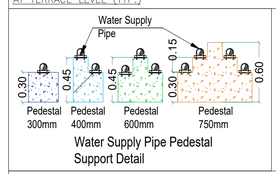



Detail Of Rainwater Inlet




WATER SUPPLY PIPE PEDESTAL SUPPORT DETAIL AT TERRACE LEVEL (TYP.)




Water Supply Pipe Pedestal Support Detail



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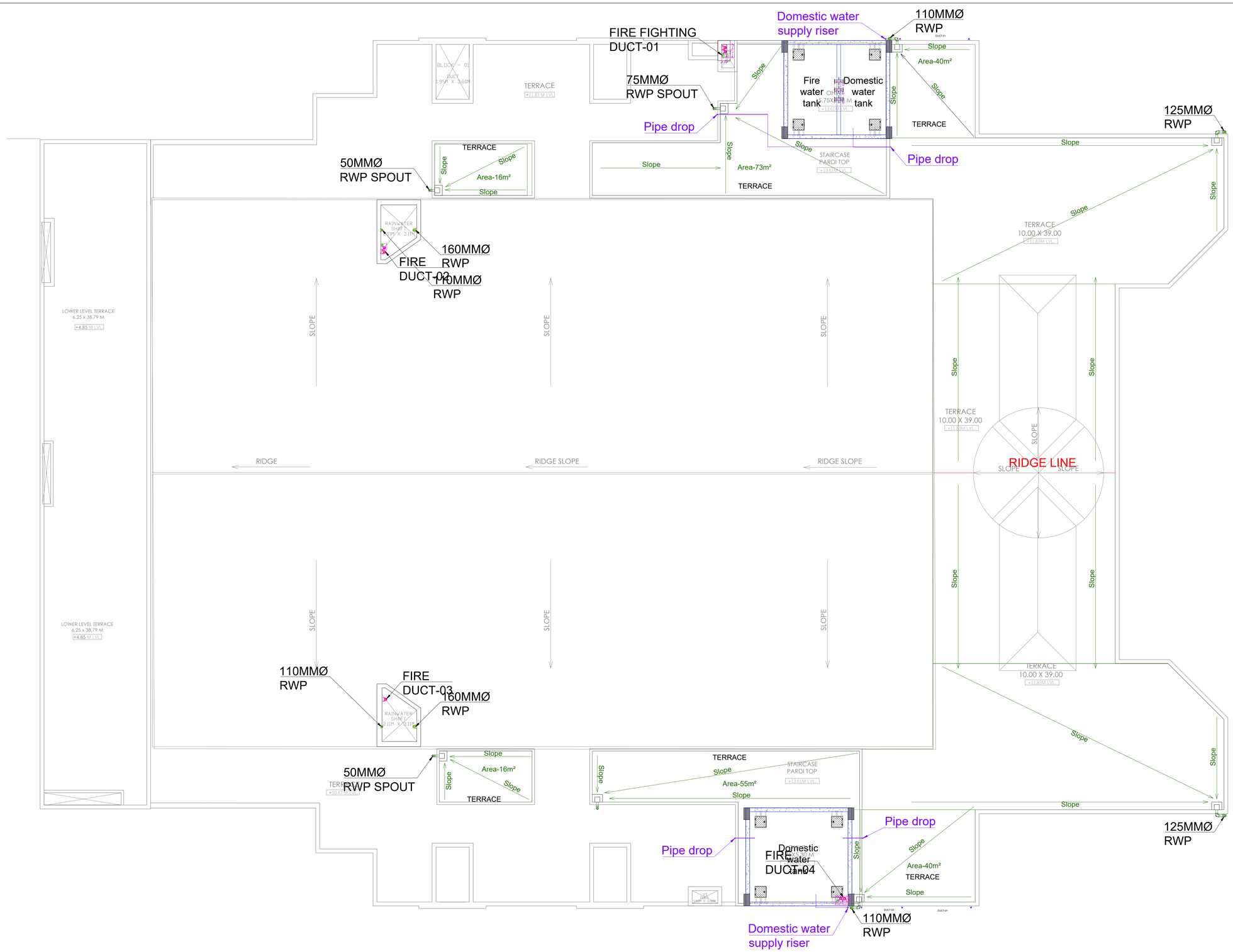


## PLUMBING LEGEND

| | |
|---|---|
| 1. | 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| 2. | 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| 4. | 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
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| 5. | DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
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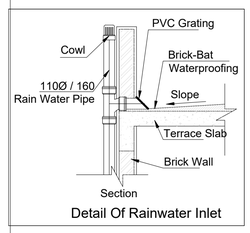
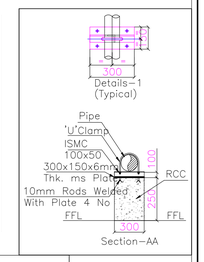
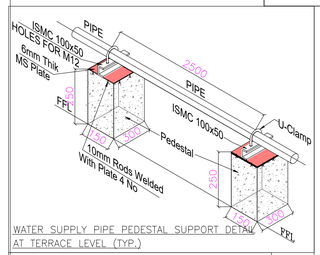
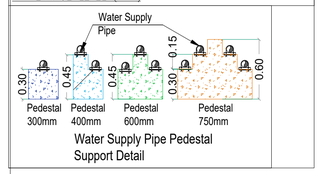



Detail Of Rainwater Inlet




WATER SUPPLY PIPE PEDESTAL SUPPORT DETAIL AT TERRACE LEVEL (TYP.)




Water Supply Pipe Pedestal Support Detail

## OHT LVL. FLOOR PLAN



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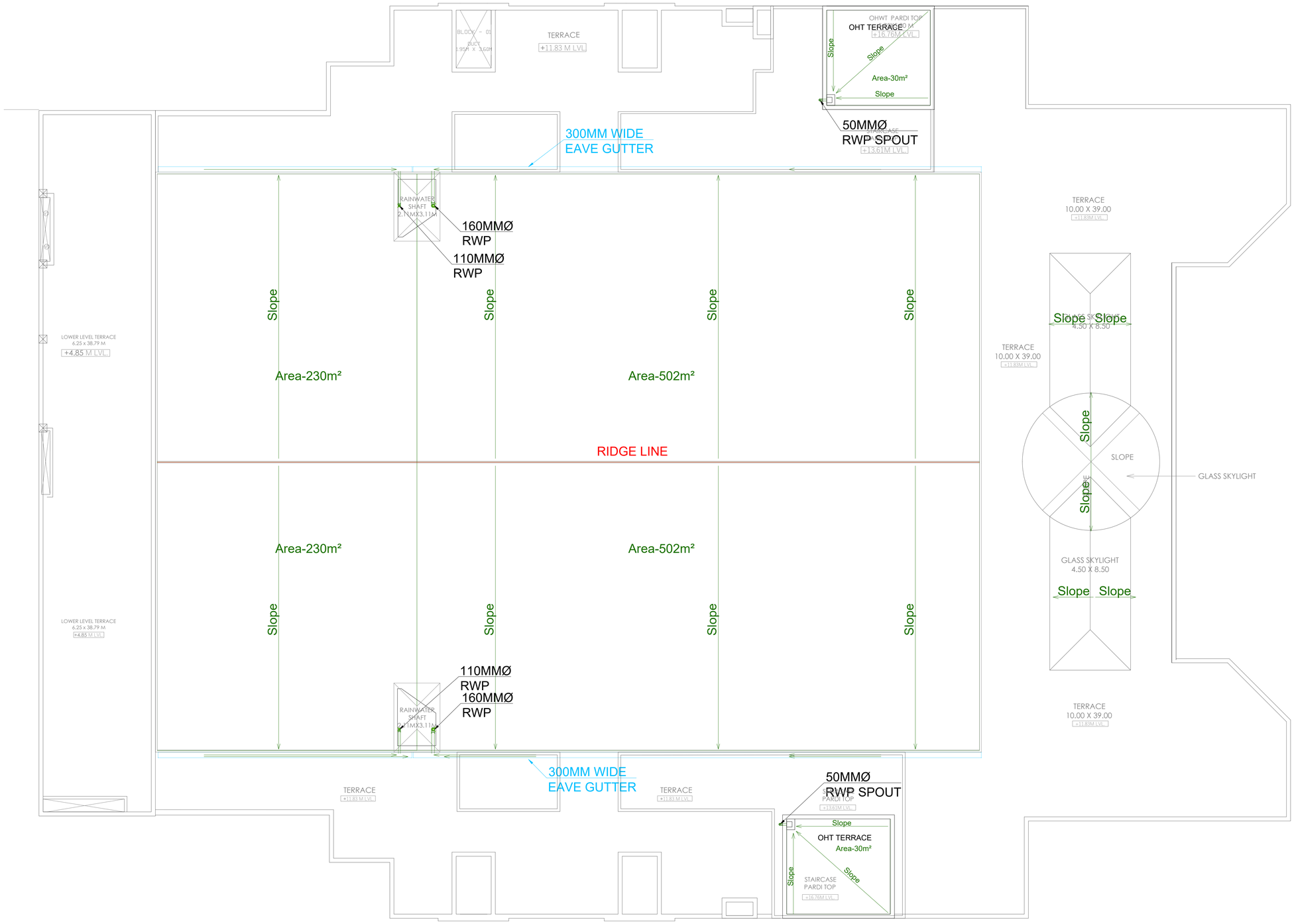


## PLUMBING LEGEND

| | |
|---|---|
| 1. | 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| 2. | 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| 4. | 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
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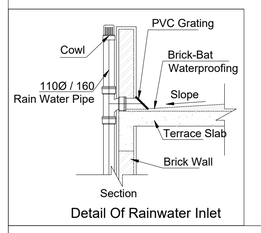
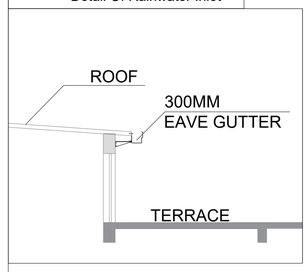



Detail Of Rainwater Inlet

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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

| | |
|---|---|
| CLIENT | College of engineering, pune |
| JOB TITLE | Yashawantrao chavan academy of development administration |
| DRAWING TITLE: | PHE SERVICES FOR CONVENTION CENTER ROOF LEVEL PLAN. |
| SCALE | 1:100 |
| DRAWN | AS |
| CHECKED | ND |
| ISSUE FOR: | FOR APPROVAL |
| DATE OF ISSUE | 04 MAR 2024 |
| PROJECT NO. | SCS/24/445 |
| SHEET NUMBER | C_PL_204 |
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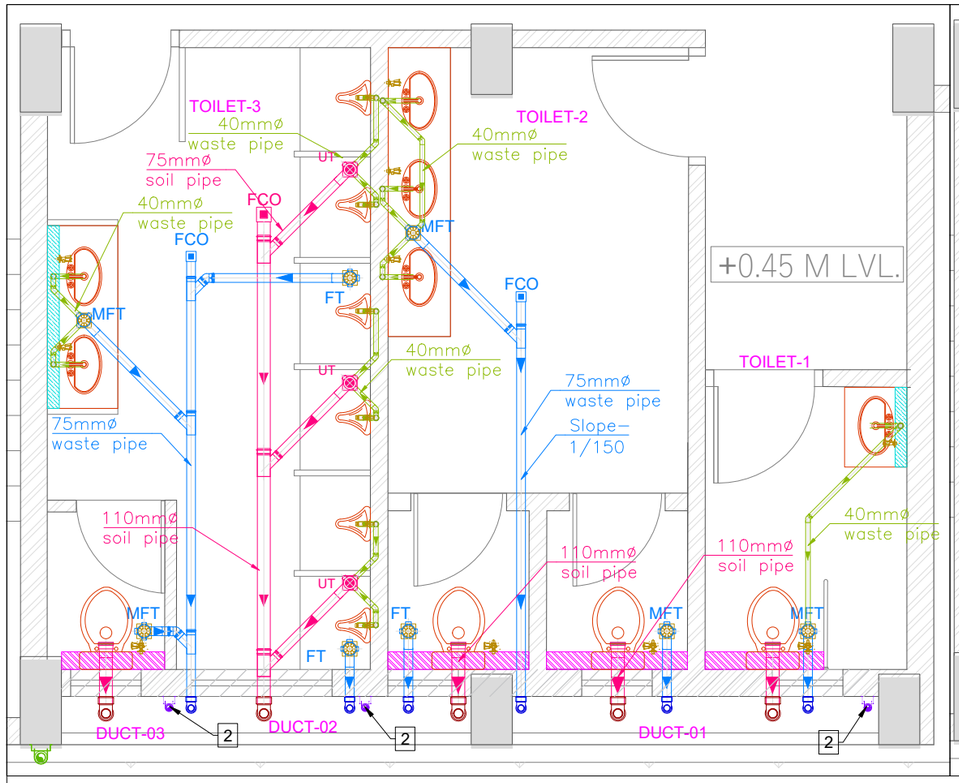
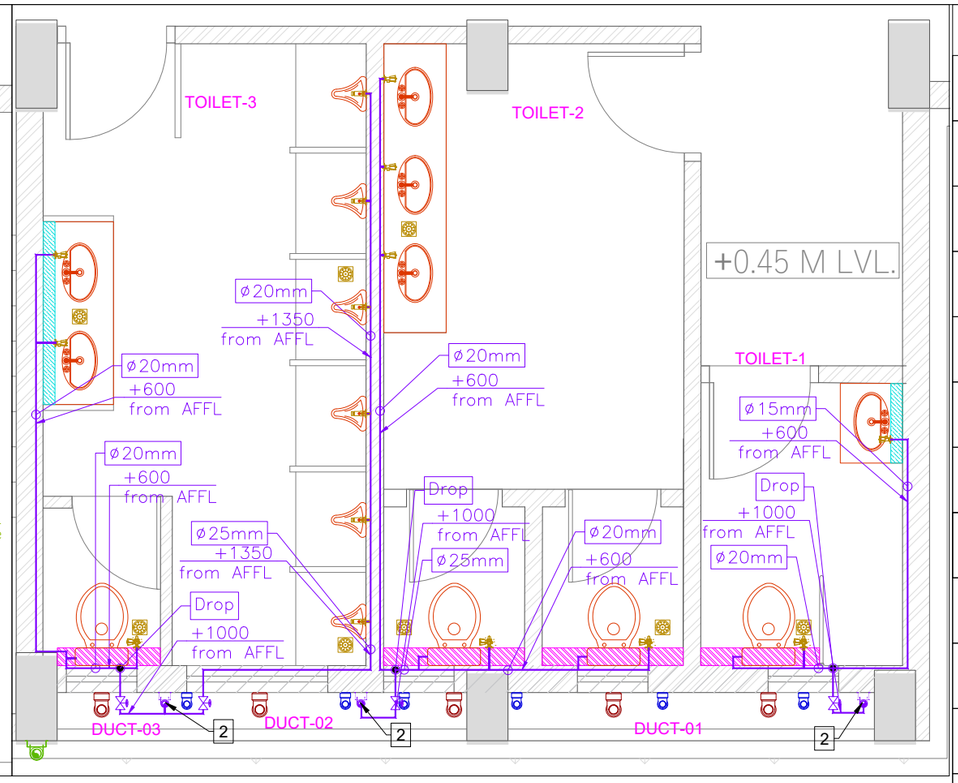
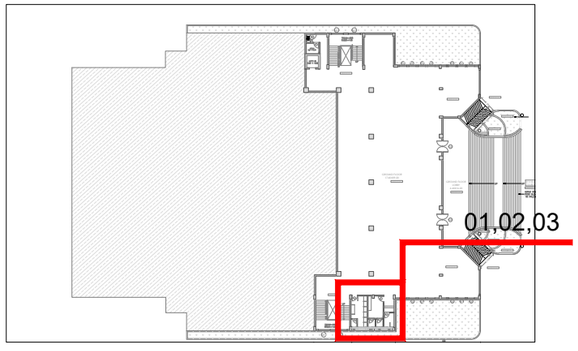



T-01,02,03
: SOIL, WASTE & VENT PIPE DETAIL




T-01,02,03
: WATER SUPPLY PIPE




KEY PLAN
GROUND FLOOR(LVL.+0.45)

## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT) |
| | 110mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 75mmø WASTE LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 75mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 50mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |



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CLIENT
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JOB TITLE
**COEP technological university, shivajinagar, pune - 411 005**

DRAWING TITLE:
PHE SERVICES FOR CONVENTION CENTER TOILET -01,02,03DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1/50 | AS | ND |

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24 Feb 2024

| PROJECT NO. | SHEET NUMBER | REV. # | PAPER SIZE |
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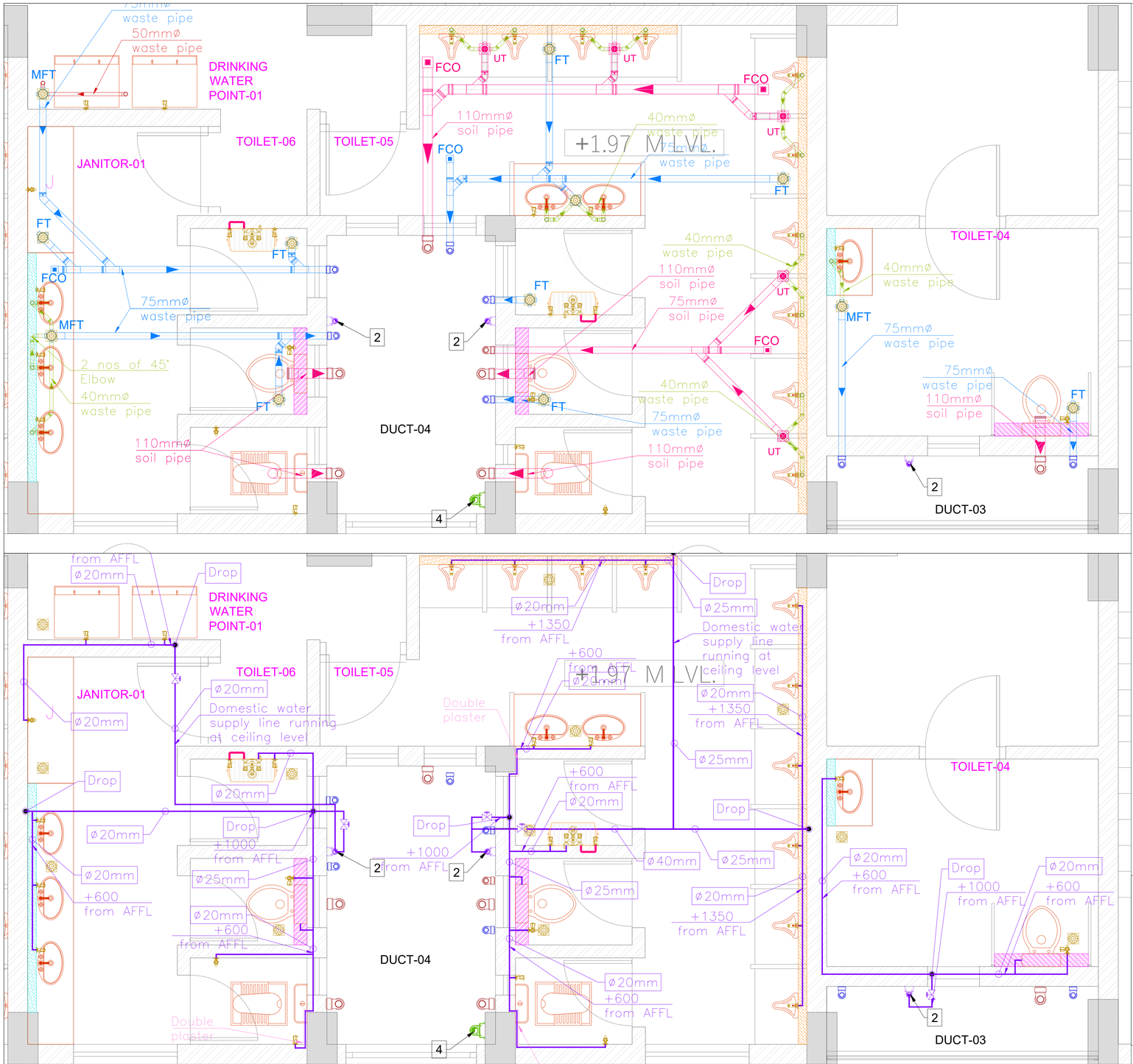
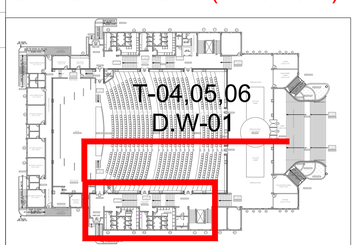



T-04,05,06
DRINKING POINT-01
: SOIL, WASTE & VENT PIPE DETAIL

T-04,05,06
DRINKING POINT-01
: WATER SUPPLY PIPE

KEY PLAN
GROUND FLOOR(LVL.+1.52)




## PLUMBING LEGEND

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| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |



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CLIENT
College of engineering, pune

JOB TITLE
**COEP technological university, shivajinagar, pune - 411 005**

DRAWING TITLE:
PHE SERVICES FOR CONVENTION CENTER TOILET-04,05,06 , DRINKING WATER POINT-01 DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1/50 | AS | ND |

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DATE OF ISSUE: 24 Feb 2024

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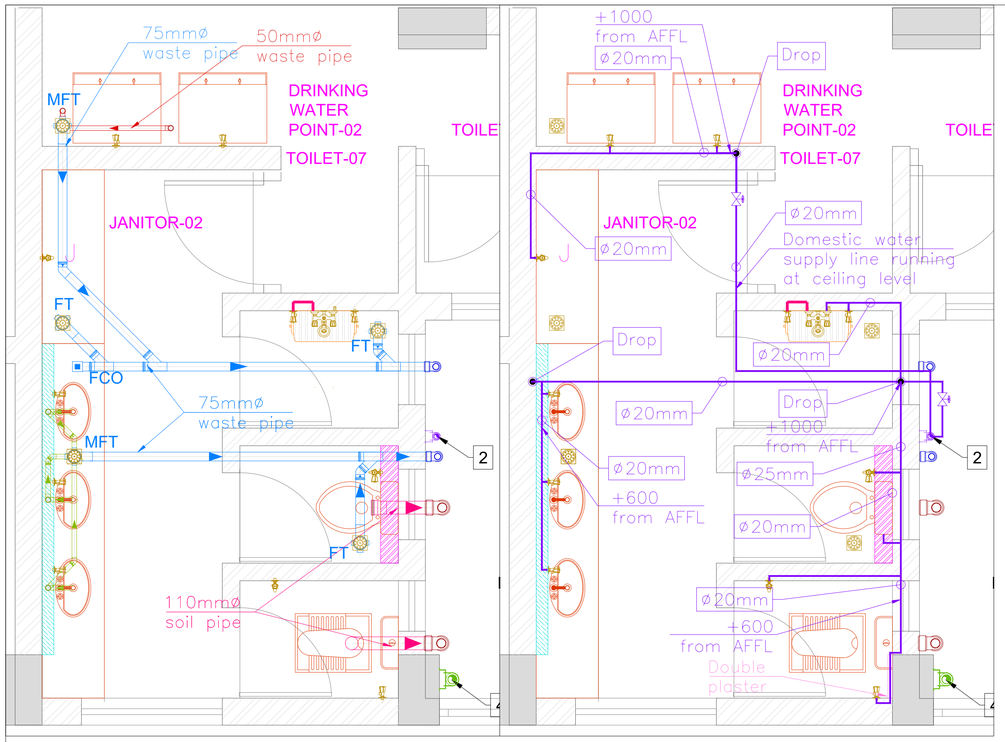
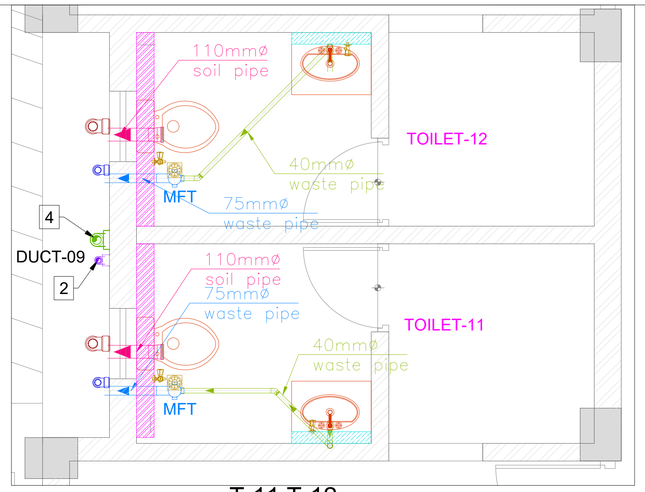
| SCS/24/445 | C_PL_301 | R0 | A3 |

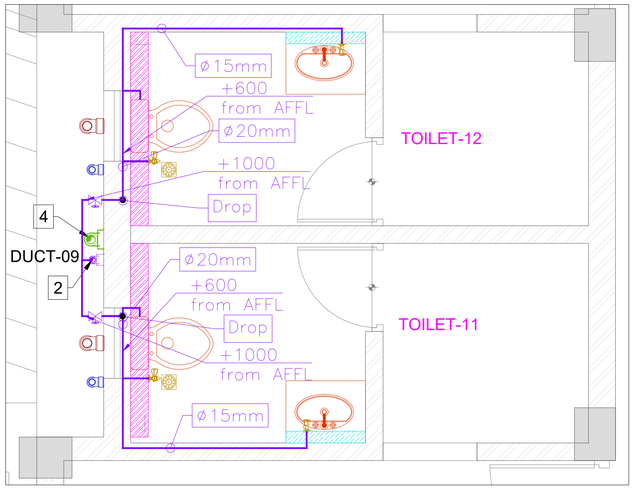



T-07,DRINKING WATER POINT-02
: SOIL, WASTE & VENT PIPE DETAIL

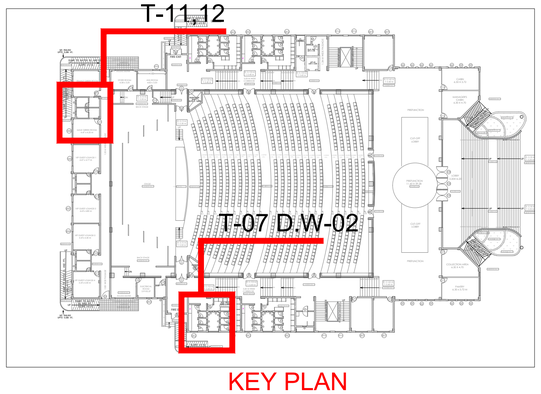
T-07,DRINKING WATER POINT-02
: WATER SUPPLY PIPE




T-11,T-12
SOIL, WASTE & VENT PIPE DETAIL




T-11,12
WATER SUPPLY PIPE




KEY PLAN
GROUND FLOOR(LVL.+0.45 & +1.97)

## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
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| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
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CLIENT
College of engineering, pune

JOB TITLE
**COEP technological university, shivajinagar, pune - 411 005**

DRAWING TITLE:
PHE SERVICES FOR CONVENTION CENTER TOILET- 04,05 ,L.TOILET-2A ,DRINKING WATER POINT-1A DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1/50 | AS | ND |

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DATE OF ISSUE
24 Feb 2024

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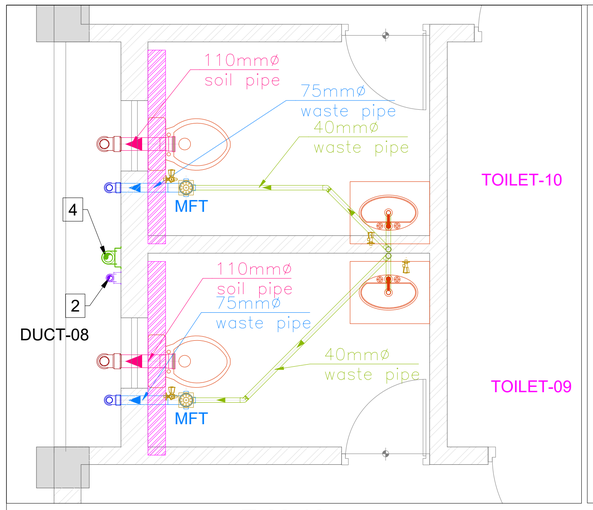
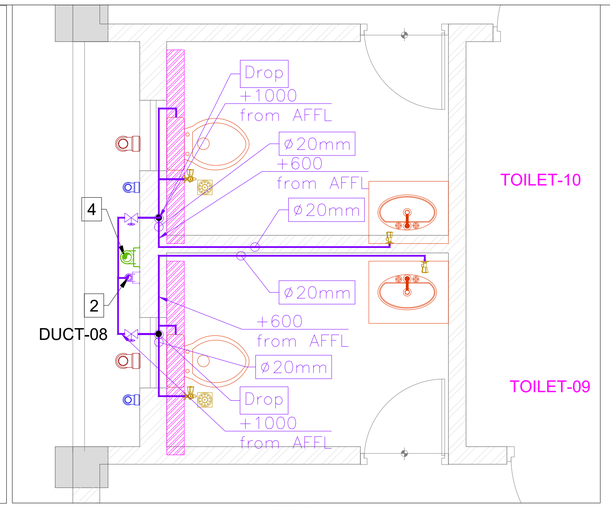
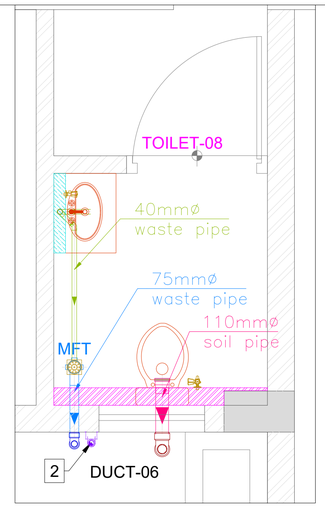
| SCS/24/445 | C_PL_302 | R0 | A3 |



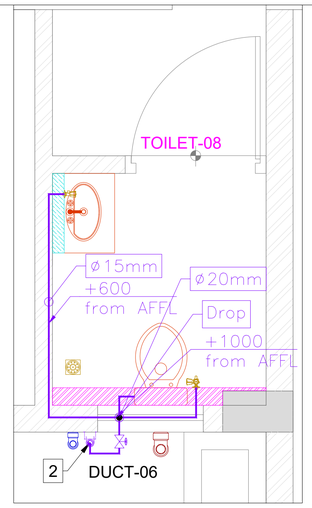

T-09,10
SOIL, WASTE & VENT PIPE DETAIL



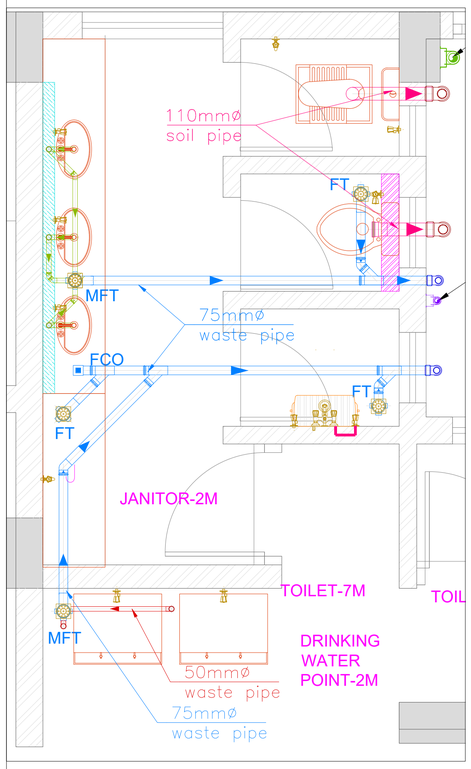

T-09,10
WATER SUPPLY PIPE



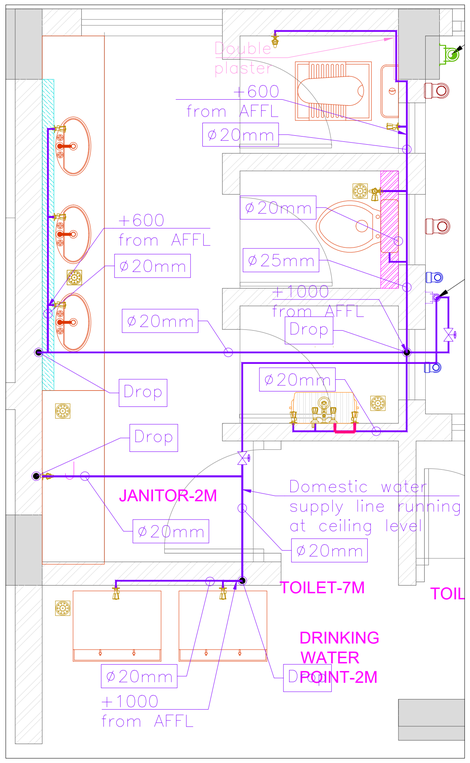

T-08
SOIL, WASTE & VENT PIPE DETAIL



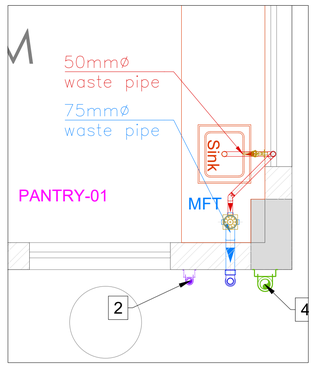

T-08
WATER SUPPLY PIPE



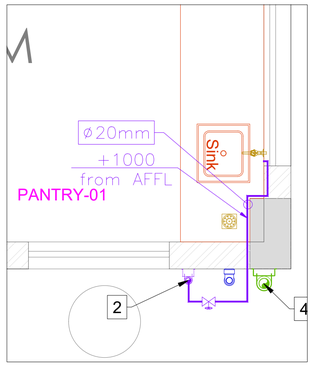

T-7M,DRINKING WATER POINT-2M
: SOIL, WASTE & VENT PIPE DETAIL




T-7M,DRINKING WATER POINT-2M
: WATER SUPPLY PIPE



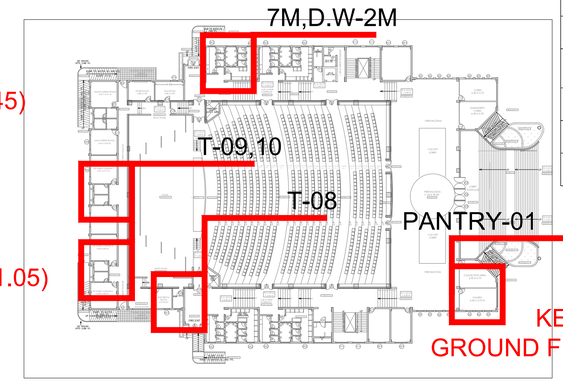

PANTRY-01
SOIL, WASTE & VENT PIPE DETAIL




PANTRY-01
WATER SUPPLY PIPE

KEY PLAN
GROUND FLOOR(LVL.+0.45)

KEY PLAN
GROUND FLOOR(LVL.+1.05)




KEY PLAN
GROUND FLOOR(LVL.+0.45)

## PLUMBING LEGEND

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CLIENT
College of engineering, pune

JOB TITLE
**COEP technological university, shivajinagar, pune - 411 005**

DRAWING TITLE:
PHE SERVICES FOR CONVENTION CENTER TOILET-08,9,10,7M,D.W-2M PANTRY-01 DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1/50 | AS | ND |

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FOR APPROVAL

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24 Feb 2024

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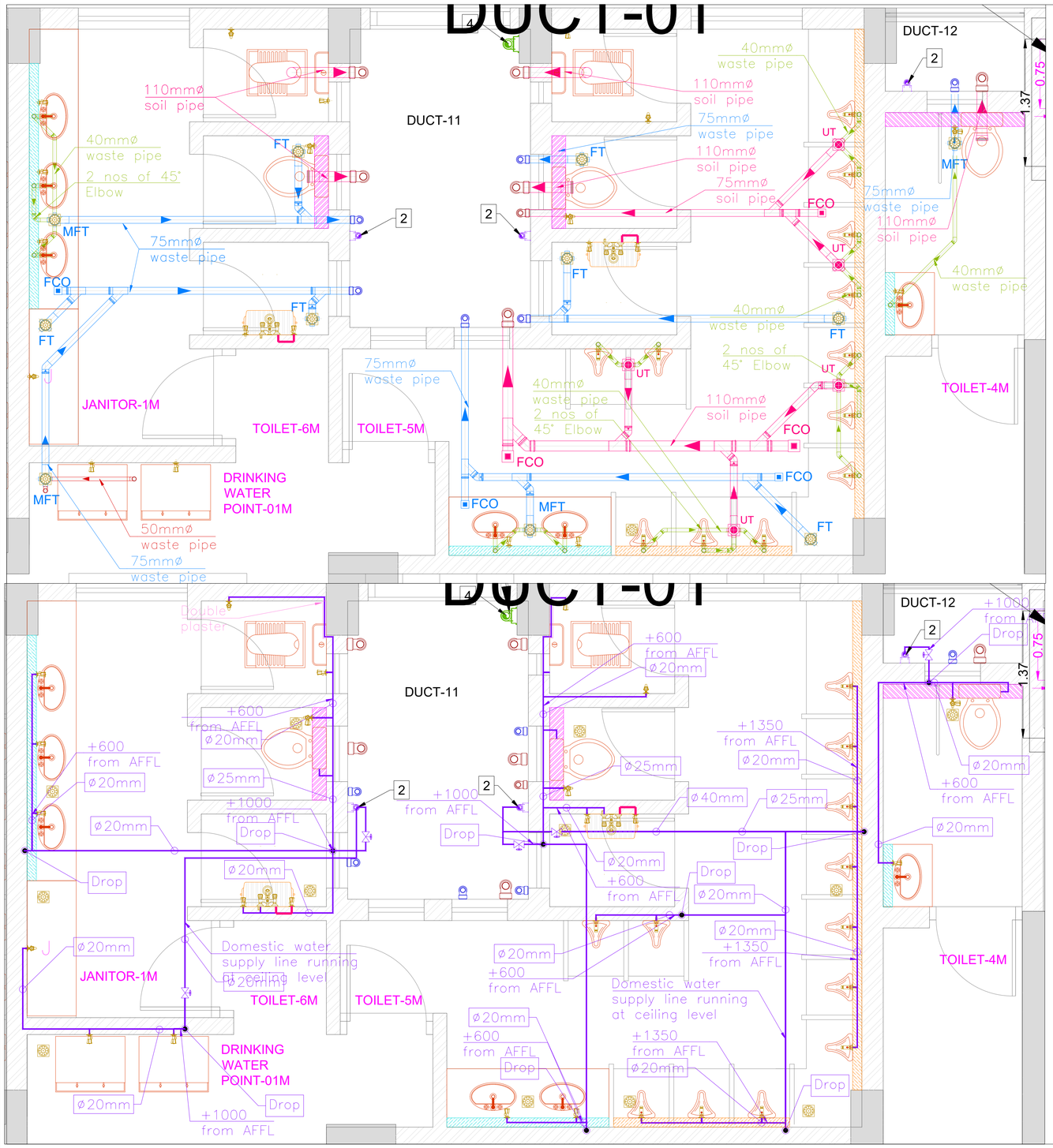
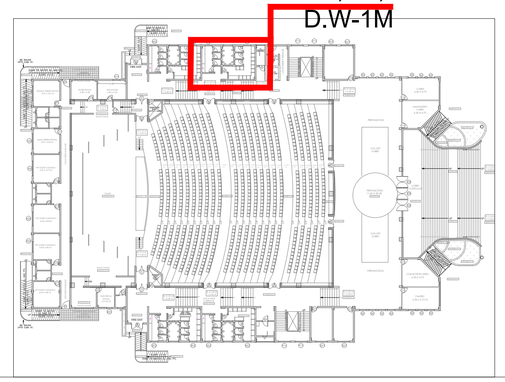



T-4M,5M,6M
DRINKING WATER POINT-1M
SOIL, WASTE & VENT PIPE DETAIL

T-4M,5M,6M
DRINKING WATER POINT-1M
WATER SUPPLY PIPE

KEY PLAN
GROUND FLOOR(LVL.+1.97)




## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD-40, SOLVENT JOINT) |
| | 110mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø WASTE LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 50mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |



ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS IN METERS, UNLESS OTHERWISE SPECIFIED. THE DRAWING IS NOT BE SCALED THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.DISCREPANCIES IF ANY SHALL BE IMMEDIATELY BROUGHT TO THE NOTICE OF THE CONSULTANT.

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JOB TITLE
**COEP technological university, shivajinagar, pune - 411 005**

DRAWING TITLE:
PHE SERVICES FOR CONVENTION CENTER T-4M,5M,6M,DRINKING WATER POINT-1M, DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1/50 | AS | ND |

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| ABSTRACT | | | | |
|---|---|---|---|---|
| **Name of the work:-** | | | **Providing Fire Fighting & Plumbing water supply Pumping system Work at newly constructed of Seminar Hall, Guest House & Conventional Centre Building At Yashada Tathawade Campus** | |
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| 1 | 1.00 | 13.1.3 | Supplying, installation, testing and commissioning of main fire pump (MFP / EP) suitable for water discharge of 1800 to 2280 LPM at 80 to 60 m head driven by electric motor 415 volts, 3 phase 50 Hz, AC supply of 37kW or of suitable kW capacity for manual/automatic operation and consisting of following :<br>(a) Horizontal type, single stage, centrifugal/split casing pump of cast iron body & bronze impeller with stainless steel shaft(SS410 grade), mechanical seal conforming to IS 1520.<br>(b) Squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.<br>(c) M.S. fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required.<br>(d) Erected on provided suitable size cement concrete foundation duly plastered with anti vibration pads with perfect aligning, proper levelling complete pump set with accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003) complete, as per specification no. FF-MFP/SSC/EP | Each |
| 2 | 1.00 | 13.2.2 | Supplying, installation, testing and commissioning of jockey fire pump (JP) suitable for water discharge of 180 to 240 LPM at 90 to 70 m head driven by electric motor 415 volts, 3 phase 50 Hz, AC supply of 9.3 kW or of suitable kW capacity for manual/automatic operation and consisting of following :<br>(a) Horizontal/vertical type, multi stage, centrifugal casing pump of cast iron body & bronze impeller with stainless steel shaft(SS410 grade), mechanical seal conforming to IS 1520.<br>(b) Squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.<br>(c) M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.<br>(d) Erected on provided suitable size cement concrete foundation duly plastered with anti vibration pads with perfect aligning, proper levelling complete pump set with accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003)complete, as per specification no. FF-MFP/JP | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| 3 | 1.00 | 13.3.2 | Supplying, installation, testing and commissioning of booster fire pump [BP] suitable for water discharge of 900 LPM at 35 m head driven by electric motor 415 volts, 3 phase 50 Hz, AC supply of 7.5 kW or of suitable kW capacity for manual/automatic operation and consisting of following :<br>(a) Horizontal/vertical type, single/multi stage, centrifugal casing pump of cast iron body & bronze/CI impeller with stainless steel shaft (SS410 grade), mechanical seal conforming to IS 1520.<br>(b) Squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation on with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.<br>(c) M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.<br>(d)Erected on provided suitable size cement concrete foundation duly plastered with anti vibration pads with perfect aligning, proper levelling complete pump set with accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003) complete, as per specification no. FF-MFP/BP | Each |
| 4 | 1.00 | 13.3.1 | Supplying, installation, testing and commissioning of booster fire pump [BP] suitable for water discharge of 450 LPM at 35 m head driven by electric motor 415 volts, 3 phase 50 Hz, AC supply of 5.5 kW or of suitable kW capacity for manual/automatic operation and consisting of following :<br>(a) Horizontal/vertical type, single/multi stage, centrifugal casing pump of cast iron body & bronze/CI impeller with stainless steel shaft (SS410 grade), mechanical seal conforming to IS 1520.<br>(b) Squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.<br>(c) M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.<br>(d) Erected on provided suitable size cement concrete foundation duly plastered with anti vibration pads with perfect aligning, proper levelling complete pump set with accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003) complete, as per specification no. FF-MFP/BP | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| 5 | 1.00 | 13.4.2 | Supplying, installation, testing and commissioning of main fire pump (MFP/DP) suitable for water discharge of 2280 to 2850 LPM at 90 to 60 m head driven by 76 HP or suitable HP capacity diesel engine at required working speed suitable for manual/automatic operation and consisting of following :<br>(a) Horizontal type, single stage, centrifugal casing pump of cast iron body & bronze impeller with stainless steel shaft(SS410 grade), mechanical seal conforming to IS 1520.<br>(b) Water cooled with radiator, diesel engine conforming to relevant IS standard complete with auto starting mechanism, 12/24 volts DC electric starting equipment with battery of required AH capacity with necessary charger suitable to work on 230v, 50Hz AC supply, diesel tank of minimum 150ltr capacity with first filling of diesel up to 100% level with necessary piping with valves up to engine , exhaust pipe extended up to 10 m outside pump house duly insulated with 50 mm thick glass wool with 1.0 mm thick aluminium sheet cladding, residential silencer, instruments and protection as per standard specification, stop solenoid for auto stop in the event of fault with audio indications etc. as required.<br>(c) M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.<br>(d) Erected on provided suitable size cement concrete foundation duly plastered with anti vibration pads with perfect aligning, proper levelling complete pump set with engine assembly and accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003) complete, as per specification no. FF-MFP/SSC/DP | Each |
| 6 | 1.00 | 13.5.1 | Supplying, erecting, testing & commissioning of fire pump control panel (FCP) of cubical construction, floor mounted type, fabricated from minimum 2 mm thick CRCA sheet, compartmentalised with hinged lockable doors, with enclosure protection class IP54, duly powder coated or painted with accessories duly painted with two coats of synthetic enamel paint of fire red colour over a coat of primer (ISC code 536 as per IS 2932 of 2003), cable alley, interconnection with suitable size solid copper busbar strip of adequate size for all power connections having switchgears and accessories, mountings and internal wiring with adequate size copper conductor cable, earth terminals, numbering etc. complete in all respect, suitable for satisfactory operation of main fire pump and jockey (pressurisation) pumps (1working+1standby) with necessary accessories, wiring & cabling along with allied accessories with following incoming and outgoings, suitable for automatic & manual operation on 415V, 3 phase, 50Hz ac supply as per specifications<br>the capacity of electric motor driven pump are as follows<br>a. Main fire pump (MFP) having capacity of 22kW 1no (1 working)<br>b. Jockey pump(JP) capacity of suitable capacity 2 nos(1 working +1 standby, alternate run per start in auto mode)<br>comprises of the following features & switchgears:<br>1. Main incomer FP SFU having rotary handle with HRC fuses of suitable rating.<br>2. Electrolytic grade copper strips for busbar of suitable sizes for main incomer and branches to motor SFU's, starters & outgoing terminals with necessary accessories like stainless steel nut bolts with spring washers for connections, mounted on required no of epoxy or | Each |
| | | | Add on | |
| | | A | For addition of capacity of main electric motor driven fire pump MFP (1 working) for hydrant system is more than 22kW, add as follows in the basic cost of Item no 13-5-1 towards increased capacity switchgears and motor starters for main & jockey pumps along with necessary accessories for main & jockey fire pumps MFP (1working), JP (1working + 1standby, alternate run per start in auto mode) | |
| | 1.00 | 5 | For main electric motor driven fire hydrant system pump of 75kW capacity & relevant capacity jockey pump add Rs…. | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| | 1.00 | D | For addition of standby main diesel engine driven fire pump (1 standby), add as follows in the basic cost of Item no 13-5-1 towards required 12/24 v battery charger and diesel engine starter along with necessary accessories, indicators etc. with necessary interlocking and updation of control logic with interlocking for operation of pumps MFP for main (1working+1standby mode) & jockey fire pumps (1working+1standby, alternate run per start in auto mode) , add Rs.....<br>The control for diesel engine comprises of automatic/manual selector switch & 3 attempts starting device, timers and relays as required, push buttons, start/stop in manual mode indicating lamp for high/ low Lub. oil pressure, high water temp and engine on indication battery charger suitable for 12V/24 V DC with boost and trickle selector switch, 0-30 V DC voltmeter, and 0-20 A DC ammeter with all standard relays and accessories required for automatic operation of diesel engine with interlocking for operation of main fire pumps. | Each |
| | | E | For addition of booster pump for fire hydrant/sprinkler, add as follows in the basic cost of item no 13-5-1 towards necessary accessories, indicators etc. with necessary interlocking and updation of control logic, add Rs..... | |
| | 1.00 | 1 | For main electric motor driven fire hydrant system pump of 30kW capacity & relevant capacity jockey pump add Rs…. | Each |
| 7 | 1.00 | 12.4.2 | Supplying & erecting D.O.L Starter suitable for 415 V, 3 phase 50 cycles with no volt coil and overload element with necessary materials and connected to supply up to 7.5 H.P. | Each |
| 8 | 1.00 | 12.4.4 | Supplying & erecting Fully Automatic Star/delta starter suitable for 12.5 H.P to 15 H.P. for 3 phase squirrel cage motor totally enclosed with overload and no volt relay complete erected on provided angle iron frame. | Each |
| 9 | 900.00 | 13.6.2 | Supplying and erecting G.I. pipe 'C' class ERW 25 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 10 | 665.00 | 13.6.3 | Supplying and erecting G.I. pipe 'C' class ERW 50 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 11 | 90.00 | 13.6.4 | Supplying and erecting G.I. pipe 'C' class ERW 65 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 12 | 221.00 | 13.6.5 | Supplying and erecting G.I. pipe 'C' class ERW 75/80 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 13 | 190.60 | 13.6.6 | Supplying and erecting G.I. pipe 'C' class ERW 100 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 14 | 985.00 | 13.6.7 | Supplying and erecting G.I. pipe 'C' class ERW 150 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 15 | 120.00 | 13.6.8 | Supplying and erecting G.I. pipe 'C' class ERW 200 mm dia with necessary fittings complete as per specification no. FF-PP | m |
| 16 | 33.00 | 13.6.9 | Providing coating of bitumen paint & 4mm thick wrapping for underground 100 mm ring main of fire fighting system. | m |
| 17 | 250.00 | 13.6.10 | Providing coating of bitumen paint & 4mm thick wrapping for underground 150 mm ring main of fire fighting system. | m |
| 18 | 28.33 | 13.6.11 | Providing coating of bitumen paint & 4mm thick wrapping for underground 200 mm ring main of fire fighting system. | m |
| 19 | 280.20 | 16.1.6 | Excavating hard murum / stone metal road by chiselling for preparing pit for poles stay or earth plates or for laying cables, pipes & clearing the site by removing debris & making the site as required complete. | $m^3$ |
| 20 | 3.00 | 13.7.5 | Supplying and erecting 75/80 mm dia Cast Iron end line strainer of Y-type flanged end pattern, PN16 pressure rating, SS screen, end connection with Flanged / Screwed / Socket Weld / Butt Weld End etc with standard OAR (open area Ratio) for positive suction complete as per specification no. FF-VL/ELS | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| 21 | 2.00 | 13.7.7 | Supplying and erecting 150 mm dia Cast Iron end line strainer of Y-type flanged end pattern, PN16 pressure rating, SS screen, end connection with Flanged / Screwed / Socket Weld / Butt Weld End etc with standard OAR (open area Ratio) for positive suction complete as per specification no. FF-VL/ELS | Each |
| 22 | 2.00 | 13.7.12 | Supplying and erecting 200 mm dia Cast Iron end line strainer of T-Pot type flanged end pattern, PN16 pressure rating, screen of SS and end connection with flanged, for positive suction complete as per specification no. FF-VL/ELS | Each |
| 23 | 3.00 | 13.7.13 | Supplying and erecting 75/80 mm dia. cast iron double flange sluice valve complete with PN16 pressure rating, as per specification no. FF-VL/SV | Each |
| 24 | 1.00 | 13.7.14 | Supplying and erecting 100 mm dia. cast iron double flange sluice valve complete with PN16 pressure rating, as per specification no. FF-VL/SV | Each |
| 25 | 8.00 | 13.7.15 | Supplying and erecting 150 mm dia. cast iron double flange sluice valve complete with PN16 pressure rating, as per specification no. FF-VL/SV | Each |
| 26 | 4.00 | 13.7.16 | Supplying and erecting 200 mm dia. cast iron double flange sluice valve complete with PN16 pressure rating, as per specification no. FF-VL/SV | Each |
| 27 | 12.00 | 13.7.17 | Supplying and erecting 50 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 28 | 1.00 | 13.7.18 | Supplying and erecting 65 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 29 | 3.00 | 13.7.19 | Supplying and erecting 75/80 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 30 | 1.00 | 13.7.20 | Supplying and erecting 100 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 31 | 11.00 | 13.7.21 | Supplying and erecting 150 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 32 | 3.00 | 13.7.22 | Supplying and erecting 200 mm dia. cast iron double flange butterfly valve of size complete with PN16 pressure rating, as per specification no. FF-VL/BFV | Each |
| 33 | 1.00 | 13.7.23 | Supplying and erecting 75/80 mm dia cast iron double flange NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 34 | 6.00 | 13.7.25 | Supplying and erecting 150 mm dia cast iron double flange NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 35 | 1.00 | 13.7.27 | Supplying and erecting 75/80 mm dia cast iron double flange ball type NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 36 | 1.00 | 13.7.28 | Supplying and erecting 100 mm dia cast iron double flange ball type NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 37 | 4.00 | 13.7.29 | Supplying and erecting 150 mm dia cast iron double flange ball type NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 38 | 1.00 | 13.7.30 | Supplying and erecting 200 mm dia cast iron double flange ball type NRV complete with PN16 pressure rating, as per specification no. FF-VL/NRV | Each |
| 39 | 4.00 | 13.7.31 | Supplying and erecting 20 mm dia gun metal gate valve complete with PN16 pressure rating, as per specification no. FF-VL/GV | Each |
| 40 | 4.00 | 13.7.32 | Supplying and erecting 25 mm dia gun metal gate valve complete with PN16 pressure rating, as per specification no. FF-VL/GV | Each |
| 41 | 4.00 | 13.7.33 | Supplying and erecting 50 mm dia gun metal gate valve complete with PN16 pressure rating, as per specification no. FF-VL/GV | Each |
| 42 | 25.00 | 13.7.35 | Supplying and erecting stainless steel single outlet hydrant valve fitted with necessary accessories complete as per specification no. FF-VL/HV | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| 43 | 17.00 | 13.8.2 | Supplying and installing wall mounting swinging hose reel drum fitted with 19 mm dia. 30m long high pressure polypropylene (Polyhose) along with necessary accessories complete as per specification no. FF-FFA/HV | Each |
| 44 | 50.00 | 13.8.4 | Supplying and erecting 63mm dia, reinforced rubber lined (R.R.L.) hose pipe, 15m in length, fitted with necessary accessories complete as per specification no. FF-FFA/RRL | Each |
| 45 | 25.00 | 13.8.8 | Supplying and erecting stainless steel branch pipe 63 mm dia fitted with 20 mm dia detachable hexagonal nozzle complete as per specifications no. FF-FFA/NZ | Each |
| 46 | 2.00 | 13.8.10 | Supplying and erecting 150 mm dia fire brigade header suitable for supplying water in fire tank complete as per specification no. FF-FA/FBC | Each |
| 47 | 4.00 | 13.8.11 | Supplying and erecting fire brigade header ( Siamese connection )of 150 mm dia, for supplying water in fire tank complete as per specification no. FF-FA/FMC | Each |
| 48 | 1.00 | 13.8.12 | Supplying and erecting 300 mm dia 1.5m in height air vessel / tank fabricated from min 5mm thick M.S. sheet complete as per specification no. FF-FFA/ACT | Each |
| 49 | 1.00 | 13.8.13 | Supplying and erecting 20/25mm dia gun metal air release cock, with necessary G.I. coupling to be fitted on top of air vessel or on wet riser complete as per specification no. FF-FFA/ARV | Each |

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|---|---|---|---|---|
| **Sr. No.** | **Quantity** | **SSR Item** | **Particulars** | **Unit** |
| | | | | |
| 50 | 10.00 | 13.8.14 | Supplying and erecting 100 mm dia. pressure gauge , 0-300 PSI or 0-14 kg per cm square fitted with 12/15 mm dia. pad cock valve, erected with provided G.I. pipe, elbow etc. complete as per specification no. FF-FFA/PG | Each |
| 51 | 3.00 | 13.8.15 | Supplying and erecting 12/15 mm dia pressure switch with provided isolation valve, G.I. nipple, elbow, etc complete as per specification no. FF-FFA/PS | Each |
| 52 | 20.00 | 13.8.16 | Supplying and erecting brass orifice plate having 6 mm. thickness, 140 mm outer dia with required diameter of inner hole at every single outlet hydrant valve as per specification no. FF-FFA/OP | Each |
| 53 | 8.00 | 13.8.19 | Supplying and erecting M.S./CRCA cabinet for housing Fire Brigade / SIEMESE connections (size 1250 x 400 x 300 mm.) made from 16 SWG sheet and angle iron 25 mm. x 25 mm. x 4 mm. having front doors with viewing glass (8" x 6") and locking arrangement with necessary fixing material such as rubber bidding etc. duly painted in post box red colour( Code 538 of IS 5) | Each |
| 54 | 7.00 | 13.13.1 | Supplying and erecting fire resistant mortar (20 kg) with fire resistance class S90 as per National Electrical Code (NEC) SP30-2011 suitable to seal the openings of all kinds of cables, pipes and cable support system in steel, aluminium and plastic profiles ( except hollow core conductors). The residual openings shall be closed with filler, as per specification no FF-FRM. | Job |
| 55 | 22.00 | 13.15.1 | Supplying & erecting Carbon Dioxide ($CO_2$) fire extinguisher of 4.5 kg. capacity cartridge type conform to IS 2878 /15683 complete erected with necessary clamp made from 50 x 6 mm. M. S. flat with nut & bolts routed in wall complete. | Each |
| 56 | 17.00 | 13.8.20 | Supplying and erecting M.S./CRCA cabinet for housing Floor Hydrant valve, hose pipe, hose reel and branch pipe (size 1000 x 736 x 736 mm.) made from 16 SWG sheet and angle iron 25 x 25 x 4 mm. having front doors with viewing glass (8"x6") and locking arrangement with necessary fixing material such as rubber bidding etc. duly painted in post box red colour( Code 538 of IS 5) | Each |
| 57 | 675.00 | 13.12.1 | Supplying, erecting, testing and commissioning of quartzoid bulb sprinkler, 15 mm (½") dia. NBCM Body chrome finished, 68° C fixed temperature rating with deflector disc of conventional construction complete as per specification no. FF-SPR. | Each |
| 58 | 1.00 | 13.12.2 | Supplying, erecting, testing and commissioning vane type water flow detector 75/80 mm dia. with 1)Visual switch activation, 2)Rugged switch assembly, 3)Heavy duty aluminium pipe saddles, 4)Durable metal enclosure, 5)Steel U bolts for secure mounting, 6)Two SPDT (Single pole double track) synchronised switches, 7)serviceable without draining pipes. | Each |
| 59 | 3.00 | 13.12.3 | Supplying, erecting, testing and commissioning vane type water flow detector 100 mm dia. with 1) Visual switch activation 2) Rugged switch assembly 3) Heavy duty aluminium pipe saddles 4)Durable metal enclosure 5) Steel U bolts for secure mounting 6) Two SPDT ( Single pole double track ) synchronised switches 7) serviceable without draining pipes. | Each |
| 60 | 425.00 | R.A. CPWD Electrical 18.25.3 | Supplying, installation, testing & commissioning of Sprinkler Flexible Pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar. The hose assembly includes 1200 mm long, 28 mm diameter corrugated stainless steel flexible hose with a braided stainless steel exterior.complete all the work up to the satisfaction of the Engineer in charge. | Nos |

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| | | | | |
| 61 | 1.00 | R.A.CPWD WR (2019) 21.3 | Providing and fixing 150 mm dia installation valve with Hydraulic trim type automatic alarm to be connected with control valve drain and test valve as per manufacturer's recommendations . with accessories like water motor gong bell, Test & drain valve , Flow switch etc UL listed etc complete to satisfaction of Architect/ PM | Each |
| 62 | 164.00 | Non CSR | Supplying, installing, testing, and commissioning of portable fire extinguishers of **ABC dry powder** stored pressure type fire extinguishers of **6 Kgs**.capacity Complete with standard discharge valve with tube, CI bracket for wall mounting etc. complete as per confirming to IS : 15683 complete all the work up to the satisfaction of the Engineer in charge. | Each |
| 63 | 820.00 | Non CSR | Providing and fixing in position statutory Signage's made out of 3mm thick opaque PVC foam board, machine cut, non reflective, auto glow (type & Make), with silicon adhesive for safe evacuation of occupants in case of emergency. Sign indicators should be provided at prominent places as per Fire Provisional NOC (As per - IS-9457, IS-12349, IS-12407). complete all the work up to the satisfaction of the Engineer in charge. | Sq in |
| 64 | 2.00 | Non CSR | Providing, laying, testing & commissioning of 80mm dia resilient rubber neoprene lined single arch Vibration eliminators (Expansion bellows) suitable for Design Pressure 16 kg/sq cm and test pressure 24 kg/sq cm. complete all the work up to the satisfaction of the Engineer in charge. | Nos. |
| 65 | 4.00 | Non CSR | Providing, laying, testing & commissioning of 150mm dia resilient rubber neoprene lined single arch Vibration eliminators (Expansion bellows) suitable for Design Pressure 16 kg/sq cm and test pressure 24 kg/sq cm. complete all the work up to the satisfaction of the Engineer in charge. | Nos. |
| 66 | 6.00 | Non CSR | Providing and fixing 25 mm dia Inspection & Testing Assembly with 25mm gunmetal ball valve, gun metal sight glass bypass valve & connected to drain line etc complete as per drawing. | Nos. |

**WORK - ABSTRACT**

**Estimate No**

**Name of work** :- Providing internal Electrification for Residential Block -

| Sr. No. | Qty. | Item No. | ITEM DESCRIPTION | Unit |
|---|---|---|---|---|
| | | | **1. ELECTRICAL WORKS** | |
| 1 | 112 | 5.3.2 | Supplying, erecting & marking SPMCB 6A to 32A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW- | Each |
| 2 | 208 | 5.3.3 | Supplying, erecting & marking SPMCB 6A to 32A, B-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW- | Each |
| 3 | 5 | 5.3.8 | Supplying, erecting & marking DP MCB 40A to 63A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-MCB | Each |
| 4 | 68 | 5.3.7 | Supplying, erecting & marking DPMCB 6 A to 32 A, B-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 5 | 4 | 5.3.10 | Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 6 | 20 | 5.3.11 | Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 7 | 1 | 5.4.2 | Supplying & erecting triple pole and neutral distribution board (TPNDB),SPMCB of 8 ways / phase (24 poles), with door, 1.2mm thickness surface/flush mounted, IP 43 Protection on iron/GI frame (horizontal busbar type) asper specification no. SW-SWR/MCBDB | Each |
| 8 | 4 | 5.4.1 | Supplying & erecting triple pole and neutral distribution board (TPNDB), SPMCB of 4 ways/phase (12 poles), with door, 1.2mm thickness, surface/flush mounted, IP 43 protection on iron/GI frame (horizontal busbar type) as per specification no. SW-SWR/MCBDB | Each |

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| 9 | 3 | 5.4.5 | Supplying & erecting triple pole and neutral distribution board (TPNDB),<br>SP/TP MCBs total 8 ways /24 poles, with door, 1.2mm thickness surface/flush<br>mounted, IP 43 Protection on iron/GI frame (vertical busbar type) as per<br>specification no. SW-SWR/MCBDB | Each |
| 10 | 14 | 5.4.6 | Supplying & erecting triple pole and neutral distribution board (TPNDB), SP/TP MCBs total 12 ways /36 poles, with door, 1.2mm thickness surface/flush mounted, IP 43 Protection on iron/GI frame (vertical busbar type) as per specification no. SW-SWR/MCBDB | Each |
| 11 | 33 | 5.4.8 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 6 ways (6 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | Each |
| 12 | 10 | 5.4.9 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 10 ways (10 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | Each |
| 13 | 20 | 5.4.14 | Supplying and erecting blanking plate of suitable size on MCBDB. | Each |
| 14 | 34 | 5.6.1 | Supplying, erecting & commissioning 2 pole RCCB 16/25A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 15 | 16 | 5.6.2 | Supplying, erecting & commissioning 2 pole RCCB40A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 16 | 5 | 5.6.5 | Supplying, erecting & commissioning 4 pole RCCB 40A, electromagnetic type<br>with 30/100/300 mA sensitivity with earth leakage trip indication complete as per<br>specification no. SW-RCCB/RCCB | Each |

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| 17 | 4 | 5.5.1 | Providing & erecting 3 Pole MCCB, 415 V, 100A, rated short-circuit breaking capacity 25 kA (Ics=100% of Icu), adjustable thermal (overload) setting and fixed magnetic setting with provided leads, provision for installation of shunt/UV/trip alarm contact. MCCB with phase barriers on both sides, insulation withstand capacity 800V, no line-load bias in provided enclosure/panel as per specification no. SW-SWR/MCCB | Each |
| 18 | 2 | 5.5.2 | Providing & erecting 3 Pole MCCB, 415V, 200A, rated short-circuit breaking capacity 25 kA (Ics=100% of Icu), adjustable thermal (overload) setting and adjustable magnetic setting with provided leads, provision for installation of shunt/UV/trip alarm contact and MCCB should have phase barriers both sides, with insulation withstand capacity 800V, no line-load bias in provided enclosure/panel as per specification no. SW-SWR/MCCB | Each |
| 19 | 1 | `6-7-5 | Supplying, erecting, testing & commisioning 100 kVAr, 440 V, 3 phase, 50 Hz., APFC Panel with contactor logic with intelligent microprocessor relay, consisting of 2,3,5,10,20.20,20,20 or suitable steps of APP/MPP type capacitor units with detuned (harmonic filter) reactors of suitable rating, APFC panel shall be compliance to IEC 61439 and power quality IEC 61921 standard as per specification no. CP-ED/APFC. | Each |
| 20 | 260 | 7-1-23 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½core 240 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 21 | 90 | 7-1-19 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½ core 95 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 22 | 170 | 7-1-17 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½ core 50 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |

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| 23 | 20 | 7-1-16 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3½ core 35 sq. mm. aluminium conductor complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 24 | 5 | 7-1-15 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable, 1100 V 3½ core 25 sq. mm. aluminium conductor complete erected with glands & lugs on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL | Mtr |
| 25 | 30 | 7-2-31 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 4 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 26 | 35 | 7-2-32 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 27 | 640 | 7-2-33 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 10 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 28 | 85 | 7-2-34 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 16 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 29 | 10 | 7-2-15 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 4 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 30 | 10 | 7-2-16 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |

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| 31 | 10 | 7-2-17 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 3 core 10 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | Mtr |
| 32 | 320 | 1-2-11 | Supplying and erecting PVC box trunking of size 50x50 mm. with accessories on wall/ceiling as per specification No: WG-MA/BOX. (Outside Room in passage) | Mtr |
| 33 | 989 | 1.1.9 | Supplying and erecting HMS PVC conduit FRLS grade 25 mm dia. with necessary accessories in wall/floor with chiselling appropriately as per specification No: WG-MA/CC. | Mtr |
| 34 | 945 | 1.1.10 | Supplying and laying HMS PVC conduit FRLS grade 25 mm dia with necessary accessories in RCC work/false ceiling/false flooring as per specification No. WG-MA/CC. | Mtr |
| 35 | 4130 | 1.3.2 | Supplying and erecting mains with 2x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | Mtr |
| 36 | 4130 | 1.3.2 | Supplying and erecting mains with 1x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW **(NOTE 3)** | Mtr |
| 37 | 1745 | 1.3.3 | Supplying and erecting mains with 2x4 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places.as per specification No: WG-MA/BW | Mtr |
| 38 | 1745 | 1.3.3 | Supplying and erecting mains with 1x4 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places.as per specification No: WG-MA/BW **(NOTE 3)** | Mtr |
| 39 | 360 | 1.3.8 | Supplying and erecting mains with 3x6 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places as per specification No: WG-MA/BW | Mtr |
| 40 | 90 | 1.3.8 | Supplying and erecting mains with 1x6 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places as per specification No: WG-MA/BW | Mtr |
| 41 | 152 | 1.6.1 | Supplying and erecting modular type switch 6A / 10A duly erected on provided plate and box with wiring connections complete. | Each |
| 42 | 115 | 1.6.2 | Supplying and erecting modular type switch 16A duly erected on provided plate and box with wiring connections complete. | Each |

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| 43 | 20 | 1.6.6 | Supplying and erecting modular type switch 16 / 20 A with indicator, duly erected on provided plate and box with wiring connections complete | Each |
| 44 | 152 | 1.6.10 | Supplying and erecting modular type 3 pin 6A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete | Each |
| 45 | 115 | 1.6.11 | Supplying and erecting modular type 3 pin 6 / 16A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |
| 46 | 20 | 1.6.24 | Supplying and erecting modular type blanking plate one module, duly erected on provided plate & box. | Each |
| 47 | 88 | 1.6.35 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 2 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 48 | 249 | 1.6.36 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 3 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 49 | 5 | 1.6.37 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 4 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 50 | 1 | 1.6.38 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 6 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |
| 51 | 1 | 1.6.39 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 8 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match thebackground | Each |
| 52 | 1 | 1.6.40 | Supplying and erecting unbreakable concealed type modular switch box with double mounting plate for 12 module duly erected flush to wall with required chiselling and finishing with cement mortar / POP as per required to match the background. | Each |

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| 53 | 848 | 1.7.5 | Point wiring for light/bell concealed type in min 20 mm FRLS grade HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification No: WG PW/CW | Point |
| 54 | 118 | 1.7.6 | Point wiring for ceiling fan concealed type in min 20 mm HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification no. WG-PW/CW | Point |
| 55 | 647 | 1.7.22 | Secondary point wiring for additional light/ bell point, concealed type in min 20 mm FRLS grade PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires with required accessories as per specification No: WG-PW/CW | Point |
| 56 | 318 | 1.7.25 | Wiring for plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification No: WG-PW/CW | Point |
| 57 | 6 | 2.1.2 | Light having pressure die-cast aluminium housing, polystyrene diffuser having system lumens output of Min. 770 Lumens, min. efficacy of 110 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., max. ripple of 5%, THD0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50, including driver, having mounting arrangement with board for surface type or spring loaded mounting clips complete with 3 years warranty. | Point |
| 58 | 120 | Non DSR | Wardrobe Light DESIGN: 3/5Watt Made of silver plastic is discreet and unobtrusive,INSTALLATION: The lamp can be attached with the included mounting material either with screws and dowels or with adhesive strips.<br>APPLICATION: The wall lamp can be used in a variety of ways, e.g. in the wardrobe. | Each |
| 59 | 36 | 2.3.13 | Supplying and erecting ding dong / electronic musical type call bell with heavy duty coil suitable to operate on 230V A.C. supply erected on polished double wooden block/sunmica block of suitable size.(132 ROOMS x 2) | Each |

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| 60 | 72 | Non DSR | Decorative Wall Light in Toilets This exclusive wall lamp looks very elegant thanks to the chrome elements used in a targeted manner.<br>MATERIAL/COLOUR: The light is particularly effective thanks to the opal-white glass, which is surrounded by a chrome ring.<br>TYPE OF PROTECTION: The light is protected by protection class IP44 and is therefore perfect for use in the bathroom.<br>LAMPS: A 20 watt LED lamp with a strength of 1600 lumens, 4000-6000k color is permanently installed in the lamp. | Each |
| 61 | 272 | Non DSR | Decorative Wall Light In Rooms DESIGN: This wall light is a real eye-catcher thanks to its oval shape and the black and gold coloring.<br>MATERIAL: The lamp is made entirely of metal and is black on the outside and gold leaf on the inside.<br>LIGHTING: The upward and downward lighting creates a beautiful lighting effect on the chosen wall.<br>BULBS INCLUDED: A 18 watt LED bulb with 230 lumens and warm white light color (3600 Kelvin) is permanently installed in the light. | Each |
| 62 | 72 | Non DSR | Reading Light A modern and discreet interior light for your walls. The simple black design convinces with its functionality and the Scandinavian look.<br>MATERIAL/COLOUR: The small interior light is completely matt black and consists of plastic and metal. The neck can be moved flexibly and adapted to your wishes.<br>APPLICATION LOCATION: Whether as a reading light next to the bed, as a night light, as a work light at the desk or as atmospheric lighting in the living room, you are well equipped with this lamp.: Whether as a reading light next to the bed, as a night light or as atmospheric lighting in the living room, with this Lamp you are well equipped.<br>LAMPS: The existing GU10 allows lamps with a maximum power of 25 watts for the wall light. Luminous intensity and light color can be freely selected by you. | Each |

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| 63 | 349 | 2.1.4 | Supplying and erecting LED square / circular Max. 14 W down lighter / Panel Light having pressure die-cast aluminium housing, polystyrene diffuser having system lumens output of Min. 1500 Lumens, min. efficacy of 110 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., max. ripple of 5%, THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips complete with minimum 2 years warranty as per specification No. FG-IDF/LED. | Each |
| 64 | 10 | 2.1.10 | Supplying and erecting LED Strip light 5m Length Max. 60 W/12W/Mtr IP20 class having minimum lumens output of 800 Lumens/m, min. efficacy of 90 lumen/W, CRI>80, CCT upto 5000K, Beam Angle of 110 deg., THD<10%, p.f.>0.95, operating range of 230-270V, Life class of 30,000 Hrs. at L70B50, including driver/SMPS 120W, Housing material - Aluminium LLS-12WFT 50mmx70mm Led Light Fixtures ( 12 foot ) EMPTY with suspension Kit, HOUSING with 1 year warranty | Each |
| 65 | 300 | 2.1.18 | Supplying and erecting anodized aluminium corridor / passage light LED<br>fitting (4 feet) Max. 22W with high transitivity diffuser with system lumens<br>output of Min.2200 lumens , min. efficacy of 100 lumen/W, CRI>80, CCT<br>upto 6000K, Beam Angle of 110 deg., Ripple<5%, THD<10%, p.f. >0.95,<br>operating range of 200-270V, surge protection of 2 kV, Life class of 50,000 Hrs.<br>at L70B50, including driver, with end caps on provided PVC Block / wooden<br>board with 3 years warranty. | Each |
| 66 | 18 | 2.1.16 | Supplying and erecting anodized aluminium corridor / passage / mirror light<br>LED fitting (2 feet) Max. 12W with high transitivity diffuser with min. system<br>lumens output of 1200 lumens, min. efficacy of 100 lumen/W, CRI>80, CCT<br>upto 6000K, Beam Angle of 110 deg., Ripple<5%, THD<10%, p.f. >0.95,<br>operating range of 200-270V, surge protection of 2 kV, Life class of 50,000 Hrs.<br>at L70B50, including driver with end caps on provided PVC Block / wooden<br>board with 3 years warranty. | Each |

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| 67 | 88 | 2.1.22 | Supplying & erecting inverter LED batten 20W tube light fitting with polycarbonate housing, heat sink, integrated HF electronic driver, Min. 2600 mAh Lithium ion Battery with charging time of 8-10 Hours and backup time of Min. 3 hrs. with minimum 25% of initial Watts having luminous efficacy of 100 lumen/watt, CRI>80, CCT of 6500K and THD<=20% having useful life of<br>minimum 25000 hrs. with overheating protection with 2 years warranty. | Each |
| 68 | 2 | 2.4.13 | Supplying and erecting integrated LED flood light fitting Max. 50W IP65 & IK07 class having pressure die-cast aluminium housing, having system lumens output of Min. 5000 Lumens, min. efficacy of 100 lumen/W, CRI>70, CCT upto 6500K, THD<10%, p.f. >0.90, operating range of 140-270V, inbuilt surge protection of 4 kV, Life class of 50,000 Hrs at L70B50 including driver with U shaped bracket with minimum 2 Years warranty as per specification No. FG-ODF/FL. | Each |
| 69 | 36 | 1.6.9 | Supplying and erecting modular type 32A, DP key tag switch with key tag on provided plate and box with wiring connections complete. | Each |
| 70 | 118 | 2.11.5 | Supplying and erecting fan hook box of 10 mm M.S. round bar bounded to the R.C.C. bars upto 50 mm length each side and pierced through a 16 S.W.G. thick aluminium/M.S. Bowl 100 mm dia. or equivalent square size and having depth upto 75 mm complete erected with duly painted by one coat of red oxide paint and two coats of paint erected in position and without any leakage of slurry of cement concrete on either side of the box and positioned to the bottom level of the slab. | Each |
| 71 | 5 | 2.11.6 | Supplying and erecting 'B' class G.I .pipe / M.S. pipe down rod duly painted for fan complete erected with PVC three core flexible cable 1 sq. mm copper PVC wire. | Each |
| 72 | 118 | 2.10.22 | Supplying and erecting Energy Saving BLDC Ceiling fan 230 V A.C. 50 cycles 1200 mm, max. energy consumption of 28W having service ratio (CMM/W) of Min. 8 , PF>0.9, THD | Each |
| 73 | 49 | 2.10.14 | Supplying and erecting exhaust fan medium duty 230 V A.C. 50 cycles 225 mm. 1400 RPM with condenser complete erected in position with necessary materials. Fan motor with moisture proof treatment and 'E' class insulation. | Each |
| 74 | 85 | 7.11.7 | Providing & erecting hot dipped galvanised ladder type cable tray manufactured from 16 SWG (1.6 mm thick) GI sheet of 200 mm width & 75 mm height complete with necessary coupler plates & hardware. | Mtr |

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| 75 | 1 | 3.7.7 | Supplying,erecting, testing & commisioning of 10 kVA capacity on line pure sine wave,PWM,IGBT based UPS with 0.9 to unity output pf ,3 phase input &3 phase output complete with all protections as per specification no. AP-UPS (Without batteries) | Each |
| 76 | 30 | 3.8.10 | Supplying and erecting 12V/42Ah SMF battery with battery terminal wire, duly charged with 24 months warranty complete for 30 minutes. | Each |
| 77 | 265 | 7.6.7 | Supplying & laying (including excavation) reinforced cement concrete pipe of NP-2 class of 250 mm diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc. complete. | Mtr |
| 78 | 24 | 42.12 CIVIL SSR | ProvidingandconstructingBrickMasonryInspectionChamber60cmx45cmx90cmincluding1:4:8cementconcretefoundation1:2:4cementconcretechannelshalfroundG.S.W.pipes,BrickMasonry,plasteringfrominsideandwithframefixedincement concrete with R.C.C. Cover medium duty 140Kilogramwith frame etc complete. | Each |
| 79 | 20 | 5.4.13 | Supplying & erecting CRCA sheet metal one way enclosures of 1.2mm thickness suitable for **DP MCB /TP MCB/FP MCB/RCCB/RCBO** complete erected on angle iron/GI frame. | Each |
| 80 | 8 | 9.1.5 | Supplying, installation and testing of maintenance free earthing comprising of Electrode of 17.2 mm diameter Low Carbon Steel with 250 micron molecular copper bonded earthing rod of Length 3m along with 25 kg Carbon based environment friendly back fill ground enhancing compound required to fill up the excavated earth with required quantity complete, and recording the results Specification no. EA-MOBI | Each |
| 81 | 7 | 9-3-1 | Supplying & erecting conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 40 mm dia copper pipe of standard length with 5 Nos. copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation complete. | Each |
| 82 | 80 | 9.2.4 | Supplying and erecting annealed bare copper wire of high purity of required sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws complete. | kg |

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| 83 | 1 | Non DSR | Supply, Installation, testing and commissioning of cubical type MV Panel conform to IEC:61439-I as per technical specifications,single line diagram & approval of Drawings prior to manufacturing, packed in wooden crates with PVC sheets inner packing, transport to site, compartmental cubicle type freestanding with appropriate cable entries, front operating, front maintained wherever required complete with base frame etc. erected in 14 gauge CRCA sheet and surface treated with phosphating seven tank process and duly powder coated with MSEDCl approved color, feeder piller should be with supporting angles, self-locks, gasket and slanting top to be erected on provided foundation<br>'Auditorium Main Panel Name: Auditorium<br>Duty: Indoor Type (IP 42)<br>Location: Auditorium<br>Incomer: 2 Nos 400A FP MCCB with LSI release with R, Y, B & On , OFF, Trip indications and required accessories. 400A ATS with MFM.<br>Busbar: 400A AL busbar.<br>Outgoing: 5 No of 100A TPN MCCB.<br>2 No of 200A TPN MCCB<br>8 No of 32A TPN MCB.<br>2 Nos 63A TP MCB<br>All outgoing with Dual Source MFM | |

**WORK - ABSTRACT**

**Estimate No**

**Name of work :- Providing Lifts**

| Sr. No. | Item No. | Qty. | ITEM DESCRIPTION | Unit |
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| **2. Lifts** | | | | |
| 1 | 17.1.4 | 2 | SITC of Electric Traction Passenger Lift with 1299498<br>· Rated capacity :- 10 Passenger/680Kg<br>· Floors :- G+3 floor (4 Stops/4 Landings)<br>· Travel :- 3 to 4.2 mtrs<br>· Location of Lift Machine:- MR/MRL<br>· Rated speed :- 1.0mps VS<br>· Car/Landing door clear opening of 800 mm wide x 2000 mm high<br>· Clear Car size of 1350 mm wide x 800 mm deep x 2250mm high | Job |
| | | | · Doors type :- COPO/TOPO Doors with frame made from SS 304 grade solid(non-cladded) sheet of 1.5mm thick in hairline finish for car and all landing doors with SS door architraves/frames The lift doors shall have minimum 1 hour fire rating (with submission of necessary valid test certificate issued by NABL accredited or Independent test laboratory). | |
| | | | · Lift car enclosure made from SS 304 grade solid (non-cladded) sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. The lift car interior design shall be done as per the directions of engineer in charge. | |
| | | | • COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio-visual alarm, VAS in Marathi, Hindi & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor | |
| | | | • Clear Car size of 1000 mm wide x 2400 .mm deep x2000 .mm high | |

| | | | | | |
|---|---|---|---|---|---|
| | | | • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings | | |
| | | | • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class | | |
| | | | • ARD complete with necessary SMF VRLA batteries<br>• Fireman controller having fireman switch at fire Landing, | | |
| | | | • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge. | | |
| | | | • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength | | |
| | | | • Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work | | |

| | | | | |
|---|---|---|---|---|
| | | | • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT.<br><br>· General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector(Lifts) with submission to the Engineer In Charge.<br>· The above rate includes Fully Comprehensive AMC for one year from the date of commissioning. | |
| | | | A2 - For Lift having 800mm wide x 2000mm high clear entrance in 1.5mm thick SS 304 grade solid (non-cladded) landing door [Two panel], this includes all necessary accessories like LOP's with UP/DN buttons-arrows-indicators, extension of guide rails, shaft wiring with trunking, traveling cables, main hoisting ropes/belts, & OSG rope landing doors with all accessories etc. necessary for the normal safe functioning of lift installation complete. for 6Floor | |
| 2 | 1.3.2 | 10.00 | Supplying and erecting mains with 2x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | m |
| 3 | 1.3.2 | 10.00 | Supplying and erecting mains with 1x2.5 sq.mm FRLSH copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places. as per specification No: WG-MA/BW | m |
| 4 | 1.6.1 | 10.00 | Supplying and erecting modular type switch 6A / 10A duly erected on provided plate and box with wiring connections complete. | Each |
| 5 | 1.6.2 | 10.00 | Supplying and erecting modular type switch 16A duly erected on provided plate and box with wiring connections complete. | Each |
| 6 | 1.6.10 | 10.00 | Supplying and erecting modular type 3 pin 6A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |

| | | | | |
|---|---|---|---|---|
| **7** | 1.6.11 | 10.00 | Supplying and erecting modular type 3 pin 6 / 16A multi socket with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |
| | 1.6.30 | 10.00 | Supplying and erecting PVC Surface modular switch box with double mounting plate for 6 module duly erected. | Each |
| | 1.6.23 | 2.00 | Supplying and erecting modular type (two module) electronic step regulator for fan, duly erected on provided plate and box with wiring connections complete. | Each |
| | 1.7.26 | 2.00 | Wiring for plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification No: WG-PW/CW | Point |
| | 1.7.6 | 2.00 | Point wiring for ceiling fan concealed type in min 20 mm HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification no. WG-PW/CW | Point |
| 8 | 1.7.5 | 4.00 | Point wiring for light/bell concealed type in min 20 mm FRLS grade HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch, earthing and required accessories as per specification No: WG PW/CW | Point |
| 9 | 2.1.15 | 10.00 | Supplying and erecting bulk head LED fitting max. 10W with high transitivity diffuser with system lumens output of min. 1100 lumens, min. efficacy of 110 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., THD<10%, p.f. >0.95, operating range of 140-260V, in built surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50, including driver, IP66, IK09 rated on provided PVC Block / wooden board with 3 years warranty. | Each |
| 10 | 2.1.17 | 4.00 | Supplying and erecting CRCA powder coated corridor/passage light LED fitting (4 feet) Max. 17W with high transitivity diffuser with system lumens output of Min. 2000 lumens , min. efficacy of 120 lumen/W, CRI>80, CCT upto 6500K, Beam Angle of 120 deg., Ripple<5%, THD<10%, p.f. >0.95, operating range of 120-270V, surge protection of 4 kV, Life class of 50,000 Hrs. at L70B50, including driver, with end caps on provided PVC Block / wooden board with 3 years warranty. | Each |

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|---|---|---|---|---|
| 11 | 2.11.11 | 2.00 | Providing recess in brick wall suitable for erection of exhaust fan up to 450mm. sweep complete with grouting of nut, bolts, plastering and colour washing to match the colour of the wall for the wall thickness of 225 mm. | Each |
| 12 | 2.11.14 | 2.00 | Supplying & erecting 22 SWG G.I sheet metal cawl sector shaped with 25 x 25 x 3 (mm) angle iron frame, metal mesh to avoid birds entry with necessary material, suitable for exhaust fan of 300 mm as per specification no FG-FAS/MSC | Each |
| 13 | 2.10.13 | 2.00 | Supplying and erecting exhaust fan medium duty 230 V A.C. 50 cycles 225 mm. 1400 RPM with condenser complete erected in position with necessary materials. Fan motor with moisture proof treatment and 'E' class insulation. | Each |
| 14 | 2.10.22 | 2.00 | Supplying and erecting Energy Saving BLDC Ceiling fan 230 V A.C. 50 cycles 1200 mm, max. energy consumption of 28W having service ratio (CMM/W) of Min. 8 , PF>0.9, THD<10% with IR remote control/compatible speed regulator, Temperature Rise of Max. 40 deg. C, having external mounted control PCB completely erected in position as per specification no. FG-FN/CF | Each |
| 15 | 5.3.2 | 6.00 | Supplying, erecting & marking SPMCB 6A to 32A, C-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 16 | 5.3.3 | 6.00 | Supplying, erecting & marking SPMCB 6A to 32A, B-series with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification no. SW-SWR/MCB | Each |
| 17 | 5.6.1 | 2.00 | Supplying, erecting & commissioning 2 pole RCCB 16/25A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 18 | 5.4.8 | 2.00 | Supplying and erecting single pole and neutral distribution board (SPNDB), with 2 ways for incoming and 6 ways (6 poles) for outgoing SP MCBs, with door, 1.2mm thickness surface / flush mounted, IP 43 Protection on iron / GI frame as per specification no. SW-SWR/MCBDB | Each |

| | | | | |
|---|---|---|---|---|
| 19 | 5.6.6 | 2.00 | Supplying, erecting & commissioning 4 pole RCCB 63A, electromagnetic type with 30/100/300 mA sensitivity with earth leakage trip indication complete as per specification no. SW-RCCB/RCCB | Each |
| 20 | 5.4.13 | 2.00 | Supplying & erecting CRCA sheet metal one way enclosures of 1.2mm thickness suitable for DP MCB /TP MCB/FP MCB/RCCB/RCBO complete erected on angle iron/GI frame. | Each |
| 21 | 6.1.19 | 10.00 | Supplying and erecting iron work, sheet metal work consisting of CRCA sheets, various sections of iron, plates, chequered plates, rods, bars, MS pipes, etc. for panel board or any other purpose with bending, cutting, drilling and welding complete erected at the position with necessary materials duly painted with one coat of red oxide and two coats of enamel paint to match the switchgears or as per directions by the authority. | kg |
| 22 | 7.2.32 | 140.00 | Supplying, erecting & terminating FR XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 core 6 sq. mm. copper conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as per specification no. CB-LT/CU | m |
| 23 | 7.6.2 | 6.00 | Supplying & erecting G.I. pipe 'A' class 40 mm dia. erected for enclosing XLPE armoured cable on wall/pole as per specification no. CB-CE | m |
| 24 | 9.1.5 | 4.00 | Supplying, installation and testing of maintenance free earthing comprising of Electrode of 17.2 mm diameter Low Carbon Steel with 250 micron molecular copper bonded earthing rod of Length 3m along with 25 kg Carbon based environment friendly back fill ground enhancing compound required to fill up the excavated earth with required quantity complete, and recording the results Specification no. EA-MOBI | Each |
| 25 | 9.2.4 | 10.00 | Supplying and erecting annealed bare copper wire of high purity of required sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws complete. | kg |

**WORK - ABSTRACT**

**Estimate No. :-**

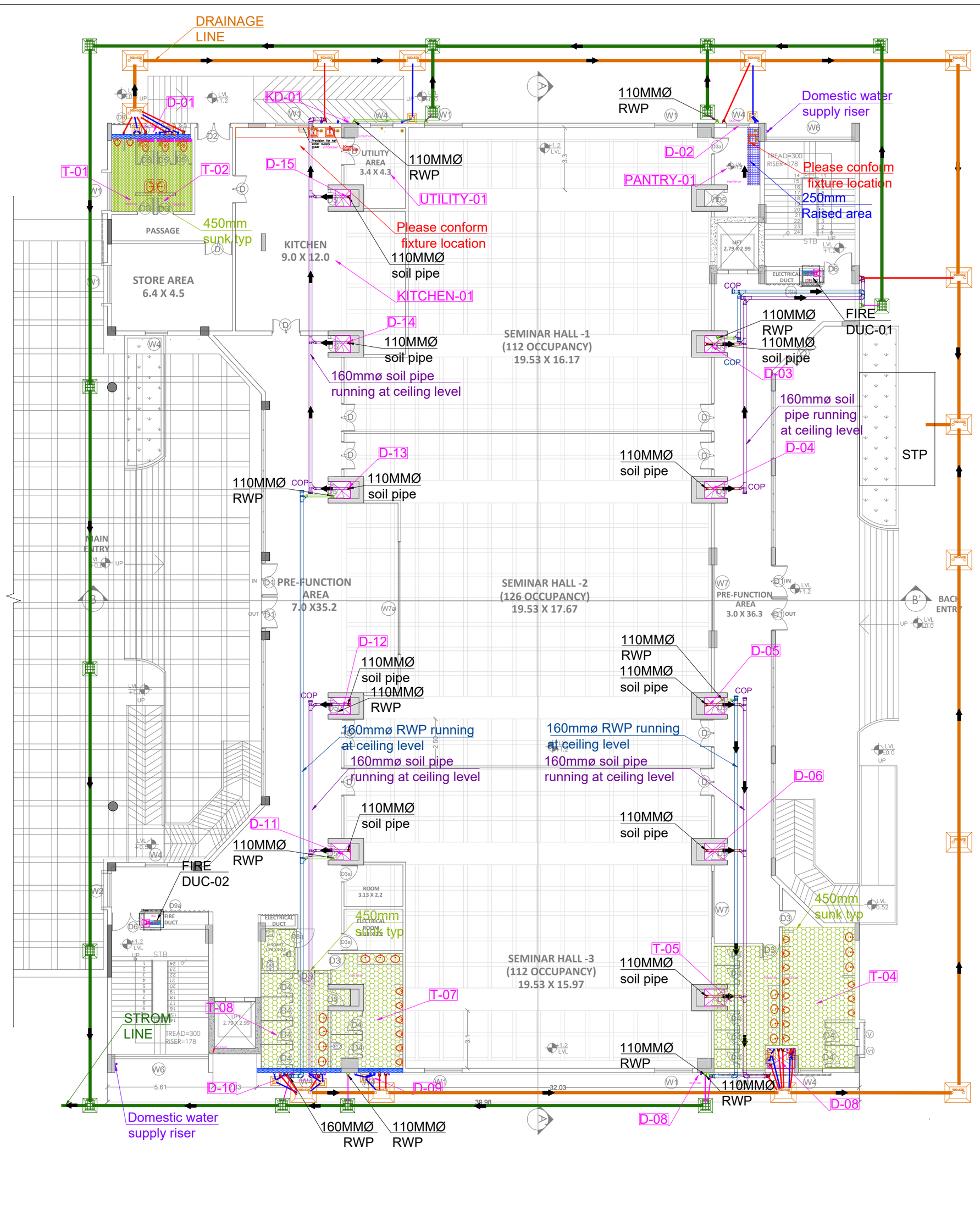
**Name of work :-** Providing LV System (Networking, Telephone, FAS, PA & CCTV) work for Seminar Hall & Guest

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **ELV WORKS** | | | | |
| **SECTION- I (NETWORKING & TELEPHONE SYSTEM)** | | | | |
| 1 | 1-1-9 | 310 | Supplying & erecting **HMS PVC conduit 25mm dia**. with necessary accessories in wall/floor with chiselling appropriately as per specification no. **WG-MA/CC** . (Conduit without bathroom 60 + Conduit for TV 150 + for CCTV 100 ) | m |
| | 1-1-12 | 150 | Supplying and laying HMS PVC conduit FRLS grade 32mm dia. with necessary accessories in RCC work/false ceiling/false flooring as per specification No. WG-MA/CC. (Inside Rooms for CAT 6 & Tel) | m |
| | 1-2-11 | 320 | Supplying and erecting PVC box trunking of size 50x50 mm. with accessories on wall/ceiling as per specification No: WG-MA/BOX. (Outside Room in passage) | m |
| 2 | 1-2-2 | 15 | Supplying and erecting **25 mm dia. corrugated flexible polypropylene conduit** | m |
| 3 | 1-2-14 | 20 | Supplying and erecting **PVC box trunking of size 100x50 mm**. with accessories on wall/ceiling as per specification No: **WG-MA/BOX .** | m |
| 4 | 1-6-14 | 40 | Supplying and erecting **modular** type **T.V. socket single outlet**, duly erected on provided plate and box with wiring connections complete. | Each |
| 5 | 1-6-15 | 42 | Supplying and erecting **modular** type **telephone socket one gang** with safety shutter, duly erected on provided plate and box with wiring connections complete. | Each |
| 6 | 1-6-24 | 42 | Supplying and erecting **modular** type **blanking plate one module**, duly erected on provided plate & box. | Each |
| 7 | 1-8-1 | 1710 | Supplying, erecting & terminating **2 pair telephone copper cable 0.5 mm dia**. with high density polyethylene insulation, polyester taped, nylon rip cord & grey colour sheathed with FR PVC, confirming to ITD specification S/WS 113C laid in provided PVC casing-n-capping/conduit as per specification no. **WG-TW** | m |
| 8 | 1-8-6 | 60 | Supplying, erecting & terminating **20 pair telephone copper cable 0.5 mm dia**. with high density polyethylene insulation, polyester taped, nylon rip cord & grey colour sheathed with FR PVC, confirming to ITD specification S/WS 113C laid in provided PVC casing-n-capping/conduit as per specification no. **WG-TW** | m |
| 9 | 1-8-17 | 3 | Supplying & erecting **0.5 mm dia, copper jumper wire** as per specification No. WG-TW | m |
| 10 | 1-8-18 | 400 | Supplying, erecting & terminating **co-axial copper cable low voltage grade** tri-shielded **RG-11** as per specification no. WG-TW | m |
| 11 | 1-8-19 | 1620 | Supplying & erecting **co-axial copper cable low voltage grade** tri-shielded **RG-6** as per specification No. WG-TW | m |
| 12 | 1-8-21 | 1 | Supplying, erecting & terminating **3 m HDMI cord low voltage grade minimum 4k compliant** to be laid in provided conduits with male/female 19pin HDMI connectors complete. | m |
| 13 | 1-9-1 | 1 | Supplying, erecting & commissioning **MDF Box 50x50 pairs** made from min. 1.5mm thick MS sheet as per specification no. WG-TA | Each |
| 14 | 1-9-12 | 2 | Supplying, erecting & commissioning **20 pairs FR junction box with moulded plastic enclosure** as per specification no. **WG-TA** | Each |
| 15 | 1-9-26 | 1 | Supplying and installing, testing & commissioning of **digital (hybrid) type EPABX of 6 x 40 extensions** suitable upto 96 extensions complete. | Each |
| 16 | 1-9-29 | 42 | Supplying, installing, testing & commissioning **push button telephone instrument** desk top unit as per specification complete | Each |
| 17 | 1-10-1 | 2905 | Supplying and installing **cat-6 cable** suitable for networking as per specification no. WG-COC/NC | m |
| 18 | 1-10-16 | 166 | Supplying and fixing **1 m 24 AWG multi stranded UTP patch cord** with RJ-45 factory crimped connector of **Cat 6 type**, compliant ANSI/TIA-568.2-D standards in position as per specification no. WG-ELVC/PC | m |
| 19 | 1-11-4 (New) | 5 | Supplying, fixing, and configuring **24 ports with 4 (SFP+) port**, **ethernet managed switch** with web view/CLI, 6KV surge protection on ethernet port and console port for management in provided rack as per specification no. WGNWC/GBS | Each |
| 20 | 1-11-17 | 1 | Supplying, fixing, and configuring broadband ADSL router with all accessories, on provided rack as per specification No. WG-NWC/ADSL | Each |
| 21 | 1-12-2 | 83 | Supplying and fixing **tool-less IO (ethernet)** flush/surface type in provided modular box as per specification no. WG-NAS/IO | Each |
| 22 | 1-12-4 | 5 | Supplying and fixing **24 port patch panel** with tool-less keystone jacks in provided U Rack complete as per specification no. WG-NAS/PP | Each |
| 23 | 1-12-16 | 4 | Supplying and fixing Power Distribution Unit for networking rack comprises of 6/16A (6 Nos. sockets), 25 A modular MCB, appropriate rating fuse and indicator lamp, enclosed in black powder coated metal with necessary arrangement for fixing as per specification No. WG-NAS/RAK | Each |
| 24 | 1-12-20 | 4 | Supplying and fixing **15U wall mount rack** (Dimension-DxWxH – 500x550x747 mm) as per specification no. WG-NAS/RAK | Each |
| 25 | Non CSR | 38 | Supplying and fixing **2 m Telephone patch cord of RJ11** type | Each |

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **TOTAL FOR SECTION- I** | | | | |
| **SECTION- II (CCTV SYSTEM-ANALOGUE)** | | | | |
| 26 | Non CSR | 5 | Supply Installation, testing & commissining of **2MP Analog HD Dome type Camera, 2.8 mm Fixed lens**, IR-20mtr with power supply adaptor & required accessories. | Each |
| 27 | Non CSR | 2 | Supply Installation, testing & commissining of **2MP Analog HD Bullet type Camera, 2.8 mm Fixed lens**, IR-20mtr with power supply adaptor & required accessories. | Each |
| 28 | Non CSR | 1 | Supply Installation, testing & commissining of **16 Channel, 1080P HD DVR (Digital Video Recorder),** Auto Adaptive HDCVI/AHD/TVI/CVBS/IP signals, Max 128Mbps Incoming Bandwidth, H.264+ / H.264 dual-stream video compression, HDMI / VGA Simultaneous Video Output, Support 2 SATA HDD up to 16TB, 2 USB Ports, with required accessories. | Each |
| 29 | Non CSR | 14 | Supplying & erecting of **BNC Connector** with required accessories. | Each |
| 30 | Non CSR | 2 | Supply Installation, testing & commissining of 12VDC/5A SMPS Power supply for Camera | Each |
| 31 | Non CSR | 400 | Supplying, erecting, testing and commissioning of multistrand annealed bare copper conductor, **PVC insulated 2C x 1.5 sqmm cable** in provided trunking/conduit etc. | m |
| 32 | Non CSR | 1 | Supplying & erecting **8 TB internal Surveillance HDD suitable for SATA Port** of DVR/NVR, interface transfer rate 6 GB/S, maximum sustained transfer rate 210 MB/Sec to 213 MB/S. Drive bay supported 08+, Cameras supported up to 64, Cache (MB) 256, Load/Unload Cycle -3000000, Work Load Rating per Year 180TB, MTBF 1000000 Hrs. HTTPS. RoHS, UL, CE certified, duly erected in position in provided NVR as per specification no. CCTV-HDD | Each |
| 33 | Non CSR | 1 | Supplying & erecting 32" professional LED Monitor with 1920*1080 (Full HD) Display, suitable for 16 channel NVR and following features<br>Brightness: minimum 250 Cd/m2<br>Contrast Ratio: minimum 1000:1<br>Viewing angle: 178/178 deg.<br>Response time: maximum 8 ms<br>Inputs: HDMI, VGA, BNC, USB, Audio In,<br>Built-in speakers maximum 2 W,<br>Suitable to operate on 100-240 V 50 Hz AC supply and 24/7 Duty Cycle duly erected on wall or table top with standard accessories like wall mount stand and wiring connections etc. complete as per specifications no. CCTV-MON | Each |
| **TOTAL FOR SECTION- II** | | | | |

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **SECTION- III (CONVENTIONAL FIRE ALARM SYSTEM)** | | | | |
| 34 | 13-9-6 | 13 | Supplying, erecting testing and commissioning **Manual Call Point** with break glass, push button (Resettable Type) in metal enclosure complete as per specification no. **FF-FAAS/MCP** . | Each |
| 35 | 13-9-8 | 13 | Supplying, erecting, testing and commissioning **hooters** having high (100dB @ 1m) and low (94dB @ 1m) volume setting, group addressing facility allowing multiple sounders to be activated with CRCA enclosure complete as per specification no. **FF-FAAS/HTR** | Each |
| 36 | 13-9-10 | 1025 | Supplying, installing, testing and commissioning **FR, XLPE armoured cable 2 core 1.5 sq.mm. copper conductor** complete erected on wall/ ceiling complete as per specification no. **CB-LT/CU** | m |
| 37 | 13-9-14 | 1 | Supplying, installing, testing and commissioning of **4 Zones Microprocessor based conventional fire alarm control panel** (FACP) with standard accessories, 16x2 Character LCD Display, provision for zone wise contact and beep sound alarm, suitable to operate on 120-220 V AC, 0 - 49 Deg C, 93 ± 2 Percentage RH (non- condensing) at 32 ± 2 Deg C complete as per specification no. FF-FAAS/FACP | Each |
| **TOTAL FOR SECTION- III** | | | | |

| Sr. No. | CSR Item No. | Qty. | Item Description | Unit |
|---|---|---|---|---|
| **SECTION- IV (PUBLIC ADDRESS SYSTEM)** | | | | |
| 38 | Non CSR | 1 | Supplying Installing, testing and commissioning of **PA Gooseneck Microphone with Base** and frequency response 50-16000Hz, 150Ω to 200Ω impedence, sensitivity 3 to 5.5mV/PA with minimum length(excluding pedestal) of 585mm(23") long, felxible stem gooseneck condenser microphone & Heavy Duty Metal Base having on/off switch, LED indication and Suitable for 48V phantom supply as per specification no. PA-GM | Each |
| 39 | Non CSR | 1 | Supplying, erecting, testing & commissioning **Mixer Amplifier 500W RMS Power with Built-in Digital Player** with remote and having 7 Mic & 3 Aux Inputs with Box Speaker/Driver Unit selector switch to each zone , stereo/mono switch, frequency response 50-15000Hz, output regulation <2dB, serprate control for USB level. The unit shall have Preamplifier and Line Output for connecting to a Booster Amplifier and for recording the programme with Resettable circuit breaker for protection against overload and short circuit. The unit shall have speaker output range of 2Ω, 4Ω/(Low Impedence) and 70V & 100V/(High Impedence) & It can instant transfer to DC power(36V) if AC power fails. Signal to noise ratio between 60dB to 80dB. Complete as per specification no. PA-MA | Each |
| 40 | Non CSR | 12 | Supplying,installing, testing & commissioning **2-Way flush mount Ceiling Speakers with input power 20W RMS powe**r, with power taps on 20/10/5W, 100V & 70V line, frequency response 90-18000Hz, stylish metal mesh grill and plastic frame, operates on 100V line for excellent reproduction of both speech and music, wide frequency response and adjustable tweeter complete as per specification no. PA-FMCS | Each |
| 41 | Non CSR | 39 | Supplying, installing, testing and commissioning 15W PA Column Speakers with 15W RMS power in aluminium extruded cabinet, Moulded Plastci Covers & Metal mesh grill, frequency response 150-15,000Hz, operates on 100V line with power taps of 15/10/5/2.5W in black or white color,With Mounting clamps & Necessary hardware, as per decesion by Engineer-in charge complete as per specification no. PA-CS | Each |
| 42 | 13-11-10 | 800 | Supplying, erecting, testing and commissioning of multistrand annealed bare copper conductor, transparent **PVC insulated 2C x 1.5 sqmm speaker wire** in provided trunking/conduit etc.complete as per specification no. PA-TSPWR | m |




## PLUMBING LEGEND

1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)
5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT)
10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT)
8. HOT WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT)

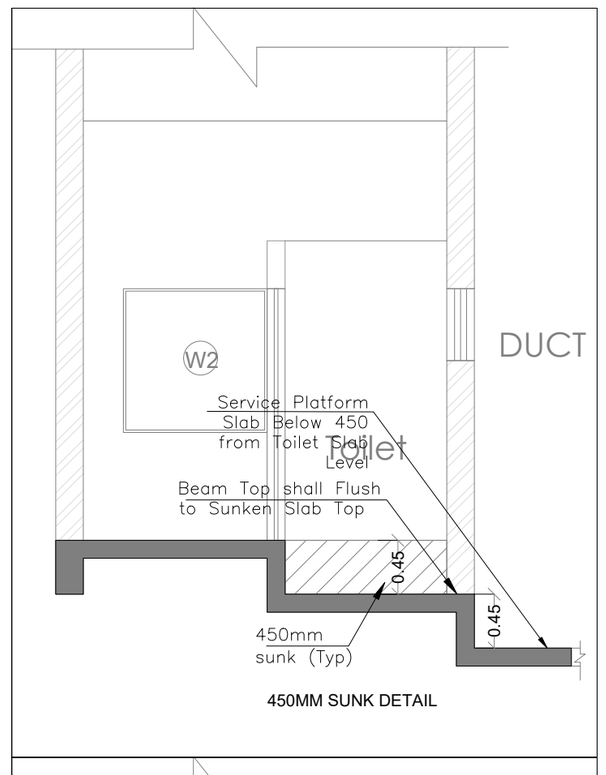
150MM SUNK

250MM SUNK

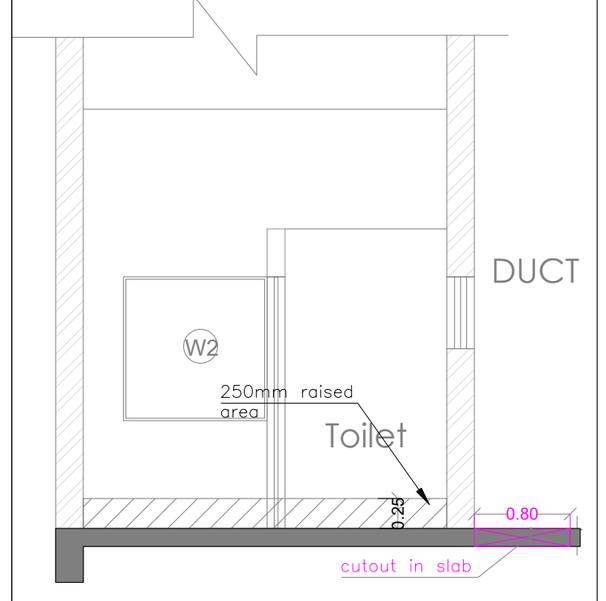
450MM SUNK

250MM RAISE

FOR EASY CROSSINGS OF PLUMBING PIPI THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP)




450MM SUNK DETAIL




250MM RAISE DETAIL

# GROUND FLOOR PLAN

LEGEND

- EXTERNAL DRAINAGE LINE
- EXTERNAL STORM WATER LINE
- 300mm X 300mm GULLY TRAP CHAMBER
- 900mm x 600mm DRAINAGE CHAMBER
- 600MM X 600MM STORM WATER CHAMBER
- 900MM X 900MM STORM WATER CHAMBER



ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS IN METERS, UNLESS OTHERWISE SPECIFIED. THE DRAWING IS NOT BE SCALED THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.DISCREPANCIES IF ANY SHALL BE IMMEDIATELY BROUGHT TO THE NOTICE OF THE CONSULTANT.

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CLIENT: College of Engineering, Pune

JOB TITLE: Yashawantrao chavan academy of development administration

DRAWING TITLE: PHE SERVICES FOR SEMINAR HALL GROUND FLOOR PLAN

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:100 | AS | ND |

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| SCS/24/445 | S_PL_200 | R1 | A2 |

## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
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| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
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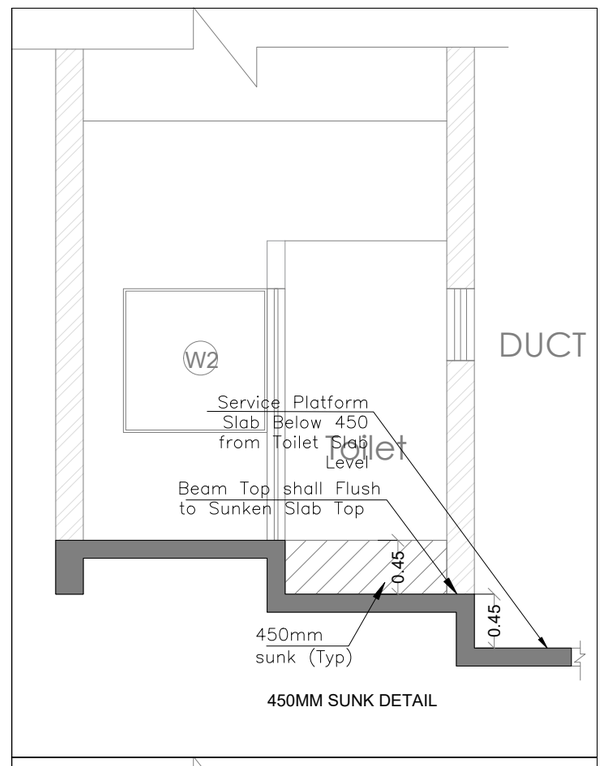
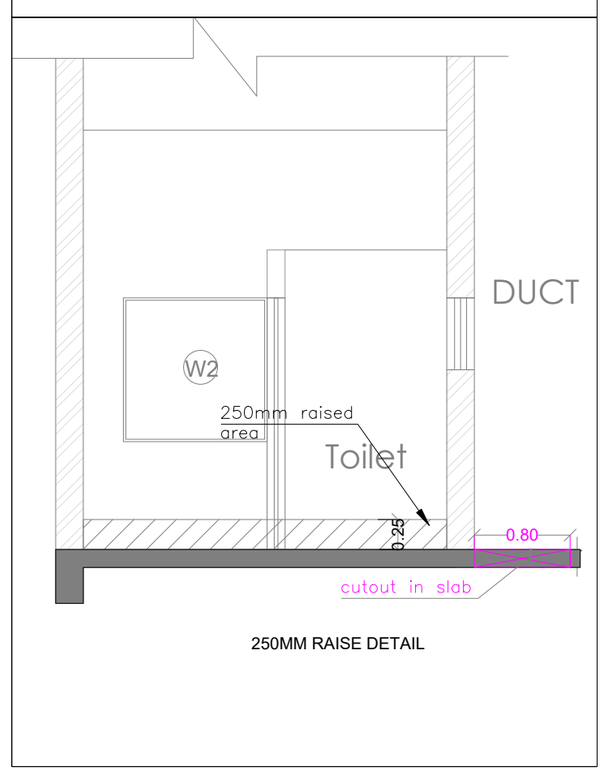
| | 8. HOT WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | 150MM SUNK |
| | 250MM SUNK |
| | 450MM SUNK |
| | 250MM RAISE |
| | FOR EASY CROSSINGS OF PLUMBING PIPE THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP) |




450MM SUNK DETAIL




250MM RAISE DETAIL

# 1ST FLOOR PLAN

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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 1ST FLOOR PLAN

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|---|---|---|
| 1:150 | AS | ND |

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## PLUMBING LEGEND

1. 110mmø SOIL STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

2. 75mmø WASTE STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

4. 110 / 160mm RAIN WATER STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

4A. 75mm RAIN WATER STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

5. DOMESTIC WATER SUPPLY STACK
(CPVC PIPE, SDR–11, SOLVENT JOINT)

10. DOMESTIC WATER SUPPLY RISER FOR OHT
(uPVC PIPE, SCHD–40, SOLVENT JOINT)

8. HOT WATER SUPPLY STACK
(CPVC PIPE, SDR–11, SOLVENT JOINT)

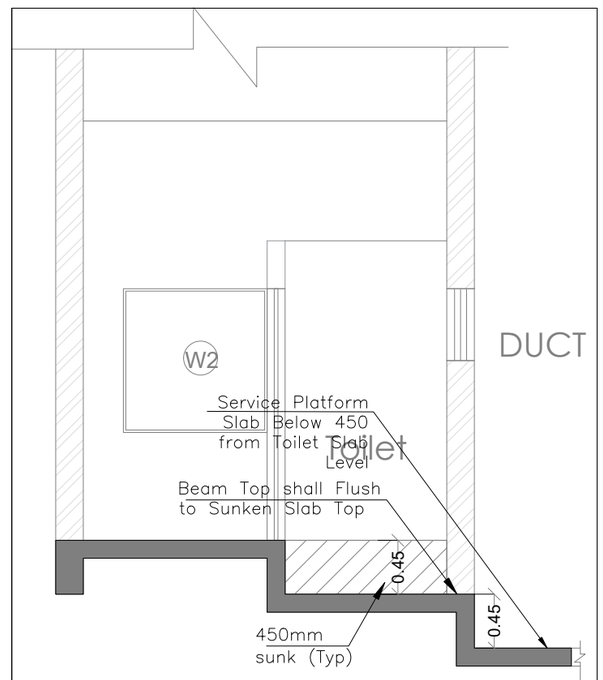
150MM SUNK

250MM SUNK

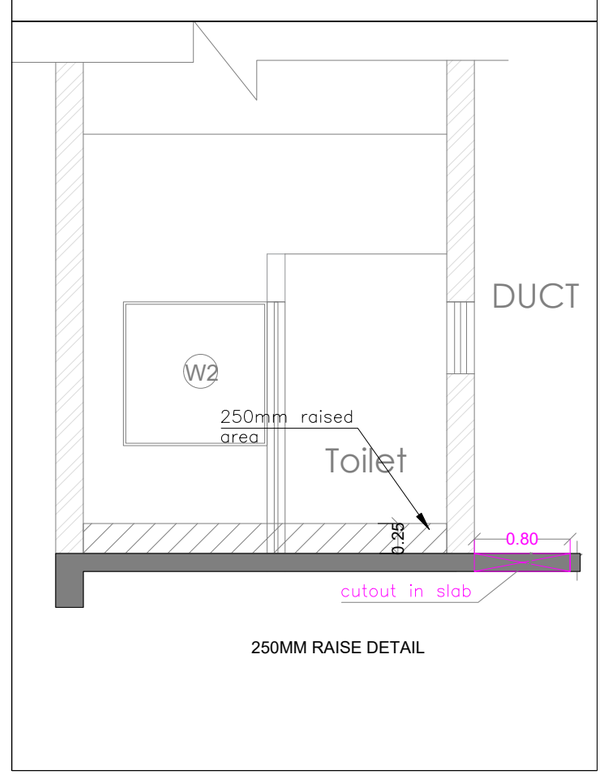
450MM SUNK

250MM RAISE

FOR EASY CROSSINGS OF PLUMBING PIPE THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP)




450MM SUNK DETAIL




250MM RAISE DETAIL

# 2ND FLOOR PLAN



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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 2ND FLOOR PLAN

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| SCS/24/445 | S_PL_202 | R1 | A2 |

## PLUMBING LEGEND

1. 110mmø SOIL STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

2. 75mmø WASTE STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

4. 110 / 160mm RAIN WATER STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

4A. 75mm RAIN WATER STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

5. DOMESTIC WATER SUPPLY STACK
(CPVC PIPE, SDR–11, SOLVENT JOINT)

10. DOMESTIC WATER SUPPLY RISER FOR OHT
(uPVC PIPE, SCHD–40, SOLVENT JOINT)

8. HOT WATER SUPPLY STACK
(CPVC PIPE, SDR–11, SOLVENT JOINT)

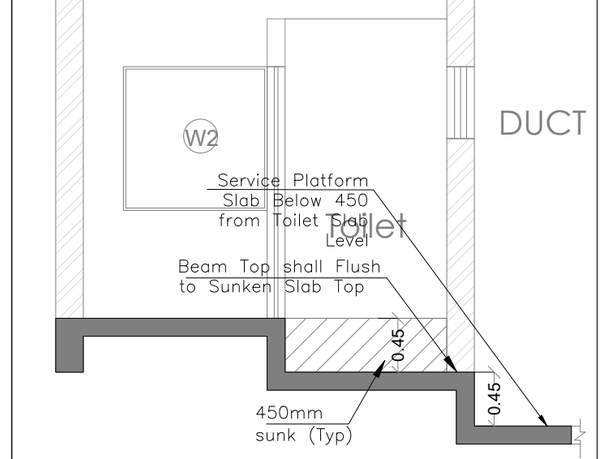
150MM SUNK

250MM SUNK

450MM SUNK

250MM RAISE

FOR EASY CROSSINGS OF PLUMBING PIPES THE BEAMS BELOW WALLS MARKED BY HATCH SHALL BE REGULAR (BEAM TOP SHALL FLUSH TO SUNKEN SLAB TOP)




450MM SUNK DETAIL




250MM RAISE DETAIL

# 3RD FLOOR PLAN



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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 3RD FLOOR PLAN

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| 1:150 | AS | ND |

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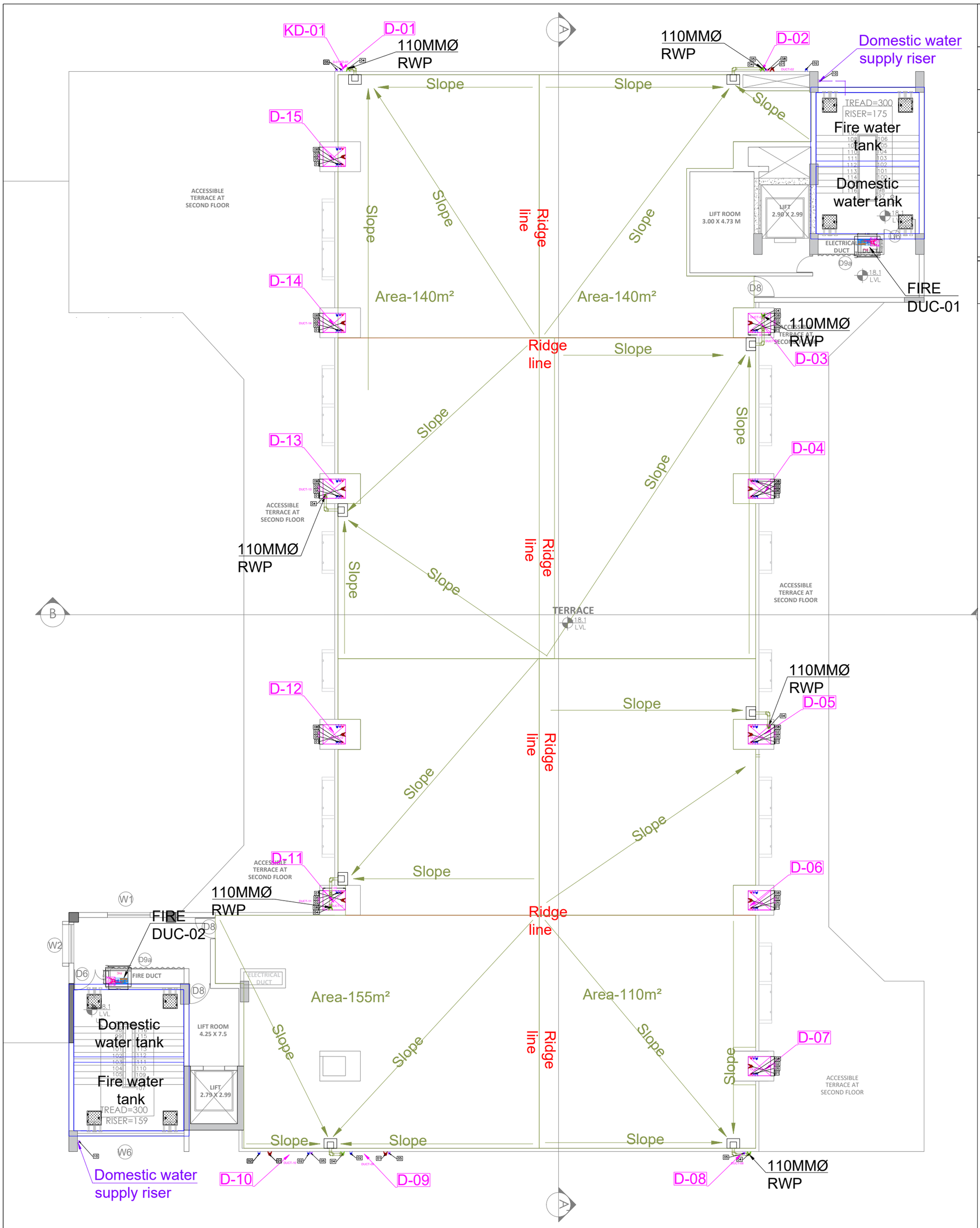
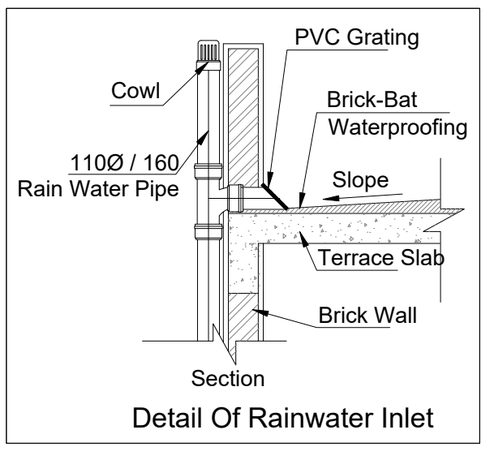



| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT) |
| | PEDESTAL 300mm @ 2500MM SPACING |




Detail Of Rainwater Inlet

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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL BUILDING TERRACE FLOOR RWP KAYOUT

| SCALE | DRAWN | CHECKED |
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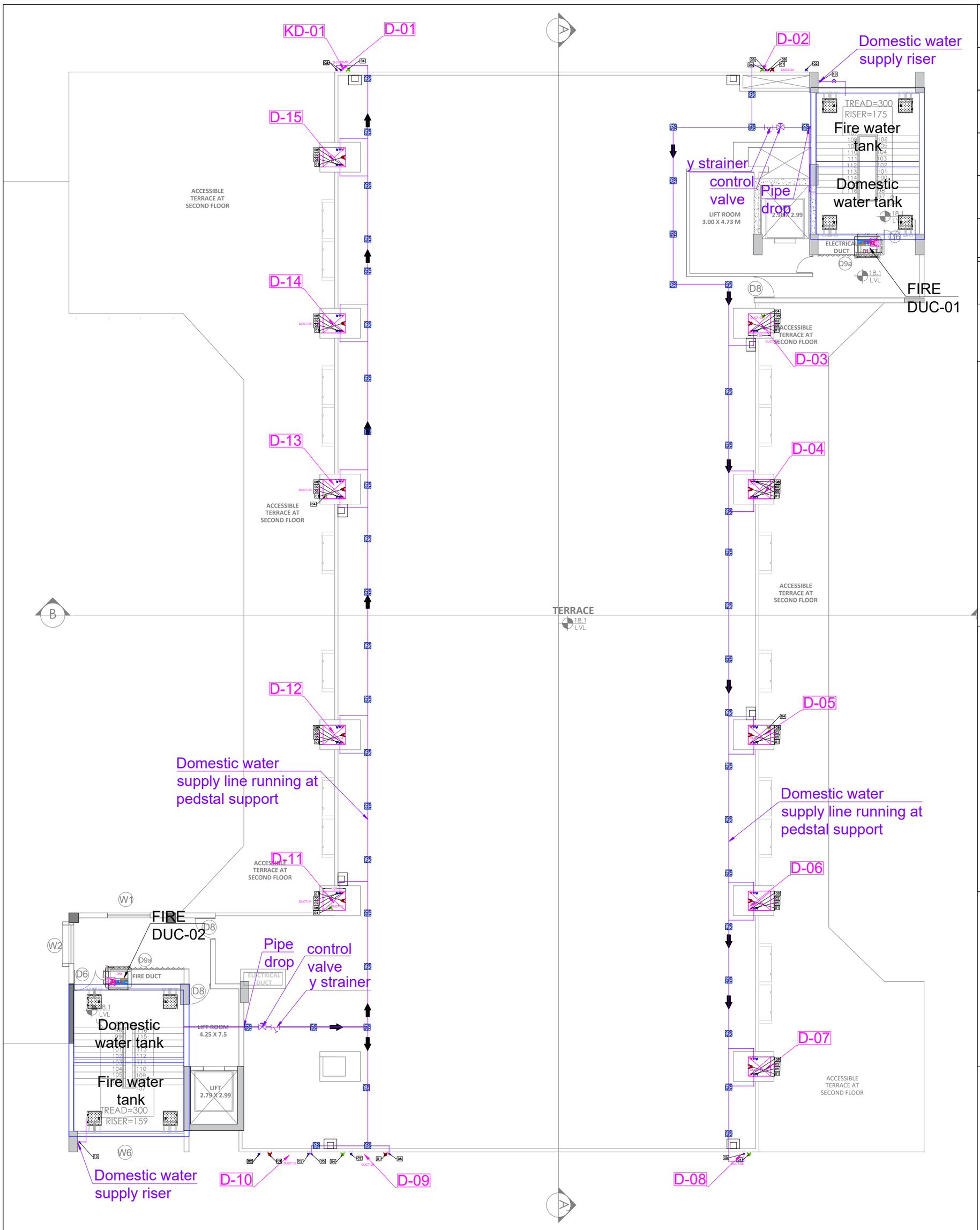


1. 110mmø SOIL STACK
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2. 75mmø WASTE STACK
(UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT)

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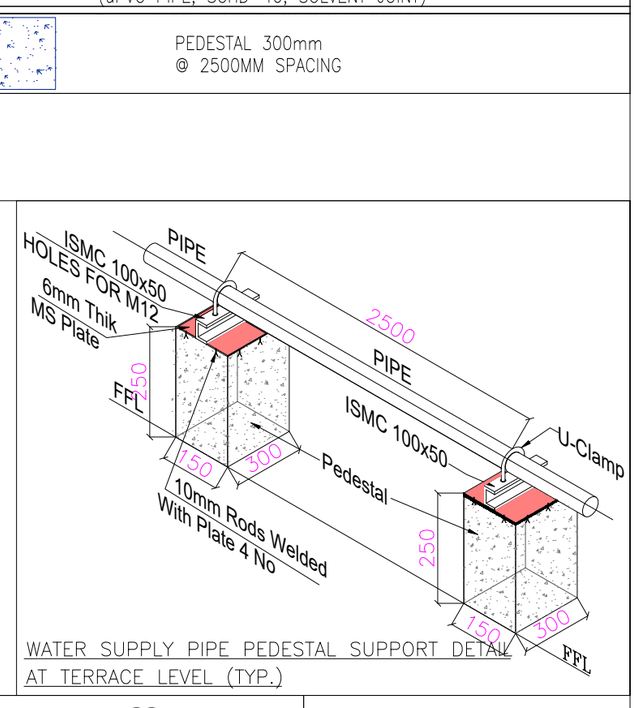
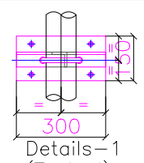
10. DOMESTIC WATER SUPPLY RISER FOR OHT
(uPVC PIPE, SCHD–40, SOLVENT JOINT)

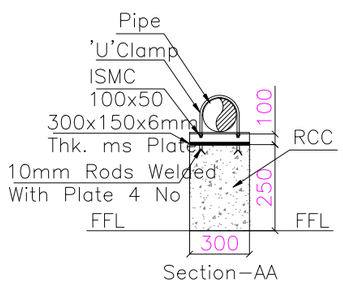
PEDESTAL 300mm
@ 2500MM SPACING



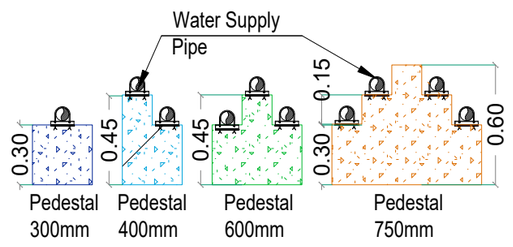

WATER SUPPLY PIPE PEDESTAL SUPPORT DETAIL AT TERRACE LEVEL (TYP.)




Details–1
(Typical)




Section–AA




Water Supply Pipe Pedestal Support Detail



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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL BUILDING TERRACE FLOOR WATER SUPPLY LAYOUT

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|---|---|---|
| 1:150 | AS | ND |

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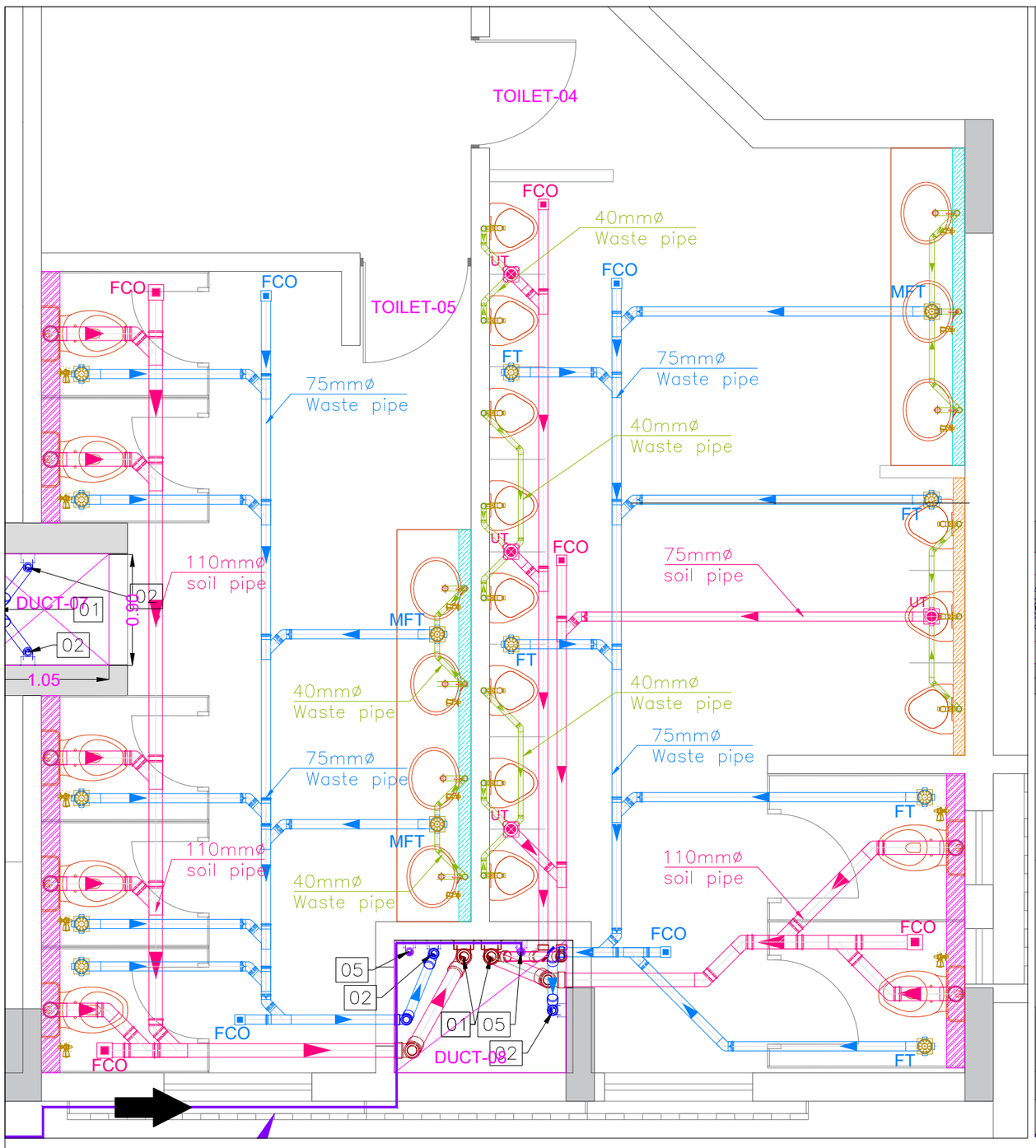
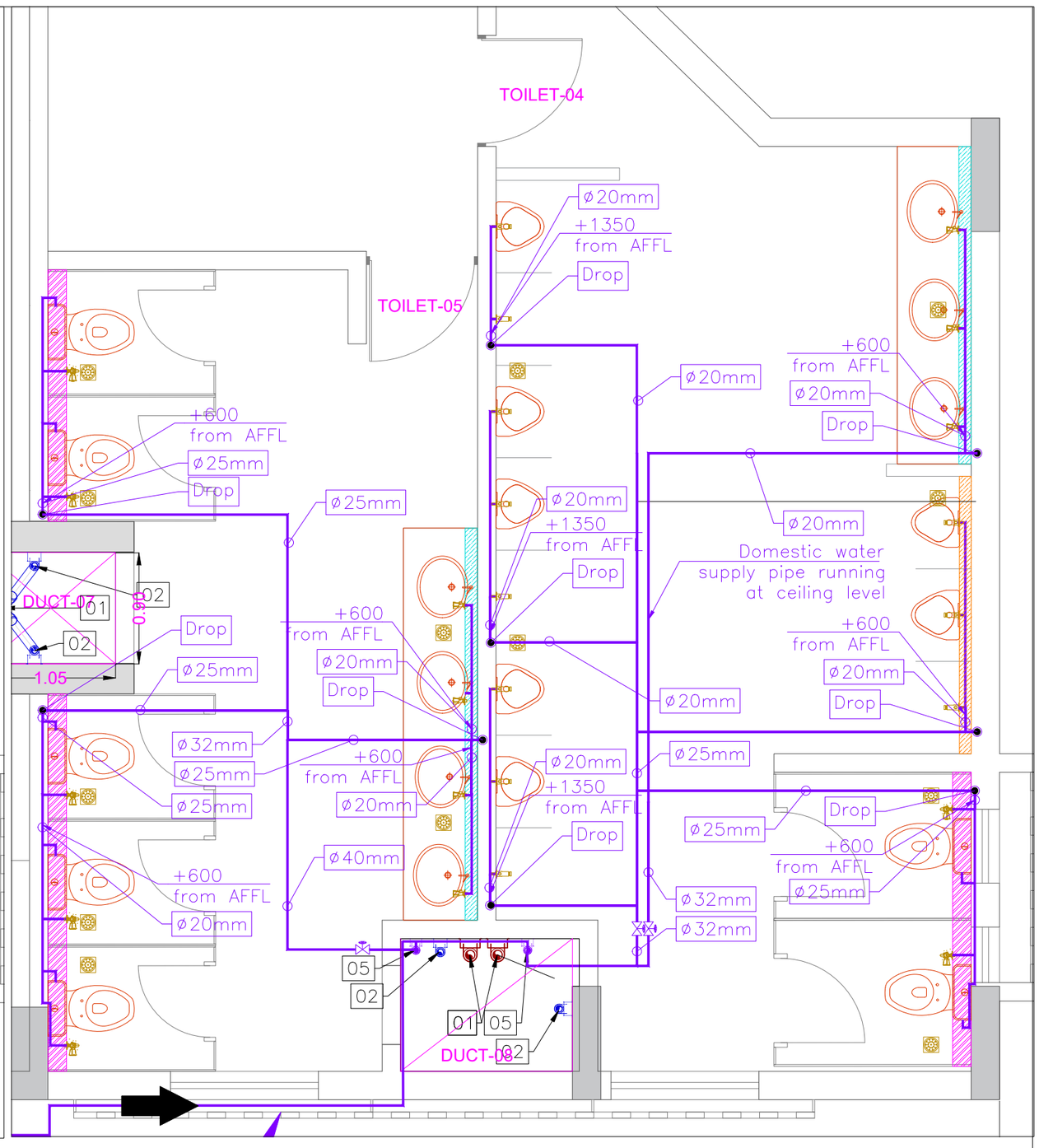
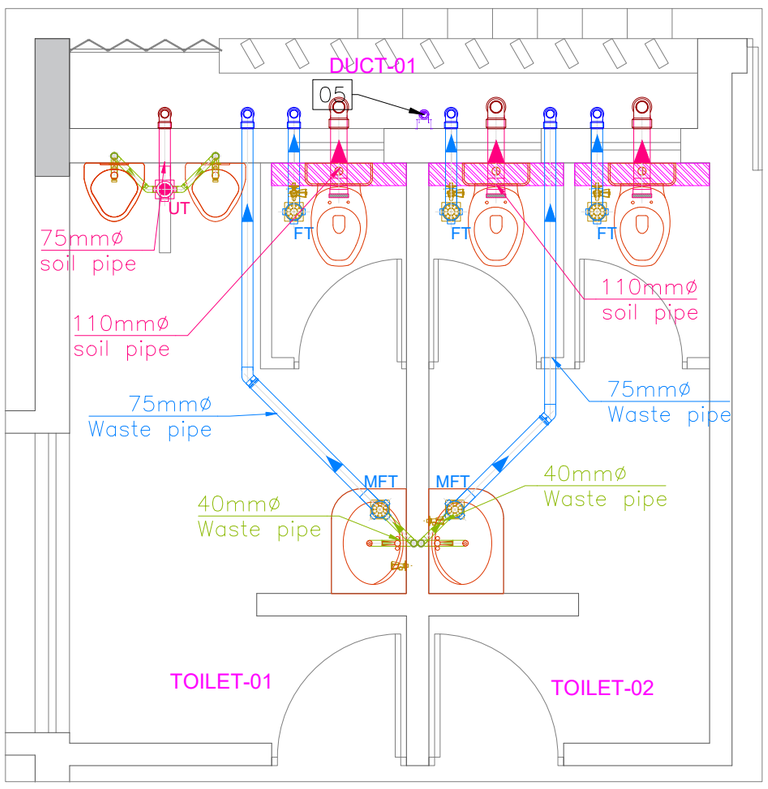


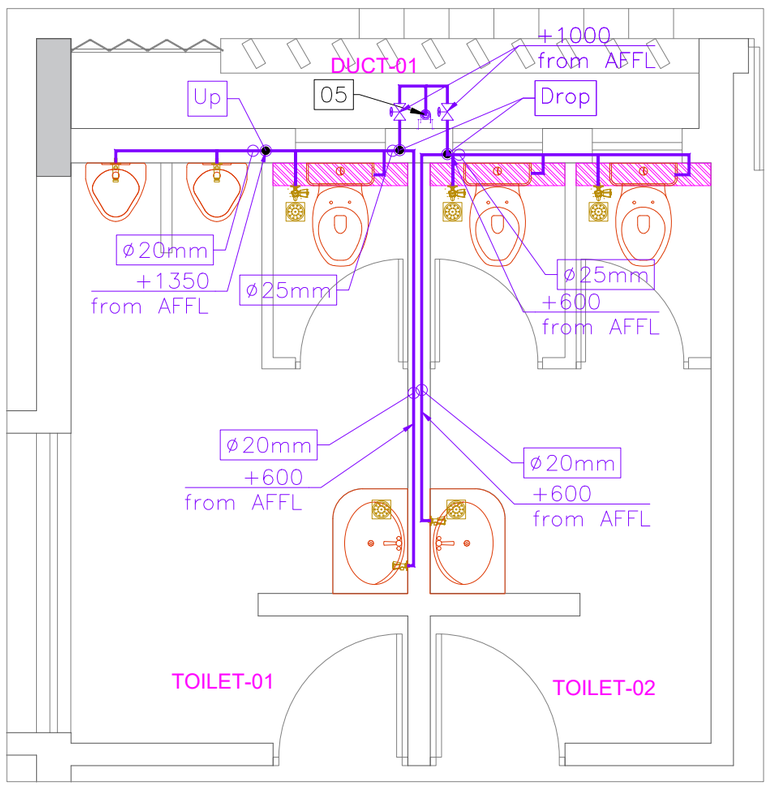

T-04 & 05
SOIL& WASTE PIPE DETAIL



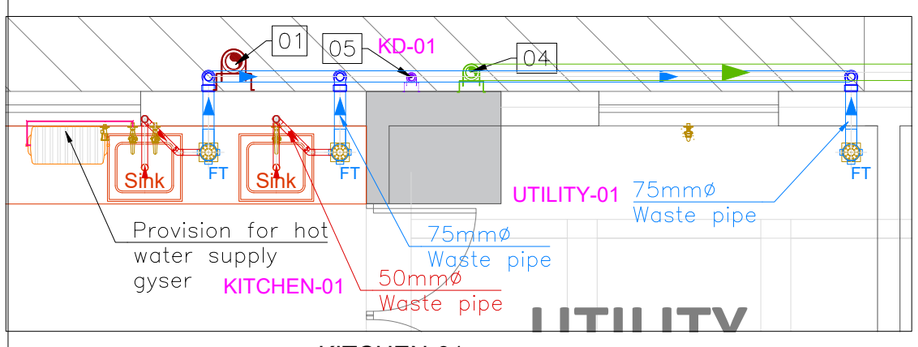

T-04 & 05
WATER SUPPLY PIPE



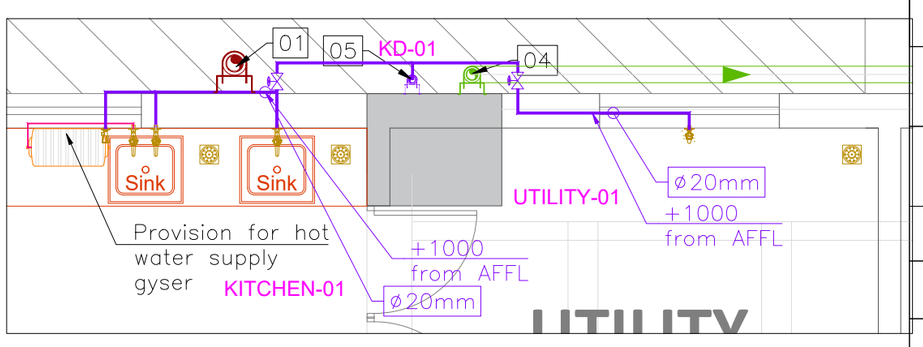

T-01,T-02
SOIL& WASTE PIPE DETAIL




T-01,T-02
WATER SUPPLY PIPE



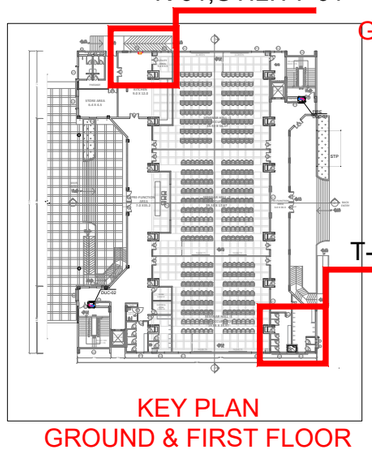

KITCHEN-01
SOIL& WASTE PIPE DETAIL




KITCHEN-01
WATER SUPPLY PIPE

K-01,UTILITY-01

KEY PLAN
GROUND FLOOR




KEY PLAN
GROUND & FIRST FLOOR

## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE–B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD–40, SOLVENT JOINT) |
| | 8. HOT WATER SUPPLY STACK (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | 110mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 75mmø WASTE LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 75mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 50mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE–B, SOLVENT JOINT) |
| HW | HOT WATER SUPPLY LINE (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR–11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |



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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL TOILET-01,02,03,04,05 KITCHEN-01,UTILITY-01 DETAIL

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| 1:40 | AS | ND |

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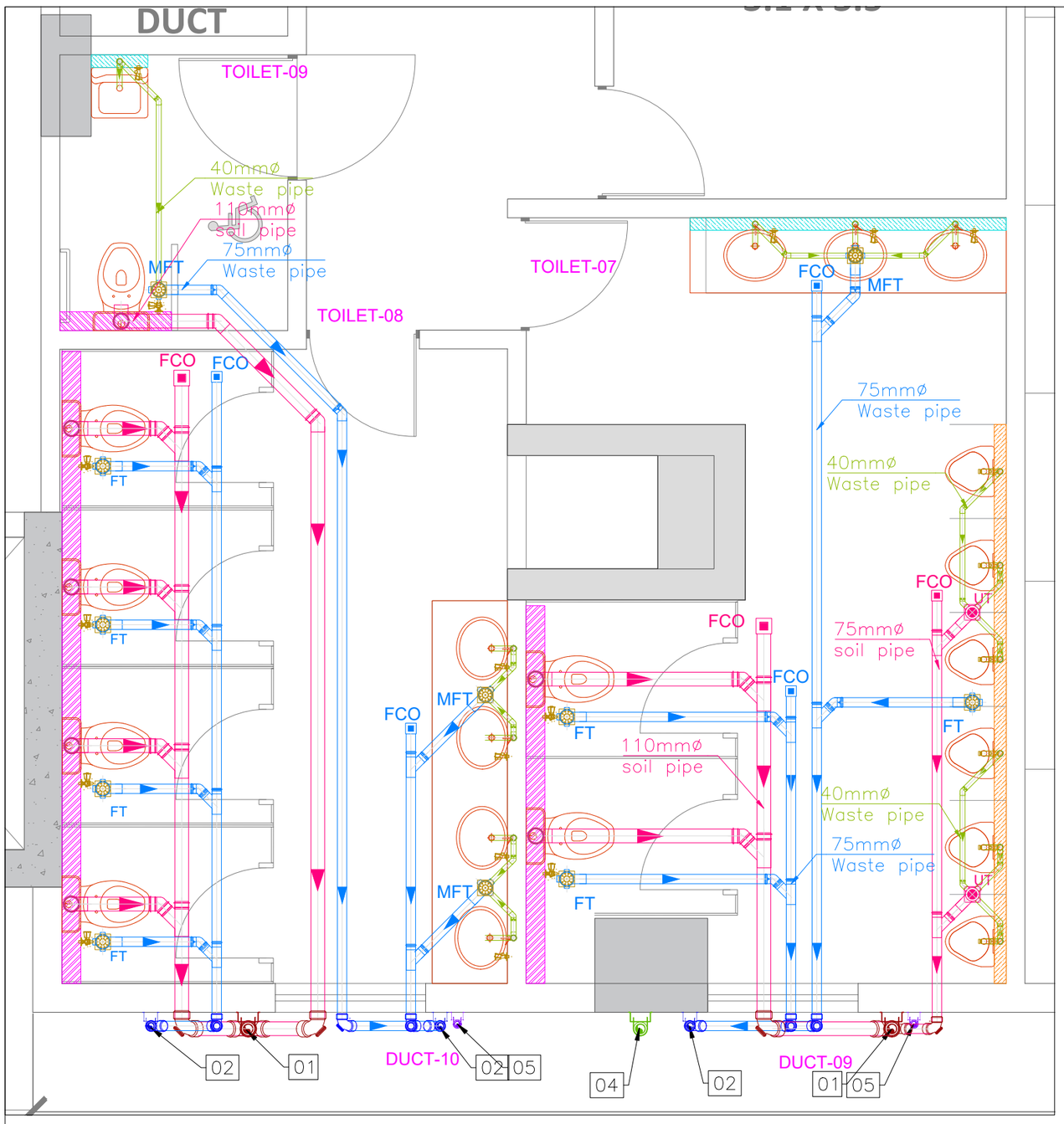
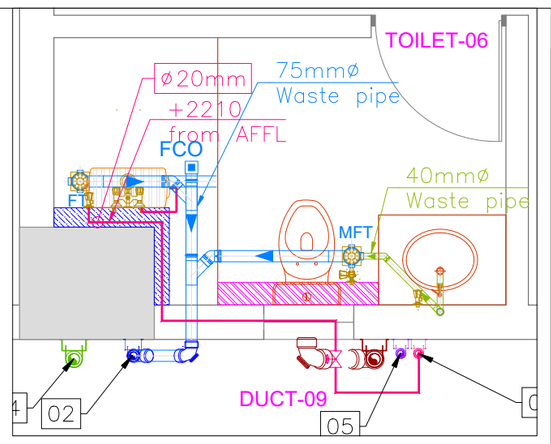
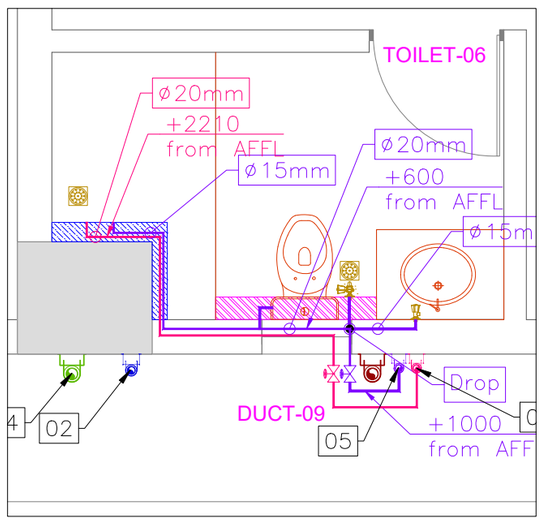



T-07 & 08,09
SOIL& WASTE PIPE DETAIL



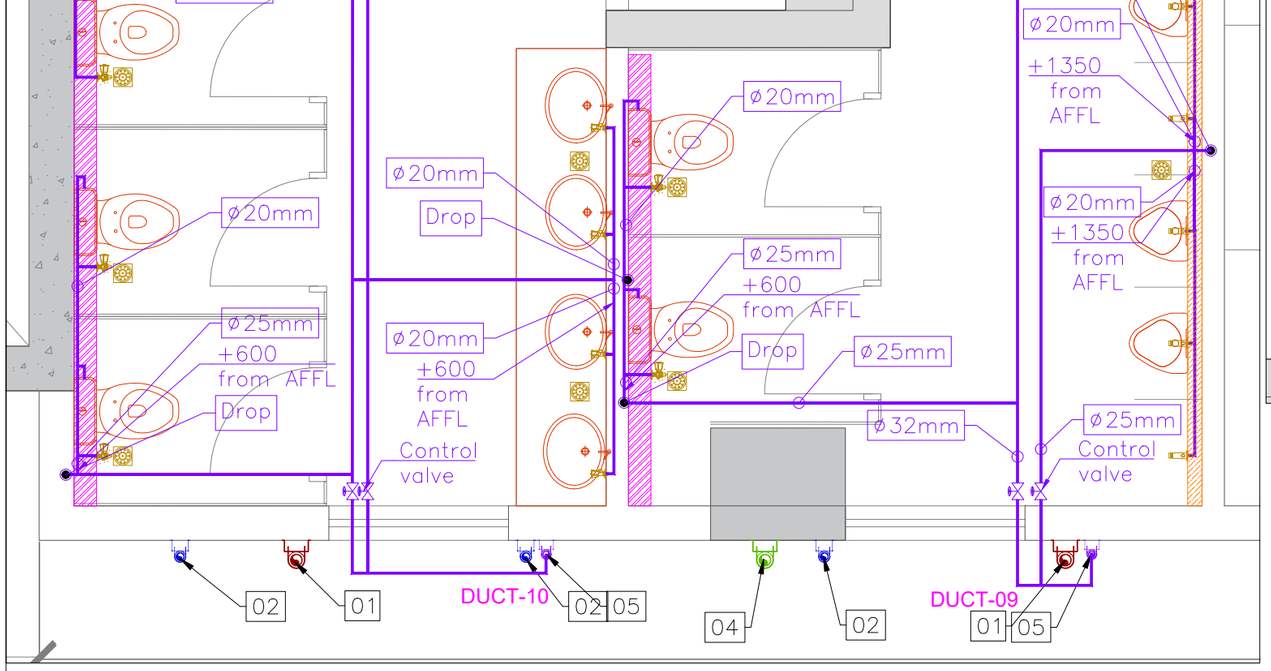

T-06
SOIL& WASTE PIPE DETAIL



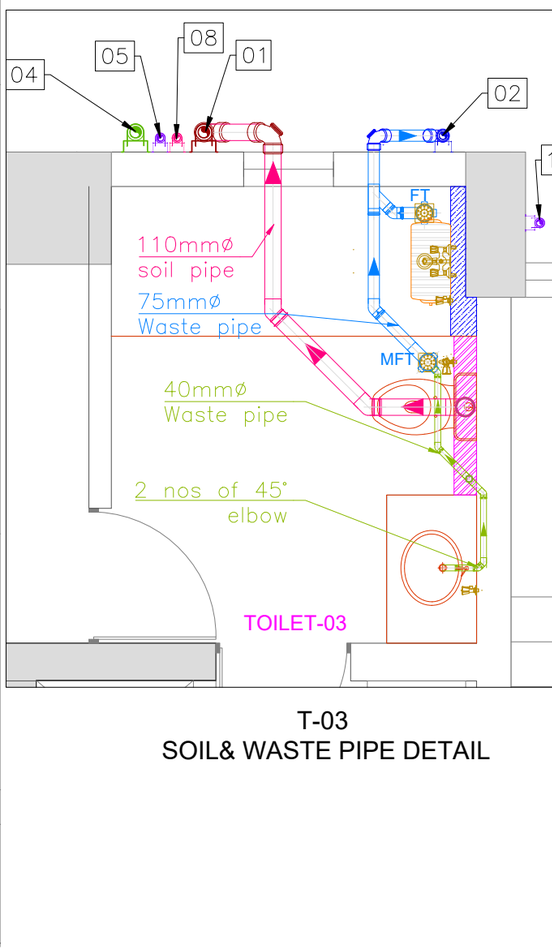

T-06
WATER SUPPLY PIPE

## PLUMBING LEGEND

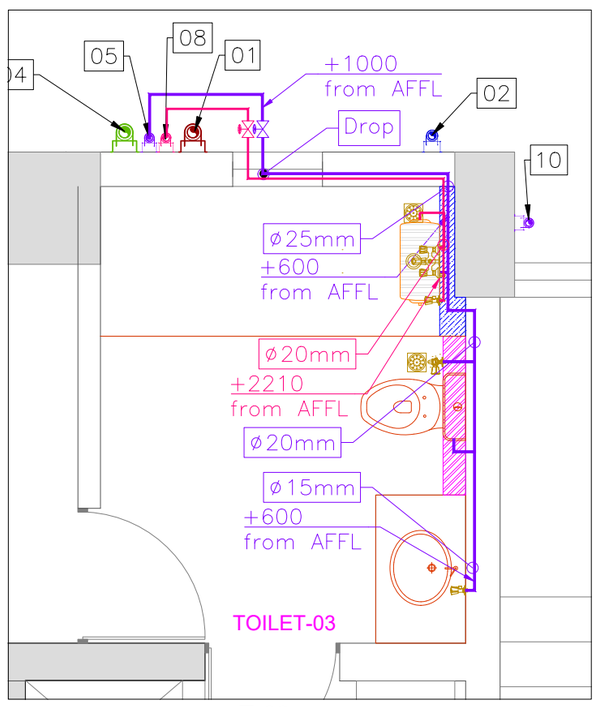
| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD-40, SOLVENT JOINT) |
| | 8. HOT WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | 110mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø WASTE LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 50mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | HOT WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |
| | 160mm Sleeve For 110mmø Pipe |
| | 110mm Sleeve For 75mmø Pipe |



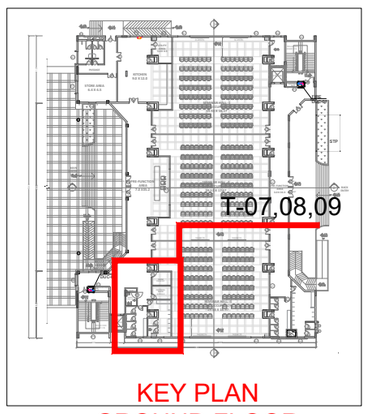

T-07,08,09
WATER SUPPLY PIPE



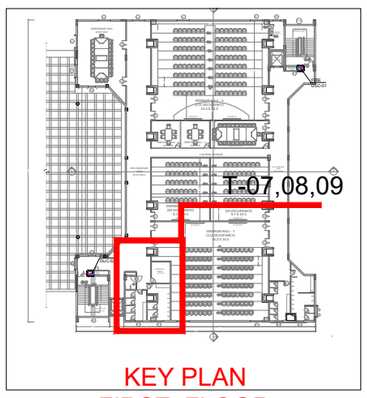

T-03
SOIL& WASTE PIPE DETAIL



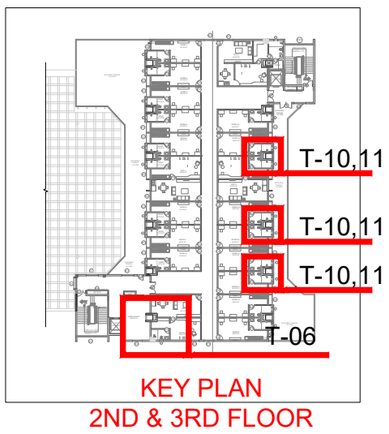

T-03
WATER SUPPLY PIPE



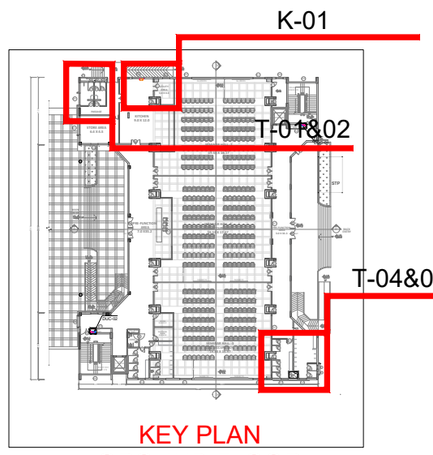

KEY PLAN
GROUND FLOOR



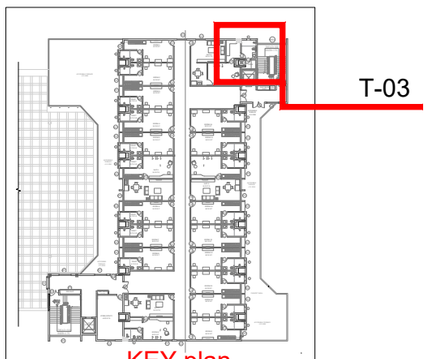

KEY PLAN
FIRST FLOOR




KEY PLAN
2ND & 3RD FLOOR




KEY PLAN
GROUND FLOOR




KEY plan
2nd & 3rd FLOOR



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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL BUILDING TOILET-06,07 & 08,03 DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:40 | AS | ND |

ISSUE FOR:
FOR APPROVAL

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04 Mar 2024

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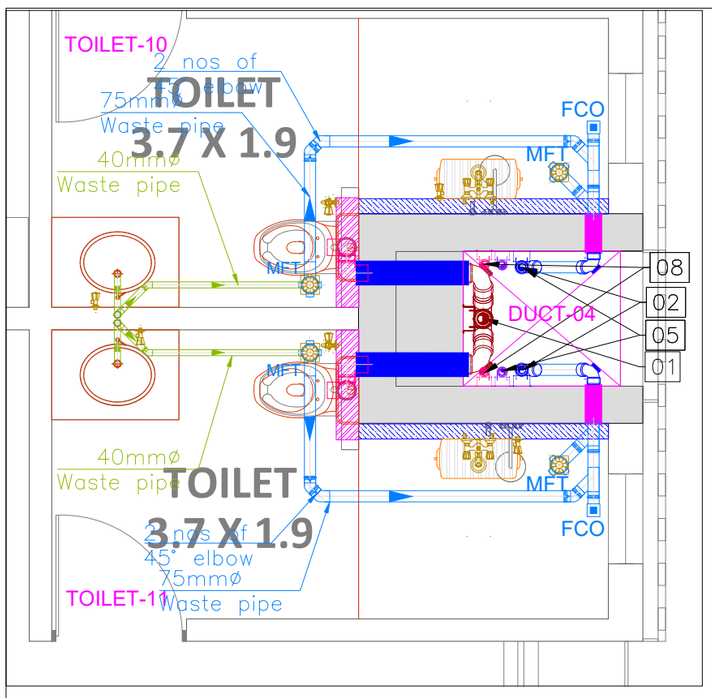
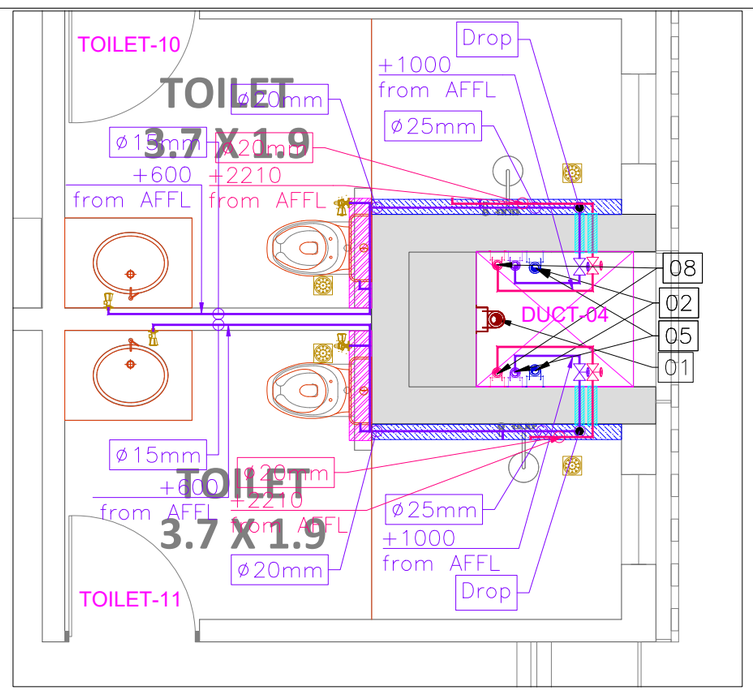
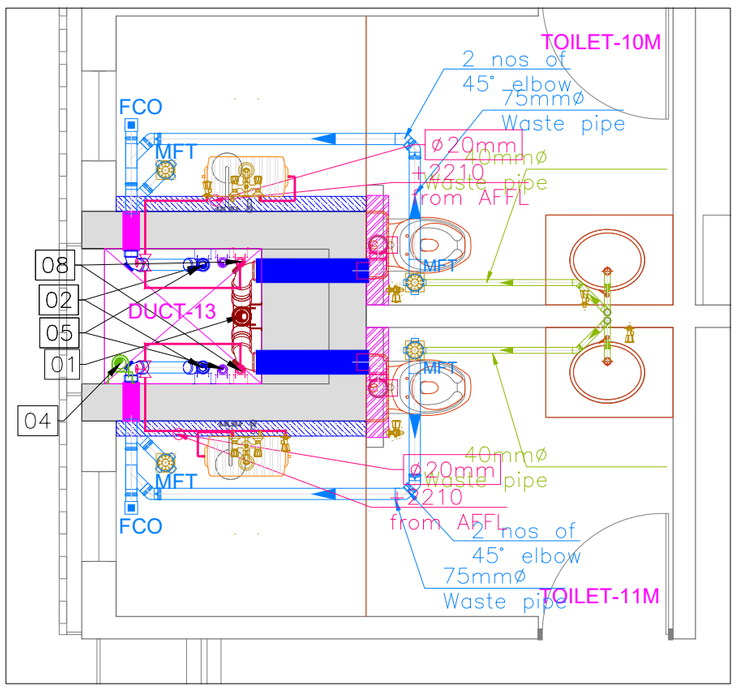
|---|---|---|---|
| SCS/24/445 | S_PL_301 | R1 | A2 |



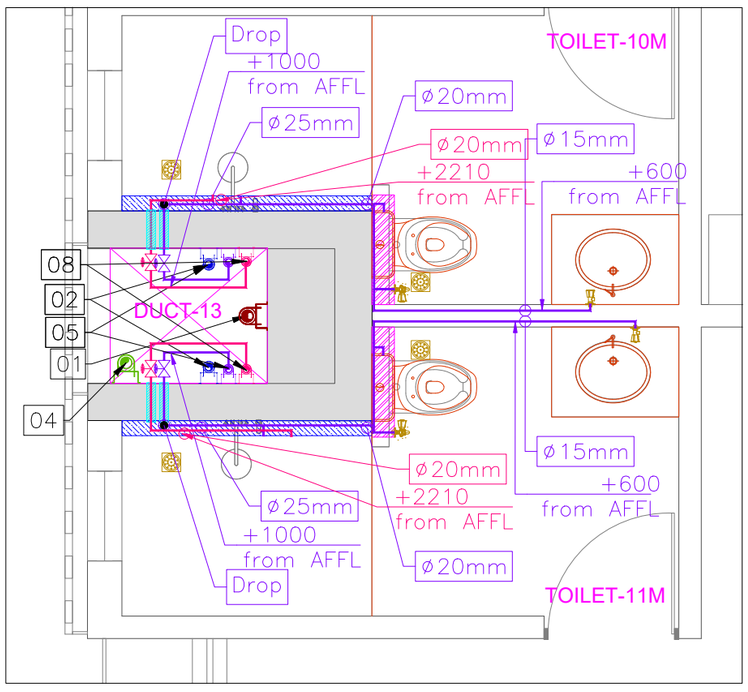

T-10,11
SOIL& WASTE PIPE & SLEEVE DETAIL



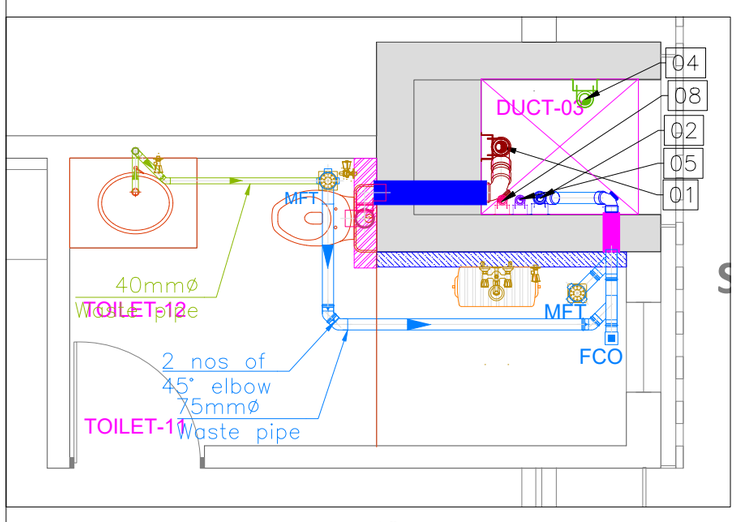

T-10,11
WATER SUPPLY PIPE



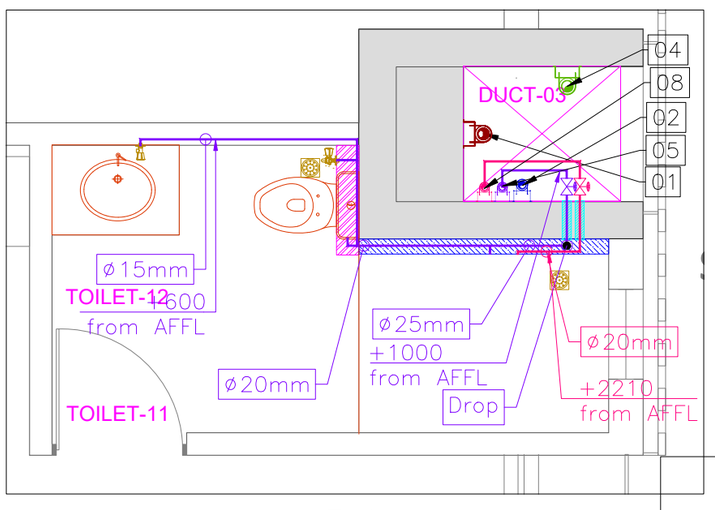

T-10M,11M
SOIL& WASTE PIPE & SLEEVE DETAIL



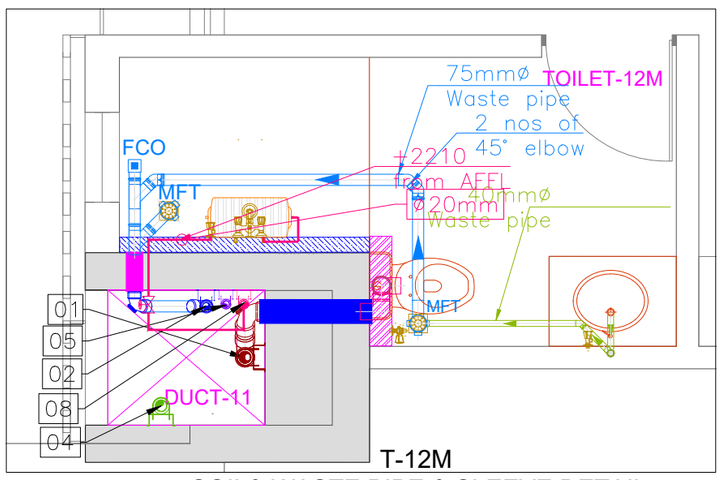

T-10M,11M
WATER SUPPLY PIPE



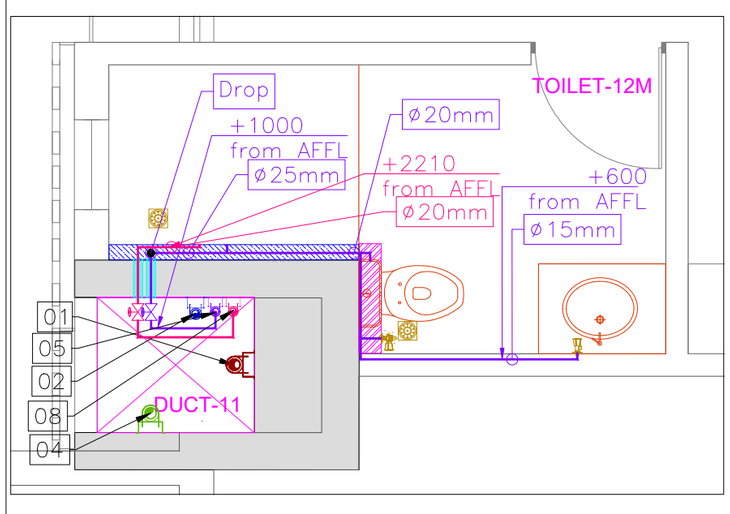

T-12
SOIL& WASTE PIPE & SLEEVE DETAIL



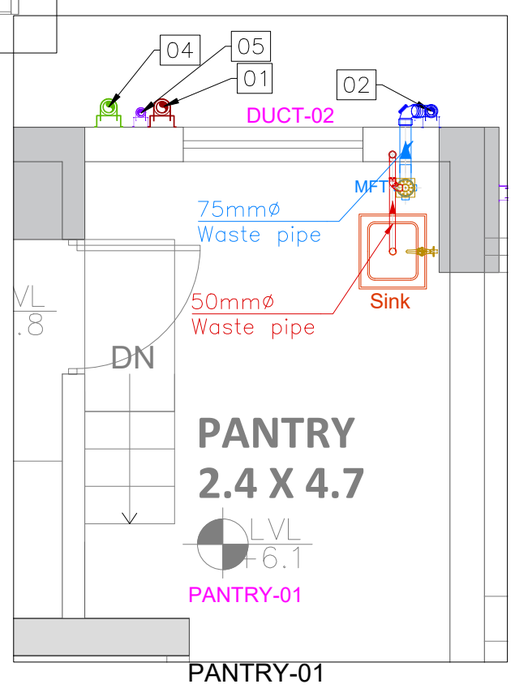

T-12
WATER SUPPLY PIPE



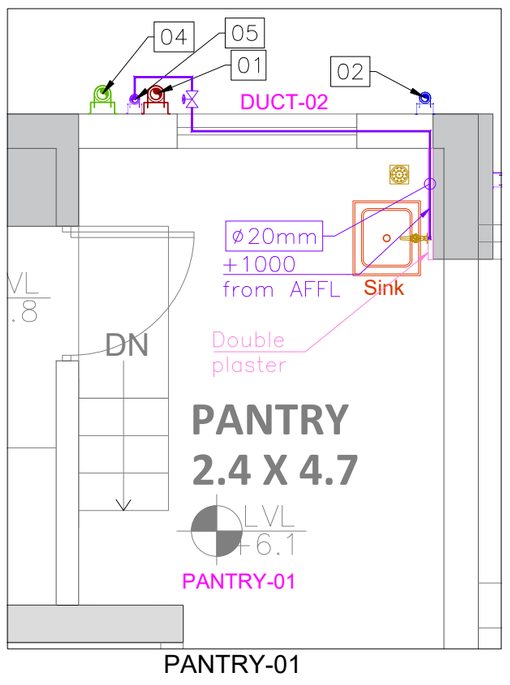

T-12M
SOIL& WASTE PIPE & SLEEVE DETAIL




T-12M
WATER SUPPLY PIPE

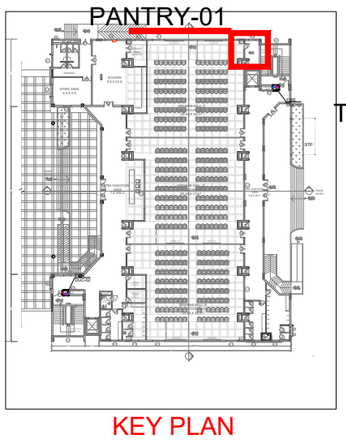



PANTRY-01

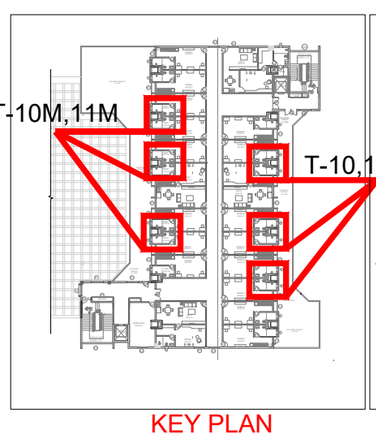



PANTRY-01

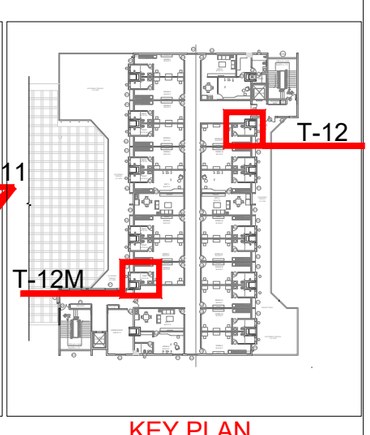
PANTRY-01



KEY PLAN
GROUND FLOOR




KEY PLAN
2ND & 3RD FLOOR




KEY PLAN
2ND & 3RD FLOOR

## PLUMBING LEGEND

| | |
|---|---|
| | 1. 110mmø SOIL STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 2. 75mmø WASTE STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 4. 110 / 160mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 4A. 75mm RAIN WATER STACK (UPVC SWR PIPE, TYPE-B, RUBBER RING JOINT) |
| | 5. DOMESTIC WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | 10. DOMESTIC WATER SUPPLY RISER FOR OHT (uPVC PIPE, SCHD-40, SOLVENT JOINT) |
| | 8. HOT WATER SUPPLY STACK (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | 110mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø WASTE LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 75mmø SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 50mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | 40mmø WASTE/ SOIL LINE @ SLOPE 1:60 (u.P.V.C SWR PIPE, TYPE-B, SOLVENT JOINT) |
| | HOT WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | DOMESTIC WATER SUPPLY LINE (CPVC PIPE, SDR-11, SOLVENT JOINT) |
| | GEYSER ONLY PROVISION |
| MFT | FLOOR TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| UT | URINAL TRAP WITH S.S GRATING (PVC MULTI FLOOR TRAP 110x75MM, WATER SEAL NOT LESS THAN 50MM) |
| | 150MM LEDGE WALL |
| | 100MM LEDGE WALL @ 800MM HEIGHT |
| | 100MM LEDGE WALL @ 1400MM HEIGHT |
| | CUTOUT SLAB |
| | DOUBLE PLASTER REQUIRED FOR CONCEALING WATER SUPPLY PIPE |
| FCO | FLOOR CLEAN OUT S.S GRATING |
| | CONTROL VALVE |
| AFFL | ABOVE FLOOR FINISH LEVEL |
| | 160mm Sleeve For 110mmø Pipe |
| | 110mm Sleeve For 75mmø Pipe |



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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL TOILET-10,11 & 10M,11M & ,12,12M, PANTRY-01 DETAIL

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:40 | AS | ND |

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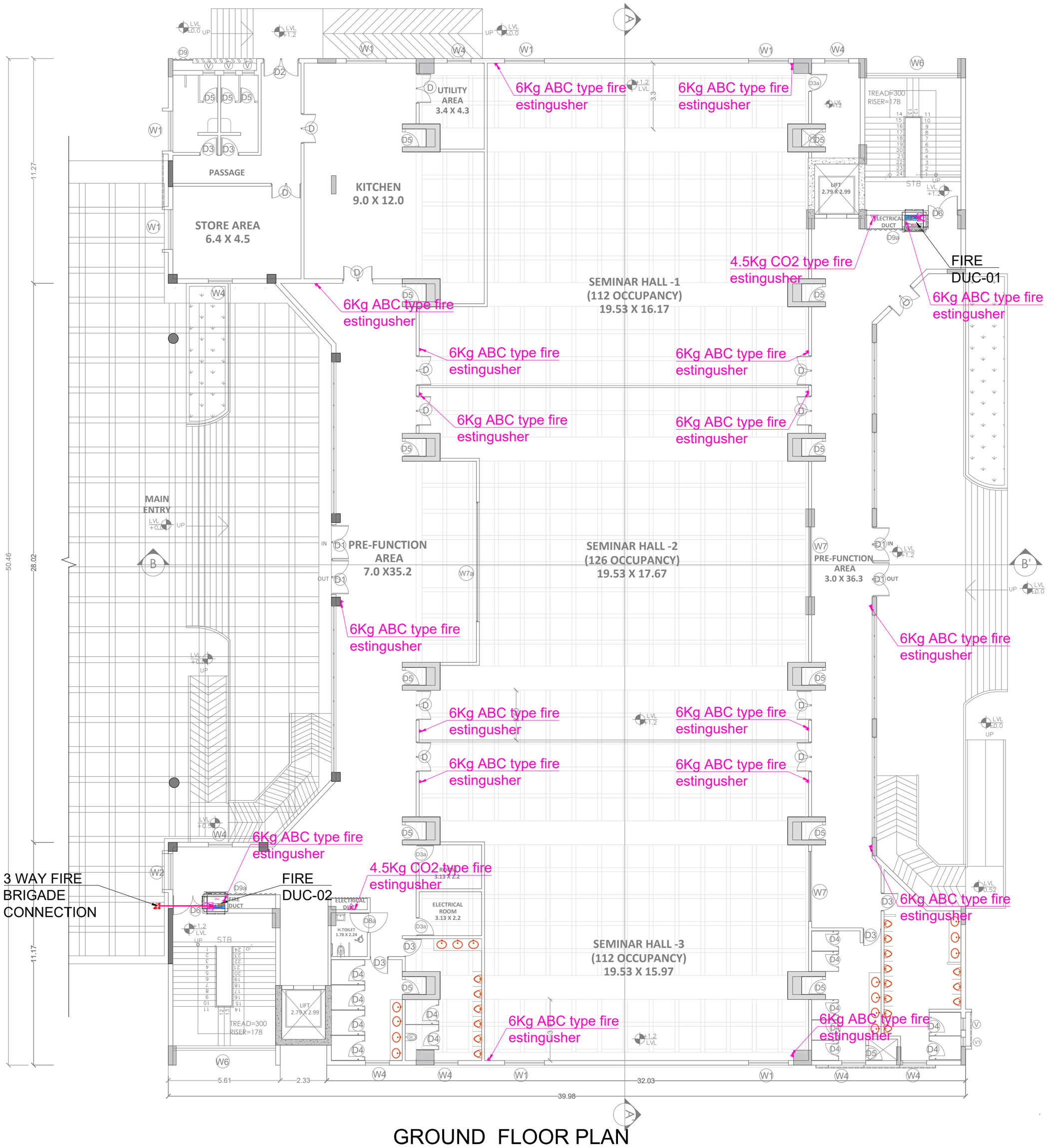
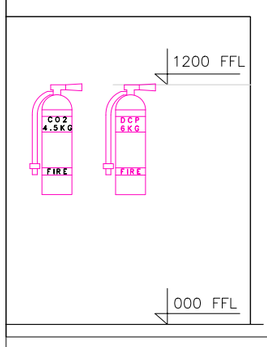
| SCS/24/445 | S_PL_302 | R1 | A2 |

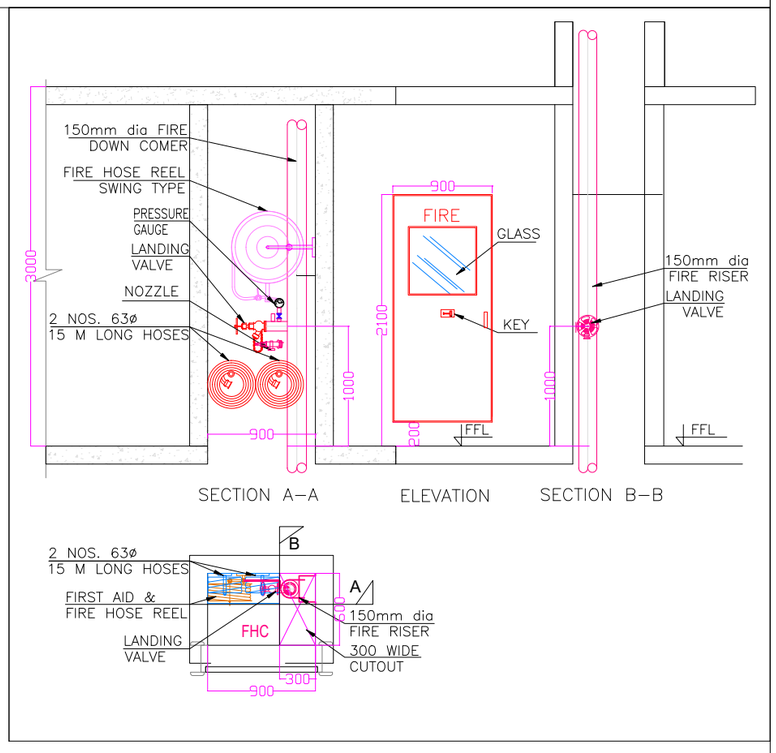



# GROUND FLOOR PLAN

FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 3 WAY FIRE BRIGADE INLET | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |

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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL GROUND FLOOR PLAN

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|---|---|---|
| 1:150 | AS | ND |

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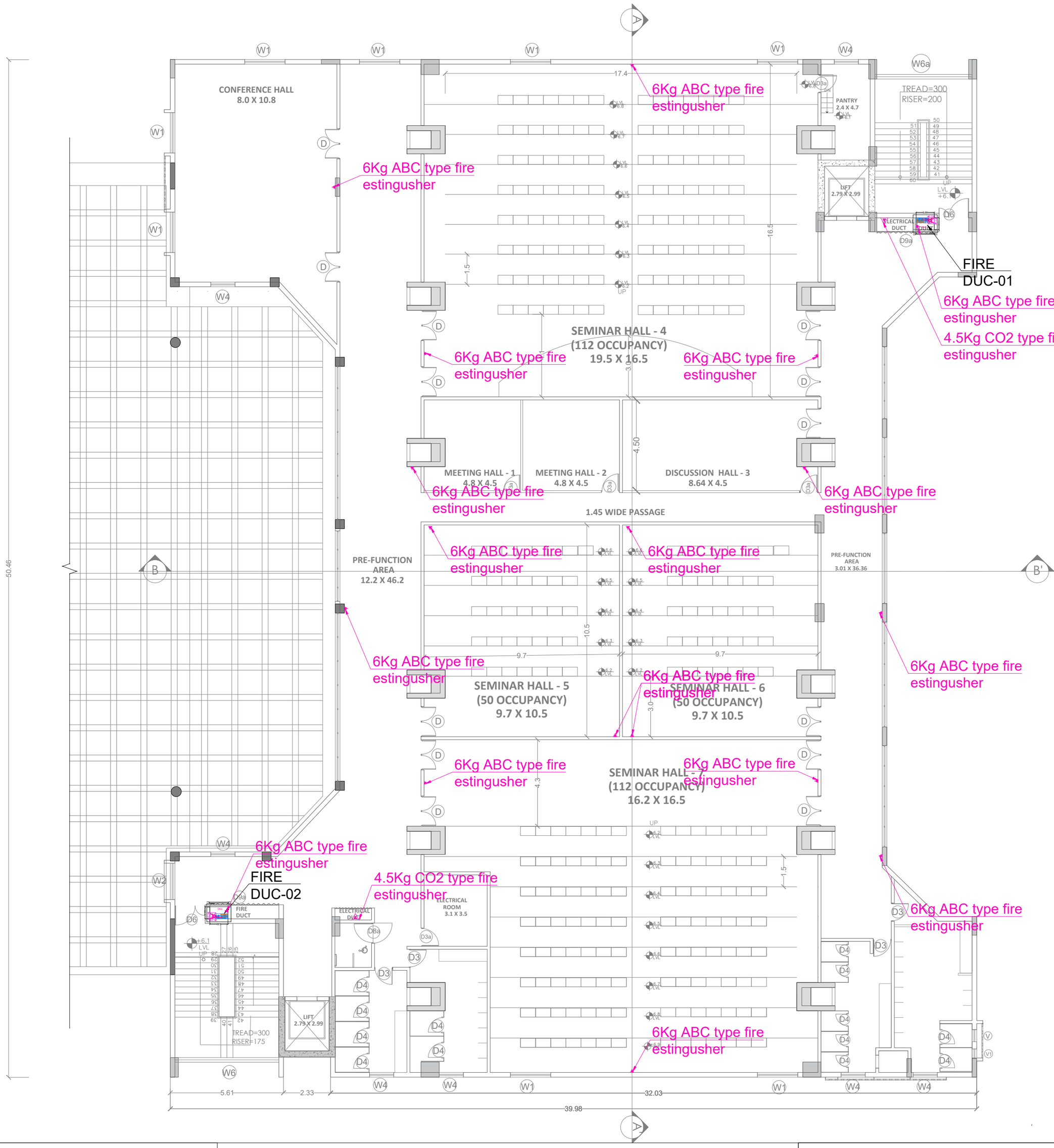
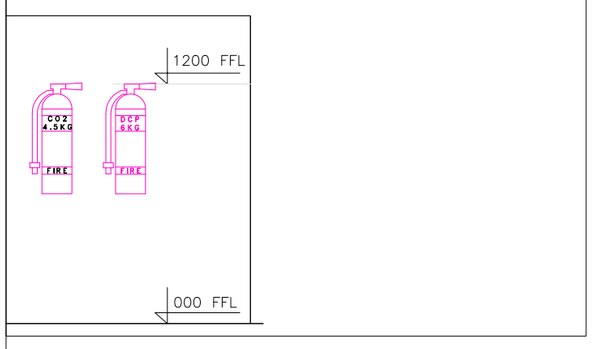
| SCS/24/445 | S_FF_200 | R1 | A2 |

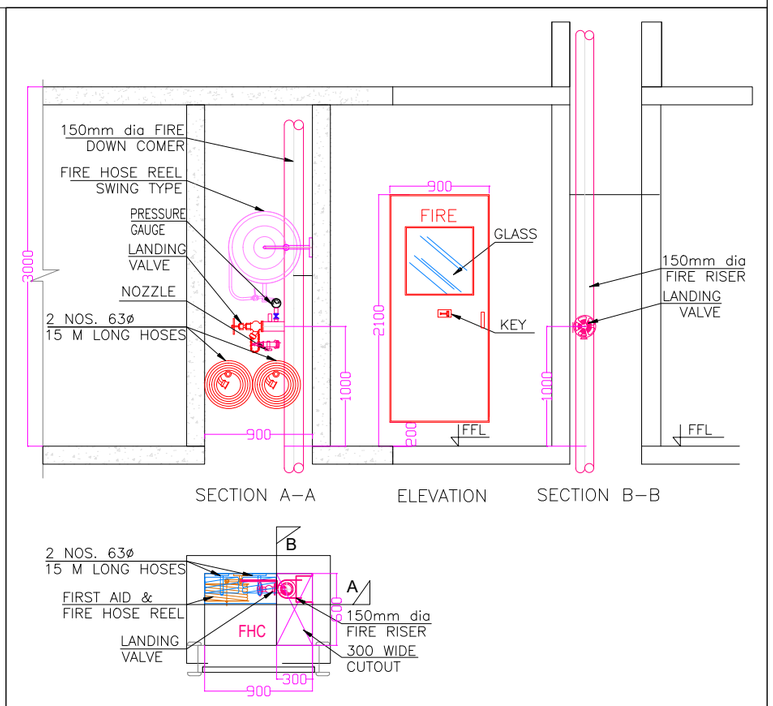



FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 3 WAY FIRE BRIGADE INLET | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |




# 1ST FLOOR PLAN

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EMAIL: scspune1@gmail.com www.swamics.com
Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 1ST FLOOR PLAN

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:150 | AS | ND |

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FOR APPROVAL

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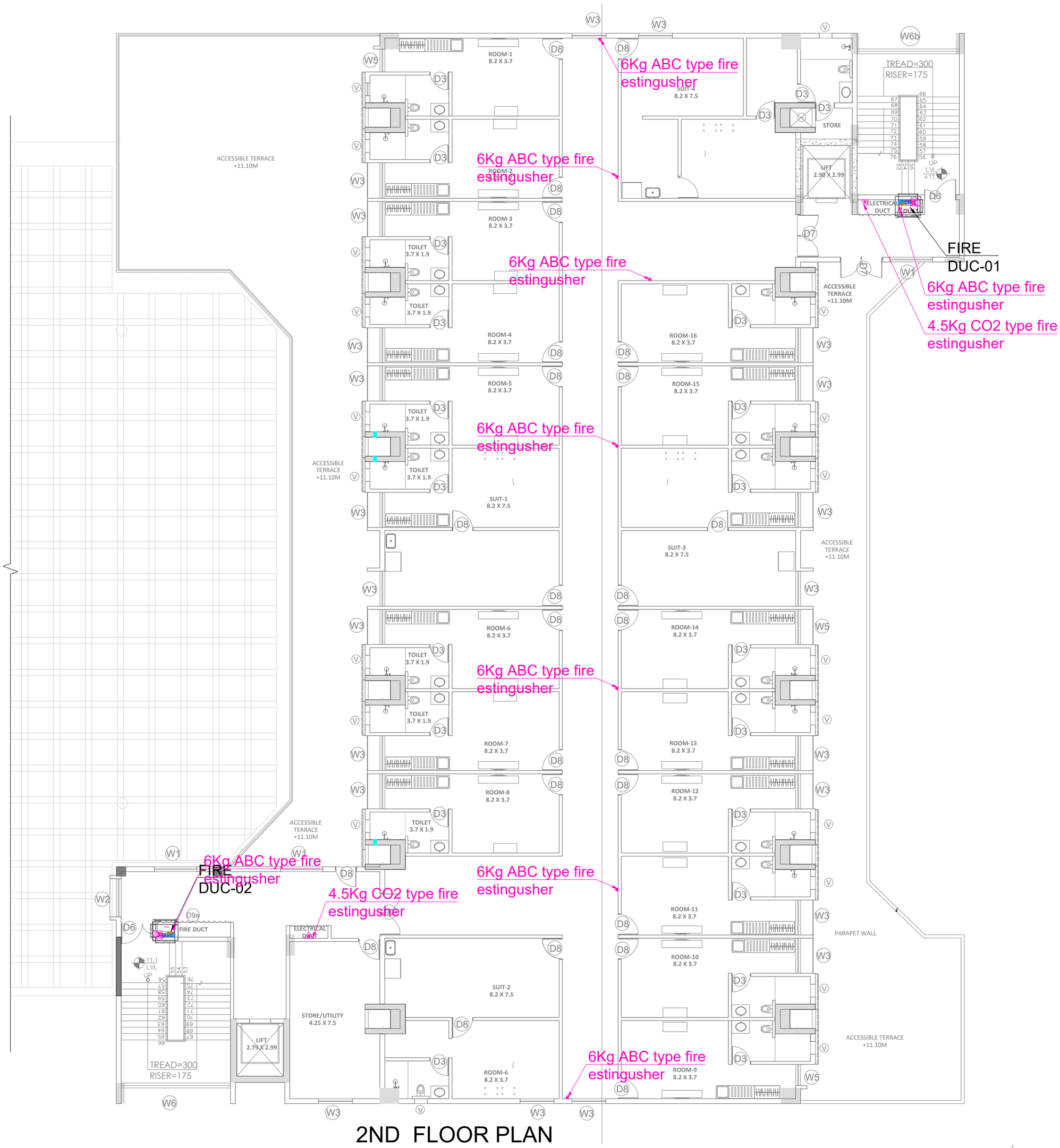
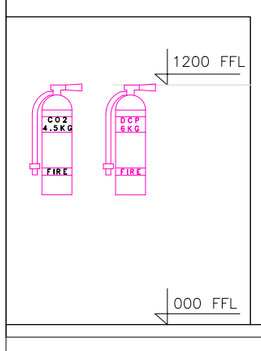
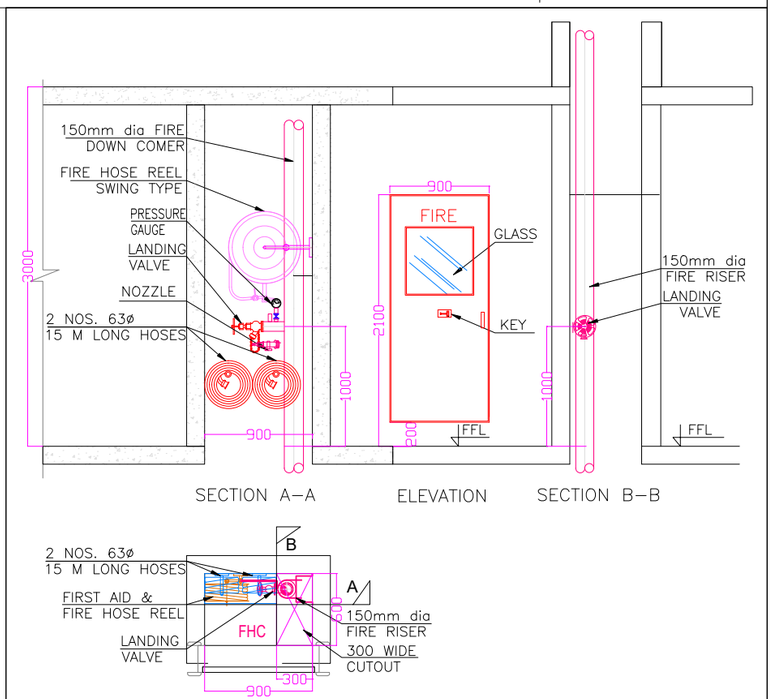



# 2ND FLOOR PLAN

FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 3 WAY FIRE BRIGADE INLET | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |

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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 2ND FLOOR PLAN

| SCALE | DRAWN | CHECKED |
|---|---|---|
| 1:150 | AS | ND |

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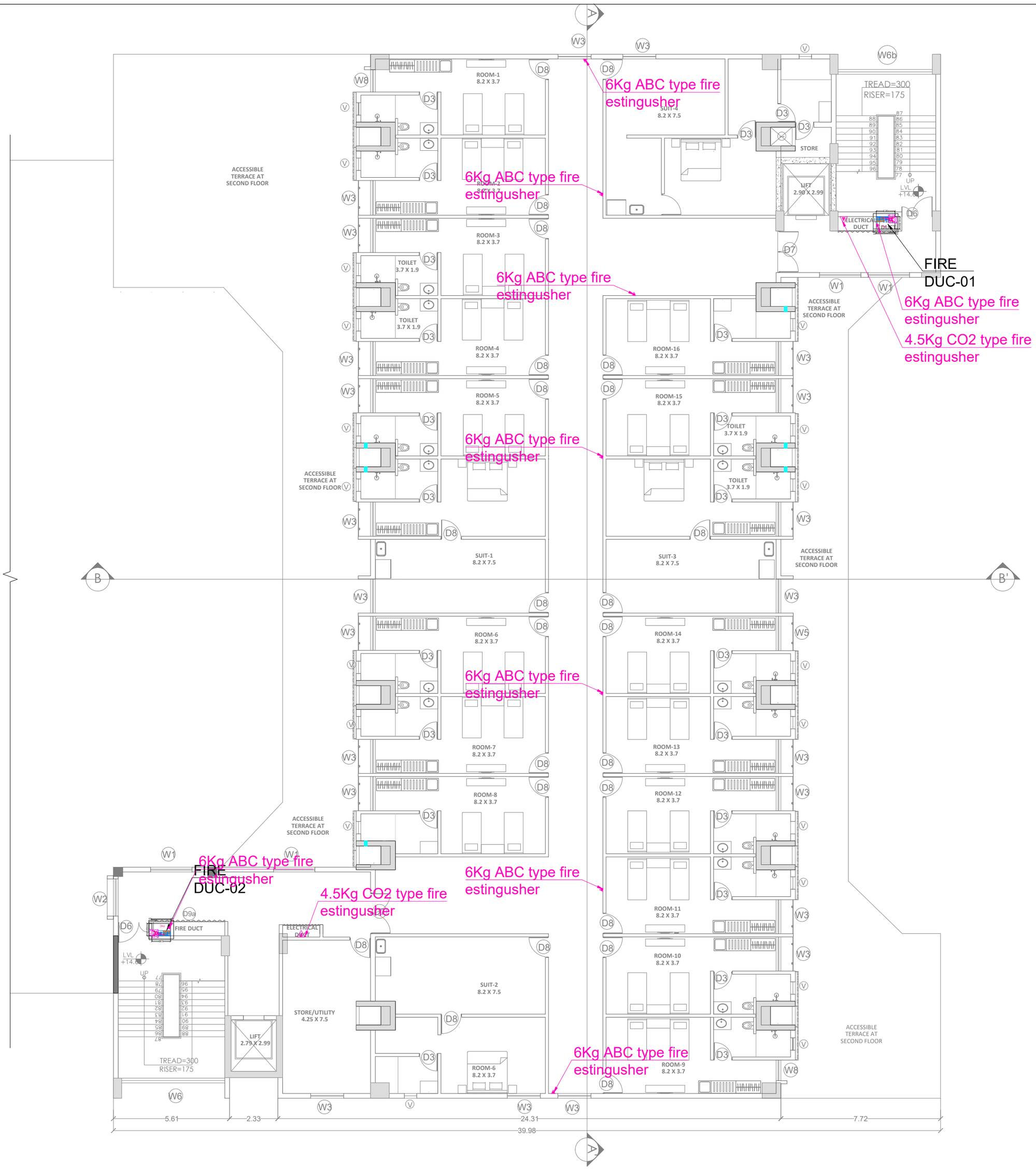
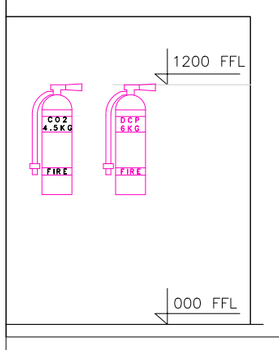


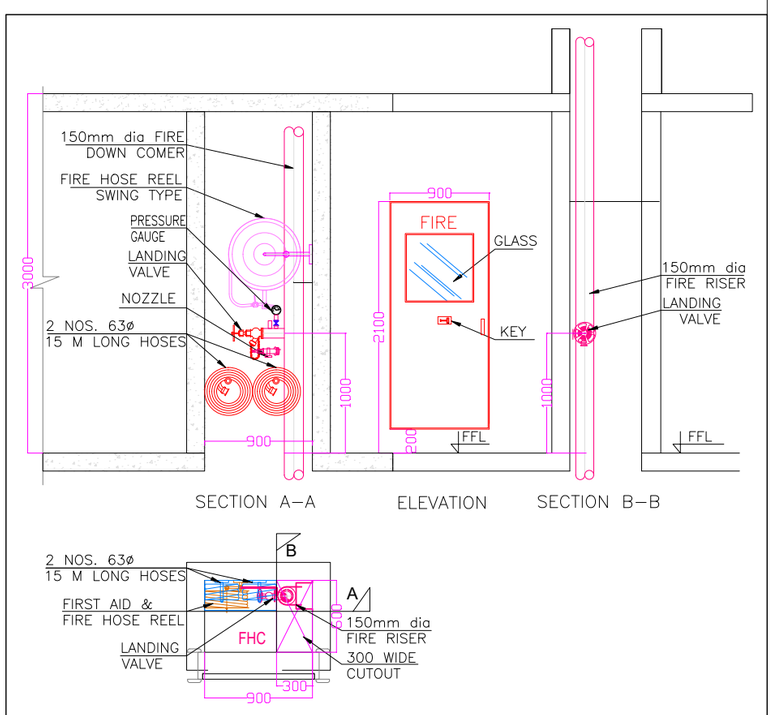

# 3RD FLOOR PLAN

THIRD FLOOR PLAN

FIRE FIGHTING LEGEND:–

| | |
|---|---|
| 150mmø FIRE RISER (G.I. 'C' CLASS WELDED JOINT) | |
| 3 WAY FIRE BRIGADE INLET | |
| 6kg ABC DRY POWDER EXTINGUISHERS | |
| 4.5kg CARBON DI OXIDE EXTINGUISHERS | |



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CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL 3RD FLOOR PLAN

| SCALE | DRAWN | CHECKED |
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| 1:150 | AS | ND |

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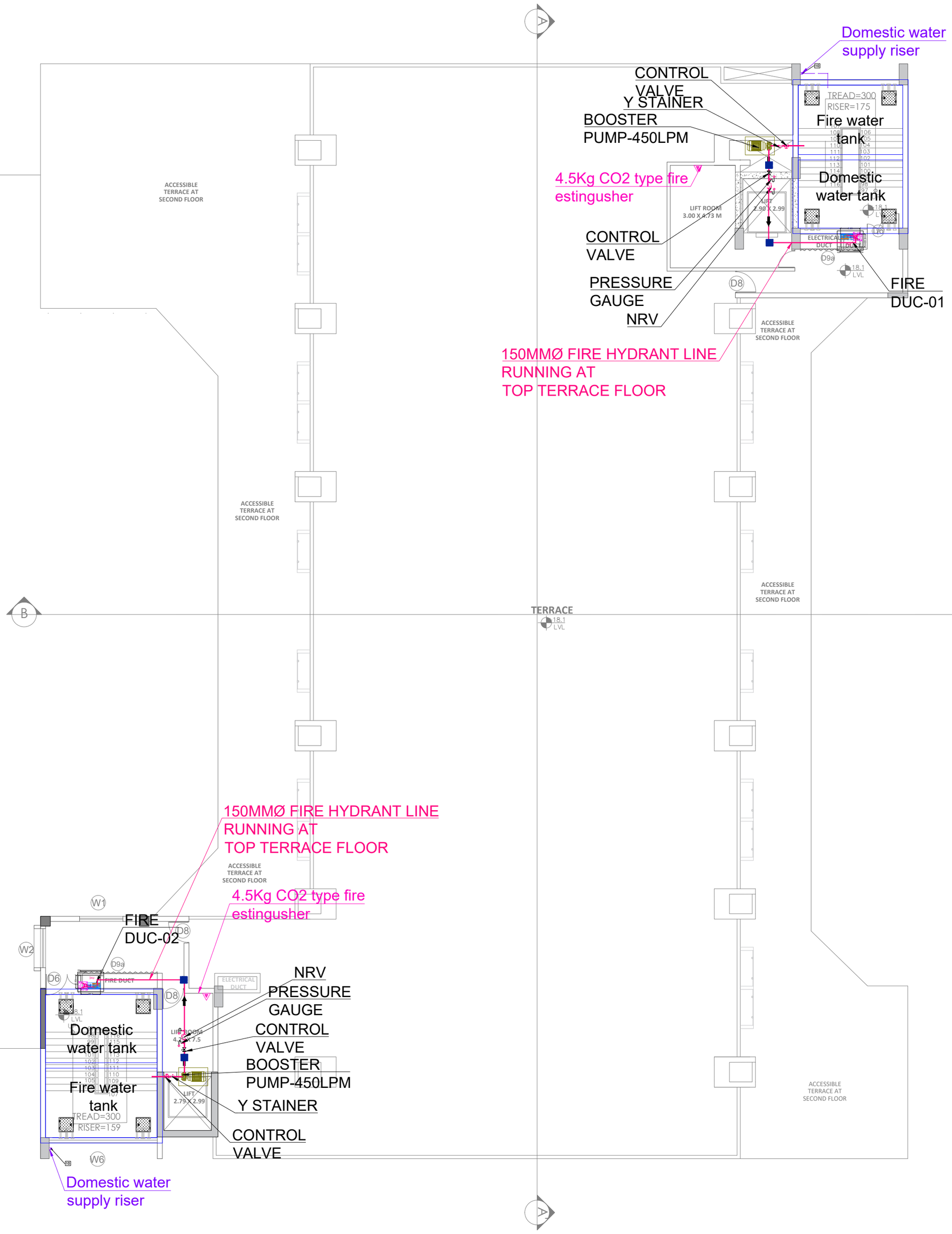



# TERRACE FLOOR PLAN

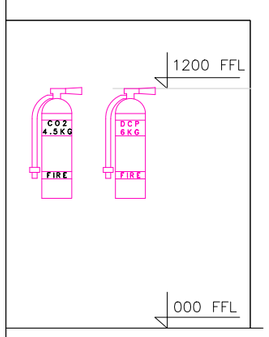
FIRE FIGHTING LEGEND:–

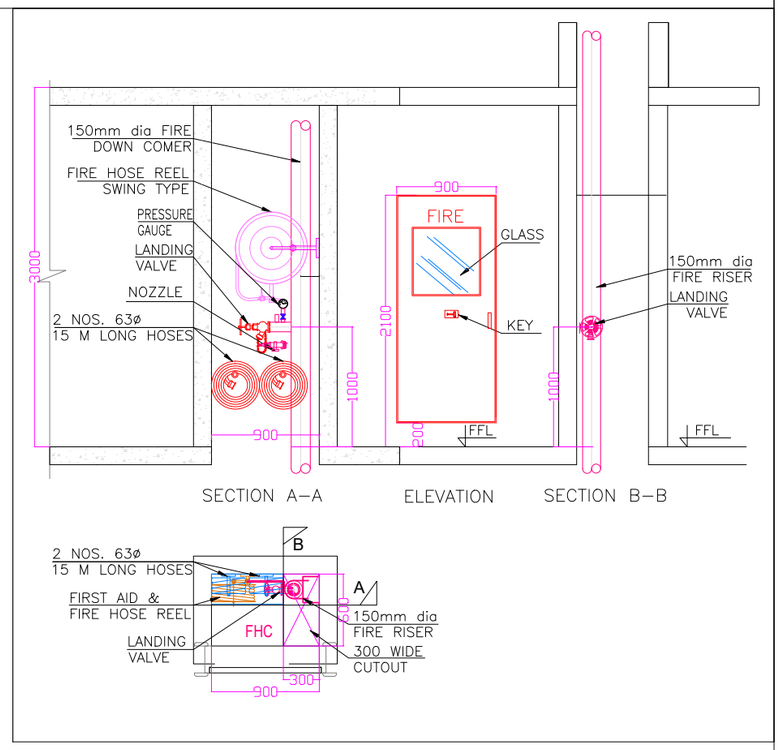
150mmø FIRE RISER
(G.I. 'C' CLASS WELDED JOINT)

3 WAY FIRE BRIGADE INLET

6kg ABC DRY POWDER EXTINGUISHERS

4.5kg CARBON DI OXIDE EXTINGUISHERS



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Ph.No.: 020-66850807,Mob. : 9420356655 / 9011081049 (Nitin)

CLIENT
College of Engineering, Pune

JOB TITLE
Yashawantrao chavan academy of development administration

DRAWING TITLE:
PHE SERVICES FOR SEMINAR HALL BUILDING TERRACE FLOOR PLAN

| SCALE | DRAWN | CHECKED |
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| 1:150 | AS | ND |

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## Convention Centre (Auditorium)

**BOQ FOR AUDITORIUM AIRCONDITIONING WITH AHU & CONDENSING UNITS**

| SR. NO. | DESCRIPTION | UNITS | QTY |
|---|---|---|---|
| **1.0** | Supply, Installation, Testing & Commssioning of Air handling unit 43 mm thick double skin type complete with with thermal break profile, RA chamber, RA, SA & FA damper, Prefilter section with EU4 pre filter, Cooling coil section with 4/6 row deep DX coil, DIDW backward / Aerofoil blade fan , motor, drive set etc, . All dampers in aluminium low leakage construction. | | |
| a | Capacity 14000 CFM at 25 mm ESP | Nos | 2 |
| b | Capacity 13000 CFM at 25 mm ESP | Nos | 2 |
| c | Capacity 8000 CFM at 25 mm ESP | Nos | 2 |
| **2.0** | Supply, Installation, Testing & Commssioning of Air cooled type INCERTER technology condensing unit with scroll compressor with R410a gas and air cooled condenser, fan, all necessary electrical accessories and controls. Including all necessary accessories such as dryer, filter, expansion valve, etc. refrigeration accessroies for AHU coil connection. | | |
| a | Zone 1- 17.5 TR | Nos | 2 |
| b | Zone 1- 16.0 TR | Nos | 2 |
| c | Zone 1- 11.0 TR | Nos | 2 |
| **3.0** | Supply, Installation, Testing & Commssioning of AHU Connection KIT for ODU and AHU Dx cooling coil. | | |
| a | Zone 1- 17.5 TR ODU and AHU | Nos | 2 |
| b | Zone 1- 16.0 TRP ODU and AHU | Nos | 2 |
| c | Zone 1- 11.0 TR ODU and AHU | Nos | 2 |
| **4.0** | SITC of UPVC Drain piping with 6mm tubular nitrile rubber tubular insulation (Anti microbial) from indoor unit to nearest drain point. Drain piping with necessary fitting shall be U-PVC. Piping shall be complete with supports of following sizes - | | |
| a | 32 mm dia. | Rmt | 30 |

| | | | |
|---|---|---|---|
| **5.0** | Supply and fixing of refrigerant pipe made out of hard drawn copper including accessories, jointing / brazing etc duly insulated with 19mm thk Class - 0 nitrile tubular rubber sections to prevent condensation with suitable adjsutable ring type hanger supports etc complete as required. (The correct size of pipe has to be worked out by the vendor and The number of circuits shall match the vendors equipment.) | | |
| a | 12.7 mm | Rmt | 20 |
| b | 15.9 mm | Rmt | 40 |
| c | 28.6 mm | Rmt | 60 |
| **6.0** | SITC of Communication Cable for ODU system : 2C x 1.5 sq.mm Cu. Shielded control cabling shall be with PVC conduit as per specifications | Rmt | 200 |
| **7.0** | SITC of MS C Chaneel & Angle ( with 2 coat of red oxide anti rust paint & black pianted) - MS base frame /platform for outdoor units as mentioned above complete with vibration isolation pads, supports, hangers, railing, brackets etc. (size for ODU - 1250x750x300mm height - 75mmx6mm MS angle and size for AHU - 2800x1550x300mm height - 100mmx50mm ISMB) | KG | 540 |
| **8.0** | SITC of G.I. ducting with flanges, food grade rubber gasket, standard supporting with hanger 8 mm thick rod and 30 x 30 x 5 mm angle support. All M S items should be galvanised or painted. | | |
| a | 22 Gauge G.I. ducting | Sq.Mtr. | 384 |
| b | 24 Gauge G. I. Ducting | Sq.Mtr. | 220 |
| **9.0** | SITC of Insulation of ducting with nitrile rubber insulation Class 'O' finsihed with aluminium foil. With required adhesive and aluminium tape at all joints. | | |
| a | 19 mm thick for supply air | Sq.Mtr. | 462.0 |
| b | 13 mm thick for return air | Sq.Mtr. | 110.0 |
| c | 12mm thick acoustic microban insulation | Sq.Mtr. | 192.0 |
| **10.0** | SITC of Electrical panel for AHU and cond unit complete with temperature indication and control arrangement. All necessary safety devices. ( Suitable as per AHU and condenser unit configuration and capacities) | Nos | 6 |
| **11.0** | SITC of Power & Communication cabling (Outdoor units to AHU ROOM panel) | | |
| a | 4C x 16 Sq. mm Armoured Cu Power cable | Rmt | 90 |

| | | | |
|---|---|---|---|
| **12.0** | SITC of 'Fire damper for AHU in 16 gauge GI construction suitable for 90 Min fire rating with limit switch for AHU interlock. UL approved. Fire dapet shall be installed at AHU SA & RA connection . Sizes shall be as per layout. | Sq. Ft. | 90 |
| **13.0** | Supply installation testing & commissioning of Aluminium powder coated Supply Air Diffusers of Size : 600 x 600 mm with collar damper. | Nos | 32 |
| **14.0** | Supply installation testing & commissioning of Aluminium powder coated Return Air Diffusers of Size : 600 x 600 mm without collar damper. | Nos | 32 |
| **15.0** | SITC of Strip type heaters with housing suitable for installation in supply air duct with electrical starter and RH control system. Heater will operate when RH goes above 60%. | | |
| a | 3.0 kw for AHU ( 1.0Kw X 3 circuits) | Set | 6 |
| **16.0** | Supplying, installing, testing & commissioning split type variable speed inverter technology with minimum 3 to 1 convertible mode for compressor, room air conditioning unit of following mentioned capacities having ISEER minimum 5.00 suitable to operate on 250V, 50 Hz, A.C. supply having 1 no of air handling unit hi-wall/floor mounting type complete with refrigerant R32 having copper condenser, minimum 2.5PM filter, self diagnosis feature, stabilizer free operation & temperature display on indoor unit, noise level maximum 50dBA at position as per specification no. APAC/ WAC | | |
| a | Hiwall - 1.5 TR | Nos | 2 |
| b | Hiwall - 2.0 TR | Nos | 4 |
| c | Ductable - 8.3 TR | Nos | 2 |
| **17.0** | Supply and fixing of refrigerant pipe made out of hard drawn copper including accessories, jointing / brazing etc duly insulated with 19mm thk Class - 0 nitrile tubular rubber sections to prevent condensation with suitable adjsutable ring type hanger supports etc complete as required. (The correct size of pipe has to be worked out by the vendor and The number of circuits shall match the vendors equipment.) | | |
| a | 12 mm | Rmt | 70 |
| b | 16 mm | Rmt | 70 |
| **18.0** | SITC of UPVC Drain piping with 6mm tubular nitrile rubber tubular insulation (Anti microbial) from indoor unit to nearest drain point. Drain piping with necessary fitting shall be U-PVC. Piping shall be complete with supports of following sizes - | | |
| a | 25 mm dia. | Rmt | 80 |
| | | | |

**Supply, Installation, Testing and Commissioning of 1.5 TR Split AC's at GUEST ROOMS OF 'YASHADA CAMPUS' AT TATHAWADE.**

**Part A**

| Sr. No | Description | Make and Model | Qty in Nos |
|---|---|---|---|
| 1 | 2 | 2.1 | 3 |
| 1 | Residential section : Supplying, installing, testing and commissioning 5 Star split type variable speed Inverter technology room Air conditioning unit 1.5 TR capacity having minimum ISEER value of 5.4, suitable to operate on 250V, 50 cycles, A.C. supply having 1 no of air handling unit Hi wall (throw shall be upto 16m with wide coverage area) / floor mounting type complete with refrigerant R410A / R32 and copper condenser and evaporators at position with smart control facility using Wifi on Mobile/Tablet/PC. | Daikin FTKF50UV | 52 |

**Part B**

| Sr. No | Description | Qty | Unit |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | Supply and Installation of powder coated bracket stand (wall | 52 | Nos |
| 2 | Supply and Installation of copper piping with nitril rubber | 362 | mtr |
| 4 | Supply and Installation hard PVC drain pipe of appropriate | 260 | mtr |
| 5 | Providing and driling core cuts in beams and columns | RO | Inches |

| Part - C | | | |
|---|---|---|---|
| **Comprehensive mentainance contract rates for above mentioned part - A** | | | |
| | | 1.5 TR | |
| Sr. No | Description | Qty in Nos | No of years |
| 1 | 2 | 3 | 4 |
| 1 | From second year to fifth year (4 years) | 44 | 4 |
| 2 | From Sixth year to Tenth year (5 years) | 44 | 5 |

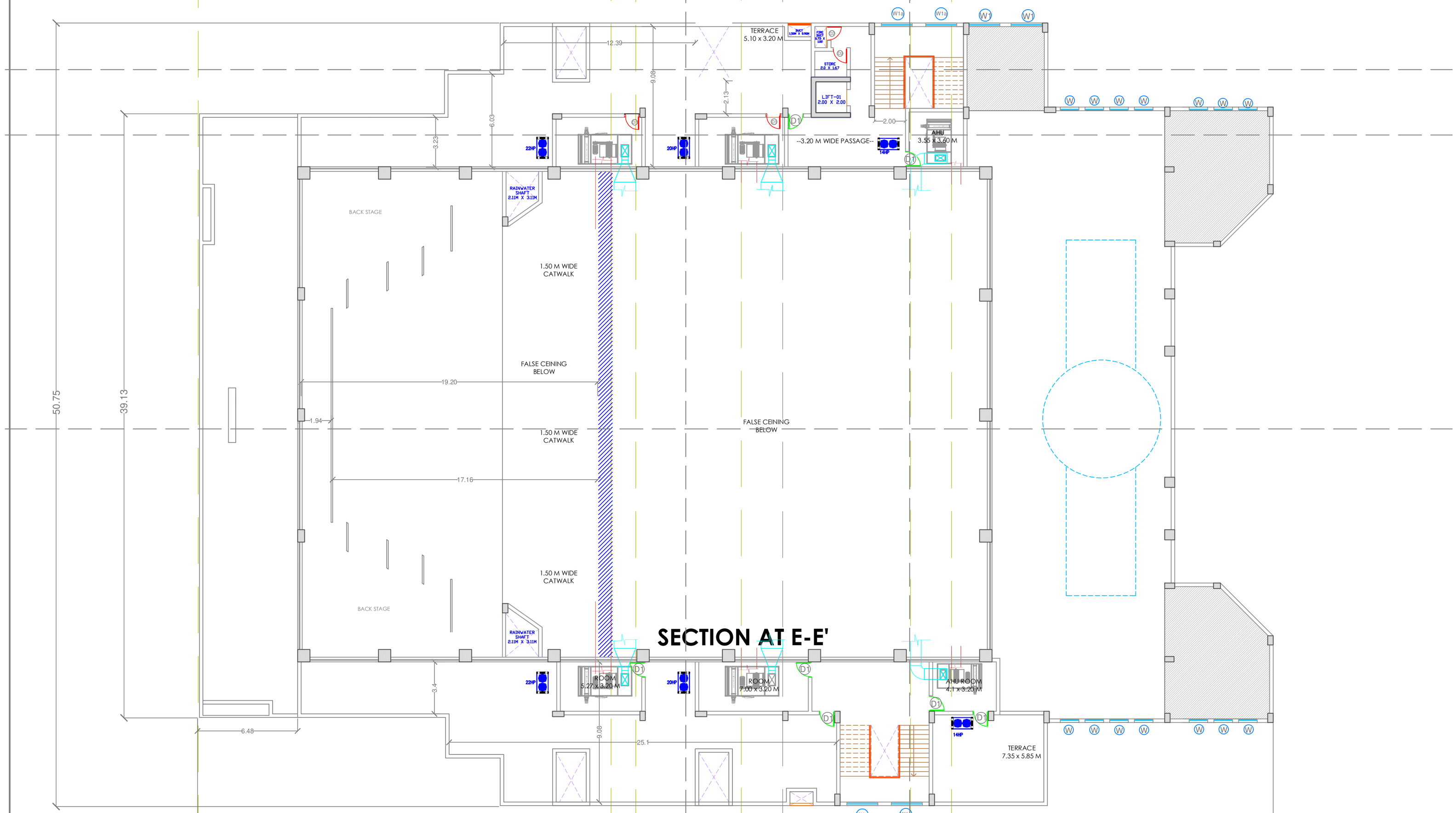
**Supply, Installation, Testing and Commissioning of AC Systems at SEMINAR HALL OF 'YASHADA CAMPUS' AT TATHAWADE.**

| Part - B | | | |
|---|---|---|---|
| **Sr. No** | **Description** | **Qty** | **Unit** |
| **1** | **2** | **3** | **4** |
| | **Section - 1 ( 4 Way Cassette units )** | | |
| **1** | Supplying, installing, testing & commissioning 4 way cassette type variable speed inverter technology with minimum 3 to 1 convertible mode for compressor room Air conditioning unit 1.8TR to 2.1TR capacity having ISEER minimum 5.00 suitable to operate on 250V, 50 Hz, A.C. supply having 1 no of air handling unit hi-wall/floor mounting type complete with refrigerant R32/R410A having copper condenser, dust filter, self diagnosis feature, stabilizer free operation, noise level maximum 50dBA at position as per specification no. APAC/ WAC | 3 | Nos |
| | Supplying, installing, testing & commissioning 4 way cassette type room Air conditioning unit 4TR to 4.4TR capacity with refrigerant R32/410A 415V, 50 Hz, A.C. supply having 1 no of air handling unit (Mega split) mounting type complete with temperature display on indoor unit, minimum dust filter, noise level maximum 50dBA at position as per specification no. APAC/ WAC | 2 | Nos |
| | | | |
| **2** | Supply and Installation of copper piping with 19mm thk nitril rubber insulation (3/8"for suction and 5/8"discharge) of appropriate size in appropriate manner suitable for machines provided with all required accessories complete as directed by Engineer in charge. | 102 | mtr |
| **3** | Supply and Installation hard PVC drain pipe of appropriate size in appropriate manner suitable for machines provided with all required accessories complete as directed by Engineer in charge. Pipe Dia.25mm with 6mm nitril rubberclass O insulation. | 60 | mtr |
| | **Section - 2 ( AC System )** | | |
| **4** | Supplying, installing, testing and commissioning of Inverter technology Ductable unit of capacity 8.5 TR with both IDU and ODU. The AC unit shall be comprising with washable Pre filter, R410A gas and drier, expansion valve, and required necessary accessaries, etc. ( min. COP > 3.5) | 12 | Nos |
| **5** | Supplying, installing, testing and commissioning of Cu piping with nitril rubber 19mm thk insulation (7/8"for suction and 3/8"discharge) for above mentioned IDU and ODU of appropriate size with insulation and support system. ( For 8.5TR Inverter AC system) | 192 | mtr |
| **6** | Supply and Installation hard PVC drain pipe of appropriate size in appropriate manner suitable for machines provided with all required accessories complete as directed by Engineer in charge. Pipe Dia.25mm with 6mm nitril rubber class O insulation. | 140 | mtr |
| **7** | Supplying, installing, testing and commissioning of AC Ducting made out of 24G G.S.S. Sheets of having coating of 180GSM, factory fabricated only. Installed with necessary supporting system. | 376 | Sqmtr |
| **8** | Supplying, installing, testing and commissioning of Class 'O' Nitril rubber insualtion of 19mm thickness for ducting. | 376 | Sqmtr |

| | | | |
|---|---|---|---|
| **9** | Supplying, installing, testing and commissioning of acoustic insulation for air ducts with 25mm thick, 48 kg/cu.m fiber glass faced with RP tissue and covered with 26 SWG perforated aluminium sheets complete. | 160 | Sqmtr |
| **10** | Supplying, installing, testing and commissioning of Aluminium powder coated grilles of height 200mm and length as per shown on layout, with 15 deg. angle all 4 side flanges with al VCD mounted. | 158 | Rmt |
| **11** | Supplying, installing, testing and commissioning of Flexible canvass connection of 8.5 TR IDU. | 12 | Nos |
| **12** | Supplying, installing, testing and commissioning of Fresh Air System Inline Cabinet fans 600 CFM x 5 mm SP with washable pre filters complete with electric motor, drive mechanism, mounting isolaters, etc. ( Sound level max 60 dBA from 1m) . | 7 | Nos |
| **13** | Supplying, installing, testing and commissioning of Fresh Air System Inline Cabinet fans 1000 CFM x 5 mm SP with washable pre filters complete with electric motor, drive mechanism, mounting isolaters, etc. ( Sound level max 60 dBA from 1m) . FOR CLASS OF 126 PERSONS. | 6 | Nos |
| **14** | Supplying, installing, testing and commissioning of Fresh Air System Inline Cabinet fans 900 CFM x 5 mm SP with washable pre filters complete with electric motor, drive mechanism, mounting isolaters, etc. ( Sound level max 60 dBA from 1m) . FOR CLASS OF 112 PERSONS. | 4 | Nos |
| **15** | Supplying, installing, testing and commissioning of Fresh Air System Inline Cabinet fans 325 CFM x 5 mm SP with washable pre filters complete with electric motor, drive mechanism, mounting isolaters, etc. ( Sound level max 60 dBA from 1m) . FOR CLASS OF 50 PERSONS. | 2 | Nos |
| **16** | Supply and Installation of powder coated bracket stand (ceiling hung type) suitable for cabinet fan in appropriate manner with all required accessories complete as directed by Engineer in charge. | 12 | Nos |
| **17** | Supply and Installation of ODU stand ( floor mounted type) suitable for 8.5 TR ductable ODU made of MS Channel 50x50x6mm HDGI coated in appropriate manner with all required accessories, (ODU size - 1200x600mm) (1stand = 22Kg ) | 12 | Nos |

NAME OF WORK: ARCHITECTURAL DESIGN FOR CONVENTIONAL CENTER AT TATHAWADE CAMPUS FOR YASHADA

NOTE: DO NOT MEASURE ON SHEET




# SECTION AT E-E'

(FOUNDATION HEIGHT-300 mm)
VRV FOUNDATION DEATAILS

Drain connections

LEGEND

| | | | |
|---|---|---|---|
| | HEVALL TYPE AC | | SA DUCT |
| | REF. JOINTS | | EA DUCT |
| | REF.PIPE | | PROPELLER FAN |
| | AC DRAIN PIPE | | INLINE FAN |
| | S A DIFFUSER | | BDC VALVE |
| | R A DIFFUSER | | OUT DOOR UNIT |

PRELIMINARY ☐ APPROVED ☑

| RVN | DATE | DESCRIPTION | DRAWN |
|---|---|---|---|

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CLIENT : College of engineering, pune

PROJECT : Yashawantrao chavan academy of development administration at Tathawade, Pune.

TITLE :
HVAC LAYOUT FOR AUDITORIUM
AHU ROOM LEVEL

| DRN. | KAVITA | DATE | SCALE | DRG.NO. | REV. |
|---|---|---|---|---|---|
| CHK. | KAVITA | 01.03.24 | NTS | PES-AC-YT-01 | R2 |
| APPD. | SKW | | | | |

PRELIMINARY | APPROVED

| DRN | DATE | DESCRIPTION | DRAWN |
|---|---|---|---|
| SKN | | | |

**LEGEND**

| | | | |
|---|---|---|---|
| NEMAL TYPE AC | SA 3KET | | |
| RET. JOINTS | EA 3KET | | |
| AC SMOKE PIPE | | | |
| RETURN AIR | | | |
| S A SUPPLY | | | |
| E A SUPPLY | | | |
| | | | SUP. SIDE OUTLET |

Drain connections

(FOUNDATION HEIGHT-300 mm)
VERY FOUNDATION DETAILS

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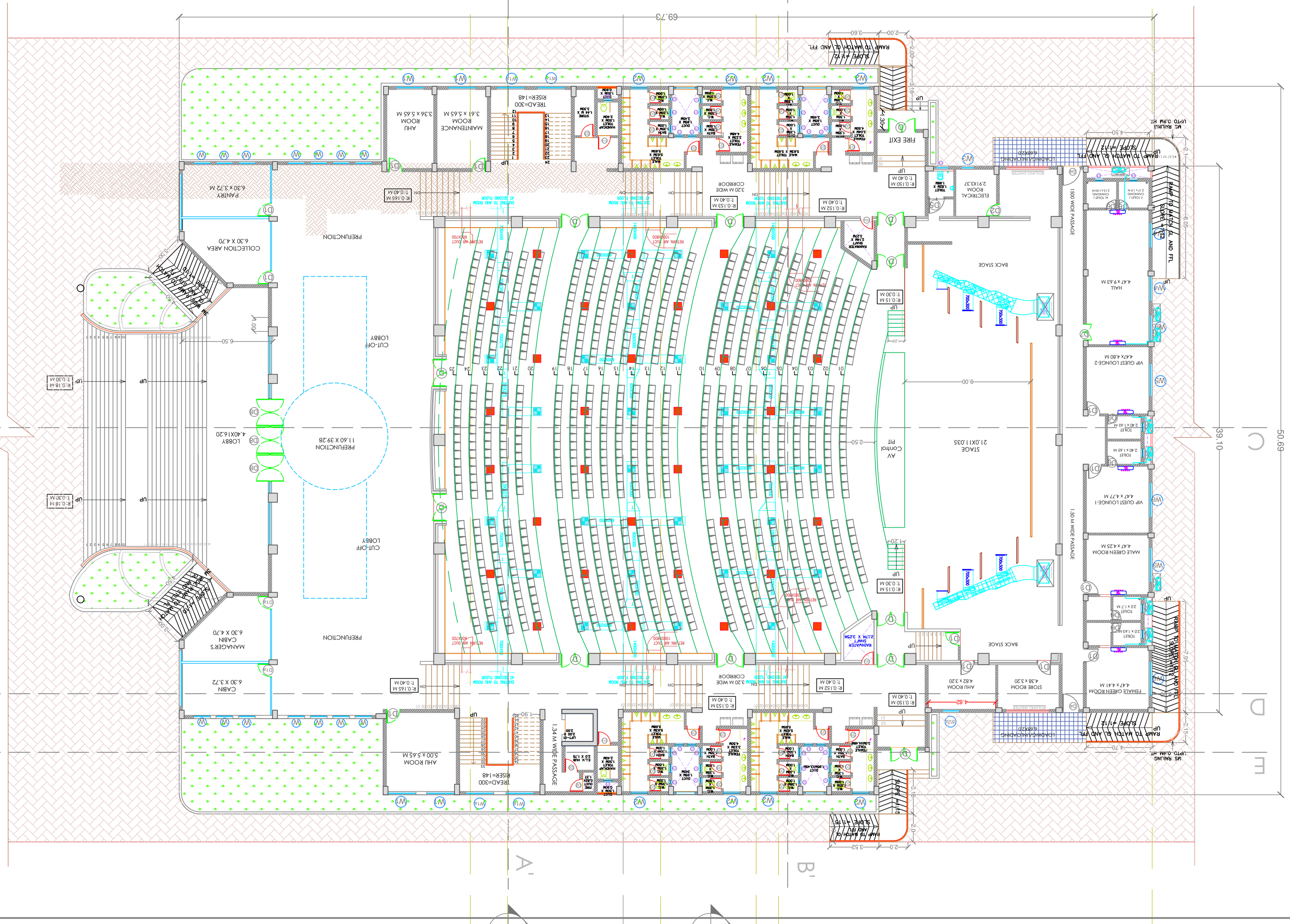
EMAIL : peshvac@gmail.com

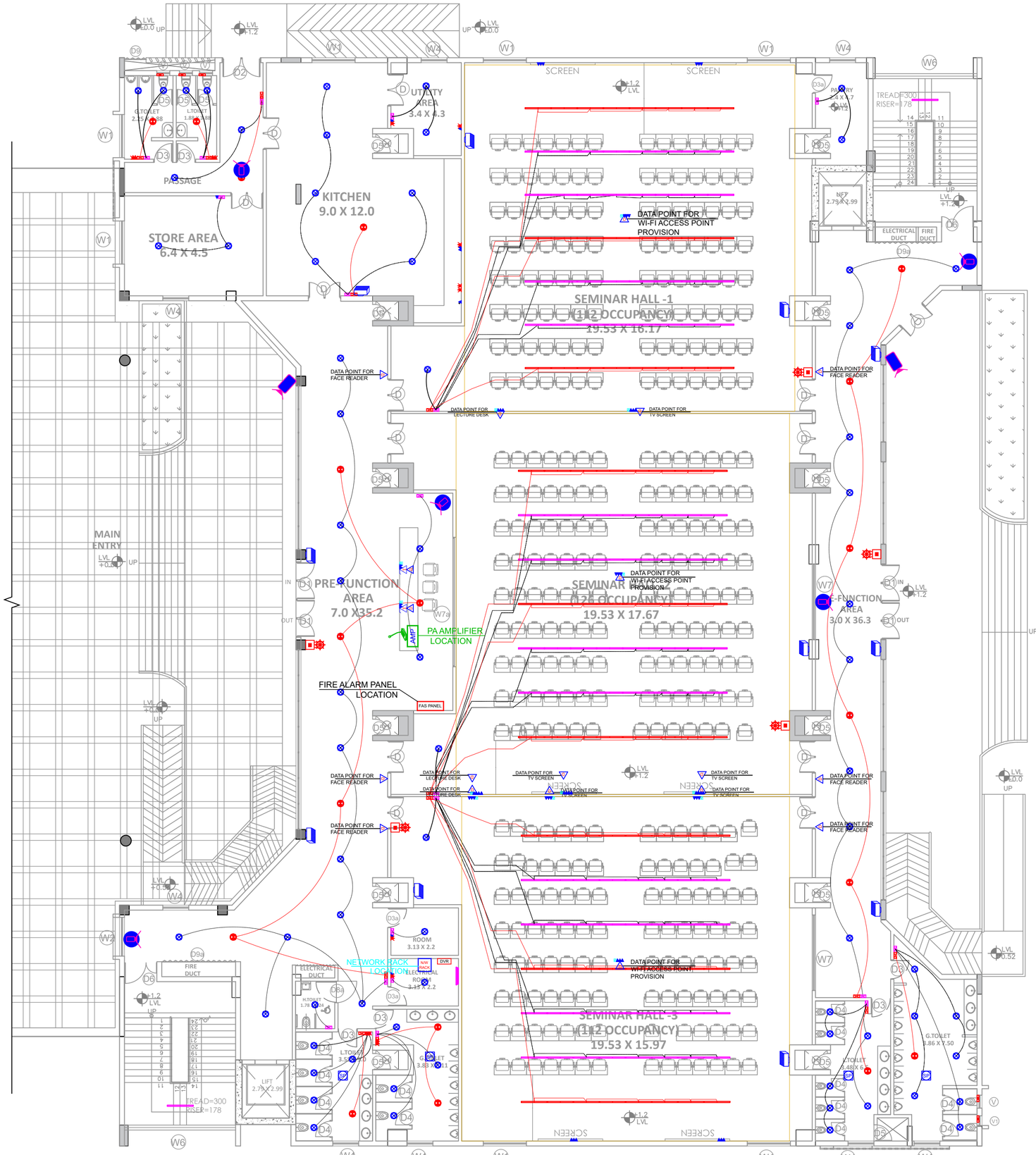
CLIENT : College of engineering, pune

PROJECT : Yashawantrao chavan academy of development administration at Tathawade, Pune.

TITLE : HVAC LAYOUT FOR AUDITORIUM

| | | | | | |
|---|---|---|---|---|---|
| DRN | KKMTA | DATE | SCALE | DRG.NO. | REV. |
| CHK | KKMTA | 01.03.24 | NTS | PES-AC-YT-01 | R2 |
| APPD | SKW | | | | |






# GROUND FLOOR PLAN

1:100 (A1)

1

| LEGEND-FIRE ALARM SYSTEM | |
|---|---|
| SYMBOL | DESCRIPTION |
| | ADDRESSABLE FIRE ALARM CONTROL PANEL |
| | PHOTO ELECTRIC SMOKE DETECTOR (BFC) |
| | PHOTO ELECTRIC SMOKE DETECTOR (AFC) WITH RI |
| | BEAM DETECTOR |
| | REFLECTOR FOR BEAM DETECTOR |
| | MANUAL CALL POINT |
| | MONITOR MODULE FOR BEAM DETECTOR |
| | STROBE CUM SOUNDER |
| LEGEND - PA SYSTEM | |
| | CEILING MOUNTED CONE TYPE SPEAKER (6W) |
| | SURFACE MOUNTED BOX TYPE SPEAKER (6W) |
| | COLUMN / WALL MOUNTED SPEAKER (6W) |
| | PA CALL STATION (MICROPHONE) |
| | PA CONTROLLER & AMPLIFIER IN RACK |
| LEGEND- CCTV SYSTEM | |
| | DOME TYPE CAMERA (2MP) |
| | BULLET TYPE CAMERA (2MP) |
| | RJ45 LAN POINT |
| | RJ11 TELEPHONE POINT |
| | NETWORK RACK- WALL MOUNT |
| | 16 CHANNEL DVR |
| | 32" CCTV MONITOR |

LEGEND'S :-ELE INTERNAL

| Symbols | Description |
|---|---|
| | SWITCHBOARD |
| | SWITCHBOARD WITH HALF POINT |
| | WALL LIGHT POINT 20W |
| | CEILING LIGHT POINT 30W |
| | CEILING FAN(D-1200MM) 80W |
| | POWER POINT WITH TELPHONE POINT |
| | Exhaust fan 40w |
| | CEILING ROSE |
| | AC UNIT |
| | WIRE CONNECTOR FOR AC |
| | 6/16A-SOCKET OUTLET & SWITCH FOR TV |
| | 6A-SOCKET OUTLET & SWITCH FOR AQUA |
| | 6A-SOCKET OUTLET & SWITCH FOR GEYSER |
| | 16A-SOCKET OUTLET &SWITCH FOR FRIDGE |
| | 6/16A-SOCKET OUTLET |
| | 6A-SOCKET OUTLET |
| | 16A-SOCKET OUTLET &SWITCH FOR INVERTER |
| | (DB) POWER DISTRIBUTION BOARD |
| | (LV DB) LV DISTRIBUTION BOARD |
| | 4 WAY CASSETTE AC |
| | KEY TACK |
| | LED TUBE LIGHT 20W |
| | Ceiling Stand alone Light 30W |
| | DATA POINT |
| | 9W DAYLIGHT READING\PLIGHT/RL |
| | WALL CLOVE LIGHTING |
| | WALL \PMOUNTED MIRROR \PLIGHT FIXTURE / ML |
| | PASSIVE INFRARED SENSOR |

**TENDER DRAWINGS** R1/01/10

NOTES:

- DRAWING AREAS TO BE READ AND NOT TO BE SCALED.
- ALL DIMENTIONS ARE IN MILIMETERS UNLESS MENTIONED OTHERWISE.
- ANY DISCREPANCY FOUND SHOULD BE BROUGHT TO THE NOTICE OF THIS OFFICE.
- IMPLEMENTATION OF THE LAYOUT PLAN IS SUBJECT TO APPROVAL OF LOCAL BODY AND OTHER STATIONERY BODIES.

| DOOR SCHEDULE | | |
|---|---|---|
| D | 1.5 M x 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D1 | 1.75 M X 2.5 M | WOODEN FRAME WITH WOODEN DOOR |
| D2 | 1.8 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D3 | 0.9 M X 2.1 M | WOODEN FRAME WITH PVC DOOR |
| D3a | 0.9 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D4 | 0.8 M X 2.1 M | WOODEN FRAME WITH MARINE PLY FLUSH DOOR |
| D5 | 0.75 M X 2.1 M | WOODEN FRAME WITH MARINE PLY FLUSH DOOR |
| D6 | 1.5 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| **WINDOW SCHEDULE** | | |
| W1 | 2.0 M x 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W2 | 1.8 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W4 | 1.2 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W6 | 4.7 M X 2.98 M | ALUMINUM DOUBLE PANEL WINDOW |
| W7 | 3.5 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W7a | 6.0 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |

AREA STATEMENT

SEMINAR HALL:TOTAL BUILT-UP

| Sr.No. | FLOOR | BUILT-UP AREA (Sq.m.) |
|---|---|---|
| 1 | Ground Floor | 1619.56 |
| 2 | First Floor | 1619.56 |
| 3 | Second Floor | 1193.9 |
| 4 | Third Floor | 1193.9 |
| 5 | Terrace Floor | 156.25 |
| 6 | Total Area | 5783.17 |

LEGEND

BRIEF SPECIFICATION

| | |
|---|---|
| A. | 230 MM THK EXTERNAL WALLS. |
| B. | 150 MM THK INTERNAL WALLS. |
| C. | R.C.C. SHEER WALL. |
| D. | 200 MM THK AAC BLOCK. |
| E. | 12MM THK INT. PLATSER |
| F. | 18MM THK EXT. PLATSER |

CERTIFICATE OF AREA

CERTIFIED THAT THE PLOT UNDER REFERENCE WAS SERVEYED BY ME AND THE DIMENSIONS OF SIDES OF PLOT STATED ON PLAN ARE AS MEASURED ON SITE AND THE AREA SO WORKED OUT TALLIES WITH THE AREA STATED IN THE DOCUMENTS OWNERSHIP / T.P. SCHEME RECORDS / LAND RECORDS DEPT.

SIGN:

PROJECT:

ARCHITECTS SIGN & STAMP:

| OWNERS | SIGN |
|---|---|
| REGISTRAR, YASHWANTRAO CHAVAN ACADEMY OF DEVELOPMENT ADMINISTRATION (YASHADA), TATHAWADE, PUNE. | |

| JOB NO | DATE | SCALE | NORTH | DRAWN | CHECKED |
|---|---|---|---|---|---|
| | 15/02/2024 | 1:100 | | AR.NUTAN AR.KALYANI | AR.P.S.SHIRKE B.G.BIRAGDAR |

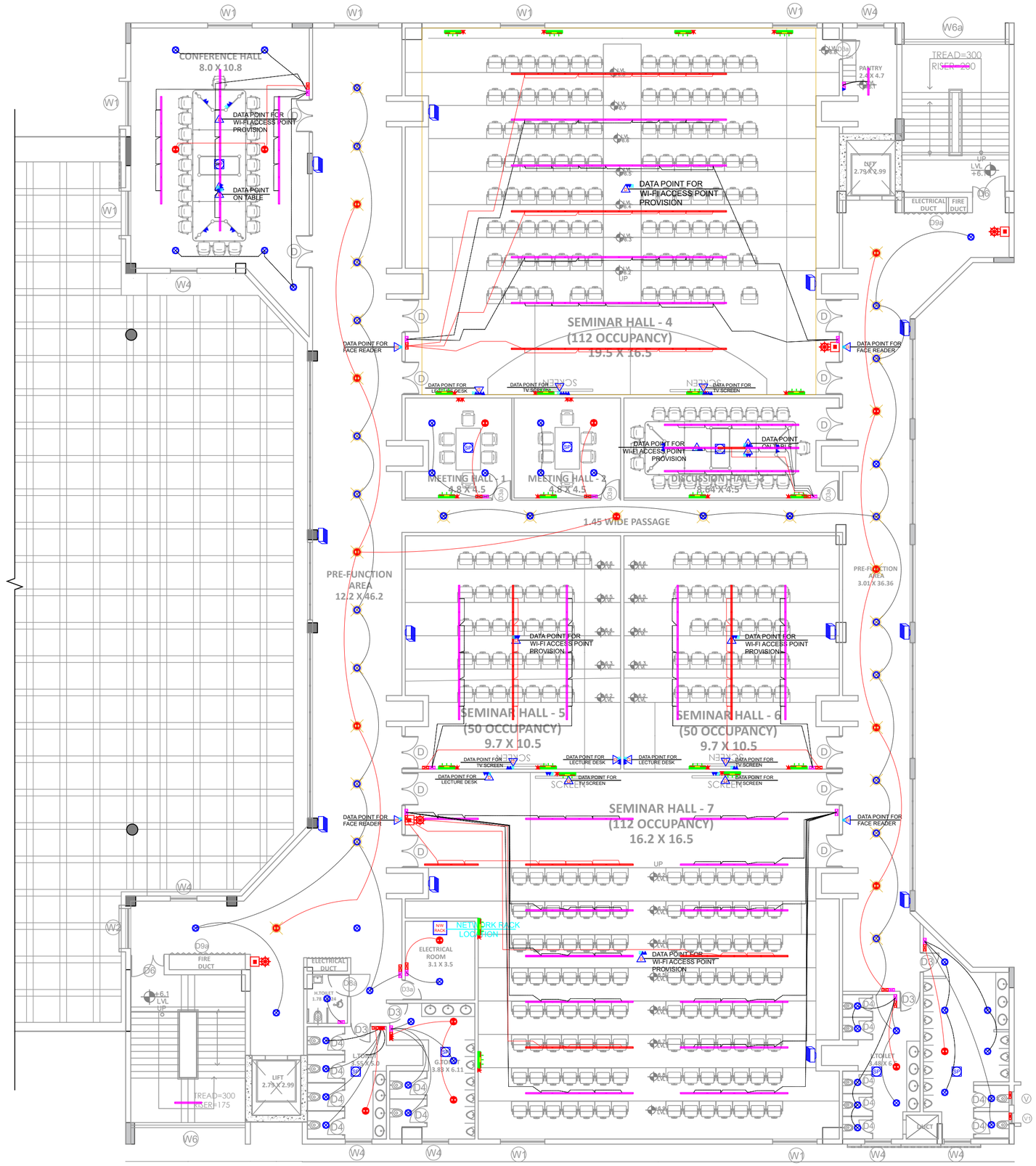
CONSULTANT ARCHITRCT :

CDEP TECHNOLOGICAL UNIVERSITY, SHIVAJINAGAR, PUNE - 411 005

YASHADA CONVENTION CENTRE , TATHAWADE,PUNE

GROUND FLOOR PLAN

S.NO 01




| LEGEND-FIRE ALARM SYSTEM | |
|---|---|
| SYMBOL | DESCRIPTION |
| | ADDRESSABLE FIRE ALARM CONTROL PANEL |
| | PHOTO ELECTRIC SMOKE DETECTOR (BFC) |
| | PHOTO ELECTRIC SMOKE DETECTOR (AFC) WITH RI |
| | BEAM DETECTOR |
| | REFLECTOR FOR BEAM DETECTOR |
| | MANUAL CALL POINT |
| | MONITOR MODULE FOR BEAM DETECTOR |
| | STROBE CUM SOUNDER |
| LEGEND - PA SYSTEM | |
| | CEILING MOUNTED CONE TYPE SPEAKER (6W) |
| | SURFACE MOUNTED BOX TYPE SPEAKER (6W) |
| | COLUMN / WALL MOUNTED SPEAKER (6W) |
| | PA CALL STATION (MICROPHONE) |
| AMP | PA CONTROLLER & AMPLIFIER IN RACK |
| LEGEND- CCTV SYSTEM | |
| | DOME TYPE CAMERA (2MP) |
| | BULLET TYPE CAMERA (2MP) |
| | RJ45 LAN POINT |
| | RJ11 TELEPHONE POINT |
| | NETWORK RACK- WALL MOUNT |
| | 16 CHANNEL DVR |
| | 32" CCTV MONITOR |

| LEGEND'S :--ELE INTERNAL | |
|---|---|
| Symbols | Description |
| | SWITCHBOARD |
| | SWITCHBOARD WITH HALF POINT |
| | WALL LIGHT POINT 20W |
| | CEILING LIGHT POINT 30W |
| | CEILING FAN(D-1200MM) 80W |
| | POWER POINT WITH TELPHONE POINT |
| | Exhaust fan 40w |
| | CEILING ROSE |
| | AC UNIT |
| | WIRE CONNECTOR FOR AC |
| | 6/16A-SOCKET OUTLET & SWITCH FOR TV |
| | 6A-SOCKET OUTLET & SWITCH FOR AQUA |
| | 16A GEYSER SWITCH & SOCKET |
| | 16A-SOCKET OUTLET &SWITCH FOR FRIDGE |
| | 6/16A-SOCKET OUTLET |
| | 6A-SOCKET OUTLET |
| | 16A-SOCKET OUTLET &SWITCH FOR INVERTER |
| | (DB) POWER DISTRIBUTION BOARD |
| | (LV DB) LV DISTRIBUTION BOARD |
| | 4 WAY CASSETTE AC |
| | KEY TACK |
| | LED TUBE LIGHT 20W |
| | Ceiling Stand alone Light 30W |
| | DATA POINT |
| | 9W DAYLIGHT READING\PLIGHT/RL |
| | WALL CLOVE LIGHTING |
| | WALL \PMOUNTED MIRROR \PLIGHT FIXTURE / WL |
| | PASSIVE INFRARED SENSOR |

# FIRST FLOOR PLAN
1:100 (A1)

2

**TENDER DRAWINGS** R1/02/10

NOTES:

- DRAWING AREAS TO BE READ AND NOT TO BE SCALED.
- ALL DIMENTIONS ARE IN MILIMETERS UNLESS MENTIONED OTHERWISE.
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- IMPLEMENTATION OF THE LAYOUT PLAN IS SUBJECT TO APPROVAL OF LOCAL BODY AND OTHER STATIONERY BODIES.

| DOOR SCHEDULE | | |
|---|---|---|
| D | 1.5 M x 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D3 | 0.9 M X 2.1 M | WOODEN FRAME WITH PVC DOOR |
| D3a | 0.9 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D4 | 0.8 M X 2.1 M | WOODEN FRAME WITH MARINE PLY FLUSH DOOR |
| D6 | 1.5 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| **WINDOW SCHEDULE** | | |
| W1 | 2.0 M x 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W2 | 1.8 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W4 | 1.2 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W6a | 4.7 M X 2.95 M | ALUMINUM DOUBLE PANEL WINDOW |

AREA STATEMENT

SEMINAR HALL:TOTAL BUILT-UP

| Sr.No. | FLOOR | BUILT-UP AREA (Sq.m.) |
|---|---|---|
| 1 | Ground Floor | 1619.56 |
| 2 | First Floor | 1619.56 |
| 3 | Second Floor | 1193.9 |
| 4 | Third Floor | 1193.9 |
| 5 | Terrace Floor | 156.25 |
| 6 | Total Area | 5783.17 |

LEGEND

1. PLOT BOUNDARY : BLACK LINE
2. PROPOSED WORK : RED LINE
3. EXISTING WORK TO BE DEMOLISHED : YELLOW HATCH
4. EXISTING WORK TO BE RETAINED : HATCH
5. DRAINAGE LINE : BLACK DOTTED LINE
6. WATER LINE : RED DOTTED LINE

BRIEF SPECIFICATION

| | |
|---|---|
| A. | 230 MM THK EXTERNAL WALLS. |
| B. | 150 MM THK INTERNAL WALLS. |
| C. | R.C.C. SHEER WALL. |
| D. | 200 MM THK AAC BLOCK. |
| E. | 12MM THK INT. PLATSER |
| F. | 18MM THK EXT. PLATSER |

CERTIFICATE OF AREA

CERTIFIED THAT THE PLOT UNDER REFERENCE WAS SERVEYED BY ME AND THE DIMENSIONS OF SIDES OF PLOT STATED ON PLAN ARE AS MEASURED ON SITE AND THE AREA SO WORKED OUT TALLIES WITH THE AREA STATED IN THE DOCUMENTS OWNERSHIP / T.P. SCHEME RECORDS / LAND RECORDS DEPT.

SIGN:

PROJECT:

ARCHITECTS SIGN & STAMP:

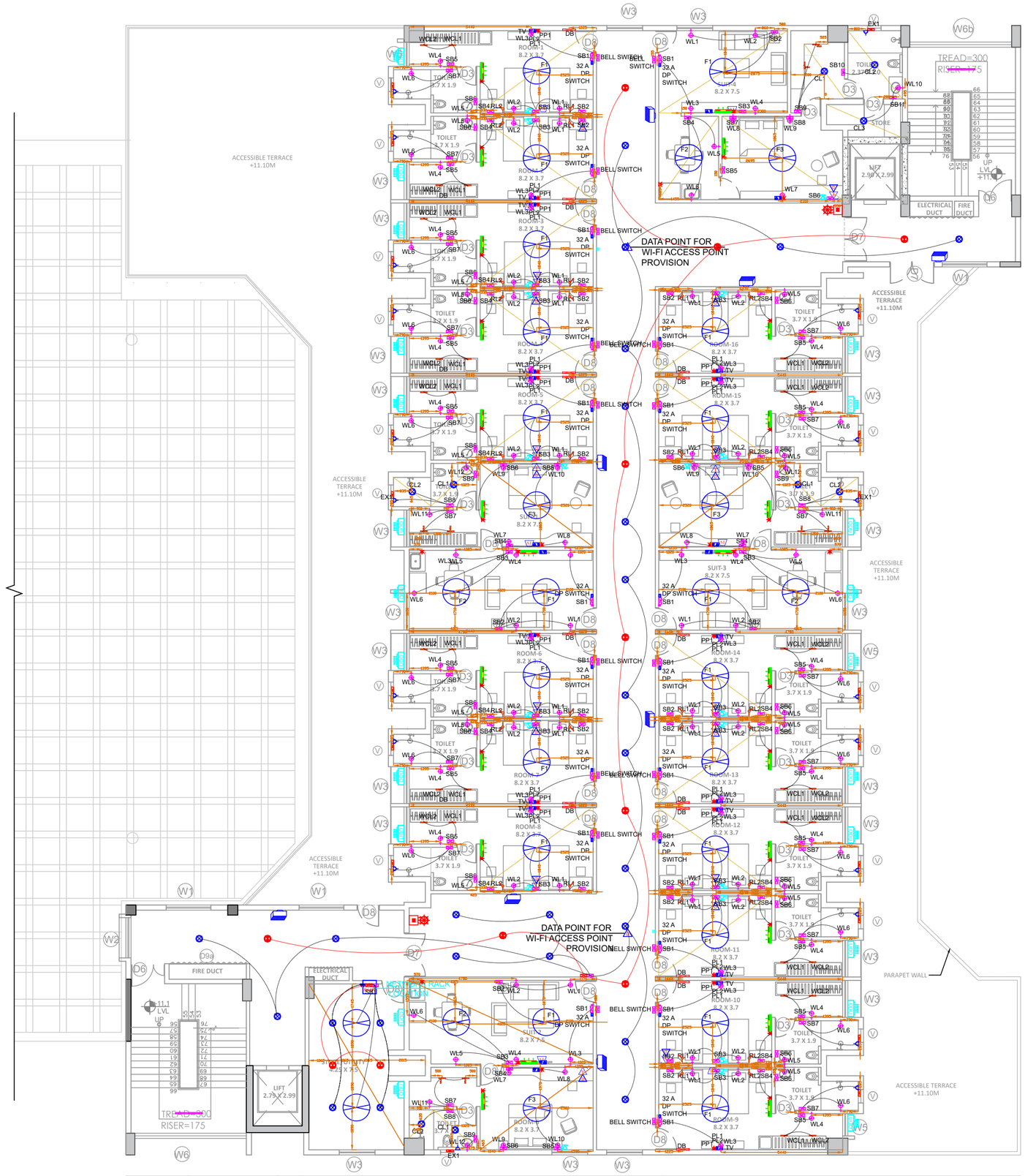
| OWNERS | SIGN |
|---|---|
| REGISTRAR, YASHWANTRAO CHAVAN ACADEMY OF DEVELOPMENT ADMINISTRATION (YASHADA), TATHAWADE, PUNE. | |

| JOB NO | DATE | SCALE | NORTH | DRAWN | CHECKED |
|---|---|---|---|---|---|
| | 15/02/2024 | 1:100 | | AR.NUTAN AR.KALYANI | AR.P.S.SHIRKE B.G.BIRAGDAR |

CONSULTANT ARCHITRCT :

CDEP TECHNOLOGICAL UNIVERSITY, SHIVAJINAGAR, PUNE - 411 005

| YASHADA CONVENTION CENTRE , TATHAWADE,PUNE | S.NO |
|---|---|
| FIRST FLOOR PLAN | 02 |




| LEGEND-FIRE ALARM SYSTEM | |
|---|---|
| SYMBOL | DESCRIPTION |
| | ADDRESSABLE FIRE ALARM CONTROL PANEL |
| | PHOTO ELECTRIC SMOKE DETECTOR (BFC) |
| | PHOTO ELECTRIC SMOKE DETECTOR (AFC) WITH RI |
| | BEAM DETECTOR |
| | REFLECTOR FOR BEAM DETECTOR |
| | MANUAL CALL POINT |
| | MONITOR MODULE FOR BEAM DETECTOR |
| | STROBE CUM SOUNDER |
| LEGEND - PA SYSTEM | |
| | CEILING MOUNTED CONE TYPE SPEAKER (6W) |
| | SURFACE MOUNTED BOX TYPE SPEAKER (6W) |
| | COLUMN / WALL MOUNTED SPEAKER (6W) |
| | PA CALL STATION (MICROPHONE) |
| | PA CONTROLLER & AMPLIFIER IN RACK |
| LEGEND- CCTV SYSTEM | |
| | DOME TYPE CAMERA (2MP) |
| | BULLET TYPE CAMERA (2MP) |
| | RJ45 LAN POINT |
| | RJ11 TELEPHONE POINT |
| | NETWORK RACK- WALL MOUNT |
| | 16 CHANNEL DVR |
| | 32" CCTV MONITOR |

| LEGEND'S :-ELE INTERNAL | |
|---|---|
| Symbols | Description |
| | SWITCHBOARD |
| | SWITCHBOARD WITH HALF POINT |
| | WALL LIGHT POINT 20W |
| | CEILING LIGHT POINT 30W |
| | CEILING FAN(D-1200MM) 80W |
| | POWER POINT WITH TELPHONE POINT |
| | Exhaust fan 40w |
| | CEILING ROSE |
| | AC UNIT |
| | WIRE CONNECTOR FOR AC |
| | 6/16A-SOCKET OUTLET & SWITCH FOR TV |
| | 6A-SOCKET OUTLET & SWITCH FOR AQUA |
| | 16A GEYSER SWITCH & SOCKET |
| | 16A-SOCKET OUTLET &SWITCH FOR FRIDGE |
| | 6/16A-SOCKET OUTLET |
| | 6A-SOCKET OUTLET |
| | 16A-SOCKET OUTLET &SWITCH FOR INVERTER |
| | (DB) POWER DISTRIBUTION BOARD |
| | (LV DB) LV DISTRIBUTION BOARD |
| | 4 WAY CASSETTE AC |
| | KEY TACK |
| | LED TUBE LIGHT 20W |
| | Ceiling Stand alone Light 30W |
| | DATA POINT |
| | 9W DAYLIGHT READING\PLIGHT/RL |
| | WALL CLOVE LIGHTING |
| | WALL \PMOUNTED MIRROR \PLIGHT FIXTURE / ML |
| | PASSIVE INFRARED SENSOR |

# SECOND FLOOR PLAN

1:100 (A1)

3

## TENDER DRAWINGS | R1/03/10

NOTES:

- DRAWING AREAS TO BE READ AND NOT TO BE SCALED.
- ALL DIMENTIONS ARE IN MILIMETERS UNLESS MENTIONED OTHERWISE.
- ANY DISCREPANCY FOUND SHOULD BE BROUGHT TO THE NOTICE OF THIS OFFICE.
- IMPLEMENTATION OF THE LAYOUT PLAN IS SUBJECT TO APPROVAL OF LOCAL BODY AND OTHER STATIONERY BODIES.

| DOOR SCHEDULE | | |
|---|---|---|
| D3 | 0.9 M X 2.1 M | WOODEN FRAME WITH PVC DOOR |
| D6 | 1.5 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D7 | 2.0 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |
| D8 | 1.0 M X 2.1 M | WOODEN FRAME WITH WOODEN DOOR |

| WINDOW SCHEDULE | | |
|---|---|---|
| W | 2.4 M x 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W1 | 2.0 M x 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W2 | 1.8 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W3 | 1.6 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |
| W6b | 4.7 M X 2.15 M | ALUMINUM DOUBLE PANEL WINDOW |
| W5 | 1.0 M X 1.2 M | ALUMINUM DOUBLE PANEL WINDOW |

AREA STATEMENT

SEMINAR HALL:TOTAL BUILT-UP

| Sr.No. | FLOOR | BUILT-UP AREA (Sq.m.) |
|---|---|---|
| 1 | Ground Floor | 1619.56 |
| 2 | First Floor | 1619.56 |
| 3 | Second Floor | 1193.9 |
| 4 | Third Floor | 1193.9 |
| 5 | Terrace Floor | 156.25 |
| 6 | Total Area | 5783.17 |

LEGEND

1. PLOT BOUNDARY : BLACK LINE
2. PROPOSED WORK : RED LINE
3. EXISTING WORK TO BE DEMOLISHED : YELLOW HATCH
4. EXISTING WORK TO BE RETAINED : HATCH
5. DRAINAGE LINE : BLACK DOTTED LINE
6. WATER LINE : RED DOTTED LINE

BRIEF SPECIFICATION

| | |
|---|---|
| A. | 230 MM THK EXTERNAL WALLS. |
| B. | 150 MM THK INTERNAL WALLS. |
| C. | R.C.C. SHEER WALL. |
| D. | 200 MM THK AAC BLOCK. |
| E. | 12MM THK INT. PLATSER |
| F. | 18MM THK EXT. PLATSER |

CERTIFICATE OF AREA

CERTIFIED THAT THE PLOT UNDER REFERENCE WAS SERVEYED BY ME AND THE DIMENSIONS OF SIDES OF PLOT STATED ON PLAN ARE AS MEASURED ON SITE AND THE AREA SO WORKED OUT TALLIES WITH THE AREA STATED IN THE DOCUMENTS OWNERSHIP / T.P. SCHEME RECORDS / LAND RECORDS DEPT.

SIGN:

PROJECT:

ARCHITECTS SIGN & STAMP:

| OWNERS | SIGN |
|---|---|
| REGISTRAR, YASHWANTRAO CHAVAN ACADEMY OF DEVELOPMENT ADMINISTRATION (YASHADA), TATHAWADE, PUNE. | |

| JOB NO | DATE | SCALE | NORTH | DRAWN | CHECKED |
|---|---|---|---|---|---|
| | 15/02/2024 | 1:100 | | AR.NUTAN AR.KALYANI | AR.P.S.SHIRKE B.G.BIRADDAR |

CONSULTANT ARCHITRCT :

COEP TECHNOLOGICAL UNIVERSITY, SHIVAJINAGAR, PUNE – 411 005

| YASHADA CONVENTION CENTRE , TATHAWADE,PUNE | S.NO |
|---|---|
| SECOND FLOOR PLAN | 03 |