

# REQUEST FOR PROPOSAL

## **Name of the Work:**

Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission.



**BAREILLY SMART CITY LIMITED (BSCL)  
BAREILLY  
(UTTAR PRADESH, INDIA)**



**March 2021**

**Employer: - Bareilly Smart City Limited (BSCL)**

Nagar Nigam, Bareilly- 243001

Telephone: 0581 25510074

[Email: ceo.bscl01@gmail.com](mailto:ceo.bscl01@gmail.com)

Ref No: -BSCL/2020-21/ 776

Date:- 08/03/2021

Bareilly Smart City Limited, Bareilly invites e-tender for the following projects: -

| S. No. | Name of the Work   | Earnest Money Deposit (Rs.) | Tender fee with GST @ 18% (Rs.) | Work completion Period | Bid Start Date |
|--------|--|-----------------------------|---------------------------------|------------------------|----------------|
| 01     | Renovation of Ghantaghar Clock Tower with Development Of Moti Park And Parking Area Under Bareilly Smart City Limited                  | 2 Lakhs                     | 11,800                          | 6 Months               | 15.03.2021     |
| 02     | Engineering, Procurement and Construction of Bareilly Haat and Handicraft Centre with 1 year Defect Liability under Smart City Mission | 3 Crore                     | 29,500                          | 24 Months              | 19.03.2021     |

|    |  |
|----|--|
| 1. | Detailed NIT and Bid Document shall be available on: - <a href="https://etender.up.nic.in">https://etender.up.nic.in</a> and <a href="http://www.bareillysmartcity.in">http://www.bareillysmartcity.in</a>   |
| 2. | Tender call notice in two Bid systems (Part- I: General & Technical Bid and Part-II: financial Bid/Price Bid/BOQ) from intending bidders fulfilling the eligibility criteria mentioned in this Notice and other qualifying requirements mentioned in this RFP. |
| 3. | Amendment to NIT if any would be published on website only.  |
| 4. | In case of any queries on this RFP, intending bidders may contact THE GENERAL MANAGER, BAREILLY SMART CITY LIMITED, Bareilly (Tel. No: - 0581- 25510074, 7055519602) or send an email to: <a href="mailto:ceo.bscl01@gmail.com">ceo.bscl01@gmail.com</a>       |

Chief Executive Officer,  
Bareilly Smart City Limited, Bareilly.

प्रकाशन हेतु नहीं

- सम्पादक, Times of India (All Edition), Dainik Jagran (Local edition) को इस अनुरोध के साथ कि अपने राष्ट्रीय संस्करण समाचार पत्र में उपरोक्त निविदा सूचना का प्रकाशन आगामी संस्करण में डी0ए0बी00पी0 दरो पर न्यूनतम स्थान में एक बार प्रकाशित करने का कष्ट करे तथा 04 प्रतियों के साथ बिल भुगतान हेतु प्रेषित करें ।
- आयुक्त महोदय, बरेली मण्डल, बरेली की सूचानार्थ ।
- नोटिस बोर्ड पर चस्पा हेतु ।
- कम्प्यूटर प्रभारी/ आई.टी0 एक्सपर्ट नगर निगम बरेली को इस अनुरोध के साथ प्रेषित कि उक्त निविदा सूचना को नगर निगम, बरेली की वेबसाइट पर प्रदर्शित करने का कष्ट करें ।

Chief Executive Officer,  
Bareilly Smart City Limited, Bareilly



## DISCLAIMER

The information contained in this Request for Proposal document ("RFP") or subsequently provided to bidders, verbally or in documentary or any other form by or on behalf of the Bareilly Smart City Limited (here for the referred to as BSCL in this document) or any of its employees or advisers, is provided to bidders on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

This RFP is not an agreement and is not an invitation by the Employer to the prospective Consultants or any other person. The purpose of this RFP is to provide interested bidders with information that may be useful to them in the formulation of their Proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the Employer in relation to the Consultancy. Such assumptions, assessments and statements do not purport to contain all the information that each bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the Employer, its employees or advisers to consider the objectives, technical expertise and particular needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in this RFP, may not be complete, accurate, adequate or correct. Each bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this RFP and obtain independent advice from appropriate sources.

The BSCL and its employees and advisers make no representation or warranty and shall have no liability to any person including any bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, reliability or completeness of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way in this Selection Process.

The BSCL also accepts no liability of any nature whether resulting from negligence or otherwise however caused arising from reliance of any bidder upon the statements contained in this RFP.

The BSCL may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this RFP.

The issue of this RFP does not imply that the Employer is bound to select a bidder or to appoint the selected bidder, as the case may be, for the Consultancy and the BSCL reserves the right to reject all or any of the Proposals without assigning any reasons whatsoever. The bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the BSCL or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the bidder and the BSCL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a bidder in preparation or submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

Chief Executive Officer,  
Bareilly Smart City Limited, Bareilly.



**BAREILLY SMART CITY LIMITED (BSCL)**

**BAREILLY**

**(UTTAR PRADESH, INDIA)**

Letter no. BSCL/2020-21/ **728**

Dt. **08/03/2021**

**NATIONAL COMPETITIVE BIDDING THROUGH e-Procurement**

Chief Executive Officer (CEO), Bareilly Smart City Ltd., Bareilly invite lumpsum Bids for the work mentioned below through e-Procurement in conformity with the terms and conditions of this advertisement and the detailed tender call notice in two Bid systems (Part- I: General & Technical Bid and Part-II: financial Bid/Price Bid/BOQ) from intending bidders fulfilling the eligibility criteria mentioned in this Notice and other qualifying requirements mentioned in this RFP. Bidders can participate in the bidding after registering them on E- tendering portal <http://etender.up.nic.in>. Bidder can download the RFP from <http://etender.up.nic.in> after paying the tender cost through online payment in the name of Bareilly Smart City Limited, A/C No. : 0294001100000836, Name of Bank: Punjab National Bank, Branch: Pilibhit By-Pass Road, Bareilly, IFSC Code: PUNB0613400. Bidder will have to upload the scanned copy of transaction slip along with technical bid failing this; the Bid is liable to be rejected. The Bidder should deposit the Earnest Money through online in above mentioned account number or through Bank Guarantee from a Nationalized Bank in favour of Chief Executive Officer, Bareilly Smart City Limited, Bareilly. The scanned copy of the transaction slip should be uploaded along with technical bid. The bidders should have necessary Portal enrollment (Digital Signature Certificate) under e-procurement process of Govt. of Uttar Pradesh in required class/category. In case of any queries on this RFP, intending bidders may contact CHIEF EXECUTIVE OFFICER, BAREILLY SMART CITY LIMITED, Bareilly (Tel. No:- 0581- 25510074)

| S.No. | Name of the Work   | Earnest Money Deposit (Rs.) | Tender fee with GST @ 18% | Work completion Period |
|-------|--|-----------------------------|---------------------------|------------------------|
| 1     | Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission. | 2.35 Crore                  | 29,500                    | 24 Months              |



## TIME SCHEDULE FOR BIDDING

| S. No | Description                     | Critical Dates     |
|-------|---------------------------------|--------------------|
| 1     | Upload/Publish of RFP           | 19/03/2021 6:55 PM |
| 2     | Bid start Date/Time of RFP      | 19/03/2021 6:55 PM |
| 3     | Pre-Bid Meeting                 | 31/03/2021 3:00 PM |
| 4     | Bid Closing Date/Time of RFP    | 05/04/2021 3:00 PM |
| 5     | Technical Bid Opening Date/Time | 06/04/2021 3:00 PM |
| 6     | Financial Bid Opening Date/Time | To be notified     |

1. Other details can be seen on website <http://etender.up.nic.in> (for view, download and bidding) and on website [www.nagarnigambareilly.com](http://www.nagarnigambareilly.com) (for view and download only).
2. Subsequent corrigendum, if required, shall appear in these websites.
3. Authority reserves the right to reject any or all the tenders without assigning any reasons
4. Contractor who want to participate in bid must registered themselves on <http://etender.up.nic.in>
5. For any other queries, please contact Nodal Officer, Bareilly Smart City Limited. Also, for any further queries, the bidders are advised to send an email to : [ceo.bscl01@gmail.com](mailto:ceo.bscl01@gmail.com)

Chief Executive Officer,  
Bareilly Smart City Limited,  
Bareilly.

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## FACTSHEET

This RFP is meant for the exclusive purpose of submitting the e-bid in accordance with the terms and conditions specified herein and this RFP shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued

| Sr. No. | Item  | Description   |
|---------|---|---|
| 1.      | Method of Selection                                     | The method of selection is Lowest quoted price ( L1) bidder   |
| 2.      | Availability of RFP Documents                           | Download from <a href="http://www.etender.up.nic.in">www.etender.up.nic.in</a>  |
| 3.      | Date/Time of RFP Issuance                               | 19/03/2021 6:55 PM  |
| 4.      | Bid Processing fee (Non-refundable and Not -- exempted) | Indian Rupees 29,500/- (Indian Rupees Twenty-Nine Thousand Five Hundred only) shall be paid via online transfer in favor of the "Chief Executive Officer, Bareilly Smart City Limited".   |
| 5.      | Earnest Money Deposit (EMD)                             | Indian Rupees 2,35,00,000 (Two Crore thirty five lakh only) by online / Bank Guarantee from Nationalized Bank in favor of "Chief Executive Officer, Bareilly Smart City Limited, Bareilly". In case the EMD is submitted in the form of Bank Guarantee then the Bidder will upload the scanned copy of the instrument along with the technical bid and same shall be submitted in original at BSCL office within 3 days of Bid submission due date. |
| 6.      | Last date and time for Submission of Pre-Bid Queries    | 31/03/2021 12 noon  |
| 7.      | Date of Pre-Bid Meeting                                 | 31/03/2021 3:00 PM  |
| 8.      | Posting of responses to queries (on Email)              | Respective bidder's e-mail ID's   |
| 9.      | Last Date and time for Bid submission (On or before)    | 05/04/2021 3:00 PM  |
| 10.     | Date, time for opening of Pre-Qualification Bids        | 06/04/2021 3:00 PM  |
| 11.     | Date, Time for opening of Financial Bids                | To Be notified  |
| 12.     | Bid validity  | Bid must remain valid up to 180 (One Hundred & eighty) days from the actual date of submission of the Bid.  |
| 13.     | Project Duration  | 24 Months   |
| 14.     | Currency  | Indian Rupees (INR) only  |
| 15.     | Bareilly Smart City                                     | Bareilly Smart City Limited,  |

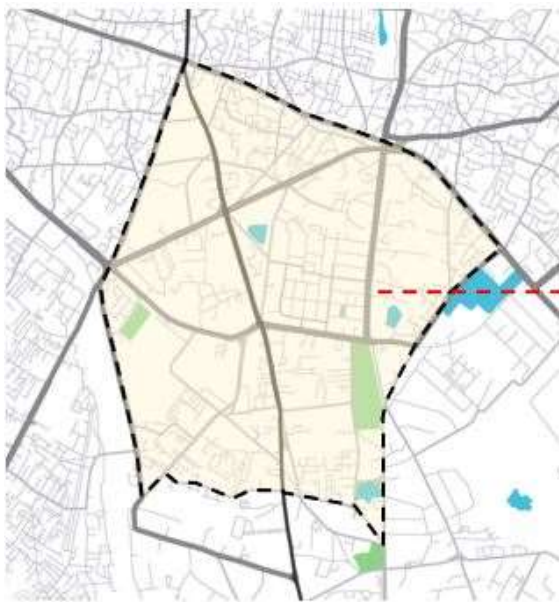


| Sr. No. | Item                                | Description   |
|---------|-------------------------------------|---|
|         | Limited Bank Account Details        | A/C No. : 0294001100000836,<br>Name of Bank: Punjab National Bank,<br>Branch: Pilibhit By-Pass Road, Bareilly,<br>IFSC Code: PUNB0613400  |
| 16.     | Name and Address for Correspondence | <b>Chief Executive Officer</b><br>Bareilly Smart City Limited (BSCL),<br>Bareilly Municipal Corporation, Bareilly,<br>Electronic mail address: <a href="mailto:ceo.bscl01@gmail.com">ceo.bscl01@gmail.com</a><br>Ph: 0581 – 25510074, M: 7055519602 |
| 17      | Language of Bid                     | English   |

Chief Executive Officer,  
Bareilly Smart City Limited,  
Bareilly

## PROJECT PROFILE

### Project Site:



### Project Profile

Bareilly is a manufacturing and export center for handicrafts which also provides employment and better future for craftsmen & its dependents who are engaged in the activities. Nearly 30% population (2.7 lakh out of 9.05 lakh as per 2009 census) is involved in handicrafts activities.

The popular crafts of Bareilly include **Zari work** (the elaborate metal embroidery on sarees etc.), making of **Surma** (the special eye liner which soothes the eyes), **Manjha** (the stone powder coated kite-flying and fighting string), **bamboo furniture making** etc.

The Bareilly Smart City Ltd (BSCL) has proposed to develop a Integrated Infrastructure for Handicrafts Center and Bareilly Haat for the up-liftment and promotion of the Handicraft Industry of the city/state.

### Handicrafts Centre

#### Project Objectives for Site :

The OBJECTIVE for the project is to provide exposure and support to the handicrafts sector in the city at various levels:

1. **INTERNAL MARKET LINKAGE:** Creating a vibrant public Space “ART DISTRICT” in the heart of the city with shopping, restaurants and a complete HIGH STREET atmosphere thereby providing an exposure to the local market of the city for the Handicraft industry.
2. **EXTERNAL MARKET LINKAGE:** Design Incubation center to the best talented designers worldwide to come and create innovative designs. Bringing the best designers to create Designs with ZARI and giving the workers

a space to execute these designs thereby providing an exposure to the National and International markets through the designer garments collection of these designers. Further, Creating an Online Portal showcasing the products and handicrafts of the city.

3. **TRAINING CENTER:** Encourage more and more people to join the Handicraft making trade by providing an efficient training and resource center. Innovation and quality increment in the Handicraft products through the research and development center. We have held detailed discussions with NIFT to run and manage the Training center. The setup has been planned as per their discussions.
4. **PRODUCTION CENTER:** to create an ideal Production center showcasing the industry best practices and working environment with correct wage structure. This will also inspire the local people to upgrade their own workplaces when they see the benefits of an ideal production center.

The site is located opposite Rampur Garden and near the Company Garden which is the main park of Bareilly. The Total land area is 14500 sqm. The land ownership belonged to Department of Industries which has now handed over the no objection certificate for the above land. Bareilly Exhibition centre (Urban /Bareilly Haat) also lies close to the site within the range of 100m.

## **Bareilly Haat**

### **Project Objectives for Site :**

For achieving revitalization and development of handicraft Industry in Bareilly city, following are the objectives of proposing Bareilly Haat campus:

### **PROMOTION & RETAIL (MARKET PLACE):**

To Provide 200 shops/ stalls inside the campus  
Convention Centre for events  
BAREILLY IDENTITY  
Interpretation Centre

### **RECREATION ACTIVITIES: REVENUE and FOOTFALL**

Restaurant ,Café, Food Court, Ferris Wheel  
Adventure zone and Play Area for children

### **PROPER INFRASTRUCTURE**

Well defined landscape, plazas, open furniture, toilets and signage  
Ample Parking space in the Campus

### **Area Programming of the Site**

| TOTAL PROJECT AREAS |                     |  |             |  |
|---------------------|---------------------|--|-------------|--|
| S. No.              | Description         |  | Total (sqm) |  |
|                     | TOTAL SITE AREA     |  | 41138       |  |
|                     | TOTAL BUILT UP AREA |  | 44917       |  |
|                     | GROUND COVERAGE     |  | 10949       |  |

| URBAN HAAT AREA CHART |                       |            |             |   |
|-----------------------|-----------------------|------------|-------------|---|
| BUILDING AREAS        |                       |            |             |   |
| S. No.                | Description           | Area (sqm) | Total (sqm) | Work to be done   |
|                       | TOTAL SITE AREA       |            | 26624       |   |
|                       | TOTAL BUILT UP AREA   |            | 30932       |   |
|                       | GROUND COVERAGE       |            | 7392        |   |
| 1                     | EXISTING STRUCTURE    | 2000       | 2000        | Dismantling, Demolition AND DISPOSAL  |
| 2                     | BASEMENT              | 11700      | 11700       | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work |
| 3                     | GATEHOUSE             |            |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work                                   |
| A                     | GROUND FLOOR          | 300        | 300         |   |
| 4                     | SHOPPING CENTRE (G+2) |            |             | Civil work<br>Electrical work<br>Plumbing work<br>Firefighting work                               |
| A                     | GROUND FLOOR          | 585        | 1845        | Civil work<br>Electrical work<br>Plumbing work<br>Firefighting work                               |
| B                     | FIRST FLOOR           | 585        |             |   |
| C                     | SECOND FLOOR          | 585        |             |   |
| D                     | MUMTY                 | 90         |             |   |



|           |  |      |             |                               |
|-----------|--|------|-------------|-------------------------------|
|           |  |      |             |                               |
| <b>5</b>  | <b>SHOPPING KIOSKS</b>                   |      |             | Civil work                    |
| A         | GROUND FLOOR                             | 500  | <b>500</b>  | Electrical work               |
|           |  |      |             |                               |
| <b>6</b>  | <b>FOOD CENTRE (G+2)</b>                 |      |             | Civil work                    |
| A         | GROUND FLOOR                             | 750  | <b>3650</b> | Electrical work               |
| B         | FIRST FLOOR                              | 1400 |             | Plumbing work                 |
| C         | SECOND FLOOR                             | 1400 |             | Firefighting work             |
| D         | MUMTY                                    | 100  |             | Solar work                    |
|           |  |      |             |                               |
| <b>7</b>  | <b>INTERPRETATION CENTRE (BASEMENT)</b>  |      |             | Civil work                    |
|           |  |      |             | Interior work                 |
|           |  |      |             | Electrical work               |
|           |  |      |             | Plumbing work                 |
|           |  |      |             | HVAC work                     |
|           |  |      |             | Firefighting work             |
| A         | BASEMENT FLOOR                           | 1300 | <b>1300</b> |                               |
|           |  |      |             |                               |
| <b>8</b>  | <b>HANDICRAFTS SHOPPING CENTRE (G+1)</b> |      |             | Civil work                    |
| A         | GROUND FLOOR                             | 660  | <b>1270</b> | Electrical work               |
| B         | FIRST FLOOR                              | 550  |             | Firefighting work             |
| C         | MUMTY                                    | 60   |             |                               |
|           |  |      |             |                               |
| <b>9</b>  | <b>CONVENTION CENTRE (G+2)</b>           |      |             | Civil work                    |
| A         | GROUND FLOOR                             | 1700 | <b>6900</b> | Interior work                 |
| B         | FIRST FLOOR                              | 1800 |             | Electrical work               |
| C         | SECOND FLOOR                             | 1600 |             | Plumbing work                 |
| D         | THIRD FLOOR                              | 1600 |             | HVAC work                     |
| E         | MUMTY                                    | 200  |             | Firefighting work             |
|           |  |      |             | Solar work                    |
|           |  |      |             |                               |
| <b>10</b> | <b>DORMITORY BLOCK (G+1)</b>             |      |             | Civil work                    |
|           |  |      |             | Interior work                 |
|           |  |      |             | Electrical work               |
|           |  |      |             | Plumbing work                 |
|           |  |      |             | HVAC work                     |
|           |  |      |             | Firefighting work             |
|           |  |      |             | Solar work                    |
| A         | GROUND FLOOR                             | 580  | <b>1150</b> |                               |
| B         | FIRST FLOOR                              | 520  |             |                               |
| C         | MUMTY                                    | 50   |             |                               |
|           |  |      |             |                               |
| <b>11</b> | <b>OPEN AIR THEATRE</b>                  |      |             | Civil work                    |
| A         | GROUND FLOOR                             | 400  | <b>400</b>  | Electrical work plumbing Work |
|           |  |      |             |                               |

|                                     |                               |                   |                    |   |
|-------------------------------------|-------------------------------|-------------------|--------------------|---|
| <b>12</b>                           | <b>STALLS</b>                 |                   |                    | Civil work<br>Electrical work   |
| A                                   | GROUND FLOOR                  | 1425              | <b>1425</b>        |   |
|                                     |                               |                   |                    |   |
| <b>13</b>                           | <b>LIFT LOBBY + STAIRCASE</b> |                   |                    | Civil work<br>Interior work<br>Electrical work  |
| A                                   | GROUND FLOOR                  | 220               | <b>220</b>         |   |
|                                     |                               |                   |                    |   |
| <b>14</b>                           | <b>GUARD ROOMS</b>            |                   |                    | Civil work<br>Interior work<br>Electrical work  |
| 1                                   | GROUND FLOOR                  | 112               | <b>112</b>         |   |
|                                     |                               |                   |                    |   |
| <b>15</b>                           | <b>ELECTRICAL SERVICES</b>    |                   |                    | Civil work<br>Interior work<br>Electrical work<br>Firefighting work                               |
| 1                                   | GROUND FLOOR                  | 110               | <b>110</b>         |   |
|                                     |                               |                   |                    |   |
| <b>16</b>                           | <b>TICKET BOOTH</b>           |                   |                    | Civil work<br>Interior work<br>Electrical work  |
| 1                                   | GROUND FLOOR                  | 30                | <b>50</b>          |   |
| 2                                   | GROUND FLOOR                  | 20                |                    |   |
|                                     |                               |                   |                    |   |
| <b>17</b>                           | <b>EXTERNAL DEVELOPMENT</b>   |                   |                    |   |
|                                     |                               |                   |                    |   |
| 1                                   | GREEN AREAS                   | 2000              | <b>2000</b>        | Site Plumbing,Site<br>Electrical ,Firefighting  |
| 2                                   | SURFACE PARKING               | 670               | <b>670</b>         |   |
| 3                                   | ROAD                          | 5000              | <b>5000</b>        |   |
| 4                                   | PAVING                        | 8302              | <b>8302</b>        |   |
| 5                                   | KID'S PLAY AREA               | 650               | <b>650</b>         |   |
|                                     |                               |                   |                    |   |
| <b>HANDICRAFT CENTER AREA CHART</b> |                               |                   |                    |   |
| <b>BUILDING AREAS</b>               |                               |                   |                    |   |
| <b>S. No.</b>                       | <b>Description</b>            | <b>Area (sqm)</b> | <b>Total (sqm)</b> | <b>Work to be done</b>  |
|                                     |                               |                   |                    |   |
|                                     | <b>GROUND COVERAGE</b>        |                   | <b>3557</b>        |   |
|                                     | <b>TOTAL BUILT UP AREA</b>    |                   | <b>13985</b>       |   |
|                                     | <b>TOTAL SITE AREA</b>        |                   | <b>14514</b>       |   |
|                                     |                               |                   |                    |   |
| <b>18</b>                           | <b>BASEMENT</b>               | <b>3663</b>       | <b>3663</b>        | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work |

|           |                             |      |             |   |
|-----------|-----------------------------|------|-------------|---|
| <b>19</b> | <b>BLOCK 1</b>              |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A         | GROUND FLOOR                | 1155 | <b>4480</b> |   |
| B         | FIRST FLOOR                 | 1065 |             |   |
| C         | SECOND FLOOR                | 1135 |             |   |
| D         | THIRD FLOOR                 | 880  |             |   |
| E         | TERRACE FLOOR               | 245  |             |   |
|           |                             |      |             |   |
| <b>20</b> | <b>BLOCK 2</b>              |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A         | GROUND FLOOR                | 1070 | <b>4510</b> |   |
| B         | FIRST FLOOR                 | 1070 |             |   |
| C         | SECOND FLOOR                | 1070 |             |   |
| D         | FOURTH FLOOR                | 1070 |             |   |
| E         | TERRACE FLOOR               | 230  |             |   |
|           |                             |      |             |   |
| <b>21</b> | <b>BLOCK 3</b>              |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work               |
| A         | GROUND FLOOR                | 1300 | <b>1300</b> |   |
|           |                             |      |             |   |
| <b>22</b> | <b>GUARD ROOMS</b>          |      |             | Civil work<br>Interior work<br>Electrical work  |
| A         | GROUND FLOOR                | 32   | <b>32</b>   |   |
|           |                             |      |             |   |
| <b>23</b> | <b>EXTERNAL DEVELOPMENT</b> |      |             |   |
|           |                             |      |             |   |
| 1         | GREEN AREAS                 | 3500 | <b>3500</b> |   |
| 2         | SURFACE PARKING             | 425  | <b>425</b>  |   |
| 3         | ROAD                        | 5632 | <b>5632</b> |   |
| 4         | PAVING                      | 1135 | <b>1135</b> |   |
| 5         | KID'S PLAY AREA             | 165  | <b>165</b>  |   |
| 6         | OAT                         | 100  | <b>100</b>  |   |

## Part I

## SECTION I - INSTRUCTIONS TO BIDDERS (ITB)

| Instruction to Bidders (ITB) |                      |     |  |
|------------------------------|----------------------|-----|--|
| A. General                   |                      |     |  |
| 1                            | Scope of Bid         | 1.1 | In connection with the RFP, specified in the <b>Bid Data Sheet (BDS)</b> , the Employer, as <b>specified in the BDS</b> , issues this bidding document for the provision of Works as specified in Section VII, scope of work. The name, identification, of this RFP are <b>specified in the BDS</b> .  |
|                              |                      | 1.2 | Throughout this bidding document:  |
|                              |                      |     | (a) The term “in writing” means communicated in written form (e.g. by mail, e-mail, including if <b>specified in the BDS</b> , distributed or received through electronic-procurement system used by the Employer) with proof of receipt;  |
|                              |                      |     | (b) if the context so requires, “singular” means “plural” and vice versa; and  |
|                              |                      |     | (c) “Day” means calendar day, unless otherwise specified as a “Business Day.” A Business Day is any day that is a working day of the Employer. It excludes the Employer’s official public holidays.  |
| 2                            | Source of Funds      | 2.1 | Source of Fund is from Smart City Mission funds (Government of India and Government of Uttar Pradesh)  |
| 3                            | Fraud and Corruption | 3.1 | The Employer requires compliance with the Employer’s Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the GOI’s Sanctions Framework, as set forth in Section VI (Fraud and Corruption).   |
|                              |                      | 3.2 | In further pursuance of this policy, Bidders shall permit and shall cause their agents (where declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the Employer to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, bid submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Employer. |
| 4                            | Eligible Bidders     | 4.1 | A Bidder shall be a company/ firm that is a private entity, or public entity registered in India.  |
|                              |                      | 4.2 | A Bidder shall not participate in more than one Bid. Such participation shall result in the disqualification of all Bids in which the firm is involved.  |
|                              |                      | 4.3 | Bidder may be Single entity /JV/Consortium or Association shall nominate a representative who will be Lead Partner & shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture, Consortium or Association during the Bidding process. In the event the Bid of Joint Venture, Consortium or Association is accepted, either they shall form a registered Joint   |



| <b>Instruction to Bidders (ITB)</b>    |                                     |     |  |
|--|-------------------------------------|-----|--|
|  |                                     |     | Venture, Consortium or Association as company/firm or otherwise all the parties to Joint Venture, Consortium or Association shall sign the Agreement to appoint one Partner as Lead Partner under whose name all business will be done using all his statutory registrations of GST, PAN, Bank, ESI, PF etc. |
|  |                                     | 4.4 | Each intending Bidder may be a natural person/ sole proprietorship/ Company/ Partnership firm/ Limited Liability Partnership (LLP) having authority to participate in this RFP.  |
|  |                                     |     |  |
| 5                                      | Deleted                             |     |  |
| <b>B. Contents of Bidding Document</b> |                                     |     |  |
| 6                                      | <b>Sections of Bidding Document</b> | 6.1 | The bidding document consist of Parts 1, 2, and 3, which include all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.   |
|  |                                     |     | <b>PART 1 Bidding Procedures</b>   |
|  |                                     |     | · Section I - Instructions to Bidders (ITB)  |
|  |                                     |     | · Section II - Bid Data Sheet (BDS)  |
|  |                                     |     | · Section III - Evaluation and Qualification Criteria  |
|  |                                     |     | · Section IV - Bidding Forms   |
|  |                                     |     | · Section V - Eligible Countries   |
|  |                                     |     | · Section VI - Fraud and Corruption  |
|  |                                     |     | <b>PART 2 Scope of work</b>  |
|  |                                     |     | · Section VII (A) – Scope of Work  |
|  |                                     |     | <b>PART 3 Conditions of Contract and Contract Forms</b>  |
|  |                                     |     | · Section VIII - General Conditions of Contract  |
|  |                                     |     | · Section IX - Particular Conditions of Contract   |
|  |                                     |     | · Section X - Contract Forms   |
|  |                                     |     | - Section XI – Drawings(Annexure 20)   |

| Instruction to Bidders (ITB)          |                          |     |  |
|---------------------------------------|--------------------------|-----|--|
|                                       |                          | 6.2 | Unless obtained directly from the Employer / through online portal, the Employer is not responsible for the completeness of the bidding document, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer / through online portal shall prevail   |
|                                       |                          | 6.3 | The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding document and to furnish with its Bid all information and documentation as is required by the bidding document.   |
| 7                                     | Clarification of Bidding | 7.1 | A Bidder requiring any clarification of the bidding document shall contact the <i>Employer</i> in writing at the <i>Employer's</i> address <b>specified in the BDS (Bid Data Sheet)</b> or raise its inquiries during the pre-Bid meeting if provided for in accordance with ITB 7.4. The <i>Employer</i> will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of Bids within a period <b>specified in the BDS</b> . Should the clarification result in changes to the essential elements of the bidding document, the Employer shall amend the bidding document following the procedure under ITB 8 and ITB 22.2 |
| Document, Site Visit, Pre-Bid Meeting |                          |     |  |
|                                       |                          | 7.2 | The Bidder is advised to visit and examine the Site of works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.   |
|                                       |                          | 7.3 | The Bidder and any of its personnel or agents will be granted permission by the <i>Employer</i> to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the <i>Employer</i> and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.   |
|                                       |                          | 7.4 | If so <b>specified in the BDS</b> , the Bidder's authorised representative is invited to attend a pre-Bid meeting and/or a Site of works visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.   |
|                                       |                          | 7.5 | The Bidder is requested, to submit any questions in writing, to reach the <i>Employer</i> not later than one week before the pre-Bid meeting.  |

| Instruction to Bidders (ITB) |                               |      |  |
|------------------------------|-------------------------------|------|--|
|                              |                               | 7.6  | Any modification to the bidding document that may become necessary as a result of the pre-bid meeting shall be made by the <i>Employer</i> exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-Bid meeting. Nonattendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.   |
| 8                            | Amendment of Bidding Document | 8.1  | At any time prior to the deadline for submission of Bids, the <i>Employer</i> may amend the bidding document by issuing addenda.   |
|                              |                               | 8.2  | Any addendum issued by the Employer shall be part of the bidding document and shall be published on the e-tender webpage in accordance with ITB 6.3 and ITB 7.1.   |
|                              |                               | 8.3  | To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2.  |
| C. Preparation of Bids       |                               |      |  |
| 9                            | Cost of Bidding               | 9.1  | The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the <i>Employer</i> shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.   |
| 10                           | Language of Bid               | 10.1 | The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the <i>Employer</i> , shall be written in the language <b>specified in the BDS</b> . Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language <b>specified in the BDS</b> , in which case, for purposes of interpretation of the Bid, such translation shall govern. |
| 11                           | Documents Comprising the Bid  | 11.1 | The Bid shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted online only.  |
|                              |                               |      | · Power of Attorney and Bank Guarantee for EMD should also be submitted by the bidder  |
|                              |                               | 11.2 | The <b>Technical Part</b> shall contain the following:   |
|                              |                               |      | (a) <b>Letter of Bid – Technical Part</b> , prepared in accordance with ITB 12;  |
|                              |                               |      | (b) <b>EMD/Bid Security</b> , in accordance with ITB 19.1;   |
|                              |                               |      | (c) <b>Authorization</b> : written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.3;  |
|                              |                               |      | (d) <b>Bidder's Eligibility</b> : documentary evidence in accordance with ITB 17.1 establishing the Bidder's eligibility to Bid;   |
|                              |                               |      | (e) <b>Qualifications</b> : documentary evidence in accordance with ITB 17.2 establishing the Bidder's qualifications to perform the Contract if its Bid is accepted;  |

| Instruction to Bidders (ITB) |                                     |      |   |
|------------------------------|-------------------------------------|------|---|
|                              |                                     |      | (f) <b>Conformity:</b> a technical proposal in accordance with ITB 16;  |
|                              |                                     |      | (g) any other document <b>required in the BDS.</b>  |
|                              |                                     |      | (h) Proposed planning/approach/methodology for the project  |
|                              |                                     |      | (i) Proposed Technologies and Methodology to be used in construction of this project.   |
|                              |                                     |      | (j) All Proposed Specifications & Technology shall be supported with International/National/NBC/CPWD/UPPWD Norms  |
|                              |                                     | 11.3 | The <b>Financial Part</b> shall contain the following:  |
|                              |                                     |      | (a) <b>Letter of Bid – Financial Part:</b> prepared in accordance with ITB 12 and ITB 14;   |
|                              |                                     |      | (b) Lump-sum Package amount for Execution of Entire Project on EPC Mode   |
|                              |                                     |      | (c) any other document <b>required in the BDS.</b>  |
|                              |                                     | 11.4 | The Technical Part shall not include any information related to the Bid price. Where material financial information related to the Bid price is contained in the Technical Part the Bid shall be declared non-responsive and rejected.  |
|                              |                                     | 11.5 | The Bidder shall furnish in the Letter of Bid – Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.   |
| 12                           | <b>Letters of Bid and Schedules</b> | 12.1 | The Letter of Bid – Technical Part, Letter of Bid – Financial Part shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.3. All blank spaces shall be filled in with the information requested.  |
| 13                           | <b>Deleted</b>                      |      |   |
| 14                           | <b>Bid Prices Discounts and</b>     | 14.1 | The Contract shall be for the whole Works in Lump sum. (Priced Bill of Quantity with Basis of Price may be demanded after opening of Financial bid if employer finds that quoted amount in Lump sum is too high or low from Employer's estimated cost and in such case the sole discretion of employer will prevail). The Bidder shall adopt the Lump-sum package Amount method only for the Bid Execution on EPC Mode; only the same option is allowed to all the Bidders. |

| Instruction to Bidders (ITB) |   |      |  |
|------------------------------|---|------|--|
|                              |   | 14.2 | Deleted  |
|                              |   | 14.3 | The price to be quoted in the Letter of Bid – Financial Part, in accordance with ITB 12.1, shall be the total price of the Bid, including all duties, taxes, royalties and other levies payable by the contractor under the contract.  |
|                              |   | 14.4 | The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid Financial Part, in accordance with ITB 12.1.  |
|                              |   | 14.5 | Unless otherwise <b>provided in the BDS</b> , and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and Weightages for the price adjustment formulae in the Schedule of Adjustment Data in Section IV- Bidding Forms and the Employer may require the Bidder to justify its proposed indices and weightings. |
|                              |   | 14.6 | Deleted  |
|                              |   | 14.7 | All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of Bids, shall be included in the rates and prices and the total Bid price submitted by the Bidder.  |
| 15                           | Currencies of Bid and Payments  | 15.1 | The currency(ies) of the Bid and the currency(ies) of payments shall be the same and shall be as <b>specified in the BDS 7</b> .   |
| 16                           | Documents   | 16.1 | The Bidder shall furnish a technical proposal in the Technical Part of the Bid including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Bidding Forms, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work's requirements and the completion time.  |
| Technical Proposal           |   |      |  |
| 17                           | Documents Establishing the Eligibility and Qualifications of the Bidder | 17.1 | To establish Bidder's eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, – Technical Part, included in Section IV, Bidding Forms.   |
|                              |   | 17.2 | In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.  |



| Instruction to Bidders (ITB) |                                      |      |   |
|------------------------------|--------------------------------------|------|---|
| 18                           | Period of Validity of Bids           | 18.1 | Bids shall remain valid for the Bid Validity period <b>specified in the BDS</b> . The Bid Validity period starts from the date fixed for the Bid submission deadline (as prescribed by the Employer in accordance with BDS 8). A Bid valid for a shorter period shall be rejected by the Employer as nonresponsive.   |
|                              |                                      | 18.2 | In exceptional circumstances, prior to the expiration of the Bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 19.1, it shall also be extended for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 18.3. |
|                              |                                      | 18.3 | If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Bid validity period, the Contract price shall be determined as follows:  |
|                              |                                      |      | (a) in the case of fixed price contracts, the Contract price shall be the Bid price adjusted by the factor <b>specified in the BDS</b> ;  |
|                              |                                      |      | (b) in the case of adjustable price contracts, no adjustment shall be made; or  |
|                              |                                      |      | (c) in any case, Bid evaluation shall be based on the Bid price without taking into consideration the applicable correction from those indicated above.   |
| 19                           | EARNEST MONEY DEPOSIT / BID SECURITY | 19.1 | The Bidder shall furnish as part of its Technical Part of its Bid, either a Bid-Securing Declaration or a EMD as specified in the BDS, in original form and, in the case of a EMD/Bid security, in the amount and currency specified in the BDS.  |
|                              |                                      | 19.2 | A Bid-Securing Declaration shall use the form included in Section IV, Bidding Forms.  |
|                              |                                      | 19.3 | If a EMD/Bid Security is specified pursuant to BDS 9, the Bid Security shall be a demand guarantee, and in any of the following forms at the Bidder's option:   |
|                              |                                      |      | (a) Transfer through NEFT/ RTGS/ Bank Guarantee   |
|                              |                                      |      | (b) Another security specified in the BDS,  |
|                              |                                      | 19.4 | If a EMD/Bid Security or Bid-Securing Declaration is specified pursuant to BDS 9, any Bid not accompanied by a substantially responsive Bid Security or Bid-Securing Declaration shall be rejected by the Employer as nonresponsive.  |
|                              |                                      | 19.5 | If a Bid Security is specified pursuant to BDS 9, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon issuing of the award.   |

| <b>Instruction to Bidders (ITB)</b> |  |      |  |
|-------------------------------------|--|------|--|
|                                     |  | 19.6 | The Bid Security of the successful Bidder shall be adjusted with the 10 % performance security   |
|                                     |  | 19.7 | The Bid Security may be forfeited or the Bid-Securing Declaration executed:  |
|                                     |  |      | (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid – Technical Part and repeated in the Letter of Bid – Financial Part or any extension thereto provided by the Bidder; or   |
|                                     |  |      | (b) if the successful Bidder fails to:   |
|                                     |  |      | (i) sign the Contract in accordance with ITB 49; or  |
|                                     |  |      | (ii) furnish a Performance Security.   |
| <b>20</b>                           | <b>Format and Signing of Bid</b>       | 20.1 | The Bidder shall prepare the Bid, in accordance with the Instructions, ITB 11 and ITB 21.  |
|                                     |  | 20.2 | Bidders shall mark as “CONFIDENTIAL” information in their Bids which is confidential to their business. This may include proprietary information, trade secrets or commercial or financially sensitive information.  |
|                                     |  | 20.3 | The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialled by the person signing the Bid. |
|                                     |  | 20.4 | Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialled by the person signing the Bid.  |
| <b>D. Submission of Bids</b>        |  |      |  |
| <b>21</b>                           | <b>Submission on E-Portal</b>          | 21.1 | The Bidder shall submit the bids through e-portal only. All the documents required for Technical qualification shall be submitted as per ITB and formats as per Section IV of the RFP documents. Bidder shall submit all the required documents and submit as per the standard procurement procedures of the E-portal <a href="http://www.etender.up.nic.in/">http://www.etender.up.nic.in/</a>  |
|                                     |  | 21.2 | Financial Part shall be uploaded in the given format in web portal only.   |
| <b>22</b>                           | <b>Deadline for Submission of Bids</b> | 22.1 | Bidders shall submit the Bids electronically only and follow the electronic Bid submission procedures specified in the <b>BDS</b> .  |
|                                     |  | 22.2 | The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the bidding document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.  |

| <b>Instruction to Bidders (ITB)</b>                 |   |      |  |
|---|---|------|--|
| <b>23</b>   | <b>Late Bids</b>  | 23.1 | Not Applicable   |
| <b>24</b>   | <b>Withdrawal, Substitution, and Modification of Bids</b> | 24.1 | No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid or any extension thereof.  |
| <b>E. Public Opening of Technical Parts of Bids</b> |   |      |  |
| <b>25</b>   | <b>Public Opening of Technical Parts of Bids</b>          | 25.1 | All Bidders, or their representatives and any interested party may attend a public bid opening. Any specific electronic Bid opening procedures required in accordance with ITB 22.1, shall be as <b>specified in the BDS</b> .   |
|   |   | 25.2 | At the Bid opening the Employer shall neither discuss the merits of any Bid nor reject any Bid.  |
| <b>F. Evaluation of Bids – General Provisions</b>   |   |      |  |
| <b>26</b>   | <b>Confidentiality</b>                                    | 26.1 | Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until information on Intention to Award the Contract is transmitted to all Bidders.  |
|   |   | 26.2 | Any effort by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.   |
|   |   | 26.3 | Notwithstanding ITB 26.2, from the time of Bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the Bidding process, it shall do so in writing.  |
| <b>27</b>   | <b>Clarification of Bids</b>                              | 27.1 | To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 36. |
|   |   |      | If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.  |
| <b>28</b>   | <b>Deviations, Reservations, and Omissions</b>            | 28.1 | During the evaluation of Bids, the following definitions apply:  |

| <b>Instruction to Bidders (ITB)</b>             |  |      |   |
|---|--|------|---|
|   |  |      | (a) "Deviation" is a departure from the requirements specified in the bidding document;   |
|   |  |      | (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding document; and  |
|   |  |      | (c) "Omission" is the failure to submit part or all of the information or documentation required in the bidding document.   |
| <b>29</b>                                       | <b>Nonmaterial Nonconformities</b>     | 29.1 | Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid.   |
|   |  | 29.2 | Provided that a Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.  |
|   |  | 29.3 | Provided that a Bid is substantially responsive pursuant to ITB 31, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid price. To this effect, the Bid price may be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner <b>specified in the BDS</b> .  |
| <b>G. Evaluation of Technical Parts of Bids</b> |  |      |   |
| <b>30</b>                                       | <b>Evaluation of Technical Parts</b>   | 30.1 | In evaluating the Technical Parts of each Bid, the Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted.   |
|   |  | 30.2 | A substantially responsive "Technical Bid" is one that 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. |
| <b>31</b>                                       | <b>Determination of Responsiveness</b> | 31.1 | The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.  |
|   |  | 31.2 | A substantially responsive Bid is one that meets the requirements of the bidding document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:   |
|   |  |      | (a) if accepted, would:   |

| <b>Instruction to Bidders (ITB)</b>                 |  |      |  |
|---|--|------|--|
|   |  |      | (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or  |
|   |  |      | (ii) limit in any substantial way, inconsistent with the bidding document, the Employer's rights or the Bidder's obligations under the proposed Contract; or   |
|   |  |      | (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.  |
|   |  | 31.3 | The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, in particular, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.  |
|   |  | 31.4 | If a Bid is not substantially responsive to the requirements of the bidding document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.  |
| 32  | <b>Qualification of the Bidder</b>       | 32.1 | The Employer shall determine to its satisfaction whether the eligible Bidders that have submitted substantially responsive Bid - Technical Parts meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria  |
|   |  | 32.2 | The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the bidding document), or any other firm different from the Bidder. |
|   |  | 32.3 | If a Bidder does not meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, its Bid shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.  |
|   |  | 32.4 | Only Bids that are both substantially responsive to the bidding document and meet all Qualification Criteria shall have their "FINANCIAL PART" submitted in e-portal opened at the second public opening.  |
| 33  | <b>Deleted</b>                           |      |  |
| <b>H. Public Opening of Financial Parts of Bids</b> |  |      |  |
| 34  | <b>Public Opening of Financial Parts</b> | 34.1 | Following the completion of the evaluation of the Technical Parts of the Bids, and the Employer may notify in writing or upload the same in e-portal those Bidders whose Bids were considered non-responsive to the bidding document or failed to meet the Qualification Criteria, advising them of the following information:   |
|   |  |      | (a) the grounds on which their Technical Part of Bid failed to meet the requirements of the bidding document;  |
|   |  |      | (b) their "FINANCIAL PART" uploaded in web portal will be not be opened; and   |



| <b>Instruction to Bidders (ITB)</b>             |                                      |      |  |
|---|--------------------------------------|------|--|
|   |                                      | 34.2 | The Employer shall, simultaneously, notify in writing or upload in e-portal those Bidders whose Technical Part have been evaluated as substantially responsive to the bidding document and met all Qualifying Criteria, advising them of the following information:  |
|   |                                      |      | (a) their Bid has been evaluated as substantially responsive to the bidding document and met the Qualification Criteria;   |
|   |                                      |      | (b) their "FINANCIAL PART" uploaded in e-portal will be opened at the public opening of the Financial Parts; and   |
|   |                                      |      | (c) notify them of the date, time and location of the second public opening of the "FINANCIAL PART" <b>as specified in the BDS.</b>  |
|   |                                      | 34.3 | At this public opening the Financial Parts will be opened by the Employer in the presence of Bidders, or their designated representatives and anyone else who chooses to attend. Bidders who met the Qualification Criteria and whose bids were evaluated as substantially responsive will have their "FINANCIAL PART" opened. |
|   |                                      | 34.4 | The Employer shall neither discuss the merits of any Bid nor reject "FINANCIAL PART".  |
|   |                                      | 34.5 | The Employer shall prepare a record of the Financial Part of the Bid opening that shall include, as a minimum:   |
|   |                                      |      | (a) the name of the Bidder whose Financial Part was opened;  |
|   |                                      |      | (b) the Bid price, per contract if applicable, including any discounts; and  |
|   |                                      | 34.6 | The Bidders whose "FINANCIAL PART" have been opened or their representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.                   |
| <b>I. Evaluation of Financial Parts of Bids</b> |                                      |      |  |
| <b>35</b>                                       | <b>Evaluation of Financial Parts</b> | 35.1 | To evaluate the Financial Part, the Employer shall consider the following:   |
|   |                                      |      | (a) the Bid price, excluding Provisional Sums and the provision, if any, for contingencies   |
|   |                                      |      | (b) price adjustment for correction of arithmetic errors in accordance with ITB 36.1;  |
|   |                                      |      | (c) price adjustment due to discounts offered in accordance with ITB 14.4;   |
|   |                                      |      | (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency ;  |
|   |                                      |      | (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 29.3; and  |

| <b>Instruction to Bidders (ITB)</b> |  |      |   |
|-------------------------------------|--|------|---|
|                                     |  |      | (f) the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria.  |
|                                     |  | 35.2 | The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.   |
| <b>36</b>                           | <b>Correction of Arithmetical Errors</b> | 36.1 | In evaluating the Financial Part of each Bid, the Employer shall correct arithmetical errors on the following basis:  |
|                                     |  |      | (a) only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected; |
|                                     |  |      | (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and  |
|                                     |  |      | (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.   |
|                                     |  | 36.2 | Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 36.1, shall result in the rejection of the Bid.   |
| <b>37</b>                           | <b>Conversion to single Currency</b>     |      | Not Applicable  |
| <b>38</b>                           | <b>Margin of Preference</b>              |      | Not Applicable  |
| <b>39</b>                           | <b>Comparison of Financial Parts</b>     | 39.1 | The Employer shall compare the evaluated costs of all responsive and qualified Bids to determine the Bid that has the highest Score.  |
| <b>40</b>                           | <b>Abnormally Low Bids</b>               | 40.1 | An Abnormally Low Bid is one where the Bid price, in combination with other constituent elements of the Bid, appears unreasonably low to the extent that the Bid price raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid price.   |
|                                     |  | 40.2 | In the event of identification of a potentially Abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analyses of its Bid price in correlation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the bidding document.  |

| <b>Instruction to Bidders (ITB)</b>       |                                       |      |   |
|---|---------------------------------------|------|---|
|   |                                       | 40.3 | After evaluation of the price analyses, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to deliver the contract for the offered tender price, the Employer shall reject the Bid.   |
| <b>41</b>                                 | <b>Award Criteria</b>                 |      | Subject to ITB 43, the Employer shall award the Contract to the successful L1 Bidder  |
| <b>42</b>                                 | <b>Deleted</b>                        |      |   |
| <b>43</b>                                 | <b>Employer's Right to Accept Any</b> | 43.1 | The Employer reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract Award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, Bid Securities, shall be promptly returned to the Bidders.  |
| <b>Bid, and to Reject Any or All Bids</b> |                                       |      |   |
| <b>44</b>                                 | <b>Standstill Period</b>              |      | Not Applicable  |
| <b>45</b>                                 | <b>Notice of Intention to Award</b>   | 45.1 | The Notification of Intention to Award shall contain, at a minimum, the following information:  |
|   |                                       |      | (a) the name and address of the Bidder submitting the successful Bid;   |
|   |                                       |      | (b) the Contract price of the successful Bid;   |
|   |                                       |      | (c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated;   |
| <b>J.Award of Contract</b>                |                                       |      |   |
| <b>46</b>                                 | <b>Award Criteria</b>                 | 46.1 | Subject to ITB41 & 43, the Employer shall award the Contract to the successful Bidder   |
| <b>47</b>                                 | <b>Notification of Award</b>          | 47.1 | Prior to the expiration of the Bid Validity Period the Employer shall transmit the Letter of Acceptance to the successful Bidder. The Letter of Acceptance shall specify the sum that the Employer will pay the Contractor in consideration of the execution of the contract (hereinafter, and in the Conditions of Contract and Contract Forms, called "the Contract Price") |
|   |                                       | 47.2 | At the same time, the Employer shall publish the Contract Award Notice which shall contain, at a minimum, the following information:  |
|   |                                       |      | (a) name and address of the Employer;   |
|   |                                       |      | (b) name and reference number of the contract being awarded, and the selection method used;   |
|   |                                       |      | (c) the name of the successful Bidder, the final total contract price, the contract duration and a summary of its scope.  |

| Instruction to Bidders (ITB) |                            |      |   |
|------------------------------|----------------------------|------|---|
|                              |                            | 47.3 | The Contract Award Notice shall be published on the Employer's website with free access.  |
|                              |                            | 47.4 | Until a formal Contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.   |
| 48                           | Debriefing by the Employer |      | Not Applicable  |
| 49                           | Signing of Contract        | 49.1 | Promptly upon Notification of Award, the Employer shall send the successful Bidder the Contract Agreement.  |
|                              |                            | 49.2 | Within ten (10) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.   |
| 50                           | Performance Security       | 50.1 | 1.1. Within Ten (10) days of the receipt of the letter of acceptance from the employer, the successful Bidder shall furnish the 5 % Performance Security. The Employer shall retain 5% of Security deposit along with agreement and further 5% amount shall be deducted from the each running bills of the contractor. After the complete work, total of 10% of the security deposit shall be retained by the BSCL in accordance with the General Conditions of Contract, using for that purpose the Performance Security, Contract Forms, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a BG/ FDR, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. |
|                              |                            | 50.2 | Failure of the successful Bidder to submit the above mentioned Performance Security, or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the Bidder offering the next Most Advantageous Bid.  |
|                              |                            | 50.3 | Performance Security will be released after successful completion of one year of Defect Liability period in following manner:-<br><br>1) 5 % of the Performance Security will be released at the time of work completion & successful handover of the project.<br>2) 5 % of the Performance Security will be released at the end of the defect liability period of 1 year.  |

## SECTION II - BID DATA SHEET (BDS)

| Bid Data Sheet (BDS)                   |   |
|--|---|
| <b>A. General</b>                      |   |
| <b>BDS 1.1</b>                         | <p>The Employer is: Bareilly Smart City Limited</p> <p>The name of the RFP is <b>“Engineering, Procurement &amp; Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission.</b></p> <p>Type of Contract : <b>Lumpsum Contract</b></p>  |
| <b>BDS 1.2</b>                         | <p>The number and identification of comprising this RFP is:<br/><b>Electronic –Procurement System</b></p> <p>The Employer shall use the following electronic-procurement system to manage this Bidding process: <a href="http://www.etender.up.nic.in">http://www.etender.up.nic.in</a></p> <p>The electronic-procurement system shall be used to manage the following aspects of the Bidding process:</p> <ul style="list-style-type: none"> <li>· Technical Proposal containing all the required documents in the required formats.</li> <li>· Financial Proposal: The Priced Bid shall be uploaded through web-portal only.</li> </ul> |
| <b>B. Contents of Bidding Document</b> |   |
| <b>BDS 2</b>                           | <p>For <u>clarification purposes</u> only, the Employer’s address is:</p> <p>Address Electronic mail address: <a href="mailto:ceo.bscl01@gmail.com">ceo.bscl01@gmail.com</a></p> <p>Requests for clarification should be received by the Employer no later than: <b>2 days (Two days) before the pre-bid meeting</b></p>  |
| <b>BDS 3</b>                           | <p>A Pre-Bid meeting <b>“shall”</b> take place at following venue and time.</p> <p><b>Date:</b> _____ <b>Time:</b> _____</p> <p><b>Place:</b> _____</p>   |
| <b>BDS 4</b>                           | <p>Web page: <a href="http://www.etender.up.nic.in">http://www.etender.up.nic.in</a></p>  |
| <b>C. Preparation of Bids</b>          |   |



| Bid Data Sheet (BDS)                         |  |
|--|--|
| BDS 5  | The language of the Bid is: <b>English</b><br>All correspondence exchange shall be in <b>English</b> language.<br>Language for translation of supporting documents and printed literature is <b>English</b>  |
| BDS 6  | The prices quoted by the Bidder <b>shall be</b> subjected to adjustment during the performance of the Contract in accordance with PCC  |
| BDS 7  | The price shall be quoted by the Bidder in: <b>Indian Rupees</b>   |
| BDS 8  | The Bid validity period shall be <b>180</b> days   |
| BDS 9  | In absence of the Bid- Security & Bid Document Fee the bidder shall be treated as non-responsive.<br>A Bid-Securing Declaration <b>shall not be</b> required.<br>If a Bid Security/EMD shall be required, the amount and currency of the Bid Security shall be: 2.35 Crore INR /-<br>In Favour of : <b>Chief Executive Officer, Bareilly Smart City Limited, Bareilly</b><br>Validity: Minimum period of 180 days (i.e 60 days beyond validity of bid) from date of submission of bid<br>Bid Document fee of <b>INR 29500/- (Rupees Twenty-Nine Thousand Five hundred only)</b> is also to be deposited separately.  |
| BDS 10                                       | The written confirmation of authorization to sign on behalf of the Bidder shall consist of; <b>Duly executed Power of Attorney in favour of person who is submitting the Bid</b>   |
| D. Submission of Bids                        |  |
| BDS 11                                       | For <b>Bid submission purposes</b> only, the:<br><b>Date:</b> , <b>Time:</b><br>Bidders <b>"shall" mandatorily submit all the Bid in online portal.</b><br>The electronic bidding submission procedures shall be:<br>The bidder would be required to register on the e-procurement market place <a href="http://www.etender.up.nic.in">www.etender.up.nic.in</a> and submit their bids online. Bidders are requested to submit the bid in two stages:<br>Stage – I: Pre Qualification(Eligibility) and Technical Bid Stage.<br><br>Stage – II: Financial Bid Stage.<br>· The first stage will cover the qualifications and eligibility criteria and the technical bid. The bidder shall upload documents in support of the above. The bidder shall submit price bid online under second stage which may include proposals for financing to cover part of the Scope of Work as per bid documents before the bid submission closing date.<br>· Declaration should be given by the bidder for the correctness of the credentials submitted by him |
| E. Public Opening of Technical Parts of Bids |  |

| Bid Data Sheet (BDS) |   |
|----------------------|---|
| BDS 12               | <p>The Bid opening shall take place at: <b>Bareilly Smart City Office, Nagar Nigam, Bareilly</b></p> <p>Email Id:-ceo.bscl01@gmail.com</p> <p>Date : ..... Time : .....</p> <p>The electronic Bid opening procedures shall be: <b><i>Bid opening will be as per the e-procurement procedures.</i></b></p> |

### **SECTION III - EVALUATION AND QUALIFICATION CRITERIA**

#### **Eligibility Criteria**

##### **General Instructions to the Bidder**

1. No Bidder shall submit more than one Bid for the Project. A Bidder bidding individually or as a member of a Consortium shall not be entitled to submit another BID either individually or as a member of any Consortium, as the case may be.
2. A Bidder bidding individually or as a member of a Consortium shall ensure that Power of Attorney is legalized / apostille by appropriate authority notarized in the jurisdiction where the Power of Attorney is being issued and requirement of Indian Stamp Act is duly fulfilled.
3. The Bidder should submit a Power of Attorney as per the format provided in Annexure 9, authorizing the signatory of the Bid to commit the Bidder.
4. In case the Bidder is a Consortium, the Members thereof should furnish a Power of Attorney in favour of any Member, which Member shall thereafter be identified as the Lead Member, in the format at Annexure 9 . In case the Bidder is a Consortium, the Bidder shall submit Joint Bidding Agreement in the format at Annexure 20 .
5. The Bid should include a brief description of the roles and responsibilities of individual members, particularly with reference to financial, technical and DLP obligations;
6. Unless otherwise indicated, the bidder means single entity or the consortium formed by the firms.

##### **Guidelines for participation of Consortium :**

1. Where consortium bids are allowed, leader and members of consortium should themselves meet the experience criteria covering the respective activities of work to be performed by them on their own and not through any other arrangement like through Supporting Company, Parent / Subsidiary / Sister Subsidiary / Co-Subsidiary / Technical Collaboration / Sub-contracting. Necessary documentary evidence to this effect should be submitted with techno-commercial bid.
2. The members of consortium shall decide the Leader of consortium. The leader of consortium shall have minimum 70% stake in terms of bid value, as reflected in the MOU executed by consortium members. Each member of consortium shall remain jointly and severally liable to BSCL.
3. For this purpose the role and scope of work to be performed by the respective consortium members expressed as a percentage of bid value should be indicated in the Memorandum of Understanding (MOU) submitted along with techno-commercial bid as per format provided in the tender.
4. The leader of the consortium should confirm unconditional acceptance of primary responsibility of executing the 'Scope of work' of this tender. This confirmation should be submitted along with the techno-commercial bid.
5. The Leader of the Consortium can submit the bid on behalf of the Consortium. Memorandum of Understanding (MoU) (as per format enclosed in tender) between the Consortium members duly signed by the authority (ies) as per the note in the MOU format, must accompany the techno-commercial bid.
6. The MoU should clearly define the role / scope of work to be performed by each constituent and should clearly define the leader of the Consortium. All the members of the Consortium must resolve and affirm in the MoU that each party shall be jointly and severally liable to BSCL for any and all obligations and responsibility arising out of the Contract and for discharging all obligations under the Contract. MoU signed between the members of the Consortium shall form part of the contract.
7. In case of award of contract, the MoU shall be kept valid through the entire contract period, including extensions, if any. After award of contract, no alterations / modifications would be permitted In the MoU.
8. Only that consortium member who has undertaken a particular activity in execution of a contract shall be considered as having technical experience of that particular activity.
9. In view of the complexity of nature of work involved as covered by the Bidding Documents, it is anticipated that some of the intending bidders may pool their resources and experiences to form Consortium. In their own

interest, the bidders are advised to investigate the capabilities, availability of expertise and resources such as construction equipment, experienced personnel, financial soundness, past experience and concurrent engagements of constituting partners/members of the consortium.

10. The tender document can be purchased in the name of Lead member of the consortium.
11. The bid shall be signed by all the constituents of the Consortium. Alternatively, the Leader of the Consortium may sign the bid provided a Power of Attorney from each member authorizing the Leader for signing and submission of bid on behalf of individual member must accompany the techno-commercial bid. Other members of the Consortium may participate in techno-contractual discussions and also sign the minutes of such discussions / meetings along with the Leader of the Consortium.
12. Leader of the Consortium on behalf of the Consortium shall co-ordinate with BSCL during the period the bid is under evaluation and also during the execution of the contract, if the same is awarded.
13. BSCL shall correspond / communicate only with the leader of a Consortium and like-wise, the leader of the Consortium only should communicate with BSCL on behalf of the Consortium. No cognizance shall be given to communication received directly from other consortium members. The Leader of the Consortium shall also be responsible for resolving dispute / misunderstanding / undefined activities, if any, amongst all the constituents of the Consortium.
14. Any correspondence exchanged between BSCL and the Leader of Consortium shall be binding on all the constituents of the Consortium. The Leader of the Consortium should confirm unconditional acceptance of primary responsibility of executing the 'Scope of Work' of the tender. This confirmation should be submitted along with the techno-commercial bid.
15. Contract, if awarded, shall be in the name of the Consortium clearly specifying the names of all the constituents and also mentioning that the Consortium is led by which constituent. Accordingly, EMD and SD/PBG shall be submitted in the name of the Consortium clearly specifying the names of all the constituents along with that of the leader.
16. In the event of award of contract to the Consortium, the contract shall be signed by each constituent of the Consortium. Alternatively, the Leader of the Consortium may sign the contract subject to submission of a Power of Attorney (duly notarized) from each constituent authorizing the Leader of the Consortium to sign the contract on behalf of the individual member of the Consortium.
17. Irrespective of whether the Contract is signed by all the constituents of the Consortium or by the Leader of the Consortium, all the constituents of the Consortium shall be jointly and severally responsible for satisfactory execution of the contract.
18. Payment for work done under the contract shall be made by BSCL only to the Leader of the Consortium. However, in case payment is to be made directly to each constituent corresponding to their part of the scope of work, the same shall be clearly indicated in the bid along with the constituent-wise details of the price break-up.
19. No alteration or modification in the constituents or composition of a Consortium shall be permitted after submission of bid and also after award of the Contract during currency of the contract. A constituent of the Consortium shall be allowed to undertake and carry out only that activity for which that constituent has been evaluated and qualified technically.
20. Before forming a Consortium, the individual constituents of the Consortium are advised to investigate the capabilities, availability of expertise and resources such as construction equipment, experienced personnel, financial soundness, past experience and concurrent engagements of the companies with whom they propose to form a Consortium.
21. A constituent of the Consortium shall not be permitted to participate either in an individual capacity as a bidder or as a member of another Consortium in the same tender.
22. Documents/details pertaining to qualification of bidder as per proforma of document attached with the bidding documents must be furnished by each partner/member of consortium complete in all respects along with the bid clearly bringing up their experience especially in the form of work in their scope.
23. In case of award to the consortium, only the leader of the Consortium shall submit the PBG for the entire requisite amount of the PBG on behalf of the Consortium.

**Bid shall be submitted in 2 separate parts:**

- a. Pre-qualification and Technical Eligibility
- b. Financial Eligibility

**A. Technical Eligibility**

**Tenderer will have to upload the following documents to qualify for the Technical Eligibility:**

**Bidder:** Each intending Bidder may be a natural person/ sole proprietorship/ Company/ Partnership firm/ Limited Liability Partnership (LLP) having authority to participate in this RFP.

Bidder shall enclose the relevant registration certificates.

- a. GST Registration
- b. PAN Card
- c. PF Registration
- d. **Income Tax:** Income tax return copy of last 3 years (FY 2017-18, 2018-19 and 2019-20) duly attested by Chartered Accountant.
- e. **Balance Sheet:** Balance sheet of last 3 years (FY 2017-18, 2018-19, 2019-20) duly attested by Chartered Accountant.
- f. **EMD:** Bidder has to submit EMD through RTGS/ NEFT or Bank Guarantee pledged in favor of Chief Executive Officer, Bareilly Smart City Limited, Bareilly or Bank Guarantee from Nationalized Banks. In case the EMD is submitted in form of Bank Guarantee then the Bidder will upload the scanned copy of the instrument along with the technical bid and same shall be submitted in original at BSCL office within 3 days of Bid submission due date.
- g. **Self-declaration:** Self-declaration certificate by Bidder in the form of Affidavit is to be submitted. (Annexure 14)
- h. **Non-Blacklisting:** As on date of submission of the proposal, the Bidder should not have been blacklisted by any State / Central Government Department from any project work in India. (Annexure 11)
- i. **No Relation Certificate:** No Relationship Certificate (format Annexure 12).
- j. **Manpower:** Educational Qualification of Technical Employees employed as stated in Scope of work under Manpower during Execution of the project with CV attached as per annexure 2.
- k. **Experience Certificate:** Experience Certificate of having successfully completed similar works during last 7 years
  - i. At least One similar\* work of value above 100 Crores  
Or
  - ii. At least Two similar\* works of value above 75 Crores each  
Or
  - iii. At least Three similar\* works of value above 60 Crores each

**\*Similar work means,** Similar work shall mean construction of RCC Frame Structure building of non-residential type like hotel, airport, metro station, shopping mall, logistic park, corporate office, convention center, University, hospital which includes basement and HVAC. Residential, school and real estate projects shall not be considered in Similar experience. 4



The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to 31.03.2020.

- l. **Net Worth:** Submission of audited financial statements or other financial statements acceptable to the Employer, for the last Three (3) years to demonstrate the current soundness of the Bidder's financial position. As a minimum the Bidder's net worth for the last financial year (FY 2018- 19) calculated as the difference between total assets and total liabilities should be POSITIVE. (Note: Net worth (FY 2019-20) should be certified by Chartered Accountant)
- m. **Turnover:** The Applicant (All consortium members put together in case of consortium) shall have an Average Annual Turnover of Rs.100 Crores ( Hundred Crores) for the last three financial years (2017-18, 2018-19, 2019-20) immediately preceding the Bid Due Date from Civil Engineering Project only. In case of Consortium, out of the total value of turnover; at least 70% of the turnover criteria shall be met by the Lead Bidder and Consortium partners other than lead bidder shall have minimum 30% annual turnover of in last three FY as indicative above.
- n. Conflict of Interest - No conflicts of interest in accordance with ITB
- o. Debarment/ Transgression by any public Procuring Entity- Must declare
- p. All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than 50 percent of the Bidder's net worth. NOTE: CA certificate clearly mentioning with calculation that pending litigation in total not more than 50% of Bidder's net worth.
- q. Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity for construction work is equal to or more than the total bid value. The available bid capacity will be calculated as under:

$$\text{Assessed Available Bid capacity} = (A * N * M) - B$$

Where,

A = Maximum value of civil engineering executed in any one year during the last five years (updated to the price level of the last year at the rate of 10 percent a year) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which bids are invited (period up to 6 months to be taken as half-year and more than 6 months as one year).

M = M is taken 2

B = Value, at the current price level, of existing commitments and on-going works to be completed during the period of completion of the works for which bids are invited.

**Note:** The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in charge, not below the rank of an Executive Employer or equivalent. In Case of JV Combined Net Work can be considered.

**\*All the above stated documents are required to be duly attested by the Contractor/Bidder under the company seal.**

**\* If any of the above documents is found missing or incorrect, then the bid will be disqualified.**

**\*Proof of having successfully completed similar works must be submitted in the form of a Completion certificate issued by the Client.**

**JOINT VENTURE/CONSORTIUM: Allowed with Maximum of two Members.**

Even though the Bidder meets the above qualifying criteria, he is subject to be disqualified if he has;

- a. Made a misleading or false representation[s] in the Forms, Statements and Attachments Submitted in Proof of the Qualification Requirements.

**And/ or**

- b. A record of poor performance such as Abandoning a work, Poor quality of work, Claim, Litigation History, or Financial failures etc. in any State Govt. organization/services/corporations/local body etc. (by whatever names these are called).

#### **b. Financial Eligibility Criteria / Selection Process**

The financial Bid will be opened only if the bidder successfully qualifies the technical Bid round. **Ranking order for Bid for Selection of Contractor** – Lowest Price to highest price. The bidder which qualifies all the conditions mention in the bid document and has quoted the lowest rate shall be selected for the contract.

**Drawl of Agreement:** If L1 bidder does not turn up for agreement after finalization of the tender, then he shall be debarred from participation in bidding at least for three years in BSCL and action may be taken to blacklist the contractor. In that case, the L2 bidder, if fulfilling, other required criteria, would be called for drawing agreement for execution of the work subject to the condition that L2 bidder negotiates his/her/their rate and terms and conditions as per with the rate quoted by the L1 bidder, otherwise the tender will be cancelled.

#### **1. Conflict of Interest**

An Applicant shall not have a conflict of interest that may affect the Selection Process or the work (the "Conflict of Interest"). Any Applicant found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the Authority shall forfeit and appropriate the Bid Security as mutually agreed genuine pre-estimated compensation and damages payable to the Authority for, inter alia, the time, cost and effort of the Authority including consideration of such Applicant's Proposal, without prejudice to any other right or remedy that may be available to the Authority hereunder or otherwise. A Bidder may be considered to have a conflict of interest for the purpose of this Bidding process, if the Bidder:

- 1.1.1 directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- 1.1.2 receives or has received any direct or indirect subsidy from another Bidder; or
- 1.1.3 has the same legal representative as another Bidder; or
- 1.1.4 has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- 1.1.5 any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or
- 1.1.6 any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Project Manager for the Contract implementation;
- 1.1.7 Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the RFP that it provided or were provided by any affiliate that directly or indirectly controls, is

controlled by, or is under common control with that firm;

- 1.1.8 Has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding document or specifications of the contract, and/or the Bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.
- 1.2 A Bidder shall be liable for disqualification if any legal, financial or technical adviser of the Employer in relation to the Project is engaged by the Bidder, or any of its Members, as the case may be, in any manner for matters related to or incidental to the Project. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Bidder, its Member in the past but its assignment expired or was terminated 6 (six) months prior to the date of issue of this RFP.
- 1.3 The Authority requires that the bidders / contractors observe the highest standard of ethics during the procurement and execution of such contracts and at all times hold the Authority's interest paramount, avoid conflicts with other assignments or its own interests, and act without any consideration for future work. The Agency shall not accept or engage in any assignment that would be in conflict with its prior or current obligations to other clients, or that may place it in a position of not being able to carry out the assignment in the best interests of the Authority.

## SECTION IV: BIDDING FORMS

### ANNEXURE 1: Letter of Bid - Technical Part

**Date of this Bid submission:** *[insert date (as day, month and year) of Bid submission]*

**Request for Bid No.:** *[insert identification]*

To:

Chief Executive Officer,  
Bareilly Smart City Limited  
Bareilly

We, the undersigned, hereby submit our Bid, in two parts, namely:

- (a) the Technical Part, and
- (b) the Financial Part

In submitting our Bid, we make the following declarations:

- (a) **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance with Instructions to Bidders (ITB 8);
- (b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) **Conformity:** We offer to execute in conformity with the bidding document the following Works: *[insert a brief description of the Works]*
- (d) **Bid Validity Period:** Our Bid shall be valid for a period specified in BDS 8 (or as amended if applicable) from the date fixed for the Bid submission deadline specified in BDS 11 (or as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (e) **Performance/Bid Security:** If our Bid is accepted, we commit to obtain a Performance Security in accordance with the bidding document;
- (f) **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder or as a subcontractor.
- (g) **State-owned enterprise or institution:** *[select the appropriate option and delete the other] [We are not a state-owned enterprise or institution] / [We are a state-owned enterprise]*
- (h) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (i) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive; and
- (j) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

**Name of the Bidder:** *[insert complete name of person signing the Bid]*

**Name of the person duly authorized to sign the Bid on behalf of the Bidder:** \*\* *[insert complete name of person duly authorized to sign the Bid]*

**Title of the person signing the Bid:** *[insert complete title of the person signing the Bid]*

**Signature of the person named above:** *[insert signature of person whose name and capacity are shown above]*

**Date signed** *[insert date of signing]* **day of** *[insert month]*, *[insert year]*

Date signed \_\_\_\_\_ day of \_\_\_\_\_,

\*\* : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid

## ANNEXURE 2: Key Personnel

### Schedule

Bidders should provide the names and details of the suitably qualified Key Personnel to perform the Contract. The data on their experience should be supplied using the Form below for each candidate.

Technical Part: Bidder's Qualification

|                                  |                                      |  |
|----------------------------------|--------------------------------------|--|
| <b>Name of Bidder</b> :          |                                      |  |
| <b>Position</b> :                |                                      |  |
| <b>Personnel<br/>Information</b> | <b>Name</b>                          | <b>Date of Birth</b>   |
|                                  | <b>Professional qualifications :</b> |  |
| <b>Experience<br/>Details</b>    | <b>Name of Employer :</b>            |  |
|                                  | <b>Address of Employer:</b>          |  |
|                                  | <b>Telephone :</b>                   |  |
|                                  | <b>Contact:</b>                      |  |
|                                  | <b>Fax :</b>                         |  |
|                                  | <b>Email :</b>                       |  |
|                                  | <b>Job title</b>                     |  |
|                                  | <b>Years with present employer</b>   |  |
| <b>From</b>                      | <b>To</b>                            | <b>Company/Project/Position/Relevant technical and management experience</b> |
|                                  |                                      |  |
|                                  |                                      |  |

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.



### ANNEXURE 3 : Bidder Information

#### Bidder Information Form

Date: \_\_\_\_\_

RFB No. and title: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_ pages

Bidder's name

Bidder's actual or intended country of registration:

*[indicate country of Constitution]*

Bidder's actual or intended year of incorporation:

Bidder's legal address [in country of registration]:

Bidder's authorized representative information

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone/Fax numbers: \_\_\_\_\_

E-mail address: \_\_\_\_\_

1. Attached are copies of original documents of

Articles of Incorporation (or equivalent documents of constitution or association),

2. Included are the organizational chart and a list of Board of Directors

**ANNEXURE 4: Litigation History**

Date: DD/MM/YYYY Bidder's

Name:

RFP No. and Title: \_\_\_\_\_

Page \_\_\_ of \_\_\_ pages

| Non-Performed Contracts   |                                   |   |   |
|---|-----------------------------------|---|---|
| <input type="checkbox"/> Contract non-performance did not occur since 1 <sup>st</sup> January [insert year] |                                   |   |   |
| <input type="checkbox"/> Contract(s) not performed since 1 <sup>st</sup> January [insert year]              |                                   |   |   |
| Year  | Non-performed portion of contract | Contract Identification   | Total Contract Amount (current value, currency, exchange rate and INR equivalent) |
|   |                                   | Contract Identification: Name of Employer:<br>Address of Employer:<br>Reason(s) for non-performance: [indicate main reason] |   |
| Pending Litigation  |                                   |   |   |
| <input type="checkbox"/> No pending litigation  |                                   |   |   |
| <input type="checkbox"/> Pending litigation   |                                   |   |   |

Pending Litigation, in accordance with section III, Evaluation and Qualification Criteria

| Year of dispute | Amount in dispute (IN Rs.) | Contract Identification   | Total Contract Amount (In Rs.) |
|-----------------|----------------------------|---|--------------------------------|
|                 |                            | Contract Identification:<br>Name of Employer:<br>Address of Employer:<br>Matter in dispute:<br>Party who initiated the dispute:<br>Status of dispute: |                                |
|                 |                            | Contract Identification:<br>Name of Employer: Address of Employer: Matter in dispute:<br>Party who initiated the dispute:<br>Status of dispute:       |                                |

**Signature of the Bidder**

Information on litigation history in which Bidder is the Petitioner.

| S. No | Case No. / Year | Court where filed. | Subject Matter / Prayer in the case. | Respondents i.e., SE / CE | Present Stage. |
|-------|-----------------|--------------------|--------------------------------------|---------------------------|----------------|
| 1     | 2               | 3                  | 4                                    | 5                         | 6              |
|       |                 |                    |                                      |                           |                |

(To be provided by the Bidder/each Member/Associate for any material non-performance or contractual non-compliance in past projects, contractual disputes and litigation/ arbitration in the last 5 years preceding the Bid Due Date)

| Sl, No | Name | Forum and Counterparty With Contract Identification | Brief Description of the matter | Estimated financial liability | Current Status of Litigation | Orders passed against the Bidder/Member |
|--------|------|---|---------------------------------|-------------------------------|------------------------------|---|
|        |      |   |                                 |                               |                              |   |
|        |      |   |                                 |                               |                              |   |

Bidder must not hide any information regarding litigation or blacklisting otherwise legal action may be initiated in case of wrong information submitted by the bidder.

**Signature of the Bidder**

## ANNEXURE 4: FIN 1

### Financial Situation and Performance

Bidder's Name \_\_\_\_\_

Date \_\_\_\_\_

RFB No \_\_\_\_\_

#### 1. Financial data<sup>#</sup>

| Type of Financial information in INR                             | Historic information for previous _____ years, |        |        |        |        |
|--|--|--------|--------|--------|--------|
|  | Year 1   | Year 2 | Year 3 | Year 4 | Year 5 |
| Statement of Financial Position (Information from Balance Sheet) |  |        |        |        |        |
| Total Assets (TA)  |  |        |        |        |        |
| Total Liabilities (TL)   |  |        |        |        |        |
| Total Equity/Net Worth (NW)                                      |  |        |        |        |        |
| Current Assets (CA)  |  |        |        |        |        |
| Current Liabilities (CL)   |  |        |        |        |        |
| Working Capital (WC)   |  |        |        |        |        |
| Information from Income Statement                                |  |        |        |        |        |
| Total Revenue (TR)   |  |        |        |        |        |
| Profits Before Taxes (PBT)                                       |  |        |        |        |        |
| Cash Flow Information  |  |        |        |        |        |
| Cash Flow from Operating Activities                              |  |        |        |        |        |

# The Financial Certificate shall be certified by the Chartered Accountant.

## ANNEXURE 5: FIN 2

### Average Annual Turnover

Bidder's Name: \_\_\_\_\_

Date: \_\_\_\_\_

| S. No. | Financial Year         | Annual Construction (INR Turnover Crore) |
|--------|------------------------|--|
| 1      | Financial Year 2017-18 |  |
| 2      | Financial Year 2018-19 |  |
| 3      | Financial Year 2019-20 |  |

Note: The audited Financial Statements for the corresponding year has to be attached.

Name of the auditor issuing the certificate

Name of the auditor's Firm:

Seal of the auditor's Firm:

Date:

(Signature, name and designation of the authorised signatory for the Auditor's Firm)

### ANNEXURE 6: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts

| Financial Resources |                     |                         |
|---------------------|---------------------|-------------------------|
| No.                 | Source of financing | Amount (INR equivalent) |
| 1                   |                     |                         |
| 2                   |                     |                         |
| 3                   |                     |                         |
|                     |                     |                         |



### **ANNEXURE 7: Current Contract Commitments / Works In Progress**

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

| Current Contract Commitments |                  |   |  |                                 |   |
|------------------------------|------------------|---|--|---------------------------------|---|
| No.                          | Name of Contract | Employer's<br>Contact<br>Address, Tel,<br>Fax | Value of<br>Outstanding<br>Work<br>[Current INR<br>Equivalent] | Estimated<br>Completion<br>Date | Average Monthly<br>Invoicing Over<br>Last<br>Six Months<br>[INR month)] |
| 1                            |                  |   |  |                                 |   |
| 2                            |                  |   |  |                                 |   |
| 3                            |                  |   |  |                                 |   |
| 4                            |                  |   |  |                                 |   |
| 5                            |                  |   |  |                                 |   |
|                              |                  |   |  |                                 |   |

## ANNEXURE 8: Letter Of Bid - Financial Part

**Date of this Bid submission:** *[insert date (as day, month and year) of Bid submission]*

**Request for Bid No.:** *[insert identification]*

To:

Chief Executive Officer,  
Bareilly Smart City Limited  
Bareilly

We, the undersigned, hereby submit the second part of our Bid, the Bid Price and Bill of Quantities. This accompanies the Letter of Technical Part.

In submitting our Bid, we make the following additional declarations:

- (a) **Bid Validity Period:** Our Bid shall be valid for a period specified in BDS 8 (or as amended if applicable) from the date fixed for the Bid submission deadline specified in BDS 11 (or as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (b) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*.

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |

(If none has been paid or is to be paid, indicate "none.")

**Name of the Bidder:** *\*[insert complete name of person signing the Bid]*

**Name of the person duly authorized to sign the Bid on behalf of the Bidder:** *\*\* [insert complete name of person duly authorized to sign the Bid]*

**Title of the person signing the Bid:** *[insert complete title of the person signing the Bid]*

**Signature of the person named above:** *[insert signature of person whose name and capacity are shown above]*

**Date signed** *[insert date of signing]* **day of** *[insert month]*, *[insert year]*

**\*\*:** Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

# FINANCIAL BID WITH PAYMENT SCHEDULE

| TOTAL COST OF PROJECT : FINANCIAL BID WITH PAYMENT SCHEDULE |                                  |       |           |      |                         |                  |  |                        |
|---|----------------------------------|-------|-----------|------|-------------------------|------------------|--|------------------------|
| 1. BAREILLY HAAT  |                                  |       |           |      |                         |                  |  |                        |
| S. No.  | Description                      | QTY   | Total QTY | Unit | Total RATE quoted (INR) | TOTAL COST (INR) | STAGE OF PAYMENT                         | STAGewise % OF PAYMENT |
|   |                                  |       |           |      |                         |                  |  |                        |
| 1   | DEMOLITION OF EXISTING STRUCTURE | 2000  | 2000      | SQM  |                         |                  | 1. on completion of work                 | 100%                   |
|   |                                  |       |           |      |                         |                  |  |                        |
| 2   | BASEMENT INCLUDING RAMP          | 11700 | 11700     | SQM  |                         |                  | 1. Foundation & upto Raft level          | 30%                    |
|   |                                  |       |           |      |                         |                  | 2. Slab level                            | 30%                    |
|   |                                  |       |           |      |                         |                  | 3. Internal brickwork, plaster, flooring | 20%                    |
|   |                                  |       |           |      |                         |                  | 4. finishing and handover                | 20%                    |
|   |                                  |       |           |      |                         |                  |  |                        |
| 3   | GATEHOUSE (G+1)                  |       |           |      |                         |                  |  |                        |

|   |                       |     |      |     |  |  |  |     |
|---|-----------------------|-----|------|-----|--|--|--|-----|
| A | GROUND FLOOR<br>300   |     | 300  | sqm |  |  | 1. Foundation & upto plinth level                        | 20% |
|   |                       |     |      |     |  |  | 2. top slab level building structure complete            | 30% |
|   |                       |     |      |     |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
|   |                       |     |      |     |  |  | 4. Final finishing and handover                          | 20% |
|   |                       |     |      |     |  |  |  |     |
| 4 | SHOPPING CENTRE (G+2) |     |      |     |  |  |  |     |
| A | GROUND FLOOR          | 585 | 1845 | SQM |  |  | 1. upto FF slab level                                    | 20% |
| B | FIRST FLOOR           | 585 |      |     |  |  | 2. top slab level building structure complete            | 30% |
| C | SECOND FLOOR          | 585 |      |     |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
| D | MUMTY                 | 90  |      |     |  |  | 4. Final finishing and handover                          | 20% |
|   |                       |     |      |     |  |  |  |     |

|          |   |      |             |            |  |  |  |     |
|----------|---|------|-------------|------------|--|--|--|-----|
| <b>5</b> | <b>SHOPPING KIOSKS</b>  |      |             |            |  |  |  |     |
| A        | GROUND FLOOR  | 500  | <b>500</b>  | <b>SQM</b> |  |  | 1. completion of structure                               | 50% |
|          |   |      |             |            |  |  | 2. Final finishing and handover                          | 50% |
|          |   |      |             |            |  |  |  |     |
| <b>6</b> | <b>FOOD CENTRE (G+2)</b>  |      |             |            |  |  |  |     |
| A        | GROUND FLOOR  | 750  | <b>3650</b> | <b>SQM</b> |  |  | 1. upto FF slab level                                    | 20% |
| B        | FIRST FLOOR   | 1400 |             |            |  |  | 2. top slab level building structure complete            | 30% |
| C        | SECOND FLOOR  | 1400 |             |            |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
| D        | MUMTY   | 100  |             |            |  |  | 4. Final finishing and handover                          | 20% |
|          |   |      |             |            |  |  |  |     |
| <b>7</b> | <b>INTERPRETATION CENTRE ( shall be paid over and above the rate for the Basement construction in item 2)</b> |      |             |            |  |  |  |     |
| A        | BASEMENT FLOOR  | 1300 | <b>1300</b> | <b>SQM</b> |  |  | 1. Civil work completion                                 | 50% |
|          |   |      |             |            |  |  | 2. Final finishing and handover                          | 50% |

|          |  |      |             |            |  |  |  |     |
|----------|--|------|-------------|------------|--|--|--|-----|
|          |  |      |             |            |  |  |  |     |
| <b>8</b> | <b>HANDICRAFTS SHOPPING CENTRE (G+1)</b> |      |             |            |  |  |  |     |
| A        | GROUND FLOOR                             | 660  | <b>1270</b> | <b>SQM</b> |  |  | 1. upto GF slab level                                    | 20% |
| B        | FIRST FLOOR                              | 550  |             |            |  |  | 2. top slab level building structure complete            | 30% |
| C        | MUMTY                                    | 60   |             |            |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
|          |  |      |             |            |  |  | 4. Final finishing and handover                          | 20% |
|          |  |      |             |            |  |  |  |     |
| <b>9</b> | <b>CONVENTION CENTRE (G+2)</b>           |      |             |            |  |  |  |     |
| A        | GROUND FLOOR                             | 1700 | <b>6900</b> | <b>SQM</b> |  |  | 1. upto FF slab level                                    | 20% |
| B        | FIRST FLOOR                              | 1800 |             |            |  |  | 2. top slab level building structure complete            | 30% |
| C        | SECOND FLOOR                             | 1600 |             |            |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |



|           |                              |      |             |            |  |  |  |     |
|-----------|------------------------------|------|-------------|------------|--|--|--|-----|
| D         | THIRD FLOOR                  | 1600 |             |            |  |  | 4. Final finishing and handover                          | 20% |
| E         | MUMTY                        | 200  |             |            |  |  |  |     |
|           |                              |      |             |            |  |  |  |     |
| <b>10</b> | <b>DORMITORY BLOCK (G+1)</b> |      |             |            |  |  |  |     |
| A         | GROUND FLOOR                 | 580  | <b>1150</b> | <b>SQM</b> |  |  | 1. upto GF slab level                                    | 20% |
| B         | FIRST FLOOR                  | 520  |             |            |  |  | 2. top slab level building structure complete            | 30% |
| C         | MUMTY                        | 50   |             |            |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
|           |                              |      |             |            |  |  | 4. Final finishing and handover                          | 20% |
|           |                              |      |             |            |  |  |  |     |
| <b>11</b> | <b>OPEN AIR THEATRE</b>      |      |             |            |  |  |  |     |
| A         | GROUND FLOOR                 | 400  | <b>400</b>  | <b>SQM</b> |  |  | 1. Civil work completion                                 | 50% |
|           |                              |      |             |            |  |  | 2. Final finishing and handover                          | 50% |
|           |                              |      |             |            |  |  |  |     |
| <b>12</b> | <b>STALLS</b>                |      |             |            |  |  |  |     |

|    |   |      |      |     |  |  |   |     |
|----|---|------|------|-----|--|--|---|-----|
| A  | GROUND FLOOR  | 1425 | 1425 | SQM |  |  | 1. Civil work completion                  | 50% |
|    |   |      |      |     |  |  | 2. Final finishing and handover           | 50% |
|    |   |      |      |     |  |  |   |     |
| 13 | EXTERNAL LIFT LOBBY + STAIRCASE (EXCEPT LIFT EQUIPMENT) |      |      |     |  |  |   |     |
| A  | GROUND FLOOR  | 320  | 320  | SQM |  |  | 1. Civil work completion                  | 50% |
|    |   |      |      |     |  |  | 2. Final finishing and handover           | 50% |
|    |   |      |      |     |  |  |   |     |
| 14 | GUARD ROOMS   |      |      |     |  |  |   |     |
| 1  | GROUND FLOOR  | 112  | 112  | SQM |  |  | 1. Civil work completion                  | 50% |
|    |   |      |      |     |  |  | 2. Services, Final finishing and handover | 50% |
|    |   |      |      |     |  |  |   |     |
| 15 | ELECTRICAL SERVICES BUILDING                            |      |      |     |  |  |   |     |
| 1  | GROUND FLOOR  | 110  | 110  | SQM |  |  | 1. Civil work completion                  | 50% |
|    |   |      |      |     |  |  | 2. Services, Final finishing and handover | 50% |

|  |                                   |             |                  |             |                          |                   |   |                               |
|--|-----------------------------------|-------------|------------------|-------------|--------------------------|-------------------|---|-------------------------------|
|  |                                   |             |                  |             |                          |                   |   |                               |
| <b>16</b>                              | <b>TICKET BOOTH</b>               |             |                  |             |                          |                   |   |                               |
| 1                                      | GROUND FLOOR                      | 30          | 50               | SQM         |                          |                   | 1. Civil work completion                  | 50%                           |
|  | GROUND FLOOR                      | 20          |                  |             |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   | 2. Services, Final finishing and handover | 50%                           |
| <b>17</b>                              | <b>EXTERNAL DEVELOPMENT</b>       |             |                  |             |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   |   |                               |
| 1                                      | GREEN AREAS                       | 2000        | 2000             | SQM         |                          |                   | 1. Civil work completion                  | 50%                           |
| 2                                      | SURFACE PARKING                   | 670         | 670              | SQM         |                          |                   |   |                               |
| 3                                      | ROAD                              | 5000        | 5000             | SQM         |                          |                   |   |                               |
| 4                                      | PAVING                            | 8302        | 8302             | SQM         |                          |                   | 2. Services, Final finishing and handover | 50%                           |
| 5                                      | KID'S PLAY AREA                   | 600         | 600              | SQM         |                          |                   |   |                               |
| 6                                      | OAT                               | 650         | 650              | SQM         |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   |   |                               |
| <b>2. HANDICRAFT CENTER AREA CHART</b> |                                   |             |                  |             |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   |   |                               |
| <b>S. No.</b>                          | <b>Description</b>                | <b>QTY</b>  | <b>Total QTY</b> | <b>Unit</b> | <b>Total RATE quoted</b> | <b>TOTAL COST</b> | <b>STAGE OF PAYMENT</b>                   | <b>STAGewise % OF PAYMENT</b> |
|  |                                   |             |                  |             |                          |                   |   |                               |
| <b>18</b>                              | <b>BASEMENT HANDICRAFT CENTER</b> | <b>3663</b> | <b>3663</b>      | <b>SQM</b>  |                          |                   |   |                               |
|  |                                   |             |                  |             |                          |                   | 1. Civil work completion                  | 50%                           |

|           |                                    |      |             |            |  |  |  |     |
|-----------|------------------------------------|------|-------------|------------|--|--|--|-----|
|           |                                    |      |             |            |  |  | 2. Final finishing and handover                          | 50% |
| <b>19</b> | <b>BLOCK 1 : INCUBATION CENTER</b> |      |             |            |  |  |  |     |
| A         | GROUND FLOOR                       | 1155 | <b>4480</b> | <b>SQM</b> |  |  | 1. upto FF slab level                                    | 20% |
| B         | FIRST FLOOR                        | 1065 |             |            |  |  | 2. top slab level building structure complete            | 30% |
| C         | SECOND FLOOR                       | 1135 |             |            |  |  | 3. Services, Internal plaster, flooring, fixed finishing | 30% |
| D         | THIRD FLOOR                        | 880  |             |            |  |  | 4. Final finishing and handover                          | 20% |
| E         | MUMTY                              | 245  |             |            |  |  |  |     |
|           |                                    |      |             |            |  |  |  |     |
| <b>20</b> | <b>BLOCK 2 : TRAINING CENTER</b>   |      |             |            |  |  |  |     |
| A         | GROUND FLOOR                       | 1070 | <b>4510</b> | <b>SQM</b> |  |  | 1. upto FF slab level                                    | 20% |
| B         | FIRST FLOOR                        | 1070 |             |            |  |  | 2. top slab level building structure complete            | 30% |

|           |  |      |             |  |  |  |   |     |
|-----------|--|------|-------------|--|--|--|---|-----|
| C         | SECOND FLOOR   | 1070 |             |  |  |  | 3. Services,<br>Internal plaster,<br>flooring, fixed<br>finishing | 30% |
| D         | FOURTH FLOOR   | 1070 |             |  |  |  | 4. Final finishing<br>and handover                                | 20% |
| E         | MUMTY  | 230  |             |  |  |  |   |     |
|           |  |      |             |  |  |  |   |     |
| <b>21</b> | <b>BLOCK 3 ( PEB BUILDING :<br/>MULTIPURPOSE HALL)</b> |      |             |  |  |  |   |     |
| A         | GROUND FLOOR   | 1300 | <b>1300</b> |  |  |  | 1. Civil work<br>completion                                       | 50% |
|           |  |      |             |  |  |  | 2. Final finishing<br>and handover                                | 50% |
|           |  |      |             |  |  |  |   |     |
| <b>22</b> | <b>GUARD ROOMS</b>                                     |      |             |  |  |  |   |     |
| A         | GROUND FLOOR   | 32   | <b>32</b>   |  |  |  | 1. Civil work<br>completion                                       | 50% |
|           |  |      |             |  |  |  | 2. Final finishing<br>and handover                                | 50% |
|           |  |      |             |  |  |  |   |     |
| <b>23</b> | <b>EXTERNAL DEVELOPMENT</b>                            |      |             |  |  |  |   |     |
| 1         | GREEN AREAS  | 3500 | <b>3500</b> |  |  |  | 1. Civil work<br>completion                                       | 50% |
| 2         | SURFACE PARKING  | 425  | <b>425</b>  |  |  |  |   |     |
| 3         | ROAD   | 5632 | <b>5632</b> |  |  |  |   |     |
| 4         | PAVING   | 1135 | <b>1135</b> |  |  |  | 2. Services,<br>Final finishing<br>and handover                   | 50% |
| 5         | KID'S PLAY AREA  | 165  | <b>165</b>  |  |  |  |   |     |
| 6         | OAT  | 100  | <b>100</b>  |  |  |  |   |     |

| OTHER ITEMS |                       |      |           |      |                   |            |                                 |                        |
|-------------|-----------------------|------|-----------|------|-------------------|------------|---------------------------------|------------------------|
| S. No.      | Description           | QTY  | Total QTY | Unit | Total RATE quoted | TOTAL COST | STAGE OF PAYMENT                | STAGewise % OF PAYMENT |
| 24          | ROOFTOP SOLAR PLANT   | 500  | 500       | KVA  |                   |            | 1. Delivery & Installation      | 70%                    |
|             |                       |      |           |      |                   |            | 2. commissioning and handover   | 30%                    |
|             |                       |      |           |      |                   |            |                                 |                        |
| 25          | LIFTS                 |      |           |      |                   |            |                                 |                        |
| a           | SERVICE LIFT          | 5    | 5         | nos  |                   |            | 1. Delivery                     | 50%                    |
| b           | CAPSULE               | 2    | 2         | nos  |                   |            | 2. Installation                 | 25%                    |
| c           | PASSENGER             | 11   | 11        | nos  |                   |            | 3. commissioning and handover   | 25%                    |
|             |                       |      |           |      |                   |            |                                 |                        |
| 26          | Boundary wall & gates | 1700 | 1700      | rm   |                   |            | 1. Civil work completion        | 50%                    |
|             |                       |      |           |      |                   |            | 2. Final finishing and handover | 50%                    |
|             |                       |      |           |      |                   |            |                                 |                        |
| 27          | Recreation Equipment  |      |           |      |                   |            |                                 |                        |
| a           | Ferris wheel 25m high | 1    | 1         | nos  |                   |            | 1. Delivery                     | 50%                    |
| b           | multi-swing           | 1    | 1         | nos  |                   |            | 2. Installation                 | 25%                    |
| c           | see saw               | 2    | 2         | nos  |                   |            | 3. commissioning and handover   | 25%                    |
| d           | slide                 | 2    | 2         | nos  |                   |            |                                 |                        |

|           |   |        |        |      |  |  |   |     |
|-----------|---|--------|--------|------|--|--|---|-----|
|           |   |        |        |      |  |  |   |     |
| <b>28</b> | <b>High Mast Light</b>  | 3      | 3      | nos  |  |  | 1. Delivery & installation                  | 50% |
|           |   |        |        |      |  |  | 2. Final finishing commissioning            | 50% |
|           |   |        |        |      |  |  |   |     |
| <b>29</b> | <b>Water tank / Pump room / Plumbing equipment with water treatment plant</b>                           |        |        |      |  |  |   |     |
| a         | underground tank  | 400000 | 400000 | ltrs |  |  | 1. Civil work completion                    | 50% |
| b         | pump room   | 200000 | 200000 | ltrs |  |  | 2. Final finishing, equipments and handover | 50% |
| c         | overhead tank (RCC / Panel / triple layer )   | 200000 | 200000 | ltrs |  |  |   |     |
|           |   |        |        |      |  |  |   |     |
| <b>30</b> | <b>Boom Barriers</b>  | 6      | 6      | nos  |  |  | 1. Delivery & installation                  | 70% |
|           |   |        |        |      |  |  | 2. Final finishing commissioning            | 30% |
|           |   |        |        |      |  |  |   |     |
| <b>31</b> | <b>Hi-Side Main electrification (HT metering, transformer, gensets, LT panels, cables etc complete)</b> | 2      | 2      | LS   |  |  | 1. Delivery & installation                  | 70% |
|           |   |        |        |      |  |  | 2. Final commissioning                      | 30% |

|    |                       |   |   |    |  |  |                                 |     |
|----|-----------------------|---|---|----|--|--|---------------------------------|-----|
|    |                       |   |   |    |  |  |                                 |     |
| 32 | Rain Water Harvesting | 2 | 2 | LS |  |  | 1. Civil work completion        | 50% |
|    |                       |   |   |    |  |  | 2. Final finishing and handover | 50% |

|   |  |
|---|--|
|   | <b>NOTES:</b>  |
| 1 | Rates are inclusive of all taxes, levies, worker insurances etc.   |
| 2 | For Area calculation in Buildings: The entire area of the floor on which respective floor roof slab is casted including balconies and slab projections will be measured in the area. However, lintels or any other mid-level projections will not be measured separately. Shafts / court which are larger than 50sqft only shall be deducted from the covered area calculation.  |
| 3 | The cost of Sheet barricading of site, water removal, office setup, labour hutment, material store etc – any item that is required for construction is included in the rates quoted above and shall not be paid separately   |
| 4 | AREA VARIATION : The above represent estimated areas. Payment shall be done as per the actual areas executed on site as certified by the engineer-in-charge.   |
| 5 | The above covered area of construction is indicative only and may change during the course of project. The client shall have the right to add/Subtract area/Buildings in the Project. The payment shall be done based on the Construction achieved on Site by the contractor after due approval is taken from the Client.  |
| 6 | 10% mobilization advance can be released on request of implementing agency after mobilisation of staff and providing drawings and design to commence the work against Bank Gurantee of 10 % of above value of the said amount. (5% can be released at the time of Submission of Drawings and surveys, Remaining 5% shall be released after team and material mobilisation on site). Recovery of such advance shall be made by the deduction from the contractor's bills and it will be deducted in not less than 5 instalments in subsequent payments or payment of 50 percent of project implementation whichever is earlier. |



### ANNEXURE 9: Format For Power Of Attorney For Signing The Bid

(On INR 100.00 Non judicial Stamp Paper and duly notarized)

KNOW ALL MEN BY THESE PRESENTS,

We \_\_\_\_\_ (*name of the firm and address of the registered office*) do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. (*name*), \_\_\_\_\_ son/daughter/wife of \_\_\_\_\_ and presently residing at \_\_\_\_\_, who is presently employed with us and holding the position of \_\_\_\_\_, as our true and lawful attorney (*hereinafter referred to as the "Attorney"*) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our application for qualification and submission of our bid for the Project proposed by the \_\_\_\_\_ (the "*client*") including but not limited to signing and submission of all applications, bids and other documents and writings, participate in pre-applications and other conferences and providing information/ responses to the client, representing us in all matters before the client, signing and execution of all contracts including the Agreement and undertakings consequent to acceptance of our bid, and generally dealing with the client in all matters in connection with or relating to or arising out of our bid for the said Project and/ or upon award thereof to us and/or till the entering into of the Agreement with the client.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, \_\_\_\_\_, THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF \_\_\_\_\_.

For \_\_\_\_\_ (Signature, name, designation and address) Witnesses:

1. (Notarized) 2.

Accepted

(Signature, Name, Title and Address of the Attorney)

#### Notes:

- *The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.*
- *Wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.*
- *In case the bid is signed by an authorized Director / Partner or Proprietor of the Bidder, a certified copy of the appropriate board resolution / document conveying such authorization to client may be enclosed in lieu of the Power of Attorney.*

## ANNEXURE 10 (A) : Bank Guarantee for Earnest Money Deposit

To,

<Designation>

<Address>

<Phone Nos.>

<Email id>

Whereas <<Name of the bidder>> (hereinafter called 'the Bidder') has submitted the bid for Submission of RFP <<RFP Number>> dated <<Date>> for <<Name of the assignment>> (hereinafter called "the Bid") to <<Client>>.

Know all Men by these presents that we <<... >> having our office at <<Address>> (hereinafter called "the Bank") are bound unto the <<Client>> (hereinafter called "the Client") in the sum of Indian Rupees<<Amount in figures>> (Rupees <<Amount in words>> only) for which payment well and truly to be made to the said Client, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this <<Date>>.

The conditions of this obligation are:

1. If the Bidder having its bid withdrawn during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its bid by the Client during the period of validity of bid
  - a) Withdraws his participation from the bid during the period of validity of bid document; or
  - b) Fails or refuses to participate in the subsequent Bid process after having been short listed;

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

This guarantee will remain in force up to <<insert date>> and including <<extra time over and above mandated in the RFP>> from the last date of submission and any demand in respect thereof should reach the Bank not later than the above date.

NOTWITHSTANDING ANYTHING CONTAINED HEREIN:

- I. Our liability under this Bank Guarantee shall not exceed Indian Rupees<<Amount in figures>> (Rupees <<Amount in words>> only)
- II. This Bank Guarantee shall be valid up to <<insert date>>)
- III. It is condition of our liability for payment of the guaranteed amount or any part thereof arising under this Bank Guarantee that we receive a valid written claim or demand for payment under this Bank Guarantee on or before <<insert date>>) failing which our liability under the guarantee will automatically cease.

(Authorized Signatory of the Bank)

Seal:

Date:

## ANNEXURE 10 (B) : Performance Bank Guarantee

Ref: \_\_\_\_\_

Date \_\_\_\_\_

Bank Guarantee No. \_\_\_\_\_

<Name>

<Designation>

<Address><Phone Nos.><Fax Nos.><Email id>

Whereas, <<name of the firm and address>> (hereinafter called "Implementing Agency") has undertaken, in pursuance of contract no. <Insert Contract No.> dated. <Date> to provide Implementation services for <<name of the assignment>> to Bareilly Smart City Limited (hereinafter called "the Authority")

And whereas it has been stipulated by in the said contract that the bidder shall furnish you with a bank guarantee by a recognized bank for the sum specified therein as security for compliance with its obligations in accordance with the contract;

And whereas we, <Name of Bank> a banking company incorporated and having its head/registered office at <Address of Registered Office> and having one of its office at

<Address of Local Office> have agreed to give the supplier such a bank guarantee.

Now, therefore, we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of Indian Rupees<Insert Value> (Rupees <Insert Value in Words> only) and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of Indian Rupees<Insert Value> (Rupees

<Insert Value in Words> only) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the bidder before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the Implementing Agency 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 until <<Insert Date>>) Not withstanding anything contained herein:

- I. Our liability under this bank guarantee shall not exceed Indian Rupees<Insert Value> (Rupees <Insert Value in Words> only).
- II. This bank guarantee shall be valid up to <Insert Expiry Date>)
- III. It is condition of our liability for payment of the guaranteed amount or any part thereof arising under this bank guarantee that we receive a valid written claim or demand for payment under this bank guarantee

on or before <Insert Expiry Date>) failing which our liability under the guarantee will automatically cease.

Date \_\_\_\_\_

Place \_\_\_\_\_

Witness \_ \_\_\_\_\_

Signature \_\_\_\_\_

Printed name \_\_\_\_\_

**(Bank's common seal)**

**ANNEXURE 11: Declaration Of Non-Blacklisting**

(On INR 100.00 Non judicial Stamp Paper and duly notarized)

Place

Date

To,

*Chief Executive Officer  
Bareilly Smart City Limited  
Bareilly, Uttar Pradesh*

Subject: Self Declaration of not been blacklisted in response to the RFP for “Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission.”

Ref: RFP No. <<.....>> dated << .....>>

Dear Sir,

We confirm that our company or firm, \_\_\_\_\_, is currently not blacklisted in any manner whatsoever by any Government (Central / State / PSU/ Corporation/ Multilateral Funding Agencies) Organization in India on any ground including but not limited to indulgence in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

(Signature)

Printed Name

Designation

**Seal**

Date:

Place:

Business Address:

## **ANNEXURE 12: No Relationship Certificate**

I/We hereby certify that I/We\* am/are\* **related /not related** (\*) to any officer of Bareilly Smart City Limited, Bareilly of the rank of Assistant Engineer & above. I/We\* am/are\* aware that, if the facts subsequently proved to be false, my/our\* contract will be rescinded with forfeiture of E.M.D and security deposit and I/We\* shall be liable to make good the loss or damage resulting from such cancellation.

I/We also note that, non-submission of this certificate will render my/our tender liable for rejections.

(\*) – Strike out which is not applicable

**SIGNATURE OF THE BIDDER**

### **ANNEXURE 13: No Deviation Certificate**

To

**The Chief Executive Officer,**  
Bareilly Smart City Limited,  
C/o Bareilly Municipal Corporation,  
Bareilly

This is to certify that our offer is exactly in line with your RFP enquiry (including amendments) no. \_\_\_\_\_ dated \_\_\_\_\_. This is to expressly certify that our offer contains no deviation either Technical (including but not limited to Scope of Work, Business Requirements Specification, Functional Requirements Specification, Hardware Specification and Technical Requirements Specification) or Financial in either direct or indirect form.

(Authorized Signatory)

Signature: Name: Designation:

Address:

**Seal**

Dated: DD/MM/YYYY

#### **ANNEXURE 14: Self-Decalaration certificate**

1. I/We have visited the site and have fully acquainted with the local situation regarding the materials, labour and factors pertaining to the work for completion in all respect before submitting the tender.
2. I/We have carefully studied the conditions of the construction, specifications, contract condition and all other document relating to this work and agree to execute the same accordingly.
3. I/We solemnly pledge that I/We shall be sincere in discharging my/our duties as responsible contractor and complete the work within the prescribed time limit. In case there are deviation from the construction program, I/We shall abide by the decision of Engineer-in-charge for revision of the program and arrange for the labor, materials, equipment etc. accordingly.
4. In the event of award of the work to me/us, I/We under the entire responsibility for the structural stability to reconstruct / replace the whole or part of the component of the structure in the event of failure or improper functioning/improper constructions within a period of one year from the date of completion without asking for extra payment from any account to the department.
5. I/We undertake that I/We shall not claim any escalation of cost on account of materials, laborers, taxes, natural calamities, public nuisance, miscreants or any account in connections with work within execution of the work till the project completion period and shall not be entertained by the department (BSCL, Bareilly).
6. In case of violation of contents of department's tender documents in conditions or in any form, my /our offer / tender shall be rejected by the department without any intimation to me/us.

(\*) – Strike out which is not applicable

**SIGNATURE OF THE BIDDER**



**ANNEXURE 15: Draft Memorandum Of Understanding (Mou)  
For Joint Venture / Consortium Participation**

**BETWEEN**

M/s.....having its registered office at..... (hereafter referred to as ..... ) acting as the Lead Partner of the first part. And M/s.....having its registered office at.....(hereafter referred to as '.....') in the capacity of a Joint Partner/ Consortium Partner of the other part.

The expressions of.....and .....shall whatever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "the Parties" and individually as "the Party"

WHEREAS; Bareilly Smart City Limited (hereinafter referred to as "Client") has invited bids for.....(insert name of work).....

**NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:**

1. The following documents shall be deemed to form and be read and construed as an integral part of this MOU.
  - i. Notice for bid, and
  - ii. Tender document
  - iii. Any Addendum / Corrigendum issued by (Bareilly Smart City Limited)
  - iv. The Tender submitted on our behalf jointly by the Lead partner.
2. The 'Parties' have studied the documents and have agreed to participate in submitting a 'Tender' jointly.
3. The name of the Joint Venture firm shall be\_\_\_\_\_.
4. M/s..... shall be the lead member of the JV / Consortium for all indents and purpose and shall represent the Joint Venture in its dealing with Client. For the purpose of submission of Tender proposals, the parties agree to nominate ..... as the leader duly authorized to sign and submit all documents and subsequent clarifications, if any, to the Client. However, M/s..... shall not submit any such proposals, clarifications or commitments before securing the written clearance of the other partner which shall be expeditiously given by M/s..... to M/s.....
5. The 'Parties' have resolved that the distribution of share and responsibilities is as under:
  - a) Lead Partner share.....%;  
Responsibilities .
    - i).....
    - ii).....
    - iii).....
  - b) Joint Venture / Consortium Partner's share.....%  
Name.....

## Responsibilities

- i).....
- ii).....
- iii).....

### 6. **JOINT AND SEVERAL RESPONSIBILITIES**

The Parties undertake that they shall be jointly and severally liable to the client in the discharge of all the obligations and liabilities as per the contract with the client and for the performance of contract awarded to their JV / Consortium partners

7. **ASSIGNMENT AND THIRD PARTIES** The parties shall co-operate throughout the entire period of this MOU on the basis of exclusively and neither of the parties shall make arrangement or enter into agreement either directly or indirectly with any other party or group of parties on matters relating to the Project except with prior written consent of the other party.

8. **EXECUTIVE AUTHORITY** The said Joint Venture/ The Lead Bidder (in case of Consortium partners) through its authorized representative shall receive instructions, payments from the client. The management structure for the project shall be prepared by mutual consultations to enable completion of project to quality requirements within permitted cost and time.

9. **GUARANTEES AND BONDS** Till the award of the work, the lead partner shall furnish Earnest Money and all other bonds/guarantees to the Client on behalf of the Joint Venture, which shall be legally binding on all the partners of the Joint Venture.

10. **INDEMNITY** Each party hereto agrees to indemnify the other party against its respective parts in case of breach / default of the respective party of the contract works of any liabilities sustained by the Joint Venture.

11. For the execution of the respective portions of works, the parties shall make their own arrangements to bring the required finance, plants and equipment, materials, manpower and other resources.

12. **DOCUMENTS & CONFIDENTIALITY** Each party shall maintain in confidence and not use for any purpose related to the Project all commercial and technical information received or generated in the course of preparation and submission of the bid.

13. **ARBITRATION** Any dispute, controversy or claim arising out of or relating to this agreement shall be settled in the first instance amicably between the parties. If an amicable settlement cannot be reached as above, the Settlement of disputes in connection with the contract will be dealt with and governed by Clause 63 & 64 of General Condition of Contract for Works as amended upto date. The Venue of the arbitration shall be Bareilly.

14. **VALIDITY This MOU/ JV/ Consortium Partners** Agreement shall remain in force till the occurrence of the earliest to occur of the following unless by mutual consent, the parties agree in writing to extend the validity for a further period.

- a. The Tender submitted by the joint venture is declared unsuccessful, or
- b. Cancellation / shelving of the project by the client for any reasons prior to award of work.
- c. Execution of detailed JV agreement by the parties, setting out detailed terms after award of work by the client.

15.This MOU is drawn in.....number of copies with equal legal strength and status. One copy is held by M/s..... and the other by M/s..... & M/s..... and a copy submitted with the proposal.

16.This MOU shall be construed under the laws of India.

17.**NOTICES** Notices shall be given in writing by Fax confirmed by registered mail or commercial courier to the following Fax numbers and addresses.

Lead Partner

.....

.....

Address)

Email:

Other Partner

.....

.....

(Name and Address)

Ph no.

Email:

(Name and

Ph: no:

IN WITNESS WHERE OF THE PARTES, have executed this MOU the day, month and year first before written.

M/s.....

.....

(Seal)

M/s.....

.....

(Seal)

Witness:

1.....(Name & Address)

2.....(Name & Address)

### DETAILS OF PARTICIPATION IN THE JOINT VENTURE / CONSORTIUM PARTNERS

| Participation Details   | FIRM 'A' (Lead Member) | FIRM 'B' (Member) | FIRM 'C' (Member) |
|---|------------------------|-------------------|-------------------|
| Financial   |                        |                   |                   |
| Name of the Banker(s)   |                        |                   |                   |
| Planning  |                        |                   |                   |
| Key professional /Development Professional                                      |                        |                   |                   |
| <b>Execution of Consultancy Services (Give details on contribution of each)</b> |                        |                   |                   |
| Design and up to Bid process  |                        |                   |                   |
| Implementation support  |                        |                   |                   |

**ANNEXURE 16: Conduct and Anti-Collusion Certificate**

(To be notarized on Non-Judicial Stamp Paper of Rs.100)

I / We hereby certify and confirm that in the preparation and submission of our Bid for **Request for Proposal [RFP] for “Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission”** against the RFP issued by Authority, that

I / We undertake that, in competing for the contract, I / we will strictly observe the laws against fraud and corruption in force in India namely Prevention of Corruption Act 1988.

I / We declare that our organization have never been blacklisted by any department / units of Government of India or State Governments or Union Territories in India for any of the reasons of committing serious misconducts or have been charged with committing criminal action(s), or dissatisfaction with the performance of our services, or violation of any terms and conditions of the Agreement. In case if such misconducts are found to have been committed by us with documentary evidences, our contract can be summarily cancelled with the forfeiture of the security and performance guarantees we have executed with the Authority.

I / We hereby certify and confirm that in the preparation and submission of our Bid, I / we have not acted in concert or in collusion with any other Bidder or other person(s) and also not done any act, deed or thing which is or could be regarded as anti- competitive.

I / We further confirm that I / We have not offered nor will offer any illegal gratification in cash or kind to any person or agency in connection with the Bid.

I / We further acknowledge that on any later date, if it was found that I / We indulged in any of the corrupt activities mentioned in Prevention of Corruption Act 1988, the Authority has the right to take necessary legal action.

Dated this .....Day of ....., 201...

Place:

.....

(Name of the Bidder)

.....

(Signature of the Bidder / Authorised Person)

.....

(Name of the Authorised Person)

**Seal**

Business Address:

### ANNEXURE 17: Certificate for the Net Worth

<<Required for lead bidder/sole bidder >>

Financial Year

Net Worth (Rs Crore)

2018-19 (as on the last day of the bidders' financial  
year 2018-19)

|   |
|---|
| <b>Certificate from the Statutory Auditor/Practicing Chartered Accountant</b> |
|---|

This is to certify that..... [*Name of the Firm*] [*Registered Address*] has a net worth as shown above against the respective years. The net worth has been computed as (Subscribed and Paid up Equity + Reserves less (Revaluation Reserves + miscellaneous expenditure not written off).

Name of Authorized Signatory:

Designation:

Name of firm:

(Signature )

Registration No:

Seal of firm:

## **Section V – Deleted**

## **Section VI - Fraud and Corruption**

- 6.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the Letter of Acceptance and/or Letter of Award and during the subsistence of the Contract Agreement. Notwithstanding anything to the contrary contained herein, or in the Letter of Acceptance and/or Letter of Award or the Contract Agreement, the Employer shall reject a Bid, withdraw the Letter of Acceptance and/or Letter of Award, or terminate the Contract Agreement, as the case may be, without being liable in any manner whatsoever to the Bidder or Contractor or Concessionaire, as the case may be, if it determines that the Bidder or Contractor or Concessionaire, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, the Employer shall forfeit and appropriate the Bid Security or Performance Security, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to the Employer towards, inter alia, time, cost and effort of the Employer, without prejudice to any other right or remedy that may be available to the Employer hereunder or otherwise.
- 6.2 Without prejudice to the rights of the Employer under Clause 6.1 hereinabove and the rights and remedies which the Employer may have under the Letter of Acceptance and/or Letter of Award or the Contract Agreement, if a Bidder or contractor or Concessionaire, as the case may be, is found by the Employer to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the Letter of Acceptance and/or Letter of Award or the Contract Agreement or the execution of the Contract Agreement, such Bidder or Contractor or Concessionaire shall not be eligible to participate in any tender or RFB issued by the Employer during a period of 3 (three) years from the date such Bidder or Contractor or Concessionaire, as the case may be, is found by the Employer to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.
- 6.3 For the purposes of this Clause 6, the following terms shall have the meaning hereinafter respectively assigned to them:
- (a) “corrupt practice” means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Employer who is or has been associated in any manner, directly or indirectly with the Bidding Process or the Letter of Acceptance and/or Letter of Award or has dealt with matters concerning the Contract Agreement or arising therefrom, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Employer, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the Letter of Acceptance and/or Letter of Award or after the execution of the Contract Agreement, as the case may be, any person in respect of any matter relating to the Project or the Letter of Acceptance and/or Letter of Award or the Contract Agreement, who at any time has been or is a legal, financial or technical adviser of the Employer in relation to any matter concerning the Project;
- (b) “fraudulent practice” means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process ;

- (c) “coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bidding Process;
- (d) “undesirable practice” means (i) establishing contact with any person connected with or employed or engaged by the Employer with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- (e) “Restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.



## Part 2 - Section VII- Scope of work

The scope of work covered in this tender shall be based on the EPC ( Engineering, Procurement & construction) model as per the specifications, drawings, instructions, orders issued to the contractor in this tender. The Work Shall be executed on Preparation of Engineering drawings, Procurement and Construction Basis. Details and drawings given in Tender document is for information purpose only and successful bidder shall undertake confirmatory survey for accuracy and completeness of data (like Geotech, Underground Utility, topographic survey etc.). All the construction of building blocks in handicraft center site and bareilly haat site with external development etc as specified in the tender drawings and specifications shall be in the scope of the successful bidder. The bidder shall obtain all required approvals from the relevant authorities. The engineering design and construction shall be carried out as per the Green Building design and construction norms specified by GRIHA ( miniumum 3 star).

Statutory and other charges for getting various required approvals shall be paid by BSCL , however, all incidental charges and laisoning work for obtaining the approvals shall be in scope of successful Bidder. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in individual items and covered areas specified in the RFP or required for the project as specified in the contract.

### Broad Scope of Tender

The Bareilly Smart City Limited (abbreviated as 'BSCL' and Referred to as the 'Employer' in these documents) invites Lumpsum rate Tenders from eligible Bidders for the Works as defined as Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission." in this document and referred to as "the Works").

1. Contractors are requested to visit the site prior to filing/submission and undertake self-assessment of all the necessary works as per the specification and plans including all attributes/matters related for completion of this project.
2. The Contractor is to seek clarification prior to the submission date (where necessary), to have clarity of all the activities required to be carried out for a successful and timely completion of this project and the works which shall be carried out by the successful contractor.
3. The works under this Contract comprises, building of Bareilly Haat and Handicraft centre and all related works including all recreational and other items.
4. Other works will include installation or restoration of existing water, drainage and electrical power utilities and dismantling og existing structures on site.
5. All works as per Green Building design principles of minimum GRIHA 3 star rating.
6. The Architecture drawings in Annexure 20 & the detailed specifications in scope of work form the minimum scope of work to be implemented in the project that have to be followed.
7. The contractor shall furnish all labour, material, tools and equipment necessary to complete the works as indicated or inferred in the supporting drawing package. Any item not specifically shown in the drawings or specified, but normally required to conform to the required outcome or such intent, should be considered part of the work unless identified by the contractor prior to commencement of works. The contractor shall include and price for such item in the commercial bid accordingly.

8. The works shall be completed within the scheduled time unless otherwise approved by the Client or its representatives and shall be certified by the Employer upon Practical Completion.
9. The landscape planting shall be provided and in a healthy and vigorous growing condition.
10. The contractor shall submit for approval within 7 days of the issue of Letter of Award, his proposed Work Programme based on the criteria of the overall schedule of works, showing the intended sequences, stages and order of proceeding with the works together with the period of time he has estimated for each and every stage of the progress including the resources and plant required.
11. The successful bidder shall have to prepare and submit detailed design drawing(GFC) as per the tender drawing set and engineering drawings before execution and 'As Built Drawings' after execution depicting the exact construction carried out on site, in soft and hard copy format. Statutory and other charges for getting various required approvals as required shall be in scope of Successful bidder.
12. The successful bidder shall undertake confirmatory survey for accuracy and completeness of data prior to commencing the site works. It is in scope of successful Bidder to undertake all relevant Site surveys, obtaining all required approvals from the relevant regulatory authorities, , Prepare and submit maintenance manual to client for approval at least 4 weeks before start of post construction maintenance period. Key tasks/deliverables by the Contractor include:
  - b) The contractor should submit a detailed timeline for scope of work to be carried out including details of the man power deployment for the projects prior to commencing the works for approval by the Employer.
  - c) The Employer or his representatives will supervise and monitor the progress of construction phase and Contractor shall provide necessary coordination.
  - d) Procurement programme indicating purchasing and dispatch of materials as per the implementation timelines. Shall also provide the supporting evidence for all the items delivered to the site and take possession of said items.
  - e) The Contractor shall prepare presentation GFC and shop drawings, Detailed engineering, layout, construction drawings, civil works construction, supply, installation/erection, testing and commissioning of Mechanical, Electrical, IT work etc., and operation & maintenance of project, including future up-gradation, etc.
  - f) Preparation and submission of periodical progress report for all the stages on a weekly basis. The Contractor must be aware of general and specific site conditions, topography and any existing landscape prior to commencement of any landscape works on site.
  - g) The contractor shall be responsible for taking electric connection as per requirement from MVVNL(Madhyanchal Vidyut Vitaran Nigam Limited) for which the demand note fee for line , Transformer etc. shall be paid by the contractor. BSCL shall assist the contractor in getting the required connection
  - h) Construction of Approach Road within Campus (if required) shall be in the scope of the contractor.
  - i) Construction of all Pre-Engineered steel / civil structures including all civil works, buildings, water supply, storm water drainage, rain water harvesting as per latest prevailing specification and as per CPHEEO. Building code, NCB including electric fittings shall be applicable.

- j) Third party inspection (TPI) at manufacturing units and site required for all electro-mechanical items along with submissions of respective QAP's by contractor. Third party inspection (TPI) during manufacturing, during assembling or on testing before packing and after unloading at site is required. Cost of TPI along with clients and its representative's visits shall be borne by the contractor. (TPI shall be selected after BSCL's Consent).
- k) The contractor will also provide luminous painted warning / caution notice boards with flickering light arrangements, where the work is in progress.
- l) Shifting of existing utilities like RCC pipe, Water supply lines, cables with consultation and after approval of concern department etc.
- m) Approval charges of Structural design and drawing from various agencies like IIT or reputed Universities after consultation with Client will be done by contractor on his own and the approved drawing / design set shall be submitted to BSCL.
- n) The sub-soil water is likely to be encounter during excavation. The Contractor is advised to carry out its own investigations and gather information on the water table/subsoil conditions. The suitable and approved dewatering system should be adopted for execution of work. Nothing extra shall be paid on this account.
- o) The sub-soil water pumped will be drained off to the proper disposal points, contractor will have to make arrangements to dispose-off the pumped sub-soil water to satisfaction of the Engineer-in- Charge/BSCL and nothing extra for dewatering of sub-soil water drain etc. will be paid.
- p) The contractor shall develop A Exterior model & a 3min walkthrough video on a relevant software. The model shall be rendered to allow viewing of the model from various viewpoints to show all structures, facilities and equipment with different Color lighting
- q) Electrical connection for the purpose of Construction work will be taken by contractor at its own cost and its initial and recurring cost will not be reimbursed to contractor.
- r) Shifting of existing utilities like existing pipeline, cables etc., if required are to be taken by as per satisfaction of the line department. The charges for the same shall be deposited by the contractor upfront and the same shall be reimbursed by BAREILLY SMART CITY LIMITED upon submission of receipts (if any).
- s) Supply, Erection, Testing & Commissioning of Safety Equipment's at required locations including Safety Showers, Sand Buckets, Fire Extinguishers, Fire Alarms, pump, sprinklers, Overhead Tank, hose, UG tank, etc. including necessary firefighting system, as per the applicable building bye laws and other requirements as needed for NOC. Contractor shall Fire NOC from relevant department.

Note: If work item is not detailed under Indian Standards, appointed contractor should refer to relevant international standard (BS or equivalent). This should be approved by Employer prior to commencing any works on site;

#### **SITE OFFICE DURING CONSTRUCTION**

The contractor shall provide one site office at the project site consisting two rooms along with one attendant for BSCL field Engineers. The contractor shall provide 1 Nos. desktop with latest configuration including 1 Nos. laser

printers (B/W) to the BSCL staff for monitoring of execution and maintenance work. Site office should be well furnished with electrical power supply, equipment's and connection facility. Comfortable flooring along with toilet block facility shall be provided by contractor. Separate septic tank should be provided for toilet block. Modern Notice board should be provided in the site office to display the notice or work schedule plan. No additional cost shall be paid for site office.

#### **TESTING LABORATORY SET UP DURING CONSTRUCTION**

i. The contractor shall arrange a testing laboratory with all testing equipment's and trained staff required for proper testing of construction material likely to be used in execution of work as per QA- QC manual, at his own cost. Calibration certificate of each equipment should be available on site with up to date validity period.

ii. Testing record book and Test results of each test with up to date shall be maintained by the contractor. All the records of testing in lab should be signed and stamped with the witness of the testing and field engineers of BSCL officers.

#### **TIME SCHEDULE**

The work shall be done by the contractor according to the work schedule plan fixed in consultation with the BSCL or/and their authorized representatives. Bar/PERT/CPM chart showing detailed program shall be submitted and adhered to by the contractor. Site order book shall be provided and maintained by the contractor. Site order book should be up to date and signed and stamped by BSCL and CONSULTANT officials/Field Engineer. Compliance of the site order given by BSCL, CONSULTANT field engineer, officials shall be complied by the contractor with his sign and stamp.

#### **OTHER SERVICES**

##### **AREA OUTSIDE THE SITE**

i. In the event of the Contractor making use of any special or temporary way or accommodation acquired by him or any tip for the disposal of surplus materials, or any borrow pit or quarry, he shall obtain the written consent of the owner, occupier or authority having charge of the land in which such way, accommodation or pit is situated and shall make a record agreed by the owner, occupier or authority as aforesaid of the condition of the surface of that land before entering thereon.

ii. The Contractor shall permit BSCL and its representative to access for the purposes of the Contract to any such special or temporary way or additional accommodation.

iii. In the event of the Contractor making use of any special or temporary way or additional accommodation made available to him by BSCL for the purpose of the Contract, the land in which such way or accommodation is situated shall be deemed to be part of the Site. On completion of the works at site, the Contractor shall reinstate the area to its original condition to the satisfaction of BSCL or it's representative.

iv. For the purposes of this Clause, 'accommodation' shall be deemed to include housing, offices, workshops, warehouses, and storage areas.

##### **CLEARANCE OF THE SITE**

i. The Contractor shall clear all the Sites to the extent as required for checking the setting-out. Clearance of the Site shall also include demolition and removal of all articles, excavation/filling by earth, objects and obstructions, which are expressly required to be cleared. The Contractor shall ensure that the parts of the Site to be occupied by the proposed Permanent Works are clear and shall maintain the remainder of the Site as may be required for access and temporary works areas required for the project.

ii. The Contractor shall remove the material arising from such clearance and dispose of it in a manner at a location, to the approval of BSCL. The Contractor shall fill and make good with appropriate materials those cavities and losses of soil, which result from clearing the parts of the Site not subsequently to be occupied by the Works.

iii. The Contractor shall not clear the Site of any existing structure without the prior written instruction of BSCL.

#### **CLEARANCE AND REINSTATEMENT OF THE SITE ON COMPLETION**

On completion of the Works, the Contractor shall clear any temporary works and temporary access roads and reinstate the areas to their original condition to the satisfaction of BSCL.

#### **ACCESS FOR THE BSCL AND ITS REPRESENTATIVE**

The Contractor shall permit BSCL and its representative and any person authorized by BSCL including workmen of BSCL, other Contractors for utility undertakings access for the purposes of the Contract to all areas of the Site and to any additional accommodation or temporary way leave for the duration of the Contract period.

#### **WATER SUPPLY AND WASTEWATER DISPOSAL AT SITE**

i. The Contractor shall make his own arrangements for water supply during construction at site and he shall ensure the quality of the water remains potable for the purpose for which it is intended. The Contractor shall also conduct weekly/bi-weekly test for water quality and comply with the quality requirements, as directed by the BSCL's representative. If required, Contractor may construct a tube well as per the ground water norms and legal formalities with help of BSCL. No additional cost will be paid for the construction of tube well including laying of pipeline and necessary fittings and electro-mechanical items which is assumed the part of the project.

ii. In case of tap water connection taken by the contractor for construction, the water bill/charges should be paid by the contractor till the handover of the project.

iii. Wastewater generated

iv. During the construction, should be disposed as per the norms of CPCB. If there are any irregularity in disposal of wastewater as per the norms of CPCB/any authority appointed by Law, only the Contractor will be liable for the same.

#### **LATRINES AND WASHING FACILITIES**

i. Throughout the period of construction works the Contractor shall provide, maintain and clean and sufficient latrines and washing facilities for use by his employees. He shall ensure that his employees do not foul the Site but make proper use of the latrines. Where practicable, the latrines shall be connected to the nearest sewer, or if this is not practicable the Contractor shall provide an adequately sized septic tank and soak-pit.

ii. The Contractor is also to provide separate latrines to the above requirements for BSCL's staff.

iii. After completion, the latrines and washing facilities shall be removed, all ground disinfected and the surface reinstated to the satisfaction of BSCL.

#### **ELECTRICITY FOR CONTRACTOR'S USE ON SITE**

i. The Contractor shall be responsible for provision of electrical supply at site and will pay electricity bills for the purpose of construction up to testing and before Handover of Site.

ii. The installation shall comply with all the relevant regulations, Indian Standards and Codes of Practice, and Health and Safety requirements, etc. The Contractor must take every possible precaution to ensure that his installation is safe and injury to personnel or damage to project and buildings is avoided. The Contractor shall be fully responsible for all safety, etc. The Contractor shall test the temporary site distribution system every 3 months for compliance with the relevant standards.

**REFUSE DISPOSAL ON SITE**

Refuse and rubbish of every kind shall be removed from the Site and disposed of by the Contractor at his own expense, frequently and regularly so as to keep the Site in an approved wholesome, hygienic and tidy condition to the satisfaction of BSCL.

**SETTING OUT**

The Contractor shall submit all drawings based on his detail design, layout and hydraulics and will be approved by the Authorised Representative of BSCL/BDA. The contractor has to set out the Facility, as per the approved Design and Drawings.

**CONSTRUCTION DOCUMENTS**

These documents shall include:

- Layout Plan
  - Architectural Drawings/ 3D Renderings;
  - Detailed structural design and good-for-execution (construction) drawings pertaining to all components of the project
  - Drawings showing the size, position and other necessary details of all IT, mechanical and electrical equipment and fixtures;
  - Wiring diagrams, power & motor control gear in power cum Motor Control Center and motor control center.
  - Details of foundations, position of openings, etc., for the pumps, motors, Blowers, starter modules, Low- and High-tension panels, etc.
  - Elementary diagram and manufacturers' shop and part drawings for each equipment, including cut section drawings.
  - Drawings depicting services like internal illumination and ventilation, building water supply, sanitation and plumbing, service roads, landscaping, area lighting, storm water drainage, rain water harvesting (to ensure optimum utilization of rain water run off from the entire project area, to avoid flooding) etc.;
  - HVAC Drawings, Firefighting Drawings, Plumbing Drawings.
  - Any other design and drawings to comply with the Procuring Entity's requirement as indicated in Detailed Technical Specifications.
  
  - The documents and drawings shall be in sufficient detail for review of the Procuring Entity's Representative. The scale of the drawing has to be chosen accordingly in coordination with the Procuring Entity's Representative in respect of hard copies, the soft copies shall normally be made available on actual scale basis. The drawings shall be of standardized sizes and as instructed by the Procuring Entity's Representatives. The drawings shall contain the following basic information in the nameplate:
    - Project name
    - Name and number of the Contract
    - Contractor's name
    - Number and title of the drawing
  
    - Date
    - GFC stamp
    - Draftsman's name
  
  - Revision Number (R0 for drawing submitted initially and R1, R2, etc., for drawings submitted subsequently).
- A blank space 90 x 50 mm shall be provided immediately above the title block for the approval stamp. If required, the detailed design and the execution drawings shall be submitted only after verification by an institute approved by the Procuring Entity.

## Detail Scope of Works

### General

Contractor shall be responsible for making the facility fit for the intended purpose while performing all of its obligations covered under the Contract Document in its entirety. The work shall be done in accordance to the drawings approved by the statutory authorities. Scope includes Site / Campus Planning, Demolition & disposal of existing structures, boundary wall, detailed engineering design, shop/GFC drawings and construct entire integrated campus in accordance with the same. The scope shall also include preparation of as-built drawings before handing over the work to the Employer, maintaining the Quality assurance & Quality control (QA&QC) including control, corrective actions, reporting and arranging for regular inspections by all concerned. As deemed necessary by the Employer/Employer's Engineer/PMC, Contractor shall execute necessary mock-ups of all items/activities related to the Work performed required under this Contract as indicated below and the cost for the same shall be deemed to be included in the Contract price. The Contractors are advised to visit the site before submitting the Proposal for the works. The Scope includes all temporary works required for the completion of works, testing and commissioning and handover till Defect liability Period.

While the Tender drawing & specifications form a guideline for the project, the contractor shall develop the detailed engineering drawings and calculations for each aspect of the project which should be got approved from a reputed government institute and then submitted to the employer keeping the Basic Architectural design of the project. The Structure stability responsibility shall remain solely with the contractor. The scope shall also include the execution of the project including all external development, landscaping & building works with civil, plumbing, sanitary fixtures, interior, finishing, internal & external electrification, LED Lighting, telecommunication, LAN system & cable TV work, Smoke Detection system, speaker system, security system, plumbing works, Firefighting as per NBC, HVAC works with VRF system, Rooftop Solar power plant, recreation equipments, external development and connection with various external services headers etc as per detailed scope of work. Obtaining occupation certificate and any other approvals from statutory authorities, if required, is also included in the scope of work.

### Project Brief

The work to be executed under the lump sum rate contract shall be construction of following buildings:

#### Site A- Handicrafts Promotion Centre

1. Design Incubation Centre Block
2. Training Centre and Residential Block
3. Multipurpose Building
4. Gatehouse
5. External Development
6. Basement

#### Site B – Bareilly Haat

1. Demolition of Existing Building
2. Building 01- Gatehouse
3. Building 02- Shopping Centre

4. Block 03 – Shopping Kisok (C Shape)
5. Building 04 – Food Centre
6. Block 5 – Interpretation Centre
7. Building 06 – Handicrafts Shopping Centre
8. Building 07 – Convention Centre
9. Building 08 – Dormitory
10. Basement – at two locations
11. External Development

## **SCOPE**

The scope of work is the construction of buildings which as listed above which shall include all civil, Architectural, structural, plumbing, sanitary, fixed interior, finishing, internal electrification, telecommunication, LAN system & cable TV work, Furniture, connection of sewer/ water line to nearest headers etc for various types of buildings on site as per detailed scope. Obtaining occupation certificate and any other approvals from statutory authorities, if required, is also included in the scope of work.

## **Site A- Handicrafts Promotion Centre**

### **1. Design Incubation Centre Block**

It shall be four storied Framed Structure building. The building shall be the first block after entering the Handicrafts Site. Total built up area of the block is 4480 sqm. The building would be constructed as a state-of-art office/retail space at the ground floor with Design Incubation Centre on the above floors. The scope of work covers the entire civil work, fixed interior, elevation work, Internal Electrical / telecom / IT / access control Installation, Internal Water Supply & Sanitary Installations, fire fighting, HVAC, acoustic treatment, stage lighting, Installation of Seats for Auditorium and connection to nearby water supply, Sewerage, fire fighting & electrical System, IT & access control network, Rooftop Solar system. The external development and Façade of the building shall also be included.

### **2. Training Centre and Residential Block**

It shall be four storied Framed Structure building. The building shall be the Second block after entering the Handicrafts Site. Total built up area of the block is 4480 sqm. The building would be constructed as a state-of-art office/retail space at the ground floor with Training Centre and Hotel floor above. The scope of work covers the entire civil work, fixed interior, elevation work, Internal Electrical / telecom / IT / access control Installation, HVAC, Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage, fire fighting & electrical System, IT & access control network, Rooftop Solar system. The external development and Façade of the building shall also be included.

### **3. Multipurpose Building**

It shall be a single storied PEB structure for Multipurpose hall with the total area of 1300 sqm. . The structure shall be designed with steel portals incorporating the latest IS codes with provision of solar panels on the roof. The wall and roof sheeting used has to be insulated with at least 50mm PUF panel or equivalent. The detailed structure design and specifications shall be submitted for approval before fabrication. The structure shall be made watertight with suitable waterproofing techniques, flashings, grouts etc.



#### **4. Gatehouse/Sentry Post**

It shall be single storied framed structure building. The building shall be the main entrance of the Handicrafts Promotion Side. The scope of work covers the entire civil work, elevation work, Electrical / telecom / IT / access control /security Installation, Internal Water Supply & Sanitary Installations, fire fighting and connection to nearby water supply,

#### **5. External Development**

Development of Area in terms of earth filling in selected areas, pavements, Roads, parking, Water Supply & Distribution lines, sewer lines, storm water drainage, street lighting etc. of entire 14500 sqm of land shall be in the scope of work. In addition scope covers the connection to the hook up points for various services like water supply, firefighting, electrical feeder / sub station.

#### **6. Basement :**

Basement shall be planned below the block1 and block 2 of the handicraft site. And the total basement area in Site A shall be 3663 sqm. Scope of Work covers the entire civil work, Mechanical ventilation, Electrical , Drainage and Firefighting.

### **Site B: Bareilly Haat**

#### **Demolition of Existing Structures**

The existing Bareilly haat site consist of Office block, police Post ,Shopping Blocks, Food Centre Blocks, training centre Block, Godown Block, Toilet Blocks with total built up area of 2000 sqm. Existing Roads (1850 sqm, Pedestrian Path and external flooring with total area of 2650 sqm shall also be part of Dismantling works and shall be part of the scope of work so that the new design is implemented from the scratch after the clearing of the site with disposal of debris at appropriate location.

#### **Building 01- Gatehouse**

It shall be single storied framed structure building. The building shall be the main entrance of the Site B – Bareilly haat and shall be a state of the art building. The scope of work covers the entire civil work, elevation work, Electrical / telecom / IT / access control /security Installation, Internal Water Supply & Sanitary Installations, fire fighting and connection to nearby water supply,

#### **Building 02- Shopping Centre**

It shall be three storied Framed Structure building with total built up area of around 1845 sqm. It shall consist of large/High end shops at the front end of the Bareilly haat site. The scope of work covers the entire civil work, elevation work, Internal Electrical / IT / Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage, fire fighting & electrical System. The external development and Façade of the building shall also be included.

#### **Block 03 – Shopping Kiosk (C Shape)**

These shall be single storied cluster of Shopping Kiosk placed in front of Shopping centre and with the coverage area of 500 sqm. The scope shall include civil and electrical works for the kiosks.

**Building 04 – Food Centre**

It shall be three storied Framed Structure building with total built up area of around 3650 sqm. It shall consist of food shops of various sizes at different floors with interconnected building blocks as per the layout and shall be placed at the rear end of the site. The scope of work covers the entire civil work, elevation work, Internal Electrical / IT / Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage. The external development and Façade of the building shall also be included.

**Block 5 – Interpretation Centre**

It shall be a single story structure planned at the basement level, accessible from the open air theatre with total coverage area of 1300 sqm. The scope of work covers the entire civil work, fixed interior, elevation work, Internal Electrical / telecom / IT / access control Installation, Internal Water Supply & Sanitary Installations, fire fighting, HVAC and connection to nearby water supply, Sewerage, fire fighting & electrical System, IT & access control network, HVAC, acoustic treatment at AV room.

**Building 06 – Handicrafts Shopping Centre**

It shall be two storied Framed Structure building with total built up area of around 1270 sqm. The scope of work covers the entire civil work, elevation work, Internal Electrical / IT / Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage, & electrical System. The external development and Façade of the building shall also be included.

**Building 07 – Convention Centre**

It shall be four storied Framed Structure building with total built up area of around 6900 sqm. It is planned such that it can be accessed from the Handicraft site as well. The scope of work covers the entire civil work, elevation work, Internal Electrical / IT / Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage, Solar rooftop System, HVAC. The external development and Façade of the building shall also be included.

**Building 08 – Dormitory**

It shall be two storied Framed Structure building with total built up area of around 1150 sqm. The scope of work covers the entire civil work, elevation work, Internal Electrical / IT / Internal Water Supply & Sanitary Installations, fire fighting, and connection to nearby water supply, Sewerage, Solar Rooftop System & electrical System. The external development and Façade of the building shall also be included.

**Basement – at two locations**

Basement shall be planned with total basement area in Site B of 11700 sqm. Scope of Work covers the entire civil work, Mechanical ventilation, Electrical, Drainage and Firefighting.

### External Development

Development of Area in terms of earth filling in selected areas, pavements, Roads, parking, Water Supply & Distribution lines, sewer lines, storm water drainage, street lighting etc. of entire 26626 sqm of land of Site B shall be in the scope of work. In addition scope covers the connection to the hook up points for various services like water supply, firefighting, electrical feeder / sub station.

### Specifications and Standards

The integrated site of Bareilly Haat and Handicrafts Promotion Centre shall be designed and constructed in conformity with the Specifications and Standards given. Wherever the requisite specification for any material, workmanship, execution, testing. etc are not specified in this document, the contractor shall refer to up to date NBC / IS code specifications.

### Built Up Area Details and area programming

| TOTAL PROJECT AREAS |                     |  |             |  |
|---------------------|---------------------|--|-------------|--|
| S. No.              | Description         |  | Total (sqm) |  |
|                     | TOTAL SITE AREA     |  | 41138       |  |
|                     | TOTAL BUILT UP AREA |  | 44917       |  |
|                     | GROUND COVERAGE     |  | 10949       |  |

| URBAN HAAT AREA CHART |                     |            |             |   |
|-----------------------|---------------------|------------|-------------|---|
| BUILDING AREAS        |                     |            |             |   |
| S. No.                | Description         | Area (sqm) | Total (sqm) | Work to be done   |
|                       | TOTAL SITE AREA     |            | 26624       |   |
|                       | TOTAL BUILT UP AREA |            | 30932       |   |
|                       | GROUND COVERAGE     |            | 7392        |   |
| 1                     | EXISTING STRUCTURE  | 2000       | 2000        | Dismantling, Demolition AND DISPOSAL  |
| 2                     | BASEMENT            | 11700      | 11700       | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work |

|          |  |      |             |   |
|----------|--|------|-------------|---|
|          |  |      |             |   |
| <b>3</b> | <b>GATEHOUSE</b>                         |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work   |
| A        | GROUND FLOOR                             | 300  | <b>300</b>  |   |
|          |  |      |             |   |
| <b>4</b> | <b>SHOPPING CENTRE (G+2)</b>             |      |             |   |
| A        | GROUND FLOOR                             | 585  | <b>1845</b> | Civil work<br>Electrical work<br>Plumbing work<br>Firefighting work   |
| B        | FIRST FLOOR                              | 585  |             |   |
| C        | SECOND FLOOR                             | 585  |             |   |
| D        | MUMTY                                    | 90   |             |   |
|          |  |      |             |   |
| <b>5</b> | <b>SHOPPING KIOSKS</b>                   |      |             | Civil work<br>Electrical work   |
| A        | GROUND FLOOR                             | 500  | <b>500</b>  |   |
|          |  |      |             |   |
| <b>6</b> | <b>FOOD CENTRE (G+2)</b>                 |      |             | Civil work<br>Electrical work<br>Plumbing work<br>Firefighting work<br>Solar work                               |
| A        | GROUND FLOOR                             | 750  | <b>3650</b> |   |
| B        | FIRST FLOOR                              | 1400 |             |   |
| C        | SECOND FLOOR                             | 1400 |             |   |
| D        | MUMTY                                    | 100  |             |   |
|          |  |      |             |   |
| <b>7</b> | <b>INTERPRETATION CENTRE (BASEMENT)</b>  |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work               |
| A        | BASEMENT FLOOR                           | 1300 | <b>1300</b> |   |
|          |  |      |             |   |
| <b>8</b> | <b>HANDICRAFTS SHOPPING CENTRE (G+1)</b> |      |             | Civil work<br>Electrical work<br>Firefighting work  |
| A        | GROUND FLOOR                             | 660  | <b>1270</b> |   |
| B        | FIRST FLOOR                              | 550  |             |   |
| C        | MUMTY                                    | 60   |             |   |
|          |  |      |             |   |
| <b>9</b> | <b>CONVENTION CENTRE (G+2)</b>           |      |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A        | GROUND FLOOR                             | 1700 | <b>6900</b> |   |
| B        | FIRST FLOOR                              | 1800 |             |   |
| C        | SECOND FLOOR                             | 1600 |             |   |
| D        | THIRD FLOOR                              | 1600 |             |   |
| E        | MUMTY                                    | 200  |             |   |
|          |  |      |             |   |

|                              |                        |            |             |   |
|------------------------------|------------------------|------------|-------------|---|
| 10                           | DORMITORY BLOCK (G+1)  |            |             | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A                            | GROUND FLOOR           | 580        | 1150        |   |
| B                            | FIRST FLOOR            | 520        |             |   |
| C                            | MUMTY                  | 50         |             |   |
|                              |                        |            |             |   |
| 11                           | OPEN AIR THEATRE       |            |             | Civil work<br>Electrical work plumbing<br>Work  |
| A                            | GROUND FLOOR           | 400        | 400         |   |
|                              |                        |            |             |   |
| 12                           | STALLS                 |            |             | Civil work<br>Electrical work   |
| A                            | GROUND FLOOR           | 1425       | 1425        |   |
|                              |                        |            |             |   |
| 13                           | LIFT LOBBY + STAIRCASE |            |             | Civil work<br>Interior work<br>Electrical work  |
| A                            | GROUND FLOOR           | 220        | 220         |   |
|                              |                        |            |             |   |
| 14                           | GUARD ROOMS            |            |             | Civil work<br>Interior work<br>Electrical work  |
| 1                            | GROUND FLOOR           | 112        | 112         |   |
|                              |                        |            |             |   |
| 15                           | ELECTRICAL SERVICES    |            |             | Civil work<br>Interior work<br>Electrical work<br>Firefighting work   |
| 1                            | GROUND FLOOR           | 110        | 110         |   |
|                              |                        |            |             |   |
| 16                           | TICKET BOOTH           |            |             | Civil work<br>Interior work<br>Electrical work  |
| 1                            | GROUND FLOOR           | 30         | 50          |   |
| 2                            | GROUND FLOOR           | 20         |             |   |
|                              |                        |            |             |   |
| 17                           | EXTERNAL DEVELOPMENT   |            |             |   |
|                              |                        |            |             |   |
| 1                            | GREEN AREAS            | 2000       | 2000        | Site Plumbing,Site<br>Electrical ,Firefighting  |
| 2                            | SURFACE PARKING        | 670        | 670         |   |
| 3                            | ROAD                   | 5000       | 5000        |   |
| 4                            | PAVING                 | 8302       | 8302        |   |
| 5                            | KID'S PLAY AREA        | 650        | 650         |   |
|                              |                        |            |             |   |
| HANDICRAFT CENTER AREA CHART |                        |            |             |   |
| BUILDING AREAS               |                        |            |             |   |
| S. No.                       | Description            | Area (sqm) | Total (sqm) | Work to be done   |

|           |                             |             |              |   |
|-----------|-----------------------------|-------------|--------------|---|
|           | <b>GROUND COVERAGE</b>      |             | <b>3557</b>  |   |
|           | <b>TOTAL BUILT UP AREA</b>  |             | <b>13985</b> |   |
|           | <b>TOTAL SITE AREA</b>      |             | <b>14514</b> |   |
|           |                             |             |              |   |
| <b>18</b> | <b>BASEMENT</b>             | <b>3663</b> | <b>3663</b>  | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work               |
|           |                             |             |              |   |
| <b>19</b> | <b>BLOCK 1</b>              |             |              | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A         | GROUND FLOOR                | 1155        | <b>4480</b>  |   |
| B         | FIRST FLOOR                 | 1065        |              |   |
| C         | SECOND FLOOR                | 1135        |              |   |
| D         | THIRD FLOOR                 | 880         |              |   |
| E         | TERRACE FLOOR               | 245         |              |   |
|           |                             |             |              |   |
| <b>20</b> | <b>BLOCK 2</b>              |             |              | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work<br>Solar work |
| A         | GROUND FLOOR                | 1070        | <b>4510</b>  |   |
| B         | FIRST FLOOR                 | 1070        |              |   |
| C         | SECOND FLOOR                | 1070        |              |   |
| D         | FOURTH FLOOR                | 1070        |              |   |
| E         | TERRACE FLOOR               | 230         |              |   |
|           |                             |             |              |   |
| <b>21</b> | <b>BLOCK 3</b>              |             |              | Civil work<br>Interior work<br>Electrical work<br>Plumbing work<br>HVAC work<br>Firefighting work               |
| A         | GROUND FLOOR                | 1300        | <b>1300</b>  |   |
|           |                             |             |              |   |
| <b>22</b> | <b>GUARD ROOMS</b>          |             |              | Civil work<br>Interior work<br>Electrical work  |
| A         | GROUND FLOOR                | 32          | <b>32</b>    |   |
|           |                             |             |              |   |
| <b>23</b> | <b>EXTERNAL DEVELOPMENT</b> |             |              |   |
|           |                             |             |              |   |
| 1         | GREEN AREAS                 | 3500        | <b>3500</b>  |   |
| 2         | SURFACE PARKING             | 425         | <b>425</b>   |   |
| 3         | ROAD                        | 5632        | <b>5632</b>  |   |
| 4         | PAVING                      | 1135        | <b>1135</b>  |   |
| 5         | KID'S PLAY AREA             | 165         | <b>165</b>   |   |
| 6         | OAT                         | 100         | <b>100</b>   |   |

Contractor shall be responsible for Construction of above mentioned Complexes on Engineering, Procurement & Construction (EPC) basis at the Project Site situated in Bareilly. The Contractor is encouraged to introduce innovative and efficient designs for the Project provided that the Project Requirements stated in the RFP document and architectural layouts are fulfilled in entirety. Value Engineering and Green Building Concept are to be adopted.

1. It is entirely Contractor's responsibility to plan and prepare detailed working Drawings & designs as per the provisions of the RFP document. The design shall be as per the Project Requirement with respect to basic configuration of sizing and height as per the architectural layout provided
2. The scope includes the following:
  - i. Survey and soil testing of the site shall be performed by the contractor.
  - ii. Cleaning of grass and vegetation by manual means and its disposal.
  - iii. Design, Execute works for Complexes including all Pre-Engineered, civil, architectural, structural, interior and exterior finishes, service and systems like electrical and lighting works, mechanical, IT, Horticulture and landscaping, Plumbing, water supply and sewerage systems, firefighting, waterproofing system (with 5-year Commercial warranty, as provided by the manufacturer), HVAC, Roof sheeting system, Structural steel trusses etc. to make the building fully functional for all the disciplines with reference to tender drawings in bid document.
- v. Supply and installation of, Furnishing including wall claddings, Structure Glazing, electrical fixtures in the project , except loose furniture and equipment which shall be approved by Authorised Representative of BSCL before installation.
 

Wall Putty and cement plaster is to be taken up by contractor outside on all the surfaces as per the design and layout provided.

  - i. False Ceiling shall be provided in all the rooms and entrance lobbyas per design and as per standard recommendations of B&C norms and practice.
  - ii. The contractor shall take-up acoustics work with framing as per items in BOQ in the auditorium hall as per the requirement of using wood wool boards/ Full Tone tiles or similar products.
  - iii. The concrete shall be of grade approved by the Vetting Institute/BSCL as per structure drawings with vacuum dewatering along with use of Hardener.
3. **Air-Conditioning:** Supply and installation of Ductable Ceiling Mounted VRV / VRF System as required for optimum space and electric consumption and approved by Authorised Representative of BSCL including all civil works, refrigerant piping, drain piping and related electrical works.
4. Design and construction of the ventilation systems for the building and exhausts for the toilet area.
5. Water Coolers with purifier: Supply, installation and commissioning of water coolers with purifying system at each floor as per design requirements, and approved by Engineer-In- Charge
6. **Fire Fighting:** Supply, installation and commissioning of fire-fighting equipment, as per NBC Norms and as required by the Uttar Pradesh Fire Department / Nagar Nigam Bareilly for issuance of the No Objection Certificate (NOC).
7. Installation of CCTV and access control system, as required and approved by Engineer- In-Charge.
8. **External Development Works:** The area near Proposed Complexes is to be developed by landscaping internal road, parking and fixing of interlocking tiles granite /Sandstone Stone flooring, laid over 150mm-thick bed GSB and the joint shall be filled with fine sand for pathway along with PCC and parking (with marking by thermoplastic paint) as per approved drawings along with Plain cement concrete at base.
9. Wall Dado to be finished in Tile Finish upto 1.2 mtr height minimum in all common circulation area for low maintenance in smart decorative looks and all interiors of halls should be wall paneled as per requirement of space of use too match aesthetics , technical requirements and low maintenance purposes.

10. **Broad electrical scope of work** :This Scope covers the requirements of Design, Supply, Installation, Testing and Commissioning, Trial Run (SITC) of electrical equipment / DG Set and accessories required for Proposed Complex. This also covers the procedure to be adopted for Inspection, Testing and Commissioning for all electrical equipment's at site. The works shall be carried out strictly in accordance with the IS or ISO standards.
11. **Broad it scope of work**: Supply & Installation of computer system at Training block,Office areas, Admin Block, Gatehouse, Convention Centre Etc, Audio Visual System, Access Control Systems, CCTV & Surveillance System.
12. **Waste management works** : With a view to ensure that the public does not litter waste, litter bins are to be provided at important locations placed at a distance ranging from 60m to 100m spacing depending on the local conditions.
13. **other works**:
  - Rain Water Harvesting, as required to ensure no flooding and optimum utilization of rain water run-off.
  - Internal Road/ Pavement to Proposed Site
  - Storm Water Drainage
  - Internal and External Finishing works including all equipment fixing, testing and commissioning and other works all complete.

## DESIGN CONSIDERATIONS:

### DESIGN SUBMISSIONS

The Contractor shall be responsible for the safety of structures, correctness of design and drawings, even after the approval of the same by Authorised Representative of BSCL. Complete detailed design calculations of foundations and superstructure together with general arrangement drawings and explanatory sketches shall be submitted to the Authorised Representative of BSCL after getting them vetted by government institution like IIT or Reputed university (shall be finalised after consultation with BSCL) . Any Activity of construction at site will resume only after submission of duly vetted drawing from IIT/Reputed Government Institute to Authorised Representative of BSCL and getting approval by Employer-in-charge of BSCL for start of activity.

### DESIGN STANDARDS

All designs shall be based on the latest Indian Standard (I.S.) Specifications or Codes of Practice, CPWD, UPPWD unless otherwise specified. The design standards adopted shall follow the best modern engineering practice in the field based on any other international standard or specialist literature subject to such standard reference or extract of such literature in the English language being supplied to and approved by the Engineer-in-charge. In case of any variation or contradiction between the provisions of the I.S. Standards or Codes and the specifications given along with the submitted tender document, the provision given in this RFP shall be followed.

#### Design Life

The design life of all structures and buildings shall be 60 years.

#### Design Loading

The structure shall be designed to resist the worst combination of the following loads/ stresses under test and working conditions; these include dead load, live load, wind load, seismic load, stresses due to temperature changes, shrinkage and creep in materials, dynamic loads.



## Approved Makes and Broad Specs

| Description/ Item  | Specification  | Approved Makes   |
|--|--|--|
| <b>BUILDING</b>  |  |  |
| Foundation   | Raft/Isolated/Combined Foundation                                    | as per vetted structural drawing   |
| Pre Construction Anti Termite Treatment  | As per Manufacturer/CPWD specs.                                      |  |
| Earth works/Cement concrete, Plinth Protection   | As per CPWD/uppwd specs.   |  |
| Cast - in- situ RCC with RMC   | As per CPWD/UPPWD specs.   | RINL TISCO JINDAL<br>OPC Cement - 43 grade/53 grade: Ultra Tech<br>ACC Ltd.<br>Ambuja L&T<br>JK Cement Lafarge                           |
| Internal wall /Finish–Fly Ash Brick/AAC (Autoclaved Aerated Concrete) block wall with acrylic emulsion                                       | As per CPWD specs. (AAC/Fly Ash Brick/ AAC block work with adhesive) | Minimum compressive strength of Flyash brick should be CD-75<br>Minimum compressive strength of AAC Block should be more than 3.0 N/sqmm |
| Combination of Fly Ash Brick / AAC (Autoclaved Aerated Concrete) Block wall with texture finish paint over plain cement                      |  | AAC block:<br>- Aerocon<br>Magicrete Building Solution   |
| Wood work in frames/door and windows<br><br>Flush Door Shutters 32 mm thk Cup Board<br>Shutters 25 mm thk With Laminate /<br>Veneer & Polish | As per CPWD specs.   | Flush<br>Doors:<br>Mikasa<br>Duro<br>Kanara wood & Plywood Industries  |

|  |                            |  |
|--|----------------------------|--|
| Electric panel room/AHU/ Shaft- Steel Fire resistance door (Two Hrs. Fire Rating)  | As per CPWD specs          | Navair Ltd.<br>Promat International Ltd. Shakti Hormann Pvt. Ltd<br>Signum Fire Protection                                       |
| i) Complex concoures – Frameless Automatic sliding door , Spider fittings, Patch Fittings, Floor spings etc.<br>ii) Complex - Glazed doors (framed glass Panels) in matt flush fittings for 10 mm / 12mm toughened glass | As per Manufacturer specs. | Ozone India<br>Dorma India Pvt. Ltd.<br>Hafele India Pvt. Ltd.<br>Linix Technology Pty Ltd                                       |
| Steel door/Rolling Shutter   | As per CPWD specs.         |  |
| Rain Water Spout & Pipe- PVC Structural Pipe   | As per CPWD specs          | Supreme Finolex<br>AKG<br>Astral   |
| <b>False Ceiling</b>   |                            |  |
| Metal Linear / Gypsum / Square Tile combination False Ceiling  | As per Manufacturer specs. | HI-Steel USG Boral<br>Saint Gobain Gyproc India Ltd.<br>Armstrong<br>Dexune  |
| 600 x 600 metal perforated / plain ceiling.  | As per Manufacturer specs. | HI-Steel USG Boral<br>Saint Gobain Gyproc India Ltd.<br>Armstrong<br>Dexune  |
| Service Area / Toilets / Lobby / Common Area- Gyssum Board Tiles - 600 x 600 mm or 12 mm thick boards . / Calcium Silicate Boards or Tiles   | As per CPWD specs. - 2009  | Saint Gobain Gyproc India Ltd.<br>Armstrong World Industries (India) Ltd.<br>Aerolite Ceiling Systems<br>Hilux Dexune<br>Everest |

|  |  |   |
|--|--|---|
| VIP/Reserved Lounge Rooms: Decorative Mineral Fibre Board False Ceiling as per design.               | As per Manufacture Specs. /CPWD specs. | Saint Gobain Gyproc India Ltd.<br>USG Boral (formerly Boral Gypsum)<br>Armstrong World Industries (India) Pvt. Ltd. |
| <b>Cladding</b>  |  |   |
| 4mm thick Aluminium Composite Panels (ACP) -   | As per CPWD/<br>Manufacturer specs.    | Alstrong Timex<br>Alstone<br>Aludecor<br>Alstone Alutuff  |
| HPL Cladding   | As per Manufacturer specs.             | Alstrong<br>Greenlams<br>Merino<br>industries   |
| Brick Cladding   | As per manufacturer specs              | Pioneer,<br>Bharat Bricks co.,<br>Unistone  |
| Column Cladding-<br>GFRC as per design if so designed  | As per CPWD/<br>Manufacturer specs.    | GFRC<br>GRC India<br>Ultra Tech<br>Everest Composites   |
| Silicone Weather Sealant/ Structural Sealant   | As per Manufacturer specs.             | Pidilite Industries Ltd.<br>Fosroc Chemicals (India) Pvt Ltd<br>BASF India Ltd.<br>SIKA India Pvt Ltd.              |
| Gable end wall cladding:- Combination of Polished and Flamed finish Granite stone upto 900 mm height | As per CPWD specs.                     |   |
| Railing : - S.S. brush finished railing with 12mm toughened glass/ Frameless Glass System .          |  | Ozone India<br>Jindal Architecture Ltd.<br>Linux Technology Pty.<br>Ltd.  |

|   |  |   |
|---|--|---|
| Counters & Desks - Solid acrylic polymer counter with glass partition and glass doors / Granite                       | As per Manufacturer specs.                 | Acrylic Polymer: Dupont<br>LG- HImacs<br>Neonnex  |
| External Structural Glazing   |  | Jindal Aluminium Ltd.<br>GMGR India(Samsung Staron)<br>Hindalco Industries Ltd.<br><b>Glass-</b><br>Saint Gobain Glass India Ltd.<br>Pilkington Guardian<br>Glass<br>Emirates Glass |
| Vitrified tile – 600 mm x 600 mm /1000x1000 / 1200x600  | As per Manufacturer specs                  | Kajaria<br>Somany<br>Nico   |
| Server room / control rooms (flooring & skirting) – Raised/ False Access Flooring                                     |  | Unifloor<br>United access Floor Ltd.<br>United Insulation Lender  |
| Kerb Area (flooring & skirting) – Combination of Polished and Flamed Finish Granite stone.                            | As per CPWD specs<br><br>As per CPWD specs |   |
| Washbasin counter top – Solid Acrylic Polymer finished board of approved colour & shade. or Granite as per CPWD Specs | As per Manufacturer specs.                 | Acrylic Polymer:<br>Dupont,<br>LG- Himacs,Neonnex<br>GMGR India (Samsung Staron)  |
| Blinds  |  | Blinds: - Mac Décor<br>Hunter Douglas<br>Vista or approved<br>Equivalent Deck   |

|  |                                  |  |
|--|----------------------------------|--|
| Art work /Local Architecture/ Heritage   | As per local Artist/ Architect   |  |
| Tile /AAC Block - Adhesive/ Solid epoxy grout  | As per Manufacturer specs.       | Ardex Endura (India) Pvt. Ltd.<br>Ferrouscrete India Pvt. Ltd.<br>MYK Laticrete/Laticrete<br>Pidilite Industries Ltd<br>Ultra Tech |
| Water Proofing Treatment over RCC roof   | As per CPWD specs.               | CICO Technologies Ltd.<br>Ardex Endura (India) Pvt. Ltd<br>Pidilite Industries Ltd<br>BASF India Ltd.<br>Sika India Pvt. Ltd       |
| Sanitary fittings (All toilets fixtures to be in off white colour, all urinals to be half stall and all EWC sheets to be wall hung).       | As per Manufacturer specs.       | Parryware Roca Pvt. Ltd.<br>Grohe AG (Germany)<br>Duravit<br>Hindware<br>Kohler  |
| CP fittings (All exposed fitting in toilets to be chrome plated)/ Angle Valve/ Bottle Trap/Flush Valve/Basin Mixer/Single Lever Sink Mixer | As per Manufacturer specs.       | Parryware Roca Pvt. Ltd.<br>Grohe AG (Germany)<br>Duravit<br>Jaquar<br>Hindware<br>Kohler  |
| i) SS Sink   | As per CPWD/ Manufacturer specs. | Nirali<br>Franke<br>Jayna  |
| ii) Combined unit of tissue paper dispenser, hand dryer and dustbin  | As per CPWD/ Manufacturer specs. | DORMA India Private Limited<br>D-line<br>Ozone<br>Toshi  |

|  |  |  |
|--|--|--|
| SS brush finished railing with 12 mm toughened glass, SS Elevation Railing, SS Hand Railing                      | As per CPWD/Manufacturer specs.            | Dorma India Pvt. Ltd<br>Ozone<br>Jindal Architecture Ltd.<br>Kaufmann Limited      |
| SS Grade - 304, Q-Management System, SS Dustbins, SS Bollards  | As per Manufacturer specs.                 | Ozone India Pvt Ltd.<br>Euronics Industries Pvt Ltd. Brosis International          |
| Plastering:-<br>i) Internal wall & Ceilings plaster with light weight Gypsum plaster.                            | As per CPWD specs.                         | Zipplastr<br>Ferrous Crete India Pvt. Ltd.<br>Saint Gobain (Elite 90)<br>Ultratech |
| ii) Exterior wall – Cement plaster with grooves  | As per CPWD specs.                         | Zipplastr<br>Ferrous Crete India Pvt. Ltd.<br>Saint Gobain (Elite 90)<br>Ultratech |
| Wall Putty   | As per CPWD specs.                         | Birla White<br>J.K. Cement<br>3. Ferrous Crete India Pvt. Ltd.                     |
| Internal wall Painting – with acrylic emulsion/oil bound distemper External wall painting – texture finish paint | As per Manufacturer specs.                 | Asian Paints Ltd<br>Berger Paints India<br>Limited Nerolac                         |
| Paint on Steel Structure – Synthetic Enamel  | As per Manufacturer's specs.               | Asian Paints Ltd.<br>Jenson & Nicholson<br>Berger Paints India<br>Limited Nerolac  |
| Landscaping and water bodies   | As per Artist/Architect/<br>as per drawing |  |
| Demountable partition – Double skinned pre-laminated particle board partition in GI frame work                   | As per Manufacturer and CPWD specs.        | Ozone<br>Dorma<br>Maars Living Walls   |
| Expansion Joint cover  | As per Manufacturer specs.                 | Vexcolt<br>Sanfield CS<br>Goodco Z-tech  |

|   |                            |   |
|---|----------------------------|---|
| Hardware Like: Mortice Lock With Pair Of Handles, Recess Handle Fittings, Floor Spring, Etc.<br>Door & Window Hardware Fittings, Door closer etc. | As per Manufacturer specs. | Dorma<br>Hafele India Pvt. Ltd.<br>Godrej & Boyce<br>Ozone  |
| Plumbing works a) G.I. Pipe   | As per CPWD specs.         | Tata Steel Ltd.<br>Jindal Pipes Ltd.<br>Apollo  |
| b) UPVC/ CPVC pipe  | As per CPWD specs.         | The Supreme Industries Ltd.<br>Finolex Industries Ltd.<br>Savoir Faire Manufacturing Co. Ltd.<br>Astral |
| b) UPVC/ CPVC pipe  | As per CPWD specs.         | The Supreme Industries Ltd.<br>Finolex Industries Ltd.<br>Savoir Faire Manufacturing Co. Ltd.<br>Astral |
| c) Sewage/Drainage pipe – PVC Structural Pipe   | As per CPWD specs.         | Supreme<br>Finolex<br>Savoir<br>AKG<br>Astral   |
| Liquid Recessed Soap Dispenser/ Jumbo Roll Tissue Toilet Dispenser/ SS Grab Bar   | As per Manufacturer specs. | Bobrick Washroom Equipment, Inc.<br>Euronics<br>Echo<br>Toshi   |
| Glass Mirror – Large size mirror, 200 mm above counters to be provided with washbasin   | As per Manufacturer specs. | Saint Gobain Glass India Ltd.<br>Pilkington<br>Modi Guard   |
| Expansion Joint Filler board – 25 mm thk  | As per CPWD Specification  | Supreme<br>Insuboard<br>Styrofoam   |

|   |                            |   |
|---|----------------------------|---|
| Polysulphide Sealant and Primer   | As per CPWD Specification  | Choksey Chemicals<br>Fosroc<br>Pidilite                                     |
| Footpaths –Paver Blocks, sand filling, PCC, kerb stone  | As per UPPWD specs         | Unistone, Pavit, Dalal Tiles  |
| Exterior Sign Boards  | As per CPWD specs.         | External signage to guide public  |
| <b>Auditorium</b>   |                            |   |
| Auditorium Seats  | As per Manufacturer specs. | Krishna Quenette / Featherlite / Absound Seating                            |
| Acoustic Wall Panelling and ceiling<br>Ceiling With Micro-perforated 3x3mm Square Gyp Acoustic Board in Hall, Back Stage & Green Room,<br>Slated Wooden Acoustic paneling for rear wall, side walls lower Level | As per Manufacturer specs. | Armstrong,<br>Himalayan,<br>Topacoustics/Absound<br>Overseas/Acoustic India |
| Cyclorama Screen  | As per Manufacturer specs. | Effectron,<br>Himalayan<br>Stage Curtains                                   |
| Stage Lighting  | As per Manufacturer specs. | Canara<br>Effectron<br>NAAPL  |
| Strip Lighting  | As per Manufacturer specs. | Canara<br>Effectron<br>NAAPL  |
| Sound System  | As per Manufacturer specs. | Martin Audio,<br>Klipsch,Bose,<br>Professional Audio,<br>DBX                |
| Front and Rear Curtain  | As per Manufacturer specs. | Himalayan ,<br>Absound Overseas<br>Stage Curtains                           |



|   |                                     |   |
|---|-------------------------------------|---|
| Video Projection System                     | As per Manufacturer specs.          | Hitachi, Sony, Barco, Delta                                     |
| STAGE FURNISHING                            | As per Manufacturer specs.          | Canara<br>New Age<br>Leksa                                      |
| Ferris Wheel                                | As per Manufacturer specs.          | Fabbri Group,<br>BARPL, Chance<br>Morgan/Chance Rides,<br>Senyo |
| Rides and Swings                            | As per Manufacturer specs.          | Funriders<br>Koochie<br>Cowboy                                  |
| Cobble Stone                                | As per specs Provided               | Unistone<br>Espania<br>Pavit                                    |
| Lifts                                       | As per manufacturer spec            | OTIS<br>KONE<br>Schneider                                       |
| Outdoor LED                                 | As per manufacturer spec            | Barco<br>Delta<br>Mitsubishi<br>Daktronics                      |
| Indoor LED                                  | As per manufacturer spec            | Barco<br>Delta<br>Mitsubishi<br>Daktronics                      |
| Aluminium Doors in the External Facade      | As per manufacturer spec/UPPWD/CPWD | Alupure<br>Armstrong<br>OZONE                                   |
| Dormitory Bed and side tables Approved Make | As per manufacturer spec            | Godrej Interio<br>Nilkamal furniture<br>Ergo                    |

|                    |                           |   |
|--------------------|---------------------------|---|
| Furniture          | As per manufacturer specs | Godrej Interio,<br>Nilkamal furniture,<br>HNI India   |
| RO- Plant          | As per Manufacturer Spec  | Kelvin<br>3D Aqua<br>Ion Exchange                     |
| Solar Plant        | As per UP Govt.           | Adani<br>Vikram Solar<br>Waree Energies               |
| Organic composter: | As per Manufacturer Spec  | Greenviron<br>ecotech chutes<br>SMS hydrotech         |
| LED 55"            | As per Manufacturer Spec  | Samsung,<br>Sony,<br>LG                               |
| DG                 | As per manufacturer specs | Greaves Power<br>Kirloskar<br>Adani Power             |
| Transformer        | As per manufacturer specs | Kirloskar<br>Transdelta Transformers<br>Vaibhav Group |
| Wires and Cables   | As per manufacturer specs | Anchor<br>Ravin<br>Havells                            |
| Conduits           | As per manufacturer specs | Polycab<br>Icotek<br>Kalinga Cable                    |
| Lights             | As per manufacturer specs | Philips<br>Wipro<br>Bajaj                             |

|                                    |                           |   |
|------------------------------------|---------------------------|---|
| Light Pole                         | As per manufacturer specs | Philips<br>Skipper<br>Wipro               |
| PA System                          | As per manufacturer specs | Bosch<br>Honeywell<br>Ahuja               |
| Firefighting and Fire Alarm System | As per manufacturer specs | Honeywell<br>Ravel<br>Palladium Safety    |
| Pumps                              | As per manufacturer specs | Shakti Pumps<br>Netzsch<br>Grundfos       |
| Mild Steel works                   | As per manufacturer specs | Tata Steel,<br>Jindal,<br>Apollo          |
| Polycarbonate Sheet                | As per manufacturer specs | Polygal India pvt. Ltd.<br>Alcox<br>Sabir |
| PEB Shed                           | As per manufacturer specs | EPack Polymers<br>Everest<br>Interarch    |

**Note:** The specifications mentioned below represent the minimum specifications of the project. The EPC contractor shall get all drawings, design, engineering and specifications approved before construction. Further, the project shall be designed as a GREEN BUILDING (minimum LEED GOLD / GRIHA 3 STAR) and relevant specifications of all materials shall be incorporated in the project to achieve this rating.

## Detailed Specification :

### Architecture and Interiors :

| ARCHITECTURE WORKS |   |   |                |
|--------------------|---|---|----------------|
| S. No.             | ITEM  | AREA OF USE   | BUILDING USAGE |
|                    | <b>FLOORING</b>   |   |                |
| 1                  | Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) : 25 mm thick  | Service areas / passages, Fire escape stairs, stores, Service and maintenance utility rooms   | All buildings  |
| 2                  | Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS: 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), jointing with grey cement slurry @ 3.3kg/sqm including grouting the joints with white cement and matching pigments etc., complete.   | Shops, Residential dormitory Rooms, Exhibition & display Areas, offices, workstation areas, Prefunction areas, multifunction large halls, entrance hall | All buildings  |
| 3                  | Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete. | Washrooms, toilets, pantries, kitchens  | All buildings  |
| 4                  | Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in colours such as White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement : 4 Coarse sand), jointing with grey cement slurry @ 3.3kg/sqm including pointing the joints with white cement and matching pigment etc., complete.  | Washrooms, toilets, pantries, kitchens  | All buildings  |
| 6                  | Providing and laying gang saw cut 18 mm thick, mirror polished pre moulded and pre polished machine cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring laid over 20mm thick base of cement mortar 1:4 (1cement : 4 coarse sand) including grouting the joints with  | Corridors, passenger staircases, plinth protection,   | All buildings  |

|           |   |   |   |
|-----------|---|---|---|
|           | white cement mixed with matching pigment, epoxy touch ups etc. complete as per direction of Engineer-in-Charge.   | outside seting, terrace etc.  |   |
| <b>8</b>  | ENGINEERED Wooden Flooring : Providing & fixing engineered Wooden Flooring (15mm approx) as approved with PVC & foam underlay, inclusive of 100mm skirting, profiles, junctions, door profile, fully installed with glue less interlocking mechanism including all profile .<br>Smoked Oak (quantity per box = 17.17 Sq.Ft.)<br>25 mm wooden planking, tongued and grooved in flooring, including fixing<br>Second class teak wood  | office meeting rooms, conference rooms, Individual hotel rooms            | Handicraft center Block-1 & 2.<br>Bareilly Haat convention center   |
| <b>10</b> | CARPET - Providing and fixing machine tufted loop pile high low scroll polypropylene carpet effective pile height 6mm, total pile weight not less than 22oz. secondary backing action back 55 gms/sqm. In rolls of 3.66 mtr. width as per size, shade, design and direction of Engineer-in-charge and as per manufacturer's specifications. The sample may be approved by the Engineer-in-charge before start of the work. The surface area will be measured for payment. The carpet to be bakced with 6mm thick PU underlay.   | convention halls  | In Urban Haat Convention Centre and Auditorium , Handicrafts centre |
| <b>11</b> | Providing and fixing 300 x300 commercial tiles in all colours, shades any size as approved by Engineer-in-Charge, in wall ,floor, over bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.  | below carpet & wooden floor, behind kitchen / pantry / wardrobe cabinetry | All buildings   |
| <b>12</b> | Providing and laying machine cut, mirror polished, Italian Marble stone flooring laid in required pattern in linear portion of the building all complete as per architectural drawings, with 18 mm thick stone slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm, including pointing with white cement slurry admixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge 18 mm thick Italian Marble stone slab, Perlato, Rosso verona, Fire Red or Dark Emperadore etc. | Reception & entrance areas  | Handicraft center Block-1 & 2.<br>Bareilly Haat convention center   |

|    |  |   |               |
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|    |  |   |               |
|    | <b>FALSE CEILING</b>   |   |               |
| 14 | <p>Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts &amp; bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering up to 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with : 12.5 mm thick tapered edge gypsum moisture resistant board</p> | All spaces except toilets, kitchens, service areas, stores                              | All buildings |
| 15 | <p>P/F of Silhouette Edge , ceiling tiles Mineral Fiber based acoustic ceiling in size 600 x 600 x 12mm having noise reduction co-efficient (NRC) of 0.5 (Average) Measurement of sound absorption coefficient in a reverberation room with channel complete. With 16 mm thick beveled tegular mineral fiber false ceiling tile (NRC 0.55 to 0.6)</p>  | Office areas, workstation areas, meeting rooms, large gathering halls, convention halls | All buildings |
|    |  |   |               |
|    | <b>PARTITION</b>   |   |               |
| 16 | <p>Providing and fixing partition upto ceiling height consisting of G.I. frame and required board, including providing and fixing of frame work made of special section power pressed/ roll form G.I. sheet with zinc coating of 120 gms/sqm(both side inclusive),</p>   | Offices, workstation areas, meeting   | All buildings |

|    |   |  |                   |
|----|---|--|-------------------|
|    | <p>consisting of floor and ceiling channel 50mm wide having equal flanges of 32 mm and 0.50 mm thick, fixed to the floor and ceiling at the spacing of 610 mm centre to centre with dash fastener of 12.5 mm dia meter 50 mm length or suitable anchor fastener or metal screws with nylon plugs and the studs 48 mm wide\ having one flange of 34 mm and other flange 36 mm and 0.50 mm thick fixed vertically within flanges of floor and ceiling channel and placed at a spacing of 610 mm centre to centre by 6 mm dia bolts and nuts, including fixing of studs along both ends of partition fixed flush to wall with suitable anchor fastener or metal screws with nylon plugs at spacing of 450 mm centre to centre, and fixing of boards to both side of frame work by 25 mm long dry wall Nscrews on studs, floor and ceiling channels at the spacing of 300 mm centre to centre. The boards are to be fixed to the frame work with joints staggered to avoid through cracks, M.S. fixing channel of 99 mm width (0.9 mm thick having two flanges of 9.5 mm each) to be provided at the horizontal joints of two boards, fixed to the studs using metal to metal flat head screws, including jointing and finishing to a flush finish with recommended jointing compound, jointing tape, angle beads at corners (25 mm x 25 mm x 0.5 mm), joint finisher and two coats of primer suitable for board as per manufacture's specification and direction of engineer in charge all complete.</p> <p>75 mm overall thickness partition with 12.5 mm thick double skin fire rated board conforming to IS: 2095: part I</p> | rooms, pre-function areas, lounge and lobby, shops, cafes, restaurants, dining areas                                     |                   |
|    | <p>Frame Less Glass Partation Wall : Providing and fixing frameless glass fixed panels with 12mm thick tempered / toughened float glass without Tong Mark, set within 15mm Aluminium C-Channels, with or without SS patch fittings for all glass; glass to be edge polished and finished in plumb with adjoining exposed glass (spans to be as large as possible depending on location). Each Glass pane will be joined to the adjoining glass pane with either transparent silicone or the glass tape.</p>   | Offices, workstation areas, meeting rooms, pre-function areas, lounge and lobby, shops, cafes, restaurants, dining areas | All buildings     |
|    |   |  |                   |
|    | <b>GLAZING</b>  |  |                   |
| 17 | <p>Designing, fabricating, testing, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including: Structural analysis &amp; design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. complete</p>   |  | Convention center |
|    |   |  |                   |

|    |   |  |                                |
|----|---|--|--------------------------------|
| 18 | Design supply & installation of suspended Spider Glazing system designed to withstand the wind pressure as per IS 875 (Part-III). The Suspended System held with Spider Fittings of SS-316 Grade Steel of approved manufacturer with glass panel having 12 mm thick clear toughened glass held together with SS- 316 Grade Stainless steel Spider & bolt assembly with laminated glass fins 21 mm thick. The Glass fins and glass panel assembly shall be connected to Slab/beams by means of SS- 316 Grade stainless steel brackets & Anchor bolts and at the bottom using SS channel of 50x25x2mm using fastener & anchor bolts, non staining weather sealants of approved make, Teflon/ nylon bushes and separators to prevent bi-metallic contacts, all complete to perform as per specification and approved drawings. The complete system to be designed to accommodate thermal expansion & seismic movements etc. The joints between glass panels (6 to 8 mm) and gaps at the perimeter & in U channel of the assembly to be filled with non staining weather sealant, so as to make the entire system fully water proof & dust proof. The rate shall include all design, Engineering and shop drawing including approval from structural designer, labour, T&P, scaffolding, other incidental charges including wastage, enabling temporary services all fitting fixers nut bolts, washer, Buffer plates, fastener, anchors, SS channel laminated glass etc. all complete. For the purpose of payment, actual elevation area of Glazing including thickness of joints and the portion of Glass panel inside the SS channel shall be measured. |  | All buildings except gatehouse |
|    |   |  |                                |
|    | <b>PAINT &amp; POLISH</b>   |  |                                |
| 19 | Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications : Two or more coats applied on walls @ 1.25 ltr/10 sqm over and including one coat of Special primer applied @ 0.75 ltr /10 sqm,  |  | All buildings                  |
| 20 | Painting with synthetic enamel paint of approved brand and manufacture to give an even shade : Two or more coats on new work  |  | All buildings                  |
| 21 | Providing and doing Textured surface per sqm coating on walls of approved shade and texture as approved by engineer in charge.  |  | All buildings                  |
| 22 | Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications : Two or more coats applied on walls @ 1.25 ltr/10 sqm over and including one coat of Special primer applied @ 0.75 ltr /10 sqm   |  | All buildings                  |
| 23 |   |  | All buildings                  |
| 24 | Providing and doing Melamine polishing on wood work with applying filler coat followed by stainer coat then two coats of sealer followed by 2 top coats, sand papering and finally polishing with cream including putting Matt spray coat.  |  | All buildings                  |



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|---|---|--|---------------|
| 25  | POP Punning (12mm-18mm): Providing and fixing Average 12 mm to 18 mm thick POP with chicken mash (if required) Punning over cement plaster in line & plumb finished smooth to receive paint.  |  | All buildings |
|   | POP Punning (2mm-5mm): Providing and fixing Average 2 mm to 5 mm thick POP Punning over cement plaster in line & plumb finished smooth to receive paint.  |  | All buildings |
| <b>ANTI-TERMITE TREATMENT AND WATERPROOFING</b> |   |  |               |
| 21  | Providing and injecting chemical emulsion for preconstructional antitermite treatment and creating and chemical barrier under and around the column pits, wall and floor along the external per meter of binding expansion joints surrounding of pipes and conduits etc. complete (plinth area of the building at ground floor only shall be measured as per I.S.6313 (part ii 1981) . Aldrine emulsifiable concentrate of any other approved materials such as hepthachior or chlordance will be used.   |  | All buildings |
| 22  | Providing and mixing integral crystalline admixture for waterproofing treatment to RCC structures like basement raft, retaining walls, reservoir, sewage & water treatment plant, tunnels / subway and bridge deck etc. at the time of transporting of concrete into the drum of the ready-mix truck, using integral crystalline admixture @0.80% (minimum) to the weight of cement content per cubic meter of concrete) or higher as recommended by the manufacturer's specification in reinforced cement concrete at site of work. The material shall meet the requirements as specified in ACI-212-3R-2010 i.e. by reducing permeability of concrete by more than 90%, compared with control concrete as per DIN 1048 and resistant to 16 bar hydrostatic pressure. The crystalline admixture shall be capable of self-healing of cracks up to a width of 0.50mm. The work shall be carried out all complete as per specification and the direction of the Engineer-in-charge. The product performance shall carry guarantee for 10 years against any leakage. |  | All buildings |
| 24  | Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 Kg per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane min 3.0 mm thick consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 ( 1 cement : 3 fine sand) and finished neat.   |  | All buildings |

|    |  |                                |   |
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| 25 | <p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom &amp; water tanks &amp; balconies etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p> |                                | All buildings   |
|    |  |                                |   |
|    | <b>TENSILE STRUCTURE</b>   |                                |   |
| 26 | <p>Providing and fixing imported tensile fabric of make Ferrari or equivalent, over steel frames with all fittings and fixtures such as centenary cables PVC/SS membrane plates, swedge, fork etc. as per the direction of Engineer in Charge. Rate is inclusive of design providing and fixing fabric with all necessary accessories as required as per approved design complete. (Material Specification: -Tie Cables Galvanized Steel Core Make :- Usha Martin / Bharat Wire Rope, Material of End terminals and Nut bolts SS 304, End plates Mild Steel with Hot dip galvanized along with powder coating , Fabric Fixing Nuts and bolts HDG with 80 microns.</p>  |                                | Shopping center, Food centre, handicraft shopping center, Handicraft centre block 1 and 2 |
|    |  |                                |   |
|    | <b>DOOR WINDOW</b>   |                                |   |
| 27 | <p>Providing and fixing paneling or paneling and glazing in paneled or paneled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Paneling for paneled or paneled and glazed shutters 25 mm to 40 mm thick 5.0 mm thick glass panes (weight not less than 12.5 kg per sqm)</p>  |                                | All buildings   |
| 28 | <p>Supply and fixing of flush doors commercial quality conforming to I.S. 2202 Part-1 (1983) including fixing of wooden cleats and stoppers and including fixing and adjustment of hinges bolt locks handles springs fitting with necessary screws to be supplied departmently.<br/>35 mm thick</p>  | Internal service areas, stores | All buildings   |
| 29 | <p>Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position:<br/>Sal wood</p>  | Internal spaces                | All buildings   |
| 30 | <p>Providing and fixing 25mm thick shutters for cup board etc: Panelled or panelled &amp; glazed shutters: Secnd class teak wood including ISI marked anodised aluminium butt hinges with necessary screws.</p>  | Internal spaces                | All buildings   |

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| <b>31</b> | Glazed Shutters: Second class teak wood including ISI marked anodised aluminium butt hinge with necessary screws.  | Internal spaces  | All buildings |
| <b>32</b> | Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete: 2nd class teak wood 50x20mm   | Internal spaces  | All buildings |
| <b>33</b> | <p>Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling to be paid for separately) : For shutters of doors, windows &amp; ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required including fittings, locks complete.</p> <p>Powder coated aluminium (minimum thickness of powder coating 50 micron) (Sample should be submitted to BSCL for Approval )</p> | External facades | All buildings |
| <b>34</b> | For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Powder coated aluminium (minimum thickness of powder coating 50 micron)  | External facades | All buildings |
| <b>35</b> | Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in-charge (Door handle, lock and stopper etc.to be paid separately).  | Glazing          | All buildings |
| <b>36</b> | Extra for providing frosted glass panes 4 mm thick instead of ordinary float glass panes 4 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).   | Internal spaces  | All buildings |
| <b>37</b> | Filling the gap in between aluminum frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over bracker rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete. up to 5mm depth and 5mm width  | External facades | All buildings |

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| <b>38</b> | P/f frameless glass door using 12 mm th toughened glass incl stainless steel pivot with clamps at top, patch fittings, floor springs, stainless steel handles and locking mechanism (as per approved) , necessary floor / glass cutting, making hole. 1000 mm wide & 2400 mm ht. (single / double leaf)  | Glazing                    | All buildings |
| <b>39</b> | Providing and fixing fire resistant door frame of section 50 x 60 mm on Nhorizontal side & 35 x 60 mm on vertical sides having built in rebate made out of 1.6 mm thick GI sheet ( Zinc coating not less than 120gm/ m <sup>2</sup> ) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m <sup>3</sup> . The frame will have a provision of G.I. Anchor fastners 14 nos ( 5 each on vertical style & 4 on horizontal style of size M10 x 80 ) suitable for fixing in the opening along with Factory made Template for SS Ball Bearing Hinges of Size 100x89x3mm for fixing of fire rated glazed shutter . The frame shall be finished with a approved fire resistant primer or Powder coating of not less than 30 micron in desired shade as per the directions of Engineer - in- charge .<br>(Cost of SS ball bearing hinges is excluded).  | All fire escape staircases | All buildings |
| <b>40</b> | Providing and fixing 60 mm thick glazed fire resistant door shutters of 120 min Fire Rating confirming to IS:3614 (Part II) or EN1634-1:1999, tested and certified as per laboratory approved by Engineer-in-charge, with suitable mounting on door frame, consisting of vertical styles, top rail & side rail 60 mm x 60 mm wide and bottom rail of 110 mm x 60mm made out of 1.6mm thick G.I. sheet (zinc coating not less than 120gm/m <sup>2</sup> ) duly filled mineral wool insulation having density min 96 kg/ m <sup>3</sup> and fixing with necessary stainless steel ball bearing hinges of size 100x89x3mm of approved make, including applying a coat of approved fire resistant primer or powder coating not less than 30 micron etc all complete as per direction of Engineer-in-charge (panelling to be paid forseperately).   | All fire escape staircases | All buildings |
| <b>41</b> | Providing and fixing glazing in fire resistant door shutters, fixed panels & partitions etc., with G.I. beading made out of 1.6 mm thick G.I. sheet (zinc coating not less than 120 gm/m <sup>2</sup> ) of size 20 x 33 mm screwed with M4 x 38 mm SS screws at distance 75 mm from the edges and 150 mm c/c , including applying a coat of approved fire resistant primer/ powder coating of not less than 30 micron on G.I. beading, & special ceramic tape of 5 x 20 mm size etc complete in all respect as per NBC 2016, IS 16231 (Part 3):2016 and as per direction of Engineer-incharge with glass of required thickness having 120 minutes of fire resistance both integrity & radiation control (EW120) and minimum 20 minutes of insulation (EI20). The manufacturer have to give test report/certification of fire glass and the glass should have the stamp showing the value of E, EW & EI. The glass shall be tested in approved NABL accredited lab or by any other accreditation body which operates in accordance with ISO/IEC 17011 and accredits labs as per ISO/IEC 17025 for testing and calibration | All fire escape staircases | All buildings |

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|    | scopes shall be eligible. The maximum glazing size shall not be more than 1100x2200 mm (w x h) or 2.42 sqm.  |  |               |
| 42 | Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of Engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item) With float glass panes of 5. mm thickness | External facades   | All buildings |
|    |  |  |               |
|    | <b>DOOR WINDOW HARDWARE</b>  |  | All buildings |
| 43 | providing and fixing special quality chromium plated brass cupboard locks with six levers including necessary screws etc. complete 9best make of approved quality) of: size 50mm   | Kitchen, pantries, storage areas, offices, workstations, dormitories, cabins | All buildings |
| 44 | providing and fixing ISI marked aluminium butt hinges anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with necessary screws etc. complete: 75x45x3.2mm   | Internal and external doors and windows                                      | All buildings |
| 45 | providing and fixing ISI marked aluminium butt hinges anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with necessary screws etc. complete: 300x16mm  | Internal and external doors and windows                                      | All buildings |
| 46 | Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured): Rectangular or square  | Offices, service areas, store areas  | All buildings |
| 47 | Providing and fixing aluminium tee channrels (heavy duty) with rollers, stop end in pelments as curtain rod.   | Internal and external doors and windows                                      | All buildings |
| 48 | Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm   | Internal and external doors and windows                                      | All buildings |
| 49 | Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 150x10 mm   | Internal and external doors and windows                                      | All buildings |
| 50 | providing and fixing bright finished brass handles with screws etc complete: 125 mm  | Internal and external doors and windows                                      | All buildings |
| 51 | Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.   | Internal and external doors  | All buildings |

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| 52 | Providing and fixing chromium plated brass 100 mm mortise latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.  | Internal and external doors                          | All buildings  |
| 53 | Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight up to 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate minimum 1.25 mm thickness  | glass doors  | All buildings  |
| 54 | stainless steel tube handle H type 450mm long  | internal doors                                       | All buildings  |
| 55 | Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size)  | internal and external windows, internal wooden doors | All buildings  |
| 56 | Providing and fixing IS : 12817 marked stainless steel butt hinges (heavy weight) with stainless steel screws etc. complete  | external and internal doors                          | All buildings  |
|    |  |  |  |
|    | <b>ELEVATION CLADDING</b>  |  |  |
| 58 | Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt/ suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S, including cost of adhesive of approved quality. thickness 6mm  | Exterior cladding                                    | Convention center, gatehouse, Shopping center, food center, handicraft shopping center, shopping kiosks, Handicraft center block 1 and 2 |
| 59 | Designing, fabricating, testing, installing and fixing in position Curtain Wall with Aluminium Composite Panel Cladding, with open grooves for linear as well as curvilinear portions of the building , for all heights and all levels etc. including:<br>a) Structural analysis & design and preparation of shop drawings for pressure equalisation or rain screen principle as required, proper drainage of water to make it watertight including checking of all the structural and functional design.<br>(b) Providing, fabricating and supplying and fixing panels of aluminium composite panel cladding in pan shape in metallic colour of approved shades made out of 4mm thick aluminium composite panel material consisting of 3mm thick FR grade mineral core sandwiched between two Aluminium sheets (each 0.5mm thick). The aluminium composite panel cladding sheet | Exterior cladding                                    | Convention center, gatehouse, Shopping center, food center, handicraft shopping center, Handicraft center block 1, 2 and 3               |

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|  | <p>shall be coil coated, with Kynar 500 based PVDF / Lumiflon based fluoropolymer resin coating of approved colour and shade on face # 1 and polymer (Service) coating on face # 2 as specified using stainless steel screws, nuts, bolts, washers, cleats, weather silicone sealant, backer rods etc.</p> <p>(c) The fastening brackets of Aluminium alloy 6005 T5 / MS with Hot Dip Galvanised with serrations and serrated washers to arrest the wind load movement, fasteners, SS 316 Pins and anchor bolts of approved make in SS 316, Nylon separators to prevent bi-metallic contacts all complete required to perform as per specification and drawing The item includes cost of all material &amp; labour component, the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working curtain wall with aluminium composite panel cladding, cleaning and protection of the curtain wall with aluminium composite panel cladding till the handing over of the building for occupation. Base frame work for ACP cladding is payable under the relevant aluminium item.s The Contractor shall provide curtain wall with aluminium composite panel cladding, having all the performance characteristics all complete , as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer-in-Charge. However, for the purpose of payment, only the actual area on the external face of the curtain wall with Aluminum Composite Panel Cladding (including width of groove) shall be measured in sqm. up to two decimal places.</p> |                             |  |
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|  | <b>PLASTERING AND WALL FINISHING</b>   |                             |  |
|  | 12 mm Thick plaster with kankar lime over brick minimum thickness not to be less than 3/8" (10mm) thick including supply of all materials, labour and T&P etc. required for proper completion of the work  | External walls              |  |
|  | Neat cement Punning 6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)  | Internal walls              |  |
|  | Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.  | Internal and external walls |  |
|  | Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.  | Internal and external walls |  |
|  | 15mm cement plaster on the rough side of single or half brick wall of mix : 1:6 (1 cement: 6 fine sand)  | Internal walls              |  |

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|  | <b>MISCELLANEOUS</b>  |   |  |
|  | <p><b>Slated Wooden Acoustic paneling for rear wall, side walls lower Level:</b></p> <p>Providing and fixing Slated Wooden Acoustic panel with lineal perforations to be fixed on walls. The panels shall be with melamine laminate finish of size 2440mm x 128mm x 16mm with 4mm grooves at 28 mm pitch tongue and groove edges for seamless mounting high density fiberboard having density of 800 kg/m<sup>3</sup> and system NRC of 0.83 as per IS 8225 / ISO 354 / ASTM 423C . The back of the panels are perforated with 10mm diameter circular holes with a nonwoven fabric covering of 0.2mm for providing Sound absorption via the acoustic impedance method. Panel is to be fixed on 50mm GI framework consisting of 48x36x34x0.5mm thick GI Studs wall channels &amp; 50x35x35x0.5mm floor channels @ 600mm c/c back support with 75x12mm MR grade ply strip as recommended by the manufacturer with screw fixed horizontal / vertical to wall in tongue &amp; groove system. The cavity of GI framework should be inserted with 50mm thick 1000GSM, thermally bonded polyester fibre for better insulation. The shade of the panel will be approved by architect or engineer in charge.</p> | Conference rooms, meeting rooms   | Convention center, Handicraft center block 1 and 2                                   |
|  | <p><b>Fabric wrapped Compressed glass substrate panels paneling on rear &amp; side walls upper level :</b></p> <p>Providing and Fixing Fibril Glass Stoff acoustical wall paneling square edges made of fibre glass substrate of 120kg/m<sup>3</sup> density and 25mm thick. Panel will be wrapped on the front side with fire retardent fabric as per BS EN1021:1&amp;2 with an option of colors as per the choice of the architect or engineer in charge of size 1200X600 mm providing the sound absorption level of NRC 1.0 as per IS 8225 / ISO 354 / ASTM 423C with the system. Panel will be affixed on wall using construction adhesives backing with 8mm MR grade ply on 50mm GI framework consisting of 48x36x34x0.5mm thick GI Studs wall channels &amp; 50x35x35x0.5mm floor channels @ 600mm c/c with the help of steel screw as per the instructions laid down by the manufacturer. All complete as per drawing &amp; design.</p>  | Conference rooms, meeting rooms   | Convention center, Handicraft center block 1 and 2                                   |
|  | <p>Washed stone grit plaster on exterior walls height upto 10 metre above ground level, in two layers, under layer 12 mm cement plaster 1:4 (1 cement : 4 coarse sand ), furrowing the under layer with scratching tool, applying cement slurry on the under layer @ 2 Kg of cement per square metre, top layer 15 mm cement plaster 1:1/ 2:2 (1 cement: 1/2 coarse sand : 2 stone chipping 10 mm nominal size), in panels with groove 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-charge (payment for providing grooves shall be made separately).</p>  | External walls  | All buildings  |
|  | <p><b>Vertical Blinds :</b> Providing and fixing 100 mm vertical blinds of louvers of fabric of a combination of Glass fibre and PVC with an openness factor of 5%. The head rail shall be of powder coated aluminium alloy of size 45mm wide and 25mm high with minimum wall thickness of 1.10 mm with tilt gear hub and reduction gear system with over drive protection and delrin acetal runners carriers including necessary fixtures to make the blind operational all complete. The rate is inclusive of all accessories. Blind area shall be measured from one end to the other end of the mechanism/ bracket of blind &amp; from the fixing face/ top to the bottom/end of the blind.</p>  | Offices, meeting rooms, hotel rooms, residential rooms, dormitories, conference rooms, convention halls | gatehouse, Convention center, Interpretation center, Handicraft centre block 1 and 2 |



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|  | Roller Blinds: Providing and fixing roller blinds using extruded aluminium roller tube, clutch & idler of high strength fibre glassreinforced polyester assembly with beaded chain and bottom weight of aluminium tube powder coated to match the fabric. The Fabric to be of a combination of Glass fibre and PVC with an openness factor of 5%. Front area shall be measured for payment. The rate is inclusive of all accessories. Blind area shall be measured from one end to the other end of the mechanism/ bracket of blind & from the fixing face/ top to the bottom/end of the blind. | Offices, meeting rooms, hotel rooms, residential rooms, dormitories, conference rooms, convention halls | Gatehouse, Convention center, Interpretation center, Handicraft centre block 1 and 2 |
|  | Black-out Roller Blinds: Providing and fixing black out roller blinds using extruded aluminium roller tube, clutch & idler of high strength fibre glassreinforced polyester assembly with beaded chain and bottom weight of aluminium tube powder coated to match the fabric. The Fabric to be of 100% blackout coated and flocked glass fibre. Front area shall be measured for payment. The rate is inclusive of all accessories. Blind area shall be measured from one end to the other end of the mechanism/ bracket of blind & from the fixing face/ top to the bottom/end of the blind.   | Offices, meeting rooms, hotel rooms, residential rooms, dormitories, conference rooms, convention halls | Gatehouse, Convention center, Interpretation center, Handicraft centre block 1 and 2 |
|  | Roman Blind: providing and fixing roman blinds of approved cloth (basic rate rs.200 per mtr) and terricot lining with applique work as per design. Providing suitable wooden section in the ceiling for suspending the blinds, aluminium rod etc included. Blind area shall be measured from one end to the other end of the mechanism/ bracket of blind & from the fixing face/ top to the bottom/end of the blind.  | Offices, meeting rooms, hotel rooms, residential rooms, dormitories, conference rooms, convention halls | gatehouse, Convention center, Interpretation center, Handicraft centre block 1 and 2 |
|  | Providing and placing in position floor mounted pedestal type wooden coat hangar with shelf for cuff links.   | Cloak rooms, meeting rooms, conference rooms  | Gatehouse, Convention center,, Handicraft centre block 1 and 2                       |
|  | providing and placing in position waste paper baskets of perforated stainless steel type of approximate 300mm dia and 400mm height after approval by engineer-in-charge.  | Offices, meeting rooms, conference rooms  | gatehouse, Convention center,, Handicraft centre block 1 and 2                       |
|  | Providing and fixing wall / door mounted stainless steel coat pins complete including aluminium coat hangar.  | Washrooms and toilets   | All buildings  |

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| <p>LED 55"</p> <p>Video Screen Size 101cm (40)</p> <p>Dynamic Contrast Ratio 150,000:1</p> <p>Picture Engine HyperReal Engine</p> <p>Wide Color Enhancer</p> <p>Dolby Digital Plus, Dolby pulse, dts 2.0 + Digital Out</p> <p>Sound Output (RMS) 10 watts x 2</p> <p>Speaker Type Down Firing Anynet+ (HDMI-CEC)</p> <p>OSD language Local Languages</p> <p>Picture-in-Picture 1 Tuner PIP</p> <p>USB Movie</p> <p>WiFi Adaptor Support</p> <p>Audio Out L-R (Mini Jack) 1</p> <p>Component In (Y/Pb/Pr) 2</p> <p>Composite In (AV) 2 (Side: 1, Back: 1 Common use for Component Y)</p> <p>Digital Audio Out (Optical) 1</p> <p>DVI Audio In (Mini Jack) 1 (Common use for PC Audio In)</p> <p>Ethernet (LAN)</p> <p>HDMI (720p, 1080i and even 1080p)</p> <p>PC Audio In (Mini Jack) 1</p> <p>PC In (D-sub) 1</p> <p>RF In 1</p> <p>RS232C (AV CONTROL) No</p> <p>USB 2 (Side)</p> <p>Power Supply AC100 - 240V 50/60Hz</p> |  | Conference rooms, meeting rooms    | Convention center, Handicraft centre block 1 and 2 and 3 |
| Trimix flooring  |  | BASEMENT                           | ALL BUILDING BASEMENTS                                   |
| <p><u>Cabin Signage:</u> size 62mm x 300mm flat shaped aluminium extruded sliding changeable signage complete with black coloured plastic &amp; caps on both sides. sides and caps. Polycarbonate sheet of required thickness with the name printed on computerised cut vinyl. All in the required shade and instruction of the architect / engineer-in-charge.</p>  |  | Cabins, offices, conference rooms  | Convention center, Handicraft centre block 1 and 2 and 3 |
| <p>Stainless steel brush finish signage complete with message in etching process. The thickness of the signage would be 20 gauge. Stainless steel would be of 304 grade. The signage would be without paint filling. The signage would be attached with the glass surface.</p>   |  | Cabins, offices, conference rooms  | Convention center, Handicraft centre block 1 and 2 and 3 |
| <p>Stainless steel raised 3 dimensional alphabet with proportionate width. The letter would be raised by approximately 1 inch.</p>   |  | Building entrances                 | All buildings  |
| <p>Fire Exit Signage : P/I "Fire Exit" signage on 4"x8" acrylic panels in glo-sign &amp; green film with directional indications as directed.</p>  |  | Corridors and fire exit staircases | All buildings  |

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|  | Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut GRANITE stone for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, molding and polishing to edges to give high gloss finish etc. complete   | Washrooms, toilets, pantries, kitchens   | All buildings   |
|  | Automated Parking Ticket Transaction Kiosk<br>Machine Configuration consists of:<br>15.6 inch capacitive Touch Screen Monitor, Industrial mother board with intel processor and 4GB RAM, 64 GB SSD, Windows OS License, Compact cabinet with PC SMPS, Bank Note Acceptor with stacker to accept inr 10, 20 50 (New), 50 (Old), 100, 200, and inr 500 with a cash box to hold upto 700 Notes in each cash box, QR Scanner Module, 3 Inch Thermal Kiosk printer for printing tickets, SMPS power supplies for all devices, 600 KVA UPS, Power coated metal cabinet with vinyl branding sticker   | At the Entrance gate for Vehicular Entry | Site A and Site B   |
|  | SITC of RO Plant 1000 LPH, Standard Model (Liter per hour)<br>Description                      Features<br>Technology                      : Membrane Based, (Size: 40 x 40), Qty -4 Nos.<br>Electricity                        : 3.8 KW/AC-220 - 440v, 50Hz<br>Filtration                         : Suspended Solids, Chemical Impurities, Bacteria like Cryptosporidium, Pseudomonas, and Pathogens e-coli.<br>Pre Filtration                    : Sand Filter, Activated Carbon Filter, Filters 5 & 10 Micron<br>RO Piping                        : UPVC / SS 304 Optional<br>Post Filtration                    : ULTRA VIOLET (UV) Optional<br>Pumps, Skid                      : SS 304<br>Design to Work : TDS up to 2000 ppm, Hardness 1000 ppm<br>Operating Mode                   : Automatic + Manual<br>Monitoring Accessories : Display/ DOL Panel, Pressure Gauges, Flow Meters etc. | RO plant planned for the complex         |   |
|  | SITC of solar plant of required capacity, Class A application as per Cl. 3 of IS/IEC 61730-1 : 2004, 330 Wp PV module rating >14% Efficiency of PV modules, Corrosion resistant frame structure shall be provided to hold the SPV module, The terminal box on the module should have a provision for opening, for replacing the cable, if required, Warranty for PV Modules from the date of supply as per MNRE specn: >= 25 years, PV modules used in Solar Power Plants / System must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years, BIS CRS as per IS: 14286 (for Crystalline Silicon Terrestrial Photovoltaic (PV) modules). All metal structure as per site along with paint etc to be included.  | Rooftops                                 | All Buildings Expect Interpretation and Multipurpose Hall |

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| <p>ITC of Automatic Fully Mechanised Organic Waste Machine for Compost 3250 for 500 kgs reprocessing capacity, Type of machine: Fully Automatic (PLC Based)</p> <p>Reprocessing Capacity of Machine (Kgs):500</p> <p>Chamber volume (approx Six times to reprocessing capacity of machine) (ltrs): 3250 for 500 kgs reprocessing capacity</p> <p>Material of body cover: SS – 202 of suitable thickness</p> <p>Gear Motor (BEE star rating): 4</p> <p>Gear Motor: Planetary Gear (Direct drive)</p> <p>Heating System: ceramic type</p> <p>Power Consumption (KW): Max 15 for 500 kgs reprocessing capacity</p> <p>Power requirement: 440 V, 3-phase,above 100kg</p> <p>Capacity Twin Shaft Shredder (Kg/hr): 250</p> <p>Material of Blade of Twin Shaft Shredder: SS-304</p> <p>Blade Thickness of Twin Shaft Shredder: 5 millimeter</p> <p>Sheet thickness of Hoper of Twin Shaft Shredder: 2 millimeter</p> <p>Feeding into Shredder: Manual</p> <p>Electric Motor Power Rating for Twin Shaft Shredder confirming to IS:325 latest revision:3 horsepower</p> <p>Material of Canopy of control panel confirming to IS:2062 latest: SS-302</p> <p>Air flow capacity of Air Blower (Cubic ft): 1000</p> <p>Electric Motor Power Rating for Air Blower confirming to IS:325 latest revision: 1 horsepower</p> <p>Compostable material removal: Once in 24 hours for continuous plug system</p> <p>Comprehensive Warranty of Plant: 5 year</p> <p>Noise Level of Plant during Operation (dB): 60</p> | <p>Ground floor<br/>, Near<br/>Kitchen</p> | <p>Wherever Planned<br/>By contractor</p> |
| <p>Supply and Installation of-3mm Pixel Pitch based indoor Direct View True Color LEDWall inclusive of LED controller, Video Processor, Power Distribution Unit , Mechanical Structure for Mounting of LED Wall.</p> <p>Display Size (W x H)</p> <p><b>display wall:</b></p> <p><b>- Min. 3.5m x 2m</b></p> <p>Pixel Pitch-3mm or better(Lower pitch is regarded as better)</p> <p>LED Configuration-RGB 3 in 1 SMD</p> <p>Pixel Density -Minimum 112896 per sqm or higher</p> <p>Brightness -800 cd/m<sup>2</sup> or better</p> <p>Power Input-100 ~ 240 VAC</p> <p>Access For Maintenance-Front</p> <p>IP Level-Front IP30 / Rear IP30</p> <p>Safety Certifications-( Mandatory to submit along with the bid)</p>   | <p>Kala<br/>Kendra/AV<br/>room</p>         | <p>Interpretation<br/>Centre</p>          |

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|  | <p>BIS Registration (Bureau Of Indian Standards) As per Standard: IS 13252 ( PART 1) :2010. Offered model BIS certificate should be on OEM brand and their own manufacturing unit in India.</p> <p>Power-100~240VAC</p> <p>Solution Compatibility -Complete solution should be from same OEM brand to ensure smooth integration and avoid compatibility issues during implementation phase</p> <p>Network-WiFi,( 802.11 AC (2.4 GHz &amp; 5 GHz) , Ethernet , PIN-protected guest access. POE support AES encryption and dual network management, Collaboration Quickly connect mobile devices using QR codes, 60 user can share information from any device. Wireless screen out two way duplication , NT live screen</p> <p>Inputs-1 x HDMI , 2 x USB, 1x Ethernet In , RS-232, audio in, 1X DVI, Output -1x HDMI out ,1x Audio Out , Control-LAN, USB, RS232 Wireless Connectivity-It should be possible for the user to show Laptop or Android/IOS phone over the display without disturbing the existing network over wireless Quality/Health &amp; Safety/Environmental Certifications of OEM/OEM subsidiary in India ( Copy to be submitted along with the bid Quality Management System 9001:2015 , Occupation health &amp; Safety Management System - OHSAS 18001:2007, Environmental Management System 14001: 2015</p> <p>Scope<br/>Complete Supply, Installation, Configuration, Testing and Commissioning of all the delivered equipment with necessary cables and accessories.</p> <p>Mounting Structure<br/>LED wall should be mounted on wall . Structure should be mounted properly.</p> <p>Material<br/>Should be made from mild steel and painted black along with antirust coating.</p> |               |               |
|  | <p>Outdoor LED – Pixel Pitch 10 mm</p> <p>Size-7.6 x 2.8 meter or higher</p> <p>Pixel Pitch-10 mm</p> <p>LED Configuration-RGB 3 in 1 SMD</p> <p>Pixel Density - Minimum 10,000 pixels per sqm or higher</p>   | Entrance Side | Bareilly Haat |

|  |   |  |  |
|--|---|--|--|
|  | Half Gain Horizontal / Vertical Viewing Angle- H 140 deg / V 90 deg or better<br>Refresh Rate- >1920 Hz or better<br>Temp Range- -20 to +50 Degrees C or better<br>Grey Scale Processing- 12 Bit or better<br>Brightness (Typ)- 5500 cd/m <sup>2</sup> or better<br>Maximum Power Consumption- 900 w/sqm or lower<br>Dimming Capability- 255 levels<br>Power Input- 100 ~ 240 VAC<br>Access For Maintenance- Rear<br>IP Level-Front: IP65 / Rear : IP 54<br>Safety Certifications( Mandatory to submit along with the bid)<br>BIS Registration (Bureau Of Indian Standards) As per Standard: IS 13252 ( PART 1) :2010. Offered model BIS certificate should be on OEM brand and their own manufacturing unit in India. CE, FCC.<br>Quality/Health & Safety/Environmental Certifications of OEM/OEM subsidiary in India ( Copy to be submitted along with the bid<br>Quality Management System 9001:2015 , Occupation health & Safety Management System - OHSAS 18001:2007 , Environmental Management System 14001: 2015 |  |  |
|--|---|--|--|

| Parameter  | Specifications   |
|--|--|
| Approved Brand   | Barco/ Delta / Mitsubishi /Daktronics  |
| <b>LED Control System</b>  |  |
| Control Port   | RS232/ LAN   |
| Signal Interface   | 1x HDMI in, 1x HDMI Out 1x Audio In, 1x Audio Output 2x USB ; RJ45-POE support |
| Connectivity to Display  | RJ45   |
| Maximum Load Capacity  | 2.3 Million Pixels   |
| Network Connectivity   | WiFi: 802.11 AC (2.4 GHz & 5 GHz) Ethernet: 1 Gbps                             |
| Input Voltage  | 100~240 VAC  |
| Operating Temperature  | 5~40 Deg C   |
| Complete solution (Outdoor LED display, LED control System, management software for cloud publishing should be from same OEM/Brand for smooth integration to avoid issues at implementation stage .) |  |
| <b>Workstation/PC</b>  |  |
| Operating System   | WIN10  |
| HDD  | 500GB  |
| RAM  | 4GB  |
| Processor  | i5   |
| Monitor (With DVI/HDMI I/P)  | 17"  |
| Display Output   | DVI/HDMI   |
| Display Memory   | 1GB Min  |

|  |  |
|--|--|
| Approved Brand                                   | HP/DELL/ ACER  |
| <b>Smart Power Distribution unit</b>             |  |
| Front Door                                       | 2 Hinges with Rack with Aircon bolted  |
| Wall Mount Clamp                                 | Welded on Rack frame rear side   |
| 19" pillar front & 19" pillar rear               | Bolted on rack side wall   |
| Locking Arrangement                              | To be provided with a locking system   |
| Limit Switch                                     | The rack door to be provided with a limit switch   |
| Earthing   | Earthing studs should be provided in the rack for Earthing purposes  |
| Cable points                                     | Cable entry and exit points should be provided in the rack   |
| Mounting   | Should be possible to mount the rack either on a pole or on a wall with options of different mounting types  |
| IP rating  | IP54   |
| Surge protection                                 | Class C  |
| Over temperature protection                      | Selectable from 30 deg to 60 deg C   |
| Refrigerant                                      | R134a for harsh conditions   |
| Cooling capacity                                 | 500W@L35/L35   |
| Internal Airflow                                 | 120 m3/h   |
| Display Panel                                    | Should be provided with a display panel to show parameters like cabinet temperature, indications for cooling, running of external fans, flashing on alarm  |
| Approved Brand                                   | Barco/ Delta / Mitsubishi /Daktronics  |
| <b>MOUNTING STRUCTURE</b>                        |  |
| Mounting Structure                               | Outdoor LED Display should be mounted on wall/ Unipole. Bidder need to make structure to mount the LED display with 800mm catwalk area for maintenance form the rear side of the display.                          |
| Material   | Should be made from mild steel/ Al extrusion and painted black along with antirust coating.  |
| <b>Management Software with Cloud Publishing</b> |  |
| Signage & Content Manager (Software & Hardware)  | To be able to create playlists and send them over the network to media players or more for playout based on schedule and sequencing. This software to be loaded on suitable hardware to be supplied by the vendor. |
| Playlist Automation                              | Flexible scheduling based on day, date and time; Playlist Scheduling;  |
| Content Distribution                             | Should be done using OEM cloud setup. Cloud licence should be provided for three years minimum   |
| Content Management                               | Synchronize media content automatically from remote storage -Dropbox, FTP, etc.  |

**Acoustic work, Stage furnishing & Stage lighting and A V system in Auditorium**

| S.no.       | Description of Item  | AREA OF USE                     | BUILDING   |
|-------------|--|---------------------------------|--|
| <b>SH 1</b> | <b>ACOUSTICAL TREATMENT CEILING:</b>   |                                 |  |
| <b>1</b>    | <p><b>Ceiling With Micro-perforated 3x3mm Square Gyp Acoustic Board in Hall, Back Stage &amp; Green Room:-</b><br/>                     Providing &amp; fixing Micro perforated Gyp acoustical ceiling , as marked in the drawings, consisting of GI perimeter channels of size 0.55mm thick (having one flange of 20mm and another flange of 30mm and a web of 27mm) along with perimeter of ceiling, screw fixed to brick wall/ partition with the help of nylon sleeves and screws, at 610mm c/c. Then suspending GI intermediate channels of size 45mm (0.9mm thick with 2 flanges of 15mm each) from the soffit at 1220mm c/c with ceiling angles of width 25mm x 10mm x 0.55mm thick fixed to soffit with GI cleats and steel expansion fasteners. Ceiling section of 0.55mm thickness having knurled web of 51.5mm and two flanges of 26mm each with lips of 10.5mm are then fixed to the intermediate channel with the help of connecting clips and in a direction perpendicular to the intermediate channel at 300mm c/c. The polyester fibre of 1000 gsm density and 50mm thick layed over the made framework and Finished in 12.5mm thick micro-perforated gypsum board, 1200mm x 2400mm, with 3x3mm square perforations in combination with 12.5mm thick gypsum board where ever required. The ceiling to be finished with 2 or more coats of mat type plastic emulsion paint after proper jointing &amp; making surface smooth. All complete as per drawing &amp; design.</p> | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>2</b>    | <p><b>Stage suspension Grid:</b> Providing &amp; fixing MS suspension grid system over stage for hanging stage services made of 2 nos 40x40x5mm MS angles welded back to back with 50x12x12mm thk studs as MS spacers sandwiched between the MS angles so as to maintain 12mm gap between MS angles, the welded angles to be placed @ 1200mm c/c in one direction and 40x5mm thick MS Tee @ 600mm c/c in other direction. The MS grid to be suspended from the roof structure by means of MS flat suspender of 50x6mm thick MS flats @ 1200mm c/c in both directions. All MS members to be painted with a coat of red oxide primer &amp; 2 or more coats of black enamel paint.</p>  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |



|             |   |                                 |  |
|-------------|---|---------------------------------|--|
| <b>3</b>    | <b>Woodwool fibril acoustical panel in stage ceiling:</b><br>Providing and fixing Fibril wood-wool black acoustical panel of size 1200x600x20 mm, to be installed on existing MS suspension grid.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>SH 2</b> | <b>ACOUSTICAL TREATMENT WALL PANELING:</b>  |                                 |  |
| <b>1</b>    | <b>Slated Wooden Acoustic paneling for rear wall, side walls lower Level:</b><br>Providing and fixing Slated Wooden Acoustic panel with lineal perforations to be fixed on walls. The panels shall be with melamine laminate finish of size 2440mm x 128mm x 16mm with 4mm grooves at 28 mm pitch tongue and groove edges for seamless mounting high density fiberboard having density of 800 kg/m <sup>3</sup> and system NRC of 0.83 as per IS 8225 / ISO 354 / ASTM 423C . The back of the panels are perforated with 10mm diameter circular holes with a nonwoven fabric covering of 0.2mm for providing Sound absorption via the acoustic impedance method. Panel is to be fixed on 50mm GI framework consisting of 48x36x34x0.5mm thick GI Studs wall channels & 50x35x35x0.5mm floor channels @ 600mm c/c back support with 75x12mm MR grade ply strip as recommended by the manufacturer with screw fixed horizontal / vertical to wall in tongue & groove system. The cavity of GI framework should be inserted with 50mm thick 1000GSM, thermally bonded polyester fibre for better insulation. The shade of the panel will be approved by architect or engineer in charge. | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|             |  |                                 |  |
|-------------|--|---------------------------------|--|
| 2           | <p><b>Fabric wrapped Compressed glass substrate panels paneling on rear &amp; side walls upper level :</b></p> <p>Providing and Fixing Fibril Glass Stoff acoustical wall paneling square edges made of fibre glass substrate of 120kg/m<sup>3</sup> density and 25mm thick. Panel will be wrapped on the front side with fire retardent fabric as per BS EN1021:1&amp;2 with an option of colors as per the choice of the architect or engineer in charge of size 1200X600 mm providing the sound absorption level of NRC 1.0 as per IS 8225 / ISO 354 / ASTM 423C with the system. Panel will be affixed on wall using construction adhesives backing with 8mm MR grade ply on 50mm GI framework consisting of 48x36x34x0.5mm thick GI Studs wall channels &amp; 50x35x35x0.5mm floor channels @ 600mm c/c with the help of steel screw as per the instructions laid down by the manufacturer. All complete as per drawing &amp; design.</p> | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 3           | <p><b>Stage Walls treatment :</b> Providing and fixing 20mm thick black fibril wood wool panels having density of 400kg/cum, fixed over a framework of GI channels consisting of 48x36x34mm GI Stud wall channels &amp; floor channels @ 600mm c/c, filled with 50 mm thick 500GSM thermally bonded polyester wadding to be held in position with 19mm GI wire netting.</p>  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 4           | <p>Providing &amp; fixing 150x15mm thick Polished teak wood skirting at the bottom of wall paneling. The skirting shall be fixed over 12mm thick commercial ply to match the level of paneling.</p>  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>SH 3</b> | <b>STAGE FURNISHING</b>  |                                 |  |
| 1           | <p>SUPPLY INSTALLATION TESTING AND COMMISSIONING of FRONT CURTAIN made out of FR Treated approved colour velvet cloth with horizontal sliding arrangement complete with fixing rails, brackets, sliding arrangements &amp; motorised operation complete with runners, master runners, pullies, 3mm steel wire rope, 1HP motor (Crompton) 2nos. air breaker contactors (L&amp;T/SIEMENS), 2 nos. micro switches for auto stop, 3nos. push buttons for forward, reverse and stop positions. The curtain should be draped to half area when in closed position. Minimum overlap at centre should be 900mm and should be stitched in double gathering. App size 21000x9000.</p>  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|          |  |                                 |  |
|----------|--|---------------------------------|--|
| <b>2</b> | SUPPLY INSTALLATION TESTING AND COMMISSIONING of REAR CURTAIN made out of FR Treated approved colour crepe cloth with horizontal sliding arrangement complete with fixing rails, brackets, sliding arrangements & motorised operation complete with runners, master runners, pullies, 3mm steel wire rope, 1HP motor (Crompton) 2nos. air breaker contactors (L&T/SIEMENS), 2 nos. micro switches for auto stop, 3nos. push buttons for forward, reverse and stop positions. The curtain should be draped to half area when in closed position. Minimum overlap at centre should be 900mm and should be stitched in double gathering. size 21000x9000. | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>3</b> | Providing and fixing WINGS at Stage with fire retardant crape black fabric ( weight not less than 320gms/sqm of Make: Comrade/ RSWM/Banswar Syntax) fixed complete on 25mm dia MS pipe for 180 degree rotational movement . The work shall be executed as per drawings ,specifications & instructions of engineer in charge.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>4</b> | Providing & fixing of the Border frills out of Fire retardant Crape black colour ( weight not less than 290 gms/sqm Make: Comrade/RSWM/Banswara Syntax)) fabric in 1:2 gathers & accessories like cotton dori eyelets of brass complete with 25mm dia medium grade GI pipe painted black suitably hung from the ceiling . The work shall be executed as per drawings ,specifications & instructions of engineer in charge.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>5</b> | P/f of the cyclorama for the stage by fixing 35x35x5mm MS angle on the wall with MS angle hold fasts secured to the walls & 40mm dia 16G MS pipe welded to it as per the drgs. Further 40mm dia pipe welded to it at 600 centres vertically at an angle of 45 deg. & finally welding 40 mm dia pipe horizontally to it. The pipe to be supported away at 200mm centers by MS pipe. The cyclorama frame to be supported by MS angle hold fasts of 35x35x5mm on the wall at 1200mm centers. Finally fixing PVC perforated screen, cyclorama cloth as per approved sample & fixing by cotton dori 10mm thick complete.                                    | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|             |  |                                 |  |
|-------------|--|---------------------------------|--|
| <b>6</b>    | <p>Providing and fixing 90x20mm thick, in random length, Maple wood planks flooring with tongue &amp; groove joints ,fixed to pine wood joist at 600 mm c/c in one direction , pine wood joists to be resiliently supported on 50x50 mm rubber pads .</p> <p>Polishing of flooring on exposed surface: In horizontal/vertical plane (Rate for flooring shall include providing additional framework required for housing microphone and power outlet junction boxes.</p> | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>SH 4</b> | <b>SOUND REDUCING DOORS</b>  |                                 |  |
| <b>1</b>    | Entry/exit doors for the auditorium 77mm thick, acoustic doors consisting of fire resistant materials & peripheral seals all around . The door to be laminated with 1mm thick laminate. The Door shutter frames to be of klin dried chemically treated teak wood. The door shutter frame to be lapped with 12mm commercial ply duly treated for fire retardance.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>2</b>    | Chowkhats for the doors in second class teak wood of size 110x 90mm duly fire treated.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>3</b>    | Providing and fixing SS handles 450mm long.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>4</b>    | Providing and fixing Hinges (Steel with bal bearings ) of size 125 X 32mm fixed with steel drive all screws of 35mm.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>5</b>    | Providing and fixing heavy duty door closer.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>6</b>    | Providing and fixing locking arrangement for doors.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>SH 5</b> | <b>AUDITORIUM CHAIRS &amp; CARPET FLOORING</b>   |                                 |  |

|             |   |                                 |  |
|-------------|---|---------------------------------|--|
| <b>1</b>    | Supplying & installation of Fabric upholstered chair with C-Frame mechanism for Auto-tip seat movement without spring or gravity. The chair to be mounted on central foot for easy housekeeping and aesthetics. The chair shall have powder coating not below 40 microns on all MS framework. The seat shall have Polyurethane moulded foam of Density 45+-5 KG /cum & back to have density of 40+-5Kg /cum. The height of the back to be 950-1050mm from the ground to top of the Back & for the seat to be 400-450mm from the ground. The rear of the back to be covered with Polypropylene Plastic shell in black color. The chair to be upholstered in fire retardant fabric (optional) with optional 5 mm foam lamination for durability. The box type armrest to be fabric clad for extra comfort (provision for conferencing system can be provided on top of armrest). The armrest between two chairs in a row to be shared, including fixing of the chair with expansion fasteners of M8X100 length on hard RCC/PCC floor. | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>2</b>    | Providing and fixing machine tufted loop pile high low scroll polypropylene carpet effective pile height 6mm, total pile weight not less than 22oz. secondary backing action back 55 gms/sqm. In rolls of 3.66 mtr. width as per size, shade, design and direction of Engineer-in-charge and as per manufacturer's specifications. The sample may be approved by the Engineer-in-charge before start of the work. The surface area will be measured for payment. The carpet to be backed with 6mm thick PU underlay.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>SH 6</b> | <b>STAGE LIGHTING SYSTEM</b>  |                                 |  |
| <b>1</b>    | SUPPLY INSTALLATION TESTING AND COMMISSIONING of 1000W Halogen Planoconvex spot light complete with 1000 W Halogen Bipin T-11 lamp, spherical anodised reflector, imported socket, 150mm dia planoconvex lens, bottom sliding knob, yoke, colour frame & suitable clamp, safety chain complete as required.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>2</b>    | SUPPLY INSTALLATION TESTING AND COMMISSIONING of 1000W Halogen Fresnel light consisting of 1000W Halogen Bipin T-11 lamp, 150mm dia imported fresnel lens, Imported socket, bottom sliding knob, yoke, colour frame & suitable clamp safety chain complete as required.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|           |  |                                 |  |
|-----------|--|---------------------------------|--|
| <b>3</b>  | "SUPPLY INSTALLATION TESTING AND COMMISSIONING of 1000 W Halogen profile light consisting of 2 nos. 150mm dia PC lenses, imported socket, ellipsoidal anodised aluminium reflector, 1000W halogen BipinT-11 lamp, yoke colour frame & suitable clamp safety chain complete as required.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>4</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING of 1000W, 240 Volt, PAR Sealed Beam Light 16 SWG aluminium duly painted powder quoted paint , lamp 1000watt 240V OSRAM/Philips lamp CP-61/62,Ceremic type base GX 16 D mat black color, yoke & clamp safety chain complete as required   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>5</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING OF 1000 W Halogen light with mash & barndoor consisting of 2nos. single contact compressible holders, yoke, 1000W halogen tube & suitable clamp safety chain complete as required  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>6</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING of M.S. Pipe Ladders to be provided on sides of the Stage to be fixed on the existing GI pipe or top grid. Made of 50mm x 25mm MS pipe complete as required size 1800x600.<br>CUSTOM BUILT   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>7</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING of 50mm dia MS pipe lighting bars complete with suspenders etc. complete.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>8</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING of DMX controled Lighting desk for control of lights both halogen and LED: 12/24 Channels  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>9</b>  | SUPPLY INSTALLATION TESTING AND COMMISSIONING of Light Point Wiring from Patch Panel to be provided near stage to various stage light fixtures with FRLS 2.5 Sq.mm 3 Core PVC Insulated and PVC Sheathed Cable including Cable Tray of suitable size for laying these wires on the tray including 16AMP MULTISOCKET AND PvC cable tray mountable box complete with accessories as required.FRLS 3 core 2.5 sqmm wires. | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>10</b> | SUPPLY INSTALLATION TESTING AND COMMISSIONING of 18x4KW stage lighting digital, wall mounted dimmer rack with patch panel.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| <b>3</b>  | LED Grazer BCG 432 x LED - LXN/GN PSU - 100- 240 Volts   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|      |   |                                 |  |
|------|---|---------------------------------|--|
| 4    | LED strip light with aluminium strip Extrusion (Length 1 mtr. Width 75 mm<br>No. of LED per mtr. = 60 LED<br>Wattage of each LED = 40mw<br>Wattage per mtr. = 2.5 W.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 6    | LED brick light (108YL)<br>Length = 115 mm<br>Width = 155 mm<br>No. Of LED 18 (Single)  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 7    | Wiring for step and exit light with PVC insulated copper conductor 1100V multistrad "FRLS" wire in existing coduits, 2x1.5sq mm.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
|      |   |                                 |  |
| SH-7 | <b>SOUND REINFORCEMENT SYSTEM</b>   |                                 |  |
| 1    | FOH left & right :1000 Watt 2 Way 15" Powered Loudspeaker with KLARK TEKNIK DSP Technology, Remote Control via iPhone/iPad and Bluetooth Audio Streaming.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 2    | Subwoofer system of 1X18" powered subwoofer (Left and Right)Frequency Response: 35Hz-250Hz<br>Power capacity: upto 1000W Maximum SPL: >120dB.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 3    | Delay speakers left & right & stage monitors: Two way 1X12" powered speakersFrequency Response: 50Hz-20kHz Power capacity: upto 1000W Maximum SPL: >120d.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 7    | 22 channles, 4 band, 4 aux, 2 in 2 out USB, Faders 100mm, Lexicon effect, DBX limiter, Phantom power 48V, Sound craft GB, 2 Sub groups.   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 8    | 2 IN 6 out complete speaker management system with EQE,Copm,Delay,Limiter etc.  | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 9    | Equalizer: Input Connectors 1/4" TRS, female XLR (pin 2 hot), Max Input >+21dBu balanced or unbalanced, Input Impedance Balanced 40k ohm, unbalanced 20k ohm, CMRR >40dB, typically >55dB at 1kHz, Output Connectors 1/4" TRS, male XLR (pin 2 hot), Bandwidth 20Hz to 20kHz, +0.5/-1dB. Make: DBX, BSS | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 10   | Wired vocal microphone Cardoid or hypercardoid pattern dynamic microphoneMake: AKG/Audiotechnica/Shure or Eqvt approved by Engineer in Charge   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |
| 11   | Wired instrument microphone Cardoid or hypercardoid pattern dynamic microphone Make: AKG/Audiotechnica/Shure or Eqvt approved by Engineer in Charge   | Auditorium,<br>convention halls | Convention center,<br>Handicraft center<br>block 1 |

|      |  |                              |  |
|------|--|------------------------------|--|
| 12   | Wireless Handheld microphone To include 1 handheld microphones, 1 receiver with power supply, 1 charger for handheld transmitter, Antenna, cables etc.Make: AKG/Audiotechnica/Shure or Eqvt approved by Engineer in Charge   | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 13   | Gooseneck 18" gooseneck cardoid/ hypercardoid pattern dynamic microphone To include mounts, connectors and cables Make: AKG/Audiotechnica/Shure or Eqvt approved by Engineer in Charge   | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 14   | Equipment Rack 20 RU with power, fan.  | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 15   | Wall mount bracket for speakers, Microphone 2way box for stage mounting  | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 16   | Floor Mic Stand, Desk Mic Stand  | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 17   | Speakon, XLR, Tini & phono Connector. Wiring for speakers & microphones in PVC conduits. Installation, testing & commissioning of the system including training to technical staff.  | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| SH-8 | <b>VIDEO PROJECTION SYSTEM</b>   |                              |  |
| 1    | The VPL-CH370,5000 Lumins WUXGA offers installation flexibility, energy efficiency with a low total cost of ownership, and high image quality, while boasting a stylish design that blends into any decor. Image correction features and a lens shift/zoom capability enable users to easily fit any image onto the screen, even from an offset projection angle. Make: Sony, Barco, Panasonic | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 2    | Wall/ceiling Mounting kit Universal.   | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 3    | HDMI, VGA, LAN, Power Video Cable.   | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 4    | Active phase plate ( HDMI, VGA,AUDIO,CAT 6 etc). Receiver for phase plate. Milestone pro, Extron, Kramer   | Auditorium, convention halls | Convention center, Handicraft center block 1 |
| 5    | Transmitter receiver over cat 6 cable (1set). Milestone pro, Extron, Kramer  | Auditorium, convention halls | Convention center, Handicraft center block 1 |



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| 6 | Milestone switcher cum scaler . Milestone pro, Extron, Kramer Installation, testing & commissioning of the system including training to technical staff. | Auditorium, convention halls | Convention center, Handicraft center block 1 |
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## External Development Works

| EXTERNAL DEVELOPMENT WORKS |  |                          |
|----------------------------|--|--------------------------|
| S. NO.                     | ITEM   | AREA OF USE              |
| 1                          | Providing & Applying high quality acrylic modified resin based texture of Dhoolpur/Red sand stone Pattern with anti algae and UV resistance properties to be applied as intermediate finish in desired pattern @ 43.04 kgs/10 sqm to form film of 1-1.5 mm thickness after scrapping and properly cleaning the surface to remove loose particles from the plaster surface, followed by top coating with Premium Acrylic Smooth exterior paint with Silicone additives of required shade by two or more coats @ 1.43 litres/10 sqm, complete as the direction of Engineer -in-Charge  | Pavements                |
| 2                          | Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.   | All external development |
| 3                          | Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.<br>With material conforming to Grade-I (size range 75 mm to 0.075 mm) having CBR Value-30  | All external development |
| 4                          | Construction of dry lean cement concrete sub base over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per specifications, cement content not to be less than 150 Kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, for all leads & lifts, laid with a mechanical paver, compacting with 8-10 tonne vibratory roller, finishing and curing etc. complete as per direction of Engineerin-charge. | All external development |

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| <b>5</b>  | <p>Providing and laying design mix cement concrete of M-30 grade, in roads/ taxi tracks/ runways, using cement content as per design mix, using coarse sand and graded stone aggregate of 40 mm nominal size in appropriate proportions as per approved &amp; specified design criteria, providing dowel bars with sleeve/ tie bars wherever required, laying at site, spreading and compacting mechanically by using needle and surface vibrators, levelling to required slope/ camber, finishing with required texture, including steel form work with sturdy M.S. channel sections, curing, making provision for contraction/ expansion, construction &amp; longitudinal joints ( 10 mm wide x 50 mm deep) by groove cutting machine, providing and filling joints with approved joint filler and sealants, complete all as per direction of Engineer-in- charge (Item of joint fillers, sealants, dowel bars with sleeve/ tie bars to be paid separately).</p> <p>Note:- Cement content considered in M-30 is @ 340 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately.</p> <p>Cement concrete prepared with batch mixing machine</p> | Roads and vehicular paths               |
| <b>6</b>  | Extra for providing and mixing hardening compound of approved quality as per manufacturer's specification in cement concrete.  | Roads and vehicular paths               |
| <b>7</b>  | Providing and fixing in position pre-moulded joint filler in expansion per cm depth joints. Size is 5cm x 10cm   | Joints                                  |
| <b>8</b>  | Providing and laying in position bitumen hot sealing compound for expansion joints etc. Using grade 'A' sealing compound.: Size is 5cm x 10cm  | Expansion joint                         |
| <b>9</b>  | Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).  | Pedestrian pathways, green areas, roads |
| <b>10</b> | Providing and laying of factory made 80 mm thick interlocking cement concrete tiles (30mpa) including 25 mm thick compacted bed of fine sand compacting and proper embedding/ laying of interlocking tiles levelling and dressing of surface to required level and slope , filling joints with fine sand including the cost of material , labour T&P etc. required for proper completion of work as directed by Engineer-in-charge   | Pedestrian pathways                     |
| <b>11</b> | <p>Providing and laying factory made chamfered edge Cement Concrete paver blocks in footpath, parks, lawns, drive ways or light traffic parking etc, of required strength, thickness &amp; size/ shape, made by table vibratory method using PU mould, laid in required colour &amp; pattern over 50mm thick compacted bed of sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. complete all as per direction of Engineer-in-Charge.</p> <p>60mm thick cement concrete paver block of M-35 grade with approved colour, design &amp; pattern.</p>  | Pedestrian pathways                     |

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| <b>11a</b> | COBBLE STONE -Providing and laying 60mm thick facioy made of M -30 grade , of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.  | Entrance plazas ,<br>Hardscape areas    |
| <b>12</b>  | Geosynthetic Drainagewith two filtering nonwoven geotextiles having a “W” configuration as longitudinal parallel channels. Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75mm having pores of 150 micron and tensile strength of 8.0 kN/m and having plane flow capacity of 2.1 L / (m.s) at hydraulic gradient of 1.0 & 20 kPa pressure ,tensile strength of 18 kN/m , with mass per unit area of 740 gsm.   | Green areas                             |
| <b>13</b>  | Supplying and stacking of good earth at site including royalty and carriage upto 5 km complete (earth measured in stacks will be reduced by 20% for payment).   | All external development                |
| <b>14</b>  | Supplying and stacking at site dump manure from approved source, including carriage upto 5 km complete (manure measured in stacks will be reduced by 8% for payment) :<br>Screened through sieve of I.S. designation 20 mm  | All external development                |
| <b>15</b>  | Providing and applying 2.5 mm thick road marking strips (retroreflective) of specified shade/ colour using hot thermoplastic material by fully/ semi automatic thermoplastic paint applicator machine fitted with profile shoe, glass beads dispenser, propane tank heater and profile shoe heater, driven by experienced operator on road surface including cost of material, labour, T&P, cleaning the road surface of all dirt, seals, oil, grease and foreign material etc. complete as per direction of Engineer-in-charge and accordance with applicable specifications.  | Vehicular roads                         |
| <b>16</b>  | Fabrication and supply of stainless steel 304 grade BOLLARD with tapered top, Height-900mm, Diameter -150mm, Base plate dia – 210mm. Satin Finish. (Note: Installation, J Bolt/ Fastner as per approved make & Civil/CC Footing work shall be Extra & in the client scope as per site and choice). Installation of bollard on existing floor with chemical fastner as per satisfactory by site incharge.  | Pedestrian pathways, green areas, roads |
| <b>17</b>  | Fabrication & Supply of Flat Top Light Bollard Conforming Grade to SS-304, Matt finish, Consisting of 150mm dia pipe with laser indexing cutout for lighting with dia- 225mm, 6+6mm Thick Base plate with 1mm milky weight polypropylene Sheet covered internal surface area of lighting and Light fixture made out of Dia-16mm with 6mm thick lighting arrangement with the help of 1 nos LED Bulbs Osram/Philips or equivalent make including internal Electrical Wiring. Studs shall be providing M12x140mm Long. As per drawing details. (vendor must submit the own laser cut machine invoice of manufacturer at the time of bidding) (Note: Cost of civil work/foundation and installation will be extra)Installation of light bollard on existing floor with chemical fastner hilti make as per satisfactory by site incharge. | Pedestrian pathways, green areas, roads |

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| 18 | Fabrication and supply of Pole Mounted Single Dustbin of make made with Stainless Steel 304 grade, dustbin having the height 825mm & Outer Dia 375 mm with 1.2mm thk sheet. All around diamond shaped laser cut perforations, The dustbin shall be Mounted with connector rods on 75mm outer dia pole with 150 mm outer dai base plate have 3nos of hole for fixing on floor. (Note: Manufacturer shall have the own Lasercut machine bidder need to upload invoice of machine at the time of bidding). (Note: Installation, J Bolt/ Fastner as per approved make & Civil/CC Footing work shall be Extra & in the client scope as per site and choice). Installation charge including J Bolt/ Fastner on existing floor or foundation block as per approved make charges excuding of matrial frieght. Providing and laying of 300x300x300 mm RCC foundation of 1:2:4 ratio. Including excavation and leveling as required at site as per satisfactory by site enchange. (In the civil contractor scope). | Pedestrian pathways, green areas, roads |
| 19 | Fabrication and supply of Pole Mounted Double Dustbin of make made with stainless steel 304 grade, both dustbin having the height 825mm & Outer Dia 375 mm with 1.2mm thk sheet. All around diamond shaped laser cut perforations, both dustbin shall be Mounted with connector rods on 75mm outer dia pole with 150 mm outer dai base plate have 3nos of hole for fixing on floor. (Note: Manufacturer shall have the own Lasercut machine bidder need to upload invoice of machine at the time of bidding). (Note: Installation, J Bolt/ Fastner as per approved make & Civil/CC Footing work shall be Extra & in the client scope as per site and choice). Installation charge including J Bolt/ Fastner on existing floor or foundation block as per approved make charges excuding of matrial frieght. Providing and laying of 300x450x300 mm RCC foundation of 1:2:4 ratio. Including excavation and leveling as required at site as per satisfactory by site enchange.                            | Pedestrian pathways, green areas, roads |
| 20 | Fabrication and supply of stainless steel 304 grade 4 seater tubular bench without backrest having hair line finish, size of 1800mm length and 675 mm width with tubular seats made with 16mm dia tube & 50mm dia SS-304 tube. 2 legs made of 2mm thk SS sheet fixed with the push fit componant machanism. (Vendor need to submit the own laser cut machine proof of manufacturer at the time of bidding). Installation with J Bolt/ Fastner as per satisfactory by site enchange. Providing and laying the PCC 1:2:4 ratio foundation block as per satisfactory by site enchange.  | Pedestrian pathways, green areas        |
| 21 | Fabrication and Supply of Stainless Steel 304 grade 4 seater bench (Sheet Matel Bench with backrest) with hair line finish, of length 1700 mm and width 450 mm with leaser cut perforation sheet matel. SS Bench is modular in nature will packed in 2 part Seat with backrest & Legs for easy/fast to assamble at site. both legs have the push-fix componant. (Note: Installation, J Bolt/ Fastner as per approved make & Civil/CC Footing work shall be Extra & in the client scope as per site and choice). Installation with J Bolt/ Fastner as per satisfactory by site enchange. Providing and laying the PCC 1:2:4 ratio foundation block as per satisfactory by site enchange.  | Pedestrian pathways, green areas        |
| 22 | Fabrication and supply of unipole Center Pole Signage, having the double side openable backlit signage of size 4'-4"(L) x 6'-0" (H), Signage shall be suppoted on SS-304 grade pole of 6" dia with MS base plate, The overall height shall be 8'-10" from FFL and signage box shall be mounted on top of pole along with top & bottom the laser cut mirror finish decoratiove crown/vectoria corners shall be made in SS 304. (Note: Manufacturer shall have the own Lasercut machine bidder need to upload invoice of machine at the time of bidding). The side signage frame shall be made of 6063-aluminum frame with section weight 5.3 to 5.5kg/m with minimum tensile strength 22000 psi, The front frame shall be cladde by SS-304 grade sheet on both side as per drawing provided having 4mm clear solid compact polycarbonate on both side and reinforced with internal support frame, completely sealed with the  | Pedestrian pathways, green areas, roads |

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|    | <p>help of silicon and EPDM to make it dust and water proof. Should have the inbuilt STRONG clipping and frame arrangement for holding the flex of digital media alongwith all necessary cleats and corner joinery require to build the signage with sufficient strength. The aluminum frame should have polyester powder coating with minimum thickness of 60 micron. (Note: The Bidder need to provide own Powder coating machine/paint shop of the manufacturer). The Internal led light of 22W LED Tube with batten (HELONIX, ORIENT, PHILIP, OSRAM, HAVELS) shall be fixed 2 nos Led light on all four sides total 8 nos led light shall be fixed inside the signage including the all required wiring and 1 no. MCB for NO/OFF provision. (Note: The Main source of current and connection to MCB of this signage shall be the client responsibility.) Installation charges excluding of material freight. The stand alone signage shall be fixed on RCC 1:2:4 Footing Block with bottom PCC bed of 1:4:8 ratio with fastener or 'J' Bolt as per satisfactory by site engineer.</p> |                           |
| 23 | <p>Providing of Pop-up Rotary type sprinkler of heavy duty plastic / non-corrosive &amp; UV resistant body suitable for a throw of approx. 10 to 15 m radius at operating pressure of approx. 1.5 to 4 kg/cm<sup>2</sup>, with adjustable type Full / Part circle with inlet filter screen, adjustable arm complete as per requirement.</p>   | Green areas               |
| 24 | <p><b>Geyser jet fountain</b><br/> Geyser jet nozzle of SS/ brass/bronze CNC with nickel chromium plating .<br/> Multi colored nozzle mounted RGB LED Light Noural black-body ,with water proof Light (IP 68) , toughen glass with elastomer sealed of 18W, 12V,<br/> Controller for Multi colored RGB LED Light<br/> Center jet nozzle 1inch, brass or SS<br/> Submersible pump 3Hp with suction strainer and other fittings with all respect.<br/> Outdoor electrical Panel of 3HP pump(MCB,OLR,Push button switch, light indicator,voltmeter,ammeter etc.<br/> Electrical submersible cable complete in all respect of 4 core round 1.5mm copper conductor.<br/> Electrical submersible cable complete in all respect of 3 core flat 2.5mm copper conductor,PVC insulated flat wire for pump.<br/> Electrical cable conducting pipe of all lay out of wire<br/> UPVC Plumbing and its fittings of 10kg pressure with bush,socket,T,Elbow,control valve,gate valve, solvent etc.<br/> Installation,Testing and commissioning<br/> Transportation</p>                                    | Green areas, public zones |
| 25 | <p><b>Cascade water fountain</b><br/> 15 Feet Diffuser Nozzle with complete fittings and holding Material.<br/> Programmable color changing LED based lights<br/> DCC Programmable controller for lights<br/> Openwell Submersible pump 5 HP<br/> Electrical panel 22 Gauge CRC Sheet, power coated, contractor overload relay with face and on/off indication, protection circuit.<br/> Necessary electrical Submersible Wiring for water Body Pump, RGB Lights &amp; Water Switch For conducting pipe ,Band , Submersible Tape, Pvc Tape, etc.<br/> Plumbing material pipe, fitting, elbow ,tee ,socket, reducer jointing all necessary plumbing item in water body's<br/> Installation /Testing /Supervision/Transport</p>   | Green areas, public zones |

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| 26 | <p><b>HIGH MAST</b><br/> Shaft- Supply &amp; fixing of 25 mtr High mast shaft of approved make with rising system hot dip galvanized inside &amp; out side dip, having pole sheet thickness 4 mm. Top dia minimum 150 mm, Bottom dia 460 mm base plate 32 mm thick suitable for wind velocity as per IS 875 part 3 &amp; having no circumferential weld, with accessories for high mast such as head frame suitable for 8 to 12 luminaries &amp; its control gear boxes 1.5 HP power tool moter, 3 point suspension system with steel wire rope 8 mm dia, double drum winch, including making suitable foundation as per manufacture drawing/ site requirement along with foundation bolts nuts, washers, anchor plates etc complete in all respect.<br/> Luminaire- Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with driver set suitable for 170 to 200 Watt. Confirming to IP 66 protection complete in all respect.</p>  | Wherever applicable                     |
| 27 | <p><b>SCULPTURE</b><br/> M.S Pipe Frame Enamel Painted -20 x40 mm and 40x40 mm – 1.5 Tonnes<br/> Approximate weight , 1.2 mm thick CNC bent laser cut Titanium coated SS304 stainless steel sheet gold colour -100ns ., 16mm base foundation plate bolted - 500kg</p>  | Wherever applicable                     |
| 28 | <p><b>SENTRY POST/ Guard House/ Ticket Room</b><br/> MS Sheet confmg to IS 1079/ Latest side wall, 18 gauge MS door panel, square shape, two way slope roof, easily assembled, without partition, 1 ventilator made of aluminium adjustable louvers type channel and to be fixed in wall panel with suitable fasteners, polycarbonate sheet 6 mm thick window panel, Door window canopy 18 gauge ms corrugated sheet, 19 mm thick marine grade plywood confmg to IS 710/ latest covered with 2mm thich PVC sheets, 18 gauge MS corrugated sheet roof panel material, PUF insulation, MS frame, aluminium glazed sliing window anodised sections frame</p>  | Site entry points                       |
| 29 | <p><b>BOOM BARRIER</b><br/> Torque 250 Nm, Owrking cycle 80%, Opening time at 90 degrees 6 seconds, power 24 VDC, Motor consumption 1.3 A, Absorbed power 300 W, Integrated lights, IP54 rating, -20 to + 55 degree celcius working temperature</p>  | Site and basement entry and exit points |
| 30 | <p>Providing and fixing M. S. tree guard 50 cm square in plan, height 1.40 metre above ground level and 0.50 metre below ground level. The vertical members shall consist of four nos of angle iron of size 25x25x5 mm 1.9 m long, one at each corner and 8 nos flat iron of size 25x5 mm 1.4 m long. The vertical members shall be welded to 4 nos 25x6 mm M. S. flats placed horizontally around the vertical member of the cage. One name plate of 1 mm thick M.S. sheet of size 250x100 mm shall be welded to the tree guard near the middle height and lettered CPWD / PWD/ any other approved name. The tree guard shall be fixed to the ground by making suitable holes and by embedding four corners leg in the ground, including refilling the earth , compaction etc. complete. The tree guard shall be painted with two coats of paint of approved brand and manufacture over a coat of primer, complete in all respect. Tree Guard shall be manufacture with laser cutting, CNC Turret machine, CNC Bending machine, Powdercoating Machine. All Weilding should not be visible, properly finsihed by grainder, buffer machines done by TUV certified weilder only. Proof of own machines of OEM will be submitted by contractor. Make: Neelkanth, Ozone, Balaji Steel Industry only.</p> | Along with trees                        |

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| 31 | <p>Supply , fixing, Testing &amp; Commissioning of 4.5 mtr long,3mm thick sheet,hot dip galvanised poles of bottomdia 130mm/70mm respectively with base plate diamensions 220X220X14 mm with galvanised Single Arm Bracket of 1.00 mtr length. The pole shall be Erected on a suitable size of Cement Concreate 1:2:4 foundation as per Manufacturers standards along with Grouting the Foundation Bolts,nuts and 1.5 mtr long,50 mm dia suitably bend ,GI ,Medium Class Pipe for cable entry, suitable size Inbuilt Cable End Box opening approx.600 mm above the Pole Base with 2 Nos. 6Way 15 Amp, Bakelite Connectors,1 No 6 Amp, SP MCB C Curve etc as required. The door shall be vandal resistant and shall be weather proof to ensure safety of inside connections. The door shall be flush with the exterior surface and shall have suitable locking arrangement. There shall also be suitable arrangement for the purpose of earthing. The poles shall be complete with integral terminal boxes, MCB cut-outs, pole foundation bolts, lightning arrestor, earthing, etc. as required. The poles shall have provisions for mounting and connecting an additional 250 Watt MH -type outdoor light fitting</p> <p>Supplying , Fixing, Testing &amp; Commissioning of Post Top Lanterns of 40 Watt LED Light Fixtures,IP-65 Housing,made of single piece Die Cast Aluminium alloy,as per Manufacturers design.on a suitable length &amp; Dia of GI Pipe</p> | Along site boundary, pedestrian pathways and roads |
|    | <p>Plan: Providing &amp; Fixing Signage, "Bareilly Haat" of Front Dimension as specified in Submitted drawing with illuminated Signage .Signage in 18guage and grade 304 Stainless Steel (Corrosion Resistance- to stress corrosion cracking above about 60°C. Considered resistant to potable water with up to about 200mg/L chlorides at ambient temperatures, reducing to about 150mg/L at 60°C.) . and there would be use SS bolt,Nuts and fastner (The stainless steel fastener materials are identified as the B8 class of alloys and are identified in the ASTM Specification A193/193M (Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service). The corresponding nut specification is ASTM Specification A194/194M.) Front Side will be Acrylic Sheet (a cast) 40% transparaency to be laser cutting, Buffing and there would be use 3M Translucent Vinyle 3630 with digital printing (5 Yrs warranty ) where we required as per the artwork. Signage Illumination:- illumination to be done via Samsung Led module with advanced short circuit protection and power supply would weather resistance with 5yrs warranty.(12 alphabets with 1200 mm height and logo)</p>  | At the Roof of Front Building                      |
| 32 | <b>HORTICULTURE (LIST OF TREES,PLANTS, VEGETATION ETC MAY BE ALTERED AS PER SITE)</b>   |  |
| 33 | Supply and stacking of Ficus benjamina (green) plant of height 150-165 cm., bushy with healthy branches and lush green foliage in big size HDPE bags as per direction of the officer-incharge.  | Wherever applicable                                |
| 34 | Ficus benjamina (green) of height 150-165 cm., bushy with healthy branches and lush green foliage in big size HDPE bags   | Wherever applicable                                |
| 35 | Supply and stacking of plant Bauhinia acuminata of height 60-75 cm. in earthen pots of size 20 cm as per direction of the officer-in-charge.  | Wherever applicable                                |
| 36 | Bauhinia acuminata of height 60-75 cm. in earthen pots of size 20 cm  | Wherever applicable                                |

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| 37 | Providing and laying Neelgiri/Mexican grass turf with earth 50mm to 60mm thickness of existing ground prepared with proper level and ramming with tools wooden (Dhurmos) and than rolling the surface with light roller make the surface smoothen and light watering with sprinkler and maintenance for 30 days or more till the grass establish properly, as per direction of officer-in-charge  | Wherever applicable |
| 38 | Supply and stacking of Fishtail palm plant of ht. 270-300 cm bottom girth 40-50 cm well developed in big size HDPE bags as per direction of the officer-in-charge.  | Wherever applicable |
| 39 | Fishtail palm of ht. 270-300 cm bottom girth 40-50 cm well developed in big size HDPE bags  | Wherever applicable |
| 40 | Supply and stacking of Foxtail palm plant of ht. 240-270 cm bottom girth 35-40 cm well developed in big size HDPE bags as per direction of the officer-in-charge.   | Wherever applicable |
| 41 | Preparation of mounds of various size and shape by available excavated / supplied earth in layers not exceeding 20 cm in depth, breaking clods, watering of each layer, dressing etc., lead upto 50 meter and lift upto 1.5 m complete as per direction of Officer-in-charge.   | Wherever applicable |
| 42 | Rough dressing the trenched ground including breaking clods. Details of cost for 100 sqm  | Wherever applicable |
| 43 | Fine dressing of the ground. Details of cost for 100 sqm  | Wherever applicable |
| 44 | Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20% : one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). | Wherever applicable |
| 45 | Ficus blackii (F.vivion) of height 45-60 cm. with 6-8 branches healthy foliage in earthen pot of size 25 cm Each  | Wherever applicable |
| 46 | Antirrhinum dwarf   | Wherever applicable |
| 47 | Aster dwarf   | Wherever applicable |
| 48 | Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserviceable material's as per direction of officer in charge (excluding cost of plant & water) Trees Plant   | Wherever applicable |
| 49 | Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserviceable material's as per direction of officer in charge (excluding cost of plant & water) Shrubs Plant  | Wherever applicable |



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| 50 | Providing and stacking of Azadirachta indica ( Neem ) of height 120-130cm in big polybag of size 25 cm as per direction of the officer-in-charge.       | Wherever applicable |
| 51 | Providing and stacking of Saraca indica (Sita Ashok) of height 105-120cm. in big poly bags of size 25 cm as per direction of the officer-in-charge.     | Wherever applicable |
| 52 | Providing and stacking of Mangifera indica (Mango-grafted ) of height 60-75cm. in big poly bag of size 25 cm as per direction of the officer-in-charge. | Wherever applicable |
| 53 | Shifting of existing trees to nearby suitable location With similar soil condition , complete in all aspects .  | Wherever applicable |

## Recreation Zone

| RECREATION ZONE |   |  |
|-----------------|---|--|
| S.No.           | Item  | AREA OF USE  |
| 1               | <b>Pre Engineered - Ferris Wheel of 90ft</b><br>Technical specification<br>Seating Capacity : 4 Pax / per Bogie<br>No. of bogies : 18 Bogies<br>Area for Rides : L: 21 mtrs. X B: 18 mtrs<br>Fencing Area : L: 27 mtrs. X B: 20 mtrs.<br>Ride Height : 27 mtrs.<br>Power Required : 35 HP , 27 KW<br>Rotating Speed : 3-5 per round<br>Drive : Hydraulic Drive<br>Construction : Permanent Park<br>Loading : 1 by 1 Boggie  | Bareilly haat recreatioal zone                                   |
| 2               | <b>Swings</b><br>Metal frame – provided with rope (so that it can be hanged easily) and length to provide 300 mm ground clearance of the swing – both sides of rope having two plastic hollow pipe ( for the grip of 300 mm length) – having seat and back seat with belt (for kids safety) – In front of the swing support tray provided)<br>300mm plastic hollow pipe for grip in rope, 300 mm ground clearance of seat with suitable rope length, swing provided with seat belt, safety tray provided in front of swing, CRC pipe 25mm dia 20 gauge wall thickness metal frame pipe, polypropylene rope material<br>or as per manufacturer's specifications and approved makes list. | Bareilly haat recreatioal zone, Handicraft centre kids play area |

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| 3 | <b>Merry Go Round</b><br>Four seater<br>Structure- 4-40NB pipes with 4-25NB pipes<br>4mm thick seat<br>Light duty A class series of pipes<br>Galvanised nut and bolts<br>Conforming to EN 1176-1:1998<br>Centre support- 80 NB hot dip galvanized centre support pipe of length 500 mm conforming to IS 1239/latest with GI thickness 60μ<br>Base plate- Centre support pipe is welded with a 150 mm X 150 mm base plate at bottom for fixing the foundation angles ISA and circular plate on top with OD 200 mm for assembling the bearing<br>Finishing- FRP- Use international quality of gel coats which is dully mixed with UV stabilised pigment to give the required colour to the product<br>Powder coating- Pre polyester raw material<br>or as per manufacturer's specifications and approved makes list. | Bareilly haat recreatioal zone, Handicraft centre kids play area |
| 4 | <b>Slide</b><br>(As per manufacturer's specifications and approved makes list)   | Bareilly haat recreatioal zone, Handicraft centre kids play area |
| 5 | <b>See Saw</b><br>(As per manufacturer's specifications and approved makes list)   | Bareilly haat recreatioal zone, Handicraft centre kids play area |

## Furniture

| Furniture |   |                             |              |
|-----------|---|-----------------------------|--------------|
| S. No.    | Item  | AREA OF USE                 | BUILDING     |
| 1         | SOFA: Supplying and installing sofa with hidden framework of 12mm thick fire retardent ply, seasoned and sawn furniture quality Marandi wood & seasoned teak wood for exposed framework. Back & arms/sides of Nawar over framework with canvass, 50mm thick rubber on inside, 25mm thick medium density foam (32kg/cum) on inside and 12mm thick medium density foam outside, covered with markeen and finished with fabric. Seat to be of Nawar over framework, 100mm rubber seat, 50mm thick medium density foam (32 kg/cum), 25mm-50mm thick polyfill for shaping the seat covered with markeen and finished with fabric. The leg support to be of 4nos Stainless steel 37mm dia or of 4nos moulded teakwood cut to shape sections of 37mmx37mm. | Receptions, cabins, offices | Allbuildings |
|           | 3 seater sofa   | Receptions, cabins, offices | Allbuildings |
| 2         | 2 seater sofa   | Receptions, cabins, offices | Allbuildings |
| 3         | 1 seater sofa   | Receptions, cabins, offices | Allbuildings |

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|----|---|---|--|
| 4  | Center table & Side made in 19 mm thk commercial board top finished with laminate / vineer & seasoned Burma teakwood legs/framework with bottom shelf of 12mm commercial ply with vineer / laminate as approved with melamine polish & 10mm thick clear float glass top with bevelled edge, complete as per drawing.  | Pre function areas, lobbies, reception, offices, cabins | Allbuildings   |
| 5  | open cabin table fixed to existing modular partition consisting of table top of 1500 L X 750 W X 750 Ht prelam top th25mm,die-cast legs in combination with frame of steel including prelam modesty panel,wire mgr & with Back storage of 2000 L X 450 W X 750 Ht. One end of the table will be supported on the leg and the other will be supported on the existing modular partition. Cost of modular partition is not included in this item. Side Storage with 18mm thick laminated mdf sliding shutters,structure prelam25mm with all necessary hardware. Back storage with with laminated mdf shutters and drawers(2dx1f) with prelam structure25mm,shutters18mm thick including all necessary hardwares. All work to be after approval from architect / engineer-in-charge. | Cabins and offices                                      | Allbuildings   |
| 6  | Training Table: Table having top prelam 25mm thick including powder coated CRCA metal base(frame having thickness of 50x50mm), prelam modesty panel & metallinc cable management with wire manager. Size of table 1500 L x 600 W x 750 Ht.  | Workstation areas, offices                              | Allbuildings   |
| 7  | 1 DOOR MINI REFERIGERATOR<br>Outer body 20Swg. S.S. Sheet.<br>Iner tank 22Swg. S.S. Sheet.<br>04 nos.of Door puff insulated self closing system.<br>75mm puff insulated.  | Hotel rooms, residential rooms                          | Bareilly haat convention center, handicraft center block 2 |
| 16 | Open Workstation: Supplying & installation of modular L shaped workstation 1500mmx1500mmx1200mm(high) with 75mm thick alumnium partition as mentioned above in item 1 with Magnetic marker Board / acid etched glass / prelam board / pin-up fabric & double power beam above worktop and skirting alongwith running counter 600mm wide made out of 25 mm thick partical board wih postformed edge / 2mm edge banding thick for bottom of approved make and shade with 2mm thick factory finished pvc hot pressed binding as per site sample all supported on Module leg with Prelam modesty on passage side including pvc cable manager. Cost of partition is included.  | Workstation areas, offices                              | Allbuildings   |
| 17 | Reception table made as per detail drawing & made in 19 mm thick. Commercial board and finished in laminate / vineer as per approved with drawer unit, shutter storage and all hardware & SS spacer with 10mm float glass / lacquered glass as required. 5000mmx750mmx1100mm high   | Receptions  | All buildings  |
| 18 | Boat shaped 14 seater conference table with net top axial boxes   | Conference rooms  | All buildings  |
| 19 | Boat Shaped 8 seater video conference table with provision for video conference equipment & cabling & net top axial boxes.  | Conference rooms  | All buildings  |

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| 20 | Supplying of dining table of height 750mm of various dimensions. Top shall be prelaminate 25 mm thick partical board in preferably single piece with 1mm laminate of approved make and shade for top and 0.6 mm thick for bottom with 2mm thick factory finished pvc edge binding. The table shall be supported by powder coated metal base. Rate includes recessed Flap up (1 No.s) with provision for plug points and switches for electricals, voice and data as directed and as per approved sample.  | Dining halls, cafes, restaurants, lounges  | Dormitory, convention center, food center, handicraft center block 1 and 2 |
| 21 | Supplying of pantry table of height 750mm of various dimensions. Top shall be prelaminate 25 mm thick partical board in preferably single piece with 1mm laminate of approved make and shade for top and 0.6 mm thick for bottom with 2mm thick factory finished pvc edge binding. The table shall be supported by powder coated metal base. Rate includes recessed Flap up (1 No.s) with provision for plug points and switches for electricals, voice and data as directed and as per approved sample.  | Pantries   | Convention center, handicraft centre block 1 and 2                         |
| 22 | SITC of Chairs High Back  | Receptions, cabins, offices, conference rooms  | All buildings  |
| 23 | SITC of Chairs Mid Back   | Receptions, cabins, offices, conference rooms  | All buildings  |
| 24 | SITC of Teachers' Chairs  | Classes and laboritories   | Handicraft centre block 2  |
| 25 | SITC of Classroom Desk with Chairs  | Classes and laboritories   | Handicraft centre block 2  |
| 27 | Providing and fixing Modular Laminated Free standing storage made in 19mm thk postformed laminated shutters with bull nose edge with all SS snap hinges, handles, locks etc as reqd. Shutter size varies between 375mm - 450mm width & height as per storage height. Depth of of storage between 375mm-500mm as required (for files, folders coats etc) with select shelves duly adjustable as reqd on metal stud supports with sleeves set in at intervals of every 35mm, as per the following: structure of storage made in 19 mm thick commercial board board & finished in 1 mm thick laminate everywhere (outside /innerside). Teak / maple edge margin to all edges, incl laminated skirting in approved shade with all hardware, magnetic catchers, tower bolts, etc complete as per detailed drawings. (Front area to be measured) Using Aluminium extruded G-channel handle. | Receptions, cabins, offices, conference rooms, hotel rooms, residential rooms, dormitory | All buildings  |
| 29 | Lockers in powder coated CRCA structure thickness (0.8/1mm) with shutters complete with hardware, locks.  | Cloak rooms  | Convention center  |

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| <b>30</b> | SITC of King size Beds made of metal/wood  | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
|           | SITC of 2 level Bunk beds made of metal  | Dormitory<br>rooms                   | Dormitory   |
| <b>31</b> | Luggage Racks  | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
| <b>33</b> | LED 40"<br>Video Screen Size 101cm (40)<br>Dynamic Contrast Ratio 150,000:1<br>Picture Engine HyperReal Engine<br>Wide Color Enhancer<br>Dolby Digital Plus, Dolby pulse, dts 2.0 + Digital Out<br>Sound Output (RMS) 10 watts x 2<br>Speaker Type Down Firing Anynet+ (HDMI-CEC)<br>OSD language Local Languages<br>Picture-in-Picture 1 Tuner PIP<br>USB Movie<br>WiFi Adaptor Support<br>Audio Out L-R (Mini Jack) 1<br>Component In (Y/Pb/Pr) 2<br>Composite In (AV) 2 (Side: 1, Back: 1 Common use for<br>Component Y)<br>Digital Audio Out (Optical) 1<br>DVI Audio In (Mini Jack) 1 (Common use for PC Audio In)<br>Ethernet (LAN)<br>HDMI (720p, 1080i and even 1080p)<br>PC Audio In (Mini Jack) 1<br>PC In (D-sub) 1<br>RF In 1<br>RS232C (AV CONTROL) No<br>USB 2 (Side)<br>Power Supply AC100 - 240V 50/60Hz | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
|           | Providing Mattress size appropriate with beds  | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
|           | Providing Fabric curtains on windows   | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
|           | Providing pillows for beds   | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |

|  |   |                                      |   |
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|  | Providing bedsheets of appropriate size for beds  | Hotel rooms,<br>residential<br>rooms | Convention<br>center,<br>Handicraft<br>center block 2 |
|  | 2 DOOR REFERIGERATOR<br>Outer body 20Swg. S.S. Sheet.<br>Iner tank 22Swg. S.S. Sheet.<br>04 nos.of Door puff insulated self closing system.<br>75mm puff insulated. | Kitchens and<br>pantries             | All buildings   |
|  | Providing 20/25L geysers  | Washrooms<br>and toilets             | All buildings   |

### Hi-Side Electrical -Haat

|        | Hi-Side Electrical   |  |
|--------|--|--|
| S. No. | Item   | LOCATION                                     |
| 1      | <p><b>11 KV HT PANEL:</b><br/>Supplying, installation, testing &amp; commissioning of indoor type floor mounted metal clad, 11KV VCB THREE panel with 1..No. VCB as INCOMER &amp; 2 nos VCB as OUTGOING, totally enclosed &amp; fully interlocked, horizontal drawout, horizontal/vertical isolation type breaker as per IS13118, as amended upto date and additional specifications, having capacities as mentioned below, single break, trip free mechanism, manually charged and auto/ manually closing breaker suitable for use on 11KV, 3 Phase, 50 Hz A.C. supply with short circuit fault level of 350 MVA, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 630Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4NO +4N Candequipped with following switchgears and accessories i/c connections suitable for 3x 300*sq. mm. XLPE 11KV cable (cable entry from *bottom) end termination with heat shrinkable jointing material etc. as required. <b>(Note-</b> Cost of end termination not included in this item)</p> <p>(a) Incoming :-1 Nos...800 Amp. VCB each having following accessories and mountings.<br/>(b) 1* No. – 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1 No. Voltmeter (0-15KV), analog/digital* type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 36 KV on incomer.<br/>(c) 1 No. – (0-200 A) dual scale Ammeter, analog type, selector switches for ammeters.<br/>(d) 1* No. – Microprocessor based numerical relay with O/L, E/F and S/C protection.<br/>(e) 1* No. – Set of dual core dual ratio 3 CTs 200/100/5/5 A of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection.<br/>(f) 1.Nos. – (0-150/50/5/5 A) Ammeters, dual scale analog type &amp; selector switches for Ammeters.<br/>(g) 1 Nos. – Microprocessor based numerical relays with O/L, E/F &amp; S/C protections.</p> | As per SLD of both Sites (For Bareilly Haat) |

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|---|--|----------------------------|
|   | <p>(h) 1Nos. – Set of dual core dual ratio 3 CTs<br/>150/50/5/5A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.</p> <p>(I) 1 No. Power Pack of 24 Volts DC, 7 AH batteries</p>  |                            |
|   | <p><b>11 KV 2 WAY RING MAIN UNIT (RMU)_(CV)</b><br/>Supplying, installation, testing and commissioning of following capacity of 11/0433 KV, ONAN, oil filled, 3 Phase, 50 Hz of following capacities OUTDOOR, ONAN TYPE, DYn11, OIL Cooled copper wound transformer with ON load tap changing arrangement on HV side +5% to -15% in steps of 2.5% with RTCC+AVR panel, Transformer shall have cable end boxes on HV side suitable for 3x300 sqmm XLPE cable of 11KV grade and cable end box on LV side suitable Adopter box for 4000Amp, Aluminium, Sandwich Bus Trunking complete with all accessories i/c first filling of filtered dehydrated oil and confirming to IS &amp; as per specification attached complete in all respects as required at site. The permissible Loss figures in the Transformer at NO-LOAD, 75% LOAD &amp; FULL LOAD shall not be more than the figures recommended by latest Energy conservation building code (ECBC). Apart from this, The Transformer shall be manufactured as per the additional specifications attached herewith.<br/>2000 KVA</p>  | As per SLD (Bareilly Haat) |
|   | <p><b>11kv/433 Volts, ONAN TRANSFORMER:-</b><br/>Supplying, installation, testing and commissioning of following capacity of 11/0433 KV, 3 Phase, 50 Hz, Dyn11, OUTDOOR, ONAN type, copper wound transformer with OFF load tap changing arrangement on HV side in steps of +/- 2.5% &amp; -7.5%, having cable end boxes on HV side suitable for 3x300 sqmm XLPE cable of 11KV grade and cable end box on LV side of suitable capacity of LT XLPE cables complete with all accessories i/c first filling of filtered dehydrated oil and confirming to IS &amp; as per specification attached complete in all respects as required at site. (2000 KVA)</p>   | As per SLD (Bareilly Haat) |
| 2 | <p><b><u>DIESEL GENERATOR SETS :</u></b><br/>Supply of following rating, 415 V, 3 Phase, 4-wire, 50 Hz at 0.8 p.f. silent type diesel generator set with acoustically treated canopy suitable for AMF/Manual operation with <b>Radiator cooling</b>, alternator, of suitable rating 415 Volts at 1500 RPM, 3 phase, 50Hz AC supply with 0.80 lagging power factor at 40°C 50% RH &amp; at 1000 Mtrs. MSL, 24 Volts batteries, charger with battery leads, one day fuel Tank (Capacity as per manufacturer standard), Residential silencer and AVM Pads, all accessories as specified in the specifications, including first fill of lube oil providing common base plate, anti vibration isolators, cable termination adopter box, drip trays, foundation bolts, glands, nuts etc. as required for a complete installation.<br/>DG Sets shall include one day fuel tank (800 liters for 600 kVA DG Set &amp; 350 litres for 250 kVA DG Set / as per design) for each D.G. set. The day fuel tank shall be fabricated out of 2 mm thick MS sheets and shall include the cost of removable cover with locking arrangement, the cost of painting, the cost of providing all the required appurtenances like inlet &amp; outlet connection, float valves, drain connection, mechanical oil level indicator and low level/high level alarms and the cost of support arrangement etc. complete as per specification and as required. The Alternator overload capacity shall not be less than 110% of rated capacity for 1 hour in every continuous running of 12</p> | As per approved SLD        |

hours. The DG Set shall be mounted on a fabricated rigid common base frame with anti-vibration mountings to provide at least 98% vibration isolation. The DG set shall include all accessories, fittings, instruments and standard tool kit complete as per specification and as required including control cabling.

**DG CONTROLLER:** DG Controller as per OEM Design shall be provided in the DG Set/ DG Control panel by OEM of DG set for Automatic Operation & protection system of DG Set thru Main LT Panel.

**DG Set shall be provided with the following accessories & mountings.**

Radiator cooling system.

Fly Wheel to suit flexible/rigid coupling with guard.

Fly wheel housing complete with starter gear ring and coupling.

Fuel hoses.

Electronic Governor.

Air Cleaner with Vacuum Indicator.

Fuel and Lub Oil Filter.

By pass filter

Corrosion inhibitor coolant.

Fuel Pump PT Type.

Lub Oil Pump.

Electric Starter 24 Volts DC.

Battery Charging Alternator with Built-in-regulator - 24 Volts, 30 Amps. With MS battery stand complete with insulated mattings and instrument panel comprising of switch with key & battery charging voltmeter.

Residential Silencer (as per latest CPCB norms including baffle plates and 75mm thick glass/mineral wool insulation complete with wire mesh chicken mesh and 26 gauge aluminium cladding from engine upto silencer, supporting arrangement complete as required). with dry exhaust manifold.

i) Expansion below fabricated out of SS sheet.

ii) Fuel pipe of required size from DG set flue outlet up to Silencer.

Lube oil pressure gauge

Water temperature gauge

Safety control for low lube oil pressure

Over speed and high cooling temperature with indication and tripping etc.

Alternator insulation Class "H" suitable to withstand tropical conditions.

Fabricated rigid common base frame with anti-vibration mountings.

Vibration Isolator

Adaptor box and extension of busbars for aluminium cable termination/bus duct insulation as required.

Lube Oil Cooler.

Flexible Pipe joints for Silencer.

Anti Vibration Pads.

Droop setting for the synchronization.

Exhaust pipe of suitable dia with MS support& Pipe + Silencer Insulation

Naturally aspirated turbocharger as per manufacturer's specifications.

suitable Acoustic Enclosure Radiator cooled diesel engine.

Chimney stack supply and installation and commissioning

**Rating of DG Sets as Follows :-**

**500 kVA, 415 Volts DG Set**

**3**

**MAIN LT PANEL -1 :-**

As per SLD



|   |   |                      |
|---|---|----------------------|
|   | <p>Supplying, installation, testing &amp; commissioning of Indoor cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning &amp; finishing complete with 7 tank process for powder coating in approved shade, having 4000 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common COPPER earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half. The Panel shall have suitable rating of Ammeter, Voltmeter with selector switches and Phase indicating lights. The Panel shall be installed on suitable foundations with provision of incoming and outgoing LT Cables i/c providing following switch gears :- PANEL SHALL BE ELECTRICALLY &amp; MECHANICALLY INTERLOCKED</p> |                      |
| 4 | <p><b>MAIN INCOMER (Load as per SLD)</b><br/> 1 No. ACB EDO, 3200A, FP, 80KA MICROPROCESSOR BASED RELEASE, O/L, S/C &amp; E/F PROTECTION<br/> UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br/> BUS &amp; LINE PT MODULE PT 415/110 volts: 1no +DP MCB 6A-2 Nos</p>   | As per SLD           |
| 5 | <p><b>METERING &amp; INDICATION</b><br/> RYB PHASE INDICATING LIGHT, 230V AC<br/> ON/OFF/TRIP INDICATING LIGHT, 230V AC<br/> CT FOR METERING, 3200/5A, CL-1.0, 15VA<br/> CT FOR APFCR, 3200/5A, CL-1.0, 15VA<br/> DIGITAL MULTIFUNCTION METER with RS-485<br/> TNC SWITCH, 25A<br/> A/M SELECTOR SWITCH<br/> AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br/> VOLTAGE MONITORING RELAY (VMR)<br/> MCB, 63A, FP, 10KA<br/> 50 KVAR CAPACITOR BANK, 440V AC<br/> CONTROL MCB, 6A SP, 10KA<br/> ELECTRICAL INTERLOCKING (E&amp;M)</p>   | As per SLDs          |
| 6 | <p><b>DG INCOMER - 1 &amp; 2 (FROM 500 KVA Each DG SET)</b><br/> <b>EACH DG INCOMER SHALL CONSISTS OF FOLLOWING:</b><br/> 1 Nos. ACB EDO, 1000A, FP, 50KA MICROPROCESSOR BASED RELEASE, O/L, S/C &amp; E/F PROTECTION<br/> UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br/> BUS &amp; LINE PT MODULE PT 415/110 volts: 1no +DP MCB 6A-2 Nos</p>  | As per SLDs and Load |
| 7 | <p><b>METERING &amp; INDICATION</b><br/> RYB PHASE INDICATING LIGHT, 230V AC<br/> ON/OFF/TRIP INDICATING LIGHT, 230V AC<br/> CT FOR METERING, 1000/5A, CL-1.0, 15VA<br/> DIGITAL MULTIFUNCTION METER with RS-485</p>  | As per SLDs          |

|    |  |                                |
|----|--|--------------------------------|
|    | TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING (E&M)  |                                |
| 16 | <b>BUS-COUPLER</b><br>1 No.ACB EDO,3200A, FP, 80KA WITH RELEASE<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br>ON/OFF INDICATING LIGHT, 230V AC<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING(E&M)  | As per SLDs                    |
| 17 | <b>INCOMER FROM SOLAR POWER</b><br>1 No.MCCB, 250A, FP, 36KA Microprocessor BASED RELEASE, O/L & S/C PROTECTION  | As per final Working by Bidder |
| 18 | <b>METERING &amp; INDICATION</b><br>RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING,250/5A , CL-1.0, 15VA<br>CT FOR APFCR,250/5A , CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>VOLTAGE MONITORING RELAY (VMR)<br>MCB, 63A, FP, 10KA<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING (E&M)  | As per SLD                     |
| 19 | <b>OUTGOINGS</b><br>2 Nos.MCCB, 630A, FP, 50KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>4 Nos.MCCB, 400A, FP, 50KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>4 Nos.MCCB,250A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>8 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>3 Nos.MCCB, 63 A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>1 No. ACB, 2000 Amp,FP, MDO ,65 KA,U/V releases 415 volts,ON/OFF I/L, A/M & Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc.for CAPACITOR PANEL | As per SLD                     |

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| 20 | <b>PLC INTERLOCKING WITH LOAD MANAGEMENT</b><br>PLC WITH SOFTWARE DEVELOPMENT<br>HUMAN MACHINE INTERFACE (HMI)<br>CONNECTING CABLE & CONNECTORS<br>AUXILIARY RELAY, 24V DC 2 C/O<br>UPS 30 MINUTES BACKUP<br>POWER SUPPLY 24V DC( 5 Amp)<br>CONTROL MCB, 16A TP, 10KA<br>CONTROL MCB, 16A DP, 10KA<br>CONTROL MCB, 6A SP, 10KA<br>BATTERY CHARGER, 24V<br>DC AMMETER, 0-30A<br>DC VOLTMETER, 0-30V<br>HOOTER, 24V DC<br>6 WINDOW ANNUNCIATOR<br>CONTROL SUPPLY ON/DG NC ON INDICATING LIGHT<br>START/STOP PUSH BUTTON FOR DG SET<br>EMG. STOP PUSH BUTTON<br>ALUMINIUM BUS BAR, TPN, 4000 AMP, WITH HEAT SHRINKABLE SLEEVE & SMC/DMC SUPPORT<br>14/16SWG, PANEL WITH POWDER COATING & WIRING WITH ALL PANEL ACCESSORIES, COMPARTMENTLIZED | As per SLD |
| 21 | <b>550 KVAR CAPACITOR MLTP-1</b><br>1 No. ACB, 2000 Amp, FP, MDO, U/V releases 415 volts, ON/OFF I/L, A/M & Selector Switch, TNC switch, Aux. contactor 230 V with 2NO+2NC, control MCB etc.<br>RYB PHASE INDICATING LIGHT, 230V AC<br>12 STAGE APFC RELAY<br>CONTROL MCB, 6A SP, 10KA<br>EXHAUST FAN WITH FILTER   | As per SLD |
| 22 | <b>10 KVAR CAPACITOR BANK ( NOS.)</b><br>MCB, 32A, TP, 10KA<br>10 KVAR CAPACITOR DUTY CONTACTOR<br>10 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH  | As per SLD |
| 23 | <b>15 KVAR CAPACITOR BANK (NOS.)</b><br>MCB, 32A, TP, 10KA<br>15 KVAR CAPACITOR DUTY CONTACTOR<br>15 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   | As per SLD |
| 24 | <b>25 KVAR CAPACITOR BANK (2 NOS.)</b><br>MCB, 63A, TP, 10KA<br>25 KVAR CAPACITOR DUTY CONTACTOR<br>25 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   | As per SLD |

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| 25 | <b>50 KVAR CAPACITOR BANK (2 NOS.)</b><br>MCCB, 125A, TP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>50 KVAR CAPACITOR DUTY CONTACTOR<br>50 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH  | As per SLD |
| 27 | <b>100 KVAR CAPACITOR BANK (4 NOS.)</b><br>MCCB, 250A, TP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>100 KVAR CAPACITOR DUTY CONTACTOR<br>100 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH<br>ALUMINIUM BUS BAR, TPN, 4000 AMP, WITH HEAT SHRINKABLE SLEEVE & SMC/DMC SUPPORT<br>14/16SWG, PANEL WITH POWDER COATING & WIRING WITH ALL PANEL ACCESSORIES, COMPARTMENTALIZED  | As per SLD |
| 29 | <b>MAIN LT PANEL -2 (LOCATION:NEAR HALL) :-</b><br>Supplying, installation, testing & commissioning of Indoor cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 4000 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common COPPER earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half. The Panel shall have suitable rating of Ammeter, Voltmeter with selector switches and Phase indicating lights. The Panel shall be installed on suitable foundations with provision of incoming and outgoing LT Cables i/c providing following switch gears :- PANEL SHALL BE ELECTRICALLY & MECHANICALLY INTERLOCKED | As per SLD |
| 30 | <b>MAIN INCOMER (FROM 2000 KVA TRANSFORMER)</b><br>1 No. ACB EDO, 3200A, FP, 80KA MICROPROCESSOR BASED RELEASE, O/L, S/C & E/F PROTECTION<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br>BUS & LINE PT MODULE PT 415/110 volts: 1no +DP MCB 6A-2 Nos  | As per SLD |
|    | <b>METERING &amp; INDICATION</b><br>RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING, 3200/5A, CL-1.0, 15VA<br>CT FOR APFCR, 3200/5A, CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485<br>TNC SWITCH, 25A   | As per SLD |

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|    | A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>VOLTAGE MONITORING RELAY (VMR)<br>MCB, 63A, FP, 10KA<br>50 KVAR CAPACITOR BANK, 440V AC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING (E&M)  |            |
| 31 | <b>DG INCOMER - 1 (FROM 500 KVA DG SET)</b><br>1 Nos.ACB EDO, 1000A, FP, 65KA MICROPROCESSOR BASED RELEASE, O/L, S/C & E/F PROTECTION<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br>BUS & LINE PT MODULE PT 415/110 volts: 1no +DP MCB 6A-2 Nos   | As per SLD |
| 33 | <b>METERING &amp; INDICATION</b><br>RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING, 1000/5A, CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING (E&M) | As per SLD |
|    | <b>DG INCOMER - 2 (FROM 500 KVA DG SET)</b><br>1 Nos.ACB EDO, 1000A, FP, 65KA MICROPROCESSOR BASED RELEASE, O/L, S/C & E/F PROTECTION<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB  | As per SLD |
|    | <b>METERING &amp; INDICATION</b><br>RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING, 1000/5A, CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING (E&M) | As per SLD |
|    | BUS-COUPLER<br>1 No.ACB EDO,3200A, FP, 80KA WITH RELEASE<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br>ON/OFF INDICATING LIGHT, 230V AC<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING(E&M)   | As per SLD |
|    | <b>OUTGOINGS</b><br>1 Nos.MCCB, 630A, FP, 50KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION  | As per SLD |

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|  | <p>1 Nos.MCCB, 400A, FP, 50KA THERMAL MAGNETIC BASED RELEASE, O/L &amp; S/C PROTECTION</p> <p>4 Nos.MCCB,250A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L &amp; S/C PROTECTION</p> <p>4 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L &amp; S/C PROTECTION</p> <p>3 Nos.MCCB, 63 A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L &amp; S/C PROTECTION</p> <p>1 No. ACB, 1000 Amp,FP,EDO,65 KA ,U/V releases 415 volts,ON/OFF I/L, A/M &amp; Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc.FOR HVAC PANEL</p> <p>1 No. ACB, 2000 Amp,FP, MDO ,U/V releases 415 volts,ON/OFF I/L, A/M &amp; Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc for CAPACITOR PANEL.</p>   |            |
|  | <p>PLC INTERLOCKING WITH LOAD MANAGEMENT</p> <p>PLC WITH SOFTWARE DELOPMENT</p> <p>HUMAN MACHINE INTERFACE (HMI)</p> <p>CONNECTING CABLE &amp; CONNECTORS</p> <p>AUXILIARY RELAY, 24V DC 2 C/O</p> <p>UPS 30 MINUTES BACKUP</p> <p>POWER SUPPLY 24V DC( 5 Amp)</p> <p>CONTROL MCB, 16A TP, 10KA</p> <p>CONTROL MCB, 16A DP, 10KA</p> <p>CONTROL MCB, 6A SP, 10KA</p> <p>BATTERY CHARGER, 24V</p> <p>DC AMMETER, 0-30A</p> <p>DC VOLTMETER, 0-30V</p> <p>HOOTER, 24V DC</p> <p>6 WINDOW ANNUNCIATOR</p> <p>CONTROL SUPPLY ON/DG NC ON INDICATING LIGHT</p> <p>START/STOP PUSH BUTTON FOR DG SET</p> <p>EMG. STOP PUSH BUTTON</p> <p>ALUMINIUM BUS BAR, TPN, 4000 AMP, WITH HEAT SHRINAKBLE SLEEVE &amp; SMC/DMC SUPPORT</p> <p>14/16SWG, PANEL WITH POWDER COATING &amp; WIRING WITH ALL PANEL ACCESSORIES, COMPARTMENTLIZED</p> | As per SLD |
|  | <p><b>550 KVAR CAPACITOR PANEL MLTP-2</b></p> <p>1 No. ACB, 2000 Amp,FP, MDO ,U/V releases 415 volts,ON/OFF I/L, A/M &amp; Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc.</p> <p>RYB PHASE INDICATING LIGHT, 230V AC</p> <p>12 STAGE APFC RELAY</p> <p>CONTROL MCB, 6A SP, 10KA</p> <p>EXHAUST FAN WITH FILTER</p>   |            |
|  | <p><b>10 KVAR CAPACITOR BANK ( NOS.)</b></p> <p>MCB, 32A, TP, 10KA</p> <p>10 KVAR CAPACITOR DUTY CONTACTOR</p> <p>10 KVAR CAPACITOR BANK, 440V</p> <p>ON INDICATING LIGHT, 230V AC</p> <p>A/M SELECTOR SWITCH</p>   | As per SLD |

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|  | <b>15 KVAR CAPACITOR BANK (NOS.)</b><br>MCB, 32A, TP, 10KA<br>15 KVAR CAPACITOR DUTY CONTACTOR<br>15 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   | As per SLD |
|  | <b>25 KVAR CAPACITOR BANK (2 NOS.)</b><br>MCB, 63A, TP, 10KA<br>25 KVAR CAPACITOR DUTY CONTACTOR<br>25 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   | As per SLD |
|  | <b>50 KVAR CAPACITOR BANK (2 NOS.)</b><br>MCCB, 125A, TP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>50 KVAR CAPACITOR DUTY CONTACTOR<br>50 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH  | As per SLD |
|  | <b>100 KVAR CAPACITOR BANK (4 NOS.)</b><br>MCCB, 250A, TP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>100 KVAR CAPACITOR DUTY CONTACTOR<br>100 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH<br>ALUMINIUM BUS BAR, TPN, 4000 AMP, WITH HEAT SHRINKABLE SLEEVE & SMC/DMC SUPPORT<br>14/16SWG, PANEL WITH POWDER COATING & WIRING WITH ALL PANEL ACCESSORIES, COMPARTMENTLIZED | As per SLD |
|  | <b>SUB PANELS</b>   | As per SLD |
|  | <b>LIFT PANEL</b>   | As per SLD |
|  | <b>GATE HOUSE PANEL(SEcurity&lt;SAFETY&amp;EXTERNAL LIGHTING)</b>   | As per SLD |
|  | <b>BASEMENT LIGHTING PANEL/DB</b>   | As per SLD |
|  | <b>ENERGY METERING PANEL LT</b>   | As per SLD |
|  | <b>SINGLE PHASE METERING FOR SHOPS</b><br>Metering & Indication:- 1 set of KWH METER AS PER DESIGN OF STATE ELECTRICITY BOARD, Phase Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485, TNC switch, A/V selector Switch, etc. The Metering Box should be of suitable Rating of Copper Busbars & size to Accommodate the size of the METER supplied & Installed by State Electricity Board..              | As per SLD |
|  | <b>THREE PHASE METERING</b>   | As per SLD |

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|  | Metering & Indication:- 1 set of KWH METER AS PER DESIGN OF STATE ELECTRICITY BOARD, Phase Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/V selector Switch, etc. The Metering Box should be of suitable Rating of Copper Bus Bars & size to Accommodate the size of the METER supplied & Installed by State Electricity Board.  |            |
|  | <b>HVAC PANEL VRF 1,2&amp;3</b>  | As per SLD |
|  | <b>BASEMENT VENTILATION AXIAL FANS</b>   | As per SLD |
|  | <b>FIRE FIGHTING PANEL</b>   | As per SLD |
|  | <b>PLUMBING &amp; WATER SUPPLY PANEL</b>   | As per SLD |
|  | <b>SUPPLY OF HT/LT CABLES</b><br>Supply of HT XLPE Cables:<br>Supplying of earthed armoured, aluminium conductor XLPE power cable of 11 KV grade conforming to IS 7098 (Part II) amended upto date as per the following size:<br>a) 3x185 sqmm<br><br>Supply of LT XLPE Cables:<br>Supply of LT XLPE Cables of 1.1 KV Grade, Aluminium Armoured, of following sizes as per latest IS Code.<br>3.5 Core X 300 Sqmm.<br>3.5 Core X 185 Sqmm.<br>3.5 Core X 70 Sqmm.<br>3.5 Core X 35 Sqmm.<br>4 Core X 16 Sqmm.<br>4 Core X 10 Sqmm.<br>4 Core X 6 Sqmm.   | As per SLD |
|  | <b>SUPPLY OF SAFETY EQUIPMENTS</b><br>Safety Equipment<br>Providing & fixing danger plates made of mild steel at least 2 mm thick & vitreous enameled white on both sides & with inscriptions in signal red colour on front side as read.<br>(a) High Voltage – size 250 mm x 200mm<br>(b) Medium Voltage – size 200 mm x 150mm<br>Providing and fixing carbon dioxide (CO2) type fire extinguishers conforming to IS 2878 : 1976 and cylinders fully charged of following capacity.<br>(a) 4.5 KG<br>Supply and fixing of foam fire extinguishers, Portable type 9 lit capacity hanged on wall with bracket complete as required.<br>Supply and fixing safety instruction chart in word duly framed with 5 mm thick glass as required.<br>(approx. front area 1.20 sq. mt.) | As per SLD |



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|  | <p>Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on MS angle iron frame with bracket of appropriate size &amp; capacity i/c filling sand etc.</p> <p>Providing First Aid Box as approved by St. John Ambulance Brigade/Indian Red Cross conforming to IS 2217 : 1963.</p> <p>Supply &amp; fixing shock treatment chart duly mounted on a wooden frame with 5 mm thick glass as reqd. (approximate front area 1.20 sq. metre)</p> <p>Providing of rubber mat 1 mtr. wide and 12 mm thick to withstand 15 KV dielectric strength as per IS 5424 : 1969</p> <p>Providing of rubber mat 1 mtr. wide and 12 mm thick to withstand 3.3 KV dielectric strength as per IS 5424 : 1969</p> |            |
|  | <p><b>GRID CONNECTED SOLAR POWER 40 KW</b></p> <p>Design, Supply, Erection, Testing, Commissioning, of Grid Connected Rooftop Solar Photovoltaic Power Projects on the building under "EPC" Model Type: 40kW with Grid-tied Inverter with Net-Metering with Remote Monitoring. Work includes all Equipmentn Providing, installing, cabling, connecting and commissioning 40KW Rooftop Solar power plant with all approvals, Netmetering activation complete</p>  | As per SLD |
|  | <p><b>LAYING OF HT CABLES</b></p> <p>Laying of one number PVC Insulated PVC sheathed/XLPE power cable of 11 KV grade of following size direct in ground including excavation ,protective covering and refilling the trench etc as required.</p> <p>Up to 120 sqmm</p> <p>Above 120 sqmm and up to 400 sqmm</p> <p>Laying of one number PVC Insulated PVC sheathed/XLPE power cable of 11 KV grade of following size in existing RCC/HUME/METAL PIPE etc as required.</p> <p>Up to 120 sqmm</p> <p>Above 120 sqmm and up to 400 sqmm</p> <p>Laying of 1 No. PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required.</p> <p>Up to 120 sqmm</p> <p>Above 120 sqmm and upto 400 sqmm</p>  | As per SLD |
|  | <p><b>TERMINATION OF HT CABLES</b></p> <p>HV Cable Jointing &amp; End Termination :</p> <p>Supplying and making Indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of cables of 11 KV grade as required.</p> <p>3Cx240/185 sqmm</p>   | As per SLD |
|  | <p><b>LAYING OF LT CABLES</b></p> <p>Laying of LT Cables :</p> <p>Laying of One number PVC Insulated ,PVC Sheathed/XLPE Power Cables 1.1KV Grade of Following Size direct in Ground including excavation, Sand Cushioning and protective covering and refilling the trench etc.</p> <p>Upto 35 sqmm</p> <p>Above 35 &amp; upto 95 sqmm.</p> <p>Above 95 &amp; upto 185 Sqmm.</p>   | As per SLD |

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|  | <p>Above 185 &amp; upto 400 Sqmm</p> <p>Laying of One number ADDITIONALPVC Insulated ,PVC Sheathed/XLPE Power Cable 1.1KV Grade of Following Size direct in Ground in the same Trench including excavation,Sand Cushioning and protective covering and Refilling the trench etc as reqd.</p> <p>Upto 35 sqmm<br/>Above 35 &amp; upto 95 sqmm.<br/>Above 95 &amp; upto 185 Sqmm.<br/>Above 185 &amp; upto 400 Sqmm</p> <p>Laying of 1 No. PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size in the existing RCC/HDPE/Metal pipe/Open Trench/Cable Trays etc. as required.</p> <p>Upto 35 sqmm<br/>Above 35 &amp; upto 95 sqmm.<br/>Above 95 and upto 185 sqmm<br/>Above 185 sqmm and upto 400 sqmm</p> <p>Laying of one number PVC Insulated PVC sheathed/XLPE power cable of 1.1 KV grade of following size in existing Masonary open duct etc as required.</p> <p>Upto 35 sqmm<br/>Above 35 &amp; upto 95 sqmm.<br/>Above 95 and upto 185 sqmm<br/>Above 185 sqmm and upto 400 sqmm</p> |            |
|  | <p><b>TERMINATION OF LT CABLES</b></p> <p>Supplying and making end termination with brass compression gland and Al. lugs for following size of PVC insulated and PVC sheathed/XLPE Al. conductor cable of 1.1 KV grade as required.</p> <p>3.5x300sq. mm<br/>3.5x185sq. mm<br/>3.5 Core X 70 Sqmm.<br/>3.5 Core X 35 Sqmm.<br/>4 Core X 16 Sqmm.<br/>4 Core X 10 Sqmm.<br/>4 Core X 6 Sqmm.</p>   | As per SLD |
|  | <p><b>EARTHING</b></p> <p>Earthing with copper Earth Plate 600 mm x 600 mm x 3 mm thick i/c accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with salt &amp; Charcoal.</p> <p>Earthing with GI earth place 600 mm x600 mm x 6 mm thick i/c accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but with charcoal or coke and salt) complete as required.</p> <p>Providing and fixing 25mm x 5 mm Copper strip in 40 mm dia GI pipe from earth electrode as required.</p>  | As per SLD |

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|  | Providing and fixing 25mm x 5 mm GI strip in 40 mm dia GI Pipe step on surface or in recess for connection etc. as required.<br>providing and fixing 25x5 MM copper strip on surface<br>Providing and fixing 25x5MM GI strip on surface  |            |
|  | <b>HDPE PIPE</b><br>Supplying & Laying following size of DWC HDPE PIPE ISI Marked along with all accessories like sockets ,bend,couplers,etc confirming to IS 14930,part II, complete with fitting & cutting ,jointing etc direct in ground,(750 MM below ground Level) including excavation and refilling the trench complete as required.<br>90 mm dia (OD-90& ID-76 mm Nominal)<br>160 mm dia (OD-160& ID-135 mm Nominal)<br>200 mm dia (OD-200& ID-175 mm Nominal) | As per SLD |

### Hi Side Electrical- Handicrafts Promotion Centre Site

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| <b>Handicraft Centre - Bareilly substation</b>   |                             |
|  |                             |
| <i>Description of Item</i>   | <i>remark.</i>              |
| <b>Sub Head-I : Equipments-HT Panel Board, Transformers &amp; H.T. /LTCables, LT Panel, &amp;DG Sets.</b>  |                             |
| <b>11 KV HT PANEL:_</b>  |                             |
| Supplying,installation,testing&commissioning of indoor type floor mounted metal clad, 11KV VCB Single panel with 1..No. VCB as INCOMER & OUTGOING, totally enclosed&fullyinterlocked,horizontal drawout, horizontal/vertical isolation type breaker as per IS13118,as amended upto date and additional specifications, having capacities as mentioned below, single break, trip free mechanism, manually charged and auto/ manually closing breaker suitable for use on 11KV, 3 Phase, 50 Hz A.C. supply with short circuit fault level of 350 MVA, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 800Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4NO +4N Candequipped with following switchgears and accessories i/c connections suitable for 3x 300*sq. mm. XLPE 11KV cable (cable entry from *bottom/ top/side) end termination with heat shrinkable jointing material etc. as required. <b>(Note-</b> Cost of end termination not included in thisitem)<br>(a) Incoming & Outgoing:-1 Nos...800 Amp. VCB each having following accessories and mountings<br>(b) 1* No. – 11 KV / 110 Volts PTClass<br>0.5 accuracy and 100 VA burden with 1 No. Voltmeter (0-15KV), analog/digital* type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 36 KV on incomer.<br>(c) 1 No. – (0-200 A) dual scale Ammeter, analog type, selector switches for ammeters.<br>(d) (d) 1* No. – Microprocessor based numerical relay with O/L, E/F and S/Cprotection. | Setting as per Approved SLD |

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| <p>(e) 1* No. – Set of dual core dual ratio 3 CTs 200/100/5/5 A of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection.</p> <p>(f) 1.Nos. – (0-150/50/5/5 A) Ammeters, dual scale analog type &amp; selector switches for Ammeters.</p> <p>(g) 1 Nos. – Microprocessor based numerical relays with O/L, E/F &amp; S/C protections.</p> <p>(h) 1Nos. – Set of dual core dual ratio 3 CTs 150/50/5/5 A of 15 VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.</p> <p>(i) 1 No. Power Pack of 24 Volts DC, 7 AH batteries</p>   |                              |
| <b>11kv/433 Volts, ONAN TRANSFORMER:-</b>   |                              |
| Supplying, installation, testing and commissioning of following capacity of 11/0433 KV, 3 Phase, 50 Hz, Dyn11, OUTDOOR, ONAN type, copper wound transformer with OFF load tap changing arrangement on HV side in steps of +/- 2.5% & -7.5%, having cable end boxes on HV side suitable for 3x300 sqmm XLPE cable of 11KV grade and cable end box on LV side of suitable capacity of LT XLPE cables complete with all accessories i/c first filling of filtered dehydrated oil and confirming to IS & as per specification attached complete in all respects as required at site.  |                              |
| 1600 KVA  |                              |
| <b>DIESEL GENERATOR SETS :</b>  |                              |
| Supply of following rating, 415 V, 3 Phase, 4-wire, 50 Hz at 0.8 p.f. silent type diesel generator set with acoustically treated canopy suitable for AMF/Manual operation with <b>Radiator cooling</b> , alternator, of suitable rating 415 Volts at 1500 RPM, 3 phase, 50Hz AC supply with 0.80 lagging power factor at 40°C 50% RH & at 1000 Mtrs. MSL, 24 Volts batteries, charger with battery leads, one day fuel Tank (Capacity as per manufacturer standard), Residential silencer and AVM Pads, all accessories as specified in the specifications, including first fill of lube oil providing common base plate, anti vibration isolators, cable termination adopter box, drip trays, foundation bolts, glands, nuts etc. as required for a complete installation. | Quantity as per approved SLD |

DG Sets shall include one day fuel tank (800 liters for 600 kVA DG Set & 350 litres for 250 kVA DG Set / as per design) for each D.G. set. The day fuel tank shall be fabricated out of 2 mm thick MS sheets and shall include the cost of removable cover with locking arrangement, the cost of painting, the cost of providing all the required appurtenances like inlet & outlet connection, float valves, drain connection, mechanical oil level indicator and low level/high level alarms and the cost of support arrangement etc. complete as per specification and as required. The Alternator overload capacity shall not be less than 110% of rated capacity for 1 hour in every continuous running of 12 hours. The DG Set shall be mounted on a fabricated rigid common base frame with anti-vibration mountings to provide at least 98% vibration isolation. The DG set shall include all accessories, fittings, instruments and standard tool kit complete as per specification and as required including control cabling.

Radiator cooling system.

Fly Wheel to suit flexible/rigid coupling with guard.

Fly wheel housing complete with starter gear ring and coupling.

Fuel hoses.

Electronic Governor.

Air Cleaner with Vacuum Indicator.

Fuel and Lub Oil Filter.

By pass filter

Corrosion inhibitor coolant.

Fuel Pump PT Type.

Lub Oil Pump.

Electric Starter 24 Volts DC.

Battery Charging Alternator with Built-in-regulator - 24 Volts, 30 Amps. With MS battery stand complete with insulated matting and instrument panel comprising of switch with key & battery charging voltmeter.

Residential Silencer (as per latest CPCB norms including baffle plates and 75mm thick glass/mineral wool insulation complete with wire mesh chicken mesh and 26 gauge aluminium cladding from engine upto silencer, supporting arrangement complete as required). with dry exhaust manifold.

i) Expansion below fabricated out of SS sheet.

ii) Fuel pipe of required size from DG set flue outlet up to Silencer.

Lube oil pressure gauge

Water temperature gauge

Safety control for low lube oil pressure

Over speed and high cooling temperature with indication and tripping etc.

Alternator insulation Class "H" suitable to withstand tropical conditions.

Fabricated rigid common base frame with anti-vibration mountings.

Vibration Isolator

Adaptor box and extension of busbars for aluminium cable termination/bus duct insulation as required.

Lube Oil Cooler.

Flexible Pipe joints for Silencer.

Anti Vibration Pads.

Drop setting for the synchronization.

Exhaust pipe of suitable dia with MS support

Naturally aspirated turbocharger as per manufacturer's specifications.

suitable Acoustic Enclosure Radiator cooled diesel engine.

Chimney stack supply and installation and commissioning

**Rating of DG Sets as Follows :-**

**500 kVA, 415 Volts DG Set**

|   |  |
|---|--|
|   |  |
| <b>MAIN LT PANEL :-</b>   |  |
| Supplying, installation, testing & commissioning of Indoor cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 2500 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common COPPER earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half. The Panel shall have suitable rating of Ammeter, Voltmeter with selector switches and Phase indicating lights. The Panel shall be installed on suitable foundations with provision of incoming and outgoing LT Cables i/c providing following switch gears :- |  |
|   |  |
| <b>MAIN INCOMER (FROM 1600 KVA TRANSFORMER)</b>   |  |
| 1 No. ACB EDO, 2500A, FP, 50KA MICROPROCESSOR BASED RELEASE, O/L, S/C & E/F PROTECTION<br>2 UNDER VOLTAGE RELEASE, 415V AC FOR ACB  |  |
| <b>METERING &amp; INDICATION</b>  |  |
| RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING, 2500/5A, CL-1.0, 15VA<br>CT FOR APFCR, 2500/5A, CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>VOLTAGE MONITORING RELAY (VMR)<br>MCB, 63A, FP, 10KA<br>25 KVAR CAPACITOR BANK, 440V AC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING  |  |
|   |  |
| <b>DG INCOMER - 1 &amp; 2 (FROM 500 KVA DG SET)</b>   |  |
| 2 Nos. ACB EDO, 1000A, FP, 50KA MICROPROCESSOR BASED RELEASE, O/L, S/C & E/F PROTECTION   |  |
| UNDER VOLTAGE RELEASE, 415V AC FOR ACB  |  |
| <b>METERING &amp; INDICATION</b>  |  |
| RYB PHASE INDICATING LIGHT, 230V AC<br>ON/OFF/TRIP INDICATING LIGHT, 230V AC<br>CT FOR METERING, 800/5A, CL-1.0, 15VA<br>DIGITAL MULTIFUNCTION METER with RS-485  |  |

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|---|--|
| TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING   |  |
| <b>BUS-COUPLER</b>  |  |
| 1 No.ACB EDO, 2500A, FP, 50KA WITHOUT RELEASE<br>UNDER VOLTAGE RELEASE, 415V AC FOR ACB<br>ON/OFF INDICATING LIGHT, 230V AC<br>TNC SWITCH, 25A<br>A/M SELECTOR SWITCH<br>AUXILIARY CONTACTOR, 230V AC 2NO+2NC<br>CONTROL MCB, 6A SP, 10KA<br>ELECTRICAL INTERLOCKING  |  |
| <b>OUTGOINGS</b>  |  |
| 3 Nos.MCCB, 400A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>2 Nos.MCCB, 250A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>2 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>2 Nos.MCCB, 63A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>1 No. ACB, 1000 Amp,FP, MDO ,U/V releases 415 volts,ON/OFF I/L, A/M & Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc.          |  |
| <b>PLC INTERLOCKING WITH LOAD MANAGEMENT</b>  |  |
| PLC WITH SOFTWARE DEVELOPMENT<br>HUMAN MACHINE INTERFACE (HMI)<br>CONNECTING CABLE & CONNECTORS<br>AUXILIARY RELAY, 24V DC 2 C/O<br>UPS 30 MINUTES BACKUP<br>POWER SUPPLY 24V DC( 5 Amp)<br>CONTROL MCB, 16A TP, 10KA<br>CONTROL MCB, 16A DP, 10KA<br>CONTROL MCB, 6A SP, 10KA<br>BATTERY CHARGER, 24V<br>DC AMMETER, 0-30A<br>DC VOLTMETER, 0-30V<br>HOOTER, 24V DC<br>6 WINDOW ANNUNCIATOR<br>CONTROL SUPPLY ON/DG NC ON INDICATING LIGHT<br>START/STOP PUSH BUTTON FOR DG SET<br>EMG. STOP PUSH BUTTON |  |
| <b>400 KVAR CAPACITOR SECTION</b>   |  |
| 1 No. ACB, 1000 Amp,FP, MDO ,U/V releases 415 volts,ON/OFF I/L, A/M & Selector Switch, TNC switch, Aux.contactor 230 V with 2NO+2NC, control MCB etc.<br>12 STAGE APFC RELAY<br>CONTROL MCB, 6A SP, 10KA  |  |

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| EXHAUST FAN WITH FILTER   |  |
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| MCB, 32A, TP, 10KA<br>10 KVAR CAPACITOR DUTY CONTACTOR<br>10 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   |  |
|   |  |
| MCB, 32A, TP, 10KA<br>15 KVAR CAPACITOR DUTY CONTACTOR<br>15 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   |  |
|   |  |
| MCB, 63A, TP, 10KA<br>25 KVAR CAPACITOR DUTY CONTACTOR<br>25 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   |  |
|   |  |
| MCCB, 125A, TP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C<br>PROTECTION<br>50 KVAR CAPACITOR DUTY CONTACTOR<br>50 KVAR CAPACITOR BANK, 440V<br>ON INDICATING LIGHT, 230V AC<br>A/M SELECTOR SWITCH   |  |
|   |  |
| ALUMINIUM BUS BAR, TPN, 1250/500 AMP, WITH HEAT SHRINKABLE SLEEVE &<br>SMC/DMC SUPPORT<br>14/16SWG, PANEL WITH POWDER COATING & WIRING WITH ALL PANEL<br>ACCESSORIES, COMPARTMENTLIZED  |  |
| <b>SUB PANEL-1,&amp;2,Block 1&amp; 2 Incubation Centre,&amp;Training .</b>  |  |
| INCOMER:- 1 No.400 A MCCB, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L<br>,S/C & E/F PROTECTION<br>Metering & Indication:- 1 set of Phase Indicating Lights, ON/OFF/TRIP Indicating<br>Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/M<br>selector Switch, Aux. Contactor,230V,2NO+2NC,Contro MCB etc.<br>OUTGOING:-<br>1 No. 250A, MCCB,FP,36KA, Thermal Magnetic Based Release,O/L,S/C protection<br>5 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C<br>PROTECTION<br>6 Nos.MCCB, 63A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C<br>PROTECTION |  |



| LIFT PANEL  |  |
|---|--|
| INCOMER:- 1 No.125 A MCCB, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L ,S/C & E/F PROTECTION   |  |
| Metering & Indication:- 1 set of Phase Indicating Lights, ON/OFF/TRIP Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/M selector Switch, Aux. Contactor,230V,2NO+2NC,Contro MCB etc.   |  |
| 4 Nos.MCCB, 63A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION  |  |
|   |  |
| BASEMENT PANEL(PARKING&ESS)   |  |
| INCOMER:- 1 No.125 A MCCB, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L ,S/C & E/F PROTECTION<br>Metering & Indication:- 1 set of Phase Indicating Lights, ON/OFF/TRIP Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/M selector Switch, Aux. Contactor,230V,2NO+2NC,Contro MCB etc.<br>1 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>6 Nos.MCCB, 63A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION |  |
| SUB PANEL-3,Block-3, Production.  |  |
| INCOMER:- 1 No.250 A MCCB, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L ,S/C & E/F PROTECTION<br>Metering & Indication:- 1 set of Phase Indicating Lights, ON/OFF/TRIP Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/M selector Switch, Aux. Contactor,230V,2NO+2NC,Contro MCB etc.<br>3 Nos.MCCB, 125A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION<br>4 Nos.MCCB, 63A, FP, 36KA THERMAL MAGNETIC BASED RELEASE, O/L & S/C PROTECTION |  |
| ENERGY METERING PANEL   |  |
| SINGLE PHASE METERING FOR SHOPS & restaurents   |  |
| Metering & Indication:- 1 set of KWH METER AS PER DESIGN OF STATE ELECTRICITY BOARD, Phase Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/V selector Switch, etc. The Metering Box should be of suitable Rating of Copper Busbars &size to Accommodate the size of the METER supplied & Installed by State Electricity Board..  |  |
| THREE PHASE METERING FOR COMMON UTILITIES   |  |

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|---|--------------------------|
| Metering & Indication:- 1 set of KWH METER AS PER DESIGN OF STATE ELECTRICITY BOARD, Phase Indicating Lights, CT for Metering, Digital Multifunction Meter with RS485,TNC switch, A/V selector Switch, etc. The Metering Box should be of suitable Rating of Copper Bus Bars &size to Accommodate the size of the METER supplied & Installed by State Electricity Board..   |                          |
|   |                          |
| <b>HVAC PANEL</b>   |                          |
|   |                          |
| <b>FIRE FIGHTING PANEL</b>  |                          |
|   |                          |
| <b>PLUMBING &amp; WATER SUPPLY PANEL</b>  |                          |
| <b>SUPPLY OF HT/LT CABLES</b>   |                          |
| <b>Supply of HT XLPE Cables:</b><br>Supplying of earthed armoured, aluminium conductor XLPE power cable of 11 KV grade confirming to IS 7098 (Part II) amended upto date as per the following size:<br>a) 3x185 sqmm<br><br><b>Supply of LT XLPE Cables:</b><br>Supply of LT XLPE Cables of 1.1 KV Grade,Aluminium Armoured,of following sizes as per latest IS Code.<br>3.5 Core X 300 Sqmm.<br>3.5 Core X 185 Sqmm.<br>3.5 Core X 150 Sqmm.<br>3.5 Core X 95 Sqmm.<br>3.5 Core X 35 Sqmm.<br>4 Core X 16 Sqmm.<br>4 Core X 10 Sqmm.   | As per approved drawings |
| <b>SUPPLY OF SAFETY EQUIPMENTS</b>  |                          |
| <b>Safety Equipment</b><br>Providing & fixing danger plates made of mild steel at least 2 mm thick & vitreous enamelled white on both sides & with inscriptions in signal red colour on front side as read.<br>(a) High Voltage – size 250 mm x 200mm<br>(b) Medium Voltage – size 200 mm x 150mm<br>Providing and fixing carbon dioxide (CO <sub>2</sub> ) type fire extinguishers confirming to IS 2878 : 1976 and cylinders fully charged of following capacity.<br>(a) 4.5 KG<br>Supply and fixing of foam fire extinguishers, Portable type 9 lit capacity hanged on wall with bracket complete as required. Supply and fixing safety instruction chart in word duly framed with 5 mm thick glass as required. (approx. front area 1.20 sq. mt.) Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on MS angle iron frame with bracket of appropriate size & capacity i/c filling sand etc.<br>Providing First Aid Box as approved by St. John Ambulance Brigade/Indian Red Cross conforming to IS 2217 : 1963. | As per approved drawings |

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| Supply & fixing shock treatment chart duly mounted on a wooden frame with 5 mm thick glass as reqd. (approximate front area 1.20 sq. metre)<br>Providing of rubber mat 1 mtr. wide and 12 mm thick to withstand 15 KV dielectric strength as per IS 5424 : 1969<br>Providing of rubber mat 1 mtr. wide and 12 mm thick to withstand 3.3 KV dielectric strength as per IS 5424 : 1969   |                          |
| <b>GRID CONNECTED SOLAR POWER</b>  |                          |
| Design, Supply, Erection, Testing, Commissioning, of Grid Connected Rooftop Solar Photovoltaic Power Projects on the building under "EPC" Model Type: 20kW with Grid-tied Inverter with Net-Metering with Remote Monitoring. Work includes all Equipmentn Providing, installing, cabling, connecting and commissioning 20KW Rooftop Solar power plant with all approvals, Netmetering activation complete  |                          |
| <b>LAYING OF HT CABLES</b>   |                          |
| <b>Laying of HT Cables:</b><br><br>Laying of 1 No. PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required.<br>Above 120 sqmm and upto 400 sqmm  | As per approved drawings |
| <b>TERMINATION OF HT CABLES</b>  |                          |
| <b>HV Cable Jointing &amp; End Termination :</b><br>Supplying and making Indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of cables of 11 KV grade as required.<br>3Cx185 sqmm  | As per approved drawings |
| <b>LAYING OF LT CABLES</b>   |                          |
| <b>Laying of LT Cables :</b><br>Laying of One number PVC Insulated ,PVC Sheathed/XLPE Power Cables 1.1KV Grade of Following Size direct in Ground including excavation, Sand Cushioning and protective covering and refilling the trench etc.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 & upto 185 Sqmm.<br>Above 185 & upto 400 Sqmm<br><br>Laying of One number ADDITIONALPVC Insulated ,PVC Sheathed/XLPE Power Cable 1.1KV Grade of Following Size direct in Ground in the same Trench including excavation,Sand Cushioning and protective covering and Refilling the trench etc as reqd.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 & upto 185 Sqmm.<br>Above 185 & upto 400 Sqmm<br><br>Laying of 1 No. PVC insulated and PVC | As per approved drawings |

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| sheathed/ XLPE power cable of 1.1 KV<br>grade of following size in the existing RCC/HDPE/Metal pipe/Open<br>Trench/Cable Trays etc. as required.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 and upto 185 sqmm<br>Above 185 sqmm and upto 400 sqmm   |                             |
| <b>TERMINATION OF LT CABLES</b>  |                             |
| Supplying and making end termination with brass<br>compression gland and Al. lugs for following<br>size of PVC insulated and PVC sheathed/XLPE<br>Al. conductor cable of 1.1 KV grade as required.<br>3.5x300sq. mm<br>3.5x185sq. mm<br>3.5 Core X 150 Sqmm.<br>3.5 Core X 95 Sqmm.<br>3.5 Core X 35 Sqmm.<br>4 Core X 16 Sqmm.<br>4 Core X 10 Sqmm.   | As per approved<br>drawings |
| <b>EARTHING</b>  |                             |
| Earthing with coper Earth Plate 600 mm x 600<br>mm x 3 mm thick i/c accessories and providing<br>masonry enclosure with cover plate having<br>locking arrangement and watering pipe etc. with salt & Charcoal.<br>Earthing with GI earth place 600 mm x600<br>mm x 6 mm thick i/c accessories and providing<br>masonry enclosure with cover plate having<br>locking arrangement and watering pipe etc. (but<br>without charcoal or coke and salt) complete as required.<br>Providing and fixing 25mm x 5 mm <del>Copper</del><br>strip in 40 mm dia GI pipe from earth electrode<br>as required.<br>Providing and fixing 25mm x 5 mm GI strip in 40 mm dia GI Pipe<br>step on surface or in recess for connection etc. as required.<br>providing and fixing 25x5 MM copper strip on surface<br>Providing and fixing 25x5MM GI strip on surface | As per SLD                  |

## Internal Electrical

| Internal Electrical |   |               |
|---------------------|---|---------------|
| S. No.              | Item  | LOCATION      |
| 1                   | <p>WIRING IN PVC CONDUIT</p> <p>Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface/recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.</p> <p>Group A<br/>Group B<br/>Group C</p>   | All buildings |
|                     | Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.   | All buildings |
| 2                   | Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit along with 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.   | All buildings |
| 3                   | Wiring for light/ power plug with 4X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit along with 2 Nos. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.  | All buildings |
| 4                   | <p>Wiring for circuit/ sub main wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.</p> <p>2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire<br/>2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire<br/>2 X 6 sq. mm + 1 X 6 sq. mm earth wire<br/>2 X 10 sq. mm + 1 X 6 Sq. mm earth<br/>4 X 10 sq. mm + 2 X 6 Sq. mm earth<br/>4 X 16 sq. mm + 2 X 6 Sq. mm earth</p> | All buildings |
| 5                   | Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.  | All buildings |
| 6                   | <p><b>Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.</b></p> <p>25 mm<br/>32 mm<br/>40 mm<br/>50 mm</p>  | All buildings |

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| <b>7</b>  | Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.<br>5/6 A switch<br>2 way 5/6 A switch<br>15/16 A switch<br>3 pin 5/6 A socket outlet<br>6 pin 15/16 A socket outlet<br>Telephone socket outlet<br>TV antenna socket outlet<br>Bell push | All buildings |
| <b>16</b> | Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.   | All buildings |
| <b>17</b> | Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.  | All buildings |
| <b>18</b> | Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc. as required.<br>1 or 2 Module (75mmX75mm)<br>3 Module (100mmX75mm)<br>4 Module (125mmX75mm)<br>6 Module (200mmX75mm)<br>8 Module (125mmX125mm)<br>12 Module (200mmX150mm)   | All buildings |
| <b>19</b> | Supplying and fixing following Modular base & cover plate on existing modular metal boxes etc. as required.<br>1 or 2 Module<br>3 Module<br>4 Module<br>6 Module<br>8 Module<br>12 Module  | All buildings |
| <b>20</b> | Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.  | All buildings |
| <b>21</b> | Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.  | All buildings |
|           | Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required.  |               |
| <b>22</b> | Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing up to two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.   | All buildings |

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| <b>23</b> | Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.  | All buildings |
| <b>24</b> | Providing and fixing plain 16/0.20mm (0.50sqmm) twin flat flexible, FRLS PVC insulated, copper conductor cable, in PVC sleeve of suitable size on the floor/ wall, or side of the table/ door etc. as required.   | All buildings |
| <b>25</b> | Installation ,Testing, Commissioning of Pre-wired LED/Flourescent fittings of all type, sizes and shapes contianing lamps per fitting, complete with all accessories including connections etc. as required.  | All buildings |
| <b>27</b> | Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (up to 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable, including providing and fixing phenolic laminated sheet cover on the fan box etc. as required.             | All buildings |
| <b>29</b> | Installation, testing and commissioning of Exhaust fans, in the existing opening,including making good the damages,connections,testing,commissioning etc. as required.<br>Up to 450 mm sweep<br>510 mm sweep  | All buildings |
| <b>30</b> | Supplying and drawing following pair 0.5 sq. mm FR PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.<br>2 Pair (4 core) From LV box to different point   | All buildings |
|           | Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.<br>1 run of cable   | All buildings |
| <b>31</b> | Providing, laying connecting and testing of multi-core telephone armored/ unarmored cable of conductor size 0.5mm dia annealed copper conductor PVC insulated PVC sheathed jelly filled (as per DOT specification) cable as required<br>100 Pair telephone armored cable<br>20 Pair telephone armored cable | All buildings |
| <b>33</b> | Providing, fixing connecting and testing of under noted size of solder less telephone tag block Krone make in surface/recess in wall required size of M.S. box with hinged lockable cover duly stove enamel painted.<br>100 pair tag block  | All buildings |
|           | Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.<br>20mm dia conduit pipe<br>25mm dia conduit pipe<br>32mm dia conduit pipe                        | All buildings |
|           | Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.<br>Supplying and fixing M.S. box with modular type telephone (RJ-11) outlet complete as required.                                      | All buildings |

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|  | Modular Type DATA ( RJ-45) outlet complete as required   |               |
|  | Supplying & Fixing of UTP Jack Panel, loaded with 48 no's UTP ports for Non-PCB based IO Jacks (RJ45, TIA-568C Category-6, Shall have integrated bonding bar or other mechanism for grounding, Shall be loaded with individually replaceable 24 nos. Category-6 certification by Jacks complying with TIA-568.C.2 , Shall be having a 6 port module construction for better cable dressing at the rear, the jacks shall have RJ-45 type connector with bend limiting and strain relief boot for securing IDC contacts from external forces and for maintaining the bend radius of the cable complete in all respect.   | All buildings |
|  | Supplying & Fixing of Floor Standing Network/Server Rack - 42U / 800w / 800d, with Heavy Duty Extruded Aluminum Frame for rigidity. Top cover with FHU provision. Top & Bottom cover with cable entry gland plates. Two pairs of 19" mounting angles with 'U' marking. Depth support channels - 3 pairs. With a Overall Weight Carrying Capacity of 500Kgs. Side Panels - 42U/800d Front MS Door Perforated honeycomb 42U/800w Rear MS Door Split Perforated honeycomb 42U/800w Fan 90CFM 230V AC, 4" dia Castors with Brake (set of 4) Vertical Cable manager 80mmW 42U Shelf, Stationery 700mm N/W PDU 12Sockets 5/15Amps with MCB Mounting Hardware (Pkt. Of 20) earthing Kit 150mmH Cable manager 1U MS with Loops complete in all respect | All buildings |
|  | Supplying Installation testing and Commissioning of 48 port 10/100/1000BASE-T ports POE switch and four GbE/10GbE SFP/SFP+ uplink ports, layer 3 from day1 having static & RIP ,stackable up to 10 switches, should support external redundant power supply, certified , each switch should be provided with stacking port/cable complete in all respect   | All buildings |
|  | MODULAR BOXES & SWITCH/SOCKETS<br>Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).   | All buildings |
|  | Providing and fixing following rating and breaking capacity and pole MCCB with THERMOMAGNETIC RELEASE AND TERMINAL spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.<br>125 A,36KA,FPMCCB<br>63 A,36KA,FPMCCB   | All buildings |
|  | Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required but without MCB/RCCB/Isolator)<br>4 way (4 + 12), Double door<br>8 way (4 + 24), Double door<br>12way (4 + 36), Double door   | All buildings |
|  | Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer )   | All buildings |



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|  | as required . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.)<br>4 way (4 + 12), Double door<br>8 way (4 + 24), Double door<br>12 way (4 + 36), Double door   |               |
|  | Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.<br>Single pole<br>Triple pole   | All buildings |
|  | Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.  | All buildings |
|  | Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 30 Ma in the existing MCB DB complete with connections, testing and commissioning etc. as required.<br>40 A<br>63 A  | All buildings |
|  | Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc.as required.<br>For 4 way, Double door TPN MCBDB<br>For 8 way, Double door TPN MCBDB<br>For 12 way, Double door TPN MCBDB          | All buildings |
|  | Supplying and fixing Cable End Box (Loose Wire Box) suitable for triple pole and neutral, sheet steel, Vertical MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc. as required.   | All buildings |
|  | Laying of One number PVC Insulated ,PVC Sheathed/XLPE Power Cables 1.1KV Grade of Following Size direct in Ground including excavation, Sand Cushioning and protective covering and refilling the trench etc.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 & upto 185 Sqmm.<br>Above 185 & upto 400 Sqmm                                    | All buildings |
|  | Laying of One number ADDITIONALPVC Insulated ,PVC Sheathed/XLPE Power Cable 1.1KV Grade of Following Size direct in Ground in the same Trench including excavation,Sand Cushioning and protective covering and Refilling the trench etc as reqd.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 & upto 185 Sqmm.<br>Above 185 & upto 400 Sqmm | All buildings |
|  | Laying of 1 No. PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size in the existing RCC/HDPE/Metal pipe/Open rench/Cable Trays etc. as required.<br>Upto 35 sqmm<br>Above 35 & upto 95 sqmm.<br>Above 95 and upto 185 sqmm<br>Above 185 sqmm and upto 400 sqmm  | All buildings |

|  |  |               |
|--|--|---------------|
|  | <b>Laying of one number PVC Insulated PVC sheathed/XLPE power cable of 1.1 KV grade of following size in existing Masonary open duct etc as required.</b><br><b>Upto 35 sqmm</b><br><b>Above 35 &amp; upto 95 sqmm.</b><br><b>Above 95 and upto 185 sqmm</b><br><b>Above 185 sqmm and upto 400 sqmm</b>  | All buildings |
|  | <b>Supplying and making end termination with brass compression gland and Al. lugs for following size of PVC insulated and PVC sheathed/XLPE Al. conductor cable of 1.1 KV grade as required.</b><br><br><b>4 Core X 6 sqmm</b><br><b>4 Core X 10 sqmm</b><br><b>4 Core X 16 sqmm</b><br><b>3.5 Core X 35 Sqmm.</b><br><b>3.5 Core X 50 Sqmm.</b><br><b>3.5 Core X 70 Sqmm.</b> | All buildings |
|  | <b>Earthing with coper Earth Plate 600 mm x 600 mm x 3 mm thick i/c accessories and providing masonary enclosure with cover plate having locking arrangement and watering pipe etc. with salt &amp; Charcoal.</b>  | All buildings |
|  | <b>Earthing with GI earth place 600 mm x600 mm x 6 mm thick i/c accessories and providing masonary enclosure with cover plate having locking arrangement and watering pipe etc. (but with charcoal or coke and salt) complete as required.</b>   | All buildings |
|  | <b>Providing and fixing 25mm x 5 mm Copper strip in 40 mm dia GI pipe from earth electrode as required.</b>  | All buildings |
|  | <b>Providing and fixing 25mm x 5 mm GI strip in 40 mm dia GI Pipe step on surface or in recess for connection etc. as required.</b>  | All buildings |
|  | <b>providing and fixing 25x5 MM copper strip on surface</b>  | All buildings |
|  | <b>Providing and fixing 25x5MM GI strip on surface</b>   | All buildings |
|  | <b>Providing &amp; Fixing of Lightening Conductor finial made of 25mm dia 300 mm long,G.I.tube having single prong at Top,with 85 mm dia 6mm thick G.I.Plate including holes etc complete as required.</b>   | All buildings |
|  | <b>Jointing copper/G.I.Tape (with another Copper/ G.I.Tape,base of the tape or any other metallic object) by Rivetting, Nut Bolting, Sweating and slodering etc as required.</b>   | All buildings |
|  | <b>Providing &amp; Fixing G.I.Tape 20mm x 3mm thick on parapet or on surface of wall for lightening conductor complete as required (FOR HORIZONTAL RUN)</b>  | All buildings |
|  | <b>Providing &amp; Fixing G.I.Tape 20mm x 3mm thick on parapet or on surface of wall for lightening conductor complete as required (FOR VERTICAL RUN)</b>  | All buildings |
|  | <b>Providing &amp; Fixing Test Jointing made of 20mmx3mm thick G.I.Strip125mm long,with 4 nos. of G.I.Bolts,nuts,checknuts &amp; Spring washers etc complete as required.</b>  | All buildings |

|  |   |               |
|--|---|---------------|
|  |   |               |
|  | Providing & Laying G.I.Strip 32x6 mm, from earth Electrode to Test Joint directly in ground as required.<br><b>Supply of LT XLPE Cables SUBMAIN CABLES FROM PANELS TO DBs</b><br><b>Supply of LT XLPE Cables of 1.1 KV Grade,Aluminium Armoured,of following sizes as per latest IS Code.</b><br><b>4 Core X 6 sqmm</b><br><b>4 Core X 10 sqmm</b><br><b>4 Core X 16 sqmm</b><br><b>3.5 Core X 35 Sqmm.</b><br><b>3.5 Core X 50 Sqmm.</b><br><b>3.5 Core X 70 Sqmm.</b> | All buildings |
|  | PVC RACEWAYS<br>Providing & Fixing of following size of PVC Raceways with its accessories and mountings as per approved make of Manufacturer and shall be laid along the wall or wherever required as per requirement at site and as per drawings.complete as required.<br>50mmx50mmx2mm thick<br>75mmx50mmx2mm thick<br>100mmx50mmx2mm thick   | All buildings |

## Street Lighting

| Street Lighting |   |   |
|-----------------|---|---|
| S. No.          | Item  | LOCATION                                  |
| 1               | SUB LT PANEL (Landscaping & External Lights),Location New Gate House.<br>"Supplying, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having fabricated in compartmentalized design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having suitable Amp capacity extensible type TPN aluminium alloy bus bars of light conductivity, DMC / SMC bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common Aluminium/GI earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :- | In external area, as specified in drawing |
|                 | INCOMING SUPPLY FROM NEW GATE HOUSE PANEL:<br>1 No. 125 A, 4P (100% Neutral) MCCB (36 kA) with Microprocessor based O/L, S/C and E/F releases.  | In external area                          |
| 2               | METERING & INDICATING LIGHTS<br>1 Nos MFM Meters<br>1 Set of 150/5A, CL-1, 15VA CTs for measuring.<br>Sets of phase indicating ,ON/OFF,TRIP Indicating lamps with 2A control MCBs.  | In external area, as specified in drawing |
| 3               | BUSBAR:<br>Electrolytic high conductivity TPN (100% Neutral) Aluminium busbars rated at 200 amps (25 kA) with heat shrinkable PVC sleeves.  | In external area                          |
| 4               | OUTGOING FEEDER:<br>3Nos.32 A DP MCB .<br>2Nos.32 A TPN MCB with Timer for LANDSCAPING & EXT. POLE LIGHTS .<br>2Nos.32 A TPN MCB with Timer for LANDSCAPING & EXT. POLE LIGHTS .<br>2Nos.63 A TPN MCB with Timer for LANDSCAPING & EXT. POLE LIGHTS .   | In external area                          |
| 5               | CABLING WORK (SUPPLY)<br>Supply of following size of XLPE / PVC insulated,PVC Sheathed, Aluminium Conductor armoured power cable of 1.1kV grade etc. as required.<br>3.5C x 70sq.mm 1.1kV Al Cable<br>4C x 10sq.mm 1.1kV Al. Cable<br>4C x 6sq.mm 1.1kV Al. Cable   | In external area                          |
| 6               | LAYING OF CABLES :<br>Laying of one number XLPE / PVC insulated,PVC Shethed armoured power cable of 1.1kV grade of following sizes on perforated cable trays and dressed using cable ties and identified at regular intervals as required./in Existing RCC/HDPE Pipe/Masonry/Trusses etc<br>3.5C x 70sq.mm 1.1kV Al Cable<br>4C x 10sq.mm 1.1kV Al. Cable<br>4C x 6sq.mm 1.1kV Al. Cable  | In external area                          |

|           |   |                  |
|-----------|---|------------------|
|           | <p><b>Laying of one number XLPE / PVC insulated, PVC sheathed Aluminium Conductor Armoured power cable of 1.1kV grade of following sizes in ground including excavation and backfilling and identified at regular intervals as required.</b></p> <p><b>3.5C x 70sq.mm 1.1kV Al Cable</b></p> <p><b>4C x 10sq.mm 1.1kV Al. Cable</b></p> <p><b>4C x 6sq.mm 1.1kV Al. Cable</b></p>   |                  |
| <b>7</b>  | <p><b>LT CABLE TERMINATION</b></p> <p>End termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.</p> <p>3.5C x 70sq.mm 1.1kV Al Cable</p> <p>4C x 10sq.mm 1.1kV Al. Cable</p> <p>4C x 6sq.mm 1.1kV Al. Cable</p>  | In external area |
| <b>16</b> | <p><b>STREET LIGHT POLES 7 MTR Galvanised:</b></p> <p>Supply , fixing, Testing &amp; Commissioning of 7 mtr long,3mm thick sheet,hot dip galvanised poles of bottom dia 130mm/70mm respectively with base plate dimensions 220X220X14 mm with galvanised Single Arm Bracket of 1.00 mtr length. The pole shall be Erected on a suitable size of Cement Concrete 1:2:4 foundation as per Manufacturers standards along with Grouting the Foundation Bolts,nuts and 1.5 mtr long,50 mm dia suitably bend ,GI ,Medium Class Pipe for cable entry, suitable size Inbuilt Cable End Box opening approx.600 mm above the Pole Base with 2 Nos. 6Way 15 Amp, Bakelite Connectors,1 No 6 Amp, SP MCB C Curve etc as required. The door shall be vandal resistant and shall be weather proof to ensure safety of inside connections. The door shall be flush with the exterior surface and shall have suitable locking arrangement. There shall also be suitable arrangement for the purpose of earthing. The poles shall be complete with integral terminal boxes, MCB cut-outs, pole foundation bolts, lightning arrestor, earthing, etc. as required. The poles shall have provisions for mounting and connecting an additional 250 Watt MH -type outdoor light fitting</p> | In external area |
| <b>17</b> | <p><b>STREET LIGHT POLES 4.5 MTR Galvanised:</b></p> <p>Supply , fixing, Testing &amp; Commissioning of 4.5 mtr long,3mm thick sheet,hot dip galvanised poles of bottom dia 130mm/70mm respectively with base plate dimensions 220X220X14 mm with galvanised Single Arm Bracket of 1.00 mtr length. The pole shall be Erected on a suitable size of Cement Concrete 1:2:4 foundation as per Manufacturers standards along with Grouting the Foundation Bolts,nuts and 1.5 mtr long,50 mm dia suitably bend ,GI ,Medium Class Pipe for cable entry, suitable size Inbuilt Cable End Box opening approx.600 mm above the Pole Base with 2 Nos. 6Way 15 Amp, Bakelite Connectors,1 No 6 Amp, SP MCB C Curve etc as required. The door shall be vandal resistant and shall be weather proof to ensure safety of inside connections. The door shall be flush with the exterior surface and shall have suitable locking arrangement. There shall also be suitable arrangement for the purpose of earthing. The poles shall be complete with integral terminal boxes, MCB cut-outs, pole foundation bolts, lightning arrestor, earthing, etc. as required. The poles shall have provisions for mounting and connecting an additional outdoor light fitting</p>               | In external area |
| <b>18</b> | <b>POST TOP LANTERNS:</b>   | In external area |

|           |   |                  |
|-----------|---|------------------|
|           | Supplying , Fixing, Testing & Commissioning of Post Top Lanterns of 40 Watt LED Light Fixtures,IP-65 Housing,made of single piece Die Cast Aluminium alloy,as per Manufacturers design.on a suitable length & Dia of GI Pipe                        |                  |
| <b>19</b> | BOLLARDS Along Path Ways:<br>Philips,LED Bollards,BCP-1510, 18Watts,IP-65,Warm White Colour,temp.3000K on 500mm high Rotomoulded LLDPE Pillars duly grouted on a concrete base by means of 4 Nos. M8X75 mm studs with necessary base rings (CatIII) | In external area |
| <b>20</b> | SPIKE LIGHTS,Garden Tree/Planter Illumination:<br>Philips make smart,Bright spot light BGP-150,LED 250/WW,6 watt,20 D,corr. Colour Temp.3000K   | In external area |
| <b>21</b> | Wall LightS:<br>Philips make,Tempo LED, wall lights, system wattage (10-16),IP-65,Colour Temp.5700K on a suitable height as per Designer/Consultants.   | In external area |
| <b>22</b> | STRIP LIGHTS for Street Furniture:<br>Philips LED Strip light ,12 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc  | In external area |
| <b>23</b> | FLOOR LIGHTS:<br>Philips make,Floor lights LED, 4Watt,IP-67,40 lumen output,warm white,Colour Temp.3000K operating voltage 220/24 volts. Designer/Consultants.  | In external area |
| <b>24</b> | pole Lights<br>for 7.0 mtr poles : 45 Watt,LED type Outdoor, pole light fixtures complete in all respect ,etc as required.<br>for 4.5 mtr poles :30 Watt,LED type Outdoor, pole light fixtures complete in all respect ,etc as required.            | In external area |
| <b>25</b> | Philips LED GARDEN LIGHT ,25 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc   | In external area |
| <b>27</b> | Philips LED UPLIGHTER ,30 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc  | In external area |
| <b>29</b> | Philips LED UPLIGHTER FOR CANOPY ,30 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc   | In external area |
| <b>30</b> | Philips LED UPLIGHTER FOR SCULPTURE ,18 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc  | In external area |
|           | Philips LED GRAZER LIGHT ,12 Watt,Warm White, Colour Temp.3000K,Operating Voltage 220/24 Volts on wall surface/floor etc as reqd. as per drawings etc   | In external area |

|           |  |                  |
|-----------|--|------------------|
| <b>31</b> | Music/Speakers:<br>supply ,Installation, Testing & Commissioning of 20Watt speakers ,outdoor, whether proof installed on the suitable foundations along the walkway etc including providing & Connecting 2 core stranded speaker wires from the console/amplifier up to the speakers in a suitable protective method by using HDPE / GI Pipes.   | In external area |
| <b>33</b> | WI-FI ROUTERS :<br>Providing wifi routers at diffirent locations as per requirement of designer/consultant.  | In external area |
|           | EARTHING SYSTEM<br>Supply, installation and connecting a Copper CHEMICAL EARTHING SAFE EARTH ELECTRODE 50MM DIA 3 Mtrs earthing electrode with non corrosive hygroscopic Backfill compound The cost of digging and back filling earth electrode as per IS 3043-1987.at a depth of 2000 mm. A masonry strucutre shall be constructed to a depth of 750mm. and a heavy duty CI Cover shall be used to cover the pit. Earth resistance with in 1 ohm. as per requirements of local authorities, With15 years warranty including Masonary chamber with locking arrangements.<br>for Low Voltage & Data Network | In external area |
|           | Supply, installation and connecting a GI CHEMICAL EARTHING SAFE EARTH ELECTRODE 50MM DIA 3 Mtrs earthing electrode with non corrosive hygroscopic Backfill compound The cost of digging and back filling earth electrode as per IS 3043-1987.at a depth of 2000 mm. A masonry strucutre shall be constructed to a depth of 750mm. and a heavy duty CI Cover shall be used to cover the pit. Earth resistance with in 1 ohm. as per requirements of local authorities, With 15 years warranty including masonry chamber for Body Earthing   | In external area |
|           | Supplying and installation of following sizes of earth strip & wires by using spacer clamp for main earth flat,suitable clamping with M.S / Cu. flats for earthwires etc.,including terminal crimping type sockets,bolts & washers, etc required for the complete job.<br>25x 6 mm CU strip.on surface or as required.<br>25 x 6 mm GI strip on surface or as required.<br>Provinding and fixing 6 SWG GI wire on surface are in recaes for loop earthing long with existing conduit / cable as required   | In external area |

## Supply and Installation of Light Fixtures and Fans

| Supply and Installation of Light Fixtures & Fans |   |  |
|--|---|--|
| S. No.   | Item  | LOCATION- as per approved drawings for Internal Fixtures |
| 1  | Supply of Following type of Fans & Fixtures of all sizes and shapes LED lamps per fitting, complete with all accessories:   |  |
|  | 36 W LED 2'X2' Light Fixtures as marked L1  |  |
| 2  | 18 watt LED Down Lighters as marked L2.   |  |
| 3  | 6 Watt LED Down Lighters as Marked L3   |  |
| 4  | 12 watt LED Down Lighters as marked L4.   |  |
| 5  | 6 watt LED Down Lighters as marked L5.  |  |
| 6  | <b>12 watt LED MIRROR LIGHTS</b>  |  |
| 7  | 14 watt/mtr LED Strip Light warm white as marked DF.  |  |
|  | 24watt/mtr LED Strip Light warm white as marked DF.   |  |
| 16   | 28 watt LED tubelight fixtures for basement   |  |
| 17   | Ceiling Fans 48" dia on ceiling without Regulator .Including GI Down Rod as required.   |  |
| 18   | Exhaust fans.med.duty for Toilets   |  |
| 19   | GEYSERS   |  |
| 20   | Receiving, Storing, Installation, testing and commissioning of Following type of Fans & Fixtures on wall bracket /ceiling fittings of all sizes and shapes LED lamps per fitting, complete with all accessories including connections with 3x1.5 sqmm copper conductor wire etc. as required. |  |
| 21   | 36 W LED 2'X2' Light Fixtures as marked L1  |  |
| 22   | 18 watt LED Down Lighters as marked L2.   |  |
| 23   | 6 Watt LED Down Lighters as Marked L3   |  |
| 24   | 12 watt LED Down Lighters as marked L4.   |  |



|    |   |  |
|----|---|--|
| 25 | 6 watt LED Down Lighters as marked L5.  |  |
| 27 | 14 watt/mtr LED Strip Light warm white as marked DF.                                  |  |
| 29 | 28 watt LED tubelight fixtures for basement   |  |
| 30 | Ceiling Fans 54" dia on ceiling without Regulator .Including GI Down Rod as required. |  |
|    | Exhaust fans.   |  |
| 31 | GEYSERS   |  |

### Fire Detection and Alarm System

| FIRE DETECTION AND ALARM SYSTEM (INTELLIGENT) |   |  |
|---|---|--|
| S. No.  | Item  | LOCATION   |
| 1   | INTELLIGENT FIRE ALARM SYSTEM<br>Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 ± 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications. | All buildings except Dormitory and shopping kiosks |
|   | Two Loop Panel.   | All buildings except Dormitory and shopping kiosks |
| 2   | Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.   | All buildings except Dormitory and shopping kiosks |
| 3   | Supplying, installation, testing & commissioning of repeater panel wih 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.   | All buildings except Dormitory and shopping kiosks |
| 4   | Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.  | All buildings except Dormitory and shopping kiosks |

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|----|--|--|
| 5  | Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.  | All buildings except Dormitory and shopping kiosks |
| 6  | <b>Supplying, Supplying, installation, testing &amp; commissioning of intelligent addressable programmable sounder complete as required.</b>   | All buildings except Dormitory and shopping kiosks |
| 7  | Supplying, installation, testing & commissioning of fault isolator complete with base as required.   | All buildings except Dormitory and shopping kiosks |
| 16 | Supplying, installation, testing & commissioning of intelligent aspiration detector for area coverage of minimum 5000 sq. ft. complete as required.  | All buildings except Dormitory and shopping kiosks |
| 17 | Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed temperature thermistor complete with base as required.  | All buildings except Dormitory and shopping kiosks |
| 18 | Supplying, installation, testing & Commissioning of addressable fire control module complete as required.  | All buildings except Dormitory and shopping kiosks |
| 19 | Supplying, Supplying, installation, testing & commissioning of addressable phone control module as required.   | All buildings except Dormitory and shopping kiosks |
| 20 | Supplying, installation, testing & commissioning of addressable beam detector with short circuit isolator (inbuilt or separate) complete with emitter and receiver including connections with remote test features etc complete as required. | All buildings except Dormitory and shopping kiosks |
| 21 | Supplying, installation, testing & commissioning of intelligent addressable duct detector including suitable Photo detector complete with base as required.  | All buildings except Dormitory and shopping kiosks |
| 22 | Supplying, Supplying, installation, testing & commissioning of addressable manual call point complete as required.   | All buildings except Dormitory and shopping kiosks |
| 23 | Supplying, Supplying, installation, testing & commissioning of addressable horn cum strobe as required   | All buildings except Dormitory and shopping kiosks |
| 24 | Supplying, Supplying, installation, testing & commissioning of strobe complete as required.  | All buildings except Dormitory and shopping kiosks |
| 25 | Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.   | All buildings except Dormitory and shopping kiosks |
| 27 | Supplying, installation, testing & commissioning of intelligent interface unit BACnet/ Modbus protocol i.e. supplying communication links between building management system and fire alarm control panel complete as required.              | All buildings except Dormitory and shopping kiosks |
| 29 | Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.  | All buildings except Dormitory and shopping kiosks |

|           |   |  |
|-----------|---|--|
| <b>30</b> | <b>PUBLIC ADDRESS SYSTEM</b><br>Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required. | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.  | All buildings except Dormitory and shopping kiosks |
| <b>31</b> | Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.  | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning ceiling of /wall mounted loud speaker, 3/1.5 Watt in ABS enclosure as required.  | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of 6 inches dia, 2 watts, 70/100 volts ceiling speaker complete as required.   | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of digital audio amplifier 50 Watt, 25V rms operating at 240 volt AC supply complete as required.  | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of digital audio amplifier 75 Watt, 25V rms operating at 240 Volt AC supply complete as required.  | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of exit point directional sound speaker with voice and integral audio amplifier with selectable sound pulse patterns complete as required.   | All buildings except Dormitory and shopping kiosks |
|           | Supplying, installation, testing & commissioning of Voice command keypad 6 zone, with microphone assembly complete as required.   | All buildings except Dormitory and shopping kiosks |
|           | <b>ASPIRATION DETECTOR ACCESSORIES</b><br>Supply, installation, testing and commissioning of 25 mm Outer dia CPVC Pipe with end caps including making air sampling opening of appropriate dia on appropriate interval and all accessories as required.                                    | All buildings except Dormitory and shopping kiosks |

#### HVAC- Minimum specification to be followed

| <b>AIR CONDITIONING &amp; VENTILATION SYSTEM</b> |   |                 |
|--|---|-----------------|
| <b>S. No.</b>                                    | <b>Item</b>   | <b>LOCATION</b> |
| <b>1</b>   | <b>VRF AIR CONDITIONING SYSTEM</b>  |                 |
|  | <b>OUTDOOR UNIT</b><br>Supply, Installation, Testing & Commissioning of modular type outdoor units complete with highly efficient inverter type scroll compressors, air cooled condenser with low noise fan having interconnected control wiring and refrigerant piping housed in compact housing. Refrigerant should be R410A. |                 |

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|---|--|--|
|   | <p>The quoted price shall include the cost of refrigerent top up. All structural frame work platforms required shall be of HVAC vendor as per site conditions. The electrical contractor shall terminate the required size cable in the PDB for ODUs to be supplied under the scope of this tender, further cabling from this PDB to outdoor units shall be provided by HVAC contractor.</p> <p>88 HP (Cooling Only)<br/> 80 HP (Cooling Only)<br/> 74 HP (Cooling Only)<br/> 68 HP (Cooling Only)<br/> 66 HP (Cooling Only)<br/> 22 HP (Cooling Only)<br/> 20 HP (Cooling Only)<br/> 18 HP (Cooling Only)<br/> 16 HP (Cooling Only)<br/> 22 HP (Cooling Only)<br/> 14HP (Cooling only)</p>                |  |
| 2 | <p><b>INDOOR UNITS</b><br/> Supply, Installation, Testing &amp; Commissionin of indoor Units of VRF system complete in all respect. The indoor unit shall comprise of evaporator with coil, fan and fan motor, necessary galvanised steel supports etc. as per specifications. Refrigerant should be R410A.</p> <p>4 way cassette Type<br/> 1.0 TR<br/> 1.5 TR<br/> 2.0 TR<br/> 2.5 TR<br/> 3.0 TR<br/> High Wall type<br/> 2.0 TR<br/> 1.5 T.R<br/> Ductable Type (with UVGI)<br/> 2.0 TR<br/> 2.5 TR<br/> 3.0 TR<br/> 5.0 TR<br/> 6.0 TR<br/> 8.0 TR<br/> Treated Fresh Air (TFA) Units<br/> The TFA unit shall be fitted with MERV-13 or higher filters<br/> 3.5 TR / 500 cfm<br/> 5.5 TR / 800 cfm</p> |  |
| 3 | <p><b>UVGI System</b><br/> Supply of Ultra Violet Germicidal Irradiation (UVGI) system to keep coils continuously clean and disinfected.<br/> For ducted indoor units and TFA units</p>  |  |
| 4 | Supply of Cordless Remote controller with LCD display.   |  |
| 5 | Supply of Corded Remote controller with LCD display.   |  |
| 6 | <b>Supply of Y Joints/ Branch Ditributors<br/>For Indoor Units</b>   |  |

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|           | <b>For Outdoor Units</b>  |  |
| <b>7</b>  | <p><b>COPPER PIPING (REFRIGERANT PIPING)</b><br/> Supply, Installation, Testing &amp; Commissioning of high pressure copper refrigerant piping suitable for R 410A refrigerant of suitable size as required and duly insulated with 19mm/13mm thick closed cell elastomeric insulation in tubing form. Piping shall be of following sizes :</p> <p>54.0 mm dia Pipe (insulation - 19 mm thick)<br/> 41.3 mm dia Pipe (insulation - 19 mm thick)<br/> 34.9 mm dia Pipe (insulation - 19 mm thick)<br/> 28.6 mm dia pipe (insulation - 19 mm thick)<br/> 22.2 mm dia pipe (insulation - 19 mm thick)<br/> 19.1 mm dia pipe (insulation - 13 mm thick)<br/> 15.9 mm dia pipe (insulation - 13 mm thick)<br/> 12.7 mm dia pipe (insulation - 13 mm thick)<br/> 9.5 mm dia pipe (insulation - 13 mm thick)</p> |  |
| <b>16</b> | <p><b>DRAIN PIPING</b><br/> Supply, installation, testing and commissioning of UPVC of 10 Kg/cm<sup>2</sup> condensate drain water piping with necessary clamps, supports, hangers and fitting such as bend, tees, reducers etc. duly insulated with 6 mm thick chemically cross-linked closed cell polyethylene foam.</p> <p>25 mm DIA<br/> 32 mm DIA<br/> 40 mm DIA<br/> 50 mm DIA</p>  |  |
| <b>17</b> | <p><b>CABLE TRAY</b><br/> Supply and installation of GI Tray of 300 mm x 75 mm size, constructed from 16G GSS, MS angle support for Tray, covered with 20G GI sheet cover for all copper refrigerent pipes<br/> 300 mm x 75 mm</p>  |  |
| <b>18</b> | <p><b>INLINE FAN FOR FRESH AIR / EXHAUST</b><br/> Supply of inline fans for exhaust air of Toilets / Kitchen as shown on drawings, complete with sheet metal casing, direct driven centrifugal fan, motor with proper protection and inspection door, gravity louvers etc. as per the specifications. Fan should be suitable for operation on 240 +10 %, 50 Hz, single phase AC power supply as required. Fan shall be suitable for following capacities :</p> <p>Capacity: 600 cfm to 800 cfm , Static: 15 mmWg</p>  |  |
| <b>19</b> | <p><b>PROPELLER FANS</b><br/> Supply, Installation, Testing and Commissioning of Propeller Fans for exhaust air of Toilets as shown on drawings. Each fan shall be complete with permanent split capacitor, mounting plate and accessories like wire guard, bird screen and gravity louvers for weather protection as required. Fan shall be suitable for operation on 220 ± 6% volts, 50 Hz cycle single phase power supply. The propeller fan shall be complete in all respects as per the approved drawings &amp; specifications and suitable for the following capacities:-</p> <p>200 mm dia<br/> 250 mm dia<br/> 300 mm dia</p>   |  |

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| <b>20</b> | <p>ELECTRICAL PANEL</p> <p>"Electrical Panel made of 2.0 mm thick steel sheet duly powder coated, complete with voltmeter,ammeter,indicating lights, selector switch incoming/outgoing isolators,current operated single phase preventor as per specification and drawings.</p> <p>(The electrical contractor shall terminate required size cables at incomer of AC Electrical Panel. All the cabling from AC Electrical Panel to ODUs &amp; IDUs shall be in the scope of HVAC contractor) "</p>   | haat        |
| <b>21</b> | <p>AC Panel VRF-1 for Interpretation Center (Location: GF)</p> <p>1 nos Incoming 3P+NL MCCB @ 125 A</p> <p>3 nos Outgoing 3P+NL MCB @ 63 A for ODUs</p> <p>Supply, installation &amp; commissioning of Electrical Panel as described above</p>  | haat        |
| <b>22</b> | <p>AC Panel VRF-2 (Location : Terrace)</p> <p>1 nos Incoming 3P+NL MCCB @ 250 A</p> <p>6 nos Outgoing 3P+NL MCB @ 63 A for ODUs</p> <p>2 nos Outgoing 3P+NL MCB @ 40 A for ODUs</p> <p>Supply, installation &amp; commissioning of Electrical Panel as described above</p>  | haat        |
| <b>23</b> | <p>AC Panel VRF-3 (Location : Terrace)</p> <p>1 nos Incoming 3P+NL MCCB @ 400 A</p> <p>6 nos Outgoing 3P+NL MCB @ 63 A for ODUs</p> <p>1 nos Outgoing 3P+NL MCB @ 40 A for ODUs</p> <p>1 nos Outgoing 3P+NL MCB @ 32 A for ODUs</p> <p>Supply, installation &amp; commissioning of Electrical Panel as described above</p>  | haat        |
|           | <p>PDB For ODUs</p> <p>PDB made of 2.0 mm thick steel sheet duly powder coated, complete with voltmeter,ammeter,indicating lights, selector switch incoming/outgoing isolators,current operated single phase preventor as per specification and drawings. (The electrical contractor shall terminate required size cables at incomer of ODU PDB. All the cabling from PDB to ODUs &amp; IDUs shall be in the scope of HVAC contractor)</p> <p>1nos Incoming TP+NL MCCB @ 400 A</p> <p>8 nos Outgoing TP+NL MCB @ 63 A for ODUs</p> <p>1nos Outgoing TP+NL MCB @ 40 A for ODUs</p> <p>PDB as above</p> | handicrafts |
| <b>24</b> | <p>Power wiring from HVAC Panel to ODUs</p> <p>Supply,Installation,testing &amp; layoing of armoured copper cable of size</p> <p>4C x 16 sqmm</p> <p>4C x 10 sqmm</p> <p>4C x 6 sqmm</p> <p>3C x 6 sqmm</p> <p>3C x 2.5 sqmm</p>  |             |
| <b>25</b> | <p>Control Cable</p> <p>Supply, installation, testing and commissioning of control cabling with PVC insulated, PVC sheathed, multicore copper conductor control cable in suitable conduits between indoor and outdoor units.</p> <p>2C x 1.5 sqmm</p> <p>3CX 15sqm</p>  |             |
| <b>27</b> | <p>EARTHING</p> <p>EARTING Conductor</p>  |             |

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|           | 25 x 3 GI Flat<br>8 SWG GI Wire   |  |
| <b>29</b> | <p><b>DUCT WORK (Factory Fabricated)</b><br/>Supply, Installation, testing and balancing of factory fabricated ducts made of galvanised steel sheet complete with fire retardent gasket, slip on flanges, GI fully threaded rods, GI chanel supports etc. in accordance with the approved shop drawings and specifications.</p> <p>Rectangular Duct (22 gauge GSS)002.3.<br/>Rectangular Duct (24 gauge GSS)</p>  |  |
| <b>30</b> | <p><b>DUCT INSULATION</b><br/>Supply and application of insulation on external surface supply air ducting using 9 mm thick closed cell elastomeric insulation with adhesive.<br/>Longitudinal &amp; transverse joints shall be sealed with self adhesive tape of same material as per specifications.</p>   |  |
|           | <p><b>ACOUSTIC LINING</b><br/>Supply and application of acoustic lining within supply and return air ducts with 25 mm thick fiber glass insulation of density 32 Kg/m<sup>3</sup> as per the approved drawings &amp; specifications.</p>  |  |
| <b>31</b> | <p><b>Canvas Connection</b><br/>Supply, Installation and Testing of fire retardant canvas connection for Ducted and TFA Units as per the approved shop drawings and specifications.</p>   |  |
|           | <p><b>DAMPERS</b><br/>Supply, Installation and Balancing of multiblade box type galvanised steel sheet dampers for ducts to be provided with suitable links, levers and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications.</p> <p>Supply, Installation and Balancing of multiblade type louver dampers of Aluminium construction for duct collars to be provided with suitable links, levers and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications.</p> |  |
|           | <p><b>FIRE DAMPERS</b><br/>Supplying of G.I fire dampers of 90 minutes rating in supply air duct/ main branch and return air path as &amp; where required of required sizes including control panel and control wiring. The damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be in-built mechanism and not externally mounted. The damper shall also be closed in the event of a fire signal and switchoff the AHU as required.</p> <p>Bare Fire Damper<br/>Actuator with control panel and wiring</p>                           |  |
|           | <p><b>GRILLES/ DIFFUSERS</b><br/>Supply, Installation, Testing &amp; Balancing of powder coated extruded aluminium Supply / Return air diffusers/grilles as per approved shop drawings and specifications.</p> <p>Supply, Installation, Testing &amp; Balancing of powder coated extruded aluminium 300 mm dia supply air jet diffusers/ Nozzles with fixing plate as per approved shop drawings and specifications.</p>  |  |

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|  | Supply, Installation, Testing & Balancing of powder coated extruded aluminium Fresh Air Intake / Exhaust Louvers complete with bird screen.  |  |
|  | <b>FLEXIBLE ROUND DUCTS</b><br>Supply, Installation, testing and commissioning of factory insulated flexible round ducts. The inner and outer skin of flexible duct shall be constructed out of aluminum sheet. The flexible ducts shall be of the following sizes in accordance with the approved shop drawings:<br>Upto 150 mm dia   |  |
|  | <b>UNDERDECK INSULATION</b><br>Supply and application of under-deck insulation by using 16 mm thick closed cell elastomeric insulation material in sheet form for the roof exposed to sun. The quoted price shall be inclusive of Pidilite SR-998 as required and in conformity with the specifications.   |  |
|  | <b>BASEMENT VENTILATION SYSTEM</b><br><b>AXIAL FLOW FANS</b><br>Supply of axial flow fans (2 hour fire rated) for ventillation and smoke extraction of Basement Parking complete with MS casing, die cast aluminium adjustable blades and induction motor as shown in the drawings. Motor shall be suitable for operation on 415±10% volts, 50Hz, 3 phase AC power supply. Axial flow fans shall be provided with hanging arrangement from ceiling and necessary vibration isolators. The unit shall be suitable for the following capacities :<br>23000 cfm @ 25 mm WG SP |  |
|  | <b>ELECTRICAL PANEL</b><br>"Electrical Panel made of 2.0 mm thick steel sheet duly powder coated, complete with voltmeter,ammeter,indicating lights, selector switch incoming/outgoing isolators,current operated single phase preventor as per specification and drawings.<br>(The electrical contractor shall terminate required size cables at incomer of Ventillation Electrical Panel. All the cabling from Ventillation Electrical Panel to motors of respective equipments shall be in the scope of HVAC contractor)  |  |
|  | Starter Panel for Axial Flow Fans (Location : Basement)<br>1 nos Incoming 3P+NL MCCB @ 32 A<br>2 nos DOL starter for Axial Flow Fan motor 7.5 Kw<br>Supply, installation & commissioning of Electrical Panel as described above<br>1 nos Incoming 3P+NL MCCB @ 63 A<br>4 nos DOL starter for Axial Flow Fan motor 7.5 Kw<br>Supply, installation & commissioning of Electrical Panel as described above  |  |
|  | <b>Power wiring</b><br>Supply,Installation,testing & layoing of armoured copper cable of size 3C x 6 sqmm  |  |
|  | <b>EARTHING</b><br>8 SWG GI Wire   |  |
|  | <b>CABLE TRAY</b><br>Supply and installation of GI Tray of 300 mm x 75 mm size,constructed from 16G GSS, MS angle support for Tray, covered with 20G GI sheet cover for all copper refrigerent pipes<br>300 mm x 75 mm   |  |



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|  | <p><b>DUCT WORK (Factory Fabricated)</b><br/> Supply, Installation, testing and balancing of factory fabricated ducts made of galvanised steel sheet complete with fire retardent gasket, slip on flanges, GI fully threaded rods, GI chanel supports etc. in accordance with the approved shop drawings and specifications. The ducts to be spray painted in white colour at outer surface onsite. The quoted rates shall include the cost of spray painting of ducts &amp; supports in white colour at outer surface onsite.</p> <p>Upto 750mm (24 gauge) GSS<br/> 751mm -1500mm (22 gauge) GSS<br/> 1501mm -2250mm (20 gauge) GSS<br/> Above 2250mm (18 gauge) GSS</p> |  |
|  | <p><b>Canvas Connection</b><br/> Supply, Installation and Testing of fire retardant canvas connection for Axial Flow fans, Air washer, Inline Fans etc as per the approved shop drawings and specifications.</p>  |  |
|  | <p><b>DAMPERS</b><br/> Supply, Installation and Testing of multiblade type louver dampers of Mild steel or galvanized steel construction for duct collars to be provided with suitable links, levers and quadrants for manual control of volume of airflow for proper balancing of the air distribution system as per the approved shop drawings and specifications.</p>  |  |
|  | <p><b>GRILLES/ DIFFUSERS</b><br/> Supply, Installation, Testing and Balancing of enamel painted mild steel grilles with Integral flanges on both sides &amp; ends in with the approved shop drawings &amp; specifications.</p>  |  |
|  | <p>Supply, Installation, Testing &amp; Balancing of powder coated extruded aluminium Fresh Air Intake / Exhaust Louvers complete with bird screen.</p>  |  |

## Plumbing Work

| PLUMBING WORK |  |          |
|---------------|--|----------|
| S. No.        | Item   | LOCATION |
| 1             | Excavating trenches of required width for pipes, cables, etc, including excavation for sockets, depth upto 1.5 m, including getting out the excavated materials, returning the soil as required in layers not exceeding 20 cm in depth, including consolidating each deposited layers by ramming, watering etc., stacking serviceable material for measurements and disposal of unserviceable material as directed, within a lead of 50 m : All kinds of soil Pipes, cables etc, not exceeding 80 mm dia.  |          |
|               | Providing and laying non-pressure SN8 class p.vc . pipes with collers jointed with soln including testing of joints etc. complete : ASTRAL (PVC pipe foamcore SN8)OR EQUIVALENT<br>150 mm dia.pvc pipe<br>250 mm dia. PVCpipe<br>300 mm dia. PVC . Pipe STORM DRAINAGE<br>300 mm dia. PVC . pipe (SEWAGE )   |          |
| 2             | Providing and laying non-pressure NP2 class R.C.C. pipes with collers jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement :2 fine sand) including testing of joints etc. complete :<br>150 mm dia. R.C.C. pipe<br>250 mm dia. R.C.C. pipe<br>300 mm dia. R.C.C. pipe  |          |
| 3             | Providing, fixing, jointing, testing and commissioning of UPVC pipe with fittings (for waste pipe from individual fixtures to floor trap / floor drain & vent pipe& rain water) IS : 4985 (Pipe Class III - 6 kg / sq.cm) cut to required lengths including all necessary fittings and specials such as bends, junctions offsets, access pieces . Fixing at wall / ceiling level supported by G.I. clamps, hangers etc. duly epoxy coated. Cost shall be inclusive of providing and laying 1:2:4 cement concrete all around the pipe including pillers, supports, shuttering & centering.<br>110 mm dia<br>90 mm dia |          |
| 4             | Providing and fixing MS holder-batclamps of approved design to Upvc pipe embedded in and including cement concrete blocks 10 x 10 x 10cm of 1:2:4 (1 cement:2 coarse sand: 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the wads etc.<br>110 mm dia<br>90 mm dia  |          |
| 5             | Providing and fixing uPVC bend of required degree with access door, insertion rubber wasrier 3mm thick, bolts and nuts complete.<br>110 mm dia<br>90 mm dia  |          |
| 6             | <b>Providing and fixing uPVC plain bend of required degree</b><br><b>100 mm dia 75 mm dia</b>  |          |
| 7             | Providing and fixing uPVC double equal junction of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.<br>100 x 100x100x100 mm<br>75 x 75 x 75 x 75mm  |          |

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| <b>16</b> | Providing and fixing uPVC double equal plain junction of required degree<br>100 x 100x100x100 mm<br>75 x 75 x 75 x 75mm  |  |
| <b>17</b> | Providing and fixing uPVC single equal plain junction of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete<br>100 x 100x100x100 mm<br>75 x 75 x 75 X 75mm   |  |
| <b>18</b> | Providing and fixing uPVC single equal plain junction of required degree<br>100x100x100 mm<br>75x75x 75mm  |  |
| <b>19</b> | Providing and fixing uPVC door piece, insertion rubber washer 3mm thick, bolts and nuts complete - 100mm<br>110 mm dia<br>90 mm dia  |  |
| <b>20</b> | Providing and fixing uPVC trap of self cleansing design with screwed down or hinged grating with or without vent ami complete, including cost of cutting and making good the walls and floors<br>100mm inlet and 100mm outlet  |  |
| <b>21</b> | "Providing and fixing G.I. Pipes complete with G.I. fittings and clamps, i/c making good the walls etc. concealed pipe, including painting with anti corrosive bitumastic paint, cutting chases and making good the wall 15 mm dia nominal bore<br>20 mm dia nominal bore  |  |
| <b>22</b> | " Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. External work<br>25 mm dia nominal bore<br>40 mm dia nominal bore<br>50 mm dia nominal bore<br>65 mm dia nominal bore<br>80 mm dia nominal bore   |  |
| <b>23</b> | Providing and fixing chlorinated Polyvinyl chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.0m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.<br>Internal work- Exposed on wall<br>25mm nominal bore<br>32mm nominal bore<br>40mm nominal bore<br>50mm nominal bore |  |
| <b>24</b> | Providing and fixing chlorinated Polyvinyl chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.0m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.<br>Concealed work including cutting chases and making good the walls etc.<br>15mm nominal bore<br>20mm nominal bore   |  |

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|           | 25mm nominal bore<br>32mm nominal bore   |  |
| <b>25</b> | Providing and fixing brass stop cock of approved quality<br>15mm nominal bore<br>20mm nominal bore   |  |
| <b>27</b> | Providing and fixing gun metal gate valve with CI wheel of approved quality (screwed end).<br>25 mm nominal bore<br>32 mm nominal bore<br>40mm nominal bore<br>50mm nominal bore   |  |
| <b>29</b> | Providing and fixing unplasticised PVC connection pipe with brass unions:<br>30 cm length ( 15mm nominal bore)   |  |
| <b>30</b> | Providing and fixing C.P . brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.<br>15mm nominal bore   |  |
|           | Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc if required will be paid separately)<br>50mm dia  |  |
| <b>31</b> | Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :<br>100x100 mm size P type<br>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5  |  |
|           | " Constructing masonry Chamber 60x60x75 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep ( inside) with chained lid and RCC top slab 1:2:4mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size ) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :<br>With common burnt clay F.P.S.(non modular) bricks of class designation 7.5   |  |
|           | Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size ) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size ) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :<br>With common burnt clay F.P.S.(non modular) bricks of class designation 7.5 |  |
|           | Constructing masonry Chamber 120x120x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm   |  |

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|  | <p>deep ( inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :</p> <p>With common burnt clay F.P.S.(non modular) bricks of class designation 7.5</p>   |  |
|  | <p>Constructing masonry Chamber 60x60x75 cm, inside in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for fire hydrants, with C.I. surface box 350x350 mm top and 165 mm deep ( inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :</p> <p>With common burnt clay F.P.S.(non modular) bricks of class designation 7.5</p>   |  |
|  | <p>Constructing masonry Chamber 60x45x50 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for water meter complete with C.I. double flap surface box 400x200x200 mm (inside) with locking arrangement and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 ( 1 cement : 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :</p> <p>With common burnt clay F.P.S.(non modular) bricks of class designation 7.5</p>   |  |
|  | <p>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.67 m</p> <p>Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement motar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement motar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement :3 coarse sand sand :6 graded stone aggregate 40mm nominal size), and making necessary channel in cement concrete 1:2:4 ( 1cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design:</p> <p>0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately):</p> <p>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5</p> <p>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.67 m</p> <p>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.67 m</p> |  |

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|  | Constructing brick masonry circular manhole 1.22 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :<br>1.68 m deep with SFRC Cover and frame (heavy duty HD20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :<br>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5 |  |
|  | Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m<br>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5   |  |
|  | Constructing brick masonry chamber for underground C.I. Inspection chamber and bends with common burnt clay F.P.S (non modular) bricks of class designation 7.5 in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement: 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design:<br>Inside dimensions 455 x 610 mm and 45 cm deep for single pipe line<br>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5   |  |
|  | Extra for depth beyond 45 cm of brick masonry chamber with common burnt clay F.P.S (non modular) bricks of class designation 7.5.<br>For 455 x 610 mm size-<br>With common burnt clay F.P.S. (non modular) bricks of class designation 7.5   |  |
|  | "Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :<br>For pipes 100 to 250 mm diameter<br>For pipes 250 to 300 mm diameter   |  |
|  | Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :<br>"With common burnt clay F .P .S. (non modular) bricks of class designation 7.5"  |  |

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|  | <p>"Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A including jointing with seal ring conforming to IS : 5382 leaving 10 mm gap for thermal expansion.<br/>(i) Single socketed pipes. "<br/>110mm diameter single socketed pipes</p>   |  |
|  | <p>Providing and fixing on wall face unplasticised-PVC moulded fittings/accessories for unplasticised-Rigid PVC rain water pipes conforming to IS:13592 Type A including jointing with seal ring conforming IS: 5382 leaving 10mm gap for thermal expansion.<br/>Single pushfit Coupler :<br/>110mm Single Pushfit Coupler<br/>Bend 87.5°<br/>110mm bend Bend 87.5 degree<br/>Shoe (Plain)<br/>110mm Shoe (Plain)</p> |  |
|  | <p>Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50mm hard wood plugs, screwed with M.S. screws of required length including cutting brick work and fixing in cement mortar 1:4 ( 1 cement : 4 coarse sand ) and making good the wall etc. complete.<br/>110mm</p>   |  |
|  | <p>Providing and fixing to the inlet mouth of rain water pipe cast iron grating 25cm diameter and weighing not less than 440 grams.</p>   |  |
|  | <p>Providing and fixing uPVC floor drain of following size inlet and outlet including cutting and making good the walls and floors wherever required complete in all respects.</p>  |  |
|  | <p>Providing and fixing uPVC cleanout plug with openable cap for uPVC pipes<br/>For 110 mm OD pipes</p>   |  |
|  | <p>Making khurras 600x600mm with average minimum thickness of 5 cms cement concrete 1:2:4 (1 cement : 2 coarse sand: 4 graded stone aggregate 20mm nominal size) over PVC sheet 1m x 1m x 400 micron, finished with 12mm plaster in cement mortar 1:3(1 cement :3 coarse sand) finished with floating coat of neat cement including rounding of edges and finishing of outlet, complete in all respects.</p>          |  |
|  | <p>Providing and fixing in position uPVC PIPE and fittings of heavy class (c) conforming to IS:1239 (for waste pipe from individual fixtures to floor trap / floor drain &amp; vent pipe) Including fixing at wall / ceiling level supported by galvanized clamps and hangers etc.<br/>For waste pipes<br/>40mm OD<br/>50mm OD</p>  |  |
|  | <p>Providing &amp; fixing wall hung EWC (Jaguar with concealed flush jaguar 1093) with SS plate &amp; buttons, connection pipe etc. complete with all accessories like angle valves etc (Jaguar 5001).<br/>EWC (Jaguar Fonte with concealed flush jaguar 1093)</p>  |  |

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|  | Providing & fixing INDIAN STYLE WC with flush valve, connection pipe etc. complete with all accessories like angle valves etc  |  |
|  | Providing & fixing wash basin and tap (Jaguar wall mounted) complete with all accessories like angle valves, waste coupling, bottle trap etc complete. Jaguar continental under counter 705 with Jaguar Pressmatic tap PRS 031 Tap                                   |  |
|  | Jaguar cAria 39901 vanity wash basin with Jaguar Pressmatic tap PRS 061 wall mounted Tap   |  |
|  | Providing & fixing Urinal (Jaguar 132530) complete with all accessories like angle valves, waste coupling, trap, and Jaguar pressmatic 073 auto close conceal urinal flush valve with all systems  |  |
|  | Providing & fixing Pantry Sink Mixture with extended spout (Jaguar 5319NB) complete with all accessories like angle valves, waste coupling, Bottle trap etc with single bowl with drainboard sink of Nirali / Jayna anti scratch.                                    |  |
|  | Health Faucet : P/f CP Health Faucet (jet spray) for WC including all accessories, cutting and making good the walls wherever required complete in all respects of following make and type: Make: JAQUAR- Model No- ALD-CHR-585 including angle valve etc. complete. |  |
|  | Providing & fixing electric operated hand dryer with photovoltaic control of reputed manufacturer complete as per specification & instructions of engineer.  |  |
|  | Providing and fixing towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.(Make:Jaquar/Varmora/Essex)              |  |
|  | Liquid Soap Dispenser : P/f SS Desktop Liquid Soap Dispenser fixed with PVC rawlplugs and CP brass screws incl cutting and making good the walls wherever required complete in all respects (Euronics - Model No - ES05).  |  |
|  | Air Purifier : P/f CP brass Air Purifier holder fixed with PVC rawlplugs & CP brass screws incl cutting and making good the walls wherever required complete in all respects of UTEC / Kimberley clark make  |  |
|  | Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C waste fitting complete 40mm dia (flexible pipe)  |  |
|  | Providing and fixing 600 X 450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats wiyh C.P. brass screws and washers complete.  |  |
|  | Providing and fixing toilet paper holder : C.P. brass  |  |
|  | Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipe but without fittings and base support for tank. |  |



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|  | Providing and fixing C.P. brass long nose bib cock of approved quality conforming to IS standards and weighing not less than 810gms.<br>20mm dia, nominal bore  |  |
|  | Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standard and weighing not less than 690gms.<br>15mm dia, nominal bore   |  |
|  | Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS : 8931.<br>15mm dia, nominal bore  |  |
|  | Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931<br>15mm dia, nominal bore   |  |
|  | Providing laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the of 1:1 (1 cement : 1 fine sand) including testing of joints etc complete.<br>100mm diameter<br>150mm diameter |  |

## Firefighting

| Firefighting |  |                   |
|--------------|--|-------------------|
| S. No.       | Item   | LOCATION          |
| 1            | <p><b>Electric Motor Driven Pump (Location - Plant Room )</b></p> <p>Supplying, installing, testing and commissioning of Fire authority approved Electrical driven fire pump suitable for automatic/ manual operation consisting of the following:</p> <p>Horizontal mounted End Suction type fire pump having cast iron body, bronze impeller, stainless steel shaft &amp; capable of delivering 2850 LPM against a total head of 65M while running at 2900 RPM complete with mechanical seal pressure gauge with GM cock on the delivery side of pump and including 50 mm by pass arrangement (with 50 mm valve and up to 5 meter GI class 'B' pipe) for periodical testing of working of pumping test.</p> <p>Squirrel cage, induction motor TEFC type suitable for 415 + 10%V, 3 phase, 50 Hz, AC supply, of suitable HP rating for the above pump with synchronous speed of 2900 RPM with flexible coupling and coupling guard .</p> <p>Common bed plate for mounting pump and motor fabricated of mild steel channel as per manufacturer's recommendation with heavy duty Anti Vibration pads (4 Nos., heavy duty).</p> <p>Coupling and coupling guard for direct coupling of pump and motor.</p> <p>Drain Pipe with Valve (50 mm dia)<br/>Main Fire Pump/Sprinkler Pump<br/>Discharge : 2850 LPM<br/>App. Head : 65 M</p> | In both the Sites |
|              | <p><b>Diesel Engine Driven Fire Pump [Stand by pump] (Location - Plant Room :)</b></p> <p>Supplying, installing, testing &amp; commissioning of fire authority approved Diesel Engine driven fire pump suitable for automatic/manual operations consisting of the following:</p> <p>Horizontal mounted End Suction type fire pump having cast iron body, bronze impeller, stainless steel shaft &amp; capable of delivering 2850 LPM against a total head of 60 M while running at 1800 RPM complete with mechanical seal pressure gauge with GM cock on the delivery side of pump including 50 mm bypass arrangement (with 50 mm valve and upto 5 meter GI class 'B' pipe) for periodical testing of working of pumping set pumps.</p> <p>Radiator cooled diesel engine of suitable BHP at 1800 RPM for the above pump complete with standard accessories &amp; suitable cooling system as described in specifications.</p>   | Both Sites        |

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|   | <p>Common base plate for mounting pump &amp; engine of requisite strength manufactured out of M.S. channels as per manufacture's recommendation with heavy duty Anti Vibration pads. (Cushy foot) (6 nos., heavy duty)</p> <p>Coupling &amp; coupling guard for direct coupling of engine &amp; pump.</p> <p>200 liters capacity day oil storage tank fabricated from 16 SWG thick M.S. plates. Tank shall be provided with inlet, outlet, overflow, vent, drain connections, filling connection &amp; level indicator. Tank shall be mounted on a suitable steel structure (Painted with 2 coats of red oxide paint). Tank shall be provided with epoxy coat from inside &amp; two or more coats of synthetic enamel paint outside over two coats of red oxide primer.</p> <p>24 volts 180 AH lead acid battery (12 volts - 2 Nos) with boost/Trickle charger for starting the engine automatically complete as required.</p> <p>Provision for starting of Engine automatically in case of power failure at the time of fire</p> <p>Diesel Engine driven pump of:<br/>Discharge: 2850 LPM<br/>App. Head: 65 M</p>   |            |
| 2 | <p>"Electrical Motor Driven Jockey Pump<br/>Location - Plant Room :"</p> <p>Supplying, installing, testing &amp; commissioning of fire authority approved electrically driven Jockey pump suitable for automatic/manual operation consisting of the following:</p> <p>Horizontal mounted end suction jockey pump having cast iron body, volute bronze impeller, stainless shaft capable of delivering 180 LPM against total head of 65M while running at 2900 RPM complete with mechanical seal pressure gauge with mechanical seal GM cock on the delivery side of pump including bypass arrangement (with 25 mm GM stop valve and up to 5 meter G.I. class 'B' pipe) for testing of working of the pumping set as required.</p> <p>Squirrel cage induction motor suitable for 415 + 10%V, 3 phase, 50 Hz, AC supply of suitable HP rating for the above pump with synchronous speed of 2900 RPM T.E.F.C type connected to pump with flexible coupling and coupling guard .</p> <p>Common bed plate for mounting pump and motor fabricated of mild steel channel as per manufacturer's recommendation with heavy duty 4 Nos. Anti Vibration pads.(Cushy foot)</p> <p>Drain pipe with valve (25 mm dia)<br/>Jockey Pump :-<br/>Discharge : 180 LPM (3 LPS)<br/>App Head : 55 M</p> | Both Sites |
| 3 | Supply, installation, testing and commissioning of Pressure switch of approved make for Hydrant pump, jockey pump and Diesel Engine Driven   |            |

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|           | pump including necessary wiring and cut off valve up to central panel & other material as described in specifications.   |  |
| <b>4</b>  | Supply, installation, testing and commissioning of Fire authority approved suitable pressure vessel with air release valve (minimum 450 mm dia & 1500 mm height) with all fittings including two nos. pressure gauge on the delivery side, 80 mm dia flanged inlet and 50 mm dia drain line with 50 mm dia G.M. gate valve.  |  |
| <b>5</b>  | Providing, fixing, testing and commissioning of heavy class MS pipe, IS : 1239 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same (Location: Plant room).<br>65 mm dia (Nominal Bore)<br>80 mm dia (Nominal Bore)<br>100 mm dia (Nominal Bore)<br>150 mm dia (Nominal Bore) |  |
| <b>6</b>  | Providing, fixing, testing & commissioning of heavy class MS pipe, IS : 3589 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports (for delivery/suction manifold relating to the pumps) including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same [ Location : Plant room].   |  |
| <b>7</b>  | 200 mm dia (6.35 mm thick) with necessary supports etc. as required.<br>(Nominal Bore)   |  |
| <b>16</b> | Providing, fixing, testing & commissioning of following dia C.I. Double flanged 'Y' typed Strainer including nut, bolts and 3 mm thick gasket as required.<br>200 mm dia<br>150 mm dia<br>100 mm dia   |  |
| <b>17</b> | Providing, fixing, testing & commissioning of C.I. Butterfly valve conforming to IS : 13095 with flanges, nuts, bolts and washers complete for following sizes :-<br>[PN 1.6 rating].<br><br>200 mm dia (Gear operated)<br>150 mm dia<br>100 mm dia<br>80 mm dia<br>65 mm dia<br>50 mm dia   |  |
| <b>18</b> | Providing, fixing, testing & commissioning of dual plate non-return valve complete with nuts, bolts and washers.<br><br>200 mm dia<br>150 mm dia<br>100 mm dia<br>80 mm dia<br>65 mm dia   |  |

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| <b>19</b> | Providing, fixing, testing & commissioning of 100 mm dia Burden type, Stainless Steel dial type pressure gauge (in Pump Room) including brass isolation valve and pipe having calibration of 0-15 Kg/cm <sup>2</sup> .  |  |
| <b>20</b> | Providing and fixing exhaust, Diesel engine driven pump exhaust M. S. pipe class 'C' 150 mm dia including fitting like flanges, bends, reducers, etc. 50 mm thick fibre wool insulation aluminium cladding, 24 gauge, necessary excavation, fixing of silencer connections at engine exhaust, necessary supports, back filling, cutting and making good, bird proof and weather proof flap complete in all respect as directed.   |  |
| <b>21</b> | Providing and fixing M.S. structural work fabricated from standard sections, (MS rounds, angles, channels etc.) including cutting to size, drilling welding including cost of fasteners clamps in R.C.C. structural members as directed, including two or more coats of synthetic enamel paints over one coat of primer after surface preparation including cutting and making good walls.  |  |
|           | Fire Hydrant System   |  |
| <b>22</b> | Excavation of required width for fire fighting pipes including excavation for sockets and dressing of sides, ramming of bottom depth upto 1.5 m including getting out the excavated soil and then returning the soil as required in layer not exceeding 20 cms in depth including consolidating each deposited layers by ramming, watering etc. and disposing of surplus excavated soil as directed within a lead of 100m for all kinds of soil.<br>Pipes, exceeding 80 mm dia but not exceeding 300 mm dia.  |  |
| <b>23</b> | Supply, Installation testing & commissioning of Black Mild Steel Class 'C' (Heavy Duty) pipes conforming to IS : 1239 Part-I including cutting, threading, welding & all fittings like flanges, tees, elbows, bends junctions, reducers, ball valves etc. welded or screwed joints, clamps structural steel supports (as per TAC norms) or as required/ directed at site including cutting & making good the walls, floors, RCC work etc cutting chases & filling the same with cement concrete 1:3:6 (1 cement :3 coarse sand :6 graded stone aggregate 20 mm nominal size) (For Internal work).<br><br>Note: Pipes upto and 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.<br><br>25 mm dia (Nominal Bore)<br>32 mm dia (Nominal Bore)<br>40 mm dia (Nominal Bore)<br>50 mm dia (Nominal Bore)<br>65 mm dia (Nominal Bore)<br>80 mm dia (Nominal Bore)<br>100 mm dia (Nominal Bore)<br>150 mm dia (Nominal Bore) |  |
| <b>24</b> | Supply and painting for M.S. Pipe with a coat of red oxide Primer and two or more coats of synthetic enamel paint of approved colour to give an even shade including surface preparation and cleaning of pipe from all external material.<br><br>25 mm dia (Nominal Bore)<br>32 mm dia (Nominal Bore)<br>40 mm dia (Nominal Bore)   |  |

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|           | 50 mm dia (Nominal Bore)<br>65 mm dia (Nominal Bore)<br>80 mm dia (Nominal Bore)<br>100 mm dia (Nominal Bore)<br>150 mm dia (Nominal Bore)  |  |
| <b>25</b> | Providing and applying two coat of 4 mm thick 'PYPKOTE' antirust protection including primer and lap of 25 mm on M.S. pipe in trenches or complete including surface preparation coating and wrapping shall be confirm to ISI 10221 including conducting required Test.<br><br>80 mm dia<br>100 mm dia<br>150 mm dia  |  |
| <b>27</b> | Providing & Fixing of gun metal double headed hydrant valves with 100 mm dia flanged inlet & 63 mm dia female outlet complete with rubber blank cap and chain as per IS : 5290 (For internal hydrant). [ ISI marked should be embosed]  |  |
| <b>29</b> | Providing & Fixing of gun metal single headed ISI marked oblique pattern hydrant landing valves with 80mm dia flanged inlet & 63 mm dia female outlet complete with gun metal cap and GI chain twist release type plug and all accessories as per IS : 5290-1983 Type A   |  |
| <b>30</b> | Providing & Fixing of 63 mm dia 15 m long non-percolating flexible hose (RRL-type A) as per IS : 636. Type A with Gunmetal male & female instantaneous type coupling (IS 903)   |  |
|           | Providing & Fixing of standard gun metal 63 mm dia branch pipe with nozzle of 20 mm nominal bore outlet as per IS:903 suitable to fit with standard instantaneous type 63mm dia coupling ISI marked (IS:903) complete.  |  |
| <b>31</b> | Providing & Fixing of standard Fireman's Axe with heavy insulated handle conforming to (IS:926).  |  |
|           | Providing & Fixing of wall mounting swinging type first aid fire hose reel with drum, hanging bracket, 36.5 Mtr. length x 20 mm dia high pressure hose reel tubing as per IS: 444 with gun metal (GM) shut off nozzle having 5 mm dia orifice. The hose reel shall be conforming to IS : 884-1985. Rate shall include 25 mm dia M.S. pipe connection from Riser to hose reel, sockets, nipples, elbows and ball valve (25 mm dia). Drum shall be fixed on adjoining wall through anchor fasteners / cement concrete block as and when required. |  |
|           | Providing & Fixing of 100 mm dia gun metal fire brigade suction hose coupling of (gunmetal draw off connection) with 100 mm dia M.S. 'C' Class suction pipe with 100 mm dia C.I. foot valve. (Pipe max. 10 m long). Cost shall include a wall mounted box of M.S. construction (16 SWG) with glass door (4.0 mm thick) to house the above mentioned component to be connected to static water tank.   |  |
|           | Potable Fire Extinguisher   |  |
|           | Providing & fixing of ISI marked (IS:940) portable chemical Fire Extinguisher, water (gas pressure) type capacity 9 ltrs with gun-metal cap. and nozzle and complete in all respects including initial fill and wall suspension bracket.  |  |

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|  | Providing & fixing of ISI marked (IS:2878) portable fire extinguisher, carbondioxide type flat base including valve, discharge hose of not less than 10 mm dia. 1 M long & complete in all respects including initial fill with CO2 gas confirming to IS:307-1966 filled to a filling ratio of not more than 0.667 of not more than 0.667 and wall suspension bracket.<br>Capacity 4.5 kg  |  |
|  | Providing & fixing of ISI marked (IS: 13386-1992) mechanical foam type fire extinguishers 50 kg consisting of welded M.S. trolley mounted cylindrical body, squeeze lever discharge valve fitted with pressure discharge hose, discharge nozzle, trolley etc., finished externally with red enamel paint and fixed to wall with brackets complete with internal charges.   |  |
|  | Providing and fixing of carbon-di-oxide fire extinguishers (22.5 kg) trolley mounted with all accessories internal discharge tube, high pressure discharge hose, discharge nozzle, ISI marked as per IS:2878 finished externally with red enamel paint and fixed to wall with brackets complete with internal charge.  |  |
|  | Providing and fixing of self illuminated / auto glow <b>"EXIT" signs</b> printed on photoluminescent sheet containing self illuminated base chemical, of appropriate size not less than 400 x 150 mm, suspended from ceiling or fixed to the walls with accessories as required and as directed at site.   |  |
|  | Providing and fixing SS304 Single headed landing valve conforming to IS - 5290 (Type-A) with 63 mm dia. single instantaneous female coupling on the outlet SS304 metal blank cap and chain, necessary companion flanges, nuts, bolts, washer and gasket complete as per specification. (ISI marked). All parts and body shall be of SS304 as per IS:5290.<br>Single outlet   |  |
|  | Providing and fixing first aid fire hose reel drum wall mounting, swinging type (Powder coated finish in fire red) fitted with 20 mm dia. 30 m long high pressure hose (IS:444, Type-2) with 5 mm outlet SS nozzle with shut off valve (IS:8090). Name of Manufacturer should be embossed on the drum and complete hose reel drum shall be conforming to IS:884)   |  |
|  | Providing and fixing <b>63 mm dia.</b> 15m long rubberized lined hose including SS304 male and female instantaneous type coupling approved by fire authority, machine wound with copper wire complete in all respects. Hose shall conform to IS 636 Type-A and coupling to IS 903 -1975 ( ISI marked)  |  |
|  | Providing and fixing standard short size SS304 <b>branch pipe with gunmetal nozzle 16 mm dia.</b> outlet with standard instantaneous type 63 mm dia. coupling. (ISI marked, IS:903)  |  |
|  | Providing and fixing door with frame for all internal fire hydrants fabricated from 20x20x3 mm and 40x20x3 mm aluminium hollow box sections mounted with 3 no. of 100 mm Aluminium butt hinge on Aluminium angle frame of 45x45x5 mm size with hold fasts fixed to wall with P.C.C. (1:2:4) blocks 100x100x100 mm including 2 nos allen key lock for locking along with padlock arrangement & fully glazed with 4 mm thick float glass approved by local Fire Authority, powder coated fire red finish with " fire hose' written on front suitable to house 15 mm long two length of canvas hose with couplings, one no of branch pipe, one fire mans axe and two numbers of portable extinguishers, first aid fire hose and supports for hoses, branch pipes, Axe and hose reel. Size 2100x 900 mm complete as per approved design including necessary fixing arrangement for hoses & axe and branch pipe.) |  |

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|  | Providing and fixing fire hose cabinet fabricated from 16 gauge M.S. Sheet with single or double glazed front door and locking arrangement, painted "Fire Red" with powder coated paint "Fire Hose" written on front including suitable supports to place 900 mm above ground level, approximately size 750x600x250 mm deep (to house two lengths of canvas hose with couplings, branch pipe and nozzle for external hydrants)   |  |
|  | Providing and fixing gunmetal fire brigade inlet head as per IS:904 Specification tested for 20 Kg/cm <sup>2</sup> with 63 mm dia. instantaneous type inlet and 100/150mm dia.. flanged outlet with built-in check valve for fire brigade connection to under ground tanks and fire risers including companion flanges as portable " E" including nuts, bolts & washers etc.<br>Three way  |  |
|  | Providing and fixing gunmetal fire brigade suction 150 mm dia. for fire tank complete with PVC Cap companion flange as per table "E" nuts, bolts, gasket etc<br>150 mm   |  |
|  | Supplying and fixing of Fire Man's Axe with heavy insulated rubber tested upto 20 KV and confirming to IS :926.  |  |
|  | Air Cushion Tank for Risers<br>Providing and fixing of air vessel of the following specifications fabricated with MS Pipe of thickness specified.<br>specifications<br>a. Diameter : 200 mm<br>b. Shell Thickness: 6.35 mm<br>c. Dish Ends : 10 mm<br>d. Height : 1000 mm<br>e. Finishing: Two coats of red enamel paint over primer out side and two coats of epoxy coating inside.<br>f. Material of construction: M.S<br>g. Test Pressure: 20 Kg/Sq.Cm.<br>i. Height of supporting legs: 400 mm<br>j. Quantity<br>Note: Contractor should submit general arrangement drawings before fabrication of vessel and ultrasonic test report to be submitted on supply of vessel and test to be conducted at the presence of Plumbing-In-Charge. Also cost shall include two nos. Gunmetal NRV(ISI Marked) |  |
|  | Providing and fixing 15 mm gunmetal sprinkler head with quartz bulb and set to operate at specified temperature pendent/ upright/ side wall /quick response as per instruction fixed with loctite. Temperature of operation 68 deg.C K-80<br>Normal response Pendent type/ upright type<br>Normal response Pendent type<br>Normal response Side wall type<br>Extended throw normal response Side wall type.  |  |
|  | Providing & fixing 25mm dia. UL listed gunmetal inspector test and drain valve with integral sight glass connected to drain line complete in all respects.   |  |



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|  | Providing and fixing electrically operated flow indicating switches model System Sensor in sprinkler branch line on each floor with necessary junction box installed in accessible place (Wiring from switches to panel and stair case pressurization not included)<br>100/65/50 mm dia.  |  |
|  | Providing and fixing gunmetal installation valve with turbine type automatic alarm to be connected with control valve , drain valve, test valve and piping as per manufacturer's specifications complete in all respects.<br>150 mm dia.  |  |
|  | Providing and fixing UL/Fm listed powder coated finish Escutcheon plate complete including fixing in position on pipe and ceiling complete in all respects. (Size=15NB)<br>Providing and fixing UL/Fm listed SS braided flexible pipe with accessories complete with all accessories specified in technical specifications(Size=15B)<br>a. 780mm long<br>b. 1000mm long |  |

## Demolition and Dismantling

- a. Demolition and disposal of unserviceable materials with all leads and lifts: Lime Concrete.

Workmanship:

- I. The demolition shall consist of demolition of one or more parts of the building as specified or seen on the site. Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant item as specified or shown in the drawings of existing structure prepared.
- II. The demolition shall always be planned before hand and shall be done in reverse order of the one in which the structure was constructed. This scheme shall be approved from the Authorised Representative of BSCL before starting the work. This however will not absolve the contractor from the responsibility of proper and safe demolition.
- III. Necessary dropping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damages is caused to the adjoining property.
- IV. Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.
- V. Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.

- VI. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.
- VII. Any serviceable material, obtained during dismantling or demolition shall be separated out and stacked properly as directed, with all lead and lift. All unserviceable materials, rubbish etc. shall be stacked as directed by the Engineer-in-charge.
- VIII. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.
- IX. The rate shall include cost of all labour involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary storing for the safety of the portion not required to be pulled down or of adjoining properly and providing temporary enclosures or partitions where considered necessary.
- X. Demolition including stacking of serviceable materials and disposal of unserviceable materials with all leads and lifts: R.C.C. work.
- XI. The relevant specifications shall be followed except that demolition of R.C.C. work is to be done.
- XII. Dismantling tiled or stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lifts.
- XIII. The relevant specification shall be followed except that the dismantling of tiled or stone floors laid on mortar shall be done. Dismantling implies carefully, taking up or down or these are fixed by nail, screws, bolts etc. these shall be taken out with proper tools.
- XIV. Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats Architraves, hold fasts and other attachments etc. complete and stacking them within all lead & lifts, Not exceeding 3 sq. mtr. in area.
- XV. The relevant specification shall be followed that the doors, windows, ventilators etc. (wood or steel) shutters including chowkhats Architraves, hold fasts and other attachments etc. are to be dismantled.
- XVI. Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats Architraves, hold fasts and other attachments etc. complete and stacking them within all leads & lifts exceeding 3 sq. mtr. in area.

## Anti- Termite Treatment

- a) Treating the earth along the external perimeter of the building by making holes 15 cms. Apart up to depth of 30 cms. With chemical emulsion at the rate of 7.5 liters/sq.mtr. along the wall.

I. Materials:

- The relevant specifications of the above-mentioned item shall be followed.

II. Workmanship:

- The relevant specifications shall be followed except that the external perimeter of the building shall be treated with chemical emulsions. After building is complete, the earth along the external perimeter of the building should be robbed at intervals of 15 cms. And to a depth of 30 cms. The rods shall be moved backward and forward parallel to the wall to break up the earth and chemical emulsion poured along the wall at the rate of 7.5liters/sq.mtr. of vertical surfaces. After the treatment, the earth shall be tamped back into place, the earth outside of the building should be graded on completion of building. This treatment shall be carried out on the completion of such grading. In event of filling being more than 30 cms. the external perimeter and treatment shall be extended to the full depth of filling up to ground level so as to ensure continuity of the chemical barrier.

- b) Providing treatment along outside of foundation using chemical emulsion at 7.5 litres/sq.mtr. of vertical surface (for each side) of sub-structure.

I. Materials:

- The chemical used for the soil treatment shall be any one of the following with concentration shown against each in aqueous emulsion.

| Chemicals  | Concentration     |
|------------|-------------------|
| Aldrin     | 0.50% (by weight) |
| Heptachlor | 0.50% (by weight) |
| Chlordane  | 1.00% (by weight) |

II. Workmanship:

- The surface of consolidated earth around the existing shall be treated with chemical emulsion at the rate 7.5 liters/sq.mtr. of vertical surface of the sub structure. The minimum height to sub-structure shall be considered 60 cms. for treatment. If the earth along the perimeter does not allow emulsion to seep through, holes up to 300 mm. depth at 150 mm. centers both ways be made by 12 mm. dia.

mild steel rod on the surface on facilitate saturation of the soil with chemical emulsion.

- The chemical barrier shall be complete and continuous under hole of the structure to be protected.
- The chemical treatment shall be carried out when the surface is quite dry. Chemical treatment shall not be carried out when it is raining or when the soil is wet with rain or sub soil water.

c) Providing treatment along external wall perimeter below concrete or masonry apron using chemical at 5 liters/sq.mtr. linear including drilling and plugging etc.

I. Materials:

- The relevant specifications of the above-mentioned item shall be followed.

II. Workmanship:

- The relevant specifications of the above-mentioned item shall be followed except that the termite control treatment shall be carried out in soil below existing floors.

d) The holes of 12 mm. dia. rod shall be drilled in floor up to 150 mm. depth at 300 mm. apart both ways. The chemicals shall be then injected with pressure at the rate 1 liters/hole of surface area.

I. Materials:

- The relevant specifications of the above-mentioned item shall be followed.

II. Workmanship:

- The walls effected by termite shall be cleaned off all live formy hiding inside sand holes or voids in masonry wall surface shall be treated by chemical emulsion at rate 1 liters/hole. The holes in cracks in surface of wall shall be drilled at 300 mm. apart.

## Civil Works

### General Technical Specifications for Building Works

- In the specifications, “as directed”/” Approved” shall be taken to mean “as directed”/ “approved” by the Authorised Representative of BSCL.
- Wherever a reference to any Indian Standard appears in the specifications, it shall be taken to mean as a reference to the latest edition of the same in force on the date of agreement.
- In “Mode of Measurement” in the specification wherever a dispute arises in the absence of specific mention of a particular point or aspect, the provisions on these particular points or aspects in the relevant Indian Standards shall be referred to.
- All measurements and computations, unless otherwise specified, shall be carried out nearest to the following limits:

|                                   |          |
|-----------------------------------|----------|
| Length, width and depth (height): | 0.01 m   |
| Areas:                            | 0.01 m   |
| Cubic Contents:                   | 0.01 Cum |

- Lift shall be measured from basement level.
- Up to “floor two level” means actual height of floor (Maxi. 4 M.) up to 3.5 Mtr. Above plinth level.
- Definite particulars covering the items of work, though not mentioned or elucidated in it, specification shall be deemed to be included therein.
- Reference to specifications of materials as made in the detailed specification of the items of work is in the form of a designation containing the number of the specification of the material and prefix ‘A’ e.g. ‘A-5’.
- Approval to the samples of various materials given by the Authorised Representative of BSCL shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such materials being rejected by the Authorised Representative of BSCL.
- The contract rate of the item of work shall be for the work completed in all respects.
- Collection of approved materials shall be done at site of work in a systematic manner. Materials shall be stored in such a manner as to prevent damage, deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work.

- Materials, if and when rejected by the Authorised Representative of BSCL, shall be immediately removed from the site of work.
- No materials shall be stored prior to, during and after execution of a structure in such a way as to cause or lead to damage or overloading of the various components of the structure.
- All works shall be carried out in a workmanlike manner as per the best techniques for the particular item.
- All tools, templates, machinery and equipment for correct execution of the work as well as for checking lines, levels, alignment of the works during execution shall be kept in sufficient numbers and in good working condition on the site of the work.
- The mode, procedure and manner of execution shall be such that it does not cause damage or over loading of the various components of the structure during execution or after completion of the structure.
- Special modes of construction not adopted in general Engineering practice, if proposed to be adopted by the Contractor, shall be considered only if the contractor provides satisfactory evidence that such special mode of construction is safe, sound and helps in speedy construction and completion of work to the required strength and quality. Acceptance of the same by the Authorised Representative of BSCL shall not, however, absolve the contractor of the responsibility of any adverse effects and consequences of adopting the same in the course of execution of completion of the work.
- All installations pertaining to water supply and fixtures thereof as well as drainage lines and sanitary fittings shall be deemed to be completed only after giving satisfactory tests by the Contractor.
- The contractor shall be responsible for observing the rules and regulations imposed under 'Minor Minerals Act' and such other laws and rules prescribed by Government from time to time.
- All necessary safety measures and precaution including those laid down in the various relevant Indian Standards shall be taken to ensure the safety of men, materials and machinery on the works as also of the work itself.
- The testing charge of all materials shall be borne by the Contractor unless recovery at one percent towards using charges is separately made.
- Approval to any of the executed items for the work does not in any way relieve the contractor of his responsibility for the correctness, soundness and strength of the structure as the drawings and specification.

## General Technical Specification

### 1. A-1. Water

- Water shall not be salty or brackish and shall be clean, reasonably clear and free from objectionable quantities of silt and traces of oil and injurious alkalis, salts, organic matter and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attack the steel in R.C.C Container for transport, storage and handling of water shall be clean. Water shall conform to the standards specified I.S 456-1978.
- If required by Authorised Representative of BSCL it shall be tested by comparison with distilled water. Comparison shall be made by means of standard cement tests for soundness, time of setting and mortar strength as specified in I.S.269-1976. Any indication of unsoundness, change in time of setting by 30 minutes or more or decrease of more than 10 per cent in strength of mortar prepared with water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.
- Water for curing mortar, concrete or masonry should not be too acidic or too alkaline. It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.
- Hard and bitter water shall not be used for curing.
- Potable water will be generally found suitable for curing mortar or concrete.

### 2. A-2. Cement:

- Cement shall be ordinary Portland slag cement as per I.S. 269-1976 or Portland slag cement as per I.S. 455-1976.

### 3. A-3. White Cement:

- The white cement shall conform to I.S. 80412-E 1978. 4)

### 4. A-4 Sand:

- Sand shall be natural sand, clean, well graded, hard strong durable and gritty particle free from injurious amounts of dust clay, kantar nodules, soft or flaky particles shale, alkali, salts organic matter, loam, mica or other deleterious substance and shall be got approved from the Authorised Representative of BSCL. The sand shall not contain more than 8 percent of silt as determined by field

test. If necessary, the sand shall be washed to make it clean.

- Coarse Sand: The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3.0.

The sieves analysis or course shall be as :

| Percentage by weight I.S. Sieve Passing Sieve Designation | I.S. Sieve Designation | Percentage by weight Passing sieve |
|---|------------------------|------------------------------------|
| 4.75 mm.100   | 600 Micron             | 30-100                             |
| 2.36 mm.90 to 100   | 300 Micron             | 5-70                               |
| 1.18 mm.70-100  | 150 Micron             | 0-50                               |

Fine sand : The fineness modulus shall not exceed 1.0. The sieve analysis of fine sand shall be as under :

| Percentage by weight I.S. Sieve Passing through Designation | I.S. Sieve Designation | Percentage by weight Passing through |
|---|------------------------|--------------------------------------|
| 4.75 mm.100   | 600 Micron             | 40-85                                |
| 2.36 mm.100   | 300 Micron             | 5-50                                 |
| 1.18 mm.70-100  | 150 Micron             | 0-10                                 |

#### 5. A-5 Stone Grit:

- Grit shall consist of crushed or broken stone and be hard strong, dense, durable, clean, of proper gradation and free from skin or coating likely to prevent adhesion of mortar Grit shall generally be cubical in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provisions of I.S. 383-1970. Unless special stone of particular quarries is mentioned, grit shall be obtained from the best black trap or equivalent hard stone as approved by the Authorised Representative of BSCL. The grit shall have no deleterious reaction with cement.
- The grit shall conform to the following gradation as per sieve analysis:

| Percentage Passing I.S. Sieve through sieve Designation | I.S. Sieve Designation | Percentage Passing through sieve |
|---|------------------------|----------------------------------|
| 12.50 mm.100 %  | 4.75 mm.               | 0-20%                            |



|                  |          |       |
|------------------|----------|-------|
| 10.00 mm.85-100% | 2.36 mm. | 0-25% |
|------------------|----------|-------|

- The crushing strength of grit will be such as to allow the concrete in which it is used to build up the specified strength of concrete.
- The necessary tests for grit shall be carried out as per the requirements of I.S.2386 (Parts I to VII) 1963, as per instructions of the Authorised Representative of BSCL. The necessity of test will be decided by the Authorised Representative of BSCL.

#### 6. A-6. Cement Mortar:

- Water shall conform to specification A-1.
- Cement: Cement shall conform to specification A-2.
- Sand: Sand shall conform to A-4.
- Proportion of Mix: Cement and sand shall be mixed to specified proportion; sand being measured by measuring boxes. The proportion of cement will be by volume on the basis of 50 Kg/Bag as directed.
- Preparation of Mortar: 11.3.1 In hand mixed mortar cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogenous mixture of uniform color is obtained. Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to form a stiff plastic mass of uniform color so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed.
- The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

#### 7. A-7- Stone Coarse Aggregate for Nominal Mix Concrete:

- Coarse aggregate shall be machine-crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

Note: This percentage may be varied somewhat by Authorised Representative of BSCL when considered necessary for obtaining better density and strength of concrete.

- The grading test shall be taken in the beginning and at the change of source of materials. The necessary test indicated in I. S. 383-1970 and I.S. 456-1978 shall have to be carried out to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If the aggregates are covered with dust,

they shall be washed with water to make them clean.

8. A-9 Bricks:

- The bricks shall be hand or machine molded and made from suitable soils and kiln- burnt. They shall be free from crack and nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform color. The bricks shall be molded with a frog of 100 mm. x 40 mm. and 10 mm. to 20 mm. deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600 mm.
- The size of modular bricks shall be 190 mm x 90 mm x 90 mm .
- The size of the conventional bricks shall be as under: (9" x 4 3/8 "x 2 3/4") 230 x 115 x 75 mm.
- Only bricks of one standard size shall be used on one work. The following tolerances shall be permitted in the conventional size adopted in a particular work. Length: 1.8(3.0 mm.) Width: 1/6" (1.51 mm.) Height: 1/6" (1.50 mm.)
- The crushing strength of the bricks shall not be less than 35 Kg. /Sq. Cm. The average water absorption shall not be more than 20 percent by weight. Necessary tests for crushing strength and water absorption etc. shall be carried out as per I. S. 3495 (Part-I to IV) 1976.

9. A-10 Stone:

- The stone shall be of the specified variety such as Granite /Trap Stone/Quartzite or any other type of good hard stones. The Stones shall be obtained only from the approved quarry and shall be hard, sound, durable and free from defects like cavities, cracks, sand holes, flaws, injurious veins, patches of loose or soft materials etc. and weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be used. The percentage of water absorption shall not be more than 5% of dry weight, when tested in accordance with I.S. 1134-1974. The minimum crushing strength of the stone shall be 200 Kb/Sq. Cm. unless otherwise specified.
- The samples of the stone to be used shall be got approved before the work is started.

10. A-11 Mild Steel Bars:

- Mild steel bars reinforcement for R.C.C. work shall conform to I.S. 432 (Part-II) 1966 and shall be of tested quality. It shall also comply with relevant part of I.S. 456-1978.

- All the reinforcement shall be clean and free from dirt, paint, grease, mill scale or loose or thick rust at the time of placing.
- For the purpose of payment, the bar shall be measured correct up to 1000 mm. length and weight payable worked out at the rate specified below:

|    |                         |
|----|-------------------------|
| 1  | 6 mm. x 0.22 Kg./Rmtr.  |
| 2  | 8 mm. x 0.39 Kg./Rmtr.  |
| 3  | 10 mm. x 0.62 Kg./Rmtr. |
| 4  | 12 mm. x 0.89 Kg./Rmtr. |
| 5  | 14 mm. x 1.21 Kg./Rmtr. |
| 6  | 16 mm. x 1.58 Kg./Rmtr. |
| 7  | 18 mm. x 3.00 Kg./Rmtr. |
| 8  | 20 mm. x 2.47 Kg./Rmtr. |
| 9  | 22 mm. x 2.98 Kg./Rmtr. |
| 10 | 25 mm. x 3.85 Kg./Rmtr. |
| 11 | 28 mm. x 4.83 Kg./Rmtr. |
| 12 | 32 mm. x 6.31 Kg./Rmtr. |
| 13 | 36 mm. x 7.99 Kg./Rmtr. |
| 14 | 40mm. x 9.86 Kg./Rmtr.  |

#### 11. A-12 High Yield Strength Steel Deformed Bars:

- High yield strength steel deformed bars be either cold twisted or hot rolled, shall conform to I. S. 1739-1966 and I. S. 1139-1966 respectively.
- Other provision and requirements shall conform to specification No. A-11 for mild steel bars.

## 12. A-13 Shuttering:

- The shuttering shall be either of wooden planking of 30 mm. minimum thickness with or without steel lining or of steel plates stiffened by steel angles. The shuttering shall be supported on battens and beams and props of vertical bellies properly cross-braced together so as to make the centering rigid. In places of bullae props, brick pillar of adequate section built in mud mortar may be used.
- The form work shall be sufficiently strong and shall have camber, so that it assumes correct shape after deposition of the concrete and shall be able to resist forces caused by vibration of live load of men working over it and other incidental loads associated with it. The shuttering shall have smooth and even surface and its joints shall not permit leakage of cement grout.
- If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work. The complete formwork shall be got inspected by and got approved from the Engineer-in-charge, before the reinforcement bars are placed in position.
- The props shall consist of bullies having 100 mm. minimum diameters measured at mid length and 80 mm. at thin end and shall be placed as per design requirement. These shall rest squarely on wooden sole plates 40 mm. thick and minimum bearing area if 0-10 sq. m. laid on sufficiently hard base.
- Double wedges shall further be provided between the sole plate and the wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete. The timber used in shuttering shall not be so dry as to absorb water from concrete and swell or bulge nor so green or wet as to shrink after erection. The timber shall be properly sawn and planed on the sides and surface coming in contact with concrete. Wooden form work with metal sheet lining or steel plates stiffened by steel angles shall be permitted.
- As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.
- The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done. Alternatively coat of raw linseed oil or oil of approved manufacturer may be applied in place of soap solution. In case of steel shuttering either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.
- The shuttering for beams and slabs shall have camber of 4 mm. per meter (1 in 250) or as directed

by the Authorised Representative of BSCL so as to offset the subsequent deflection. For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-charge.

13. A-14 Wooden flush door shutters (solid core):

- The solid core type flush door shutters shall be decorative or non-decorative type as specified in the final drawing by contractor. The size and thickness of the shutter shall be as specified in drawings or as directed.

The timber species for core shall be used as per I.S. 2202 – (Part I) 1980. The timber shall be free from decay and insect attack. Knots and knot holes less than half the width of cross-section of the members in which they occur may be permitted. Pitch pockets, pitch streaks and harmless pin holes shall be permissible except in the exposed edges of the core members. The commercial plywood, cross-bands shall conform to I.S. 303-1275.

- The face panel of the shutters shall be formed by gluing by the hot press process on both faces of the core with either plywood or cross-bands and face veneers. The hopping rebating opening, ventilation etc. shall be provided if specified in the drawing.
- All edges of the door shutters shall be square. The shutters shall be free from twist or warp in its plane. Both faces of the shutters shall be sand papered to smooth even texture.
- The shutters shall be tested for:
  - End immersion test: The test shall be carried out as per I.S. 2202 (part-I) 1980. There shall be no delamination at the end of the test.
  - Knife Test: The face panel when tested in accordance with I.S. 1659-1979 shall pass the test.
  - Glue adhesion test: The flush door shall be tested for glue adhesive test in accordance with I. S. 2202 (Part-I) 1980. The shutters shall be considered to have passed the test if no de lamination occurs in the glue lines in the plywood and if no single de lamination more than 80 mm. in length and more than 3 mm. in depth has occurred in the assembly glue lines between the plywood face and the style and rail. De lamination at the corner shall be measured continuously around the corner. De lamination at the knots, knot holes and other permissible wood defects shall not be considered in assessing the sample.
- The tolerance in size of solid core type flush door shall be as under: In Normal thickness + 1.2

mm. In Normal height + 3 mm.

- The thickness of the shutters shall be uniform throughout with a permissible variation of not more than 0.8 mm. when measured at any two points.

#### 14. A-15 Fixtures and fastenings:

- The fixtures and fastenings, that is butt, hinges, tee and strap hinges, sliding door bolts, tower bolts, door latch, bath room latch, handles, door stoppers, casement window fasteners, casement stays and ventilators catch shall be made of the metal as specified in the item or its specifications.
- They shall be of iron, brass, aluminum, chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified.
- The fixtures shall be heavy, medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operation.
- The samples of fixtures and fastenings shall be got approved as regards quality and shape before providing them in position.
- Brass and anodized aluminum fixtures and fastenings shall be bright finished

##### Holdfasts:

- Holdfasts shall be made from mild steel flat 30 cm. length and one of the hold fasts shall be bent at right angle and two nos. of 6 mm. diameter holes shall be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions.

##### Butt hinges:

- Railway standard heavy type butt hinges shall be used when so specified.
- Tee and strap hinges shall be manufactured from M. S. Sheet.

##### Sliding door bolts (Aldrops):

- The AL drops as specified in the item shall be used and shall be got approved.

##### Tower bolts (Barrel Type)

- Tower bolts as specified in the item shall be used and shall be got approved.

Door latch:

- The size of door latch shall be taken as the length of latch.

Bathroom Latch:

- Bathroom latch shall be similar to tower bolt.

Handle:

- The size of the handles shall be determined by the inside grip length of the handles. Handles shall have a base plate of length 50 mm. more than the size of the handle.

Door Stoppers:

- Door stoppers shall be either floor door stopper type or door catch type. Floor stopper shall be of overall size as specified and shall have a rubber cushion.

Door Catch:

- Door catch shall be fixed at a height of about 900 mm. from the floor level so that one part of the catch is fitted on the inside of the shutter and the other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity. The catch shall be fixed 20 mm. inside the face of the door for easy operation of catch.

Wooden Door Stop with hinges:

- Wooden door stop of size 100 mm x 60 mm x 40 mm shall be fixed on the door frame with a hinge of 75 mm size and at a height of 900 mm. from the floor level. The wooden door stop shall be provided with 3 coats of approved oil paints.

Basement window Fastener:

- Casement window fastener for single leaf window shutter shall be left or right handled as directed.

Basement stays (Straight Peg Stay):

- The stays shall be made from a channel section having three holes at appropriate position so that the window can be opened either fully or practically as directed. Size of the stay shall be 250 mm. to 300 mm. as directed.

Ventilator Catch:

- The pattern and shape of the catch shall be as approved.

Pivot:

- The base and socket plate shall be made from minimum 3 mm. thick plate and projected pivot shall not be less than 12 mm. diameter and 12 mm. length and shall be firmly riveted to the base plate in case of iron pivot and in single piece base plate in the case of brass pivot.

15. A-16 Paints:

- Oil Paints
- Oil paints shall be of the specified color and shade, and as approved. The ready mixed paints shall only be used. However, if ready mixed paint or specific shade or tint is not available, white ready mixed paint with approved strainer will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.
- All the paints shall meet with following general requirements:
- Paint shall not show excessive setting in a freshly opened full can and shall easily be re-depressed with a paddle to a smooth homogeneous state. The paint shall show no curdling, levering, caking or color separation and shall be free from lumps and skins.
- The paint as received shall brush easily, possess good leveling properties and show no running or sagging tendencies.
- The paint shall not skin within 48 hours in three quarters filled closed container.
- The paint shall dry to a smooth uniform finish free from roughness, grit, unevenness and other imperfections.
- Ready mixed paint shall be used exactly as received from the manufactures and generally according to their instructions and without any admixtures whatsoever.
- Enamel Paints:
- The enamel paint shall satisfy in general requirements as mentioned in specification of oil paints. Enamel paint shall conform to I. S. 2933-1975.

16. A-17 Rough Kota Stone:



- The Kota stones shall be hard, even, sound, and regular in shape and generally uniform in color. The color of the stone shall generally be green. Brown color stones shall not be allowed for use. They shall be without any soft veins, cracks or flows.
- The size of the stones to be used for flooring shall be of size 600 mm x 600 mm and / or size 600 mm x 450 mm or as per specification provided above. However smaller sizes will be allowed to be used to the extent of maintaining required pattern. Thickness shall be as specified.
- Tolerance of minus 30 mm. on account of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be + 3 mm.
- The edges of stones shall be truly chiseled and table rubbed with coarse sand before paving. All angles and edges of the stone shall be true, square and free from chipping and the surface shall be true and plain.
- When machine cut edges are specified, the exposed edges and the edges at joints shall be machine cut. The thickness of the exposed machine cut edges shall be uniform.

17. A-18 Polished Kota Stones:

- Polished kota stone shall have the same specifications as per rough Kota stone except as mentioned below:
- The stones shall have machine polished smooth surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. The stones to be used for dado, skirting, platforms, sink, veneering, sills, etc. where machine polishing after the stones are fixed in site is not possible, shall be double polished.

18. A-19 Granite Stone Slab:

- Granite shall be of approved color and quality. The stone shall be hard, even, sound regular in shape and generally uniform in color. It shall be without any soft veins, cracks of flows.
- The thickness of the stone shall be as specified in the items.
- All exposed face shall be double polished to tender truly smooth and the even reflecting surface. The exposed edges and corners shall be rounded off as directed. The exposed edges shall be machine cut and shall have uniform thickness.

19. A-20 Wall Peg Rail:

- The aluminum wall peg rail shall have three aluminum pegs of approved quality and size. It shall be fixed on teakwood plank of size 450 mm. x 75 mm. x 20 mm. The teakwood shall be French polished or oil painted as specified.

20. A-21 Bitumen Felt for Water Proofing and Damp Proofing:

- Bitumen felt shall be on the fiber bases and shall be type 2, self-finished grade-2 and shall conform to I. S. 1322-1970.

21. A-22 Selected Earth:

- The selected earth shall be that obtained from excavated material or shall have to brought from outside as indicated in the item. If item does not indicate anything, the selected earth shall have to be brought from outside.
- The selected earth shall be good yellow soil and shall be got approved from the Engineer-in-charge. In no case black cotton soil or similar expansive and shrinkable soil shall be used. It shall be clean and free from all rubbish and perishable materials, stones or brick bats. The clods shall be broken to a size of 50 mm. or less, Contractor shall make his own arrangement at his own cost for land for borrowing selected earth. The stacking of material shall be done as directed by the Authorised Representative of BSCL in such a way as not to interfere with any constructional activities and in proper stacks.
- When excavated materials is to be used, only selected stuff got approved from the Engineer- in-charge shall be used. It shall be stacked separately and shall comply with all the requirements of selected earth mentioned above:

## EXCAVATION

- Excavation for foundation up to 1.5 M depth including sorting out and stacking useful materials disposing of the excavated stuff up to 50-meter lead in loose or soft soil.
- General: Any soil which generally yields to the application of pickaxes and shovels, phawaras, rakes or any such ordinary excavating implement or organic soil, gravel, silt, sand turf loam, clay, peat etc. fall under this category.
- Clearing the site: The site on which the structure is to be built shall be cleared and all obstructions,

loose stone, materials and rubbish of all kind, bush, wood and trees shall be removed as directed. The materials so obtained shall be properly of the Government and be conveyed and stacked as directed within 50 M. lead. The roots of the trees coming in the sides shall be cut and coated with hot asphalt.

- The rate of site clearance is deemed to be included in the rate of earth work for which no extra will be paid.
- Setting out: After clearing the site, the center lines will be given by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all parts of the work. Contractor shall supply laborers, materials, etc. required for setting out the reference marks and bench marks and shall maintain them as long as required and directed.
- Excavation: The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be levelled both longitudinally and transversely as directed by removing and watering as required. No earth filling will be allowed for bringing it to level, if by mistake or any other reason excavation is made deeper or wider than shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.5 m. depth shall be measured under this item.
- Excavation for foundation up to 1.5 M. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50-meter lead in dense or hard soil.
- Dense or Hard Soil: Any soil which generally require close application of picks or jumpers or scarifiers to loosen it stiff clay, gravel and rubble stone etc. fall under this category.
- Workmanship: The relevant specification shall be followed except that the excavation work shall be carried out in dense or hard soil.
- Excavation for foundation up to 1.5 M. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter in lead hard murrum.
- Hard murrum: The hard murrum shall be clean of good binding quality and of approved quality obtained from approved quarries, of disintegrated rocks which contain siliceous material and natural of clay of calcareous origin. The size of hard murrum shall not be more than 20 mm.

- Workmanship: The relevant specification shall be followed except that the excavation work shall be carried in hard murrum.

**A. Excavation:**

1. For foundation for depth upto 7.0 M. including sorting out and stacking of useful materials and disposing of excavated stuff up to 50 M. lead in Hard murrum.
  - a. Workmanship: The relevant specification shall be followed except that the excavation work shall be carried out upto 7.0 M. lift in hard murrum.
2. Excavation: Foundation for depth upto 7 M. including sorting out and stacking of useful material and disposing of excavated stuff up to 50 M. lead in hard rock.
  - a. Workmanship: The relevant specification shall be followed except that the excavation work shall be carried out upto 7m lift in hard rock.

**B. Workmanship:**

1. The relevant specifications shall be followed except that sand shall be filled in under floors, including watering, ramming, consolidating and dressing etc. complete.
2. Filling in foundation and plinth with murrum or selected soil in layers of 20 cm. thickness including watering, ramming and consolidating etc. complete.
3. Materials Murrum: Murrum shall be clean, of good binding quality, and of approved quality obtained from approved pots/quarries of disintegrated rocks which contain silicones materials and natural mixture of clay of calcareous origin. The size of murrum shall not be more than 20 mm.
4. Workmanship: The relevant specifications shall be followed except that the murrum or selected soil shall be filled in foundation and plinth in 20 cms. layers including consolidating, ramming, watering, dressing etc. complete.

**C. Disposal of Excavated materials:**

- No materials excavated from foundation trenches of whatever kind they may be are to be placed even temporarily nearer than 1.5m. of distance prescribed by the Employer from the outer edge of excavation. All materials excavated shall remain the property of Government. Rate for excavation includes sorting out of useful materials and stacking them separately as directed within the specified

lead. Materials suitable and useful for backfilling or other use shall be stacked in convenient places but not in such a way as to obstruct free movement of men, animals and vehicles or encroach upon the area required for constructional purpose. The site shall be left clean of all debris on completion.

- Disposal of excavated materials is subject to the following: Unsuitable materials obtained from clearing site and excavation shall be disposed off within a lead of 50 meters as directed. Useful materials obtained from clearing site and excavation shall be stacked within a lead of 50 M. beyond the building area as directed. Materials suitable for back filling shall be stacked at convenient places within a lead of 50 M. from the structure for reuse. Useful stones from rock excavation shall be stacked neatly within a lead of 50m and will be allowed to be used by the contractor on payment at rates laid down in the contract or if not so laid down, at schedule of rates of the Division or at a mutually agreed rates if there are no such rates in the Schedule of rates.
- If surplus materials are required to be conveyed beyond 50 M. conveyance will be paid for under a separate item.

## PLAIN & RCC WORKS

- I.** Providing and laying cement concrete of grade as per Job Mix formula vetted through Intitute and approved by BSCL with provision of Mini Batching Plant on site.
- II.** Materials: Water shall conform to A-1. Sand shall conform to A-4. Cement shall conform to A-2. Stone aggregate 40 mm. nominal size shall conform to A-7.  
Workmanship: before starting concrete bed of foundation teaches shall be cleared of all loose materials, levelled, watered and rammed as directed.
- III.** Proportion of Mix: The Proportion of cement, sand and coarse aggregate shall be as per the structural drawings and approved Design mix.
- IV.** Mixing: The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Authorised Representative of BSCL. When hand mixing is permitted by the Authorised Representative of BSCL in case of break-down of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in color and consistency. However, in such cases 10% more cement than otherwise required shall have to be used without any extra cost. The mixing in mechanical mixer shall be done for a period 1 to 2 minutes. The quantity of water shall be sufficient to produce a dense concrete of required workability for the purpose.

- V.** Materials: Water shall conform to A-1. Cement shall conform to A-2. Sand shall conform to A-4. Stone aggregate 40 mm. nominal size shall conform to A-7. Workmanship: Relevant specifications shall be followed
- VI.** Providing throating or plaster drip and molding to R.C.C. Chajja.
- VII.** Materials: Water shall conform to A-1. Cement shall conform to A-2. Sand shall conform to A-4. Cement mortar shall conform to A-6. Workmanship: 4.1 The work shall be carried out as directed. The proportion of mix for finishing touching shall be in CM 1:2 by volume. Curing shall be done for not less than 7 days. The work shall be carried out in best workman like manner.
- VIII.** The throating or plaster drip and moulding shall be one centimeter in thickness.
- IX.** Extra for providing and mixing water proofing or plaster drip and moulding shall be one centimeter in thickness. Workmanship: The proportions of materials for the cement concrete shall be mentioned with the specifications of that item. The quantity of water proofing materials to be added and the method of addition shall be as specified by manufactures.
- X.** Mixing: The mixing of the water proofing materials in cement, water or concrete shall be done according to the specifications of the manufacturer.
- XI.** Providing and laying damp proof course 25 mm. thick cement concrete 1 : 2 : 4 (1 cement, 2 coarse sand, 4 stone aggregate 10 mm. nominal size) and curing complete.
- XII.** The specification of ordinary concrete with or without reinforcement shall be followed as per structure design except that the size of the stone aggregate shall be 10 mm. nominal size and the concrete work shall be carried out in 25 mm. thick damp proof course.
- XIII.** Providing and laying cement concrete as per structure Design and curing complete excluding cost of form work in (A) foundation and plinth, (B) Independent piers, columns and pillars up to floor two level.
- XIV.** Materials: Water shall conform to A-1. Cement shall conform to A-2. Sand shall conform to A-4. Grit shall conform to A-5. Graded stone aggregate 20 mm. nominal size shall conform to A-7.
- v. For reinforced concrete work, coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.
- vi. For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum clear distance between the main bars, or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.
- vii. Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be important and the nominal maximum size may sometimes be as great as or greater than the minimum cover.
- viii. Admixture may be used in concrete only with approval of Authorised Representative of BSCL upon the evidence that with the passage of time, neither the compressive strength of concrete is reduced

nor are other requisite qualities of concrete and steel impaired by the use of such admixtures.

- ix. Workmanship: Proportioning: proportioning shall be done by volume, except cement which shall be measured in terms of bags of 50 Kg. weight. The volume of one such bag being taken as 0.0342 Cu. Meter Boxes of suitable sizes shall be used for measuring sand aggregate. The size of the boxes (internal) shall be 35 cms. x 25 cms. and 40 cms. deep. While measuring the aggregate and sand, the box shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulk age shall be made.
- x. Mixing: For all work. Concrete shall be mixed in a mechanical mixer which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand, cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be continued till materials are uniformly distributed and uniform color of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.
- x. When hand mixing is permitted by the Authorised Representative of BSCL for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign materials gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Due coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture to uniform color. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is obtained. In hand mixing, quantity of cement shall be increased by 10 percent above that specified.
- xi. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer- incharge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.
- xii. Consistency: The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete, shall be determined by regular slumps tests in accordance with I. S. 1199-1959. The slumps of 10 mm. to 25 mm. shall be adopted when vibrators are used and 80 mm. when

vibrators are not used.

- xiii. Inspection : Contractor shall give the Authorised Representative of BSCL due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment, and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for results obtained. Immediately before concreting, all forms shall be thoroughly cleaned.
- xiv. Centering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labor and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed for ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.

## 2) Transporting and laying:

The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All formwork shall be cleaned and made free from standing water, dust show or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Authorised Representative of BSCL has been obtained.

- Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joints is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Authorised Representative of BSCL concrete shall be deposited shall be deposited in horizontal layers to a compacted depth of not more than 0.45 meter when internal vibrators are used and not exceeding 0.30 meter in all other cases.
- Unless otherwise agreed to by the Authorised Representative of BSCL, concrete shall not be dropped into place from a height exceeding 2 meters. When trunking or chutes are used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete.



Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on his surface shall not exceed 150 mm.in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

- All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators, unless otherwise permitted by the Authorised Representative of BSCL for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns.
- Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.
- Curing :Immediately after compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hassain or other similar absorbent material approved soon after the initial set and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonary work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.

### 3) Sampling and Testing of concrete:

Samples from fresh concrete shall be taken as per I. S. 1199-1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with I. S. 516-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following:

| Quantity of concrete in the works | No. of samples |
|-----------------------------------|----------------|
| 1-5 Cum.                          | 1              |
| 6-15 Cum.                         | 2              |

|  |   |
|--|---|
| 16-30 Cum.   | 3 |
| 31-50 Cum.   | 4 |
| 51 and above + one additional for each additional 50 M. or part thereof. |   |

NOTE: At least one sample shall be taken from each shift. Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples of concrete shall be taken on each day of the concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Authorised Representative of BSCL when procedure of tests given above reveals a poor quality of concrete and in other special cases.

- The average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150 kg/Cm<sup>2</sup> at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade, does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade.
- Concrete made in accordance with the proportions given for a particular grade shall not however, be placed in a higher grade on the ground that the test strength are higher than the minimum specified.
- Stripping : The Authorised Representative of BSCL shall be informed in advance by the contractor of his intention to strike the form work. While fixing the time for removal of form work due consideration shall be given to local conditions, character of the structure the weather and other condition that influence the setting of concrete and of the materials used in the mix in normal circumstances (generally where temperatures are above 20°C) and where ordinary concrete is used forms may be struck after expiry of periods for respective item of form work.
- All formwork shall be removed without causing any shock or vibration as would damage the concrete. Before the soffit and struts are removed the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened. Centering shall be gradually and uniformly lowered in such manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal ties are permitted they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re- use the formwork, it shall be cleaned and made good to the satisfaction of the Engineer- in- charge. After removal of form work and shuttering the Executive

Employers shall inspect the work and satisfy by random checks that concrete produced is of good quality.

- Immediately after the removal of forms all exposed bolts etc., passing through the cement concrete member and use for shuttering or any other purpose shall be cut inside the cement concrete members to a depth of at least 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar. All fine caused by form joints, all cavities produced by the removal of forms ties and all other holes and depressions honeycomb spots broken edges or corners and other defects shall be thoroughly cleaned, saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregate mixed in the proportion used in the grade of concrete that is being finished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure thorough filling in all voids. Surfaces which are pointed shall be kept moist for a period of 24 hours.

If rock pockets honeycombs in the opinion of the Authorised Representative of BSCL are of such an extent or character as to effect the strength of the structure materially or to endanger the life of the steel reinforcement he may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

- a) Materials & Workmanship: The relevant specification shall be followed except that the work shall be carried out of reinforced concrete work in addition the following stipulations shall be followed for-
  - i. The bars shall be kept in position by the following methods:
  - ii. In case of beam and slab construction sufficient number of precast cover blocks in cement mortar 1 : 2 (a cement : 2 coarse sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement.
  - iii. In case of cantilevered or doubly reinforced beams of slabs the main reinforcing bars shall be held in position by introducing chain spacers or supports bars at 1.0 to 1.0 meters centers. B. W. S. 6.
  - iv. In case of columns and walls the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them. The templates shall be removed after concreting has been done below it. The bars may also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.
  - v. All bars projecting from pillars, columns beams, slabs etc. to which other bars and concrete are to be attached or bounded to later on shall be protected with a coat of thin neat cement

grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

- vi. Providing Mild Steel reinforcement of R. C. C. work including bending binding and placing in position etc. complete up to floor two level.
- b) Materials : Mild steel bars shall conform to A-11. Mild steel binding wires shall conform to A- 12.
  - Workmanship : The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed.
  - Steel shall be clean and free from rust and loose mill scale at the time of fixing in position and subsequent concreting.
  - Reinforcing steel shall conform accurately to the dimensions given in the bar bending schedules shown on relevant drawings. Bars shall be bent cold to specified shape and dimensions or as directed using a proper bar bender, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used on the work. They shall not be heated to facilitate bending. Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less than twice the diameter of the round bar and the length of straight part of the bar beyond the end of the curve shall be at least four times the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any splitting of the concrete.
  - All the reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm. in size and by using stay blocks or metal chair spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars shall not be allowed to sag between supports nor displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of concrete, except where shown on drawings. Placing bars on layers of freshly laid concrete as the work progress for adjusting bar spacing shall not allowed. Pieces of broken stone or brick and wooden blocks shall not be used. Layers of bars shall be separated by spacebars, precast mortar blocks or other approved

devices. Reinforcement after being placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawings. All the bars producing from concrete and to which other bars are to be spliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cementgrout.

- Bars crossing each other where required shall be secured by binding wires (annealed) of size not less than 1 mm. in such manner that they do not slip over each other at the time of fixing and concreting.
- As far as possible bars of full length shall be used. In case this is not possible, overlapping of bars shall be done as directed. When practicable, overlapping bars shall not touch each other but be kept apart by 25 mm. or 1.25 times the maximum size of the coarse aggregate whichever is greater by concrete between them. Where not feasible overlapping bars shall be bound with annealed wires not less than 1 mm. thick twisted tight. The overlaps shall be staggered for different bears and located at points along the span where neither movement is maximum.
- Whenever indicated on the drawings or desired by the Authorised Representative of BSCL bars shall be jointed by couplings which shall have a cross section sufficient to transit the full stresses of bars. The ends of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than normal cross-section of the bar . Threads shall be standard threads. Steel for coupling shall conform to I.S. 226
- When permitted or specified on the drawings joints of reinforcement bars shall be butt- welded so as to transmit their full stresses. Welded joints shall preferably be located at points when steel will not be subject to more than 75 per cent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded. Only electric are welding using a process which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be accepted. Suitable means shall be provided for holding bars securely in position during welding. It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly. Ends of the bars shall be cleaned of all loose scale, rust, grease, paint and other foreign matter before welding. Only competent welders shall be employed on the work. The M. S. electrodes used for welding shall conform to I. S. 814. Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number and frequency of test shall be as directed.

- High yield deform bars steel enforcement for R. C. C. work including bending, binding and placing in position complete upto floor two level.

c) Materials : Cold twisted steel bars (high yield strength steel deformed bars) shall conform to A-12

- i. Workmanship : The specification shall be followed except that the cold twisted steel bars shall be used with or without hooks at the ends. Deformed bars without hooks shall however, comply with relevant anchorage requirements.
- ii. Extra for additional lift of concrete for all R.C.C. work above floor two level excluding cost of reinforcement.
- Materials & Workmanship : The relevant specifications shall be followed for the work except that the R. C. C. work shall be done for ground floor i.e. above plinth level to first floor level.
  - 50 mm. thick (B) 40 mm. thick (C) 25 mm. thick (D) 75 mm thick (E) 100 mm. thick

f) Materials: Water shall conform to M-1 (2) Cement shall conform to A-2 (3) Sand shall conform to A -4 (4) Mortar shall conform to A-6 (5) Aggregates shall conform to A-7 (6) Mild steel wire shall conform to A-21 (7) Shuttering shall conform to A-13.

i. Workmanship: It shall be of cement concrete as per approved grade reinforced with 1.6 mm. dia. mild steel wire unless otherwise specified. The thickness of jail shall be as specified in the item. The jail shall be set in position true to line and level before the jambs sills and soffits of the opening are plastered. Finally the jambs, sills and sophist shall be plastered gripping the Jali uniformly on all sides.

g) Providing and laying controlled concrete A-15 and curing complete excluding the cost of form work and reinforcement for reinforced concrete work in:

- i. Foundation, footing base of columns and mass concrete
- ii. Walls from top of foundations level up to floor two level
- iii. Slabs, landing shelves, Balconies, lintels, beams, girders and cantilever up to floor two level
- iv. Columns, pillars, posts and struts up to floor two level
- v. Staircase up to floor two level
- vi. Vertical and horizontal fins up to floor two level.

h) Materials: Water shall conform to A-1 Cement shall conform to A-2 Sand shall conform to A-4. Grit shall conform to A-5. Coarse aggregate shall conform A-7.

i) General: The relevant specifications of ordinary concrete shall be followed except that the concrete mix shall be designed from preliminary tests, the proportioning of cement and aggregates shall be done by

weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-10, M-15, M-20, M- 25, M-30, M-35 & M-40 with prefix controlled added to it. The letter ‘M’ refers to mix and numbers specify 28 days works cube compressive strength of 150 mm. cubes of the mix expressed in Kg./Cum.

j) The proportion of cement sand and coarse aggregates shall be determined by weight the weight the weight batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design.

The strength requirements of different grades of concrete shall be as under:

#### Concrete Strength Requirement

| Grade of Concrete Compressive strength of 15 cms. 28 days conducted in accordance preliminary test works test min. | Cubes in kg/cum at with I.S. 5161959 min. |
|--|---|
| M-15   | 150                                       |
| M-20   | 200                                       |
| M-25   | 250                                       |
| M-30   | 300                                       |
| M-35   | 350                                       |
| M-40   | 400                                       |

In all cases the 28 days compressive strength specified in above table the criteria for acceptance or rejection of the concrete.

Where the strength of a concrete mix as indicated by tests, line in between the strength of any two grades specified in the above table, such concrete shall be classified in for all purpose as concrete belonging to the lower of the two grades between which its strength lies.

k) Workmanship: The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work in question and can be properly compacted with means available except where it can be shown to the satisfaction of the Authorised Representative of BSCL that the supply of properly graded aggregate of uniform quality can be maintained till the completion of work. Grading of aggregate shall be controlled by obtaining the coarse aggregates in different sizes and benignity hemin the right proportions

as required. Aggregate of different sizes shall be stocked in separate stockpiles. The required quantity of material shall be stock piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible the frequency for a given job being determined by the Authorised Representative of BSCL to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests.

l) In proportioning concrete the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag a reasonable number of bags shall be weighted separately to check the net weight. Where cement is weighted from bulk stocks at site and not by bags it shall be weighted separately from the aggregates. Water shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean and serviceable condition. Their accuracy shall be periodically checked.

m) It is most important to keep the specified water cement ratio constant and at its correct value. To this end moisture content in both fine and coarse aggregates shall be determined by the Authorised Representative of BSCL according to the weather conditions the amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the determination of moisture content in the aggregates I. S.2389 (Part-III) shall be referred to suitable adjustments shall also be made in the weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in concrete shall not be less than 220 Kg./M<sup>3</sup> in plain concrete and not less than 250 Kg./M<sup>3</sup> in reinforced concrete.

n) Providing and laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement for reinforced concrete work in : (A) Foundations, Footings base of columns and mass concrete (B) Walls from top of foundation upto floor two level, (C) Slabs, landings, shelves, balconies, lintels, beams, girders and cantilever upto floor two level. (D) Columns, pillars posts and struts upto floor two level, (E) Staircases up to floor two level (K) Vertical and horizontal fins up to floor two level.

o) Materials & Workmanship : The relevant specification shall be followed except that the grading of concrete shall be controlled concrete M-20 sales for the works as specified in item.

p) Providing and laying controlled cement concrete M-15 and finishing smooth with curing etc. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. work in:

- i. Slabs more than 10 cms. And up to 13 cms.
- ii. Slabs more than 13 cms. And up to 15 cms.

q) Materials & Workmanship: The relevant specifications shall be followed for concrete work and



for form work and centering. The concrete surface shall be smooth finished with cement mortar 1:3 (1 cement, 3 fine sand). The thickness shall be as specified in the item.

r) Providing and laying ordinary cement concrete exposed work with curing etc. complete, including the cost of form work but excluding the cost of reinforcement for R.C.C. work in (I) Slab up to 8 cms. Thickness (II) Slabs having more than 8 cms. And up to 10 cms. Thickness (III) Slabs having more than 10 cms.

And up to 13 cms. Thickness (IV) Slabs having more than 13 cms. And up to 15 cms. Thickness

s) Materials & Workmanship: The relevant specifications shall be followed for concrete work and that of form work and centering work, the thickness of the slab shall be as specified in the item.

t) Providing and laying cement concrete of approved grade. lintel including finishing smooth with curing etc. complete including the cost of form work but excluding the cost of reinforcement.

u) Materials & Workmanship: The relevant specifications shall be followed for concrete work relevant specifications for finishing work and relevant specifications shall be followed for form work and centering work. The concrete work shall be followed for the form work and centering work for exposed concrete work.

v) Providing and laying ordinary cement concrete and finishing smooth with curing etc. complete including the cost of form work but excluding reinforcement for R.C.C. work in:

i. Beams :(I) Having cross sectional area 0.05 to 0.08 Sq. meter (II) Having cross sectional area more than 0.08 Sq. mtr. Up to 0.12 Sq. mtr. (III) Having cross sectional area more than 0.12 sq. mtr. Up to 0.18 sq. mtr.

ii. Columns: (I) Having cross sectional area 0.05 to 0.08 Sq. Mtr. (II) Having cross sectional area more than 0.08 Sq. Mtr. and up to 0.12 Sq. mtr. (III) Having cross sectional area more than 0.12 Sq. mtr. and up to 0.18 Sq. mtr. r

w) Materials & Workmanship: The relevant specifications shall be done in cement mortar 1:3 (cement :3 fine sand). The cross-sectional area of beam shall be specified in item.

## JOINTS

I. Movement joints such as expansion joints, complete contraction joints, partial contraction joints and sliding joints shall be designed to suit the structure. No expansion joints in wall, floor & roof of water retaining structure shall be allowed. The positions of construction joints should be specified by the

designer & indicated on the drawings. If there is a need on site to revise any specified position or to have additional joints, the proposed positions should be agreed with the designer. The concrete at the joint should be bounded with that subsequently placed against it, without provision for relative movement between the two, concrete should not be allowed to run to a feather edge & vertical joints should be formed against stop edges.

## FOUNDATIONS

- II.** The minimum depth of foundations for the structures, frame foundations and load bearing walls shall be as per IS: 1904 and suitable for site. Bearing capacity of soil shall be determined as per IS: 6403. Care shall be taken to avoid the foundations of adjacent buildings or structure foundations, either existing or not within the scope of this contract. Suitable adjustments in depth, location and sizes may have to be made depending on site conditions. No extra claims for such adjustments shall be accepted.
- III.** A structure subjected to groundwater pressure shall be designed to resist floatation. The dead weight of empty structure shall provide a factor of safety of 1.2 against uplift during construction and service. Where there is level difference between the natural ground level and the foundations of structure or floor slabs, this difference shall be filled. In case of liquid retaining structures, the natural topsoil shall be removed and the level difference shall be made up with Plain Cement Concrete not weaker than M 10. All blinding and leveling concrete shall
- IV.** be a minimum 100 mm thick in concrete grade M15 unless otherwise specified.

## MASONRY WORK

- A. Brick work using common burnt clay building bricks having crushing strength not less than 75 Kg./Sq. Cm. in foundations and plinth in cement mortar 1 : 4 (1 cement : 5 fine sand) modular bricks. Use of Fly ash bricks, AAC blocks etc for Green building may be use instead of regular bricks as per standards for green building Purposes.
- B. Materials :Water shall conform to A-1. Cement shall conform to M-2 sand shall conform to A- 4. Brick shall conform to A-9. Cement mortar shall conform to A-6.
- C. Workmanship:
- Proportion: The proportion of the cement mortar shall be 1 : 5 (1 cement : 5 fine sand)
  - Wetting of bricks: The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of

bubbles,

- iii. Laying: Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except where necessary to complete to bond closers in such case shall be cut to required size and used near the ends of walls.
  - iv. layer of mortar shall be spread on full width for suitable length of the lower course, Each brick shall first be properly bedded and set home by gently tapping lapping with handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.
  - v. The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.
  - vi. The brick shall be laid with frog upwards. A set of tools comprising of wooden straight edges, mason's spirit level, square half meter rub, and pins, string and plumb, shall be kept on the site of work for frequent checking during the progress of work.
  - vii. Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one meter over the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.
  - viii. All fixtures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar.
- D. Joints: Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exceed 12 mm. the face joints shall be raked out as directed by taking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to be done.
- E. The face of brick shall be cleaned the very day on which the brick work is laid and all mortar dropping removed.
- F. Curing: Green work shall be protected from rain suitably. Masonry work shall be kept moist on all the faces for a period of seven days. The top of masonry work shall be kept well wetted at the close of the day.
- G. Preparation of foundation bed: If the foundation is to be laid directly on the excavated bed the bed shall be leveled, cleared of all loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing the top of concrete shall be cleaned and moistened. The contractor shall

obtain the engineer's approval for the foundation bed, before foundation masonry is started. When puccas flooring is to be provided flush with the top to plinth the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

- H. Bricks work using common burnt clay building bricks having crushing strength not less than 35 Kg./per Sq. Cm. for super structure above plinth level up to floor two level in cement mortar 1:5 (1 Cement : 5 fine sand) modular bricks.

A. Materials :Brick shall conform to A-9. Cement mortar shall conform A-6.

1. Workmanship : The relevant specifications shall be followed except that the masonry work shall be carried out above plinth level to floor two level i.e. for ground floor.
2. The frames of doors, windows, cupboards etc. shall be housed into the brick work at the correct location and level as directed. The heavy steel doors, window frames etc. shall be built in with work, but for ordinary steel doors and windows required opening for frames, hold-fasts etc. shall be left in the wall and frames embedded latter on in order to avoid damage to the frames.
3. Necessary scaffolding shall be provided. The supports of the scaffolding shall be sound and strong tied together with horizontal coarse only. Minimum number of holes shall be left in brick work for supporting horizontal scaffolding holes. The contractor is responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.
4. For the face of brick work, where plastering is to be done, joints shall be racked out to a depth not less than thickness of joints. The face of brick work shall be cleansed and mortar dropping removed on very same day that brick work is laid.
5. Half brick masonry in common burnt clay building bricks having crushing strength not less than 75 Kg./Sq. cm. in cement mortar 1:4 (1 Cement : 4 Coarse sand) in super structure above plinth level up to floor two level with modular bricks.

- B. Materials: Bricks shall conform to A-9. Water shall conform to A-1. Cement shall conform to A-2. Sand shall conform to A-4. Cement mortar shall conform to A-6.

1. Workmanship: Relevant specifications of bricks, wetting and laying of bricks, joints, curing etc. except the brick work of half bricks shall be carried out.
2. Cement mortar used in masonry work shall be in proportion of 1 part of cement

and 4 parts of sand by volume.

3. All bricks shall be laid stretcher wise, braking joints with those in the upper and lower courses. The wall shall be taken truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. The bricks shall be laid with frogs upwards. A set of mason's tools shall be maintained on work as required for frequent checking.
  4. Half brick masonry in common burnt clay building bricks having crushing strength not less than 75 Kg./Sq. cm. in cement mortar 1:4 (1 Cement : 4 Coarse sand) in super structure above plinth level up to floor two level with conventional bricks.
- C. Materials & Workmanship: The relevant specifications shall be followed for bricks. Wasting of bricks, joint, curing, except that the bricks to be used shall be conventional bricks instead of Modular bricks. Half brick masonry in common burnt clay building bricks having crushing strength not less than 75 Kg./Sq. cm. in lime cement mortar 1:4 (1 Cement : 4 Coarse sand) with hoop iron 25 mm x 1.6 mm. or equivalent reinforcement at every third coarse embedded in cement mortar in foundation and plinth with modular bricks.
- D. Materials: Bricks shall conform to A-9. Water shall conform to A-1. Cement shall conform to A-2. Sand shall conform to A-2. Sand shall conform to A-4. Cement mortar shall conform to A-6. M. S. reinforcement shall conform to A-11.
1. Workmanship :Relevant specification of bricks wetting and laying of bricks, joints, curing, scaffolding etc. except the following :-
    - a) Cement mortar used in masonry work shall be proportion to 1 part of cement and 5 parts of sand by volume and shall conform to A-6 and this work is for half brick thickness for partitions walls.
    - b) The hoop iron 25 mm. x 1.6 mm. or equivalent reinforcement shall be provided at every third course. The ends of reinforcement shall be fully embedded in mien walls on both sides as directed. Reinforcement shall be placed on the top of the bottom-most course. Laps shall be of 15 cms. of mild steel bars of hoop iron.
    - c) The joints in the course where reinforcement is placed shall admit of mortar cover to the reinforcement.

## CENTERING & FORM WORK

- I. Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc. height of propping and centering below supporting floor to ceiling not

exceeding 4 mm and removal of the same for in site reinforced concrete and plain concrete work in foundations, footing, bases of columns and mass concrete.

**II. Materials :** The shuttering to be provided shall be of ordinary timber planks and shall conform to A-13. The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.

**Workmanship :** The form work shall conform to the shape lines and dimensions as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safe-guard against any settlement of the form work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding bracing etc. shall be as per design. **Cleaning & Treatment of forms :** All rubbish, particularly chippings shaving and saw dust shall be removed from the interior of the form before the concrete is placed and the form work in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil or form oil of approved manufacture may be applied in case steel shuttering is used. Soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joints surface and reinforcement bars.

**III. Stripping time :** In normal circumstance and where ordinary cement is used forms may be struck after expiry of following periods :

- Sites of walls columns and vertical faces of beam 24 to 48 hours.
- Beam soffits. (Props left under) – 7 days.
- Removal of props slabs.
- Slabs spanning up to 4.5 m. – 7 days (ii) Spanning over 4.5 m. – 14 days. (d) Removal of props to beams and Arches.
- Spanning up to 6 m. – 14 days.
- Spanning over 6 m. – 21 days.
- Procedure when removing the form work : 2.4.1 All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffit formwork and struts are removed the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened.

**IV. Centering :** The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the formwork and concrete work before during and after pouring concrete. Watch should be kept to see that behavior of centering and formwork is satisfactory during concreting. Erection should

also be such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.

- A.** The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.
- B.** The centering and formwork shall be inspected and approved by the Authorised Representative of BSCL before concreting. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of form work and centering. If there is a failure of formwork or centering, contractor shall be responsible for the damages to the work, injury to life and damage to property.

**V. Scaffolding :** All scaffolding, hoisting arrangements and ladders etc. required for the facilitating of concreting shall be provided and removed on completion work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to withstand all live, dead and impact loads expected to act and shall be subject to the approval of the Authorised Representative of BSCL. However, contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman, etc.

- A.** The scaffolding, hoisting arrangement and ladders shall allow easy approach to the work spot and afford easy inspection.

**VI.** The rate is applicable to all conditions of working and height up to 4 mts. The rate shall include the cost of materials and labor for various operations involved such as

- Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering, strutting, propping bolting, nailing, wedging, easing, striking and removal.
- Filleting to form stop chamfered edges or played external angles not exceeding 20 mm. width to beams, columns and the like.
- Temporary openings in the forms for pouring concrete, if required, removing rubbish etc.
- Dressing with oil to prevent adhesion of concrete with shuttering and (e) Raking or circular cutting.

**VII.** Re-Use: Before re-use all forms shall be inspected by Authorised Representative of BSCL and their suitability ascertained. The forms shall be scarred, cleaned and joints gone over, repaired where required. Inside surface shall be retreated to prevent adhesion of concrete.

**VIII.** Extra for providing form work of ordinary timber planking so as to give a rough finish including centering, shuttering, strutting and propping, etc. height of propping and centering below supporting floor to ceiling in between 4 m. to 5 m. and removal of the same of in site reinforced or plain concrete work in

foundation, footings, bases of columns etc. and mass concrete.

**A. Materials & Workmanship:** The relevant specifications shall be followed except that the height of propping and centering below supporting floor to ceiling exceeding 4 m. but not exceeding 5 m.

**IX.** Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in site reinforced and plain concrete work in flat surface such as soffits of slabs, landing and the like floors etc. up to 200 mm. in thickness.

**A. Materials & Workmanship:** The relevant specifications shall be followed except that the work is to be carried out for flat surface such as soffits of slabs, landing and the like for floors etc. up to 200 mm. in thickness.

**X.** Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in site reinforced and plain concrete work in vertical surface such as walls (any thickness) partitions.

**A. Materials & Workmanship:** The relevant specifications shall be followed except that the form work shall be carried out for vertical surfaces such as walls of any thickness, partitions etc.

**XI.** Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in site reinforced and plain concrete work in columns, pillars and struts, square rectangular, polygonal in plan.

**A. Materials & Workmanship :** The relevant specifications shall be followed except that the work is for columns, pillars, posts and struts square, rectangular, polygonal in plan.

**XII.** Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in site reinforced and plain concrete work in side and soffits of beams, hunching's, cantilevers girders bressumers and lintels exceeding 1 M. in depth.

**A. Materials & Workmanship :** 1.1 The relevant specification shall be followed except that the work is for side and soffits of beams, beams hunching's, cantilevers, girders, bressumers and lintels exceeding 1M. in depth.

**B.** The rate shall be for a unit of one Sq. meter.



l) Extra for providing form of work with sheathing of steel sheets so as to give a fair finish in

- i. Foundation, footings, base of columns etc. and mass concrete. (B) Flat surfaces such as soffits of slab, landing and the like.
- ii. Floors etc. up to 200 mm. in thickness.
- iii. Floor etc. above 200 mm. in thickness.
- iv. Vertical surfaces such as wall (Any thickness) partitions.
- v. Columns, pillars, posts and struts.
- vi. Square, rectangular, bressumers and lintels not exceeding 1 mm. depth.
- vii. Sides and soffits of beams, beam haunchings, cantilevers, girders, bressumers and lintels exceeding 1 mm. in depth.
- viii. Edges of slabs and breaks in floors and walls.
- ix. Small surface such as cantilever ends, brackets and ends of steps, caps and bases to pillars and columns including edges.
- x. Chollar woods whether sheds, chhajjas, corrodes etc. and the like.
- xi. Stair cases with sloping or steeped soffits including risers, skingers, excluding landing. (Q) Vertical fins and vertical sun breakers.

**XII.** Materials & Workmanship : The relevant specification shall be followed except that the extra rate shall be paid for using sheathing of steel sheets and plates of steel or plywood instead of ordinary timber plank, to obtain a desired smooth exposed finish of surface. The surface shall be presentable without further treatment.

## CARPENTRY WORK

- a) Providing wood work in frames of doors, windows clerestory windows and other similar work, wrought, framed and fixed in position, Indian Teak wood.
- b) i. Workmanship: The item covers the requirement of frames for doors, windows, clerestory windows their supply and fixing.

c) Frames: All members of the frames shall be exactly at right angles. The right angle shall be checked from inside surface of the respective members.

d) All members of frames shall straight without any warp or bow and shall have smooth surface well planed on the three sides exposed at right angles to each other. The surface touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall size within the tolerances specified.

e) Frame shall have dovetail joints. When clerestory windows are included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the

vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10 cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10 mm. deep. Slight adjustment of spacing as necessary shall be done to have the hold fasts in the joints of masonry course. The frame shall be erected in position and held plumb with strong support from both sides and built in masonry as it is being built. The transom shall be through tenoned into the mortices of the jamb post to the full width of the jamb post and the thickness of the tenon shall be not less than 15 mm.

f) Tolerance: Unless specially mentioned otherwise tolerance of + 1.5 mm. shall be allowed for each wrought face.

g) The tenons shall be closely fitting into the mortises and suitably pinned with wood dowels not less than 10 mm. dia. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.

h) The contact surface of tenon and mortise shall be treated before putting together with an adhesive of approved make.

i) Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 cm. from the top and the bottom of the frames. In case of windows and ventilators frames whose height is less 1 M. two hold-fats, on each side shall be fixed at quarter points of the frames. The size of each hold-fast shall be 300 x 25 x 6 mm. and of mild-steel with split end. The hold-fast shall be fixed with screws to frames.

j) Mild steel hold fasts shall be protected with a coating of coal asphalt tar. The surface of frame abutting the masonry or concrete faces shall be properly treated by applying a coat of approved coating.

k) Providing and fixing 35 mm. thick fully paneled shutters for doors, windows and clerestory windows including anodized aluminum butt hinges with necessary screws, Indian Teak Wood.

l) Workmanship : The item covers the requirement of preparation of shutters for doors, windows, clerestory windows, their supply and fixing.

- Shutters: panelled shutters shall be constructed in the form of timber frame work of styles and rails with panel inserted of type as specified in the detailed drawings. Panel shall be fixed by providing grooves in the style and rails. The styles and rails shall be joined to each other by mortise and tenon joints at right angles.
- All members of the shutters shall be straight without any warp or bow and shall have smooth, well planed faces at right angles to each other.
- The size of styles and trails shall be as per drawing or as directed. Styles and rails of shutters shall be made of one piece only.

- m) Fixtures & Fastenings: The rate shall include anodized aluminum but hinges including fixing with iron screws.
- n) Providing and fixing flush door shutters, solid core construction with frame of 1st class shad wood with cross band and face veneer or plywood face panels including anodized aluminium but hinges with necessary screws (A) Non-decorative type and block board core. (2) 35 mm. thick.
- o) Materials: Flush door shall conform A-14. Plywood shall conform to A-37. Anodised aluminium but hinges shall conform to A15.
- p) Workmanship: The relevant specifications shall be followed except that the shutters be non- decorative type and block board core with face veneer or plywood with 35 mm. thickness.
- q) Ready-made shutters shall be correct size and shall fit into the door or other openings without excessive scraping of edges. Adding of battens etc. to make up to the size shall not be allowed.
- r) Providing and fixing M. S. grill of required pattern to wooden frames of windows etc. with M. S. plates, at required spacing and frame around, square or round bars with round headed bolts and nuts or by screws and with ornamental grill.
- s) Materials & Workmanship: The relevant specifications shall be followed except that the work is for ornamental grill. Providing and fixing hard drawn steel wire fabric 75 x 25 mm. mesh of weight not less than 7.75 Kg. per Sq. M to window frames etc. including 60 x 20 mm. beading of teak wood.
- Workmanship: The steel wire fabric 75 x 25 mm. mesh of weight not less than 7.75 kg. per Sq. M. to windows frames etc. shall be fabricated as per detail drawing. The wire fabric shall be fixed to windows frame by teak wood beading of 60 x 20 mm. size by means of screws.
- u) Providing and fixing fly proof galvanized M.S. Wire gauge of I.S. Gauge designation 85 G. with wire of dia 0.56 mm. to windows and clerestory windows including 60 x 20 mm. beading of Indian Teak Wood.
- v) Materials: The fly proof galvanized M. S. wire gauge, Teak wood beading.
- Workmanship: The relevant specification shall be followed except that the proof galvanized M. S. wire gauge of I.S. gauge designation 85-G with wire of 0.56 mm. shall be provided.

## PAVING & FLOOR FINISHING

- I. a) stone flooring over 20 mm. (average) thick base of cement mortar or lime mortar over and jointed with gray cement slurry including rubbing and polishing complete 25 mm. thick.
- II. Materials: Water shall conform A-1. Lime mortar shall conform to A-10. Cement mortar shall conform to A-6 polished Kota stone/granite shall conform to A-18.
- III. Workmanship: Each slab shall be cut to the required size and shape and fine chisel dressed at all the edges. The sides thus dressed shall have a full contact if a straight edge is laid along. The sides shall be table rubbed with coarse sand before paving. All angles and edges of the slabs shall be true square and

free from chippings and giving a plane surface. The thickness shall be 25 mm. (Average) as specified in the item but not less than 20 mm. at any place of the slab.

- IV.** Bedding for the stone slabs shall be cement mortar 1 : 6 (1 cement : 6 coarse sand) or L. M. 1 : 1.5 of average thickness 20 mm. as given in the description of the item. Sub grade shall be cleaned, wetted and mopped. Mortar of the specified mix and thickness shall be then be spread on an area sufficient to receive one stone slab. The slab shall be washed clean before laying. It shall be laid on top pressed, tapped gently to bring it in level with the other slabs. It shall then be lifted and laid aside. Top surface of the mortar shall then be corrected by adding fresh mortar at hollows or depressions. The mortar shall then be allowed to harden bit. Over this surface, cement slurry of honey like consistency shall be applied. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly padded in level with and close to the adjoining slab. The joint shall be as fine as possible. The slabs fixed in the floor adjoining the wall shall enter not less than 10 mm. under the plaster, skirting or dado. The junction between the wall floor shall be finished neatly. The finished surface shall be true to levels and slopes as directed.
- V.** The floor shall be kept wet for a minimum period of 7 days so that bedding and joints set properly.
- VI.** Polishing shall be normally commenced after 14 days of laying the stone slab. First polishing shall be done with carborundum stones of 120 grade grit fitted in the heavy machine and then second polishing shall be done with carborundum stone of 220 to 350 grade grit fitted in heavy machine. Water shall be properly used during polishing. The stone shall then be washed clean with water. When directed by the Authorised Representative of BSCL wax polish of approved quality shall be applied on the surface with the help of soft cloth over a clean and dry surface. Then the polish machine fitted with bobs shall be run over it.
- VII.** The holes required for Nahni traps, pipes any other fittings shall be made without any extra cost.
- VIII.** Rough chiseled dressed ( Kota stone green) stone flooring over 20 mm. thick base of cement mortar 1 : 6(1 cement : 6 coarse sand) or L. M. 1 : 1.5 including pointing with cement 1 : 2(1 cement : 2 stone dust) etc. complete 40 mm. thick.
- IX.** The relevant specifications shall be followed except that the thickness of stone slab shall be 40 mm. thick.
- X.** Cement concrete flooring for I.P.S. 1 : 2 : 4 (for Indian Patent Stones) (1 cement : 2 coarse : sand : 4 graded stone aggregate 20 mm. nominal size) laid in one layer finished with a floating coat of net cement 40 mm. thick.

**XI. Materials:** Water shall conform to A-1 cement shall conform to A-2. Sand shall conform to A- 4. Stone aggregate 20 mm. normal size shall conform to A-7.Cement concrete of approved grade proportion measured by volume shall conform to relevant specification or ordinary grade concrete.

**XII. Workmanship:** The relevant concrete flooring of 40 mm thick (Average) is to be laid as per the site condition.

- A.** The concrete shall be mixed in a mechanical mixer at the work. Hand mixed may however be allowed for smaller quantities of work and in case of failure of machines or as permitted by the Authorised Representative of BSCL.
- B.** It shall carried out on a water platform and care shall be taken to ensure that mixing is continued until the mass is uniform in color and consistency. However, in such cases 10 % more cement than otherwise required shall have to be used without any extra cost. The mechanical mixing shall be done for period of 1/2 to 2 minutes.
- C.** The quantity of water shall be just sufficient of produce a dense concrete of required workability for the purpose. Flooring of specified thickness shall be laid in accordance with approved pattern or as directed. Finishing operation shall start shortly after the cessation of beating and shall be spread over a period one to six hours depending upon the temperature and atmosphere conditions.
- D.** The surface shall be left for some time till moisture disappears from it. Fresh quantity of cement shall be mixed with water to form a thick slurry and spread over the surface while the concrete is still green. Use of dry cement or cement and mixture sprinkled on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted.
- E.** The cement slurry shall then be properly pressed twice by means of iron floats, once, when the slurry is applied and the second time when cement starts setting and finished smooth. The surface shall be marked with string or B.R.C. fabric jall to make the surface non-slippery as and when directed.
- F.** The junction of floors with wall plaster, dado or skirting shall be rounded off where so required up to 25 mm. radius, flooring in lavatories and bath rooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage, done to water supply or sanitary fittings during execution of work shall be made good.

**XIII.** After the final set, the concrete shall be kept continuously wet, if required by pounding for a period of not less than 7 days from the date of placement.

**XIV.** The formwork shall be provided if necessary as directed by the Authorised Representative of

BSCL. Concreting shall be done as per alternate bay method with necessary centering either by mastic or cement mortar as directed

## WATER PROOFING TREATMENT

- I. Providing and fixing five course water proofing treatment felt consisting of second and fourth course of blown bitumen or/and residual bitumen applied hot 1.20 Kg. / Sq. mtr. of area for each course and first course with fiber base self-finished felt type 2 Grade-I, fifth and final course of stone grit 6 mm. and down size or pea sized gravel spreader at 0.008 cum/sq. mtr. including preparation of surface, excluding grading complete.
- II. Materials: The tar felt shall conform to A-21. The bitumen primer shall conform to I. S. 3388-1965. The bitumen shall conform to I. S. 702-1961. the grit or gravel shall conform to A-5. Workmanship:
  - Preparation of surface: Well-defined cracks other than hair cracks in the roof structure shall be cut to 'V' section cleaned and filled up flush with cement and slurry or with bitumen conforming to I.S. 702-1961. The surface to be treated shall have a minimum slope of 1 in 120 The grading shall be carried out prior to the application of water proofing treatment by cement mortar or line surkhi mortar or as specified in description of item.
  - The surface of room, part of parapet and gutters, drain mouths etc. over which the water proofing treatment is to be applied, shall be cleaned of all foreign matter such as fungus, moss and dust by wire brushing and dusting.
  - Drain outlet shall be suitably placed with respect to the roof gradient to ensure rapid drainage and prevent local accumulation of water on the roof, surface, masonry drain mouth, shall be widen sufficiently and rounded with cement mortar.
  - Form cast iron drain outlets; a groove shall be cut all round to touch the treatment.
  - When a pipe passes through a roof on which water proofing treatment is to be laid, a cement, concrete angle fillet shall be built round it and the water proofing treatment taken over the fillet.
  - In case of parapet wall over 450 mm. in height for tucking in the water proofing treatment, a horizontal grooves 75 mm. wide and 65 mm. deep at minimum height of 150 mm. above roof level shall be left in the vertical face at the time of construction, the horizontal face of the groove shall be shaped with cement mortar 1 : 4.

- In case of low parapet where the height does not exceed 450 mm . no groove shall be provided and the water proofing treatment shall be carried right over the top.
- In case of existing R.C.C. and stone wall cutting the chase for tacking in the water proofing treatment is not recommended.
- At the junction between the roof and veridical face of the parapet wall, a fillet 75 mm. in radius shall be constructed.
- At the drain mouths the fillet shall be suitably cut back and rounded off for easy application of water proofing treatment and easy flow of water.
- Outlet at every low dividing wall about less than 300 mm. in height shall be rounded smooth and corners rounded off for easy application of water proofing treatment.

**III.** Priming coat: Bitumen primer shall conform to I.S. 3385-1965. A priming coat consisting of bituminous solution of low viscosity shall be applied with brush on the roof and wall surface at specified per unit area to assist adhesion of bonding materials as specified in the description of the item. i Where a floating treatment of water proofing with self-finished bitumen felt is required i.e. where water proofing treatment is required to be isolated from the roof structure, layer of bitumen saturated felt (underlay) shall be spread over the roof surface and tucked into the flashing grooves. To keep the underlay free from the structure no bonding materials shall be used below underlay. Overlapping to the adjoining strip of underlay shall be minimum of 75 mm. at sides and 10 mm. at ends and shall be sealed with the same bonding materials as used for the self- finished felt treatment. The underlay shall be of type-1 saturated felt conforming to I.S. 1322-1970.

**IV.** Laying of Felt: The self-finished tar felt shall be cut to the required lengths, brushed clean of dusting materials laid out flat on the roof to eliminate curls and subsequent stretching. The felt shall be laid in length running at right angles to the direction of run off gradient commencing at the lowest level and working up to crest, so that the lower laps of the adjacent felt layer offer minimum obstruction to the flow of water. The felt shall not be laid in a single piece of very long lengths as it is likely to shrink 6 to 8 meters are suitable length. The roof shall be cleaned and dried before the felt treatment is begun. Each length shall be laid in position and rolled up for a distance of half its lengths. The hot bonding materials heated to correct working temperature as specified by manufacture shall be poured on to the roof across the full width of the felt as the latter is steadily unrolled and pressed down. The excess of bonding materials which squeezes out at the ends shall be removed as the laying proceeds. The pouring shall be so regulated that correct weight of the bonding materials as per unit area is spread uniformly over the surface. When the first half of the tar felt has been bonded to the roof, the other half shall be rolled up and then

unrolled on the hot bonding materials in the same way. Subsequent strips shall also be laid in the same manner. Each strip shall overlap the preceding one by at least 75 mm. at the longitudinal edges and 100 mm. at the ends. All overlaps shall be firmly bonded with hot bitumen. Streaks and trailing of bitumen near edges of laps shall be leveled by heating the overlaps with blow lamp and levelling down unevenness.

- V. Third layer of bonding materials in four course treatment shall be carried out in similar manner after the flashing has been complete. Water proofing treatment shall be carried out in the drain pipe or outlets by at least 100 mm. The water proofing treatment laid on the surface shall overlap the upper edge of water proofing treatment in the drain outlets by at least 10 mm. Flashing felts shall be laid as flashing. Wherever junction of vertical horizontal surface occurs longitudinal laps shall be 100 mm. The lower layer of flashing felt shall overlap the roofing felt by 100 mm. on vertical and sloping faces. Last course of flashing should not be of stone, grit or pea sized gravel but it shall be replaced by providing two coats of bitumen solution of approved quality. The lower edge of flashing shall overlap the flat portion of the roof and the upper edge of the flashing shall be tucked into the horizontal groove 75 mm. thick wide, 65 mm. deep provided at minimum height of 150 mm. from top of the roof surface. The flashing treatment shall be firmly held in place in the grooves with wooden wedges at intervals and the grooves shall be followed with cement mortar 1 : 4 (1 cement : 4 coarse sand) or cement concrete (1 : 2 : 4) (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominal size) and surface finished smooth with the rest of wall. The cement work shall be cured for 7 days. When dry the exposed plaster joints of grooves shall be pointed with bitumen and two coats of bituminous solution shall be applied on the vertical and sloping surface of flashing.

After the top flashing felt layer has been laid, the penultimate layer of bonding materials shall be applied over the roofing felt and horizontal overlap and vertical and sloping surface of flashing shall be spread uniformly over the hot bonding materials on the horizontal roof surface and pressed into it with wooden roller.

- The material for surface finish shall be spread as described in the item over top layer.
  - If ballooning occurs the defects may be rectified as under:
  - Remove the gravel on the ballooned surface. Then cut open and squeeze out the trapped vapor by firm pressure applied by hand, seal the bitumen felt so lifted back on the surface by applying additional bitumen, finally seal the cut with piece of bitumen felt with bitumen application.
  - Providing and fixing on wall face C. I. rain water pipe including filling the joints with spun yarn socked in neat cement slurry and cement mortar 1: 2 (1 cement: 2 fine sand) 75 mm. dia. Materials: Water shall conform to A-1. Cement mortar shall conform to A-6.
- Workmanship:



- i. C. I. rain water pipes shall be of specified diameter and shall be in full lengths of 1.8 meters including socket ends of the pipes unless shorter lengths are required at junctions with fittings.
- ii. Fixing: The pipe and fittings shall be fixed in vertical alignment unless otherwise specified and shall be secured to the walls at joints with M. S. clamps. The clamps shall be M. S. sheet 30 mm. bent to required shape and size so as to fit tightly on the socket of pipe when tightened with screw bolts. It shall be formed out of two semi- circular pieces. Hinged with 6 mm. dia. M. S. pin on one side and provided flanged ends on the other side with holes to fit in the screw bolt and nut 40 mm. long. The clamps shall be provided with hook made out of 275 mm. long, 10 mm. dia. M. S. bar riveted to the ring at the center of one semicircular piece. The clamps shall be fixed to the walls. The clamps shall be kept above 25 mm. clear of finished face of wall so as to facilitate cleaning and painting the pipes.
- iii. The pipe shall be fixed vertically. The spigot of the upper pipe shall be properly fitted in the socket of the lower pipe such that there is uniform annular space for filling with the jointing materials. The annular space between the spigot and socket shall be filled with a few turns of spun yarn soaked in cement slurry or blown bitumen 85/25 grade. These shall be pressed home by caulking tools. The joints shall then be filled with stiff cement mortar 1: 2 (1 cement: 2 fine sand) well pressed with caulking tools and finished smooth at top at an angle of 45° sloping up. The joints shall be kept wet at least for 7 days by typing four rounds of gunny bag to the pipe and keeping it moist constantly.
- iv. Providing and fixing M. S. Holder bat clamps of approved design to C. I. or S.C.I. pipes embedded and including cement concrete blocks (100 mm. x 100mm.x100mm.size) in 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm. nominal size) and cost of cutting holes and making good the walls etc. complete  
: 75 mm. dia.

- Materials & Workmanship:
- The relevant specifications shall be followed except that the M. S. Holder bat clamps of approved design shall be for C. I. rain water pipe-75 mm. dia.
- The bat clamps shall be fixed as directed with C.C. blocks of 100 mm. x 100 mm. x 100 mm. The relevant specification shall be followed for concrete work.
- Providing and fixing and embedded sand C. I. rain water pipe in the mason surrounded with 12 mm.

thick cement mortar of the same mix as that of masonry: 75 mm. dia pipe.

- Materials: Water shall conform to A-1. Cement mortar shall conform to A-6. The C. I. pipe and fittings.

Workmanship:

- i. The relevant specifications shall be followed except that the C. I. pipe 75 mm. dia. shall be embedded in masonry surrounded with 12 mm. thick cement mortar.
- ii. The pipe shall be fixed in the masonry work as it proceeds. The pipe shall be kept vertical or to the line as directed. The pipe shall have minimum surroundings of 12 mm. thick cement mortar at every portion of external surface. The length shall be caulked with spun yarn and cement mortar as soon as the next length of pipe is placed in position. The socket ends the pipe shall be kept closed till the next length of pipe is fitted and jointed to prevent any brick-bats or concrete or pieces of wood falling in and chocking the pipes.

## PLASTERING AND PAINTS

- a. 10 mm. thick cement plaster in single coat on fair side of brick concrete walls for interior plastering up to floor two level and finished even and smooth finishing with Cement Sand 1:4 Mortar. Materials:  
Water A-1. The cement mortar proportion 1:4 shall conform to A-13.
- b. Workmanship:
  - i. Scaffolding: Wooden ballads, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.
  - ii. Preparation of back-ground:
    - The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be roughened by wire brushing if it is not hard and by racking if it is hard. In case of concrete surface, if a chemical retarder has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retarders is left on the surface. Trimming of projections on brick/concrete surface where necessary shall be carried out to get an even surface.
    - Racking of joints in case of masonry where necessary shall be allowed to dry out for sufficient

period before carrying out the plaster work.

- The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry such area shall be moistened again.
- For external plaster, the plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started whenever the building frame and cladding work are ready and the temporary supporting ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

iii. Applications of plaster:

- The plaster about 15 x 15 cms. Shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movement at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float shall be avoided. All corners, arrises, angles and junctions be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering corners, arrises junctions etc. shall be carried out with proper templates to the size required.
- Cement plaster shall be used within half an hour after addition of water. Any mortar or plaster which is partially set shall be rejected and removed forthwith from the site.
- In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically. When recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. To any corners or arrises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.
- Each coat shall be kept damp continuously till the next coat is applied or for a minimum

period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging mattings or gunny bags on the outside of the plaster and keeping them wet.

- iv. Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.
- v. This item includes plastering up to floor two level.
- vi. The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.
- vii. Soffits of stairs shall be measured as plastering on ceilings. Flowing soffits shall be measured separately.
- viii. For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. mtr. each in area for ends of joints, beams, posts, girders, steps, etc. not exceeding 0.5 sq. mtr. Each in area and for openings exceeding 0.5 sq. mtr. And not exceeding 3.00 sq. mtr. In each area deductions and additions shall be made in the following manner:
  - c. No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq.mtr. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these opening for finish to plaster around ends of joints, beams, posts etc.
  - d. Deduction for openings exceeding 0.5 sq. mtr. but not exceeding 3 sq. mtr. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings.
  - e. When both faces of all wall are plastered with same plaster, deduction shall be made for one face only.
  - f. When two faces of wall are plastered with different types of plaster or if one faces is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the outer side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from area of plaster and/or pointing as the case may be.
  - g. For openings having door frames equal to projecting beyond the thickness of wall, full deduction for

opening shall be made from each plastered face of the wall.

- h. In case of openings of area above 3 sq.mtr. each, deduction shall be made for opening but jambs, soffits and sills shall be measured. 3.10. The rate shall be for unit of one sq. meter.
- i. 20 mm. thick cement plaster in single coat on rough side of single or half brick walls for interior plastering up to floor two level, finished even and smooth in cement mortar 1:4 (1 cement: 4 sand).
- j. Materials & Workmanship: The relevant specifications of above-mentioned item shall be followed except that the thickness of item plastering shall be 20 mm. in C.M. 1:4. Extra over item for finishing with a floating coat of net cement slurry.
- k. Materials & Workmanship: The relevant specifications shall be followed for materials and workmanship except that this work is only of providing smooth cement finish with floating coat of neat cement slurry.
- l. The coat of cement and fine sand mortar of proportion 1:1 (1.5 mm. thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the base coat is still plastic.
- m. In any continuous face of wall, the finishing treatment should be carried out continuously and day to day braked made to coincide with architectural breaks in order to avoid unsightly junctions.
- n. Curing: All the plaster work shall be kept damp continuously for a period of 7 days.
- o. Materials & Workmanship: The relevant specifications shall be followed except that the water proofing materials of approved make shall be added to the cement at the rate specified or as directed by the Authorised Representative of BSCL. The proportion of water proofing materials to be mixed with 50 kg. Bags shall be as recommended by the manufactures of the water proofing material.
- p. Extra over items for plastering on ceiling and soffits of stair up to floor two level instead of plastering on walls.
- q. Materials & Workmanship: The relevant specifications shall be followed except that this work is for ceiling soffits of stairs up to two floor level instead of plaster in walls. The smooth concrete surface shall be suitably roughened to provide necessary bond before plastering

## WHITE WASHING & DISTEMPERING

- a. While washing with undecorated wall surfaces (two coats) to give an even shade including through by brooming the surface to remove all dirt, dust, mortar drops and other foreign matter.
- b. Materials: The elecarcolle shall be made from glue and boiling water by mixing 1 kg. Mixture shall be suitably tinted where required for use under coloured distemper if directed. Glue shall conform to I.S. 852-1969 (Specifications for animal glue). 1.2. line used shall be freshly burnt class 'C' Lime (fat lime) and white in colour conforming to I.S. 712-1973/ Water shall conform to A-1 Best quality of gum shall be used in the preparation of white wash. Ultramarine blue or Indigo: This shall conform to I.S. 55-1970 for points, and shall be used for preparation of white wash. Pigments: Mineral colours, not affected by lime shall be used in preparing colour wash.
- c. Workmanship: Preparation of white wash solution: Surface already white or colour. The fat lime shall be slaked at site and shall be mixed and stirred with about five litres of water for 1 kg. Of unslaked lime to make a thin cream. This shall be allowed to stand for a period of 24 hours and then shall be screened through a clean coarse cloth, 4 kg. Of gum dissolved in hot water shall be added to each cubic metre of lime cream. Small quantity of ultramarine blue (Up to 3 gms. Per kg. Of lime) shall also be added to the last two coats of white wash solution and the whole solution shall be stirred thoroughly before use.
- d. Preparation of surface: The surface shall be thoroughly cleaned of all dust, dirt, mortar croppings and other foreign matter before white wash is to be applied.
- e. The surface spoiled by smoke soot shall be scraped with steel wire brushes or steel scrapers or shall be rubbed with over-burnt surkhi or brick bats. The surface shall be then broomed to remove all dust, dirt and shall be washed with clean water.
- f. Oil or grease spots shall be removed by suitable chemical and smooth surface shall be rubbed with wire brushes.
- g. All unsound portion of the surface plaster shall be removed to full depth of plaster in rectangular patches and plastered again after raking the masonry joints properly. Such portion shall be wetted and allowed to dry. They shall then be given one coat of white wash.
- h. All unnecessary nails shall be removed, the holes cracks patches etc. shall be made good with materials similar in composition to the surface to be prepared.
- i. Scaffolding: Wherever scaffolding is necessary it shall be erected in such a way that as far as possible

on part of scaffolding shall rest against the surface to be white or colour washed. A properly secured strong and well tied suspended platform (Zoola) may be used for white washing of ceilings proper stage scaffolding shall be erected where necessary.

- j. Application of white wash: On the surface so prepared the white wash shall be applied with “Moon” brush. The first stroke of the brush shall be from top downwards, another from bottom upwards over the first stroke and similarly one strokes from the right another from the left, over the first stroke brush before it dries. This will form one coat. Each coat shall be allowed to dry before next coat is applied. Number of coats as specified in item shall be applied. It shall present smooth and uniform finish free from brush marks and it should not come off easily when rubbed with finger.
- k. Splashing and dropping if any on the doors and windows, ventilators etc. shall be removed and the surface cleaned.
- l. Priming and Alkali resistant treatments, scraping of surface washing etc. surface spoiled by smoke soot removed of oil and great spots treatment for infection with efflorescence moulds moss, fungi algae and lichen and patch repairs to plaster. Wherever done shall not be paid extra.
- m. No deductions shall be made for ends of joints beams, posts etc. and openings not exceeding 0.5 sq.mtr. each. No addition shall be made for reveals, jambs, soffits, sills etc. of these openings: When both the faces or walls are provided with finish, deduction shall be made for one face only.
- n. When each face of walls is provided with different finish deduction shall be made for that side of frame for door, windows etc. on which width of reveals is less than that of the other side, where width of reveals on both faces of wall are equal, deduction of 50% of area of opening on each face shall be made from total area of finish.
- o. When only one face of wall is treated and the other face is not treated, full deduction shall be made if the width of reveal on the treated side is less than that on the untreated side, but if the width of the reveal is equal or more than on the untreated side neither deductions nor additions be made for reveals, jambs, soffits, sills etc.
- p. In case of area of opening exceeding 3 sq.mtr. each, deduction shall be made for openings but jambs, soffits, shall be measured.
- q. Corrugated surfaces shall be measured flat as fixed and not girth. The quantities so measured shall be increased by the following percentage and the resultant shall be included with the general areas.
  - Corrugated steel sheets 14%
  - Corrugated A.C. sheets 20%
  - Semi Corrugated A.C. sheets 10%

- Nainital pattern roof (Plain sheeting with rolls) 10%
- Nainital pattern roof (with corrugated sheets) 25%

o. Cornices and other wall features, when they are not picked out in a different finish/colour shall be girthed and included in the general area.

- The rate shall include the cost of all materials, labour, scaffolding, protective measures etc. involved in all the operations described above.
- White washing with lime on decorated wall surface (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust mortar drops and loose scales of lime wash and other foreign matter.
- Materials & Workmanship: The relevant specifications shall be followed except that the white washing work shall be carried out on decorated wall surface in single coat.
- Extra for every subsequent coat of white washing with lime on wall surfaces.
- Materials & Workmanship: The relevant specifications shall be followed except that this work is for extra coat over and above two coats on wall surface.
- Colour washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove all dirt dust, mortar drops and loose scales of lime wash and other foreign matter.
- Materials & Workmanship: The relevant specifications shall be followed except that the colour washing shall be carried out on decorated wall surfaces in one coat.

o. Removing dry or oil bound distemper by washing and scraping and sandpapering the wall surface smooth including necessary repairs to scratches complete.

- Materials & Workmanship: All loose pieces and scales shall be removed by sand papering and surface shall be cleared of all greasy, dust, dirt, etc. on decorated wall surface: Where heavy scaling has taken place, the entire surface shall be scrapped by means of steel scrappers so as to remove all accumulated distemper, leaving clean surfaces. Necessary repairs to the scratches shall be made as directed.
- Extra for removing dry oil bound distemper on ceiling and sloping roofs.
- Workmanship: The relevant specifications shall be followed except that removing dry oil bound distemper from sloping roof, ceiling is to be carried out.



Distempering with dry (water bound) Distemper of approved brand and manufacturer (two coat) and of required shade on undecorated wall surfaces to give an even shade, over and including a priming coat of white washing after thoroughly brooming the surface free from mortar droppings and other foreign matter.

- Materials: The dry distemper and primer shall be of approved brand and manufacture. The dry distemper shall be required colour and shade and the same shall conform to I.S. 427-1965. Whiting shall conform to I.S. 63-1964.
  - Workmanship: Scaffolding: Where scaffolding is required it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered.
  - A properly secured strong and well tied suspended platform (jools) may be used for distempering. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected where necessary.
  - Preparation of Surface: The undecorated surface to distempered shall be thoroughly brushed free from dust, dirt, grease, mortar, droppings and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry at least 2 months, before application of distemper.
  - All necessary nails shall be removed. Pitting in plaster shall be made good with plaster of Paris mixed with dry distemper of the colour to be used. The surface shall then be rubbed down again with a fine grades and paper and made smooth.
  - The surface affected by molds, moss, fungi, algeeli chem, efflorescence etc. shall be treated in accordance with I.S.: 2395 (Part-I) – 1996 before applying distemper. Any unevenness shall be made good by applying putty made of plaster of Paris mixed with water on entire surface including filling up the undulations & then papering the same after it is dry.
- u. Priming coat: A priming coat of whiting shall be applied over the prepared surface in case of new work on undecorated surface. No coat of with lime shall be used as a priming coat for distemper.
- Application of plaster shall be done as under: The primer shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be Vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be Finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound Distemper or paint is applied.

- Distemper is not recommended to be applied within six months of the completion of wall plaster.

v. Proportion of Distemper: The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufactures only. Sufficient quantity of distemper required for one day's work shall be prepared.

i. Application of Distemper coat:

- For undecorated surface, after the primer coat is dried for at least 48 hours, the surfaces shall be lightly sand papered to make them smooth for receiving the distemper, taking care not to rub cut the priming coat; All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushed in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after time interval of at least 24 hours between consecutive coats to permit proper drying of the preceding coat. The finished surfaces shall be even and uniform without patches, brush marks; distemper drops etc.
- Sufficient quantity shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room which cannot be completed on the same day
- 15cm. Double bristled brush shall be used. After the day's work, brushes shall be thoroughly washed in hot water with a soap solution and hang down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

ii. Protective Measure:

- The surface of door, windows, floors, articles of furniture etc. and such other parts of the building as are not to be distempered shall be protected from being splashed upon. Such surfaces shall be cleaned of distemper splashes if any.

iii. Distempering (two coats) with oil bound distemper of approved brand and manufacture and of required shade on undecorated wall surfaces to give an even shade, over and including a priming coat with distemper primer of approved brand and manufacture after thoroughly brushing the surface free from mortar dropping and other foreign matter also including preparing the surface even and sand papered smooth. Materials: Oil bound washable distemper and primer shall be of approved brand and manufacture. The distemper shall be of required colour and the same shall conform to I.S. 428- 1969.

- Scaffolding: Where scaffolding is required, it shall be erected in such a way that as far as possible no part

of scaffolding shall rest against the surface to be distempered. A properly secured strong and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceilings, proper stage scaffolding shall be erected where necessary.

- Preparation of surface: The undecorated surface to be distempered shall be thoroughly brushed off from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for atleast 2 months before applications of distemper.
  - All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster of Paris mixed with dry distemper of colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi algae lichens, efflorescence etc. shall be treated in accordance with I.S. 2395 (Part-I) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of Paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.
- w. Priming coat: A priming coat or distemper prime of approved manufacture and shade shall be applied over the papered surface in case of new work on decorated surface. If the distemper premiering is done after the wall surface dries completely, the distemper primer shall be applied.
- i. Application of primer shall be done as under: The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for atleast 48 hours before oil bound distemper or paint is applied.
- ii. Oil bound distemper is not recommended to be applied within six months of the completion of wall plaster.
- iii. Preparation of oil bound distemper: The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacture only. Sufficient quantity of distemper required for a day's work shall be prepared.
- iv. Application of Distemper coat: For undecorated surfaces, after the primer coat is dried for atleast 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushes in horizontal strokes followed immediately by vertical

strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of atleast 24 hours between consecutive coats to permit proper drying of the proceeding coat. The finished surface shall be even and uniform without patches, brush marks, distemper drops etc.

- v. Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room which cannot be completed on the same day.
  - vi. 15 cm. Double bristled distemper brush shall be used. After day's work brushes shall be thoroughly washed in hot water soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.
  - vii. Distemping (two coats) with oil bound washable distemper of approved brand and manufacture and of shade required on undecorated wall surfaces to give an even shade, over and including a priming coat with alkali resistance primer of approved brand and manufacture after thoroughly brushing the surface free from mortar droppings, and other foreign matter and also including preparing the surface even and sand- papered smooth.
  - viii. Materials & workmanship: The relevant specifications shall be followed except that the primer of alkali resistance primer of approved brand manufacture shall be used instead of distemper primer.
  - ix. Finishing wall with water proofing cement paint on an undecorated wall surfaces (two coats) to give an approved brand and manufacture and of required shade even shade after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials.
  - x. Materials : The water shall conform to M-1. Cement water proofing shall conform to I.S. 5410- 1969.
- Scaffolding: The relevant specifications shall be followed.
  - Preparation of surface: The relevant specifications of item shall be followed as per above mentioned except that the word white wash colour wash shall be substituted with water proofing cement paint.
  - The surface shall be thoroughly wetted with clean water before cement water proofing paint is applied.
  - Preparation of paint: Portland cement shall be prepared by adding paint powder to water and stirring to obtain a thick paste, which shall then be diluted to a brushable consistency. Generally, equal volumes of paint powder and water make a satisfactory paint. In all cases, the manufacturer's instructions shall be followed. The paint shall be mixed in such quantities as can be used up within an hour of mixing as otherwise the mixture will set and thicken, affecting flowing and finish. The lids of cement paint drums shall be kept tightly when not in use.
  - Application of Paint: No painting shall be done when the paint is likely to be exposed to a temperature of

below 7o C within 48 hours after application.

- When weather conditions are such as to cause damage, the work shall be carried out “in the shadow” as far as possible. This helps the proper hardening of the paint film by keeping the surface moist for a longer period.
- To maintain the uniform mixture and to prevent segregation, the paint shall be stirred frequently in the bucket.
- For undecorated surfaces, the surfaces shall be treated with minimum two coats of water proof cement paint. Not less than 24 hours shall be allowed between two coats. Next coat shall not be started until the proceeding coat has become sufficiently hard to resist marking by the brush being used. In hot dry weather, the proceeding coat shall be allowed between two coats. Next coat shall not be started until the proceeding coat shall be slightly moistened before applying the subsequent coat.
- The finished surface shall be even and uniform in shade, without patches, brush marks, paint drops etc.
- The cement paint shall be applied with a brush with relatively short stiff hog or fibre bristles. The paint shall be brushed in uniform thickness and shall be free from excessive heavy brush marks. The lamps shall be well brushed out.
- Water proof cement paint shall be applied on surfaces already treated with white wash colour wash, distemper dry or oil bound varnishes, paint etc. It shall not be applied on gypsum, wood and metal surfaces.
- Curing: Painted surfaces shall be sprinkled with water two or three times a day. This shall be done between coats and for atleast two days following the final coat. The curing shall be started as soon as the paint has hardened so as not to be damaged by the sprinkling of water say about 12 hours after the application.
- Protection measures shall be taken as per above mentioned para.

## Construction of PEB building (Multipurpose Hall -Handicraft Promotion Centre)

### PRE-ENGINEERED STEEL STRUCTURE

#### I. FABRICATION OF STEEL SUPER STRUCTURES

##### A. Drawings

1. The Contractor shall prepare fabrication drawings, erection drawings, bill of materials, drawing

office dispatch lists/shipping documents, schedule of bolts and nuts and as built drawings. All drawing work shall be in metric system and all writing work shall be in English.

2. The fabrication drawings shall show full length with all connecting members and connections marked thereon. The fabrication drawings shall include all the necessary blown-up details required for the correct fabrication of the structures to meet the design requirement. These drawings shall be made in conformity with the best modern practices and with due regard to speed and economy in fabrication and erection. Each erection piece shall be clearly identified by an erection mark in these drawings.
3. The preparation / detailing of fabrication drawing shall be complete in all respects. In the case of bolted connections, the bolt dia, the whole dia, the actual location of holes and the coordinating scheme with connecting / matching elements shall be clearly indicated. As far as possible, uniformity in the bolt dia shall be maintained where HSFG bolts are used; method of surface preparation shall be indicated. In case of welded constructions, the size and length of welds along the relevant weld lines should be distinctly marked. The length specified shall be the effective length excluding end crates. For all butt welds, details of appropriate edge preparation shall be indicated.
4. Detailing of structural steel members subjected to dynamic loading shall be so as to keep the stress concentration to a minimum. Cross welding shall be avoided as far as practicable.
5. For bolted connections subjected to dynamic loading, lock nuts or spring washers shall be used in addition to plain washers.
6. Erection drawings shall consist of line diagrams showing every detailed member in position with the respective erection mark. Erection marks shall appear on the left end of the members as detailed. All steel members shall be erected with marks in the same relative position as shown in plan or elevation. All loose members shall either be given part marks or wired on to the main erection mark for dispatch.
7. The erection clearances for cleat-connected ends of member's connection steel to steel shall preferably not be greater than 10 mm. at each end. The erection clearance at ends of beams shall not be more than 20mm. at each end but where for particular reasons greater clearance is necessary, suitably designed seats shall be provided.
8. The fabrication drawings shall be prepared in such a manner that structures are dispatched with maximum transportable lengths and work involved at site is minimum. Steelwork shall be shop-fitted and ship-assembled as far as practicable.

9. All edge preparations for welding shall conform to IS: 9595

10. The Contractor shall ensure correctness & completeness of fabrication drawings.

**B. Material of Construction**

1. All steel and other materials used for steelwork and in association with steelwork shall conform to appropriate Indian standards. Only tested materials shall be used unless written authority is obtained for the use of untested materials for certain secondary structural members.

Unless otherwise specified in the drawings

a) All rolled sections and plates up to & including 20 mm thickness shall conform to Grade "A" as per IS: 2062

b) Plates of thickness above 20 mm and Plated structures subjected to dynamic loading shall conform to Grade "B" as per IS: 2062

c) For High Tensile steel requirements, materials conforming to IS: 8500 or SAIL-MA (HYA or HYB) shall be used.

2. Steel sheets shall conform to IS: 1079

3. Steel tubes for structural purpose shall conform to IS: 1161/4923 )

4. Translucent sheets shall be fiberglass reinforced polyester sheets of matching profile as per IS: 12866.

5. Colour coated sheets shall be as per appropriate standard.

6. Gutters shall be provided with down pipes in a manner to be maintenance free and long lasting.

7. All black bolts, nuts and locknuts shall conform to IS: 1363 and IS: 1364 (for precision and semi precision hexagonal bolts) of property class 6.4 unless otherwise specified. Washers shall conform to IS: 6610

8. All tapered washer shall be as per IS: 5372 for channels, and IS: 5374 for Joists Spring washers shall conform to IS: 3063

9. All HSFG bolts shall conform to IS: 3757. Assembly of joints using HSFG bolts shall conform to IS: 4000. Nuts and washers of HSFG bolts shall be as per IS: 6623 & IS: 6649 respectively.

10. Covered electrodes for arc welding shall conform to IS: 814. Coding of electrodes shall be as follows:

a) ER421 'C' X for mild steel of Grade 'A' and Grade 'B' as per IS: 2062

- b) EB 542 'C' H3X for Mild steel of Grade 'B' as per IS: 2062 for dynamically loaded structures (arising out of crane, vibratory screen, equipment etc.) 'C' is the value of the current as recommended by the electrode manufacturer.

11. Certified mill test reports of materials used in the work shall be made available for inspection by the Authorised Representative of BSCL upon request.
12. All materials shall be straight and if necessary before being worked shall be straightened and /or flattened by pressure including de-coiling of plates unless required to be of curvilinear form and shall be free from twists.
13. The MS / GI / PVC gratings shall be selected based on the loading in the area in which the grating is provided and shall be subject to approval of Authorised Representative of BSCL.

#### **C. Material Preparation**

1. Cut edges shall be finished smooth by grinding or machining wherever necessary. Sufficient allowance (3 mm to 5 mm) should be kept in the items in case machining is necessary.
2. Cutting may be effected by gas cutting, shearing, cropping or sawing. In gas cutting of high tensile steel, special care is to be taken to leave sufficient metal to be removed by machining so that all metal that has been hardened by flame is removed.
3. Sufficient shrinkage allowance (@1mm/M) shall be kept wherever heavy welding is involved.
4. Straightening and bending shall be done in cold condition as far as practicable.
5. If required, straightening and bending may be done by application of heat between 900°C and 1100°C. Cooling down of the heated item shall be done slowly.

#### **D. Drilling and Punching of Holes**

1. Drilling and punching of holes for bolts shall be done as per clause no. 11.4.4 of IS: 800:1984, unless otherwise specified by the Owner.
2. Drifting of holes for bolts during assembly shall not cause enlargement of holes beyond permissible limit or damage the metal.
3. Holes of bolted connection should match well to permit easy entry of bolts. Gross mismatch of holes shall be avoided.
4. Permissible deviation in holes for mild steel bolts of normal accuracy and high strength bolts are given in the ANNEXURE below



#### **E. Assembly for Fabrication**

- 1.** Fabrication of all structural steel work shall be in accordance with IS: 800-1984 and in conformity with various clauses of this specification, unless otherwise specified in the drawings.
- 2.** Fabrication of structures shall preferably be taken up as per the sequence of erection.
- 3.** All erection units shall bear erection mark no. and reference drg. no. at a prominent location on the structures for easy identification at site.
- 4.** Fabricated structures shall conform to tolerance as specified in this standard and in IS: 7215-1974. In case of contradiction, tolerances specified in this standard shall prevail.
- 5.** All the components of structures shall be free from twist, bend, damage etc.
- 6.** Assembly of structures shall be carried out by using suitable jigs and fixtures in order to obviate distortion during welding.
- 7.** Cutting of items especially for truss, bracing, bunker, hopper, galleries surge girder, portal etc, shall be done only after checking of sizes as per layout.
- 8.** Surface, wherever machining is specified, shall be either planed or milled or ground to ensure maximum contact.
- 9.** If end-milling or machining is planned after the assembly is over, sufficient allowance(5 mm to 15 mm) shall be kept in the items where milling/machining is to be done.
- 10.** If pre-bending of the plate is required to avoid welding distortion; it shall be done in cold condition.
- 11.** Sufficient trial assembly of fabricated components (dispatch elements) shall be carried out in the fabrication works to control the accuracy of workmanship.
- 12.** Where necessary, washers shall be tapered or otherwise suitably shaped to give the heads of nuts and bolts satisfactory bearing.
- 13.** The threaded portion of each bolt shall project through the nut at least by one thread.
- 14.** Tolerance of assembled components of structures are given in IS: 7215: 1924
- 15.** Permissible deviations from designed (true) geometrical form of the dispatch elements shall be in accordance with IS: 7215-1974.

## **F. Method of Construction**

1. The method of construction shall be either by welding or by bolting limiting the site work to the minimum possible.
2. Bolt diameter shall not be less than 16mm. except for bolts securing roof and wall sheeting, windows, doors and stitching of thin coverings. For bolted joints, min two bolts shall be used.
3. The size of fillet welds shall not be less than 5mm for load-bearing joints.
4. Main structural elements shall be welded continuously. Intermittent welds shall be used only on secondary members, which are not exposed to weather or other corrosive influence.
5. Connections and splices shall be made by welding, or by bolting with high tensile turned and fitted bolts. Black bolts shall be used in connections and attachments of secondary members such as purlins, wall girts, etc. Bolts shall be prevented from loosening by means of lock nuts, single coil spring washers or similar devices.
6. Method of splicing shall be similar to the method of construction adopted for structures. All splices shall be full-strength splice unless exception is specified.
7. Roof and wall sheets shall be fixed to purlins and wall girts by stainless steel/ Zinc Plated top speed screws/galvanized J-hook bolts, each complete with neoprene and stainless steel /galvanized washers. The connections shall ensure water tightness into the buildings. The spacing of these screws/bolts shall be sufficient to prevent uplift of sheets by suction. The roof and wall sheets shall be stitched together at their edges by using studs, rivets or screws. The end and side overlaps of sheeting shall be sufficient to prevent ingress of rainwater. End lap shall not be less than 75mm and side lap shall not be less than one a half corrugation for GCS sheets. For troughed aluminum sheets manufacturer's recommendations shall be followed.

## **G. Structural Steel connection**

1. The Contractor shall be responsible for the design and the detailing of all connections. The design of connections shall provide for adequate strength for the transfer of force in the structural elements indicated on the design drawings. For purposes of detailing of connections, the allowable stresses in material, bolts and welds shall be as per IS: 800 and IS: 816 or as specified in the design drawings.
2. For all full strength butt welding of plates and sections thicker than or equal to 10mm, edge

preparation shall be done and got approved by the Engineer-In- charge.

3. Two numbers of washers shall be used for all bolted connections, one washer bearing against the head and other bearing against the nut.
4. The magnitude of forces shown on design drawings shall be used at face values with no reductions for connections.
5. If extra joints are to be provided in column, crane girder etc, prior approval on the same shall be obtained from the Authorised Representative of BSCL. However, as general guidance, the following is suggested:
  - a) Splice joint on column and crane girder shall be of full strength but weld, and, wherever possible, shall be located at the section of minimum or substantially lesser stress.
  - b) Splice joints of web and flange should be sufficiently staggered in position.
6. All penetration for piping, conduit, cable trays, etc., through grating or plate flooring shall be cut and suitably banded in the field, except when such penetrations are dimensioned in the drawings in which case they shall be shop cut and banded.

#### **H. Fabrication**

1. Fabrication of all structural steelwork shall be in accordance with IS: 800 or their equivalent foreign national standard of the country of origin of supply unless otherwise specified, and in conformity with various clauses of the Technical Specification.
2. Wherever practicable and wherever perfect matching of parts is required at site, members shall be shop assembled before dispatch to minimize site work. Parts not completely assembled in the shop shall be secured, to the extent possible, to prevent damage during dispatch.
3. All pieces shall be properly identified and bundled for transportation to work site. Care shall be exercised in the delivery, handling and storage of material to ensure that material is not damaged in any manner. Materials shall be kept free of dirt, grease and foreign matter and shall be protected from corrosion. All materials shall be stored properly on skids above the ground which shall be kept clean and properly drained. Girders and beams shall be placed upright and stored. Long members such as columns and chord members shall be supported on skids spaced near enough to prevent damage due to deflection.
4. Bolts shall be furnished according to bolt lists showing the location of their use and additional bolts shall be supplied to cover wastage.

5. All fabricated pieces shall bear erection mark numbers painted/punched according to appropriate erection and shop drawings at a prominent location on the structure for easy identification.
6. All workmanship shall be in accordance with the best practice in modern structural shops. Greatest accuracy shall be achieved in the manufacture of every part of the work and all identical parts shall be strictly interchangeable.
7. Shearing or flame cutting may be used at the Contractor's option provided that a mechanically controlled cutting torch is used for flame cutting and that the resulting edges are clean and straight.
8. Unless clean square and true to shape all flame cut edges shall be planed/cleaned by chipping or grinding. Where machine flame cutting is permitted of high tensile steel, special care shall be taken to leave sufficient margin and all flame hardened material shall be removed by machining/edge grinding.
9. Wherever shearing is used for cutting to size, sheared members shall be free from distortions at sheared edge.
10. The ends of all girder stiffeners shall be in contact with the compression flange and shall be planed or ground to fit tightly against flange plates unless otherwise stated on the drawings. Care shall be taken to ensure full bearing of the stiffeners at the supports by machining the contact surfaces of both bearing stiffeners and bearing plates. The ends shall not be drawn or caulked.
11. Column splices and butt joints of struts and compression members depending on contact for stress transmission shall be accurately machined and close butted over the whole section with a clearance not exceeding 0.1mm locally at any place.
12. In column cap and bases, the ends of shafts, should be accurately machined so that the parts connected butt over the entire surface of contact. Care should be taken so that these connecting members are fixed with such accuracy that they are not reduced in thickness by machining by more than 1.0mm. On secondary members, where sufficient gussets and welds are provided to transmit the entire loading. The column ends may not be machined subject to the approval of the Engineer-In-charge.
13. Holes for permanent black bolts shall not be more than 1.5mm larger than the nominal diameter of the back bolts unless specified otherwise. All holes for turned and fitted bolts shall be sub punched or drilled and reamed at site under assembly of connected parts to a tolerance of  $\pm 0.3$ mm unless specified otherwise. Holes in purlins, side-sheeting runners, packing plates and lacing bars may be punched full size. Holes in light framing with the exception of joint holes may be punched full size. All

punching and sub-punching shall be clean and accurate and all drilling free from burrs. In block/batch drilling, parts shall be separated after drilling and burrs removed. No hole shall be made by gas cutting process.

14. The component parts shall be so assembled that they are neither twisted nor otherwise damaged and specified cambers, if any, shall be provided. No drifting of hole shall be permitted except to draw the parts together. Drifts used shall not be larger than the nominal diameter of the bolt. Drifting done during assembling shall not distort the metal or enlarge the holes. Sufficient trial assembly shall be carried out in the fabrication works to prove the accuracy of workmanship of the number of such trials required shall be at inspector's discretion.
15. Where necessary, washers shall be tapered or otherwise suitably shaped to give the heads and nuts of bolts a satisfactory bearing. The threaded portion of each bolt shall project through the nut by at least one thread.
16. In all cases where the full bearing area of the bolt is to be developed, the bolt shall be provided with a washer of sufficient thickness, under the nut so as to avoid any threaded portion of the bolt being within the thickness of the parts bolted together. Column bases and caps, shall be in one solid piece, and except when cut from plates with true surfaces, shall be accurately machined over the bearing surfaces, and shall be in effective contact over the whole area of the machine end of the stanchion.
17. Each piece shall be distinctly marked before delivery in accordance with an approved marking diagram and shall bear such other marks as well to facilitate erection. For easy identification at site a small distinguishing mark for each building shall be painted at each end of every member before dispatch from fabrication shop. The fabricated steel work shall be dispatched in sequence as per agreed program and for such portion as may be found convenient for erection or as ordered by the Authorised Representative of BSCL.
18. The Contractor shall provide suitable packing wherever necessary to guard against damage during handling and transportation to site. All fabricated parts shall be adequately braced to prevent damage during transit.
19. The tolerance for fabrication of steel structures shall generally conform to IS: 7215 and to suit the technological requirements as specified by the equipment supplier.
20. Any fabrication work which is considered not to be in keeping with the Technical Specification forming the Contract, or in absence of Technical Specification with recognized good practice, shall be rectified/replaced/corrected at the Contractor's expense as directed by the Authorised

Representative of BSCL. Site fabrication work shall also conform to all specifications, stipulations, terms and conditions applicable for shop-welded structures as mentioned above.

#### **I. Dispatch Instructions**

1. Each dispatch able structure shall bear mark no. along with reference drawing number at two prominent locations (e.g. on flange and bottom of base plate of a column).
2. "As built" drawing shall be prepared after fabrication is completed to indicate additions/alterations made during the process of fabrication.
3. Control assembly of important structures shall be done in the shop floor before dispatch to avoid mismatching. For all such important structures, match marking shall be given at the control assembly stage in the shop floor as such match markings shall be made clearly visible while assembling the structures at site.
4. Centre lines of column flanges and both sides of web shall be punched preferably at top and bottom to facilitate alignment after erection.

#### **II. ERECTION OF STEEL STRUCTURE**

##### **A. Scope**

The scope of work under erection includes in addition to provision of erection and transport equipment, tools and tackles, consumables, materials labour and supervision the following.

1. Storing and stacking at site of erection of all fabricated structural components/ units/assemblers at the time of erection.
2. Transportation at the site of structures.
3. Receiving at site of structures including site handling /movement, unloading, storing at site of erection of technological structures such as bunkers and the related structure.
4. All minor rectification/ modification such as :
  - a) Removal of bends, kinks, twists etc. for parts damaged during transportation and handling.
  - b) Cutting, chipping, filling, grinding etc. if required for preparation and finishing of site connections.
  - c) Reaming for use of next higher size bolt for holes which do not register or which are damaged.

- d)** Welding of connections in place of bolting for which holes are either not drilled at all or wrongly drilled during fabrication.
- 5.** Other rectification work such as :
  - a)** Re-fabrication of parts damaged during fabrication beyond repair during transportation and handling or incorrectly fabricated.
  - b)** Fabrication of parts omitted during fabrication by oversight or subsequently found necessary.
  - c)** Plug welding and re-drilling of holes which do not register and which cannot be reamed for use of next higher size bolt.
  - d)** Drilling of holes which are either not drilled at all or are drilled at incorrect position during fabrication.
- 6.** Fabrication of minor items/ missing items or such important items as directed by the Authorised Representative of BSCL.
- 7.** Assembly at site of steel structural components wherever required including temporary supports and staging.
- 8.** Making arrangements for and providing all facilities for conducting ultrasonic X-rays or gamma ray tests on welds, getting the tests conducted, reports and interpretation.
- 9.** Rectifying at site damaged portions of shop primer by cleaning and touch-up paint.
- 10.** Erection of structures including making connections by bolts/high strength friction grip bolts/welding.
- 11.** Alignment of all structures true to line level plumb and dimensions within specified limits of tolerances as per IS : 12843 "Tolerance for Erection of Steel Structures"
- 12.** Application of second coat of primer paint and two coats of finishing paint at site after erection.
- 13.** Grouting of all columns bases after proper alignment of columns and only after obtaining clearance from Authorised Representative of BSCL.
- 14.** Supply of labour in sufficient numbers where necessary, as directed by the Authorised Representative of BSCL.

**15.** Conducting preliminary acceptance and final acceptance tests.

**16.** Preparation of as built drawings, preparing of sketches/drawings to suit field engineering decisions, availability of material, convenience of fabrication, transportation and erection and changes during fabrication and erection. All such works are subject to approval by the Authorised Representative of BSCL.

**B. Erection Drawings**

**1.** The erection drawings prepared by the Contractor and any approved arrangement drawings specifications or instructions accompanying them shall be followed in erection of structures and miscellaneous connected items throughout the project.

**C. Storing and handling**

**1.** The fabricated materials on receipt at site shall be carefully unloaded, examined for defects, checked, stored out for each building and stacked securely on skids above level ground which shall be kept and properly drained. Girders and beams shall be placed upright and stored. Long members, such as columns and chord members shall be supported on skids spaced near enough to prevent damage from defection.

**2.** The fabricated materials shall be verified with respect to markings on the marking plan or shipping list which shall be supplied by the Contractor.

**3.** Any material found damaged or defective shall be stacked separately and the damaged or defective portions shall be painted in distinct colour for identification. Such materials shall be dealt with as ordered by the Authorised Representative of BSCL.

**4.** The handling and storing of the component parts of a structure shall involve the use of materials and applications not likely to produce injury by twisting, bending or otherwise deforming the structures. No member slightly bent or twisted shall be put in place until the defects are corrected. Members seriously damaged in handling shall be rejected.

**D. Defects in material fabrication**

**1.** All materials shall be straight unless required to be of curvilinear from and shall be free from twists. All cold straightening shall be done by pressure only.

**2.** During assembly and during erection of the units to position, the Contractor shall compare the



structure with drawings to ensure that there are no fabrication omissions or errors. Should any omission or defect be found the same shall be brought to the notice of the Authorised Representative of BSCL who will issue necessary instructions for the rectification.

**E. Setting out**

1. The Contractor shall prepare geodetic survey of all embedded parts and holding down bolts and submit the same to Authorised Representative of BSCL. The Contractor shall inform the Authorised Representative of BSCL about any discrepancy with approved design drawings well in advance of erection and if necessary shall make necessary adjustments at site during fabrication of structures.
2. The Contractor shall assume, full responsibility for the free and correct setting out of all steel work and erection correctly in accordance with position, alignment, dimensions and levels shown on the approved drawings and plumbing vertical members. Particular care shall be taken to ensure free expansion and contraction wherever provided. Notwithstanding any assistance rendered to the Contractor by the Authorised Representative of BSCL if at any time during the progress of the work, any error should appear or arise therein, on being required to do so, the Contractor at his own cost shall remove and amend the work to the satisfaction of the Engineer-In-charge.

**F. Assembly and Erection**

1. Before starting erection, the Contractor shall submit to the Authorised Representative of BSCL for his approval the method he propose to follow and the number of types of equipment and temporary works he propose to use for the erection.
2. The approval of drawings by the Authorised Representative of BSCL will not relieve the Contractor from the basic approach to design as regards the loads which the erection equipment and temporary work shall be called upon to carry and support. Adequate allowance and provisions shall be made for lateral forces and wind loads.
3. If in the opinion of the Authorised Representative of BSCL, the tools, tackles, plant and equipment, instruments, apparatus etc. arranged by the Contractor are not sufficient or are inadequate for the fulfillment of the contractual obligations of the Contractor within the stipulated period, the Authorised Representative of BSCL will have the right to order the Contractor and the Contractor shall comply with the order to bring /arrange such additional tools, tackles, plant and equipment instruments, apparatus etc. to the site and employ the same to complete the work in time. All charges in connection thereof shall be borne by the Contractor.

- 4.** Proper consideration shall be given to the following items during erection.
- a)** Frame of building to be true and plumb.
  - b)** Temporary guying and bracing shall be used to align the framing during erection if required.
  - c)** Temporary bracing may be required to sustain forces due to erection loads and equipment. Erected parts of the structures shall be made stable during all stages of erection. The stability of structure subjected to the action of wind, dead weight and erection forces shall be attained by observing specified sequence of erection of vertical and horizontal structural members and by installing permanent and temporary bracings.
  - d)** Erection members shall be held securely in place by bolts to take care of dead load, wind load and erection load.
  - e)** Free expansion and contraction wherever provided.
  - f)** No final bolting or welding of joints shall be done until the structure has been properly aligned and consent obtained from Authorised Representative of BSCL.
  - g)** Erection tools and machinery shall be suitable capacity for handling the materials furnished and must be in safe operating conditions at all times to avoid danger to materials and personnel.
  - h)** In positioning beams, columns or other steel members the use of steel sledges shall not be permitted.
  - i)** The Contractor shall report all failures of the fabricated steel to fit together properly to the Authorised Representative of BSCL and shall obtain approval prior to taking corrective measures.
  - j)** Steel members shall not be allowed to fall or be subject to shock or impact due to other members being swung into position or for any other cause.
  - k)** All exposed bolts holes not required shall be plugged.
- 5.** Erection shall be carried out according to the best modern practices and as laid down in the IS: 800-1984 and other relevant standards referred to therein and according to this erection specification together with approved erection drawings and technical specifications.

6. The Contractor shall design, manufacture, erect and provide false work, staging, temporary supports etc. required for safe and accurate erection of structural steel work and shall be fully responsible for the adequacy of the same.
  7. The Contractor shall, if so required by the Authorised Representative of BSCL, get his drawings, erection schemes and designs for such false work, staging etc. approved by the Authorised Representative of BSCL, but such approval by the Authorised Representative of BSCL shall not relieve the Contractor of any of his responsibilities for the safety of such works. As far as possible, assemblies of structures shall be made on the ground itself.
  8. The Contractor shall provide adequate supervision at all stages of the work and examine each portion of the work for accuracy before commencing the erection of the next structural member. The Contractor shall also provide facilities such as adequate temporary access ladders, tools and tackles, instruments etc. satisfactory to Authorised Representative of BSCL / Consultant for his inspection at any stage during erection.
  9. Instrumental checking for correctness of initial setting out of structures and adjustment shall be carried out in sequence at different stages as determined by design as against checking and adjustment of alignment in one stage after completion of entire erection. The final levelling and alignment shall be carried out immediately after completion of each section of a building or when called for by the Authorised Representative of BSCL.
  10. All structural members shall be erected with erection marks in the same relative position as shown in the appropriate erection and shop drawings.
- G. Field connections**
1. The holes of erection joints required to be machine bolted shall be filled with temporary bolts and plugs after mounting the structures. The number of bolts and plugs shall be determined by design but shall not be less than 50% of the total number of holes. In joints where the number of holes is equal to 5 or less, not less than 3 holes shall be filled. The number of plug shall be about 20% of the holes filled.
  2. The number of washers on permanent bolts shall not be more than two (and not less than one) for nut and one for the bolt head. Wooden rams or mallet shall be used for forcing members into position in order to protect the metal from injury and chipped edges shall be finished with a file and all short corner and hammered rough faces shall be rounded off. Chipping with the use of sledge hammer shall only be permitted in exceptional cases and shall be done without resulting in fractured edges.

3. Where bolting is specified on the drawings, the bolts shall be tightened to the maximum limit. The threaded portion of each bolt shall project through the nut by at least one thread. Tapered washers shall be provided for all heads and nuts having bearing on beveled surfaces. Use of special bolts, such as high strength friction grip bolts, shall be according to the relevant Indian or other recognized standards and shall be subject to the prior approval of the Authorised Representative of BSCL before use.
4. Spring washers or lock nuts shall be provided as specified in the design/ shop drawings. All machine fitted bolts shall be perfectly tight and the ends shall be checked to prevent nuts from becoming loose. No unfitted holes shall be left in any part of the structures. All field assembly and welding shall be executed in accordance with the requirements for shop fabrication. Where the steel has been delivered painted, the paint shall be removed before field welding for a distance of at least 50 mm on either side of the joints.
5. Erection bolts shall be retained in position permanently even after site welding.

#### **H. Assembly by high strength friction grip bolts**

1. The mating surface shall be absolutely free from grease, lubricant, dust, rust etc. and shall be thoroughly cleaned before assembly. The preparation of mating surface shall be done as specified in the design drawings.
2. Nuts shall be tightened up to the specified torque with the help of torque wrench or by half turn method with the help of pneumatic wrench lever. Torque value has to be specified in design/ fabrication drawings itself. The direction of tightening of the nuts shall be from the middle towards the periphery of the joint. The bolt head, nuts and edges of the mating surface shall be sealed with a coat of paint to obviate entry of moisture. As far as possible, the diameter of bolts and nature of mating surface preparation shall be kept uniform to have specified unique torque.

#### **I. Bedding and grouting**

1. Base plate shall be set to elevations shown in the drawings supported and aligned using steel wedges and shims or any other approved method. The supply of wedges, shims and any other materials for alignment shall be the responsibility of the Contractor as part of his work. Plates shall be levelled properly positioned and the anchor bolts properly tightened. The bedding/grouting shall not be carried out until a sufficient number of columns have been properly

aligned, plumbed and sufficient girders, beams, trusses and bracing to the satisfaction of the Engineer-In-charge.

2. Grouting shall be done before casting of elevated RCC floor, if equipment contributing to the loading on columns are placed moving equipment shall be tested and no trial run of any equipment before grouting has been done and cured to the satisfaction of the Authorised Representative of BSCL.
  3. Grouting shall be minimum M-25 grade or one grade higher than the concrete with 10 mm and below graded coarse aggregate. Ready mixed free-flow grout from recognized manufacturer as approved by the Authorised Representative of BSCL shall be used with pressure grouting as technique to ensure up of all void spaces underneath the base plate. Manufacturer's recommendation/instruction shall be followed for proper application of grout materials.
  4. The Contractor shall inform the Authorised Representative of BSCL when the work is ready for grouting for their verification. The Contractor shall be responsible for the final vertical and horizontal alignment of all the base plates.
- J.** Painting after erection. The painting shall be as per painting specifications and instructions and in GS for painting works.
- K.** Acceptance of work

1. Acceptance of erected steel structures shall be either after erection of the whole building or in blocks. Intermediate acceptance certificate will be given in the following
  - a) Any steel work or part thereof embedded in concrete.
  - b) Steel structures which are to be covered in the process of further work.
2. The following documents shall be prepared and produced at the time of acceptance of erected steel structures:
  - a) **Documents showing approved deviations made during erection of work.**
  - b) **Documents showing acceptance of embedded structures**
  - c) **Certificate/documents on control checking and tests of nuts and welds.**
  - d) **Data and results of geodetic measurement while checking of structures.**

**III.** Copies of 'As built Drawings' showing thereon all alterations. Welding specifications

#### **A. General**

The welding and welded work shall conform to IS: 816 and other relevant codes unless otherwise specified. Electrodes shall conform to IS: 814 and shall be approved by the Authorised Representative of BSCL.

1. Welding shall be done by Electrical Arc Process, Automatic welding shall be employed for important structures as specified in the drawings. Generally submersed arc. Automatic & Semi-automatic welding shall be employed. Only where it is not practicable. Manual Arc. Welding may be resorted to. In case of Manual Arc. Welding, recommendation of electrode manufacturer are to be strictly followed.
2. Welding shall not be done under weather conditions which might adversely affect the efficiency of the welding and where necessary, effective protection and other safeguard shall be provided.
3. Only qualified welders suitable for the job shall be employed. The Authorised Representative of BSCL at his discretion can order periodic tests in accordance with IS: 817 of the welders and/or of the welds produced by them at no extra cost. Welding shall be done using requisite jigs and fixtures to avoid distortions or damage to members during /after welding. Welds on exposed work shall be finished uniformly smooth to present a neat appearance.

#### **B. Welding procedure**

1. Welding procedure to be prepared by the Contractor shall include the following.
  - a) Type and size of electrodes.
  - b) Current and voltage (for automatic welding)
  - c) Length of run per electrode or (for automatic welding) speed of travel.
  - d) Number and arrangement of runs in multi-run welds.
  - e) Position of welding
  - f) Preparation of set up parts
  - g) Welding sequence
  - h) Pre or post heating
  - i) Specifications and thickness of steel
  - j) Welding process (manual arc. /submerged arc. Welding)
  - k) Pre and post heating requirement
  - l) Weather condition — restriction thereof
  - m) Use of jigs and fixtures
  - n) Type of non-destructive testing to be carried out
  - o) Inspection procedure to be followed
  - p) Sequence and process to be followed in different multiple pass butt welding for different plate thickness.

The welding procedure shall be subject to Authorised Representative of BSCL approval.

2. The indicated in the drawings and the position in which the welding is to be carried out. The welds shall meet the requirement of quality specified. welding procedure shall be arranged to suit the details of the joints as
3. All electrodes for use in the work to which the specification relates shall be kept under dry conditions. Electrodes which are damaged by moisture shall not be used unless it is certified by the manufacturer that when it is properly dried there shall be no determinable effect. Any electrode which has part of its flux coating broken away or is otherwise damaged shall be discarded.
4. Low hydrogen electrode and flux for submerged arc. Welding shall be dried at 250-300 deg. C for one hour in drying oven before use.
5. At site the electrode shall be kept in proper coves while using them for welding.
6. All metal arc. Welding shall be as per IS : 9595
7. For multi-run weld deposit the succeeding run shall be done only after the preceding run is cleaned of all slag and flux deposit.
8. The Contractor shall prepare the edge with an automatically controlled flame cutting torch followed by grinding correctly to the shape, size and dimensions of the groove, prescribed in the design and shop drawings. In case of U-groove joint, the edges shall be prepared with an automatic flame cutting torch in two passes following a bevel cut with a gouging pass or by machining.
9. The welding surface shall be smooth, uniform and free from fins, tears, notches or any other defect which may adversely affect welding. Welding surface or the surrounding surface within 50 mm of weld shall be free from loose scale, slag, rust, grease, paint, moisture or any other foreign materials. Pre-bending of plates for three plate welded sections shall be done where found necessary.
10. Manipulators may be used where necessary and shall be designed to facilitate welding and to ensure that all welds are easily accessible to the operators. Where full strength built welds are specified run-on pieces shall be used. The welding shall be such that the face of weld deposit at all places be proud of the surface of the parent metal by 1 to 1.5 mm. Where a flush surface is

required the surplus weld metal shall be ground and dressed off.

11. After completing each run of weld all slag shall be thoroughly removed and the surface cleaned before starting the next run of weld. The weld metal as deposited (including lack welds if to be incorporated) shall be free from cracks, slag, inclusions, gross porosity, cavities and other deposition faults. The weld metal shall be properly fused with the parent metal without serious undercutting or overlapping at the toes of the weld. The surface of the weld shall have a uniform and consistent contour and uniform appearance.
  12. All weld runs found defective shall be cut by using either chipping hammer gouging torch or suitable grinding wheel in such a manner that adjacent materials is not injured in any way. Peeling of the welds involving deformation of the weld surface either during de-slagging or thereafter shall not be allowed.
  13. Arc.-strikes on parent surface of structures shall be strictly avoided.
- C. Control in welding The extent of quality control in respect of welds for structural elements for both statically and dynamically loaded structure shall be as follows and shall be conducted by the Contractor at his own cost.
1. Visual Examination - All welds shall be 100% visually inspected to check the following.
    - a) Presence of under cuts
    - b) Visually identifiable surface crack in both welds and base metal
    - c) Unfilled craters
    - d) Improper weld profile and size
    - e) Excessive reinforcement in weld
    - f) Surface porosity Before inspection, the surface of weld metal shall be cleaned of all slag, spatter, beads, scales , etc., by using wire brush or chisel.



2. Dye Penetration Test (DPT) – This shall be carried out for all important fillet welds and groove welds for both statically and dynamically loaded structures to check the following
  - a) Surface cracks
  - b) Surface porosities Dye Penetration Test shall be carried out in accordance with American National Standard ASTM E-166
3. Ultrasonic Testing – Ultrasonic test shall be conducted for atleast 10% groove welds and heat affected zone in dynamically loaded structures and for other important load bearing butt welds in statically loaded structures as desired by the Authorised Representative of BSCL to detect the following.
  - a) Cracks
  - b) Lack of fusion
  - c) Slag inclusions
  - d) Gas porosity Ultrasonic testing shall be carried out in accordance with American National Standard ANSI/AWS D1.1-96. Before ultrasonic test is carried out, any surface irregularity like undercuts, sharp ridges , etc., shall be rectified. Material surface to be used for scanning by probes must allow free movement of probes. For this purpose, surface shall be prepared to make it suitable for carrying out ultrasonic examination.
4. Radiographic Testing (X-ray and & Gamma-Ray Examination) This test shall be limited to 2% of length of welds for welds made by manual or semi automatic welding and 1% of length of weld if made by automatic welding machines. The location and extent of weld to be tested by this method will be decided by the Owner to detect the following defects.
  - a) Gas porosity
  - b) Slag inclusion
  - c) Lack of penetration
  - d) Lack of fusion
  - e) Cracks

Radiographic testing shall be conducted in accordance with American National Standard ANSI/AWS D1.1-96. Any surface irregularity like undercuts, craters pits , etc., shall be removed before conducting radiographic test. The length of weld to be tested shall not be more

than 0.75xfocal distance. The width of the radiographic film shall width of the weld joint plus 20 mm on either side of the weld.

5. The Contractor shall get all non-destructive tests for confirming the integrity of welding wherever necessary as directed by the Authorised Representative of BSCL on site and other radioactive tests periodically through a specialized lab and certificates to be submitted periodically.
6. Acceptable Limits of Defects of Weld - Limits of acceptability of welding defects shall be as follows:
  - a) Visual inspection and Dye Penetration Test The limit of acceptability of defects detected during visual inspection and Dye Penetration Test shall be in accordance with American National Standard ANSI/AWS D1-96.
  - b) Ultrasonic Testing – The limits of acceptability of defect detected during ultrasonic testing shall be in accordance with American National Standard ANSI/AWS D1-96
  - c) Radio-graphic Testing – The limit of acceptability of defects during Radiographic testing shall be in accordance with American National Standard ANSI/AWS D1-96. General guidelines for permissible deviations in welding have been given in section 11.0 of this document.

**D. Rectification Defects in Welds** In case of detection of defects in welds, the rectification on the same shall be done as follows .

1. All craters in the weld and breaks in the weld run shall be thoroughly filled with weld.
2. Undercuts, beyond acceptable limits shall be repaired with dressing so as to provide smooth transition of weld to parent metal.
3. Welds with cracks and also welds with incomplete penetration, porosity, slag inclusion , etc., exceeding permissible limits shall be rectified by removing the length of weld at the location of such defects plus 10 mm from both ends of defective weld and shall be re welded. Defective weld shall be removed by chipping hammer gouging torch or grinding wheel. Care shall be taken not to damage the adjacent material.

#### **IV. PAINTING OF BUILDING STEEL STRUCTURES**

All steel structure work shall be painted as follows unless otherwise stated in the drawing/technical specifications. Relevant sections of the GS shall be referred for further guidelines on painting.

- A. Surface preparation for encased columns** The steel surface which is to be painted will be cleaned of dirt and grease and the heavier

layer of rust shall be removed by chipping prior to actual surface preparation to a specified grade. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:1992. Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning. Abrasive blast cleans to Sa 2-<sup>1</sup>/<sub>2</sub> (ISO 8501-1:1988) or SSPC-SP6. If oxidation has occurred between blasting and application, the surface should be re-blasted to the specified visual standard. Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

**B. Paints and Painting Guidelines** stipulated here shall be considered along with those specified in General Specifications separately for painting.

1. Manufacturer of paints, mixing of paints, etc., shall be generally according to the relevant IS codes of practice and as per guidelines in the General Specification in the relevant chapter.
2. In the event of conflict between this General Specification for painting and the paint manufacturer's specifications, this conflict shall be immediately brought to the notice of the Authorised Representative of BSCL. Generally in case of such conflict, manufacturer's specification /recommendations shall prevail.
3. Generally compatibility between primer intermediate and finishing paint shall be certified by the paint manufacturer supplying the paints. Before the Contractor buys the paint in bulk, it is recommended to obtain sample of paint Control Areas of Painting on Control Area, surface preparation and painting shall be carried out in the presence of the manufacturer of paint.

## **V. Inspection and Testing of Welds**

The extent of quality control in respect of welds for structural elements shall be as follows.

### **A. Visual Examination**

1. All welds shall be 100% visually inspected to check the following:
  - a) Presence of undercuts
  - b) Surface cracks in both welds and base metals.
  - c) Unfilled craters
  - d) Improper weld profile and size
  - e) Excessive reinforcement in weld
  - f) Surface porosity
2. Before inspection, the surface of weld metal shall be cleaned of all slag, spatter matter, scales, etc., by using wire brush or chisel.

### **B. Dye Penetration Test (DPT)**

1. This shall be carried out for all important fillet welds and groove welds to check the Surface cracks and Surface porosities
2. Dye Penetration Test shall be carried out in accordance with American National Standard ASTM E

**C. Ultrasonic testing:**

1. Ultrasonic test shall be conducted for at least 10% groove welds and heat affected zone in dynamically loaded structures and for other important load bearing butt welds in statically loaded structures as desired by OWNER to detect the following:
  - a) Cracks
  - b) Lack of fusion
  - c) Slag inclusions
  - d) Gas porosity
2. Ultrasonic Testing Shall Be Carried Out In Accordance With American National Standard ANSI / AWS D1-92 Chapter 6 : Part C.
3. Before Ultrasonic test is carried out, any surface irregularity like undercuts, sharp ridges , etc., shall be rectified. Material surface to be used for scanning by probes must allow free movement of probes. For this purpose, surface shall be prepared to make it suitable for carrying out ultrasonic examination.

**D. Radiographic Testing (X-Ray and Gamma-Ray Examination)**

1. This test shall be limited to 2% of length of welds for welds made by manual or semi-automatic welding and 1% of length of weld if made by automatic welding machines. The location and extent of weld to be tested by this method shall be decided by OWNER to detect the following defects:
  - a) slag inclusions
  - b) lack of penetration
  - c) lack of fusion
  - d) Cracks
2. Radiographic testing shall be conducted in accordance with American National Standard ANSI / AWS D1.1-92.
3. Any surface irregularity like undercuts, craters, pits etc. shall be removed before conducting radiographic test. The length of weld to be tested shall not be more than  $0.75 \times$  focal distance. The width of the radiographic film shall be width of the welded joint plus 20 mm on either side of the weld.

**E.** CONTRACTOR shall provide testing equipment for conducting nondestructive tests for confirming the integrity of welding wherever necessary as directed by the purchaser / consultant.

**F.** Acceptable Limits of defects of weld

**1. Visual inspection & Dye Penetration Test**

The limits of acceptability of defects detected during visual inspection and Dye Penetration Test shall be in accordance with clauses 8.15.1 & clauses 9.25.3 of American National Standard ANSI / AWS D1.1-92 respectively, for statically and dynamically loaded structures.

**2. Ultrasonic Testing**

The limits of acceptability of defects detected during ultrasonic testing shall be in accordance with clause 8.15.4 & clause 9.25.3 of American National Standard ANSI / AWS D1.1-92 respectively, for statically and dynamically loaded structures.

**3. Radiographic Testing**

The limits of acceptability of defects detected during Radiographic testing shall be in accordance with clause 8.15.3 & 9.25.2 of American National Standard ANSI / AWS D1.1-92 respectively for statically and dynamically loaded structures.

**G. Rectification of Defects in Welds**

**1. The rectification of defects in welds shall be done as follows:**

- a)** All craters in the weld and breaks in the weld run shall be thoroughly filled with weld
- b)** Undercuts, beyond acceptable limits, shall be repaired with dressing so as to provide smooth transition of weld to parent metal.
- c)** Welds with cracks and also welds with incomplete penetration, porosity, slag inclusion , etc., exceeding permissible limits shall be rectified by removing the length of weld at the location of such defects plus 10 mm from both ends of defective weld and shall be re-welded. Defective weld shall be removed by chipping hammer gouging torch or grinding wheel. Care shall be taken not to damage the adjacent material.

**GUIDELINE FOR INSPECTION OF WELDING**

| Sr. No. | Inspection or Test                   | Coverage  | Procedure          | Evaluation findings & remedy of defects. |
|---------|--------------------------------------|-----------|--------------------|--|
| 1       | Inspection of weld seams appearances | All welds | Naked eye or lens. | All faulty welds shall be rectified.     |

|   |   |                                 |  |  |
|---|---|---------------------------------|--|--|
| 2 | Checking of sizes   | At least one for each weld seam | Ordinary measuring instruments (rule, templates) | Should faulty weld be found all welds shall be checked and all defects shall be rectified? |
| 3 | Mechanical tests for welding procedure performance & electrodes |                                 | As per IS 9595.                                  | As per IS 9595.  |

## VI. SHOP INSPECTION AND APPROVAL

### A. General

the Authorised Representative of BSCL or his representatives shall have free access at all reasonable times to the fabrication shop and shall be afforded all reasonable facilities for satisfying himself that the fabrication is being undertaken in accordance with drawings and specifications. Technical approval of the steel structures in the shop by the Authorised Representative of BSCL is mandatory.

The Contractor shall not limit the number and kinds of test, final as well as intermediate tests or extra tests requested by the Authorised Representative of BSCL. All necessary tools, gauges, instruments etc. and technical and non-technical personnel shall be furnished for shop tests to the Employer at contractor's cost as and when required by the Authorised Representative of BSCL.

### B. Shop Acceptance

The Authorised Representative of BSCL shall inspect and approve at the following stages-

#### 1. Intermediate approval of work that cannot be inspected later.

- a) Intermediate approval of work shall be given when a part of the work performed cannot be inspected later or when inspection would be difficult to perform and results would not be satisfactory.

#### 2. Partial approvals.

- a) Partial approval in the shop is given on members and assemblies of steel structures before the primer coat is applied and include:
  - (1) Approval of field joints.
  - (2) Approval of parts with planned surfaces.
  - (3) Test erection
  - (4) Approval of members
  - (5) Approval of markings.
  - (6) Inspection and approvals of special features like rollers, loading platform mechanism etc.
  - (7) During the partial approval, intermediate approvals as well as all former approvals, shall

be taken into considerations.

**3. Final approval.**

- a) The final approval refers to all elements and assemblies of the steel structures, with shop primer coat, ready for delivery from shop, to be loaded for transportation or stored.

The final approval comprises of -

- (1) Partial approvals.
- (2) Approval of shop primer coat
- (3) Approval of mode of loading and transport, approval of storage (for materials stored)

**VII. INSPECTION ON SITE**

**A. General**

Contractor shall give due notice to Authorised Representative of BSCL in advance of structural members or workmanship getting ready for inspection. All rejected material shall be promptly removed from the shop and replaced with new material for Engineer- in-charge's approval. The fact that certain material has been accepted shall not invalidate final rejection at site by Authorised Representative of BSCL if it fails to be in proper assembly. No material shall be painted or dispatched to site without inspection and approval by Engineer-in- charge. Shop inspection by Authorised Representative of BSCL or submission of test certificate and acceptance thereof by Authorised Representative of BSCL shall not relieve Contractor from the responsibility of furnishing fabricated material conforming to requirements of these specification nor shall it invalidate any claims which Employer may make because of defective, unsatisfactory workmanship.

For fabrication work carried out on the field, the same standard of supervision of quality control shall be maintained as in shop fabricated work. Inspection and testing shall be conducted in a manner satisfactory to Authorised Representative of BSCL. Members shall be inspected at all stages of fabrication and assembly or verify that dimensions, tolerances, alignment, surface finish etc. are in accordance with the requirements shown on drawings and as per IS codes. In the event of any failure of members to meet an inspection or test requirement contractor shall notify Authorised Representative of BSCL. The quality control procedure to be followed to ensure satisfactory repair shall be subject to approval by Engineer-in- charge. In such cases, Employer has right to specify additional inspection or testing as deems necessary and the additional cost of such testing will be borne by Contractor. Holes in members required for installing equipment or steel furnished by other manufacturers or other contractors shall be drilled in Contractor's shop as part of this contract the information for which will be supplied before fabrication of steel.

- B. Packing, Transportation, Delivery** After final shop acceptance and marking, the item shall be packed and loaded for transportation. Packing must be adequate to protect items against warping during loading and unloading. Proper lifting devices shall be used for loading, in order to protect items against warping. Slender projecting parts shall be braced with additional steel bars,

before loading, for protection against warping during transportation rules. If certain parts cannot be transported in the lengths stipulated in the design, the position and type of additional splice joints shall be approved by Authorised Representative of BSCL. Damaged parts and members due to transportation may be rejected by Authorised Representative of BSCL and re fabricated at site or at shop and redelivered at Contractor's cost.

Items must be carefully loaded on platforms of transportation means to prevent warping, bending or falling, during transportation. The small parts such as fishplates, plates, gussets etc. shall be securely tied with wire to their respective parts. Bolts, nuts and washers shall be packed and transported in crates. The parts shall be delivered in the order stipulated by the Authorised Representative of BSCL and shall be accompanied by document showing:

Quality and quantity of structure or members    Position of member in the structure    Particulars of structure    Identification number / job symbol

- C. Storage and Preparation of Parts prior to erection the storage plane for steel parts shall be prepared and got approved by the Authorised Representative of BSCL before the steel structures start arriving from the shop. A platform shall be provided by the Bidder near the erection site for preliminary erection work.

The Contractor shall make the following verifications upon receipt of material at site: For quality certificate regarding material and workmanship according to the general specifications and drawings.

Whether parts received are complete without defects due to transportation, loading and unloading and defects, whether the defects if any are well within the admissible limit. For the above work sufficient space must be allotted in the storage area. The storage area should be clean and free of water and moisture and should be approved by Authorised Representative of BSCL. Precautions shall be taken to prevent warping of items during unloading. The parts shall be unloaded, sorted and stored so as to be easily identified. The parts shall be stored according to construction symbol and markings so that these may be taken out in order of erection / sequence. The parts shall be set at least 150 mm clear from ground on wooden or steel blocks for protection against direct contact with ground moisture. If minor rectification of members like straightening etc. are required, these shall be done in a special place allotted which shall be adequately equipped. The parts shall be clean when delivered for erection.

## I. TOLERANCES

The dimensional and weight tolerances for rolled shapes shall be in accordance with IS 1852. The acceptable limits for straightens (sweep and camber) for rolled or fabricated member are: Struts and columns =  $L / 1000$  or 10mm whichever is smaller. All other members - $L/500$  or 15 mm where L: Length of finished member tolerances in specified camber of structural members shall be = 3 mm



Tolerance in specified length shall be: for column finished for contractor bearing -1 m other members up to 10 mm - 3 mm.

## ROOFING SYSTEM

Supply, Fabrication, Erection and installation of 0.45mm bmt colour (0.5 mm TCT) coated Trim Deck profile, structural architectural insulated colour coated steel roofing system; of nominal 150-350mm effective cover width, 25-35mm rib height, fixed to every purlin. The profile should be capable to take care of flat, curved or tapered shapes to achieve various architectural requirements.

The steel sheet shall be 0.45 mm bmt (0.50mm TCT) having yield strength 300MPa ( $F_y=300\text{Mpa}$ ), metallic coated with Zinc-Aluminum alloy (i.e. 55% Al, 43.4% Zinc, 1.6% Si), AZ150 (min 150 gm/m<sup>2</sup> total on both side) conforms to IS15961 / AS1397, pre-painted with Super Durable Polyester paint system includes inorganicinfrared reflective pigment (High SRI-"Thermatech technology") of 20µm exterior coat on top surface and 5µm reverse coat on back surface over 5µm primer coat on both surfaces of approved colour shade by concern authority. The sheet conforms to general requirement of AS/NZS 2728 type 4 / IS 15965 class 3 durability and BIS registration having the license of Bethlehem International Engineering Corporation (BIEC).

The sheet shall have brand marking of the manufacturer giving product details on the back of the sheet at every 1 meter c/c for confirming genuinely of the material. Concealed fix cladding shall be fixed using Hex head, self-drilling screw as per AS 3566- 2002 Class 3 fasteners of approved make as per the requirement considering the profile shape and design load. The fastener size shall be calculated as per the design or manufacturers recommendations the profile sheet, fastener size etc. shall be approved by the concern authority. The measurement shall be based on finished/covered surface area.

The insulation shall be 50-60 mm thick (wrapped in 200 G Virgin Polythene bags) Resin Bonded Rockwool conforming to IS: 8183, density 48 kg/ m<sup>3</sup>, to achieve minimum U value of 0.36 W/m<sup>2</sup> K, as approved by Authorised Representative of BSCL.

The liner sheet shall be reversed profile having 1015 mm effective cover width, 28-32mm rib height, spaced at 195-205 mm center with subtle square fluting in the pan. The sheeting material shall be 0.45 mm Base Metal Thickness (BMT), Hi-Strength steel with min. 550 MPa yield strength, metallic hot dip coated with AZ150 Aluminum-zinc alloy (55% Aluminum, 45% Zinc) as per IS 15961.

The colour coated sheet shall be oven baked Super Durable Polyester paint system of 20 microns on exposed surface and 5 micron reverse polyester coat on back surface over 5 micron primer coat on both surfaces of approved colour. The exposed paint system shall have stable inorganic pigments for better colour performance conforming to AS/NZS 2728 type-4 / IS15965 class 3 for the durability having the license of Bethlehem International Engineering Corporation (BIEC) or relevant licensing authority.

The supplier and applicator shall have the necessary ISO 9001:2000, 14001:2004 & OHSAS 18001 certification or relevant certification. The insulation material should conform to ECBC /GRIHA recommendation.

The two sheets shall sandwich with 50 mm thick (wrapped in 200 G Virgin Polythene bags) Resin Bonded Rockwool conforming to IS: 8183, density 48 kg/ m<sup>3</sup>, to achieve minimum U value of 0.36 W/m<sup>2</sup> K and SITC of 39 db. The entire Double skin system is installed over the structure purlin. The contractor shall prepare the shop drawings based on the drawings supplied by the Authorised Representative of BSCL for approval. The rate shall include for flashings, sealants and work shall carried out by specialized agency. (The erection / fixing / installation shall be done by specialised agency as approved by BSCL)

The above work shall be carried out by an agency having sufficient experience in concerned work and should ensure a guarantee for any defective installation, material composition and water tightness for a period of 10 years from the date of completion of the said work. Only skilled and experienced persons shall be employed for this purpose.

#### SPECIFICATIONS: -

- (a) The thermal U value of the roof built-up shall be minimum of 0.26 W/m<sup>2</sup>K.
- (b) Acoustic requirement: Sound Transmission class (STC) = 39±3 – Impact Insulation (IIC) = 42±3.

#### Specifications for Self Drilling Fasteners

Self-drilling fasteners would comply as per following specifications:

- a) Resistance to corrosion : Neutral Salt Spray Test for 1000 hrs.
- b) Humidity exposure test : 1000 hrs.

#### ACCESSORIES

##### Self-drilling roofing and wall cladding Fasteners

The steel sheet shall be fastened with min. 40 micron zinc coated (hot dipping) or min. 25 micron Zinc-Tin alloy coated (mechanically plated with min 8 porosity rating, coating composition should be 20-30% Sn) Hex head, self-drilling screw as per AS 3566; 2002 Class 3 fasteners of approved make (Buildex / Roofix or equivalent) with EPDM washer on each crest of sheets for connecting with purlin (or as per design) perpendicular to the sheeting and in the Centre of the corrugation or rib. The fastener size shall be calculated as per the design requirement.

##### Sealant

It should be acetic acid free and amine-free neutral curing silicone rubber sealant of approved make. It shall be applied at all end laps as per manufacturer's recommendation and approval by Authorised Representative of BSCL.

#### ERECTION AND FIXING

- (a) The installation shall be done in accordance to the standard practices as specified by the manufacturer and as approved by the concern authority. All sheets and accessories must be stored and finally erected without any damage.
- (b) Single length sheet shall be installed from ridge to eave (on site roll forming) or the end laps shall be 200mm (min) with appropriate two silicon strip barrier and fasteners as per manufacturer's recommendations.
- (c) The contractor shall also submit methodology for fixing and also a maintenance manual for routine maintenance.
- (d) Flashing, capping and trims shall be manufactured from the material in the length as per manufacturer's recommendation. The shape and girths shall be as per design requirement and shall be approved by the concern authority.
- (e) The contractor shall ensure that panel erector is familiarized with the erection procedure and all the supporting members are straight, level and true (according to AISC) before starting panel erection, Panels shall be erected according to approved shop drawings by the concern authorities.

#### Warranty period

The Roofing System shall be guaranteed for 10 years (05 years Guarantee Bond (BG) of value of 5% of total roofing system + 05 years Corporate Guarantee) by the manufacturer with regards to its performance parameters, material composition, surface properties and Physical Properties, in legal paper as per acceptable format.

The installation team shall be fully trained and approved by the manufacturer. All installation team must obtain the training certificate from the manufacturer and also certify that the installation team is qualified to install approved roof system. The printed instructions; installation manual shall be strictly adhering to.

In addition, the manufacturer should employ necessary personal at site to supervise the installation work and shall provide workmanship warranty bond on Rs. 100/- Non Judicial stamp Paper for any defective installation, water tightness of the system- for a period of 5years ( from the date of completion of the said work, as per special conditions.

Resin Bonded Rockwool (wrapped in 200 G Virgin Polythene bags) Sandwich Panel Wall System conforming to IS: 8183, density 48 kg/ m<sup>3</sup>, to achieve minimum U value of 0.36 W/m<sup>2</sup> K. The Thickness of the panel will be 80mm. Rest specifications will be same as above for roof system.

## Passenger Lift

### Type of lift

(12-16 Passenger lift without machine room)

### Service condition

Ambient Temperature & Relative Humidity: 4 Deg C(Min)- 50 Deg C(Max) & up to 95% RH

### Scope of Supply

Scope of work: Design, Fabrication, Supply, Installation, Commissioning, packing, forwarding, transportation to I-TMT site, unloading, furnishing of final drawings and manuals ,handling at site, performance demonstration and performance acceptance etc. of 16 passenger capacity lift, to make the system complete in all respects and required civil work as per technical Specification & as per the tender document.

#### Lift Capacity

|                                  |  |
|----------------------------------|--|
| CAPACITY                         | 16 persons   |
| SPEED (mps)                      | 1 mps  |
| STOPS                            | As per Drawing & Design  |
| CONTROLLER TYPE                  | ACD3-MR  |
| DRIVE                            | VF Regenerative (Closed Loop)                                  |
| POWER SUPPLY                     | 400/415 Volts (3 Phase AC) / or as per man specs.              |
| OPERATION                        | Full collective operation                                      |
| MACHINE                          | PM Gearless (Located above shaft)                              |
| TRACTION MEDIA                   | Flat Coated Steel Belt / or as per manufacturers specification |
| CAR FINISH                       | Rear Panel =SS Hairline finish                                 |
|                                  | Side Panels = SS Hairline finish                               |
|                                  | Front Panels = SS Hairline finish                              |
| FALSE CEILING TYPE               | metallic with LED light fixtures                               |
| FLASE CEILING FINISH             | Black Powder coated  |
| VENTILLATION                     | Cross flow fan   |
| HAND RAILS                       | Stainless Steel Mirror Finish Handrails on rear car panels     |
| FLOORING                         | Heavy duty Vinyl Tiles   |
| CAR DOOR FINISH                  | Stainless steel - Hairline finish                              |
| LANDING DOORS FINISH             | Stainless steel - Hairline finish                              |
| FIRE RATED DOORS                 | Fire rating-60mins   |
| HOISTWAY DIMENSIONS (W x D – mm) | 2.0 m x 2.0m   |
| CAR DIMENSIONS (W x D x H - mm)  | As per manufacturer specs                                      |

|                           |   |
|---------------------------|---|
| CAR & HOISTWAY DOOR TYPE  | Central opening (CO) doors  |
| DOOR OPENING (W x H - mm) | 800 mm (W) x 2100 mm (H)  |
| DOOR OPERATOR             | DC Door Operator  |
| COP                       | Gien Buttons in Stainless Steel #4(Hairline)  |
| CAR POSITION INDICATOR    | (RED LED) Scrolling Display   |
| HALL FIXTURES             |   |
| HALL FIXTURE FACE PLATE   | Stainless Steel #4(Hairline)  |
| HALL BUTTON ARRANGEMENT   | Hall Button with HPI  |
| STANDARD FEATURES         | Anti-nuisance Car Call Protection, Independent Service (for Duplex only), Overload Device, Nudging, Emergency   |
|                           | Firemen's Service, Emergency Car Light Unit, Infrared Curtain Door Protection, Door Time Protection, Emergency Alarm Button, Extra Door Time of Lobby & Parking, Door Open/Close Button, Manual Rescue Operation, Belt Inspection Drive, Auto Fan Cut Off |
| OPTIONS REQUIRED          | Automatic Rescue operation, Voice Synthesizer   |
| OPTIONS REQUIRED          | Mirror on rear side wall  |

General requirements of lifts shall be as follows:

- i. Landing doors in lift enclosures shall have a fire resistance of not less than one hour.
- ii. Lift car door shall have a fire resistance rating of one hour.
- iii. Grounding switch(es), at ground floor level, shall be provided on all the lifts to enable the fire services to ground the lifts.

## Landscape Works

The Landscape scope includes procure, supply, construction, installation, furnishing, equipping, testing, commissioning and execution of landscaping works [softscape], irrigation and fountains for entire integrated Bareilly Haat and Handicrafts building complex including mockup for Landscaping items in accordance with the Drawings in RFP,

- Site grading as per the requirements
- Good garden earth & manure
- Trees, shrubs, ground covers, lawns
- Drip irrigation system for trees and shrubs.
- Sprinkler system for lawns
- Tree Plantation

→ The Contractor will supply and install barricades for safeguarding landscape development area and works. He may also install the barricades in the landscape development area according to his own understanding if he feels that any part of the landscape area is bound to be damaged for any reason, Contractor shall follow pre construction and during construction soil erosion control measures as per the NBC.

The planting work shall include but not be limited to the following:

- a. Provide for all plant material as per the approved landscape Drawing
- b. Provide labour, equipment, services and transport.
- c. Provide planting soil from approved source.
- d. Provide topsoil for all plants.
- e. Provide fertilizers, chemicals and manure and stakes as specified.
- f. Prepare and stake out all planting locations.
- g. Prepare plants pits, back filling; prepare "sources" for watering, adding soil after settlement.
- h. Spraying insecticides as required, before planting.
- i. Staking, supporting, wrapping and tying all major trees and shrubs.
- j. Transplanting, if any
- k. Disposal of debris and unused materials.

Street furniture and lighting equipment have a major impact on the appearance of complex and will be planned as part of the overall design concept.

#### **PLANTATION OF TREES AND HEDGES.**

The work shall consist of:

- a) Planting of tree saplings in median or other designated locations.
- b) Planting of hedges within median area.
- c) Transplanting of trees within the site.

#### **Materials**

##### **Dump Manure**

Dump manure shall be of well decayed (at least six months) organic or vegetable matter, obtained in the dry state from the municipal dump or other similar sources approved by the Employer's Engineer. The manure shall be free from earth, stone, brickbats or other extraneous matter.

##### **Farmyard Manure**

Farmyard Manure shall be well decayed (should be at least 6 months covered in dump), free from grits and any other unwanted materials.

##### **Good Earth**

The soil shall be agricultural soil of sandy-loam texture, free from kankar, murrum, shingle, stone, brickbats, building rubbish and any other foreign matter. The earth shall be free from clods or lumps of sizes bigger than 75mm in any direction. It shall have pH value ranging between 6.0 to 8.5.

## Sapling of Trees

The sapling of trees shall be of medium height, leafy type and draught resistant variety native to the area and be of good quality of minimum of 2m height or caliper dia of 25mm as directed by the Employer's Engineer.

## Sapling of Hedges

The saplings shall be of draught resistant variety normally grown for hedges in the area, approved by the Employer's Engineer.

## ELECTRICAL

Electrical Works Specifications:

All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC and equivalent IS standards.

- i. Scope of job: Scope of Job include Survey, design, Supply, installation, testing & Commissioning of new Electrical System (Main Panel Boards, Lighting DP, Lighting Fixtures & Switches)

Electrical: Applicable Standards

| Particulars  | Standards               |
|--|-------------------------|
| High Voltage / Low Voltage Pre-Fabricated Substation | IEC 61330/ 62271-202    |
| Switches   | IEC 60265               |
| Metal Enclosed Low Voltage Switchgear                | IEC 60298/ IEC62271-200 |
| Low Voltage Switchgear and Control gear              | IEC 60439               |

- Earthing: Separate Earthing Pit need to construct for earthing of Main MCC, Distribution Panel Boards Pump Motors, Lifts , Air-conditioning and shall be in accordance with IS3043-1987.
- Lightning Protection to be done as per the IS Codes applicable.
- Safety parameters as indicated under Indian Electricity Rules 1956 and ECBC shall be complied.
- Earth resistivity test shall be carried out in accordance with IS Code of Practice for Earthing IS 3043.
- Specifications in respect of conductor material, their installation & jointing and providing earth electrode shall be as stipulated in "EARTHING" sections of Technical Specifications of this tender document.
- The lightning protection system shall use either copper or GI as conducting material throughout.
- Galvanizing shall conform class – IV of IS 4736: 1986. Longest possible unbroken lengths of conductors shall be used to eliminate or at least minimize mid run jointing.

- No work shall be undertaken on live installations, or on installations which could be energized unless one another person is present to immediately isolate the electric supply in case of any accident and to render first aid, if necessary.
- Measures shall be taken to identify the Electrical Environment Impacts (hazards) arising during the land preparation for use, building construction operation, and the entire cycle activities of the project and proper mitigation measures shall be adopted.
- All the standards, codes or legal requirements required to be adopted during the installation of electrical equipment.

### 3. Energy Saving Practices:

- Energy efficient lamps will be provided within the complex, Location/Area.
- Constant monitoring of energy consumption and defining targets for energy conservation.
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels.
- The following safety measurement are considered:
  - IS:732- 1989 Code of practice for electrical wiring installations.
  - IS:8061- 1976 Code of practice for design, installation and maintenance of service lines up to and including 650V
  - IS: 11353- 1985 Guide for uniform system of marking and identification of conductors and apparatus terminals
  - IS: 3646(Part-1)-1966 Code of practice for interior illumination: Principles for good lighting and aspects of design.
  - IS: 3646(Part-2)-1966 Code of practice for interior illumination: Schedule of illumination and glare index.
  - IS: 3043 - 1987 Code of practice for Earthing.
  - IS: 5216(Part-1)-1982 Guide for safety procedures and practices in electrical work
  - IS:3480 - 1966 Flexible steel conduits for electrical wiring.
  - IS:2667 - 1988 Fittings for rigid steel conduits for electrical wiring
  - IS: 3854 - 1988 Switches for domestic and similar purposes.
- UPS supply: supply, Installation & commissioning of UPS (as per calculated requirement) for at least 60 Min backup supply for the project.

#### A. LED LIGHT LUMINAIRES:

CODES & STANDARDS: IEC 60529 Classification of degree of protections provided by enclosures (IP Codes)

- EN 55015 / CISPR15 Limits and methods of measurement of radio disturbance characteristic of electrical lighting and similar equipment.



- IEC 62031 LED modules for general lighting-Safety requirements
- EN 61547 Equipment for general lighting purposes-EMC immunity requirement.
- IEC 60598-Part-2, Sec-3, Luminaries for road and street lighting.
- IEC 60598-2-1 Fixed general-purpose luminaries
- IEC 60598-1 Luminaries - General requirement and tests
- IEC 60068-2-38 Environmental Testing: Test Z- AD: composite temperature/ humidity cyclic test
- IS 10322 Specification for the luminaries
- LM 80 Lumen Maintenance
- RoHS (Reduction of Hazardous Substances)
- IEC 61347-1 ed. 2.0 for Lamp control gear - Part 1: General and safety requirements
- IEC 61000-4-5 Electromagnetic Compatibility (EMC) – Surge Immunity Test.

LED Modules/Fixtures: ANSI rated LEDs from reputed makes such as Syska, LG / Nichia, Japan / Cree, USA / Bridgelux, USA / Lumiled USA / Osram /Citizen Japan / Philips/ Havells/ Wipro or equalant shall be provided.

- LEDs shall have optical grade polycarbonate / PMMA lens to provide light distribution. LED optical lens should be mechanically fixed to MCPCB and should not be fixed by glue.

Individual or cluster of LEDs should be provided with Optical Grade Polycarbonate lens with light optical distribution.

- LED life is of 50,000 Hrs with 70% lumen maintenance at 35°C ambient temperature. (Complete LM 80 test report for LED should be submitted). Earthing is must for all LED's based products. Surge Protector need to install in the supply panel. Ensure LED Products are in separate circuit and not connected with other heavy-duty loads. Compliance: RoHS

#### B. STREETLIGHT FIXTURE ENCLOSURE SPECIFICATIONS:

Extruded aluminium / Spun Aluminum / pressure die cast aluminium (sand / gravity casting not to be considered) and should be corrosion resistant polyester powder coated. Aluminium grade LM 6063 or LM 6 as applicable or above high conductivity heat sink material. Heat sink must be made of pressure die cast Aluminum. Luminaire shall have two separate compartments for LEDs and driver and both compartments should be hermitically sealed to achieve IP 65 / IP 66 ingress protection. Control gear shall be provided with die cast aluminium cover for safety.

The label on Fixtures shall mention: Name of Manufacturer, model name and Serial number, system lumen pack, nominal CCT, Wattage of fitting, Date of Manufacture, and other labelling details as per IS. Heat sink used should be pressure die cast aluminum having high conductivity. Heat sink should be integrated within luminaries and efforts shall be made to keep the overall outer dimensions optimum such that it permits sufficient heat dissipation through the body itself so as to prevent abnormal temperature inside the luminaire and consequential damage to cover, gasket material, LEDs, lenses and drivers. Optical compartment shall be provided with heat resistant toughened glass. The optical assembly should be structured LED array for optimised roadway photometric distribution and photometric lenses designed to optimise application efficiency and minimum glare.

1. Ingress Protection: Ingress protection should be IP 65 / 66. The fixture should have double- wall construction with silicone gasket designed for IP 65 / 66 without using any glue to prevent breakdown of the water and dust proof seal for both the LED & the driver compartments.
2. The Fixture light output (lux) shall be constant with area wise as per National Standard of Lighting. The voltage variations / fluctuations in the specified voltage range shall not impinge upon the lux levels it produces. Maximum +/-2% is allowed throughout the input voltage range.
3. CCT (Colour corrected temperature):-5000K to 6000K(Kelvin)
4. WIND PRESSURE:-The fixture shall be built in such a way that it can withstand wind speed of 150 Km/Hr.
5. OPERATING VOLTAGE:- 120VAC to 270VAC
6. OPERATING TEMPERATURE:- 0°C to 50°C

P.F:-> 0.9

- a. Cables: Cables shall be ISI marked LT (1100 volts, 2/3.5/4C x 4 Sq.mm to 185 Sq.mm power cables stranded Aluminium, XLPE Insulation, inner sheath must be extruded type of PVC ST2, aluminium flat strip un armoured, Overall PVC Sheathed cable confirming to IS 7098/P1/88.
- b. The rated voltage of the cable shall be 1100 Volts AC with the highest system voltage of 1100 Volts between phases of the effectively earthed three-phase transmission system.
- c. The cables shall be capable of operating continuously under the system frequency variation of  $\pm 3$  Hz, voltage variation of  $\pm 10\%$  and a combined frequency-voltage variation of  $\pm 10\%$ .

#### C. APPLICABLE STANDARDS FOR CABLES

The latest version of the following Standards shall be applicable:

- IS 8130 Conductors for insulated electrical cables and flexible cords.
- IS 10810 (series) - Methods of tests for cables.
- IS 10418 Drums for electric cables.
- IS 3975 - Specification for mild steel wires, strips and tapes for armouring of cables.
- IS 5831 Specification for PVC insulation sheath for electric cables.
- IS 10462 - Fictitious calculation method for determination of dimensions of protective coverings of cables Part 1 - Elastomeric and thermoplastic insulated cables.

The cables manufactured to any other International Standards like BIS, IEC or equivalent standards not less stringent than Indian Standards are also acceptable. In such cases, a copy of the equivalent international standard need to enclosed, in English language, along with the bid. The

insulation shall withstand mechanical and thermal stresses under steady state and transient operating conditions.

#### D. OUTERSHEATH:-

Extruded PVC ST2, outer sheath as per IS: 5831/1984, IS: 7098 Part 1, IEC: 60502 Part – 1, BS: 6622, LSOH to BS: 7835. Shall be applied over Cable with suitable additives to prevent attack by rodents and termites. Outer sheathing shall be designed to offer high degree of protection and shall also be heat, oils, chemicals, abrasion and weather resistant. Common acids, alkalis, saline solutions etc., shall not have adverse effects on the PVC sheathing material used.

All Cables shall run through GI pipe and Junction Boxes and underground wiring shall not be installed under or within the area extending atleast 5 feet (1524mm) horizontally away from the inside walls of pools and outdoor hot tubs and spas except where the wiring is installed. The wiring method shall be rigid metal conduit, intermediate metal conduit or a non-metallic raceway system depending upon requirement. Running of underground cable through rigid metal conduit should maintain min. 6-inch depth whereas Running underground cable through non-metallic should maintain min.18-inch depth respectively.

The short circuit current of the LT cable to be as specified below

Electrical: Outer Sheath

| Sq.mm of LT Cable | Short Circuit Current (KA) |
|-------------------|----------------------------|
| 4                 | 0.274                      |
| 6                 | 0.142                      |
| 10                | 0.686                      |
| 16                | 1.100                      |
| 25                | 2.420                      |
| 35                | 3.370                      |
| 50                | 4.790                      |
| 70                | 6.680                      |
| 95                | 9.030                      |
| 120               | 11.400                     |
| 150               | 14.200                     |
| 185               | 17.500                     |

- A. Panel Board General Technical Particulars Locations Recessed mounting heavy duty horizontal type sheet steel Distribution board phosphatized / powder painted complete shall be used with suitable rating insulated copper bus bar, shorting link, neutral link, earth link and din bar, masking sheet, on forming to IS: 13032 & IS: 8623 including making internal DB terminations with copper lugs, testing etc. as required including MCB and Isolators of appropriate rating in distribution Board. The DB should be separate for light and power circuits.

|  |                 |
|--|-----------------|
| Nominal system voltage (rms) (U)             | 0.44KV          |
| Highest system voltage (rms) (Um)            | 1.1 KV          |
| Number of Phase                              | 3P+N            |
| Frequency                                    | 50Hz            |
| Variation in Frequency                       | +/- 3%          |
| Type of Earthing                             | Solidly Earthed |
| Total relay & circuit breaker Operating time | 15 – 20 cycles  |
| Metal Enclosure                              | IP25 / IP54     |

- a. Testing & Commissioning: After completion of Erection job, need to do testing & Commissioning for all DB's, Cables, Panel Boards as per IEE1248.
- b. Maintenance: Periodic inspections should be made by a licensed or certified electrician. Repairs to any electrical system shall be made only by a licensed or certified electrician. Defective underwater and overhead lights, Switches, Breakers, Cables etc shall be immediately repaired or replaced in time.
- c. PACKINGS: All material shall be suitably packed for transport, direct to site and Manufacturer / Contractor shall be responsible for all damages / losses due to improper packing. All boxes shall be marked with signs indicating the up and down sides of the boxes along with the unpacking instructions, if considered necessary by the Manufacturers.

#### 4. APPLICABLE CODE & STANDARDS FOR SUBSTATION / ELECTRICAL ROOM Electrical:

| Particulars  | Standards               |
|--|-------------------------|
| High Voltage / Low Voltage Pre-Fabricated Substation | IEC 61330/ 62271-202    |
| Switches   | IEC 60265               |
| Metal Enclosed Low Voltage Switchgear                | IEC 60298/ IEC62271-200 |

- a. Earthing: Separate Earthing Pit need to construct for earthing of Main MCC, Distribution Panel Boards & Pump Motors and shall be in accordance with IS3043-1987.
- b. ELECTRICAL INSTALLATIONS: This section covers the general requirements for electrical work to be installed under this specification. The Contractor shall supply and install all electric wiring, switchgear etc., necessary for the complete, safe and satisfactory operation of the project covered by the Specification. All electrical wiring and cables shall be properly tagged to the satisfaction of the Owner. All equipment provided shall be designed for use in conditions up to 50 oC ambient air temperature and 100% relative humidity. All equipment, materials, workmanship and fittings shall comply with the appropriate Indian Standard Specifications or Code of Practice as listed in the relevant paragraphs of this Section, or applicable international standards.
- c. ELECTRICAL SUPPLY : The electricity supply shall be 415/240 Volts, 50 Hz, 3 phase, 4 wire. All equipment shall be designed to operated with a + 10% voltage tolerance without a loss of rated output. All cables, equipment shall be so connected as to ensure that the load on phases are balanced and as per specification given in CPWD-Electrical works
- d. INTERNAL ELECTRICAL WORKS WIRING
- i. GENERAL Technical Specifications in this section cover the Internal Wiring Installations comprising of:
- Wiring for lights and convenience socket outlets etc. in concealed/surface conduit/raceways.
  - Wiring for telephone outlets.
  - Sub main wiring.
  - Conduiting for Low Voltage System
- ii. STANDARDS AND CODES Latest up to date Indian Standard (IS) and Code of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and / or IEC Standard shall be applicable.
- iii. CONDUITS
- STEEL CONDUITS (If Required) : These shall be of mild steel 16 gauge up to 32mm and 14 gauge for sizes above 32mm, electric resistance welded (ERW), electric threaded type having perfectly circular tubing. Conduits shall be precession welded ERW and shall be fabricated from tested steel strips of thickness as per IS by high frequency induction weld process. Weld shall be smooth and of consistent of high

quality to ensure crack proof bending. The conduits shall be black enamel painted inside and outside in its manufactured form. Wherever so specified, the conduit shall be galvanized. All conduits used in this work shall be ISI embossed.

- MS CONDUITS (If Required) : The electrical wiring shall be done in recessed MS Conduits, unless mentioned otherwise. No conduit less than 25mm in diameter shall be used, unless otherwise specifically ask by Engineer-In- Charge.
- PVC CONDUITS : Wiring shall be carried out in recessed /surface PVC conduits. The PVC conduits conform to latest and shall be ISI embossed. The conduits shall be heavy gauge (minimum 2 mm wall thickness) and the interiors of the conduits shall be free from all obstructions. All joints in conduits shall be sealed / cemented with approved solvent cement. Damage conduits/fittings shall not be used. Cut ends of conduits shall not have sharp edges.
- BENDS : As far as possible, the conduit system shall be so laid out that it shall obviate use of tees, elbows and sharp bends. No length of conduit shall have more than the equivalent of Signature and seal of Contractor Signature and seal of TCIL two quarter bends from inlet to outlet.

#### ACCESSORIES :

- STANDARD ACCESSORIES : The conduit wiring system shall be complete in all respects, including their accessories. Bends, couplers etc. shall be solid type in recessed type of works and may be solid or inspection type as required, in surface type of works. The accessories shall conform in all respects to the relevant IS. Samples shall be got approved by Authorised Representative of BSCL before use.
- FABRICATED ACCESSORIES : Wherever required, outlet/junction boxes of required sizes shall be fabricated from 1.6 mm thick MS sheets excepting ceiling fan outlet boxes which shall be fabricated from minimum 3 mm thick sheets. The outlet boxes shall be of approved quality, finish and manufacture. Suitable means of fixing connectors etc., if required, shall be provided in the boxes. The boxes shall be protected from rust by zinc phosphate primer process. Boxes shall be finished with minimum 2 coats of enamel paint of approved colour. A screwed brass stud shall be provided in all boxes as earthing terminal.

- iv. WIRES: Wiring shall be carried out with FRLS insulated 660/1100 volt grade unsheathed single core wires with electrolytic annealed stranded copper (unless otherwise stated) conductors conforming to latest IS Code. All wire rolls shall be ISI marked. All wires shall bear manufacturer's label and shall be brought to site in new and original packages. Manufacturer's certificate, certifying that wires brought to site are of their manufacture shall be furnished as required.

- v. COAXIAL CABLES : The coaxial cables shall be of video band type with operation up to 300 MHz capability. Aging resistance shall comply with latest code i.e. maximum 5% increase in attenuation at 200 MHz measured by artificial aging (14 days at 80o C) cables shall meet all exceed following specifications Center core Dia 0.8 mm DiaelectricDia 4.8 mm Dielectric PE Outer Conductor Dia 5.4 mm Outer Dia 7.0 mm Bending radius more than 30 mm Impedance 75 ohms DC Resistance 50 ohms/KM Screening factor more than 50 Attenuation 50 MHz 6.5 100 MHz 9 200 MHz 13 300 MHz 16
- vi. LAYING OF CONDUITS: Conduits shall be laid either recessed in walls and ceilings or on surface on walls and ceilings or partly recessed and partly on surface, as required. Signature and seal of Contractor Signature and seal of TCIL Same rate shall apply for recessed and surface Conduiting in this contract. Stranded copper conductor insulated wire of size as per schedule of quantities shall be provided in entire Conduiting for loop earthing. GI wire of suitable size to serve as a fish wire shall be left in all conduit runs to facilitate drawing of wires after completion of Conduiting.
- vii. SURFACE CONDUITING: Wherever so desired, conduit shall be laid in surface over finished concrete and/or plastered brickwork. Suitable spacer saddles of approved make and finish shall be fixed to the finished structural surface along the conduit route at intervals not exceeding 600 mm. Holes in concrete or brick work for fixing the saddles shall be made neatly by electric drills using masonry drill bits. Conduits shall be fixed on the saddles by means of good quality heavy duty MS clamps screwed to the saddles by counter sunk screws. Neat appearance and good workmanship of surface Conduiting work is of particular importance. The entire conduit work shall be in absolute line and plumb.
- viii. FIXING OF CONDUIT FITTINGS AND ACCESSORIES : For concealed Conduiting work, the fittings and accessories shall be completely embedded in walls/ceilings leaving top surface flush with finished wall/ceiling surface in a workman like manner. Loop earthing wire shall be connected to a screwed earth stud inside outlet boxes to make an effective contact with the metal body.
- ix. PAINTING AND COLOUR CODING OF CONDUITS : Before laying, conduits shall be painted specially at such places where paint has been damaged due to vice or wrench grip or any other reason. If so specified, surface conduits shall be provided with 20 mm wide and 100 mm long colour coding strips as below Use Code colour Low voltage Grey Telephone Black Earthing system Green Control system lighting Purple
- x. PROTECTION OF CONDUITS : To safeguard against filling up with mortar/plaster etc. all the outlet and switch boxes shall be provided with temporary covers and plugs which shall be replaced by sheet/plate covers as required. All screwed and socket joints shall be made fully water tight with white lead paste.
- xi. CLEANING OF CONDUIT RUNS : The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables.

- xii. PROTECTION AGAINST DAMPNESS : Signature and seal of Contractor Signature and seal of TCIL All outlets in conduit system shall be properly drain and ventilated to minimize chances of condensation/sweating.
- xiii. EXPANSION JOINTS : When crossing through expansion joints in buildings, the conduit sections across the joint shall be through approved quality heavy duty metal flexible conduits of the same size as the rigid conduit. The expansion joint crossing shall be done as approved by Engineer-InCharge.
- xiv. LOOP EARTHING: Loop earthing shall be provided by means of insulated stranded copper conductor wires of sizes as per Schedule of Quantity laid along with wiring inside conduits for all wiring outlets and sub-mains. Earthing terminals shall be provided inside all switch boxes, outlet boxes and draw boxes etc.

c) LAYING AND DRAWING OF WIRES:

- i. BUNCHING OF WIRES : Wires carrying current shall be so bunched in conduits that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.
- ii. DRAWING OF WIRES : The drawing of wires shall be done with due regard to the following precautions:-  
No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Burrs in cut conduits shall be smoothen before erection of conduits. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Approved type bushes shall be provided at conduit terminations. Before the wires are drawn into the conduits, conduits shall be thoroughly cleaned of moisture, dust, dirt or any other obstruction by forcing compressed air through the conduits if necessary. While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks which cause breakage of conductors. There shall be no sharp bends. The Contractor shall, after wiring is completed, provide a blank metal/sunmica plate on all switch / outlet / junction boxes for security and to ensure that wires are not stolen till switches / outlets etc. are fixed at no extra cost the contractor shall be responsible to ensure that wires and loop earthing conductors are not broken and stolen. In the event of the wire been partly / fully stolen, the contractor shall replace the entire wiring alongwith loop earthing at no extra cost. No joint of any nature whatsoever shall be permitted in wiring and loop earthing.
- iii. TERMINATION /JOINTING OF WIRES : Sub-circuit wiring shall be carried out in looping system. Joints shall be made only at distribution board terminals, switches/buzzers and at ceiling roses/connectors/lamp holders terminals for lights/fans/socket outlets. No joints shall be made inside conduits or junction/draw/inspection boxes. Switches controlling lights, fans or socket outlets shall be connected in the phase wire of the final sub circuit only. Switches shall never be connected in the neutral wire. Wiring conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any special reason shall be made by approved connectors. Specific prior permission from Authorised Representative of BSCL in



wiring shall be obtained before making such joint. Insulation shall be shaved off for a length of 15 mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or wringing. Strands of wires shall not be cut for connecting terminals. All strands of wires shall be twisted round at the end before connection. Conductors having nominal cross sectional area exceeding 1.5 sq. mm shall always be provided with crimping sockets. Tinning of the strands shall be done wherever crimping sockets are not available as per instructions of the Authorised Representative of BSCL. All wiring shall be labeled with appropriate plastic ferrules for identification. At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used. Brass nuts and bolts shall be used for all connections. The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less. Switches controlling lights, fans, socket outlets etc. shall be connected to the phase wire of circuits only. Only certified valid license holder wiremen shall be employed to do wiring / jointing work.

- iv. **LOAD BALANCING** : The Contractor shall plan the load balancing of circuits in 3 phase installation and get the same approved by the Authorised Representative of BSCL before commencement of the work.
- v. **COLOUR CODE OF CONDUCTORS** : Colour code shall be maintained for the entire wiring installation - red, yellow, blue for three phases, black for neutral and green for earth.

**d)SWITCHES AND FIXTURES:**

- i. **SWITCHES** : All 6 and 16 amps switches shall be of the modular enclosed type flush mounted 220 Volt AC of the best quality and standard or as approved by MEP/Architect/Engineer-InCharge. The switch moving and fixed contacts shall be of silver nickel and silver graphite alloy and contact tips coated with silver. The housing of switches shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material.
- ii. **FLUSH PLATES** : Signature and seal of Contractor Signature and seal of TCIL Switches, receptacles and telephone system outlets in wall shall be provided with molded cover plates of shape, size and colour approved by the Authorised Representative of BSCL made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material, and secured to the box with counter sunk round head chromium plated brass screws. Where two or more switches are installed together, they shall be provided with one common switch cover plate as described above with notches to accommodate all switches either in one, two or three rows. One and two gang switch cover plate, telephone outlet cover plate, 6 and 16 amps switched/unswitched plates shall have the same shape and size. Three and four gang switch cover plates shall have the same shape and size. Six and eight gang switch cover plates shall have the same shape and size. Nine and twelve switch cover plates shall have the same shape and size. Wherever five switches, seven switches, ten switches and eleven switches are to be fixed the next higher size of gang switch cover plate to be used and extra openings shall be provided with blank-off.
- iii. **EXTERNALLY OPERATED SWITCHES** : Externally operated switches, shall be of general purpose type,

250 volts of the proper size and rating and shall be provided in weather proof enclosures, complete with weather proof gasketed covers. The MCB's for all externally operated switches shall be separate and of proper rating.

- iv. WALL SOCKET OUTLETS : All 6/16 Amps wall socket outlets unless otherwise mentioned on the drawings shall be switched, five/six round pin and fitted with automatic linear safety shutters to ensure safety from prying fingers. Un-switched 6/16 amp wall socket outlets where called for in the drawings shall be of five/six round pin type. The socket outlets shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material. The switch and sockets shall be located in the same plate. The plates for 6 amp switched/un-switched plugs and telephone outlets shall be of the same size and shape. All the switched and un-switched outlets shall be of the best standard. An earth wire shall be provided along the cables feeding socket outlets for electrical appliances. The earth wire shall be connected to the earthing terminal screw inside the box. The earth terminal of the socket shall be connected to the earth terminal provided inside the box.
- v. LIGHTING FIXTURES : The light fixtures and fittings shall be assembled and installed complete and ready for service, in accordance with details, drawings, manufacturer's instructions and to the satisfaction of the Authorised Representative of BSCL. Wires brought out from junction boxes shall be encased in GI flexible pipes for connecting to fixtures concealed in suspended ceiling. The flexible pipes shall be provided with a check nut at the fixture end. Pendant fixtures specified with overall lengths are subject to change and shall be checked with conditions of the job and installed as directed. Signature and seal of Contractor Signature and seal. All suspended fixtures shall be mounted rigid and fixed in position in accordance with drawings, instructions and to the approval of the Authorised Representative of BSCL. Fixtures shall be suspended true to alignment, plumb, level and capable of resisting all lateral and vertical forces and shall be fixed as required. All suspended light fixtures etc. shall be provided with concealed suspension arrangement in the concrete slab/roof members. It is the duty of the Contractor to make these provisions at the appropriate stage of construction. All switch and outlet boxes shall be bonded to earth with insulated stranded copper wire as specified. Wires shall be connected to all fixtures through connector blocks. Flexible pipes, wherever used, shall be of make and quality approved by the Engineer-InCharge.
- vi. Highmast Lighting:- 16 mts High mast Tower of Polygonal Shape for Asymmetric loading of up to eight luminaries for Wind Speed up to 180 Km/hr. The Mast shall be made from steel grade of BSEN 10025 and should be in two sections (each of length 8375 mm or top length 5470mm & bottom length 10980mm) with the bottom section shall be of 4 mm thick and top section of 3 mm thick. Both the sections should be joined by telescopic slip joint. The bottom dia should be of 410 mm or more while top dia should of 150 mm. The bottom section should have Anti Vandalism looking type door size of 1200 mm x 250mm .The mast section should be fabricated for metal protection through hot dip galvanization and thickness of galvanization should not be less than 86 microns. The mast should be supplied with Components including Head Frame & Pulley Assembly, Winch Bracket, Lantern Carriage Ring for Luminaries and

C.G Box Mtg. Arms, Resting Bracket Guide Ring, compensating Disc, Lightening Arrestor, LED AOL, Wire Rope, Safety Wire Rope, D Suckle Clamps, nuts and Bolts, internal Cable, foundation Accessories., winch assembly with two drums with SWL 750 KG and internal power tool of 2 HP with control panel. The size of base plate diameter should be of 570 mm or more with thickness should be of 25 mm.

e) MEASUREMENT AND PAYMENT OF WIRING : Wiring for lights, fans, convenience socket outlets and telephone outlets etc. shall be measured and paid for on POINT BASIS as itemized schedule of quantities and as elaborated as below unless otherwise stated.

i. PRIMARY AND SECONDARY LIGHT POINT WIRING : In respect of group control of lights (more than one light controlled by one switch or MCB), wiring up to the first light in the group shall be measured and paid for as a primary light point. Wiring for other lights looped in one group for switch controlled as also MCB controlled lights shall be measured and paid for as secondary light points. Primary light points for switch controlled lights shall include the cost of control switch whereas primary light points controlled by MCBs shall not include the switch cost. The cost of MCB controlling such lights shall not be included in the primary light point rate since the MCB shall be paid for in the item of DB. The point wiring basis shall assume average wiring length and average conduiting length per point based on parameters stipulated in Para below. The average wiring length and average conducting length forming the basis of point wiring payment, shall take the electrical layouts of the entire project into consideration. Tenderers are advised to seek clarifications, if they so desire, on this aspect before submitting their tenders. No claim for extra payment on account of electrical layouts in part or whole of the project requiring larger average wiring and conduiting length per point, whether specifically shown in tender drawings or not, shall be entertained after the award of contract.

ii. PARAMETERS : Wiring shall be carried out as per following parameters in recessed/ surface conduit system. Only looping system of wiring shall be adopted throughout. No joints excepting at wiring terminals shall be permitted. All accessories shall be flush type unless otherwise stated. Lights, fans and 6 amp socket outlets shall be wired as per the item given in the Bill of Quantities. Power circuits shall normally have maximum two/one 16 amps socket outlet Signature and seal of Contractor Signature and seal of TCIL unless otherwise stated. Separate circuit shall be run for each Geyser, Window/Split air conditioners and similar appliances. Wiring rates shall include painting of conduits and other accessories as required. Wiring rates shall include cleaning of dust, splashes of colour wash or paint from all fixtures, fans, and fittings etc. at the time of taking over of the installation. Wiring rates shall include blanking of outlet boxes to prevent damage/pilferage of wires. Wiring rates shall include circuit wiring from DB to first control switch & shall be done as per Quantities raised by contractor.

#### A. DEFINITIONS:

a. WIRING FOR LIGHTS : PRIMARY LIGHT POINTS : Wiring for primary light points, as defined in Para above, shall commence at the Distribution Board terminals and shall terminate at the ceiling rose/connector in ceiling box/lamp holder via the control switch (for switch controlled lights). Rates for

primary light point wiring shall be deemed to be inclusive of the cost of entire material and labour require for completion of primary light point thus defined including: Recessed / surface conduiting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required. Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required. Control switch with switch box and cover plate of specified type including fixing screws, earth terminal etc. complete as required. Cost of this switch is applicable only for switch controlled points.

This cost shall not be applicable for DB controlled points. Loop earthing with insulated copper wire.

**SECONDARY LIGHT POINTS :** Secondary light points, as defined in Para above, shall cover the cost of interconnection wiring between group controlled light fittings and shall be deemed to be inclusive of the cost of entire materials and labour required for completion of the secondary light point thus defined including Recessed / surface conduiting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required. Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required. Loop earthing with insulated copper wire.

- b. **WIRING FOR CEILING FANS :** Wiring for ceiling fan points shall be same as for primary light points.
- c. **WIRING FOR EXHAUST FANS :** Wiring for exhaust fan points shall be same as for primary light points and shall in addition Signature and seal of Contractor Signature include the cost of providing a 3/5 pin 6 amp socket outlet near the fan alongwith plug top and a 6 amp control switch at convenient location near the room entry.
- d. **WIRING FOR CALL BELL POINTS :** Wiring for call bell points shall be the same as for primary light points. A call bell switch which include in lieu of the control switch at a convenient location as required.
- e. **WIRING FOR TELEPHONE OUTLETS :** Wiring for telephone outlets points shall include the entire wiring and conduiting from the telephone tag block to the telephone outlet including the telephone outlet complete as required and as itemized in the Schedule of Quantities
- f. **WIRING FOR TV OUTLETS(if Required) :** Wiring for TV outlet points shall include the entire wiring and conduiting from the Splitter Box to the TV outlet including the TV outlet complete as required and as itemized in the Schedule of Quantities.
- g. **WIRING FOR CONVENIENCE SOCKET OUTLETS :** 3/5 pin 6 amps and 3/6 pin 16 amps single phase switched convenience socket outlets shall be provided in the building as indicated in the layout or approved drawings.
- h. **SUB MAINS WIRING :** Sub mains wiring shall be measured from outer end of the boxes. Extra Loop length shall be left at each end as required.

**B. ROUTINE AND COMPLETION TESTS:**

- a. **INSTALLATION COMPLETION TESTS :** At the completion of the work, the entire installation shall be subject to the following tests:

- a. Wiring continuity test
- b. Insulation resistance test
- c. Earth continuity test
- d. Earth resistivity test

Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

- b. **WIRING CONTINUITY TEST** : All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.
- c. **INSULATION RESISTANCE TEST** : The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all protection in place and all switches closed and Signature and seal of Contractor Signature and seal of TCIL except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistance measured as above shall not be less than 50 mega ohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one mega ohm. The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above. The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant Standard specification or where there is no such specification, shall not be less than half a Mega ohm or when PVC insulated cables are used for wiring 12.5 Mega ohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Mega ohms is acceptable.
- d. **TESTING OF EARTH CONTINUITY PATH** : The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same alongwith the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.
- e. **TESTING OF POLARITY OF NON-LINKED SINGLE POLE SWITCHES** : In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non- earthed conductor of the supply. In the three or four wire installation, a test

shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Authorised Representative of BSCL as well as the local authorities.

- f. EARTH RESISTIVITY TEST : Earth resistivity test shall be carried out in accordance with latest IS Code of Practice for earthing.
- g. PERFORMANCE : Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.
- h. TESTS AND TEST REPORTS : The Contractor shall furnish test reports and preliminary drawings for the equipment to the Authorised Representative of BSCL for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc., required by the local Inspectors or Signature and seal of Contractor Signature any other Authorities would be supplied by the Contractor without any extra charge. All test reports shall be approved by the Authorised Representative of BSCL prior to energizing of installation.

**C. MEDIUM VOLTAGE DISTRIBUTION BOARDS:**

- a. GENERAL : This section covers specification of DBs.
- b. STANDARDS AND CODES : The latest and amended up to date Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.
- c. MINIATURE CIRCUIT BREAKERS : The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system. The MCB's shall have a rupturing capacity of 10 KA at 0.6 p.f. The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with XLPE cable characteristic. Type test certificates from independent authorities shall be submitted with the tender.
- d. FINAL DISTRIBUTION BOARDS : Final distribution boards shall be prewired type flush mounting, totally enclosed, Double door, dust and vermin proof with built in loose wire box and shall comprise of miniature circuit breakers, earth leakage circuit breakers, neutral link etc as detailed in the schedule of quantities. The distribution equipment forming a part of the Distribution Boards shall comply with the relevant Standards and Codes of the Bureau of Indian. The board shall be fabricated from 16 gauge CRCA sheet steel and shall have a hinged lockable spring loaded cover. All cutouts and covers shall be provided with synthetic rubber gaskets. The entire construction shall give an IP 43 (double

door and four tier arrangement) degree of protection. The bus-bar shall be of electrical grade copper having a maximum current density of 1.6 ampere per square mm and PVC insulated throughout the length. The minimum spacing between phases shall be 25 mm and between phase and earth 19 mm. Separate neutral link for each phase shall be provided. Separate earth link for each phase shall be provided. All the internal connections shall be with either solid copper PVC insulated or copper conductor PVC insulated wires of adequate rating. The equipment shall be mounted on a frame work for easy removal and maintenance. The sheet steel work shall undergo a rigorous rust proofing process, two coats of filler Signature and seal of Contractor Signature ,oxide primer and final powder coated paint finish. All the circuits shall have an independent neutral insulated wire, one per circuit, and shall be numbered and marked as required by the Authorised Representative of BSCL. A sample of the completed board is to be got approved by the Authorised Representative of BSCL before commencement of supply and erection. Before commissioning, the distribution boards shall be megger tested for insulation and earth continuity

- e. **SHEET STEEL TREATMENT AND PAINTING :** Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulphuric acid and a recognized phosphating process. The steel work shall then receive two coats of oxide filler primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat. All sheet steel shall after metal treatment be given powder coated finish painted with two coats of approved shade on the outside and white on the inside. Each coat of paint shall be properly stoved and the paint thickness shall not be less than 50 microns.
- f. **NAME PLATES AND LABELS :** Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shall indicate the feeder number and feeder designation.

#### **D. TELEPHONE WIRING SYSTEM:**

- a. **SCOPE** This section relates to specification for the supply, installation, testing & commissioning of works included telephone system. The scope of work included in this section is as follows: a) Supply, installation and laying of telephone cables/ wires. b) Providing & installing medium duty MS conduit. c) Providing & installing G.I./MS moulded boxes including plug in type telephone outlets.
- b. **CONDUITING :** All concealed /surface installation including the conduit run above the false ceiling space shall be black enameled MS Conduit (as specified in BOQ). The specification for materials & installation shall be same as described in electrical section. All relevant clauses are applicable for telephone system as well. The conduit for telephone system shall be installed minimum 20 cm away from the power conduit. Care shall be taken so that no telephone conduit is run in parallel to Electrical conduit in close proximity. Wherever telephone conduits cross power conduits, they shall be at right angle, to each other. All telephone conduits shall be earthed. Signature and seal of Contractor  
Signature.

- c. TELEPHONE DISTRIBUTION BOARDS (TAG BLOCK) : Telephone distribution network shall be provided with Main Telephone Distribution board for building located in Basement level. At each floor, Telephone distribution board tag block shall be provided in telephone shaft/cupboard. Telephone tag block shall be double jumpering type. Tag block shall be mounted in MS box fabricated from 1.63mm thick sheet steel. Box shall undergo a rigorous metal treatment process i.e. degreasing, pickling, phosphating, pasivating in deoxalate solution, dry with compressed air in dust free atmosphere facility, and disconnection module shall be in multiple of 10 pairs. Disconnection unit shall be mounted on back mounting frame. Protection against over voltage through protection magazine shall be provided from rear of Disconnection Module. Telephone distribution box shall have back mounting frame, disconnection module, lock & key arrangement. Contractor shall also provide one pair of wiring tools, test cord, disconnection plug, wiring base. Cost of these items shall deemed to be included in quoted rates. Main telephone distribution board shall be provided with protecting magazine with GD tubes for protection from over voltage. MTDB shall be complete with back mounting frame. Disconnection module, lock & key arrangement. MTDB box shall be fabricated from 2mm thick sheet steel.

E. MOULDED CASE CIRCUITBREAKERS:

- a. GENERAL Moulded case circuit breakers shall be incorporated in the switch board wherever specified. MCCB shall conform to IEC:947-II or IS:13947-II in all respects. MCCB shall be suitable for three phase 415 volts AC. Suitable discrimination shall be provided between upstream and down stream breakers in the range of 10-20 milli seconds. All MCCBs will have earth fault module (if specifically asked) and front operated. All four pole MCCB shall be suitable for three phase four wire system, with the neutral clearly identified and capable of first make last break feature.
- b. CONSTRUCTION The MCCB cover and case shall be made of high strength heat- resistant and flame retardant thermosetting insulating material, operating handle shall be quick make/quick break. The operating handle shall have suitable 'ON' 'OFF' and 'TRIPPED' mechanical indicators notable from outside. All MCCBs shall have a common operating handle for simultaneous operation and tripping of all the three phases. The MCCB should be suitable for disconnection and isolation with marking on front name plate. Suitable arc extinguishing device shall be provided for each contact. Tripping unit shall be thermal-magnetic type provided on each pole and connected by a common trip bar such that tripping of any one pole operates all three poles to open simultaneously. Thermal magnetic tripping device shall have IDMT characteristics for sustained over load and short circuits. All MCCBs above 250 Amps will also have short circuit magnetic pickup level adjustment.
- c. MCCBs Signature and seal of Contractor Signature and seal of TCIL All MCCBs shall have variable thermal overload releases which can be adjusted at site. Contact tips shall be made of suitable arc resistant, sintered alloy for long electrical life. Terminals shall be of liberal design with adequate clearances. All MCCBs of higher ratings above 250 Amps shall be provided with separate extended arcing contacts.
- d. INTERLOCKING Moulded case circuit breakers shall be provided with the following interlocking



devices for interlocking the door of a switch board. a) Handle interlock to prevent unnecessary manipulations of the breaker. b) Door interlock to prevent the door being opened when the breaker is in ON or OFF position. c) Defeat-interlocking device to open the door even if the breaker is in ON position.

e. **BREAKING CAPACITY** The moulded case circuit breaker shall have a rated service. Short circuit breaking capacity of not less than 25 KA rms at 415 volts AC. Wherever required, higher breaking capacity breakers to meet the system short circuit fault shall be used.

f. **ACCESSORIES** All the accessories like shunt, under voltage contact blocks shall be of snap fitting possible at site.

g. **TESTING:**

- Original test certificate of the MCCB shall be furnished.
- Pre-commissioning tests on the switch board panel incorporating the MCCB shall be done as per standard specifications.

• Signature and seal of Contractor Signature and seal of TCIL **TECHNICAL SPECIFICATIONS**

**EXTERNAL ELECTRICAL WORKS A - MV CABLES**

#### F. STANDARDS OF CODES:

This chapter covers the specifications for supply and laying of Medium Voltage XLPE cables. All equipment, components, materials and entire work shall be carried out in conformity with applicable and relevant Bureau of Indian Standards and Codes of Practice, as amended up to date. In addition, relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and /or IEC Standards shall be applicable.

a. **CABLES** Medium voltage cables shall be aluminium conductor FR XLPE insulated, PVC sheathed armoured conforming to latest IS. Cables shall be rated for 1100 Volts. All Conductor cables shall be as per BOQ. Conductors shall be insulated with high quality FR XLPE base compound. A common covering (bedding) shall be applied over the laid up cores by extruded sheath of unvulcanised compound. Armouring shall be applied below outer sheath of PVC sheathing. The outer sheath shall bear the manufacturer's name and trade mark at every meter length. Cores shall be provided with

following colour scheme of PVC insulation. 1 Core : Red/Black/Yellow/Blue 2 Cores : Red and Black 3 Cores : Red, Yellow and Blue 3 1/2 /4 Core : Red, Yellow, Blue and Black

b. **STORING, HANDLING, LAYING, JOINTING AND TERMINATION**

i. **STORING** All the cables shall be supplied in drums. On receipt of cables at site. It should be ensured that both ends of the cables are properly sealed to prevent ingress/absorption of moisture lay the insulation. The cables shall be inspected and stored in drums with flanges of the cable drum in

vertical position. Whenever cable drums have to be moved over short distances, they should be rolled in the direction of the arrow, marked on the drum and while removing cables from the drums the drum shall be properly mounted on jacks or on a cable wheel or any other suitable means making sure the spindle, jack etc. are strong enough to take the weight of the drum.

- ii. LAYING Cables shall be laid as per the specifications given below: Signature and seal of Contractor  
Signature and seal of TCIL
- iii. DUCT SYSTEM Wherever specified such as road crossing, entry to building or in paved area etc. cables shall be laid in underground ducts. The duct system shall consist of a required number of stone ware pipes, GI, CI or spun reinforced concrete pipe with simplex joints and all the jointing work shall be done according to the CPWD building specifications or as per the instructions of the Authorised Representative of BSCL as the case may be. The size of the pipe shall not be less than 100mm in diameter for a single cable and shall not be less than 150mm for more than one cable and so on. The pipe shall be laid directly in ground without making any special bed but wherever asbestos cement pipes are used, the pipes shall be encased in concrete of 75mm thick. The ducts shall be properly anchored to prevent any movement. The top surface of the cable ducts shall not be less than 60 cm. below the ground level. The ducts shall be laid a gradient of at least 1:300. The duct shall be provided manholes of adequate size at regular intervals for drawing the cables. The manhole cover and frame shall be of cast iron and machine finished to ensure a perfect joint. The manhole covers shall be installed flush with the ground or paved surfaces. The duct entry to the manholes shall be made leak proof with lead-wool joints. The ducts shall be properly plugged at the ends to prevent entry of water, rodents, etc. Suitable duct markers shall be placed along the run of the cable ducts. The duct markers shall at least be 15 cm. square embedded in concrete, indicating duct. Suitable cable supports made of angle iron shall be provided in the manholes for supporting the cables. Proper identification tags shall be provided for each cable in the manholes.
- iv. CABLES IN OUTDOOR TRENCHES: Cable shall be laid in outdoor trenches wherever called for. The depth of the trenches shall not be less than 75cm from the final ground level. The width of the trenches shall not be less than 45 cm. However, where more than one cable is laid, an axial distance of not less than 15 cm. shall be allowed between the cables. The trenches shall be excavated in  
  
reasonably straight line with vertical side walls and with uniform depth. Wherever there is a change in direction suitable curvature shall be provided complying with the requirements. Suitable shoring and propping may be done to avoid caving in of trench walls. The bottom of the trench shall be level and free from stone brick bats etc. The trench shall then be provided with a layer of clean, dry sand cushion of not less than 8 cm. in depth. The cable shall be pulled over rollers in the trench steadily and uniformly without jerks and strains. The entire cable length shall as far as possible be paved off in one stretch. However where this is not possible the remainder of the cable may be removed by "Flaking" i.e. by making one long loop in the reverse direction. After the cable has been uncoiled

and laid into the trench over the rollers, the cable shall be lifted slightly over the rollers beginning from one end by helpers standing about 10 meters apart and drawn straight. The cable should then be taken off the rollers by additional helpers lifting the cable and then laid in a reasonably straight line. For short cut runs and sizes up to 50 sq.mm of cables up to 1.1 KV grade any other suitable method of direct handling and laying can be adopted with the prior approval of the Authorised Representative of BSCL. When the cable has been properly straightened, the cores are tested for continuity and insulation resistance and the cable length then measured. The ends of all cables shall be sealed immediately. In case of PVC cables suitable moisture seal tape shall be used for this purpose. Cable laid in trenches in a single tier formation shall have a covering of clean, dry sand of not less 17 cms above the base cushion of sand before the protective cover is laid. In the case of vertical multi tier formation after the first cable has been laid, a sand cushion of 30 cms shall be provided over the initial bed before the second tier is laid. If additional tiers are formed, each of the subsequent tiers also shall have a sand cushion of 30 cms as Signature and seal of Contractor Signature and seal of TCIL stated above. The top most cable shall have final sand covering not less than 17 cms before the protective cover is laid. Unless otherwise specified, the cables shall be protected by the second class bricks of not less 20 cms x 10 cms x 10 cms (nominal size) protection covers placed on top of the sand (bricks to be laid breadth wise) for the full length of the cable. Where more than one cable is to be laid in the same trench, this protective covering shall cover all the cables and project at 5 cm. over the sides of the end cables. The trenches shall be taken back filled with excavated earth free from stones or other sharp edge debris and shall be rammed and watered, if necessary, in successive layers not exceeding 30 cm, unless otherwise specified.

- v. ROUTE MARKER Cable route marker marked "Cable" shall be provided alongwith the route of the cable and location of loops. The route markers shall be of tapered concrete slab of 60 x 60cm at bottom and 50 x 50cm at top having a thickness of 10cm. Cable marker shall be mounted parallel to and 50cm away from the edge of the trench.
- vi. CABLES IN INDOOR TRENCHES Cables shall be laid in indoor trenches wherever specified. The trench shall be made of brick masonry with smooth cement mortar finish with suitable removable covers (i.e. precasted slabs or chequered plates). The dimensions of the trenches shall be determined depending upon the maximum number of cables that is expected to be accommodated and can be conveniently laid. Cables shall be arranged in tier formation in trenches and if necessary, cables may be fixed with clamps. Suitable clamps, hooks and saddles shall be used for securing the cables in position. Spacing between the cables shall not be less than 15 cm centre to centre. Wherever specified, trenches shall be filled with fine sand and covered with RCC or steel chequered trench covers.

## G. EARTHING

- a. **GENERAL** This section covers the general arrangement of the earthing, i.e. all non-current carrying metal parts of the electrical installation shall be earthed as per latest IS code and general specifications for electrical works (part-1, internal) of CPWD specifications. All metal conduits, trunkings, cable sheaths, switchgear, distribution boards, meters, light fixtures, fans and all other metal parts forming part of the work shall be bonded together and connected by two separate and distinct conductors to earth electrodes. Earthing shall also be in conformity with the provisions of Rule 32, 61, 62, 67 and 88 of IER 1956. The earth electrode shall not be situated less than 1.5 meters.
- b. **EARTHING SYSTEMS** It shall comprise of earth electrodes, earth strips, earth continuity conductor and all earthing conductors shall be of high conductivity copper, GI or aluminium and shall be protected against mechanical damage and corrosion. The size of earth conductors shall not be less than half that of the largest current carrying conductor. The connection of earth continuity conductors of earth bus and earth electrodes shall be strong and sound and shall be rigidly fixed to the walls, cable trenches, cable trays or conduits and cable by using suitable clamps made of non-ferrous metals.
- c. **EARTHING ELECTRODES** Earthing electrodes shall be designed as per the requirement of latest IS codes. The number and size of earth electrodes shall be calculated so that under fault conditions no Signature and seal of Contractor Signature and seal of TCIL electrode is loaded above its maximum permissible current density. The resistance of earth electrode shall be as low as possible, the maximum allowable value being one ohm. Earthing electrodes of either plate type or pipe type may be adopted. The choice of plate or pipe electrode shall be decided according to the anticipated fault level of the network and local soil conditions. Generally, plate electrodes shall be used for substations and large medium voltage network and pipe electrodes for small medium voltage network and installations.
- i. **LOCATION OF EARTH ELECTRODES** Normally on earth electrode shall not be situated less than 1.5 mtr from any building. Care shall be taken that the excavation for earth electrode may not effect the column footings or foundation of the buildings. In such cases electrodes may be further away from the building. The location of the earth electrode will be such where the soil has reasonable chance of remaining moist. As far as possible, entrances, pavements and road ways, are to be definitely avoided for locating earth electrode.
- ii. **WATER ARRANGEMENT** Method of watering arrangement shall comply with CPWD General Specifications.
- iii. **PLATE ELECTRODE** Plate electrodes shall be made of GI plate of 6 mm thick and 60x60 cm. size. The plate shall be buried vertically in ground at depth of not less than 3.5 meters to the top of the plate, the plate being encased in charcoal to a thickness of 15 cm. all round. It is preferable to bury the electrode to a depth where sub-soil water is present. Earth leads to the electrode shall be laid in a GI pipe and connected to the plate electrode with GI bolts, nuts and washers. A GI pipe of not less than 19 mm Dia shall be placed vertically over the plate and terminated in a funnel at 5 cm. above ground. The funnel shall be provided with a wire mesh. The funnel shall be enclosed in masonry chamber of 100 x 50 cm. dimensions. The chamber shall be provided with CI frame cover

of 100 x 50 cm size. The earth station shall also be provided with a suitable permanent identification label/tag. Note: If copper plate is used it shall be of 3mm thickness.

- iv. Pipe electrode shall comprise of a 2.5 Meter. long 40 mm Dia GI pipe buried vertically in a pit of 35 x 35 cm size and filled with alternate layers of charcoal, salt and river sand and connected at the top to a GI pipe of 19 mm, 1 Meter. long with a funnel at the other end, 5 cm above the ground. The earth lead shall be properly fixed to the pipe electrode with brass bolts, nuts and washers. The funnel and earth lead connections shall be enclosed in a masonry chamber of 30 x 30 x 30 cm. dimensions. The chamber shall be provided with a CI frame and CI cover. Proper permanent identification tag/label shall be provided for each electrode.
- d. INSTALLATION: All joints shall be reverted and sweated. Joints in the earth bar shall be bolted and the joints faces tinned. Where the diameter of the bolt for connecting earth bar to apparatus exceeds one quarter of the width of the earth bar, the connection to the bolt shall be made with a wider piece of flange of copper jointed to earth bar. These shall be tinned at the point of connection and special care taken to ensure a permanent low resistance contact to iron or steel. All steel bolts, nuts, washers, etc shall be cadmium plated. Main earth bars shall be spaced sufficiently away from the surface to which they are fixed, such as walls or the side of trenches to allow for easy connections. Copper earth bars shall not be fixed by ferrous fittings. The earthing shall be suitably protected from mechanical injury by galvanized iron within ground shall be buried at least 60 cm deep. The earthing lead shall be securely bolted and soldered to the plate or pipe as the case may be. In the Signature and seal of Contractor Signature and seal of TCIL case of the plate, the lead shall be connected by means of cable socket with two bolts and nuts. All washers shall be of the same materials as the plate or pipe. All iron bolts, nuts and washers shall be galvanized.
- e. METHOD OF INSTALLATION OF WATERING ARRANGEMENT In the case of plate earth electrode a watering pipe of 20 mm Dia of medium class GI pipe shall be provided and attached to the electrode. A funnel with mesh shall be provided on the top for watering the pit. In case of pipe earth electrode a 40 mm x 20 mm reducer shall be used for accessing the funnel. The watering funnel attachment shall be housed in masonry enclosure of not less than 30 cm x 30 cm x 30 cm. A cast iron cover having locking arrangement shall be suitably embedded in the masonry enclosure.
- f. PRECAUTIONS Earthing system shall be mechanically robust and the joints shall be capable of retaining low resistance even after passages of fault currents. Joints shall be soldered, tinned and double riveted. All the joints shall be mechanically and electrically continuous and effective. Joints shall be provided against corrosion. The earthing lead from electrode onwards shall be suitably protected from mechanical injury by a 15 mm Dia GI pipe in case of wire and by 40 mm Dia medium class GI pipe in case of strips. Portion of this protection pipe within the ground shall be buried at least 30 cm deep (to be increased to 60 cm in case of road crossing and pavements). The portion within the building shall be recessed in walls and floor to adequate depth.
- g. TESTING On the completion of the entire installation, the following tests shall be conducted and no

earth electrode shall have ohmic resistance of more than 2 ohm and in rocky soil not more than 3 ohms.

- i. Earth resistance of electrodes
- ii. Impedance of earth continuity conductors as per IEE regulations.
- iii. Effectiveness of earthing as per IEE regulations.

All meters, instruments and labour required for the tests shall be provided by the contractor. The test results shall be submitted in triplicate to the Architects for approval.

#### H. MEDIUM VOLTAGE PANELS:

- a. GENERAL Medium voltage power control centres (generally termed as switchboard panels) shall be in sheet steel clad cubicle pattern, free floor standing, totally enclosed, compartmentalized design having multitier arrangement of the incomers and feeders as per details given in the schedule of quantities. All panels shall conform to the requirements of the latest addition of IS and shall be suitable for 415 V, 3 phase AC supply or 230 V single phase AC supply as required.
- b. CONSTRUCTIONAL FEATURES The Switch Boards shall be totally enclosed, sheet steel cubicle pattern, extensible on either side, dead front, floor mounting type (wall mounting if specifically asked for in BOQ) Signature and seal of Contractor Signature and seal of TCIL and shall have a bus bar chamber at the top and the cable entry from the bottom. (For panel requiring top cable entries if any, refer to BOQ). The cable terminations should be in side the feeder compartment only. The Switch Boards shall be completely dust and vermin proof. Synthetic rubber gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust and vermin proof to provide a degree of ingress protection of IP 43. All doors and covers shall also be fully gasketed with synthetic rubber. All the live parts shall be properly shrouded with FRP sheets. The Switch Board shall be fabricated with  
  
CRCA Sheet Steel of thickness not less than 2.0mm and shall be folded and braced as necessary to provide a rigid support for all components. The doors and covers shall be constructed from CRCA sheet steel of thickness not less than 1.6 mm. Joints of any kind in sheet metal shall be seam welded and all welding slag ground off and welding pits wiped smooth with plumber metal. Base channel shall be fabricated from ISMC 75 and door shall be provided at the bottom with arrangement for fixing bolts in the foundation. All panels and door covers shall be properly fitted and square with the frame. The cutouts in the panel shall be correctly positioned. Lifting lugs of adequate strength shall be provided on each transport section of the panels. Fixing screws shall enter holes tapped into an adequate thickness of metal or provided with hank nuts. Self threading screws shall not be used in the construction of the Switch Boards.
- c. SWITCHBOARD DIMENSIONAL LIMITATIONS A base channel 75 mm x 5 mm thick shall be provided at the bottom. The overall height of the Switch Board shall be limited to 2200 mm The height of the operating handle, push buttons etc shall be restricted between 300 mm and 1900 mm from finished floor level.

- d. **BUS BARS** The bus bars shall be suitable for 4 wire, 415 volts, 50 Hz, system. The main bus bar shall be made of high conductivity electrolytic grade AL 91E Aluminium. The bus bars shall have uniform cross section throughout the panel. The bus bars shall be capable of carrying the rated current at 415 volts continuously. The bus bar will run in a separate bus bar chamber using bus insulators made of non-deteriorating, vermin proof, non hygroscopic materials such as epoxy fiber, reinforced polyester or moulding compound (min. 25mm clearance between phase to phase & phase to neutral bus bars shall be provided). The interval between the two insulators will be designed after considering the following:
- i. Strength and safe load rating of the insulator
  - ii. The vibrating force generated during a fault
  - iii. A Factor of safety of 1.25
  - iv. A set of insulators at both ends of the bus.

Bus bars shall be sized considering maximum current density of 1 Amps/ cross section Sq.mm area. The size of the bus bar calculations must be approved by the consultants. The bus bars shall be designed to withstand a temperature rise of 45 oC above the ambient. To limit the temperature rise in the bus bar chamber a set of louvers can be provided at strategical places considering the air circulation. Signature and seal of Contractor  
Signature and seal of TCIL All the bus bars shall be insulated with PVC heat shrinking sleeves throughout (except at joints) the length of the panel. The electro-galvanized high tensile steel nuts, bolts, plain or spring washers of suitable size will be used in connecting the various sections of the bus bars.

- e. **SWITCH BOARD INTERCONNECTIONS** All connections between the bus bars/Breakers terminations shall be through solid Aluminium strips of adequate size to carry full rated current which shall be PVC/fiber glass insulated. For switch unit ratings up to 63A PVC insulated copper conductor wires of adequate size to carry full load current can be used. The terminations of all such interconnections shall be properly crimped.
- f. **CABLE TERMINATIONS** Knockout holes of appropriate size and number shall be provided in the Switch Board in conformity with the location of incoming and outgoing conduits/cables. All cable entries shall be from bottom until & unless specifically asked for in the BOQ. The cable terminations of the circuit breakers shall be brought out to terminal cable sockets suitably located in the panel. All outgoing links for FSU\MCB feeders shall be in the feeder compartment only. The Switch Boards shall be complete with tinned brass cable sockets, tinned brass compression glands, gland plates, supporting clamps and brackets etc for termination of 1100 volt grade aluminium conductor PVC cables.
- g. **EARTHING** The panels shall be provided with an aluminium earth bus of suitable size running through out the length of the switchboard. Suitable earthing eyes/bolts (at min. two points) shall be provided on the main earthing bus to connect the same to the earth grid at the site. Sufficient number of star washers shall be provided at the joints to achieve earth continuity between the panels and the sheet metal parts.
- h. **INTERLOCKING** The panels shall be provided with the following interlocking arrangement. The door of the switch-fuse compartments is so interlocked with the switch drive or handle that the door can be opened only if the switch is in 'OFF' position. De-interlocking arrangement shall also be provided for

occasional inspection. It shall not be possible for the breaker to be withdrawn when in 'ON' position. It shall not be possible for the breakers to be switched on unless it is either in fully inserted positions or for testing purposes in fully isolated position. The breaker shall be capable of being raked in to 'testing' 'isolated' and 'maintenance' positions and kept locked in any of these position. A safety latch to ensure that the movement of the breaker as it is withdrawn, is checked before it is completely out of the cubicle shall be provided.

- i. WIRING Signature and seal of Contractor Signature and seal of TCIL All wiring for relays and meters shall be with PVC insulated copper conductor wires. The wiring shall be coded and labeled with approved ferrules for identification. The minimum size of copper conductor control wires shall be 1.5 sq.mm except for the circuits related to current transformers or circuits with current carrying capacity more than 5 Amps (for which min. 2.5 Sq.mm copper conductor wires shall be used).
- j. SHEET STEEL TREATMENT AND PAINTING: Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulfuric acid and a recognized phosphating process. The steel work shall then receive two coats of oxide primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat. All sheet steel shall after metal treatment shall be powder coated with shade RAL 7032 (Siemens Gray) on the outside of the panel and mounting plates shall be of orange shade. Each coat of paint shall be properly stoved and the paint thickness shall not be less than 50 microns (shade of paint may be changed if the EmployerIn charge so desires).
- k. NAME PLATES AND LABELS Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shall indicate the feeder number and feeder designation.
- l. INSTALLATION: Installation shall be done by erection
- m. TESTING AND COMMISSIONING Copies of type tests and routine test as per relevant specification, carried out at manufacturer's work shall be submitted to the EMPLOYERIN CHARGE as required. Wiring and connections including earthing shall be checked for continuity and tightness. Insulation shall be measured with a 500 V megger and insulation resistance shall not be less than 100 Mega ohms Interlocking operation to be checked as per requirement. Tests shall be performed in presence of authorized representative of the EMPLOYERIN CHARGE for which the contractor shall give due prior notice.
- n. HIGH VOLTAGE TEST A high voltage test with 2.5 KV for one minute shall be applied between the poles and earth. Test shall be carried out on each pole in turn with the remaining poles earthed, all units raked in position and the breakers closed. Original test certificate shall be submitted along with panel.
- o. PRE-COMMISSION TESTS: Panels shall be commissioned only after the successful completion of the following tests. The tests shall be carried in the presence of Architect's/Consultant's or their



representatives. Signature and seal of Contractor Signature and seal of TCIL. All main and auxiliary bus bar connections shall be checked and tightened.

- i. All wiring termination and bus bar joints shall be checked and tightened.
- ii. Wiring shall be checked to ensure that it is according to the drawing.
- iii. All wiring shall be tested for insulation resistance by 1000 volts Meggar.
- iv. Phase rotation tests shall be conducted
- v. All relays and protective devices shall be tested for correctness of settings and operation by introducing a current generator and an ammeter in the circuit.
- p. CLIMATIC CONDITIONS The panels & switch gear components shall be suitable for following climatic conditions: Maximum Minimum DBT RH 45 OC 90% 3 OC 20%
- q. HEATING ARRANGEMENT : The panel shall be provided with a thermostatically controlled heating arrangement for monsoon (200 Watt) to take care of high humidity conditions. A 6/16A service socket outlet (single phase) shall be provided in one of the compartments in all the panels. D - METERING, INSTRUMENTATION AND PROTECTION : The specifications hereinafter laid down shall cover all the meters, instrumentation and protective devices required for the electrical work. The ratings, type and quantity of meters, instruments and protective devices shall be as per the schedule of quantities and drawings

#### I. MEASURING INSTRUMENTS

- a. Direct reading electrical instruments shall be in conformity with IEC-51, BS: 89 or IS: 1248. The accuracy of direct reading shall be 1.0 for voltmeters and 1.5 for ammeters. Other type of instruments shall have accuracy of 1.5. The error due to variations in temperature shall be limited to a minimum. The meter shall be enclosed in a dust tight housing. The housing shall be of steel or phenolic mould. The design and manufacture of the meters shall ensure the prevention of fogging of instrument glass. Instrument meters shall be sealed in such a way that access to the measuring element and to the accessories within the case shall not be possible without removal of the seal. The meters shall be provided with white dials and black scale marking. The pointer shall be black in colour and shall have zero position adjustment device which could be operated from outside. The direction of deflection shall be from left to right. Suitable selector switches shall be provided for all ammeters and voltmeters intended to be used on three phase supply. a) Ammeters Ammeters shall be moving iron type. The moving part assembly shall be with Signature and seal of Contractor Signature and seal of TCIL jewel bearings. The jewel bearing shall be mounted on a spring to prevent damage to pivot due to vibrations and shocks. The ammeters shall be manufactured and calibrated as per the latest edition of IS 1248 or BS 89. Ammeters shall be instrument transformer operated, and shall be suitable for 5 A. Secondary of instrument transformer. The scales shall be calibrated to indicate primary current, unless otherwise specified. The ammeters shall be capable of carrying sustained overloads during fault conditions without damage or loss of accuracy. b) Voltmeters Voltmeter shall be of moving iron type. The range for 400 volts, 3 phase voltmeters shall be to 0 to 500 volts. Suitable

selector switch shall be provided for each voltmeter to read voltage between any two lines of the system. The voltmeter shall be provided with protection fuse of suitable capacity.

- b. **INSTRUMENT TRANSFORMERS: Current Transformers** Current transformers shall be in conformity with IS: 2705 (Part-I, II, & III) in all respects. All current transformers to be used in the L.T. Electrical panels shall be low tension, ring type resin cast current transformer with the requisite currents ratio having secondary of the current transformers selected will be based on the following;
- i. For energy measuring: 1.0 class of accuracy
  - ii. For other metering: 1.5 class of accuracy
  - iii. For protects on: 3.0 class of accuracy
- c. Where a common CT is used for different functions the CT accuracy class will be equal to the best class required by any of those function. Current transformers shall be capable of withstanding without damage, magnetic and thermal stresses due to short circuit fault of 35 MVA on medium voltage system. Terminals of the current transformers shall be marked permanently for easy identification of poles. Current transformers shall be provided with earthing terminals for earthing chassis frame work and fixed part of the metal casing (if any). Each CT shall be provided with rating plate indicating the following
- i. Name and make
  - ii. Serial Number
  - iii. Transformation ratio
  - iv. Rated burden
  - v. Rated voltage
  - vi. Accuracy class
- d. The current transformers to be selected for this panel will have at least 20% extraVA capacity available over the normal capacity based on the following details; 1. For ammeters: 3 VA. 2. For current coils of KW & KWHR, PF, and KVAR meters or for all recorders: 5 VA. 3. For normal wiring: 2 VA.
- e. For current coil of protection relays: 10 VA under; no circumstances the VA rating of the CT's will be less than 15 VA. Current transformers shall be mounted such that they are easily accessible for inspection, maintenance and replacement. The wiring for CT's shall be copper conductor, PVC insulated wires with proper termination lugs and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner. Signature and seal of Contractor Signature and seal of TCIL
- f. **CONTROL DEVICES a) Push Buttons** The push buttons used in the panels will be rated for more than 415 volts and 2 amps. All the push buttons will be mounted on the front door and the assembly will be in two parts. All the push buttons will be mounted on the front door of the cubicle in regular symmetrical fashion as per the general norms being practiced. Only one make of push buttons will be used in the assembly of all the panels. The selection of the colour of the push buttons will be as follows
- |          |        |                       |       |                        |     |           |       |         |
|----------|--------|-----------------------|-------|------------------------|-----|-----------|-------|---------|
| Function | Colour | Starting/Switching ON | Green | Stopping/Switching OFF | Red | Resetting | Black | Forward |
|----------|--------|-----------------------|-------|------------------------|-----|-----------|-------|---------|

ON Yellow Reverse ON Blue Emergency OFF Red/Mushroom b) Indicating Lights The indicating lights used in the panel will be pleasant looking and round shape having the following features;

- i. A separate front lens for it's easy replacement.
  - ii. Facility to replace the bulb from the front.
  - iii. Bayonet pin cap bulbs of standard size to be used.
  - iv. The shape of the lens to allow viewing from sides.
  - v. Series resistance with use of low voltage bulb for longer life.
- g. Clear and distinct indication for light ON and OFF with differences of brightness of the lens. The selection of the colors of the indicating lamps will be as follows: -Red for system in operation -Amber for system ready for operation. -Green for system being put off. -Red, yellow and blue for incoming supply.
- h. TESTING Instrument transformers shall be tested at factory as per IS:2705 & IS:3156. The test shall incorporate the following: a) Type tests b) Routine tests Original test certificates in triplicate shall be provided. Meters shall be tested as per IS: 1248. The tests shall include both type tests and routine tests. Original test certificate in triplicate shall be furnished. a) Suitable injection tests shall be applied to the secondary circuit of every instrument to establish the correctness of calibration and working order. b) All relays and protective devices shall be tested to establish correctness of setting and operation by introducing a current generator and an ammeter in the circuit. Signature and seal of Contractor Signature and seal of TCIL

#### J. INSTRUMENT TRANSFORMER

- a. Current Transformer The current transformers shall be of epoxy encapsulated/cast resin type, mounted on stationary portion of the switchgear and shall be easily accessible for maintenance and testing purpose. The current transformers shall be capable of withstanding the short circuit stresses corresponding to a fault level of the system. The ratio and ratings of the current transformers shall be suitable to meet the requirements of metering and protection of the corresponding feeder. The current transformers shall conform to the latest edition of IS. Unless specified otherwise, insulation, temperature rise and all other phases of manufacture and testing shall conform to that given in the standards. A type test certificate of a CT of similar design for temperature rise test shall be furnished along with the offer. Facilities for shorting and grounding the terminals shall be provided at the terminal block.
- b. Potential Transformers The potential transformers shall be epoxy encapsulated /cast resin design and Star type on L.T. side. A manually operated disconnecting device shall be mounted on the primary side of potential transformer. This device shall be designed to operate externally without access into the line portion of the switchgear. The connections from main circuit to potential transformers shall be capable of withstanding short circuit stresses of the system. The high voltage winding of the potential transformer shall be protected by current limiting fuses. Low voltage fuses, sized to prevent harmful overload, shall be installed.

The manufacture, testing, insulating and temperature rise of the potential transformer shall conform to the latest revision of the relevant IS. The 110V bus in the switchboard shall be sectionalized.

- c. INSTRUMENTS & METERS The instruments shall be the flush type preferably with the square face of digital intelligent panel meter 96W x 96H as specified. They shall be fully tropicalised, dust tight and shall conform to the relevant standards. Display shall be of backlit LCD with 10mm height digits. The meter shall be capable of measuring power, current, and voltage simultaneously with accuracy of class 1.0. The scale range of the AC ammeter shall generally be equal to 1.5 times the rated primary current of the C.T. feeding them. The scale range of the voltmeter shall be about Signature and seal of Contractor Signature and seal of TCIL 15% in excess of the normal circuit voltage.

#### K. AUXILIARY AND CONTROL POWER SUPPLY:

- a. AC Power Supply for Space Heater and Cubicle Illumination Lamps: Each carriage control panel including the breaker operating mechanism shall be provided with thermostatically controlled space heater. The thermostat shall have adjustable range. The space heaters shall be rated for 230 volts, 1 phase, 50 Hz. For cubicle illumination, receptacle arrangement at suitable location of each control panel shall be provided so that hand lamp connection may be taken from this receptacle during inspection and maintenance. Wiring for space heaters shall be suitably grouped so as to form a more or less balanced condition on 230 V, 1 phase, 50 Hz supply. Suitable number of space heaters alongwith thermostat may be provided. Each space heater and hand lamp circuit shall be provided with ON/OFF switch and suitable protection.
- b. Control Supply: The power for breaker control and indication shall be taken from 24 V DC supply. In addition, each cubicle shall be provided with one double pole, single throw switch for its control circuit power supply.
- c. Fuse: All control and power fuses shall be link type "H.R.C." fuses. Plug fuses (screw- in type) shall not be accepted.

#### L. SECONDARY AND SMALL WIRING

- a. All wiring for the equipment and devices located on or within the switchgear shall be carried out. The wiring shall be complete in all respects so as to ensure proper functioning of control, indication, measurement, protection and interlocking scheme.
- b. All the wiring shall be marked in accordance with the relevant standards. Numbered ferrules, reading from the terminals onward shall be provided at both ends of all the wiring for easy identification.
- c. The internal wiring shall be of PVC insulated cable of 1100/650 grade of minimum size 2.5 Sq.mm copper.

**M. ALARM ANNUNCIATION SYSTEM :**

a. The annunciator shall be provided on each panel to indicate the various circuit conditions and shall be placed at suitable height. The various functions shall be as follows:

- Circuit breaker closed
- Circuit breaker open
- Trip circuit healthy
- Alarm & Auto trip Transformer non trip (Buchholtz, etc.)
- C/B in test
- Hooter/Buzzer

shall be provided with a manually operated switch so that it can be Signature and seal of Contractor Signature and seal of TCIL silenced.

**N. ControlCable:**

All control cables shall enter the switchgear from top/bottom. Removable plates at the top/bottom of the panel shall be furnished with compression type cable glands to make entry dust-tight and no weight is transferred on the terminal. The glands shall be suitable for terminating cable armour. All connections and accessories required to complete the whole installation shall be supplied by the Contractor.

**O. TERMINAL BLOCKS:**

Terminal blocks shall be provided as specified and shall be clip-on type. They shall be shrouded preferably by a transparent acrylic sheet. The terminal block of different voltage classes shall be segregated.

**P. ACCESSORIES:**

Following accessories shall be provided for each switchgear:

- Channel base and foundation bolts
- Lifting lugs
- Maintenance closing handle for circuit breaker
- Draw handle for circuit breaker
- Hook stick, indoor use, 1.5 m long
- Test plug for draw out type relay

**Q. NAME PLATE:**

Nameplates of approved design shall be furnished at the front of each compartment of the cubicles. Rating plates for each circuit breaker and at each instrument, relay and auxiliary switches as mounted on the face or inside the cubicle shall also be furnished. Instruments and devices mounted on the cubicle door of the switchgear shall be identified on the rear also with the respective numbers on or adjacent to the instrument or device case.

**R. GROUNDBUS:**

A ground bus of 32 mm x 6 mm Copper flat shall be furnished along with the full length of the panel. Each stationary unit shall be connected directly to this ground bus. Grounding terminals at two end of the ground bus shall be provided for connection to station ground grid. The frame of each draw-out carriage containing circuit breaker shall be grounded through heavy multiple finger contacts at all times except when the unit primary disconnecting devices are separated by a safe distance.

#### S. TESTS:

The switchgear unit shall be completely assembled, wired, adjusted and tested for operation under similar conditions to ensure accuracy of wiring, correctness of control schemes and proper functioning of all equipment. Signature and seal of Contractor Signature and seal of TCIL

- a. Routine Test : Each of the following equipment shall be subjected to standard routine tests as per applicable clauses of relevant IS specifications:
  - Circuit breakers
  - Bus bar assembly
  - Instrument transformers
  - Auxiliary relays
  - Control switches and indication lamps
- b. b) Design Test (Type Test): Typical type test report of the tests mentioned below conducted on similar equipment in the past shall be furnished alongwith the tender. i) Short Time Current Test ii) Short Circuit Test duties on Circuit Breaker iii) Impulse withstand Test iv) Power Frequency withstand Test v) Temperature Rise Test vi) Internal Arc Test vii) Mechanical Endurance test on Circuit Breaker viii) Test to prove Degree of Protection of enclosure.
- c. Test Certificates : Test certificate shall be furnished in required number of copies. The routine and type test certificates shall be furnished to the Authorised Representative of BSCL for approval before dispatch of the equipment from the works. The approval in writing shall be required to effect the dispatch of the equipment. The routine and type test certificates of the miscellaneous components shall also be furnished to the Engineer- in-charge for approval. The report shall furnish complete identification of data including serial number of each equipment.

#### T. DRAWINGS, DATA AND MANUALS :

- a. After award of contract, the successful Bidder shall submit the required number of copies of the following drawings for approval of the Authorised Representative of BSCL : Confirmed outline dimensional drawing of the various switchgears showing the general arrangement and indicating the following:

- a. Space required in the front for breaker withdrawal
  - b. Signature and seal of Contractor Signature and seal of TCIL Control cable entry points and termination arrangement.
  - c. Power cable entry points and termination arrangement.
  - d. Bus bar clearance phase to phase and phase to ground.
  - e. Configuration of bus bar
  - f. Technical detail of supporting insulator and their spacing.
  - g. Location of instrument transformers.
  - h. Control panel details with equipment layout.
  - i. Terminal block details.
- b. Single and three line diagram of all switchgears showing instrument transformers control switches, instruments and indication, etc.
- c. Control schematic diagram of each breaker showing all safety and operation interlocks, annunciation, etc.
- d. Transport/shipping dimensions with weights.
- e. Foundation and anchor bolt details including dead load and impact load.
- f. Cross-section with parts list.
- g. Cubicle wiring diagram with terminal board disposition.
- h. Any other relevant data, drawing and information necessary for review of items whether specifically mentioned or not, shall be furnished by the Contractor along with that information.
- i. The responsibility of correctness of wiring diagram shall be with Contractor. The Authorised Representative of BSCL will check the final schematic after submission. If any modification, addition or alteration is considered necessary to comply with the approved schematic drawing as stated herein above, the said modification, addition or alteration shall be carried out by the Contractor either in their works if it is before delivery, or at Site after delivery at no cost to the EmployerIn charge.
- j. Before starting manufacture of the equipment, the Contractor shall have to take approval of these design drawings from the Authorised Representative of BSCL in writing. Any manufacturing done prior to approval of drawings shall be rectified in accordance with the approved drawing by the Contractor at his own cost and the equipment shall be supplied within the stipulated period. Oil level indicator. Thermometers with thermometer sockets & leads. Oil & winding temperature indicators with alarm & trip contacts with capillary. Oil conservator Tank filter cap, drain valve and oil level gauge Oil filling hole and cap. Filter valve. Bi-directional Rollers. Explosion vent. Air Release Valve. H.V. Cable Box L.V. Cable Box with copper bus bars Marshalling Box Buchholz Relay with alarm & trip contacts & two shut OFF valves Radiators with shut off valves & air release plugs. On Load Tap Changer and RTCC Panel. Steel bolts and nuts exposed to the atmosphere shall be either galvanized or zinc passivated to make them as rust free.

## ELECTRIFICATION

The scope of contract is explained below. (Bidder should visit the site before bidding)

- i. Supply, Erection, testing & commissioning of HT RMU, UPPCL Metering Unit, Transformer, L.T. Panels & Accessories, Control Panels & Accessories termination of 11kV incoming power supply

connection at the Transformer end, all interconnecting cables as per requirements.

- ii. Earthing System as per IS 3043 for entire Electrical equipment as required.
- iii. Miscellaneous civil works like excavation & back filling, Sand, Half round pipes, red burnt bricks etc. for electrical external cabling works. Fencing (as per UPPCL / MVVNL standards) and foundation with boundary pillars etc. shall be in the scope of bidder. Cable trays with covers and conduits for Cabling System. Electrical poles, Indoor and Outdoor lighting including all the cabling works.
- iv. Supply, Erection, testing & commissioning of LT power and control cables with Glanding and Termination kits. UPS cables are included in this scope. Bidder to provide exact sizing calculation for the same.
- v. Point wiring complete with all the electrical works including fixing of fans and fixtures etc.
- vi. Separate DB complete with switch gears and all other units for separate floor/section.
- vii. Provision for 6amp and 16/32-amp switch-sockets as per requirement in each room. And other required areas.
- viii. Enclosed room for Main Panels and AMF Panel & Shed for DG set.
- ix. QAPs approval and third-party/factory Inspections of all major electrical items like Transformer, DG set, HT cables or any other equipment desired by Employer in charge.
- x. Tools and Plants, Water, Labour required to accomplish above scope of works.
- xi. Fencing and boundary with mesh wire is included in substation works as per UPPCL / MVVNL standards.
- xii. All electrical components QAP required, testing and inspection shall be carried as per approved QAP by BSCL/its representative. Dispatch clearance to be given based on test certificates and reports after inspection.
- xiii. Contractor to submit the SLD, cable sizing calculation, earthing calculation based on the electrical resistivity value in the area and other documents necessary for design engineering desired by the Employer in charge.
- xiv. All accessories required to complete the respective LT panel and control Panel is in the scope of bidder.
- xv. All interconnecting cables and its termination at both ends are in the scope of the bidder. It is the responsibility of the contractor for complete power supply terminations from the input HT supply of Transformer to the last point of supply.
- xvi. All panels shall be from CPRI approved manufacturers
- xvii. SITC of DG set of capacity at least 60% of the total load with AMF panel, interconnecting cables, and to achieve the desired interlocking and changeover of power for Indoor/Outdoor lights, shall be in the scope of the Bidder.
- xviii. Erection of Street light poles with its luminaries for outdoor illumination of complete area.  
Contractor shall ascertain the exact quantity required at site and supply and install the materials as per SLD & technical specifications and scope as per site visit. No extra amount shall be admissible, unless change in the scope or location. Therefore, contractor to visit and check the site conditions



before bidding. Supply of the Materials shall be to the Specification of this Tender document and installation shall be as described, as per drawings approved, instructions issued by consultant and/or the purchaser from time to time. Certain jobs shall be as per prevailing practices of Madhyanchal Vidyut Vitran Nigam Ltd (UPPCL / MVVNL) & IE/IS/IEC/IEEE codes. The cable quantities and sizes are tentative, any changes as per site conditions shall be to the account of the bidder, unless scope or location is changed.

- The Contractor shall take into account prevailing ambient temperature / weather conditions at site while designing the equipment as mentioned in technical specifications. Any de-rating factors related to ambient temperature shall be considered as per relevant IS specs. This scope shall be generally as per Contract Agreement and shall include additional jobs or additional quantities as may be required to be carried out for the completion of the electrical installation work in the opinion of the BSCL Engineer.
- Any other jobs/ items required to be carried out shall be evaluated on the basis of similar item rates under the Contract. Where such similar items do not exist, the Contractor shall submit cost analysis to arrive at the item rates for the approval of BSCL Engineer. (Actual invoice / price list & discount, tax details shall be submitted along with rate analysis for each extra item.) Maximum 10 % overheads, profit, etc. shall be allowed to the contractor on landed cost accepted by BSCL Engineer.

#### Liosining

- i. Getting the installation approval and obtaining permission to energize the system from State / Central Government Electrical Inspectorate authority.
- ii. Arranging visit of electrical inspector to site for Inspection of entire Electrical Installation which includes HT Cables, HT VCB, DG set, Transformer, LT Panels etc. as and when required.
- iii. Submission of necessary test reports/QAPs.
- iv. All required permission from any Government/ Semi Government / Municipal corporation / Fire Office shall be part of scope of work.
- v. Contractor shall submit installation detail working drawings for BSCL approval within 7 Days of the award of contract.
- vi. Bidder to visit the site before bidding to understand the scope completely.

#### Documentation

The following detailed documents and drawings shall be submitted for BSCL approval within 05 days of award of work.

- Earthing pits, Earth bus, Equipment / Panel earthing, etc., cable sizing calculations
- HT / LT PANEL BOARD Layout / Point of supply / Underground cable route layout etc.

- SLDs/Control Schematic/GA/BOQs/ QAPs for all panels, transformer, cables and all other electrical components to be used in this package, lighting calculations through Dialux or equivalent software.
- Cable Schedule with Tags, Cable trays/raceways lay out: - Details shall include pre-fabricated accessories such as risers, bends, tees, couplers, reducers, etc.
- Civil work like construction of RCC platforms/Fencing for installation of Transformer, Panel Board

Electrical GA drawings, Electrical Plan Approval from BSCL & State Electrical Inspector / UPPCL / MVVNL etc. QAPs for all Electrical components to be submitted for approval and Inspection thereof. Any other drawings as may be required by BSCL Employer for completing the project on time without cost over-run.

#### **HVAC:**

#### **VARIABLE REFRIGERANT FLOW (VRF) AIRCONDITIONING SYSTEM:**

##### **System Description:**

Air cooled split type multi-system air conditioning system consisting of:

- Outdoor condensing units connected to multiple indoor units.
- The indoor units may be of different type/ configuration / capacities.
- Each indoor unit shall have the capability of individual temperature set point control.
- The system should have the ability to connect each condensing unit to various nos. of indoor units of different types and capacities on one refrigerant circuit, as indicated on the tender drawings. The bidder shall check the layouts and check whether the system offered meets the desired requirements.
- Each condensing unit shall incorporate inverter driven variable speed hermetic scroll compressor, to obtain 10% to 100% step-less capacity control for enhanced power saving.
- Each indoor unit shall be provided with signal receiving kit to facilitate operation through remote control. Each indoor unit shall be provided with wireless or wired remote control, as specified in BOQ.
- The indoor and outdoor units shall be BMS compatible.

##### **Refrigerant:**

All the condensing units and indoor evaporating units shall be factory assembled and tested.

The entire refrigerant required to operate the system satisfactorily shall form part of the machines and nothing extra shall be payable on this account.

Any additional refrigerant required to meet the requirements of piping lengths shall be added at site. Nothing extra shall be payable on this account.

Additional refrigerant charge weight must be calculated based on the actual length of the refrigerant pipe work. The refrigerant charging process must be carried out with an appropriate charging station and under supervision.

Acceptable Refrigerants: R-410A.

**Refrigerant Piping Distance Limits:**

The system shall be capable of refrigerant piping runs suitable to the layouts indicated in the tender drawings. The bidder shall check the layouts and check whether the system offered meets the desired piping distance limits of all types.

The oil equalizing lines shall be inside the condensing units.

**Refrigerant Piping:**

Pipe Material: Up to 3/4" dia: soft drawn copper tube coils and  
Above 3/4" dia: hard drawn copper pipes of grade L

Fittings Material: Hard wrought copper or brass, suitable for flared / copper soldered  
/ Silver soldered connections.

Pitching: All refrigerant pipes shall be pitched to ensure proper oil return to  
the compressor.

Joints: Sweat joints using low temperature brazing and/or silver soldered

Maintenance: Isolation valves shall be provided at suitable locations for ease of  
maintenance.

**Installation:**

The installation shall be carried out strictly as per the refrigeration equipment manufacturer's recommendations including the required distribution joints and headers. The number of brazed joints shall be kept as minimum as possible/practical. The pipe work shall be supported on saddling arrangement with maximum 2-meter center distance. The refrigerant piping (inside the building and/or outside the building) shall be supported on perforated GI cable trays, which shall be covered from top with GI open able covers.

**Orientation of Joints:**

All the proprietary Distribution refrigeration pipe joints and headers shall be installed in an appropriate orientation to enable correct distribution of refrigerant. The Distribution Joints shall be factory insulated with pre-formed sections of expanded polystyrene or Equivalent insulation material.

**Cleanliness of Piping:**

All pipe work shall be kept clean and free from contamination to prevent breakdown of the system. All pipe ends shall be sealed and kept sealed until immediately prior to making a joint.

### **Testing:**

After the completion of the installation of the refrigerant piping, the entire system shall be pressure tested with dry nitrogen at a pressure of 20 Kg/Sqcm (high side) and 10 Kg/Sqcm (Low side). The pressure shall be maintained for a period of 24 hours. The system shall then be evacuated to a minimum possible vacuum, which shall be maintained for 24 hours before flushing and charging the system with the refrigerant.

### **Insulation of Refrigerant Piping:**

All suction pipes and low temperature / pressure liquid pipes of the Refrigerant pipe work shall be insulated with slip on Closed Cell Nitrile Rubber fire retardant pipe insulation having a wall thickness of not less than 13 mm. The thermal conductivity of the insulation material shall not exceed 0.032 W/m K at 0 degree C mean temperature. The density of the insulation material shall not be less than 33 + 3 Kg/cum.

All joints of the insulation shall be sealed with 100 mm width x 3 mm thick self adhesive tape of the same material as insulation and shall be of the same make as the basic insulation material. Insulation material exposed to atmosphere shall be of the material as described above and shall be provided with UV protective coating/lamination. The joint sealing tape shall also be provided with identical UV protective coating/lamination. Where indoor refrigerant pipe work is located in roof spaces or spaces where temperature may exceed 30 degree C and RH may exceed 80%, the thickness of pipe insulation shall be selected accordingly.

### **Outdoor Condensing Units:**

- i. The unit shall be fully weatherproof, factory assembled and pre-wired with all necessary electronic and refrigerant controls. The casing shall be constructed of mild steel panels finished with baked enamel or powder coating. The unit shall be completely factory wired and tested with all controls before dispatch. The unit shall be of rugged & anti-corrosion design with strong base plate for easy mounting. The unit shall be complete with state of the art microprocessor control panel. The microprocessor panel shall incorporate controls for precise monitoring of status of the system.
- ii. Larger Condensing Units: The condensing units larger than 5 HP capacities shall incorporate minimum two scroll compressors with at least one inverter driven scroll compressor. The unit shall be capable of operating even if one of the compressors is unserviceable.
- iii. Modular Design: The modular design of the condensing units shall allow for side-by-side installation. The outdoor unit when consisting of separate modules, each module shall have one separate inverter driven compressor.
- iv. Fan Motor Speed Control: The condensing unit fan motors shall have multi-speed operation to maintain constant head pressure control in all ambient temperatures and modes of operation.
- v. Compressors: Compressors shall be highly efficient hermetic scroll type of industrial quality, rugged construction direct driven, with scroll plates & suction/discharge service valves, with industrial solid motor mounts, internal motor protection and vibration isolators. The compressors shall be completely enclosed in a chamber with no leakage path and shall have the capability for scroll plates to separate.

At least one of the compressors shall be inverter driven and the controller shall vary the speed of the compressor to meet the variations in the cooling / heating loads. Each compressor shall be independently wired and piped to its own circuit for efficient operation & ease of maintenance. All parts of the compressor shall be suitable and sufficiently lubricated. Oil heaters shall be provided in compressor casing.

- vi. Heat Exchanger: The heat exchanger shall be constructed from seamless copper tubes mechanically bonded to aluminum fins to form a cross fin coil. The heat exchanger shall be with sub cooling feature for effective usage of the entire coil surface through proper circuiting in order to prevent flushing of refrigerant owing to large length of piping.
- vii. Refrigerant Circuit: The refrigeration circuits of the condensing unit shall be complete with refrigeration compressors, motors, fans, condenser coils, electronic expansion valve, solenoid valves, 4 way valve, distribution headers, capillaries, filters, shut down valves, service ports, receivers and accumulators and all other components which are essential for safe and satisfactory operation of the system.
- viii. Safety Devices: The condensing unit shall be complete with the following safety devices as minimum: High pressure switch, Fan Drive Overload protection switch, Fuses, Crank case heater, Fusible plugs, over current protector.
- ix. Oil Recovery: The unit shall be equipped with an oil recovery system to ensure stable operation of system with long refrigerant piping. The oil recovery system shall be operated after the first hour of operation and then every consecutive 4 hours of operation. The unit shall be provided with high efficiency oil separators on the discharge side of the compressor together with factory fitted oil equalization system.
- x. Fans: The unit shall be provided with necessary numbers of direct driven low noise propeller fans arranged for vertical discharge. Each fan shall be with a safety guard.

#### **Indoor Unit:**

- xi. The indoor unit shall be Cassette type. The indoor unit shall be compact and shall have elegant appearance. They shall have low noise centrifugal blowers driven by special motors. The cooling coil shall be of direct expansion type made of copper tubes and integrally fitted with aluminum fins. The indoor unit shall be provided with removable and washable type polypropylene filters. Each unit shall be provided with multi-functional cordless remote control unit with special features like programmable timer and soft dry mode etc.

#### **REFRIGERANT PIPING :**

- xii. All refrigerant piping for the air conditioning system shall be constructed from hard drawn/soft seamless copper refrigerant pipes with copper fittings and silver-soldered joints. The refrigerant piping arrangements shall be in accordance with good practice within the air conditioning industry, and to include charging connections, suction line insulation and all other items normally forming part of proper refrigerant circuits.
- xiii.
- xiv. All joints in copper piping shall be sweat joints using low temperature brazing and or silver solder. Before joining any copper pipe or fittings, its interiors shall be thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt

etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using nitrogen. After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at pressure of 20Kg per sq.cm and 10 Kg per sq.cm (low side). Pressure shall be maintained in the system for 24 hours. The system shall then be evacuated to minimum vacuum if 70mm hg and held for 24 hours.

- xv. The thickness of copper piping shall not be less than mentioned below:

| Pipe Size in mm(OD) | Wall Thickness in mm |
|---------------------|----------------------|
| a) 54.1             | 1.5                  |
| b) 41.3             | 1.3                  |
| c) 34.9             | 1.3                  |
| d) 28.6             | 1.2                  |
| e) 25.4             | 1.2                  |
| f) 22.2             | 1.0                  |
| g) 19.1             | 1.0                  |
| h) 15.9             | 1.0                  |
| i) 12.7             | 0.8                  |
| j) 9.5              | 0.8                  |
| k) 6.4              | 0.8                  |

- i. The suction line pipe size and the liquid line pipe size shall be selected according to the manufacturers specified outside diameter. All refrigerant pipes shall be properly supported and anchored to the building structure using steel hangers, anchors, brackets and supports which shall be fixed to the building structure by means of inserts or expansion shields of adequate size and number to support the load imposed thereon.

#### **CONDENSATE DRAIN PIPING :**

Condensate Drain Pipes shall be UPVC of 10 Kg/cm<sup>2</sup> condensate drain water piping with necessary clamps, supports, hangers and fitting such as bend, tees, reducers etc. duly insulated with 6 mm thick chemically cross-linked closed cell polyethylene foam.

The drain lines shall be provided at all the lowest points in the system, as well as at equipment, to remove condensate. All condensation drainage shall be pitched in the direction of flow to ensure adequate drainage, with an adequate trap seal to prevent leakage of air due to static pressure developed by air conditioning units. The Pitch shall be 20 mm per meter wherever possible, but not less than 10 mm per meter piped to nearest drain.

### **INLINE FANS:**

This specification outlines the minimum requirements for design, engineering, selection, manufacture, test and supply of ducted inline fans with all accessories complete in all respect.

#### **Construction:**

Inline Fan shall be rectangular or circular in shape and shall have mixed flow impeller directly driven with single phase IP-44 external rotor motor having class F insulation. The casing & impeller shall be made of durable & high quality plastic. The construction of the assembly shall be such that impeller & motor block is fixed to the mounting bracket frame by means of special clamps with latches. This should also facilitate removal of impeller & motor block only without disconnecting the ducting & necessity of removal of complete assembly. The assembly must have Fan speed regulator supplied by the Fan manufacturer for air balancing. The regulator shall be mounted on the Fan Motor block itself at manufacturer works. The motor shall have in-built thermal overload protection with automatic restart. Fan motor shall be equipped with ball bearing designed for at least 40000 working hours service life. The fan shall be connected to power mains through the external terminal block. The Fans shall be compatible to be used with matching size round ducts. Fan Impeller shall be dynamically balanced. The Fan assembly shall be fixed to ceiling/wall with mounting bracket supplied by Fan manufacturer along with Fan assembly. Mounting shall be possible at any angle.

#### **Installation:**

Fan shall have rigid supports and fitted to both ends of the casing. Wherever the fans are to be suspended from ceiling or mounted on the wall, the contractor shall include supply and fixing of all the material that may be required to complete the installation in all respect. Fan inlet and outlet connections shall be by means of flexible canvas connections having flexibility and slackness as per relevant IS Codes.

### **DUCTING:**

#### **Duct Material:**

The ducts shall be fabricated from galvanized steel sheets of approved make. Zinc coating on galvanized steel sheets shall not be less than 120 gm / sq m. Galvanized steel sheets shall be of lock forming quality. Test certificates from the manufacturer to be submitted by the contractor along with the every lot of sheets supplied. In addition, if deemed necessary, samples of raw material, selected at random by Clint's site representative shall be subject to approval and tested for thickness & zinc coating at contractor's expense. All ducts shall be factory fabricated from galvanized steel sheets, with no intermediate bracing. Thickness of sheet shall be as per the following details: -

|                    |                                    |
|--------------------|------------------------------------|
| <b>RECTANGULAR</b> | <b>DUCT SECTION LENGTH 1200 mm</b> |
| <b>DUCTS (GSS)</b> |                                    |

| MAXIMUM DUCT<br>SIZE (mm) | GAUGE | TYPE OF<br>JOINT | BRACING |
|---------------------------|-------|------------------|---------|
| 1-750                     | 26    | C & SS           | Nil     |
| 751 – 1000                | 26    | E-Flange         | Nil     |
| 1001 – 1200               | 24    | E-Flange         | Nil     |
| 1201 – 1500               | 24    | H-Flange         | Nil     |
| 1501 – 1800               | 22    | H-Flange         | Nil     |
| 1801 – 2100               | 20    | J-Flange         | Nil     |
| Above 2100                | 18    | J-Flange         | Nil     |

Abbreviations: (a) C – Cleat, (b) S – S Cleat (c) SS – Standing S Cleat

#### **Duct fabrication:**

All ducts shall be factory fabricated in workman like manner in accordance with SMACNA standard. The following points shall be considered during duct fabrication. Ducts to be fabricated from coil (sheet metal in roll form) to facilitate longitudinal seams at corners/ folded edges only. All ducts, to be made on CNC profile cutter for requisite accuracy of dimensions. All edges to be machine treated using lock formers. Duct shall be straight and smooth on the interior surfaces. If space available, bends shall be made with radius not less than one-half the width of the duct. Changes in dimensions and shapes of ducts shall be gradual. Tapering angles shall not be more than 30 degrees (tapering ratio shall be between 1:4 and 1:7). Cutting vanes shall be provided in all bends and duct collars to permit the air to make turn without turbulence. Splitter dampers shall be provided at all T connections.

Ducts shall be fabricated as per details on approved shop drawings. All ducts shall be rigid and adequately supported and cross- braced where required for preventing buckling, vibration or breaking. All ducts and supports shall be spray painted with white color at outer surface on site.

#### **Duct installation:**

All ducts shall be installed in workman like manner in strict accordance with the approved shop drawings. The following points to be considered during duct installation. All necessary allowances and provisions shall be made by the contractor for beams or other obstructions in the building, whether or not the same are shown on the drawings. If a duct cannot run as shown on the drawings, the contractor shall install the duct between the required points by any path available, subject to the approval of the client/ architect/ consultant. All ductwork shall be independently supported from building elements. All horizontal ducts shall be rigidly and securely supported, by using hangers formed by fully threaded GI rods and GI channel under ducts as per SMACNA standards.



All ducts shall be totally free from vibration under all conditions of operations. Whenever ductwork is connected to fans, ducts shall be provided with flexible connections. Flexible connection shall be made from fire resistant flexible double canvas sleeves at least 100 mm deep, secured properly and bolted at both ends. The two mating flanges of the ducts shall be made air tight by providing 2 mm thick rubber gasket fixed on both mating flanges by using good quality adhesive. Wherever ducts pass through masonry walls an angle iron frame of 40 x 40 x 5 mm properly primer coated shall be riveted to the duct position passing through the wall to prevent any buckling of the duct. All ducts and supports shall be spray painted with white color at outer surface on site.

**Collar dampers:**

All supply air diffusers/ grilles shall be provided with removable key-operated multi-blade type louver dampers. Dampers installed in supply air grilles of air conditioning lines shall be made of aluminum and those installed in air cooling lines shall be made of mild steel or galvanized steel. Collar dampers shall be provided with suitable links, louvers and quadrants for manual control of volume of airflow and proper balancing of the air distribution system.

**Duct dampers:**

Duct dampers shall be multi blade box type of robust construction made out of galvanized steel and tightly fitted. Dampers shall be provided with suitable links, levers and quadrants as required for manual control of volume of airflow and proper balancing of the air distribution system. Every damper shall be having an indicating device clearly showing the damper position at all times.

**Testing:**

After completion of the installation of air distribution system all ducts shall be tested for air leaks. Before painting the interiors, air distribution system shall be allowed to run continuously for 24 hours for driving away any dust or foreign material lodged within the ducts during installation.

**Balancing:**

The entire air distribution system shall be balanced using anemometer. Air quantities at the discharge and at various outlets shall be identical to, or less than 5% in excess of, those specified and quoted. Leakage in each air distribution system shall be within 3%. Dampers shall be permanently marked after air balancing is complete so that these can be restored to their correct position if disturbed at any time. Complete air balancing report shall be submitted to the consultants for scrutiny and approval.

**Duct Insulation:**

All supply air ducts shall be insulated with 9 mm thick Closed Cell Elastomeric Nitrile Rubber. Thermal conductivity of elastomeric nitrile rubber shall not exceed 0.036 W/m<sup>2</sup>°K at an average temperature of 0 °C. The insulation shall have fire performance such that it passes minimum CLASS 1 as per BS476 Part 7 for surface spread of flame. The closed cell elastomeric nitrile rubber insulation shall be applied as follows:-

- i. Clean the surface with a wire brush and make it free from rust and oil. Apply one coat of rubber adhesive SR 998.

- ii. Fix the nitrile rubber insulation on duct surface of the thickness as mentioned in BOQ.
- iii. All longitudinal & transverse joints shall be sealed with self adhesive tape of same material 50 mm wide x 3 mm thick.

**Linear grilles:**

The supply and return air grilles shall be powder coated fabricated from aluminum extruded sections. The grille shall have 3 mm thick single horizontal extruded section fixed louvers. The grille flange shall be fabricated out of 20x20x1.5 mm aluminum angle. Grilles longer than 450 mm shall have intermediate supports for the horizontal louvers. The samples of grilles shall have to be got approved by the consultant/ architect/ client.

**Testing and balancing of air distribution system:**

After completion of the installation of air distribution system all ducts shall be tested for air leaks. Before painting the interiors, air distribution system shall be allowed to run continuously for 24 hours for driving away any dust or foreign material lodged within the ducts during installation. The entire air distribution system shall be balanced to supply the air quantity for each area and the final balance of air quantity for each area shall be submitted to the Project Manager/Engineer-in-charge, for approval. The entire instrument required for testing and balancing i.e. rotating vane anemometer, thermometer, duct hood, inclined manometer etc. shall be provided by the Contractor.

**Fire fighting**

**Scope**

The Scope of works shall cover complete Fire Fighting system including Fire alarm system of Proposed building. The scope includes all the related things like testing at manufacturers' works, packaging, transportation, shipping, unloading at port, transportation to site, unloading, storage, insurance, transportation from stores to erection site etc.

**System Design Requirements**

- Main design components include Wet risers and the hydrant System including all pumps and pipe networks.
- All Accessories, but not limited to field instruments like pressure gauge & pressure switch and control cabling including junction box, erection hardware, etc., to MCC & diesel engine control panel should be included.
- Electrical panels, Cabling & earthling from MCC panels to various fire fighting system, control wiring & interlocking.
- Instrumentation and Control equipment shall be complete with primary elements, initiating contacts for alarms, instrument impulse lines, fittings, power and control cables with suitable glands and terminations and instrument installation hardware.
- 4mm thick wrapping & coating for underground piping with proper testing.
- Sprinkler System for the complete development (within the scope of this contract).
- Contractor shall carryout the hydraulic calculation using validated software.
- Fire extinguisher including mounting fixtures, anchor bolts, clamps, structures, etc. for all buildings in all the areas.
- Photo luminescent signage.
- Fire alarm system
- Firewater Storage at underground of utility building and Terrace level of each building.

- Yard hydrant system around Handicrafts building.

### **Associated Works**

- The complete electrical work related to Fire fighting including, but not limited to installation of pumps, shall be carried out by Contractor.
- All associated Plumbing Works are also in the scope of Contractor.
- The Scope includes the associated works like Structural works for pipe supports for above ground pipes, wall supports, hose cabinet supports, etc., Civil works like wall opening, chipping of foundation, grouting of foundations, sand filling and compacting for underground pipes, etc.
- Painting of equipment, piping, supports etc. with 2 coats of primer & 2 coats of synthetic enamel as per IS: 5 shade 536 (Fire Red).
- Supply of One set of special erection and maintenance tools and tackles.
- Start up and Essential spares.
- Recommended spares for 5 years operation.
- Anchor fasteners required for pipe supports of all the systems which are engineered by vendor and all anchor bolts, nuts, washers and inserts to be embedded in concrete for the equipment and piping.
- Shop inspection (in Vendor's works & at project site after installation along with all required Calibrated measuring instruments).]

Fire protection system shall be designed and install as per the following codes and standards

- NBC, 2016: National building code, part IV
- IS 2189:1999: Installation & maintenance of fire detection and alarm System
- 2002: Design and installation of fixed automatic sprinkler fire extinguishing system
- IS 13039:1991: Yard hydrant system
- IS 3844:1989: Internal hydrant system
- IS 1239 / IS 3589: Specification for MS Pipes
- IS 5290:1993: Specifications for hydrant landing valves
- IS 15683:2006: ABC powder type extinguishers
- IS 9457:1980: Safety colours and safety signs
- IS 12349:1988: Fire protection – safety sign and Local fire authority requirements

### **Plumbing**

The Scope of works shall cover the complete Plumbing system including Internal and External Water Supply, Internal and External drainage including Sewerage, Storm water drainage, Rain water harvesting system of Haat and Handicrafts Promotion Centre building complex. The scope includes all the related things like procurement, manufacture, testing at manufacturers' works, packaging, transportation, shipping, unloading at port, transportation to site, unloading, storage, insurance, transportation from stores to erection site etc.

### **System Design Requirements**

- For Utility area at Ground floor/Basement additional features to include:
  - All the transfer pumps, connection between underground tanks and transfer pumps, related piping, valves and accessories etc.
  - Auto level sensors with required controls like solenoid valve for each tanks (both underground tanks and overhead tanks) for automatic operation of transfer pumps.
  - Transfer pumps (1w + 1s) for each potable water & non-potable water system Water supply pipes in Utility building
  - Separate piping from utility building to each overhead tank through trench with required supports.

- Complete distribution of potable and non-potable water distribution for proposed building.
- There are three piping outlet to be taken from each potable and non-potable OHT. Water supply for top levels shall be supplied through booster pumps with pressure sensors. Individual piping connections shall be taken for next levels respectively to maintain the uniform pressure.
- Works to include for air vents, PRV, water meters, valves, pressure gauges, water hammer arrestors, Nahni traps, Floor gratings, Gully trap, grease trap, man holes, inspection chambers, required piping connections etc.
- Required capacity booster pumps with pressure sensor system with required controls and instruments at terrace level for each drinking water system and flushing water system with standby for each building.
- Cabling & earthing from MCC panels to various plumbing/ sanitary system, control wiring & interlocking.
- Field instruments like pressure gauge & pressure switch and control cabling including junction box, erection hardware, etc., to MCC
- Instrumentation and Control equipment included in the package unit shall be complete with primary elements, initiating contacts for alarms, instrument impulse lines, fittings, power and control cables with suitable glands and terminations and instrument installation hardware.
- Supply & Installation of following complete Sanitary Fixtures and Fittings as per the model and make mentioned in the tender specifications.
  - Modular toilet cubical of 25mm thick waterproof boards with stainless steel hardware.
  - Provision for Wall hung EWC, counter top wash basins, press and close faucets, exhaust inbuilt windows.
  - Urinal with sensor system (Model: C05075 New Magnum & Jaguar Concealed urinal flush sensor 51087).
  - Pantry sink.
  - Shower assembly.
  - taps.
  - ABS Rinsing spray.
  - Janitor sink.
  - Tower ring, soap dispenser, toilet paper holder, twin coat hook etc.

#### **Associated Works**

- The complete electrical work related to Plumbing works including, but not limited to cabling and earthing of various fixtures and control wiring shall be carried out by Contractor.
- The Scope includes the associated works like Structural works for pipe supports for above ground pipes, wall supports, hose cabinet supports, etc., Civil works like wall opening, chipping of foundation, grouting of foundations, sand filling and compacting for underground pipes, etc.,
- Painting of equipment, piping, supports etc. with 2 coats of primer & 2 coats of synthetic enamel as per relevant IS codes.
- Start up and Essential spares.
- Recommended spares for 5 years operation
- Anchor fasteners required for pipe supports of all the systems which are engineered by vendor and all anchor bolts, nuts, washers and inserts to be embedded in concrete for the equipment and piping.
- Supply of One set of special erection and maintenance tools and tackles.
- Cutting holes, chases & like through all types of walls /floors and finishing for all services crossings, including sealing, frame works, fire proofing, providing sleeve, cover plates, making good structure and finishes to an approved standard.

#### **Fire Detection Alarm System**

##### **Scope**

The scope includes execution of Solution consisting of Fire Detection & Alarm System and Public Address system in accordance with the RFP requirements.

### **System Design Requirements**

#### **For Fire Detection system and Public Address System**

- The system shall comprise of heat and smoke detectors, manual call points, hooters and Public Address System.
- The system shall comprise of microprocessor based addressable fire detection system.
  - Integrated smoke and heat detectors.
  - Manual call points.
  - Hooter sounders with flashers.
  - Ceiling mounted speakers for PA system.

#### **CCTV Video Surveillance System**

- The main objective is to monitor and record the activities, movement of people and vehicles through entry points inside the building, to monitor perimeter.
- Cameras to be positioned at all areas to enable a total secured building.
- Video Cameras should be - IP Mini Dome Color IR, 2 MP, Varifocal lens

#### **Network Management System**

- The features in the design should include:
  - 12 Port Managed Network Edge / Access Switch, 10/100 Mbps with POE.
  - 8 Port Managed Network Edge / Access Switch, 10/100 Mbps.
  - 24 Port Managed Network Aggregation Switch, 10/100 Mbps.
  - Network Management Server / Workstation with software.
  - Network Rack (42U).
  - PVC Conduit pipe + installation.
  - AT6 Cable + installation.

#### **Associated Works**

- All associated electrical / civil work related to above works including, but not limited to cabling, earthing and structural works for support / fixing of various fixtures, wall openings, grouting, foundations, sand filling and control wiring shall be carried out by Contractor.
- Required UPS Power only will be made available by the Employer. The power cabling & Ethernet / Optical Fiber cabling, Ethernet Switches and other network hardware shall be provided by the Contractor.

## Relevant IS Codes

Standards and Specifications of following project components are given in this section;

- Structure design works should follow the latest applicable IS codes and the updates thereof.

The Structure works design shall comply with the all the specified minimum requirements of the Authorities Structures analysis , design and detailing works shall be done by the latest software's.

- The Structural design shall be vetted by a Accredited Government Institute before being approved by the Employer This approved design shall form the basis of Construction.

### Code For structures

|                         |   |
|-------------------------|---|
| IS-875 (Part 1) – 1987  | Code of Practice for Design Loads (other than earthquake) for buildings and structures – Unit weights of buildings materials and stored material. |
| IS-875 (Part 2) – 1987  | Code of Practice for Design Loads (other than earthquake) for buildings and structures – Imposed loads.   |
| IS-875 (Part 3) – 1987  | Code of Practice for Design Loads (other than earthquake) for buildings and structures – Wind loads.  |
| IS-875 (Part 4) – 1987  | Code of Practice for Design Loads (other than earthquake) for buildings and structures – Snow loads.  |
| IS-875 (Part 5) – 1987  | Code of Practice for Design Loads (other than earthquake) for buildings and structures – Special loads and load combinations.                     |
| IS: 456 – 2000          | Code of Practice for Plain and Reinforced Concrete.   |
| IS: 1786 - 1985         | Specification for High Strength Deformed Bars and Wires for Concrete Reinforcement  |
| IS: 432 (Part 2) - 1982 | Specification for Mild Steel and Medium Tensile Steel Bars and Hard Drawn Steel Wire for Concrete Reinforcement – Hard Drawn Steel Wire.          |
| IS: 1343 – 1980         | Code of Practice for Pre-stressed Concrete  |
| IS: 13920 - 1993        | Ductile detailing of reinforced concrete structures subjected to seismic forces - Code of practice  |
| IS: 14268 - 1995        | Uncoated Stress Relieved low relaxation seven-ply strand for Pre stressed Concrete – Specification  |
| IS: 2062 – 1999         | Steel for General Structural Purposes. Specification.   |
| IS: 1161 – 1998         | Specification for Steel tubes for Structural Purposes.  |
| IS: 800 – 1984          | Code of Practice for General Construction in Steel.   |
| IS: 1893 – 2002         | Criteria for Earthquake resistant design of structures.   |
| IS: 2210 – 1998         | Criteria for Design of Reinforced Concrete structures and Folded plates.  |
| IS : 269 – 1989         | Specification for Ordinary, rapid hardening and low heat Portland cement.   |
| IS : 455 - 1989         | Specification for Portland blast furnace slag cement.   |

|                 |  |
|-----------------|--|
| IS : 1489 -1991 | Specification for Portland pozzolana cement  |
| IS : 383 - 1970 | Specification for coarse and fine aggregates from natural sources for concrete.                                  |
| IS : 516 -1959  | Method of test for strength of concrete.   |
| IS : 432 -1982  | Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement. |
| IS : 4990 -1993 | Specification for plywood for concrete shuttering works  |
| IS : 2645 -1975 | Specification for integral cement water proofing compounds.  |

## ARCHITECTURE & FINIHING WORKS

- The Codes, Standards and Technical Specifications applicable for the design and construction of project components are:
- The following list is included for guidance only and the omission from the list does not relieve the contractor from compliance there with:

### Code for Architecture and Finishing Works

| Code           | Description   |
|----------------|---|
| IS 1200        | Mode of measurement.  |
| IS 269         | Ordinary portland cement.   |
| IS 3812, 1981  | Flyash for use as pozzolana and admixtures,   |
| IS 2386        | Method of test for aggregate for concrete.  |
| IS 516         | Method of test for strength of concrete   |
|                | Coarse and fine aggregate from natural sources for concrete.                                    |
| IS 1077, 1970  | Method of test for Bricks.  |
| IS 456         | Code of practice for plain and reinforced concrete.   |
| IS 1597        | Code of practice for construction of stone masonry.   |
| IS 1597 PART 1 | Code of practice for construction of rubble stone masonry.                                      |
| IS 1130        | Marble (blocks, slabs and tiles)  |
| IS 287         | Recommendation for maximum permissible moisture contents of Timber used for different purposes. |
| IS 1141        | Code of practice for seasoning of timber.   |
| IS 6313 PART 2 | Anti-termite measures in buildings, pre-constructional chemical treatment measures.             |
| IS 2571        | Code of practice for laying in situ cement concrete flooring                                    |
| IS : 226       | Structural Steel (Standard Quality)   |
| IS : 451       | Technical Supply Conditions for Wood Screws   |
| IS : 800       | Code of Practice for Use of Structural Steel in General Building Construction                   |

|                       |   |
|-----------------------|---|
| IS : 806              | Code of Practice for Use of Steel Tubes in General Building Construction                                    |
| IS : 813              | Scheme of Symbols for Welding   |
| IS : 814              | Covered Electrodes for Metal Arc Welding of (part I & II) Structural Steel                                  |
| IS : 816              | Code of Practice for Use of Metal Arc Welding for General Construction in Mild Steel                        |
| IS : 822              | Code of Practice for Inspection of Welds  |
| IS : 961              | Structural Steel (High Tensile)   |
| IS 73                 | Paving bitumen.   |
| IS 702                | Industrial Bitumen  |
| IS 1322               | Bitumen felts for waterproofing and damp proofing.  |
| IS 1609               | Code of practice for laying damp proof treatment using bitumen felts.                                       |
| IS 13711 & 13712      | Ceramic tiles   |
| IS 13630 Part 1 to 13 | Testing for Ceramic tiles   |
| IS 104                | Specification for ready mixed painted, brushing, zinc chrome, priming.                                      |
| IS 137                | Ready mixed paint, brushing, matt or eggshell flat, finishing, interior to Ind standard colour as required. |
| IS 5410               | Cement paint, colour as required.   |
| IS 6241               | Method of test for determination of stripping value of road aggregate.                                      |
| IS 2720               | Density test of aggregate.  |

## Electrical works

Standards and Specifications for the Design and Construction of Electrical works are given in this section;

### BACKGROUND

The contractor shall comply with all the minimum requirements of the Design and Construction of Electrical works as per the Latest Standards, Statutory requirements, National Building codes and all other relevant regulations

### CODES AND STANDARDS

The system, design, materials, equipment, installation, testing and commissioning shall, in addition to all other applicable codes and standards, comply with the latest requirements of the following standards, codes, principles and specifications issued by Indian standards or IEC codes :-



## Code for Electrical Works

| Codes          | Description  |
|----------------|--|
| IS 335         | Insulating oil   |
| IS 2026        | Power transformers (part I - V)  |
| IS 10028       | Code of practice for selection, installation and maintenance of transformers |
| IS 2099        | Bushing for alternating voltages above 1000 V                                |
| IS 4257        | Porcelain bushings for transformers  |
| IS 3639        | Power transformer fittings and accessories                                   |
| IS 2705        | Current transformers   |
| IS 8468        | On load tap changer  |
| IS 8478        | Application guide for tap changers   |
| IS 6600        | Guide of loading of oil immersed transformer                                 |
| IEC 2544       | Creepage distance for insulators & bushing congenial                         |
| IEC 76         | Power transformers   |
| IEC 214        | On load tap changers   |
| IEC 616        | Terminal and tapping markings for power transformers                         |
| IEC 551        | Determination of transformer and reactor sound levels.                       |
| IEC 137        | Bushings for alternative voltage above 1000V.                                |
| IEC 354        | Loading guide for oil immersed transformer                                   |
| IS: 3043       | Code of practice for earthing.   |
| IEEE: 32       | Neutral Grounding Devices, standard requirements, Terminology & procedure.   |
| IS 1271        | Classification of Insulating Materials.                                      |
| IS 2099        | Bushing for alternating voltages above 1000 V                                |
| IS 2705        | Current transformers   |
| IS 3202        | Code of practice for climate proofing  |
| IS 3639        | Power transformer fittings and accessories                                   |
| IS 4257        | Porcelain bushings for transformers  |
| IS 11171       | Dry type Transformer   |
| IS 8478        | Application guide for tap changers   |
| IS10028        | Code of practice for selection, installation and maintenance of Transformers |
| IS 1248 & 3107 | Direct acting Electrical indicating instruments                              |
| IS 2099        | Bushings for alternating voltages above 1000V                                |
| IS 2516        | AC Circuit Breakers  |
| IS 2705        | Current Transformers   |
| IS 3156        | Voltage Transformers.  |

|                   |   |
|-------------------|---|
| IS 3427           | Metal enclosed switchgear and control gear for voltages Above 1000V but not exceeding 11000 V               |
| IS 6875           | Control switches for voltages up to and Including 1000V AC and 1200 V DC                                    |
| IEC 56            | HV alternating current circuit breakers.  |
| IEC 137           | Bushings for alternating voltages above 1000V   |
| IEC 298           | AC metal enclosed switchgear and control gear for rated voltages above 1kV and up to and including 72.5 kV. |
| IS 2147           | Degree of protection for enclosure  |
| IS 3842           | Specification for electrical relays for AC system   |
| IS 2208           | Specification for HRC cartridge fuse links up to 650 Volts.   |
| IS 5082           | Wrought Al. And aluminum alloys, bars, rods, tube and Sections for electrical purposes.                     |
| IEC 694           | Common clauses for high voltage switchgear and control gear standards                                       |
| IS 1248 & 3107    | Direct acting Electrical indicating instruments   |
| IS 2959           | AC contactors up to 1000V   |
| IS 13947          | AC Circuit Breakers   |
| IS 2705           | Current Transformers  |
| IS 3156 & 4146    | Potential Transformers.   |
| IS 4047           | Specification for air break switches and combination fuse switch units for voltage not exceeding 1000V.     |
| IS 6875           | Control switches for voltages upto and including 1000V AC and 1200V DC.                                     |
| IS 1822           | Motor duty Switches   |
| IS 12021          | Specification for control transformer.  |
| IS 8623           | Factory built assembly of switchgear & control gear for voltage not exceeding 1000V                         |
| IS 13947 (Part I) | Degree of protection for enclosure  |
| IS 3842           | Specification for electrical relays for AC system   |
| IS 2208 & 9224    | Specification for HRC fuses.  |
| IS 5082           | Wrought Al. and aluminum alloys, bars, rods, tube and sections for electrical purposes.                     |
| IS 4237           | General requirement for switchgear & control gear for voltage not exceeding 1000V.                          |
| IS 3231           | Electrical relays for power system protection   |
| IS 375            | Marking and arrangement for switchgear bus bars, main connection and control aux. wiring.                   |
| IS 5578           | Guide for marking of insulated conductors.  |
| IS 3618           | Pre-treatment of MS sheets for phosphatising.   |
| IS: 4722          | Specification for rotating machinery  |
| BS: 649           | Performance and testing of diesel engines for general purposes.   |

|                                |  |
|--------------------------------|--|
| IS 4729                        | Measurement and evaluation of vibration of rotating electrical machines.   |
| IS 1950 (1962)                 | Code of Practice for Sound insulation of Non Industrial Buildings.   |
| IS 8084-1976                   | Interconnecting bus bars for AC voltages above 1kV   |
| IS 8623 (part-2)               | Factory built assemblies-particular requirements of bus bar trunking systems.  |
| IEC 439 (part-2)               | Particular requirements of bus bar trunking systems  |
| IS 13925                       | Shunt capacitors for power system  |
| IS 3231                        | Electrical relays for power system Protection  |
| IS 2705                        | Current Transformers   |
| IS 1248                        | Direct acting electrical indicating instruments  |
| IS 2147                        | Degree of protection   |
| IS 5578                        | Marking & arrangement of switchgear, bus bars, main connection and auxiliary wiring  |
| IS: 1554 (PART-I)-             | PVC insulated (heavy duty) electric cables working voltage up to and including 1100V   |
| IS: 7098 (PART-II)             | Cross-linked polyethylene insulated PVC sheathed cables for working voltages from 3.3 kV up to and including 33 kV                         |
| IS: 8130                       | Conductors for insulated electric cables and flexible cords.   |
| IS: 5831                       | PVC insulation and sheath of electric cables.  |
| IS:3975                        | Mild steel wires, strips and tapes for armoring of cables.   |
| IS:2633                        | Methods of testing weight, thickness and uniformity Of coating on hot dipped galvanized articles.  |
| IS: 209                        | Specification of zinc.   |
| IS: 3961(PART-II)              | Recommended current ratings for PVC insulated And PVC sheathed heavy duty cables.  |
| IS: 10418                      | Wooden drums for electric cables.  |
| IEC: 540 & 540A                | Test methods for insulation and sheaths of electric cables and cords.  |
| IS: 10462 (PART I)             | Fictitious calculation method for determination of dimensions of protective coverings of electrometric and thermoplastic insulated cables. |
| IS: 10810 (PART 58)            | Oxygen Index test  |
| IEC 146                        | Semiconductor Converters   |
| IEC 1131-2                     | Programmable Controllers   |
| IEC Publication 947, 1988      |  |
| IEC Publication 439, 1985      |  |
| IS 13947, 1993                 | Specifications of Low Voltage Switchgear & Control Gear  |
| IS 8623, 1993                  | Specifications of Low Voltage Switchgear & Control Gear assemblies.  |
| Indian Electricity Act, 1910   |  |
| Indian Electricity Rules, 1956 |  |
| National Electrical Code 1985  |  |
| EN50081-1                      | EMI Emissions standard   |

|                   |   |
|-------------------|---|
| EN50082-1         | EMI Immunity standard   |
| Electrical safety | EC730-1 and CE directives effective from 1 January 1996.  |
| IEC 146-4         | Method of specifying the performance and test requirements  |
| IEC 146-5         | Switches for UPS  |
| IEC 439           | Low Voltage switch gear and control gear assemblies   |
| IEC 801           | Electromagnetic compatibility for industrial process Measurement  |
| IEC 950           | Safety of IT equipments including electrical business equipments  |
| 1000-2-2          | Electromagnetic compatibility – Compatible levels for low frequency conducted disturbances and signaling in public low voltage power supply systems |
| IS 3043           | Code of practice's for earthing in Electrical installation.   |
| IEEE 1100         | Recommended practice for powering and grounding of sensitive Electronic equipment.  |

## **HVAC**

### **Code of Reference for HVAC works**

| <b>Codes</b>                          | <b>Description</b>   |
|---------------------------------------|--|
|                                       | National Building Code 2005  |
|                                       | Energy Conservation Building Code 2008   |
| ASHRAE 90.1-2009                      | ANSI/ ASHRAE/ IESNA standard 90.1-2009: Energy standard for buildings except low rise residential buildings.                           |
|                                       | AMCA : Air Movement and Control Association  |
|                                       | ARI - American Refrigeration Institute   |
| AHRI 410-2001 with Addenda 1, 2 and 3 | Forced-Circulation Air-Cooling and Air-Heating Coils   |
| ANSI/AHRI 430-2009                    | Central Station Air Handling Units   |
| ANSI/AHRI 440-2008                    | Performance Rating of Room Fan-Coils   |
| AHRI 550                              | Standard for centrifugal or rotary screw water chilling packages.  |
| AHRI 575                              | Standard for method of measuring machinery sound within equipment room.  |
| ASME: Section VIII Div.1              | Code for Unfired Pressure Vessels Section VIII (Design; construction, testing and certification of pressure vessels) with 'U' stamping |
| ANSI B31.5                            | Code for Refrigeration piping  |
| ASME B31.1                            | Code for Process piping  |
|                                       | Cooling Technology Institute, CTI  |
| ATC-105-00                            | Acceptance Test Code for Water-cooling Towers (CTI Std-103 Code Tower Standard Specifications).  |
| ATC-201-96                            | Standard for Certification of Water Cooling Tower Performance (CTI Code Tower Standard Specifications).                                |

|                                   |   |
|-----------------------------------|---|
| ISO 2858, 5199                    | Specifications for pumps  |
| ASHRAE 52.1-1992                  | Air Filters   |
| ASHRAE 62-1-2007                  | Indoor Air Quality  |
|                                   | Duct Fabrication as per SMACNA  |
| IS : 277 – 1977                   | GI Sheets   |
| IS : 737                          | Aluminum Sheets   |
| IS : 325                          | Three-phase induction motors  |
| IS : 659                          | Safety code for air conditioning,   |
| IS : 660                          | Safety code for mechanical refrigeration  |
| IS : 4671                         | Expanded polystyrene for thermal insulation purposes  |
| IS : 4894                         | Centrifugal Fans  |
| IS : 1239 & IS 3589               | Pipe & Pipe Fitting   |
|                                   | Fire Damper UL555, CBRI approved  |
| IS : 659 – 1964 (Reaffirmed 1991) | Air conditioning (Safety Code)  |
| IS : 660 – 1963 (Reaffirmed 1991) | Mechanical Refrigeration (Safety Code)  |
| BS : EN:779 – 1993                | Filters   |
| ASHRAE Hand Books                 | American Society of Heating Refrigeration & Airconditioning Application 2007.<br>Fundamentals 2005. |
| IEC                               | Relevant Sections.  |

## Fire fighting works requirements

The design shall comply with rules of the local fire service department / authorities.

The Fire Protection System design shall be based on the following codes & Standards:

### Code for Fire fighting

| Codes/ Specifications | Description |
|-----------------------|-------------|
|-----------------------|-------------|

|   |  |
|---|--|
| National Building Code 2005                       | Part 4, Fire & Life Safety   |
| Tariff Advisory Committee (TAC)-12th Edition-1998 | Fire Protection Manual   |
| Tariff Advisory Committee (TAC)-1998 Edition      | Rules for automatic Sprinkler Installations  |
| Tariff Advisory Committee (TAC)                   | Rules for Water Spray System   |
| IS:3844-1989 (1995)                               | Fire Protection Manual   |
| IS:13039:1991                                     | Fire Protection Manual   |
| IS 15105: 2002                                    | Design and Installation of Fixed Automatic Sprinkler Fire Extinguishing System-Code of Practice  |
| IS 12459: 1988                                    | Code of Practice For Fire Safety In Cable Runs   |
| IS 12469: 1988                                    | Fire Fighting Pumps  |
| IS 5120: 1977                                     | Technical requirement for Rotodynamic Special Purpose Pumps  |
| IS 325: 1996                                      | Three-Phase Induction Motor  |
| IS 3042: 2003                                     | Specification For Single Faced Sluice Gates  |
| IS 2190: 2010                                     | Selection, Installation and Maintenance of First-Aid Fire Extinguishers-Code of Practice   |
| IS 15683:2006                                     | Potable Fire Extinguishers - Performance and Construction Specification  |
| IS 5: 1994  | Colours for Ready Mixed Paints and Enamels (Fourth Revision)   |
| IS 1239 (part-I): 1990                            | Mild Steel Tubes, Tubulars and Other Wrought Steel Fittings: Part-I Mild Steel Tubes (Fifth Revision)  |
| IS 1239: (Part-II): 1992                          | Mild Steel Tubes, Tubulars and Other Wrought Steel Fittings: Part-II Mild Steel Tubulars and Other Wrought Steel Pipe Fittings (Fourth Revision) |
| IS 3589: 2001                                     | Steel Pipes for Water and Sewage (168.3 to 2540 mm Outside Diameter) – Specification (Third Revision)  |
| IS 6392: 1999                                     | Specification for Steel Pipe Flanges (Seventh Reprint)   |
| IS 12835: Part I: 1989                            | Code of practice for design and installation of fixed fire extinguishing system Part 1 Low expansion foam  |

|               |  |
|---------------|--|
| IS:10221:1982 | Code of Practice for Coating & Wrapping of underground Mild Steel Pipe Lines                             |
| IS: 5290:1983 | Specification for Valve Landing (Second Revision)  |
| IS:8442:1977  | Specification for stand post type water monitor for fire fighting  |
| IS:636:1988   | Non-percolating flexible fire fighting delivery hose   |
| IS:8423:1977  | Specification for Controlled percolating hose for fire fighting  |
| IS:4927:1968  | Specification for unlined flax canvas hose for fire fighting (Amendment Nos. 1 & 2)                      |
| IS:903:1984   | Specification for Fire Hose Delivery Couplings, Branch Pipe, Nozzles and Nozzle Spanner (Third Revision) |

|                    |  |
|--------------------|--|
| IS:906:1988        | Specification for branch with revolving head for fire fighting purposes  |
| IS 907: 1984       | Specification for suction strainers, cylindrical type for fire fighting purposes(second revision)                  |
| IS:2871:1983       | Specification for branch pipe, universal for fire fighting purposes (First revision)                               |
| IS: 884:1985       | Specification for First Aid Hose Reel for fire fighting (First Revision) (Amendment No.1)                          |
| IS:940:1989        | Specification for Portable Fire Extinguisher (Gas Pressure)  |
| IS:2171:1985       | Specification of Portable Fire Extinguisher, Dry Powder (Cartridge Type) (third Revision)                          |
| IS:2878:1986       | Portable & Trolley Mounted CO2 type fire extinguisher (Third Revision)   |
| IS:4947:1985       | Specification for Gas Cartridges for use in fire Extinguishers-CO2 type (Second Revision) (Amendment Nos. 1 and 3) |
| IS:944:1979        | Functional requirements for 1800 L/min. Trailer pump for Fire brigade use.(Second Revision) (Amendment No. 1)      |
| IS:946:1977        | Functional requirements for Engines for Motor Fire Engines (First Revision)  |
| IS:947:1985        | Functional requirements for towing tender for trailer fire pump for Fire brigade use (First Revision)              |
| IS:10001, IS:10002 | Diesel Engine-General Purpose  |
| IS:13095: 1991     | Butterfly valves   |
| IS: 14846          | Sluice Valves for Water Works 50-1200mm  |
| IS: 9890           | Ball Valves for General Purposes   |
| IS 3624: 1987      | Pressure and Vacuum Gauge (Second Revision)  |
| IS 2097: 1983      | Specification for foam making branch pipe (first revision)   |
| IS: 5312           | Specification for Swing Check Valve  |
| ASME B 36.10       | Welded and Seamless Wrought Steel Pipe   |
| BS:5150            | C.I. Gate Valves/ Rising Stem types PN 16  |
| BS:5153            | C.I. Reflux Valves/Check Valves (Swing Type) PN16  |

|           |   |
|-----------|---|
| BS:1414   | Steel Wedge Gate Valves   |
| BS:1868   | Steel Check Valves  |
| NFPA 1    | NFPA Fire Prevention Code   |
| NFPA 10   | Standard for Portable Fire Extinguishers 1998 Edition   |
| NFPA-11   | Standard for installation of Low expansion Foam system  |
| NFPA-13   | Standard for installation of Sprinkler System   |
| NFPA-15   | Standard for Water Spray fixed system for the fire protection system                          |
| NFPA-20   | Standard for the Installation of Stationary Pumps for Fire Protection                         |
| NFPA-2001 | Standard on clean agent fire extinguishing system   |
| NFPA-25   | Standard for the Inspection, Testing, and Maintenance of. Water-Based Fire Protection Systems |

|             |   |
|-------------|---|
| NFA-16      | Standard for installation of Foam water sprinkler system or Foam water spray system |
| NEMA        | National Electricity Manufacturers Association                                      |
| IEEE        | Institute of Electrical and Electronic Engineers                                    |
| ISA         | Instrumentation, Systems and Automation society                                     |
| ANSI        | American National Standards Institute   |
| DIN         | Deutsche Industries Norman  |
| IEC         | International Electrochemical Commission  |
| VDE         | Verin Deutschar Eisechnhutenleutte  |
| ISI         | Indian Standard Institute   |
| BS 5839     | Code of practice for installation of fire alarm system                              |
| IS 2189     | Code of practice for installation of automatic fire alarm system                    |
| IS:817/2008 | Welded joints   |
| UL / FM     | Underwriters Laboratory / Factory Manual  |

## Plumbing works system

### WATER SUPPLY SYSTEM

#### **CODES AND STANDARDS**

Unless specifically mentioned otherwise, all the applicable codes and standards published by the Bureau of Indian Standards and their subsequent revision shall govern in respect of design, workmanship, quality and properties of materials and method of testing.

The material supplied shall comply with the latest applicable Indian and / or British Standards. Other National Standards are acceptable, if they are established to be equal or superior.

#### **Following codes and standards are made part of this specification:**

|                 |   |
|-----------------|---|
| IS 10446 – 1983 | Glossary of terms relating to water supply and sanitation.  |
| IS 7558-1974    | Code of practice for domestic hot water piping installations  |
| IS 2692-1989    | Specification for Ferrules For Water Services.  |
| IS 1239         | Mild steel tubular and other wrought steel pipes and fittings (Part-I)                              |
| IS 1239         | Mild steel tubular and other wrought steel pipes and fittings (Part-II)                             |
| IS 779 -1978    | Specifications for Water Meters - Domestic Type   |
| IS 2104 – 1981  | Specification for water meter boxes (Domestic type).  |
| IS 2401–1973    | Code of practice for selection, installation, and maintenance of domestic water meters.             |
| IS 7413-1981    | Insulation Material   |
| IS 2065 –1983   | Code of practice for Water Supply In Buildings (Second Revision)                                    |
| IS 778- 1984    | Specifications for copper alloy Gate, Globe And Check Valves for water supply purposes.             |
| IS 1703 – 1977  | Specification for ball valves (horizontal plunger type) including floats for water supply purposes. |



|                   |  |
|-------------------|--|
| IS 3004 – 1979    | Specification for plug for water supply purposes.  |
| IS 3950 – 1979    | Specifications for surface boxes for sluice valves.  |
| IS 9338 – 1984    | Specification for cast iron screw-down stop valves and stop and check valves for water works.  |
| IS 4346 – 1982    | Specification for washers for use with fittings for water services.  |
| IS 5219 – Part 1  | Specification for cast copper alloy traps – Part1 1982   |
| IS 5312 – part 1  | Specification for swing check type reflux (Non-return) 1969 valve for water works purposes part 1 single door pattern                  |
| IS 13049 – 1919   | Diaphragm type (plastic body) float operated valve for cold water services – specification.  |
| IS 13114 – 1991   | Forged brass gate, globe and check valves for water works purposes – specification.  |
| IS 14399 – part 1 | Hot press moulded thermosetting glass fibre reinforced & Part 1 – 1996 polyester (GRP) resin sectional water storage tanks.            |
| IS 310 –1965      | Code of Practice for Water Supply  |
| SP –35            | Handbook of water supply and drainage (with special emphasis on plumbing)  |
| IS 1172-1983      | Code of Basic Requirement For Water Supply, Drainage & Sanitation (Third Revision)   |
| IS 12183          | Code of practice for Plumbing In Multi- Storey buildings Part I) – 1987 (Part 1 water supply)  |
| IS 1200 - 1992    | Method of Measurement Of Building And Civil Engg. Works.(Part 1 earthwork)   |
| IS 2379 –1963     | Specification of colour code for the identification of pipes.  |
| SP 7 – 1983       | National building code of India (Part IX – Plumbing services)  |
| IS 2401 – 1973    | Code of practice for selection, Installation and maintenance of domestic water meters.   |
| IS 780-1984       | Specification for Sluice valves for water works purposes (50 to 300mm size) (Sixth Revision)   |
|                   | The Contractor shall comply with the water requirement, water supply lines and sewer lines as per the following manuals and Standards. |
| CPHEEO            | Manual on water supply and treatment   |
| CPHEEO            | Manual on sewerage and sewage treatment  |

- All the requirements must be in accordance with the statutory / authorities requirements

## **SANITARY AND SEWERAGE SYSTEMS CODES AND STANDARDS**

Unless specifically mentioned otherwise, all the applicable codes and standards published by the Bureau of Indian Standards and their subsequent revision shall govern in respect of design, workmanship, quality and properties of materials and method of testing.

### **Codes for Sanitary and Sewerage System**

| <b>Codes</b>                      | <b>Description</b>  |
|-----------------------------------|---|
| IS 10446 – 1983                   | Glossary of terms relating to water supply and sanitation.  |
| IS 11208 –1985                    | Guidelines for registration of Plumbers   |
| IS 5382 – 1985                    | Specification for rubber sealing rings for gas mains, water mains and sewers.   |
| SP – 35                           | Handbooks of water supply and drainage (with special emphasis on plumbing)  |
| IS 1172-1983                      | Code of Basic Requirement For Water Supply, Drainage & Sanitation (Third Revision)                                      |
| IS 1200 - 1992                    | Method of Measurement Of Building and Civil Engg. Works.(Part 1 earthwork)  |
| IS 2379 –1963                     | Specification of colour code for the identification of pipes.   |
| SP 7 – 1983                       | National building code of India (Part IX – Plumbing services)   |
| IS 1742 – 1983                    | Code Of Practice For Building Drainage (Second Revision)  |
| IS 301 – 1971                     | Code of practice for Building Drainage  |
| IS12251- 1987                     | Code Of Practice For Drainage In Basement   |
| BS 5572 -1978<br>(Amendment No.2) | Sanitary pipe Works   |
| BS 4660- 1973<br>(Amendment No.1) | PVC Underground Drain Pipes & Fittings.   |
| IS 5329 – 1983                    | Code of practice for sanitary pipe work above ground for buildings First Revision)                                      |
| IS 2527 – 1984                    | Code of practice for fixing rain water gutters and down take pipes for roof drainage. (First Revision) I                |
| IS 5961 – 1970                    | Specification for cast iron gratings for drainage purposes.   |
| IS 2527 – 1984                    | Code of practice for fixing rain water gutters and down take pipes for roof drainage. (First Revision)                  |
| CPHEEO                            | Manual on sewerage and sewage treatment   |
| IS 1626 (Part 1)                  | Specification for asbestos cement building pipes and pipe –1980 fittings, gutter and gutter fittings, and roof fittings |

## **FIRE DETECTION ALARM SYSTEM**

**Following codes and standards are made part of this specification:**

| <b>Codes</b> | <b>Description</b>  |
|--------------|---|
| BIS 15908 -  | Selection, Installation and Maintenance of Control and Indicating Equipments for Fire Detection and Alarm System--Code of Practice (2011) |
| IS:2189:1988 | - Code of practice for selection, installation and maintenance of Automatic Fire Detection and alarm system (second revision)             |

## **Defect Liability Period:**

In addition to the defect/s to be rectified by the contractor as per terms of the contract/ work order, the contractor shall be responsible to make good and remedy at his own expense the defect/s mentioned hereunder within such period as may be stipulated by the Engineer-in-Charge in writing:

Any defect/defects in the work detected by the Engineer-in-Charge within a period of 12 (twelve) months after the project completion period of 24 Months or Actual date of project commissioning whichever is later in point of time. Project commissioning is the process of assuring that all systems and components of a building or industrial plant are designed, installed, tested, operated, and maintained according to the operational requirements of the owner or final client.

A programme shall be drawn by the contractor and the Engineer-in-Charge for carrying out the defects by the contractor detected within the defect liability period and if the contractor fails to adhere to this programme, the Engineer-in-Charge shall be at liberty to procure proper materials and carry out the rectifications in any manner considered advisable under the circumstances and the cost of such procurement of materials and rectification work shall be chargeable to the contractor and recoverable from any of the pending dues of the contractors. The defect liability period can be extended by the company on getting request from the contractor only for valid reasons.

There will be no defect liability period for works like Grass Cutting, Jungle Cutting, Surface Dressing & any other work of similar nature to be decided by the Engineer-in-Charge.

## Applicable Permits

### Applicable Permits

- The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:
- Permission of the State Government for extraction of boulders from quarry;
- Permission of Pollution Control Board for installation of crushers;
- No Objection Certificate from the Forest Department to be obtained before commencement of work;
- Permission of the State Government for drawing water from river/reservoir;
- License from inspector of factories or other competent Authority for setting up batching plant;
- Clearance of Pollution Control Board for setting up batching plant;
- Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
- Permission of Village Panchayats and State Government for borrow earth; and
- Any other permits, clearances or approvals required under Applicable Laws.

**Applicable** permits, as required, relating to environmental protection and conservation shall have been procured by the EMPLOYER in accordance with the provisions of this Agreement.

### Local Development Authority

- Building Sanction, Commencement Certificate, Intermediate Certificates, Occupancy Certificate and Completion Certificate from local municipal body or designated authority for the buildings.

### Civil & Structures

- Water Connection from Public Health Engineering Department (State).
- Provision and permit for connection to proposed municipal sewage collection system at directed location from local municipal body.
- Project Clearance from General Inspectorate for Emergency Situations.
- Project Clearance from the Solid Waste Management Authority.

### Electrical

- Incoming Power Supply (Main and temporary): State electricity board or power supply authority.
- Substation & Elevators & Solar PV system: CEIG (chief electrical inspector to government) / local statutory authority / PWD
- License to Operate the Elevators from Ministry of Labour or relevant authority.

### Fire Fighting

- Preliminary approval from Chief Fire Officer prior to construction and final approval on completion of project.

### FDA Access Control & Security

- Fire Detection & Alarm System - Compliance with IS:2189:1988, BIS: 15908 standards and certification from the Regional Fire Officer / Chief Fire Officer.
- If any hazardous waste is generated from the facility like used DG oil, used batteries etc., the same should be handed over to only SPCB approved agencies for handling hazardous waste.

## Tests on Completion

### Schedule for Tests

- The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Employer's Engineer and the Employer of its intent to subject the project components to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Employer's Engineer and the Employer detailed inventory and particulars of all works and equipment forming part of Works.
- The Contractor shall notify the Employer's Engineer of its readiness to subject the project components to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Employer's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Employer who may designate its representative to witness the Tests. The Employer's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted

### Tests

- **Architectural & Interior Finishes:** Visual and physical check for all Architectural and Interior finishes, including but not limited to flooring, painting, glazing, HPL cladding, Murals, false ceiling, door hardware, cladding & dado, polishes, etc. Operations of doors, windows, louvers shall also be checked.
- **Landscape / softscape works:** Visual and physical check for softscape works, plants & saplings, lawns, shrubs, irrigation system including sprinklers & drip irrigation, fountains, water circulation and filtration system, etc., including performance verification.
- **Civil and Hardscape works:** Visual check of construction to determine that all civil, structural and hardscape works conform to the provisions of this Agreement. Physical test if required by the client.
- **Electrical:** Visual and physical and commissioning test for HT and LT panels, Dry type transformers, UPS, DG set, DC System, busducts, rising mains, distribution boards, power & control cables, elevators, solar PV panels, lighting DB's, switches & sockets, safety features, luminaires / lighting fixtures, street lighting and pole, power supply, grounding, communication between luminaire to control panel and central control system, etc. including performance verification.
- **HVAC:** Visual and physical and commissioning test for HVAC cooling system, dampers, VAV's, sensors, Ventilation system, drives, control gauges, instrumentations, flow meters, automation, vibration & acoustic insulation, etc including performance verification.

At an appropriate time in consultation with Client / Consultant / Project In Charge the contractor shall demonstrate performance (noise level, power consumption, actual capacity at design conditions etc.) at rated capacity over a period of 6 working days on continuous operating hours. If the tests specified above show that the performance of Air-conditioning & Ventilation system has failed to achieve all the guaranteed parameters or some of them, the contractor shall rectify the defects and carry out modifications if necessary to meet the guaranteed figures and the guarantee tests shall be repeated at no extra cost.

- **Fire Protection System:** Visual and physical and commissioning test for complete firefighting system equipment's, internal & external hydrants, sprinklers, electric & diesel engine pumps, portable fire extinguishers, etc., including performance verification.
- **Plumbing & Drainage:** Visual and physical and commissioning test for Plumbing & drainage system including water pressure, faucets & valves, sanitary fittings, flush tanks, urinals, faucet & urinal, leakages, etc. including performance verification.

- **FDA & Public Address:** Visual and physical test for Fire Alarm sensors / detectors, alarms / hooters, Public address system etc., including performance verification.
- **Road (Riding quality test):** Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be 1800 (Eighteen Hundred) mm for each kilometer.
- **Storm Water:** Visual and physical test for Rain water drainage system, storm water drains, manholes & manhole covers, rain water harvesting system, etc., including performance verification.
- **Other tests:** The Employer's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the project components with Standards and Specifications.

## Audits

- **Environment Health and Safety Requirements:** The Employer's Engineer shall carry out a check to determine conformity of the project components with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- **Safety Audit:** The Employer's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the project components with the safety requirements and Good Industry Practice.

## Manpower Required for the Work

### 1. Construction Phase :

| Sr. No. | Position                       | Qualification  | Experience of execution of similar works  |
|---------|--------------------------------|--|---|
| 1.      | Project Manager                | B.E/B.Tech. Civil  | 15 Years experience of Project Management |
| 2.      | Deputy Project Manager (3 Nos) | B.E/B.Tech. Civil & Electrical & Mechanical              | 10 years                                  |
| 3.      | Architect (1 no.s)             | B.Arch   | 5 years                                   |
| 4.      | Site Engineer (5 Nos)          | B.E./B.tech. (Civil / electrical / mechanical)           | 5 Years                                   |
| 5.      | Site Supervisor (5 Nos)        | ITI or Diploma Civil                                     | 3 years                                   |
| 6.      | Surveyor (2 Nos)               | ITI or Diploma Civil                                     | 3 years                                   |
| 7.      | Procurement Expert (2)         | B.E/ B.tech I.T.   | 3 years                                   |
| 8.      | Health Safety Engineer (2)     | Diploma in Safety/B.E/ B.tech. Civil                     | 3 years                                   |
| 9.      | Quality Control Engineer (2)   | B.E/ B.Tech. Civil/QC Engineer                           | 3 years                                   |
| 10.     | Horticultutre Expert           | Bachelor in horticulture sciences                        | 3 years                                   |
| 11.     | Planning Engineer (2)          | B.E. Civil / MBA (Construction Management) or equivalent | 3 years                                   |
| 12.     | HR / Admin                     | MBA or equivalent  | 5 years                                   |
| 13.     | Accounts Officer               | B.Com. / M.Com or equivalent                             | 3 years                                   |

### List of tools and Equipments Required

| S no. | Name of Equipment      | Quantity/No.s |
|-------|------------------------|---------------|
| 1     | Arc Weilding Machines  | 10            |
| 2     | Gas Cutters            | 8             |
| 3     | Steel Grinders         | 8             |
| 4     | Hammer Drills          | 6             |
| 5     | Motorized Chain Pulley | 5             |
| 6     | Manual Chain Pulley    | 5             |

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| 7  | Chop Shaw  | 8           |
| 8  | Pug Cutting Machine                                    | 2           |
| 9  | Bench Drill Machine                                    | 1           |
| 10 | Hydra  | 1           |
| 11 | JCB  | 1           |
| 12 | Diesel Gen- Set  | 1           |
| 13 | Water Tanker   | As Required |
| 14 | Concrete Pump with Pipe Line                           | 1           |
| 15 | Transit Mixer  | 3           |
| 16 | Vibrator with Motor                                    | 6           |
| 17 | Derricks   | As Required |
| 18 | Scaffolding  | As Required |
| 19 | Teel Shuttering  | As Required |
| 20 | Safety Equipment for Personnel                         | As Required |
| 21 | Electrical Testing Kits                                | As Required |
| 22 | First Aid Kits   | As Required |
| 23 | Any Other Equipment as required as per site conditions | As Required |

Notes:

For field/material testing laboratory

a. Contractor will have to establish one Laboratory at site fully equipped and consumable as per SP-20-2002 i.e. MORT&H/UP.P.W.D/ CPWD instructions/ as per the instruction of Authorised Representative of BSCL/Employer.



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| <p><b>1. Definitions</b></p> | <p>1.1. Boldface type is used to identify defined terms.</p> <p>a) The Accepted Contract Amount means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.</p> <p>b) The Activity Schedule is a schedule of the activities comprising the Engineering procurement and construction of the Works in this contract. It includes a price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events.</p> <p>c) The Adjudicator is the person appointed jointly by the Employer and the Implementing Agency to resolve disputes in the first instance, as provided for in GCC23.</p> <p>d) GoI means Government of India</p> <p>e) Activity schedule means the <b>Detailed Project Plan</b> covering break-up of each phase into the key activities, along with the start and end dates forming part of the Bid.</p> <p>f) Compensation Events are those defined in GCC hereunder.</p> <p>g) The Completion Date is the date of completion of the Works as certified by the Project Manager.</p> <p>h) The Contract is the Contract between the Employer and the Implementing Agency to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub- Clause 2.6 below.</p> <p>i) The Implementing Agency is the party whose Bid to carry out the Works has been accepted by the Employer.</p> <p>j) The Implementing Agency's Bid is the completed bidding document submitted by the Implementing Agency to the Employer.</p> <p>k) The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.</p> <p>l) Days are calendar days; months are calendar months.</p> <p>m) A Defect is any part of the Works not completed in accordance with the Contract.</p> <p>n) The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Implementing Agency.</p> <p>o) The Defects Liability Period is the period named in the PCC pursuant to Sub-Clause 34.1 and calculated from the Completion Date.</p> <p>p) Drawings means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.</p> <p>q) The Employer is the party who employs the Implementing Agency to carry out the Works, as specified in the PCC.</p> <p>r) Equipment is the Implementing Agency's machinery and vehicles brought temporarily to the Site to construct the Works.</p> |
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|                          | <p>s) “In writing” or “written” means hand-written, type-written, printed or electronically made, and resulting in a permanent record;</p> <p>t) The Initial Contract Price is the Contract Price listed in the Employer’s Letter of Acceptance.</p> <p>u) The Intended Completion Date is the date on which it is intended that the Implementing Agency shall complete the Works. The Intended Completion Date is specified in the PCC. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.</p> <p>v) Materials are all supplies, including consumables, used by the Implementing Agency for incorporation in the Works.</p> <p>w) The Project Manager is the person named in the PCC (or any other competent person appointed by the employer and notified to the Implementing Agency, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.</p> <p>x) PCC means Particular Conditions of Contract.</p> <p>y) The Site is the area <b>defined as such in the PCC.</b></p> <p>z) Site Investigation Reports are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.</p> <p>aa) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.</p> <p>bb) The Start Date is <b>given in the PCC.</b> It is the latest date when the Implementing Agency shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.</p> <p>cc) A Sub-Implementing Agency is a person or corporate body who has a Contract with the Implementing Agency to carry out a part of the work in the Contract, which includes work on the Site.</p> <p>dd) Temporary Works are works designed, constructed, installed, and removed by the Implementing Agency that are needed for construction or installation of the Works.</p> <p>ee) A Variation is an instruction given by the Project Manager which varies the Works.</p> <p>ff) The Works are what the Contract requires the Implementing Agency to construct, install, and turn over to the Employer, <b>as defined in the PCC.</b></p> |
| <b>2. Interpretation</b> | <p>If the context so requires it, singular means plural and vice versa</p> <p>2.1. In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.</p> <p>2.2. If sectional completion is specified in the PCC, references in the GCC 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).</p>  |

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|                                       | <p>2.3. Entire Agreement: The Contract constitutes the entire agreement between Authority and the Supplier and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.</p> <p>2.4. Amendment: No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.</p> <p>2.5. Severability : If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract</p> <p>2.6. The documents forming the Contract shall be interpreted in the following order of priority:</p> <ul style="list-style-type: none"> <li>(a) Agreement,</li> <li>(b) Letter of Acceptance,</li> <li>(c) Implementing Agency's Bid,</li> <li>(d) Particular Conditions of Contract,</li> <li>(e) General Conditions of Contract, including Appendix,</li> <li>(f) Specifications,</li> <li>(g) Drawings,</li> <li>(h) Activity schedule,</li> <li>(i) Any other document <b>listed in the PCC</b> as forming part of the Contract.</li> </ul> |
| <b>3. Language and Law</b>            | 3.1. The language of the Contract and the law governing the Contract are <b>stated in the PCC</b>   |
| <b>4. Project Manager's Decisions</b> | 4.1. Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Implementing Agency in the role representing the Employer.   |
| <b>5. Delegation</b>                  | 5.1. Otherwise <b>specified in the PCC</b> , the Project Manager may delegate any of his duties and responsibilities to other people except to the Adjudicator, after notifying the Implementing Agency, and may revoke any delegation after notifying the Implementing Agency.   |
| <b>6. Communications</b>              | 6.1. Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.  |
| <b>7. Subcontracting</b>              | 7.1. The Implementing Agency may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Implementing Agency's obligations.   |
| <b>8. Other Implementing Agency</b>   | 8.1. The Implementing Agency shall cooperate and share the Site with other Implementing Agency, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Implementing Agency, as referred to in the PCC. The Implementing Agency shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Implementing Agency, and shall notify the Implementing Agency of any such modification.  |
| <b>9. Personnel and Equipment</b>     | 9.1. The Implementing Agency shall employ the key personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment  |

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|   | <p>approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.</p> <p>9.2. If the Project Manager asks the Implementing Agency to remove a person who is a member of the Implementing Agency's staff or work force, stating the reasons, the Implementing Agency shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.</p> <p>9.3. If the Employer, Project Manager or Implementing Agency determines, that any employee of the Implementing Agency be determined to have engaged in or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.2 above.</p>   |
| <b>10. Employer's and Implementing Agency's Risks</b> | <p>10.1. The Employer carries the risks which this Contract states are Employer's risks, and the Implementing Agency carries the risks which this Contract states are Implementing Agency's risks.</p>  |
| <b>11. Employer's Risks</b>                           | <p>11.1. From the Start Date until the Defects Liability Certificate has been issued and then during the Maintenance Period, the following are Employer's risks:</p> <ul style="list-style-type: none"> <li>(a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Materials, and Equipment), which are due to <ul style="list-style-type: none"> <li>(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or</li> <li>(ii) Negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Implementing Agency.</li> </ul> </li> <li>(b) The risk of damage to the Works, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.</li> </ul> <p>11.2. From the Completion Date until the Defects Liability Certificate has been issued and then during the Maintenance Period, the risk of loss of or damage to the Works, and Materials is an Employer's risk except loss or damage due to</p> <ul style="list-style-type: none"> <li>(a) a Defect which existed on the Completion Date,</li> <li>(b) an event occurring before the Completion Date, which was not itself an Employer's risk, or</li> <li>(c) The activities of the Implementing Agency on the Site after the Completion Date.</li> </ul> |
| <b>12. Implementing Agency's Risks</b>                | <p>12.1. From the Starting Date until the Defects Liability Certificate has been issued and then during the Maintenance Period, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Materials, and Equipment) which are not Employer's risks are Implementing Agency's risks.</p>   |
| <b>13. Insurance</b>                                  | <p>13.1. The Implementing Agency shall provide, in the joint names of the Employer and the Implementing Agency, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the PCC for the following events which are due to the Implementing Agency's risks:</p> <ul style="list-style-type: none"> <li>a) loss of or damage to Equipment (if any);</li> </ul>   |

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|  | <p>b) loss of or damage to property (except the Works, Materials, and Equipment) in connection with the Contract; and</p> <p>c) Personal injury or death.</p> <p>13.2. Policies and certificates for insurance shall be delivered by the Implementing Agency to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.</p> <p>13.3. If the Implementing Agency does not provide any of the policies and certificates required, the Employer may effect the insurance which the Implementing Agency should have provided and recover the premiums the Employer has paid from payments otherwise due to the Implementing Agency or, if no payment is due, the payment of the premiums shall be a debt due.</p> <p>13.4. Alterations to the terms of insurance shall not be made without the approval of the Project Manager.</p> <p>13.5. Both parties shall comply with any conditions of the insurance policies.</p> |
| <b>14. Site Data</b>   | <p>14.1. The Implementing Agency shall be deemed to have examined any Site Data referred to in the PCC, supplemented by any information available to the Implementing Agency.</p>   |
| <b>15. Implementing Agency to Construct the Works</b>                | <p>15.1. The Implementing Agency shall construct and install the Works in accordance with the Specifications.</p>   |
| <b>16. The Works to Be Completed by the Intended Completion Date</b> | <p>16.1. The Implementing Agency may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Implementing Agency, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.</p>   |
| <b>17. Approval by the Project Manager</b>                           | <p>17.1. The Implementing Agency shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.</p> <p>17.2. The Implementing Agency shall be responsible for design of Temporary Works.</p> <p>17.3. The Project Manager's approval shall not alter the Implementing Agency's responsibility for design of the Temporary Works.</p> <p>17.4. The Implementing Agency shall obtain approval of third parties to the design of the Temporary Works, where required.</p> <p>17.5. All Drawings prepared by the Implementing Agency for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.</p>  |
| <b>18. Safety</b>  | <p>18.1. The Implementing Agency shall be responsible for the safety of all activities.</p>   |
| <b>19. Discoveries</b>   | <p>19.1. Anything of historical or other interest or of significant value Unexpectedly discovered on the Site shall be the property of the Employer. The Implementing Agency shall notify the Project Manager of such discoveries and carry</p>   |

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|   | out the Project Manager's instructions for dealing with them.   |
| <b>20. Possession of the Site</b>               | 20.1. The Employer shall give possession of all parts of the Site to the Implementing Agency. If possession of a part is not given by the date stated in the PCC, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.  |
| <b>21. Access to the Site</b>                   | 21.1. The Implementing Agency shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.  |
| <b>22. Instructions, Inspections and Audits</b> | <p>22.1. The Implementing Agency shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.</p> <p>22.2. The Implementing Agency shall keep, and shall make all reasonable efforts to cause its Sub Implementing Agencies and sub consultants to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.</p> <p>22.3. The Implementing Agency shall permit and shall cause its Sub Implementing Agencies and sub consultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Implementing Agency's and its Sub Implementing Agencies' and sub consultants' attention is drawn to Sub-Clause 25.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 22.2 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).</p> <p>22.4. As per PCC.</p> |
| <b>23. Appointment of the Adjudicator</b>       | <p>23.1. The Adjudicator shall be appointed jointly by the Employer and the Implementing Agency, at the time of the dispute within 14 days of receipt of such request from the Implementing Agency.</p> <p>23.2. Should the Adjudicator resign or die, or should the Employer and the Implementing Agency agree that the Adjudicator is not functioning in accordance with the provisions of the Contract; a new Adjudicator shall be jointly appointed by the Employer and the Implementing Agency. In case of disagreement between the Employer and the Implementing Agency, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the PCC at the request of either party, within 14 days of receipt of such request.</p>   |
| <b>24. Settlement of Disputes</b>               | <p>24.1. – Amicable Settlement</p> <p>a) The Parties shall seek to resolve any dispute amicably by mutual consultation</p> <p>b) If either Party objects to any action or inaction of the other Party, the objecting Party may file a written Notice of Dispute to the other Party providing in detail the basis of the dispute. The Party receiving the Notice of Dispute will consider it and respond in writing within fourteen (14) days after receipt. If that Party fails to respond within fourteen (14) days, or the dispute cannot be amicably settled within fourteen (14) days following the response of that Party, Clause GCC 24.2 shall apply</p> <p>24.2. Dispute Resolution</p> <p>Any dispute between the Parties arising under or related to this Contract that cannot be settled amicably may be referred to by either Party to the adjudication/arbitration in accordance with the provisions specified in the PCC</p>  |

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| <b>25. Corrupt and Fraudulent Practices</b> | <p>25.1. The Employer requires compliance with Prevention of Corruption Act 1988 (INDIA) and its subsequent amendments on Preventing and Combating Corruption</p> <p>25.2. The Employer requires the Implementing Agency to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.</p> |
| <b>26. Consortium</b>                       | Not Applicable   |

#### 1.1.2. Time Control

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| <b>27. Program</b>                                   | <p>27.1. Within the time stated in the PCC, after the date of the Letter of Acceptance, the Implementing Agency shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.</p> <p>27.2. An update of the Program shall be a program 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.</p> <p>27.3. The Implementing Agency shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the PCC. If the Implementing Agency does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the PCC from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. The Implementing Agency shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.</p> <p>27.4. The Project Manager's approval of the Program shall not alter the Implementing Agency's obligations. The Implementing Agency may revise the Program and submit it to the Project Manager again at any time. A revised Program may show the effect of Variations and Compensation Events.</p> |
| <b>28. Extension of the Intended Completion Date</b> | <p>28.1. The Project Manager 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 Implementing Agency taking steps to accelerate the remaining work, which would cause the Implementing Agency to incur additional cost.</p> <p>28.2. The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Implementing Agency asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Implementing Agency has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.</p> <p>28.3. If at any time during performance of the Contract, the Supplier or its Subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services, the Supplier shall promptly notify authority in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Supplier's notice, authority shall evaluate the</p>   |

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|  | <p>situation and may at its discretion extend the Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment.</p> <p>28.4. Except in case of Force Majeure, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages, unless an extension of time is agreed upon.</p>   |
| <b>29. Acceleration</b>                          | <p>29.1. When the Employer wants the Implementing Agency to finish before the Intended Completion Date. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Implementing Agency.</p>   |
| <b>30. Delays Ordered by the Project Manager</b> | <p>30.1. The Project Manager may instruct the Implementing Agency to delay the start or progress of any activity within the Works.</p>  |
| <b>31. Management Meetings</b>                   | <p>31.1. Either the Project Manager or the Implementing Agency 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.</p> <p>31.2. The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.</p>  |
| <b>32. Early Warning</b>                         | <p>32.1. The Implementing Agency shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase and/or decrease in the Contract Price, or delay the execution of the Works. The Project Manager may require the Implementing Agency to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Implementing Agency as soon as reasonably possible.</p> <p>32.2. The Implementing Agency shall cooperate with the Project Manager 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 Project Manager.</p> |

#### 1.1.3. Quality Control

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| <b>33. Identifying Defects</b> | <p>33.1. The Project Manager shall check the Implementing Agency's work and notify the Implementing Agency of any Defects that are found. Such checking shall not affect the Implementing Agency's responsibilities. The Project Manager may instruct the Implementing Agency to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.</p> <p>33.2. Penalty of 0.5% of the contract value/Specific Work Value per day from the due date for rectifying the defects identified by the Project manager.</p> <p>33.3. Contract Quality Assurance as discussed in PCC.</p> |
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| <b>34. Tests</b>                 | 33.1 If the Project Manager instructs the Implementing Agency 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 Implementing Agency shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.   |
| <b>35. Correction of Defects</b> | <p>35.1. The Project Manager shall give notice to the Implementing Agency of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the PCC. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.</p> <p>35.2. Every time notice of a Defect is given, the Implementing Agency shall correct the notified Defect within the length of time specified by the Project Manager's notice.</p> |
| <b>36. Uncorrected Defects</b>   | <p>36.1. If the Implementing Agency has not corrected a Defect within the</p> <p>36.2. time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected, and the Implementing Agency shall pay this amount.</p>   |

#### 1.1.4. Cost Control

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| <b>37. Contract Price</b>                | 37.1. The Implementing Agency shall provide updated Activity Schedules within 14 days of being instructed to by the Project Manager. The Activity Schedule shall contain the priced activities for the Works to be performed by the Implementing Agency. The Activity Schedule is used to monitor and control the performance of activities on which basis the Implementing Agency will be paid. If payment for materials (if any) on site shall be made separately, the Implementing Agency shall show delivery of Materials (if any) to the Site separately on the Activity Schedule. |
| <b>38. Changes in the Contract Price</b> | <p>38.1. The Activity Schedule shall be amended by the Implementing Agency to accommodate changes of Program or method of working made at the Implementing Agency's own discretion. Prices in the Payment Schedule shall not be altered when the Implementing Agency makes such changes to the Activity Schedule.</p> <p>38.2. If requested by the Project Manager, the Implementing Agency shall provide the Project Manager with a detailed cost breakdown of any rate.</p>   |

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| <b>39. Variations</b>          | <p>39.1 The Employer shall, having regard to the scope of the Works and the sanctioned estimated cost, have power to order, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall carry them out and include them in updated Programs produced by the Contractor. Oral orders of the Employer for Variations, unless followed by written confirmation, shall not be taken into account.</p> <p>39.2 PAYMENTS FOR VARIATIONS</p> <p>39.2.1 If rates for variation items are specified in Financial Bid if so submitted by the contractor for Lump sum package shall carry out such work at the same rate. This shall apply for variation only up to the limit prescribed in the contract data.</p> <p>39.2.2 If the rates for Variation are not specified in the Financial Bid, the Contractor shall derive the rate from similar items in the Bill of Quantities / Analysis of rates based on UPSOR(Preference1) and then DSR( Preference 2) as applicable and submit the same to the employer for approval.</p> <p>39.2.3 If the rate for Variation item cannot be determined in the manner specified in Clause above, the Contractor shall, within 14 days of the issue of order of variation work, inform the Employer the rate which he proposes to claim, supported by analysis of the rates. The Employer shall assess the quotation and determine the rate based on prevailing market rates within one month of the submission of the claim by the Contractor. As far as possible, the rate analysis shall be based on the standard data book and the current schedule of rates of the district public works division. The decision of the Employer on the rate so determined shall be final and binding on the Contractor.</p> <p>39.2.4 The Implementing Agency shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.</p> <p>39.2.5 If the Implementing Agency's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Implementing Agency's costs.</p> <p>39.2.6 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.</p> <p>39.2.7 The Implementing Agency shall not be entitled to additional payment for costs that could have been avoided by giving early warning.</p> |
| <b>40. Cash Flow Forecasts</b> | <p>40.1. When the Program and activity schedule is updated, the Implementing Agency shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.</p>  |

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| <b>41. Payment Certificates</b> | <p>41.1. The Implementing Agency shall submit to the Project Manager payment statements of the estimated value of the work executed less the cumulative amount certified previously.</p> <p>41.2. The Project Manager shall check the Implementing Agency's payment statement and certify the amount to be paid to the Implementing Agency.</p>   |
| <b>42. Payments</b>             | <p>42.1. Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Implementing Agency the amounts certified by the Project Manager within 28 days of the date of each certificate.</p> <p>42.2. If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Implementing Agency shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.</p> <p>42.3. Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.</p> <p>42.4. Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract. Bidder shall have to execute that item at zero rates.</p> <p>42.5. The certified payments shall be made as specified in the PCC.</p> |
| <b>43. Tax</b>                  | <p>43.1. If taxes, duties, and other levies are changed between the date 28 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Implementing Agency, provided such changes are not already reflected in the Contract Price.</p>   |
| <b>44. Retention</b>            | <p>44.1. The Employer shall retain 5% of Security deposit along with agreement and 5% amount shall be deducted from the each running bills of the contractor. After the complete work, total of 10% of the security deposit shall be retained by the BSCL.</p> <p>44.2. Security deposited shall be retained by the BSCL till the completion of the project and one year of defect liability period. After successful completion of defect liability period of 1 year, security deposited will be released.</p>   |
| <b>45. Liquidated Damages</b>   | <p>45.1. Failure to Perform the Contractual Obligations<br/>In the event of total default / failure of the Implementing Agency in execution of the services, the Employer reserves the right to get the work executed by any other agency/ firm at the risk and cost of the defaulting implementing Agency. Decision of employer is final &amp; binding on the implementing agency firm.</p> <p>45.2. I1 In this case liquidated damages @ 1% of the fee cost of balance work per week of delay subject to maximum of 10% shall be levied by the authority.</p>   |

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| <b>46. Securities</b>      | 46.1. The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount specified in the GCC and PCC, by a bank acceptable to the Employer or in the form of FDR / online payment and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until the completion including defect liability period.   |
| <b>47. Cost of Repairs</b> | 47.1. 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 Implementing Agency at the Implementing Agency's cost if the loss or damage arises from the Implementing Agency's acts or omissions.   |
| <b>48. Advance Payment</b> | <p>48.1 The Employer will make the following advance payment to the contractor against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a Commercial bank acceptable to the Employer in amounts equal to the advance payment:</p> <p>48.2 Mobilization advance up to 10 percent of the contract price.<br/>The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on advance payment. The Mobilization advance will be recovered from each RA bill of Contractor on Proportionate Basis of Value of each bill approved in relation to Total Contract Value awarded to him.</p> <p>48.3 The Contractor is to use the advance payment only to pay for T&amp;P and mobilization expenses required specifically for execution of works. The Contractor shall demonstrate the advance payment has been used in this way by supplying copies of invoices or other documents to the Employer's Authorised Representative.</p> <p>48.4 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor for the redevelopment &amp; construction work, following the schedule of completed percentage of the work on payment basis. No account shall be taken of the advance payment or the repayment in assessing valuation of work done.</p> |

#### 1.1.5.Finishing of Contract

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| <b>49. Completion</b> | 49.1 The Implementing Agency shall request the Employer to issue a Certificate of Completion of the Works including all other associated works, proceeding further Maintenance; the Employer shall do so upon deciding that the whole of the Works is completed. |
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| <b>50. Termination</b> | <p>50.1. The Employer or the Implementing Agency may terminate the Contract if the other party causes a fundamental breach of the Contract.</p> <p>50.2. Fundamental breaches of Contract shall include, but shall not be limited to, the following:</p> <ul style="list-style-type: none"> <li>(a) the Implementing Agency stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;</li> <li>(b) the Employer or the Implementing Agency is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;</li> <li>(c) the employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Implementing Agency fails to correct it within a reasonable period of time determined by the Project Manager;</li> <li>(d) the Implementing Agency does not maintain a Security, which is required;</li> <li>(e) the Implementing Agency has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the PCC; or</li> <li>(f) if the Implementing Agency, in the judgment of the Employer, has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving fourteen (14) days written notice to the Implementing Agency, terminate the Contract and expel him from the Site.</li> </ul> <p>50.3. When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC above, the Project Manager shall decide whether the breach is fundamental or not.</p> <p>50.4. Notwithstanding the above, the Employer may terminate the Contract for convenience.</p> <p>50.5. If the Contract is terminated, the Implementing Agency shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.</p> <p>50.6. Termination for Default</p> <ul style="list-style-type: none"> <li>(a) Authority, without prejudice to any other remedy for breach of Contract, by Notice of default sent to the Supplier, may terminate the Contract in whole or in part: <ul style="list-style-type: none"> <li>• If the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by authority.</li> <li>• If the Supplier fails to perform any other obligation under the Contract.</li> </ul> </li> <li>(b) In the event authority terminates the Contract in whole or in part, authority may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to authority for any additional costs for such similar Goods or Related Services.</li> <li>(c) If the Supplier, in the judgment of authority has engaged in corrupt or fraudulent practices, in competing for or in executing the Contract.</li> </ul> |
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|  | <p>50.7. Termination for Insolvency</p> <p>Authority may at any time terminate the Contract by giving Notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to Authority.</p> <p>50.8. Termination for Convenience</p> <p>Authority, by Notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The Notice of termination shall specify that termination be for Authority's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.</p>  |
| <b>51. Payment upon Termination</b>          | <p>51.1. If the Contract is terminated because of a fundamental breach of Contract by the Implementing Agency, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as specified in the PCC. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Implementing Agency, the difference shall be a debt payable to the Employer.</p> <p>51.2. If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Implementing Agency's personnel employed solely on the Works, and the Implementing Agency's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.</p> |
| <b>52. Property</b>                          | <p>52.1. All Materials on the Site, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Implementing Agency's default.</p>   |
| <b>53. Release from Performance</b>          | <p>53.1. 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 Implementing Agency, the Project Manager shall certify that the Contract has been frustrated. The Implementing Agency 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 a commitment was made.</p>   |
| <b>54. Suspension of Bank Loan or Credit</b> | <p>54.1. In the event that the Government of India (GoI) and/or State Government (Government of Uttar Pradesh) suspends the Loan or Credit to the Employer, from which part of the payments to the Implementing Agency are being made:</p> <ul style="list-style-type: none"> <li>(a) The Employer is obligated to notify the Implementing Agency of such suspension within 7 days of having received the Government of India (GoI) and/or State Government (Government of Uttar Pradesh) suspension notice.</li> <li>(b) If the Implementing Agency has not received sums due to it within the 28 days for payment provided for in Sub-Clause 40.1, the Implementing Agency may immediately issue a 14-day termination notice.</li> </ul>   |

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| <b>55. Force Majeure</b>                  | <p>(a) The Implementing Agency shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination<br/>For default if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <p>(b) For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Implementing Agency that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Implementing Agency. Such events may include, but not be limited to, acts of the Authority in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.</p> <p>(c) If a Force Majeure situation arises, the Implementing Agency shall promptly notify the Authority in writing of such condition and the cause thereof. Unless otherwise directed by the Authority in writing, the Implementing Agency shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</p> <p>(d) As per PCC.</p> |
| <b>56. Governing Law and jurisdiction</b> | <p>(a) This Agreement shall be governed by the laws of India. The courts in Uttar Pradesh, Bareilly shall have jurisdiction over all matter arising out of or relating to this Agreement.</p> <p>(b) The Jurisdiction limits will be the Bareilly</p>   |
| <b>57. Possession of Goods</b>            | <p>(a) Goods have to be delivered to the site only after prior the approval form the Engineer-In-Charge.</p> <p>(b) Such Goods once delivered to Site will not be allowed to taken back except the construction equipments and the construction equipments should be permitted after the successful completion of the Project and as well as the Operation and Maintenance period.</p> <p>(c) Goods will be allowed to taken back only after the written permission from the Engineer-In-Charge.</p>  |

**58. Warranty**

- (a) The Implementing Agency warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
- (b) The Implementing Agency further warrants that the Goods shall be free from defects arising from any act or omission of the Implementing Agency or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.
- (c) Unless otherwise specified in the PCC, the warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the PCC
- (d) The Authority shall give notice to the Implementing Agency stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Authority shall afford all reasonable opportunity for the Implementing Agency to inspect such defects.
- (e) Upon receipt of such notice, the Implementing Agency shall, within the period specified in the PCC, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Authority.
- (f) If having been notified, the Implementing Agency fails to remedy the defect within the period specified in the PCC, the Authority may proceed to take within a reasonable period such remedial action as may be necessary, at the Implementing Agency's risk and expense and without prejudice to any other rights which the Authority may have against the Implementing Agency under the Contract.



**A. Other Terms and conditions of the contract.**

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| <b>59. Scope of Supply</b>                       | <p>1) The Goods and Related Services to be supplied shall be as per the specification.</p> <p>2) Unless otherwise stipulated in the Contract, the Scope of Supply shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Delivery and Completion of the Goods and Related Services as if such items were expressly mentioned in the Contract.</p>   |
| <b>60. Notices</b>                               | <p>All notices or other communications to be given or made under this agreement shall be in writing, shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each party, its facsimile number and e-mail address are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5:30 (Five Thirty) P.M. on any day, or on a day that is a public holiday, the notice shall be deemed to be received on the first working day following the date of actual receipt. Without prejudice to the foregoing, a party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice of communication. It is hereby agreed and acknowledged that any party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such changes shall be effective when all the parties have notice of it.</p> |
| <b>61. Information provided by the Authority</b> | <p>All drawings, Data and documentation that are given to the Implementing Agency by the Authority for the execution of the order are the property of the Authority and shall be returned when demanded. Except for the purpose of executing the order of the Authority, Implementing Agency shall ensure that the above documents are not used for any other purpose. The Implementing Agency shall further ensure that the information given by the Authority is not disclosed to any person, firm, body, corporate and / or authority and every effort shall be made to keep the above information confidential. All such information shall remain the absolute property of the Authority.</p>  |

**62. Implementing Agency's Responsibilities**

The Implementing Agency shall execute the work as per the scope of work. The Implementing Agency shall be responsible for the adequacy, stability and safety of all services being provided.

The Implementing Agency shall comply with all applicable safety regulations and take care for the safety of all persons entitled to be on as the operation and maintenance.

The Implementing Agency shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Authority shall be entitled to audit any aspect of the system.

The Implementing Agency shall be deemed to:

have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and

Have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters.

Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Implementing Agency's obligations under the Contract and all things necessary for the proper discharge of the contract agreement.

The Implementing Agency shall be wholly and solely responsible for full compliance with the provisions under all labour laws and/or regulations such as Payment of Wages Act 1948, Employees Liability Act 1938, Workmen's Compensation Act 1923, Employees State Insurance Act 1948, Employees Provident Fund Act 1952, Industrial Disputes Act 1947, the Maternity Benefit Act 1961, the Contract Labour (Regulation and Abolition) Act 1970 and the Factories Act 1948 or any modifications thereof or any other law relating thereto and rules there under introduced from time to time.

The Implementing Agency shall assume liability and shall indemnify the Authority from every expense, liability or payment by reason of the application of any labour law, act, rules or regulations existing or to be introduced at a future date during the term of the Contract.

In general, in respect of all labour directly or indirectly employed in the Work for the performance of Implementing Agency's part of the Contract, the Implementing Agency shall comply with all the rules framed by the Government authorities concerned from time to time for protection of the health and welfare of the workers.

The Implementing Agency shall not employ any children/ child labour below the age of 18 years.

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|   | <p>The Implementing Agency shall include in the Contract Price all expenses necessary to meet his obligations for making contributions toward employee benefits funds such as Employee Provident fund (EPF), Employee State Insurance Scheme (ESI) benefits, old age pension and/or any other benefits/compensation legally payable in compliance with all the statutory regulations and requirements. All records in this connection shall be properly maintained by the Implementing Agency and produced for scrutiny by the concerned authorities and the Authority</p>  |
| <b>63. Confidential Information</b>     | <p>The Authority and the Implementing Agency shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Implementing Agency may furnish to its Subcontractor such documents, data, and other information it receives from the Authority to the extent required for the Subcontractor to perform its work under the Contract, in which event the Implementing Agency shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Implementing Agency.</p>  |
| <b>64. Specifications and Standards</b> | <p>Technical Specifications and Drawings</p> <ol style="list-style-type: none"> <li>The implementing agency shall ensure that construction has to be in comply with the technical specifications and other provisions of the Contract.</li> <li>Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Authority.</li> </ol>  |
| <b>65. Limitation of Liability</b>      | <p>Except in cases of criminal / gross negligence or willful misconduct:</p> <ol style="list-style-type: none"> <li>The Implementing Agency shall not be liable to the Authority, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Implementing Agency to pay liquidated damages to the Authority and</li> <li>The aggregate liability of the Implementing Agency to the Authority, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Implementing Agency to indemnify the Authority with respect to patent infringement.</li> </ol> |

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| <b>66. Change in Laws and Regulations</b>       | <p>Unless otherwise specified in the Contract, if after the bid submission date, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Implementing Agency has thereby been affected in the performance of any of its obligations under the contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC's Contract Price Clause.</p> |
| <b>67. Time is of the Essence</b>               | <p>Time shall be of the essence in respect of any date or period specified in this contract or any notice, demand or other communication served under or pursuant to any provision of this contract and in particular in respect of the completion of the activities by implementing agency by the specified completion date.</p>  |
| <b>68. Ownership and Retention of Documents</b> | <p>The authority shall own the documents, prepared by implementing agency arising out of or in connection with the contract.</p> <p>Forthwith upon expiry or earlier termination of this contract and at any other time on demand by the client, Implementing Agency shall deliver to the authority all documents provided by or organizing from the authority and all documents produced by or for implementing agency in the course of performing the services, unless otherwise directed in writing by the authority at no additional cost. Implementing Agency shall not, without the prior written consent of the client store, copy distribute or retain any such documents.</p>   |
| <b>69. Records of Contract Document</b>         | <p>Implementing Agency shall at all-time make and keep sufficient copies of the process manuals, operating procedures, specifications, Contract Documents and any other documentation for them to fulfil their duties of the contract. Implementing Agency shall keep on the site at least three copies of each and every specification and contract document. In excess of their own requirement and those copies shall be available at all times for use by the authority and by any other person authorized by the authority.</p>   |
| <b>70. Security and Safety</b>                  | <p>Implementing Agency shall comply with the directions issued from time to time by the authority and the standards related to the security and safety, in so far as it applies to the provision of the services.</p> <p>Implementing Agency shall upon reasonable request by the authority or its nominee(s) participate in regular meetings when safety and matters are reviewed.</p>  |

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| <b>71. Addition /Alteration / Modifications</b>     | <p>The Authority reserves the right to make additions/alterations/modifications to the quantity of items in the contract. The Implementing Agency shall supply such quantities also at the same rate as originally agreed.</p> <p>Any waiver by the authority of any breach of the conditions of the Contract shall not constitute any right for subsequent waiver of any other terms and conditions.</p> |
| <b>72. Material and Workmanship</b>                 | <p>Implementing Agency shall fully warrant that the stores, equipment and component Supplied shall be new and first quality, according to the specifications and shall be free from defects (even concealed faults, deficiency in design, materials and workmanship).</p>   |
| <b>73. Spare Parts, Oil and Lubricants</b>          | <p>Wherever applicable, the Implementing Agency shall furnish to the Authority, item-wise price list of spares required for regular operation and maintenance of the ordered equipment. The Implementing Agency shall also furnish necessary instructions and drawings to identify the spare part numbers and their location as well as an interchange ability chart</p>                                  |
| <b>74. Deleted</b>                                  | Deleted   |
| <b>75. Access to Implementing Agency's Premises</b> | <p>The Authority and /or its authorized representative shall be provided Access to Implementing Agency's and / or his sub- contractor's premises, at any time during the pendency of the contract, for expediting the Supplies, inspection, checking etc.</p>   |

**76. Storage of Mechanical and Electrical Equipments at Site**

The types of storage are broadly classified as

- i) Special storage - Air conditioned,
- ii) Closed storage,
- iii) Semi-closed storage and
- iv) Open storage.

The equipment covered under this Specification shall be stored in the type of storage as recommended by the manufacturer.

**STORAGE:**

Authority shall make available the place at site for storing the material, if available on chargeable basis. The contractor shall arrange construction of storage sheds, etc. for proper storage of materials and to minimize wasteful handling during retrieval of items required for erection. The outdoor storage areas as well as semi-closed stores shall be provided with adequate drainage facilities to prevent water logging.

The stores sheds shall be built in conformity with fire safety requirements and with adequate lighting and fire extinguishers. No smoking signs shall be placed at strategic locations. Safety precautions shall be strictly enforced.

Adequate lighting facility shall be provided by the contractor in storage areas and storage sheds and security personnel positioned to ensure enforcement of security measures to prevent theft and loss of materials.

The contractor shall carry out regular inventory of materials received, issued and erected and notify the client of any loss when noticed. The contractor shall provide adequate number of competent stores personnel including store-keepers, clerical staff, inspection engineers, watchmen and security staff to efficiently store and maintain the equipment/material entrusted to him.

Any equipment left in the open under such conditions shall be, if required, covered with tarpaulin.

**MAINTENANCE DURING STORAGE:**

The Contractor is responsible for maintenance of the equipment stored at site as per standard practices for storage and as per manufacturer's recommendations of each of the equipment.

**77. Progress Reports and  
Photographs/ Videos**

During various stages of the manufacture in the pursuance of the contract, the contractor shall at his own cost submit progress reports as may be reasonably required by the Client with such materials, such as charts, networks, photographs/Videos, test certificates etc., Such progress reports, shall be in the form and size as per industry standards and shall be submitted at least in four copies. During coordination meetings or review meetings, presentation shall be made by power point presentation with photographs for important mile stones.

**Progress Reports:**

Daily/weekly and Monthly progress reports shall be prepared by the Contractor and submitted to the client in three copies. The first report shall cover the period Up to the end of the first calendar month following the Commencement Date.

Reporting shall continue until the Contractor has completed all work, which is shown to be satisfactory outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

- a) Charts and detailed descriptions of progress, including each stage of surveys, Investigation, design, Contractor's Documents, procurement, manufacture, delivery to Site, construction, commissioning and trial operation;
- b) Digital photographs/videos showing the status of progress on the Site;
- c) For the manufacture of each main item of building and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of: Commencement of manufacture, Contractor's inspections, tests, and Dispatch and arrival at the Site;
- d) The details of Contractor's Personnel and Equipment;
- e) Copies of quality assurance documents, test results and certificates of Material;
- f) List of Variations, notices given
- g) Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to minimize or overcome delays.

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| <b>78. Documentation</b>   | <p>The contractor's store keeping function will include maintaining various records. These records shall include but not limited to Supplier-wise record of equipment/material received, stored and issued for erection as well as stock position.</p> <p>Record of inspection and repairs carried out, protective measures and lubrication equipment in storage as well as erected until the same is taken over by the owner.</p>   |
| <b>79. GST Number</b>  | <p>All the tenderers should have a valid GST number. Failure to comply with this instruction shall render his/her/their incomplete and shall be rejected with other punitive action against the said as deemed fit by BSCL. In any change or amendment made by the Government will be applicable according to the instructions.</p>  |
| <b>80. Incomplete tender and seeking clarification</b>           | <p>Tenders received in incomplete shape or found incomplete during evaluation of the bids, are liable for rejection. However, during evaluation if felt necessary by BSCL that, further clarification(s) is/are required on any document(s) submitted by any bidder(s) then BSCL may, at its sole discretion, resort to any procedure(s) deemed fit and by assigning reasonable time(s), as BSCL may decide just &amp; proper for completion of the procedure(s). The result(s) of this /these time bound pursuit(s) shall have bearing(s) upon further evaluation/finalization of the corresponding tender(s) of the bidder(s) or on the tender for the work.</p> |
| <b>81. Urgent Work</b>   | <p>If any urgent work in the opinion of BSCL becomes necessary to be executed and the contractor is unable and unwilling at once to carry out, the Engineer in Charge may be his own or through other agency carry it out, as he may consider necessary. All incurred on it shall be recoverable from the contractor or shall be adjusted against any sum payable to the contractor.</p>   |
| <b>82. Change(s) in Name and Constitution of the Contractor:</b> | <p>Any change(s) in the name/constitution of the contractor, shall be forthwith notified by the contractor to BSCL for information. In case of failure to notify the change(s) within 15 days, BSCL may, by notice in writing, rescind the contract and the security deposit of the contractor shall, thereupon, stand forfeited and be absolutely at the disposal of BSCL and, the same consequences shall be ensured as if the contract had been rescind there of and in addition the contractor shall not be entitled to recover or to be paid for any work thereof actually performed under the contract.</p>  |



**83. Custody of Materials:**

The contractor shall be responsible for safe custody of his/her/their materials at the work sites and BSCL will not be responsible for any loss or damage of the property at site. There should not be any conflict of interest or relaxation/exoneration of responsibility of the contractor as per this RFP/Contract, on any account whatsoever, regarding the work(s)/material(s)/property, of BSCL or of, any other agency/organization engaged/allowed by BSCL, available/to be made available/going on/to be started, at or in connection with the works of road and traffic junction development, failing which BSCL shall adopt any action deemed fit against the contractor with a view to continuing and complete the works. The portion or whole of the work executed by the contractor in connection with this contract shall remain in safe custody, watch & ward of the contractor till the same are handed over by the contractor to BSCL in required shape and manner or till, BSCL takes them over either unilaterally or as per this contract. Responsibility arising out of this safe custody, watch and ward till BSCL declares/assumes its right over the same, shall lie with the contractor. No claim in this regard by the contractor shall be acceptable by BSCL.

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| <p><b>84. Contractor to Provide and Facilitate Inspection, Safety Gear, etc:</b></p> | <ul style="list-style-type: none"> <li>i. <b>Inspection:</b> BSCL will have the right to inspect the work and can reject partly or fully, if found defective in its opinion.</li> <li>ii. <b>Safe means of Access:</b> Safe means of access shall be provided to all working platforms and other working places.</li> <li>iii. <b>Precaution against Electrical Equipment:</b> Adequate precaution shall be taken to prevent danger from electrical equipment. Hand lamps shall be provided with Mesh guard, wherever required.</li> <li>iv. <b>Preventing Public from Accident:</b> No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or public. The contractor shall provide all necessary fencing and light to protect the public from accident and shall be bound to bear expenses of defence or any suit action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precaution and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such person or which may with the consent of the contractor, be paid to compromise any claim by any such person. The contractor not to come cause blockage of traffic/disruption of traffic.</li> <li>v. <b>Personal Safety Equipment:</b> All personal safety equipment shall be made adequately available by the contractor for use of persons employed at the site of work and maintained in a condition suitable for immediate use. The contractor shall take adequate steps to ensure proper use of the equipment by persons concerned.</li> <li>vi. <b>Demolition:</b> Before any demolition work is commenced and also during process of work; <ul style="list-style-type: none"> <li>a. All roads and open areas adjacent to the work site shall either be closed or suitably protected.</li> <li>b. No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.</li> <li>c. All practical steps shall be taken to prevent danger to persons employed from the risk of fire, explosion or flooding.</li> </ul> </li> </ul> |
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| <b>85. Fair Wages Clause</b>   | <p>The contractor shall not employ for the purpose of this contract any person who is below the age of fourteen years and shall pay to each labor for work done by such laborers fair wages.</p> <p>Explanation- <b>“Fair Wage”</b> means wages, whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the minimum wages act 1948 wages at such higher rates should constitute fair wages.</p> <p>BSCL shall have the right to enquire into and decide any complaint alleging that the wages paid by the contractor to any labor for the work done by such labor is less than the wages described above.</p> |
| <b>86. Contractor to Respond for Disengagement of Unruly Labor/Personnel</b> | <p>BSCL are to have round the clock access to the work sites during execution and defect liability period. BSCL may require the contractor to remove dismiss any labour / representative(s) of person of the contractors found to be incompetent or ill-mannered/behaved or of doubtful background/integrity, etc., and the contractor shall comply with such requirements.</p>   |
| <b>87. Provisions for Workman Compensation</b>                               | <p>BSCL shall not be held liable to pay any compensation to any workman under workman’s compensation Act, 1923. The contractor shall have to pay the entire compensation as decided in any court of law for any injury/loss sustained by any workman during execution of the work. If, by order of any authority/court, BSCL pays any compensation to honor and abide the order, then said amount(s) shall be recovered from the contractor.</p>  |

**88. Rescission of Contract**

Subject to other provisions contained in this RFP or in the agreement, BSCL may, without prejudice to any other right or remedy available to the contractor in respect of any delay, inferior workmanship, any claims for damages and / or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, rescind the contract in any of the following cases:

- I. If the contractor having been given by BSCL a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper manner shall omit/ fail to comply with the requirement of such notice for a period of seven days thereafter.
- II. If the contractor being a company shall pass a resolution or the honorable court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the honorable court or the creditor to appoint a receiver or a manager or which entitle to honorable court to make a winding up order.
- III. If the contractor has, without reasonable cause, suspended the progress of the work with due diligence so that in the opinion of CHIEF EXECUTIVE OFFICER (which shall be final and binding) he will be unable to secure completion of the work by the due date of completion and continues to do so after a notice in writing of seven days from Chief Executive Officer, BSCL.
- IV. If the contractor fails to follow and comply with the relevant provisions this RFP and/or agreement.
- V. If the contractor fails to complete the work within the stipulated date or items of the work with individual date of completion. If any stipulated, on or before such date(s) of completion and does not complete them within the stipulated period.

**When the Contractor has made himself liable for action under any of the cases aforesaid, BSCL shall have the power to rescind the contract( of which rescission notice in writing to the contractor under the hand of CHIEF EXECUTIVE OFFICER shall be conclusive evidence), 20% of the value of the left over work will be realized from the contractor as Penalty in addition to other punitive measures deemed fit by BSCL including debarring the contractor from participating in BSCL Tenders at least for 3 years, blocking his/her/their Digital Signature Certificate(DSC) in the e-procurement portal and recommending the corresponding license issue authority not to renew the license of the contractor. In case of rescission of contract, the contractor shall have no claim for compensation for any loss sustained by him by reasons of having purchased or procured any materials or entered any engagement on account of or with a view to execute the work/ performance of the contractor.**

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| <b>89. Black Listing</b> | <p>A Contractor may be blacklisted for :-</p> <ol style="list-style-type: none"> <li>Misbehavior/ threatening of Departmental &amp; supervisory officers during execution of work/tendering process.</li> <li>Involvement in any sort of tender fixing.</li> <li>Constant non-achievement of milestones on insufficient and imaginary grounds and non-adherence to quality specifications despite being pointed out.</li> <li>Persistent and intentional violation of important conditions of contract.</li> <li>Security consideration of the State i.e., any action that jeopardizes the security of the state.</li> <li>Submission of False/ fabricated/ forged documents for consideration of a tender.</li> </ol> <p>In case a contractor is black listed, it will be widely published and intimated to all Departments of Government and also to Govt. of India Agencies working in the State</p> |
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#### **90. Other Conditions:**

The Implementing Agency shall arrange for the services of fully qualified and competent supervising Engineer/Engineers and necessary number of personnel as the Implementing Agency deems it absolutely necessary with the requisite specialized skills for the erection, testing and commissioning of equipment.

All tools required for installation shall be arranged by the Implementing Agency. Inspection and testing of the complete installation and putting in regular service and shall bear the overall responsibility of the satisfactory installation, testing and commissioning of the equipment. The Implementing Agency shall make his own arrangements for Boarding & Lodging of his personnel. The following facilities and services are also covered in the scope of Tenderer. Unloading and loading of equipment and accessories, transportation to the site and storage. Providing of necessary labour force required for the execution of the job. Providing of necessary transport facilities for the staff to be deputed by the contractor for installation work.

#### **CONSTRUCTION LABOUR AND TOOLS:**

- The Implementing Agency shall furnish the list of special construction tools. Special tools which in the opinion of the Implementing Agency would be required for construction work.
- The Implementing Agency may select to bring with him certain personal tools required for construction, which will remain his property at all times. Use of such personal tools for construction work shall not entitle the Implementing Agency to any additional payment. Any assistance required by the Implementing Agency in securing entry and exit permits for such tools shall be rendered by the Authority.
- Checking for necessary positions, levels and dimension of foundation shall be done by the Implementing Agency.
- Cleaning and Servicing: The Implementing Agency shall ensure that inside of all tubes, pipes, valves fittings and actuators shall be free from dirt and loose scales by thoroughly blowing and /or flushing of service before being erected by them.

**FIELD ENGINEERING CLARIFICATIONS:**

The Implementing Agency shall provide all necessary field engineering clarifications to the client that they may require for the purposes of their works. The Implementing Agency shall also provide all engineering clarifications and details to the client for the overall engineering / start-Up of the plant and equipment Supplied by them.

**REGULATION OF LOCAL AUTHORITIES AND STATUS:**

The Implementing Agency shall, to the extent relevant and applicable, comply with all the rules and regulations of local authorities/governments, during the performance of his field activities. He shall also comply with the minimum wage Act: 1948 and any modifications thereof and the payment of wages Act (both of the Government of India) and the rules made there under, in respect of employees or workmen employed or engaged by him. The Implementing Agency shall also Supply the equipment in conformity with the electricity laws, rules, etc. and obtain all permissions and approvals from the competent authorities such as CEIG, etc. before charging the equipment for testing and commissioning.

**CONSTRUCTION MANAGEMENT:**

The field activities of the Implementing Agency will be co-ordinated by the Engineer-in-Charge of BSCL and his decision shall be final in resolving any disputes.

The Implementing Agency shall have the complete responsibility for the safety of all persons employed by him, and all the properties under his custody during the Contract. This requirement with respect to the persons employed by the Implementing Agency shall be limited to work site only and with respect to the equipment and properties shall apply continuously till the completion of the contract and shall not be limited to normal working hours.

**ACCESS TO SITE:**

1. The Contract, so far as it is executed on the client premises, shall be carried out till such time as the client may approve.
2. During the execution of the work, no person's other than the Implementing Agency, or his duly appointed representative, sub-contractors and workmen shall be allowed to do work on the site, except by the special permission in writing. But access to the works at all times shall be accorded to the (Authority) representatives and other authorized officials.

**IMPLEMENTING AGENCY'S SITE OFFICE ESTABLISHMENT/ LOGISTICS:**

The Implementing Agency shall establish a site office at the site and keep posted a client authorized representative for the purpose of Contact. Any written order or instructions of Engineer-in-Charge or his representative shall be handed over to the Implementing Agency's representative under receipt duly taken from the said representative and such communication shall be treated as a communication to the Implementing Agency's legal address.

The Implementing Agency shall provide 1 nos of Air conditioned 4-Wheelers (Passenger Car) with driver(1) for the client mobilization. The cost of logistics is to be borne by the implementing agency.

**CO-OPERATION WITH OTHER IMPLEMENTING AGENCYS:**

1. The Implementing Agency shall co-operate with all staff of the Client, who may be performing other services on behalf of the Client and the workmen who may be employed by the Client and doing work in the vicinity of the Contractor's work site.

2. Client shall be informed promptly by the Implementing Agency of any defects in the work that could affect the performance of the equipment. The Implementing Agency and the client shall determine the corrective measures, if any, required to rectify this situation after inspection of the works.

**QUALIFICATION OF IMPLEMENTING AGENCY'S PERSONNEL:**

1. The Implementing Agency's personnel will be adequately qualified, trained and experienced so as to carry out the duties most efficiently and effectively as expected of them. The Implementing Agency's personnel shall have adequate experience of working on similar type of the equipment and similar job.
2. Notwithstanding above if any of the personnel is not found to be performing his services in a manner as expected of him, under the contract, the Implementing Agency on advice from (Engineer-in-Charge), shall replace such person(s) at his cost with those acceptable to (Engineer-in-Charge), by mutual agreement.

**DISCIPLINE OF WORKMEN:**

The Implementing Agency shall adhere to the disciplinary procedure set by (Engineer-in-Charge) in respect of his employees and workmen, if any, at site. The (Engineer-in-Charge) shall be at liberty to object to the presence of any representative or employee of the Implementing Agency at the site, if in the opinion of Engineer-in-Charge, such employee has committed misconduct, or is incompetent or negligent or otherwise undesirable, and then the Implementing Agency, after mutual agreement, shall replace such a person objected to.

**MANPOWER REPORT:**

The Implementing Agency shall furnish, on the first day of every month, manpower report of the previous month detailing the number of persons scheduled to have been deployed and actually deployed for timely and successful commissioning of the equipment.

**CLEANLINESS:**

The offices and the residential areas of the Implementing Agency's employees within the premises of the client or those allotted by the client, shall be kept neat and clean to the entire satisfaction of the client.

**FIELD OFFICE RECORD:**

The Implementing Agency shall maintain at his office, Up-to-date copies of all drawings, specifications and other contract documents and any other Supplementary data, complete with all the latest revisions thereto. The Implementing Agency shall also maintain, in addition, the continuous record of all changes to the above Contract documents, drawings, specifications, Supplementary data etc., effected at the field and on completion of his total assignment under the Contract shall incorporate all such changes on the drawings and other engineering data to indicate "as installed" conditions of the equipment furnished under the Contract. Such drawings and engineering data shall be submitted to (Engineer-in-Charge) in requisite number of copies as per terms of the Contract.

**EPF& INSURANCE:**

If an existing EPF account code is not in place, then the bidder should obtain independent EPF account code in his name, from the competent authority. Documentary evidence for the same should be produced at the time of entering into agreement or before commencement of works, as demanded by (Engineer-in-Charge).

The insurance of all Implementing Agency's personnel against any accident during erection, testing and commissioning etc., shall be arranged by the Implementing Agency at his cost. The Implementing Agency shall also indemnify the Authority against all liabilities arising out of any accidents, loss and/ or any other reasons. The

personal insurance for the Implementing Agency's personnel deputed to site shall also be arranged by the Implementing Agency at his cost.

i. **WORKMEN'S COMPENSATION INSURANCE:**

This insurance shall protect the Implementing Agency against all claims applicable under the Workmen's Compensation Act, 1948 (Government of India). This policy shall also cover the Implementing Agency against claims for injury, disability, disease or death of his or his sub-contractor's employees which for any reason are not covered under the Workmen's Compensation Act, 1948. The responsibility and liability of this insurance be as provided in the statutes and the liability shall not be less than the liability provided in the statutes.

ii. **COMPREHENSIVE GENERAL LIABILITY INSURANCE:**

This insurance shall protect the Implementing Agency against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the Implementing Agency, his agents, his employees, his representatives and sub-contractors or from riots, strikes and civil commotion.

The hazards to be covered will pertain to all the works and areas where the Implementing Agency, his Sub-Contractors, his agents and his employees have to perform work pursuant to the Contract. The above are only illustrative lists of insurance covers normally required and it will be the responsibility of the Implementing Agency to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect in pursuance of the Contract.

**SERVICE AND FACILITIES TO BE PROVIDED BY THE AUTHORITY:**

Necessary area required for construction of Implementing Agency's office and quarters for Implementing Agency's supervisors/workmen shall be arranged by themselves by the Implementing Agency near project site. It is the responsibility of the Implementing Agency to establish the office and to provide necessary residential accommodation to his employees at his own cost. Power Supply for construction purpose shall be arranged by themselves by the Implementing Agency. Implementing Agency shall arrange distribution of power as required for construction works. The distribution shall be with proper protection with MCCB's/MCB's etc. as per Indian standards. Implementing Agency has to make his own arrangement for water for construction activities and maintenance of roads or providing water to the employees and their residential quarters.

**WORKING HOURS:**

The personnel shall work normally 8 hours per day in one shift during the hours in between 6.00AM to 8.00PM including one-hour rest and six days working per week. The works can be allowed to be carried out during night, Sundays or authorized holidays in order to meet the schedule targets keeping in view;

1. The provisions of labour laws are adhered to,
2. Adequate lighting, Supervision and safety measures are established,
3. Authority's approves the construction program given by the Implementing Agency and agree for working during Sundays or authorized holidays.

**REGULATIONS OF LOCAL AUTHORITIES:**

The Implementing Agency shall, throughout the continuance of the contract and in respect of all matters arising in the performance thereof obtain consents, way leaves, approvals and permissions required in connection with the regulations and by-laws of the local or other authority which shall be applicable to the works.



All work shall be executed in accordance with the Indian Electricity Rules, 1956 and any statutory modifications thereof, and any local regulation and laws, wherever applicable, unless otherwise agreed to in writing by the Engineer.

All works shall be carried out by and under the supervision of qualified personnel having required skills and certifications. The necessary approvals for installation and operating the equipment such as CEIG approval, etc. shall be obtained by the Implementing Agency. The Authority shall provide necessary assistance in furnishing the required details.

**FENCING AND LIGHTING:**

Except as herein after provided the bidder shall, unless otherwise specified, be responsible for the proper fencing, guarding, lighting, and watching of all works comprised in the contract and for the proper provision of temporary roadway, footways, guards, and fences as far as the same may be rendered necessary by reason of the work for the accommodation and protection of foot passengers or other traffic and of the owners and occupiers of adjacent property and of the public. Fencing & lighting provided in and around control rooms.

**MATERIALS BROUGHT ON TO THE SITE:**

All materials, and equipment brought to and delivered Upon the site for the purpose of the work shall, from the time of their being so brought, vest and be the property of the Authority but may be used for the purpose of the work but for that purpose only and shall not on any account be removed or taken away by the bidder or any other person without the express permission in writing of the Engineer but the bidder shall never the less be solely liable and responsible for any loss or destruction thereof or damage there to unless resulting from causes beyond the bidder's control not being causes insurance against destruction or damage.

**BIDDER REPRESENTATIVE AND WORKMEN:**

Complete Erection, Testing and Commissioning is included in scope of works. The bidder shall employ at least one competent representative, whose name or names shall have previously been communicated in writing to the Authority by the bidder, to supervise the construction of roads and carrying out the works. The said representatives, or if more than one shall be employed then one of such representatives, shall be present at the site during working hours and any written orders or instructions to the said representative of the bidder, shall be deemed to have been given to the bidder. The Authority shall be at liberty to object to any representative or person employed by the bidder in the execution or otherwise about the works who shall misconduct himself or be incompetent or negligent, and the bidder shall remove the person so objected to Upon receipt of notice in writing from the Authority requiring him (the bidder) so to do, and provide in his place a competent representative at the bidder's expense.

**ENGINEER'S SUPERVISION:**

All the works shall be carried out under the direction and to the reasonable satisfaction of the Engineer-in-Charge. The bidder shall be responsible for the correctness of the positions, levels, and dimensions of the works according to the drawings notwithstanding that he may have been assisted by the Engineer in setting out the same.

**POWER TO VARY OR OMIT WORK:**

No alterations, amendments, omissions, additions, suspensions, or variations of the work (herein after referred to as "Variations") under the contract as shown by the contract drawings or the specification shall be made by

the bidder except as directed in writing by the Authority, but the Authority shall have full power, subject to the provision herein after contained, from time to time during the execution of the contract by notice in writing to instruct the bidder to make such variation without prejudice to the contract, and the bidder shall carry out such variations, and be bound by the same conditions, as far as applicable, though the said variations not occurred in the specification and the bidder will compensate in this situation if applicable.

If any suggested variations, would, in the opinion of the bidder, if carried out, prevent him fulfilling any of his obligations or guarantees under the contract, he shall notify the Authority there of in writing, and the Authority shall decide forthwith whether or not the same shall be carried out, and if the Authority confirms his instructions, the bidder's obligations and guarantees shall be modified to such an extent as may be justified. The difference of cost, if any, occasioned by any such variations shall be added to or deducted from the contract price as the case may require. The amount of such difference, if any, shall be ascertained and determined in accordance with the rates specified in the schedules of prices, so far as the same may be applicable, and where the rates are not specified in the said schedules, they shall be settled by the Authority and bidder jointly. But the Authority shall not become liable, for the payment of any charge in respect of any such variations, unless the instructions for the performance of the same shall have been given in writing by the Authority.

In the event of the Authority requiring any variations, such reasonable and proper notice shall be given to the bidder as will enable him to make his arrangements accordingly, and in cases where goods or materials are already prepared, or any designs, drawing, or patterns made or work done that require to be altered, a reasonable sum in respect there of shall be allowed by the Authority. Provided that no such variation shall, except with the consent in writing of the bidder, be such as will involve an increase or decrease of the total price payable under the contract by more than 10 (Ten) percent thereof.

In any case in which the bidder has received instructions, from the Authority as to carrying out the work, which either then or later will, in the opinion of bidder, involve a claim for additional payment, the bidder shall, as soon as reasonably possible after the receipt of the instructions, aforesaid, advise the Authority to that effect.

**NEGLIGENCE:**

If the bidder neglects to execute the work with due diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him in writing by the Engineer-in-charge connection with the work, or shall contravene the provisions of the contract, the Authority may give seven days' notice, in writing, to the bidder, to make good the failure, neglect, or contravention complained of and should the bidder fail to comply with the notice within a reasonable time from the date of service thereof in the case of failure, neglect or contravention capable of being made good within that time or, otherwise within such time as may be reasonably necessary for making good, and in such case, the Authority shall be at liberty to employ other workmen, and forthwith perform such work as the bidder may have neglected to do or if the Authority shall think fit, it shall be lawful for him to take the work wholly, or in part, out of the bidder's hands and re-contract at a reasonable price with any other person or persons, or provide any other materials, tools, tackle or labour for the purpose of completing the work or any part thereof and in that event the Authority shall, without being responsible to the bidder for fair wear and tear of the same to have the free use of all the materials, tools, construction plant or other things which may be on the site, for use at any time in connection with the work, to the exclusion of any right of bidder over the same, and the Authority shall be entitled to retain and apply any balance which may be otherwise due on the contract by him to the bidder or such part thereof as may be necessary to the payment of cost of executing such work as aforesaid.

If the cost of executing the work as aforesaid shall exceed the balance due to the bidder and the bidder fail to make good the deficit, the said materials, tackle, construction plant or other things, the property of the bidder may be sold by the Authority, and the proceeds applied towards the payment of such difference and the cost of an incidental to such sale. Any outstanding balance existing after crediting the proceeds of such sale shall be paid by the bidder on the certificate of the Engineer, but when all expenses, costs and charges incurred in the completion of the work are paid by the bidder, all such materials, tools, tackles, construction plant or other things remaining unsold shall be removed by the bidder.

**DEATH, BANKRUPTCY, ETC:**

If the bidder die or commit any act of Bankruptcy, or being a Department commence to be wound Up except for reconstruction purposes or carry on its business under a receiver, the executor successors, or other representative in law of the estate of the bidder or any such receiver, liquidator, or any person in whom the contract may become vested, shall forthwith give notice thereof in writing to the Authority and shall for one month, during which he shall take all reasonable steps to prevent as stoppage of the works, have the option of carrying out the contract subject to his or their providing such guarantee as may be required by the Authority but not exceeding the value of the work for the time being remaining unexecuted. In the event of stoppage of the work the period of the option under this clause shall be 14(fourteen) days only. Provided that, should above option not be exercised, the contract may be determined by the Authority by notice in writing to the bidder. And the same power and provisions so reserved to the Authority in the last proceeding clause on taking of the work out of the bidder's hands shall immediately become operative.

Bidder shall guarantee that before going out of production the spare parts, he will give adequate notice to the Authority so that the latter will have adequate time to order for future requirement of spares. Seller shall further guarantee that if he goes out of production of spare parts, then he will make available the blue prints, drawings of the spare parts and specification of material at no cost to the Authority if and when required

**RELEASE OF INFORMATION:**

The Implementing Agency shall not communicate or use in advertising, publicity, sales releases or in any other medium photographs or other reproduction of the works under this contract, or description of the site, dimensions, quality or other information, concerning the work unless prior written permission has been obtained from the Authority.

**LIMIT OF CONTRACT:**

Equipment Supplied shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment" s and / or needed for erection, completion and safe operation of the equipment's as required by applicable codes though they may not have been specifically detailed in the respective specifications unless included in the list of exclusions. All similar standard equipment's provided, shall be interchangeable with one another.

**GENERAL:**

The Bidder shall be responsible for provision of health and sanitary arrangement more particularly described in contract labour (regulation and abolition Act), safety precautions, etc. as may be required for safe and satisfactory execution of the contract.

The Bidder shall fulfil all his obligations in respect of accommodation including proper facilities for the personnel employed by him.

The bidder shall be responsible for the proper behaviour at site and observance of all regulations by the staff employed by him. Insurance for the labour engaged shall be the responsibility of the bidder till the equipment is taken over after completion of works in full shape and completion of maintenance period, as per applicability, by the (AUTHORITY). The insurance of the labour engaged for maintenance of the roads by the Implementing Agency shall also be the responsibility of the Implementing Agency. The bidder shall be responsible for settlement of insurance claims arising out of accident/injury to staff employed by him.

**Cancellation of Contract:**

The Authority reserves the right to cancel the contract in part or in full by giving two weeks' notice there by, if The Implementing Agency fails to comply with any of the terms of the contract. The Implementing Agency becomes bankrupt or goes into liquidation. The Implementing Agency makes general assignment for the benefit of the creditors and Any Receiver is appointed for the property owned by the Implementing Agency.

## Part 3 - Section IX

### Particular Conditions of Contract

Except where otherwise specified, all PCC should be filled in by the Employer prior to issuance of the Bidding Documents. Schedules and reports to be provided by the Employer should be annexed.

| A. General     |  |
|----------------|--|
| <b>PCC 1.1</b> | The financing institution is:<br>Government of India (GoI) and Government of Uttar Pradesh(GoUP)   |
| <b>PCC 1.2</b> | The Employer is : Bareilly Smart City Limited  |
| <b>PCC 1.3</b> | The Intended Completion Date for the whole of the Works be <i>As specified in the scope of works</i>   |
| <b>PCC 1.4</b> | The Project Manager is :<br><br>Authorized Representative of BSCL  |
| <b>PCC 1.5</b> | Location of Site :<br>Bareilly Haat and Handicrafts Centre ,Bareilly near Vikas Bhawan   |
| <b>PCC 1.6</b> | The language of the contract is <i>English</i> .<br>The law that applies to the Contract is the law of <i>India</i> .  |
| <b>PCC 1.7</b> | The Project manager <i>may</i> delegate any of his duties and responsibilities.  |
| <b>PCC 2.1</b> | Schedule of other Implementing Agency:<br><i>[insert Schedule of Other Implementing Agency, if appropriate]</i>  |
| <b>PCC 2.2</b> | The minimum insurance amounts and deductibles be:<br><div style="margin-left: 40px;"> <p>(a) For loss or damage to the Works, Materials, For loss or damage to Equipment, for loss or damage to property (except the Works, Materials, and Equipment) in connection with Contract, For loss or damage to Equipment, for loss or damage to property (except the Works, Materials, and Equipment) in connection with Contract and for personal injury or death (of the Implementing Agency's employees and of other people): equivalent to the accepted <i>value of the contract</i>.</p> <p>(b) The Contractor insure against each liability for any loss, damage, death or bodily injury which may occur to any physical property (mechanical, electrical, automation work, all civil works, Storage etc. excluding pipe line) or to any person which may arise out of the Contractor's performance of his obligations under these Conditions during the Defect Liability Period.</p> <p>(c) This insurance be for a limit of per occurrence of not less than the amount of Rs. 5 lakh, with no limit on the number of occurrences.</p> </div> |
| <b>PCC 2.3</b> | The Site Possession Date(s) be:<br><i>within 7 days from the date of signing the contract</i>  |
| <b>PCC 2.4</b> | Appointing Authority for the Adjudicator:<br><i>Chief Executive Officer, Bareilly Smart City Limited, Bareilly</i>   |

|                        |  |
|------------------------|--|
| PCC 2.5                | <p><b>Disputes be settled by arbitration in accordance with the following provisions:</b></p> <ol style="list-style-type: none"> <li>1. <u>Selection of Arbitrators.</u> <ol style="list-style-type: none"> <li>(a) Each dispute submitted by a Party to arbitrations be heard by a sole arbitrator or an arbitration panel composed of three (3) arbitrators, in accordance with the following provisions:</li> <li>(b) Where the Parties agree that the dispute concerns a technical matter, they may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty (30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to <i>[Chairman (Bareilly Smart City Ltd.)]</i>, for a list of not fewer than five (5) nominees and, on receipt of such list, the Parties alternately strike names there from, and the last remaining nominee on the list s be the sole arbitrator for the matter in dispute. If the last remaining nominee has not been determined in this manner within sixty (60) days of the date of the list, <i>Chairman (Bareilly Smart City Ltd.)</i>, Bareilly appoint, upon the request of either Party and from such list or otherwise, a sole arbitrator for the matter in dispute.</li> </ol> </li> <li>2. <u>Rules of Procedure.</u> Except as otherwise stated herein, arbitration proceedings be conducted in accordance with the rules of procedure for arbitration under the relevant statute applicable.</li> <li>3. <u>Substitute Arbitrators.</u> If for any reason an arbitrator is unable to perform his/her function, a substitutes be appointed in the same manner as the original arbitrator</li> <li>4. <u>Nationality and Qualifications of Arbitrators.</u> The sole arbitrator or the third arbitrator appointed pursuant to paragraphs 1(a) through 1(c) above be an internationally recognized legal or technical expert with extensive experience in relation to the matter in dispute and snot be a national of the Consultant's home country <b>[Note: If the Consultant consists of more than one entity, add: or of the home country of any of their members or Parties]</b> or of the Government's country. For the purposes of this Clause, "home country" means any of: <ol style="list-style-type: none"> <li>(a) the country of incorporation of the Consultant <b>[Note: If the Consultant consists of more than one entity, add: or of any of their members or Parties]</b>; or</li> <li>(b) the country in which the Consultant's [or any of their members' or Parties'] principal place of business is located; or</li> <li>(c) the country of nationality of a majority of the Consultant's [or of any members' or Parties'] shareholders; or</li> <li>(d) the country of nationality of the Sub-consultants concerned, where the dispute involves a subcontract.</li> </ol> </li> <li>5. <u>Miscellaneous.</u> In any arbitration proceeding hereunder: <ol style="list-style-type: none"> <li>(a) proceedings shall, unless otherwise agreed by the Parties, be held in <i>[select a country which is neither the Client's country nor the Consultant's country]</i>;</li> </ol> </li> </ol> |
|                        | <p>the <i>English</i> language be the official language for all purposes; and the decision of the sole arbitrator or of a majority of the arbitrators (or of the third arbitrator if there is no such majority) be final and binding and be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement</p>  |
| <b>B. Time Control</b> |  |
| PCC 3.1                | <p>The Implementing Agency submit for approval a Program for the Works within 14 days from the date of the Letter of Acceptance.</p>   |
| CC 3.2                 | <p>The period between Program updates is <i>monthly</i>.</p>   |

| C. Quality Control |  |
|--------------------|--|
| <b>PCC 3.3</b>     | The Defects Liability Period after issue of project completion certificate (after completion of construction and commissioning of the project):<br>1 year  |
| <b>PCC 3.4</b>     | Subletting of Contract is not Allowed  |
| <b>PCC 4.1</b>     | <p>Payment Schedule</p> <ul style="list-style-type: none"> <li>• 10% mobilization advance can be released on request of implementing agency after mobilisation of staff and providing drawings and design to commence the work against Bank Gurantee of 10 % above value of the said amount. The mobilization advance above bear simple interest and should be equal to the prevailing lending rate of interest charged by State Bank of India as mentioned in contract date and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractor's bills That will be deducted in not less than 5 instalments in subsequent payments or payment of 50 percent of project implementation whichever is earlier.</li> <li>• The Advance Payment shall not be released until the establishment of camp at work site including the mobilization of minimum manpower and all plant &amp; machinery as required at the start of the project is completed.</li> <li>• The advance payment shall be repaid through percentage deductions from the interim payments as follows: - <ul style="list-style-type: none"> <li>• Deductions shall commence from the 1st interim payment.</li> <li>• Deductions shall be made in proportions of the advance payment until such time as the advance payment has been repaid: provided that the advance payment shall be completely repaid prior to the time when 80 per cent of the accepted contract amount has been repaid.</li> </ul> </li> <li>• If the advance payment has not been repaid prior to the issue of the Taking over Certificate for the work or prior to termination, the balance advance is payable by the contractor to the Authority.</li> <li>• First running Bill shall be raised by the implementing agency after a minimum of 10% of contract value of work done.</li> <li>• Subsequent payment shall be made in the form of running bills raised by contractor, as per progress of the work on monthly basis.</li> <li>• The final bill shall be raised by the implementing agency after completing the work in all respect.</li> </ul> |

### Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, only be completed by the successful Bidder after contract award.

## LETTER OF ACCEPTANCE

To,

XXXXXXXXXX,

XXXXXX ,

Ph: .....

**Subject: - Letter of Acceptance (LOA) for “Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission”.**

**Tender ID: 2020\_.....\_.....\_..**

Dear Sir,

We refer to the tender published on XX/XX/2020 on e-tender website and technical bid opened on XX/XX/2020 in response to the invitation for Bids for “Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission”

Bareilly Smart City Limited, Bareilly (BSCL) is pleased to inform you that your Bid has been accepted by the BSCL.

You have been selected as the Preferred Bidder for the captioned project at the Contract Price of (inclusive of GST) **Rs. X/- + GST (Rs.X) = Rs X /-** [IN WORDS] (hereinafter referred to as the “**Contract Price**”).

This Contract price is subject to fulfilment of all terms and conditions specified in the bid document. The Contract Price will be inclusive of all applicable taxes, duties, statutory charges, levy and any other charges as applicable from time to time. The payment will be made as per the payment conditions mentioned in the bid document.

As per the bid document, you have to submit 10% as Security Deposit of the basic Bid amount (exclusive of GST), i.e. **RsX/-**. The amount of Rs.X/- has already been received in the form of EMD vide slip no ..... Hence, you are requested to pay the remaining security deposit amount of **Rs.X/-**, within 10 (Ten) days of the receipt of this Letter of Intent in the form of FDR (to be retained by the BSCL till the project completion) in favor of **CEO, Bareilly Smart City Ltd, Bareilly** or Amount can be deposited through online payment in the name of **Bareilly Smart City Limited, A/C No. : 0294001100000836, Name of Bank: Punjab National Bank, Branch: Pilibhit Bypass Road, Bareilly, IFSC Code: PUNB0613400**.

The bidder shall execute an agreement/contract for the fulfilment of the contract on non-judicial stamp paper of Rs.100/- within 10 (Ten) days from the date of issuance of letter of intent.

The Bidder shall furnish an affidavit on a stamp paper of Rs.10/- stating that if there is any change in the govt. guidelines regarding the company contracts or increase in stamp duty to be paid then the bidder needs to submit the stamp papers of appropriate value. In the event of failure, the BSCL shall have full right to recover the balance stamp duty from the Bid Security deposit.

Kindly acknowledge the acceptance of this “**Letter of Acceptance**” by signing duplicate copy by your authorized Representative and deliver the same to us.



**Chief Executive Officers  
Bareilly Smart City Limited,  
Bareilly**

**Agreed and Accepted**

Signature of the Authorized Representative of the Agency (i.e. \_\_\_\_\_)

Name:

Designation:

Address:

Place:

Date:

Company Seal

## DRAFT CONTRACT AGREEMENT

(To be signed by the Owner and the Successful Bidder within the period specified in the Bidding Documents after the issue of Letter of Intent)

(To be stamped in accordance with the Stamp Act, of the State)

THIS AGREEMENT made on ..... between **Bareilly Smart City Limited**, a company incorporated under the Companies Act, 1956/2013, having its office at "C/o Executive Engineer, Municipal Board, Nagar Nigam, Bareilly". Pincode 243001 (Uttar Pradesh) (hereinafter referred to as "Owner", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) of the **ONE PART**

and ....., having its office at .....(hereinafter referred to as the "Contractor", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) of the **OTHER PART**.

WHEREAS the Owner, desirous of associating with the Contractor for "**Engineering, Procurement & Construction of Bareilly Haat and Handicrafts Centre with 1 year Defect Liability under Smart City Mission**" (the Project) on the terms and conditions contained in the Bidding Documents and amendments of the clarifications in respect thereof issued by the Owner in response to Invitation for Bid dated .....

AND WHEREAS the Contractor had submitted its Bid for the said Project under its Letter dated .....(as hereinafter referred to as the "Bid").

AND WHEREAS the Owner has accepted the Bid, as conveyed to the Contractor vide Letter of Intent No. ....(hereinafter referred to as the "Letter of Intent"), on the terms and conditions brought out in the said Letter of Intent and the Documents referred to therein, resulting into a Contract.

AND WHEREAS the Contractor has accepted the Letter of Intent, as conveyed to the Owner vide dated \_\_\_\_\_ (hereinafter referred to as the "Letter of Acceptance"), resulting into this Contract.

NOW THEREFORE THIS AGREEMENT WITNESSETH AS UNDER:

### Article -1.0 - Definition

In this Agreement the words and expressions shall have the same meaning as are respectively assigned to them in the Contract Documents specified hereunder attached herewith which form an integral part of this Contract Agreement. This Agreement together with all the Documents attached therewith is referred to as the Contract for all intent and purposes of the aforesaid Project.

### Article - 2.0 - Date of commencement of Contract

This Contract has come into force with effect from ..... i.e. from the date of the signing of Contract Agreement.

### Article - 3.0 - Contract Documents

The Contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached hereto (hereinafter referred to as Contract Documents):

(i) The Contract Agreement between the Owner and the Contractor and the attachments thereto.  
(This Contract Agreement)

(ii) Accepted Letter of Intent till the execution of Contract Agreement between the Owner and the Contractor. (Annexure 1)

(iii) Bid submitted by the Successful Bidder (Annexure 2)

(iv) RFP issued to the Bidder (comprising Instruction to Bidders, General Conditions of Contract, Special Conditions of Contract and Technical Specification) and Corrigendum (Annexure 3)

The above Contract Documents shall form an integral part of this Agreement. If there is an ambiguity or discrepancy or conflict within the Contract Documents, the priority of the Documents shall be in the order in which the Contract Documents are listed above. All Documents forming part of the Contract Documents are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole. Subject to the provisions relating to Arbitration specified in General Conditions of Contract of the Contract Document, in case of any conflict amongst Contract Documents, the decision of the Owner shall be final & binding on the Contractor.

#### Article - 4.0 - Scope of Work

The detailed scope of work of the Contractor, under the Contract, has been brought out in the RFP Documents. However, the above scope of work of the Contractor shall also include such items of work as may not have been specifically brought out in the said Contract Documents but as may be necessary for the safe and successful completion of the various items of work, envisaged, as per good engineering practice and recognized principles.

#### Article - 5.0 - Contract Price

The Total Contract Price under the Contract shall be **Rs. ....**/- (Rupees .....only) inclusive of all the GST, taxes, duties, levies, fees etc. as specified in General Conditions of Contract and the Price Bid Schedules forming part of this Contract. The price shall remain fixed and firm and shall not change on any account whatsoever, for the duration of the Contract. All the matters relating to the payments to the Contractor shall be as per the Terms and Conditions and subject to the requirements as specified in the said General Conditions of Contract.

#### Article - 6.0 - Contract Schedule

Time is the essence of Contract and shall be strictly adhered to. The Contractor shall so organize its resources and perform its work as to complete it within a period of **24 (Twenty Four) months** from the date of Signing of Contract and as per the Projects Completion Schedule forming part of the Bid submitted by the Contractor subject to further modifications/ changes as may be mutually agreed to between the Owner and the Contractor.

#### Article – 7.0 – Owner’s Engineer Functions

The Owner’s Engineer in relation to the Contractor shall have such functions as are delegated to it by the Owner from time to time and intimated to the Contractor. The Contractor shall carry out the instructions issued by the Owner’s Engineer as if they were the instructions issued by the Owner. If there is any difference between the Contractor and Owner’s Engineer, on any matter about the implementation of this Contract/Project, the matter shall be referred to the Owner whose decision shall be final and binding on the Contractor and the Owner’s Engineer. This Contract is executed in English Language in two originals, each Party receiving one set and both the sets will be authentic. **M/s.....** has furnished an Amount of **Rs.....**/- thru FDR of ..... Bank Vide No: .....on ..... including the EMD amount of **Rs.....**/- as Security Deposit for the **Tender ID No:.....**. Hence the total requisite amount for the agreement is **Rs.....**/- has been furnished by **M/s.....**.

IN WITNESS WHEREOF the Parties through their duly authorized representatives have executed these presents on the day, month and year first above mentioned, at Bareilly.

\_\_\_\_\_  
(.....)  
Chief Executive Officer  
Bareilly Smart City Limited

\_\_\_\_\_  
(.....)  
for M/S.....  
(CONTRACTOR)

Witness:

- 1.
- 2

### Project Timeline -Annexure 19

| Bareilly Haat |   |                 |             |              |
|---------------|---|-----------------|-------------|--------------|
| S.No.         | Task Name   | Duration (days) | Start (day) | Finish (day) |
| 1             | <b>Construction</b>                                 | <b>730</b>      | <b>0</b>    | <b>730</b>   |
| 2             | Mobilisation & Site measuring                       | 30              | 0           | 30           |
| 3             | Design & engineering basis report                   | 30              | 0           | 30           |
| 4             | Detailed design drawings                            | 60              | 30          | 90           |
| 5             | University vetting and all approvals                | 30              | 90          | 120          |
| 6             | Foundation Work (Sub Structure)                     | 90              | 120         | 210          |
| 7             | Basement Floor Column Casting, shuttering           | 60              | 210         | 270          |
| 8             | Basement slab beam Casting, shuttering              | 45              | 270         | 315          |
| 9             | Basement Curing & Shuttering removal                | 20              | 315         | 335          |
| 10            | Ground Floor Column Casting, shuttering and casting | 30              | 315         | 345          |
| 8             | Ground floor slab beam Casting, shuttering          | 25              | 345         | 370          |
| 11            | Ground floor Curing & Shuttering removal            | 15              | 370         | 385          |
| 12            | Ground Masonry Work                                 | 30              | 385         | 415          |
| 13            | First Floor Column Casting, shuttering and casting  | 25              | 345         | 370          |
|               | First floor slab beam Casting, shuttering           | 15              | 370         | 385          |
| 14            | First floor Curing & Shuttering removal             | 15              | 370         | 385          |
| 15            | First Masonry Work                                  | 30              | 385         | 415          |
| 16            | Second Floor Column Casting, shuttering and casting | 25              | 370         | 395          |
| 17            | Curing & Shuttering removal                         | 15              | 395         | 410          |
| 18            | second Masonry Work                                 | 30              | 410         | 440          |
| 10            | Third Floor Column Casting, shuttering and casting  | 30              | 395         | 425          |
| 8             | third floor slab beam Casting, shuttering           | 25              | 425         | 450          |
| 11            | third floor Curing & Shuttering removal             | 15              | 450         | 465          |
| 12            | Third Masonry Work                                  | 30              | 465         | 495          |
| 19            | Mumty Floor Column Casting, shuttering and casting  | 25              | 425         | 450          |
| 20            | Curing & Shuttering removal                         | 15              | 450         | 465          |
| 21            | Mumty Masonry Work                                  | 10              | 465         | 475          |
| 22            | waterproofing                                       | 20              | 475         | 495          |
| 23            | <b>MEP Services</b>                                 | <b>45</b>       |             |              |
| 24            | MEP design & issue of drawings                      | 45              | 30          | 75           |
| 25            | <b>Electrical Site Work</b>                         |                 |             |              |
| 26            | Electrical Conduiting - slab                        | 180             | 315         | 495          |

|    |   |            |     |     |
|----|---|------------|-----|-----|
| 27 | Electrical Conducing - internal                     | 60         | 345 | 405 |
| 28 | Wiring  | 30         | 405 | 435 |
| 29 | Lighting& Modular Accessories                       | 30         | 435 | 465 |
| 30 | Hi - Side Ordering                                  | 45         | 465 | 510 |
| 31 | Hi - Side Installation                              | 30         | 510 | 540 |
| 32 | Completion  | 30         | 540 | 570 |
| 33 | <b>Fire &amp; Plumbing Site Work</b>                |            |     |     |
| 34 | Piping  | 30         | 425 | 455 |
| 35 | Fire fighting line                                  | 30         | 455 | 485 |
| 36 | Fittings  | 30         | 485 | 515 |
| 37 | Fire Fighting Equipments insttallation              | 30         | 515 | 545 |
| 38 | <b>HVAC works</b>                                   |            |     |     |
| 39 | Vendor finalisation and detail design               | 45         | 465 | 510 |
| 40 | Low side connection                                 | 30         | 510 | 540 |
| 41 | Hi - Side Ordering                                  | 45         | 510 | 555 |
| 42 | Hi - Side Installation                              | 30         | 585 | 615 |
| 43 | <b>Interior &amp; Finishing work</b>                |            |     |     |
| 44 | Interior design drawings & details                  | 60         | 370 | 430 |
| 45 | Doors Frame making and installing                   | 30         | 430 | 460 |
| 46 | Plaster Work - internal and external                | 45         | 460 | 505 |
| 47 | Flooring Work                                       | 60         | 505 | 565 |
| 48 | Ceiling   | 30         | 505 | 535 |
| 49 | Glazing , Doors & Windows Ordering and installation | 45         | 505 | 550 |
| 50 | Partition / panelling work                          | 30         | 505 | 535 |
| 51 | Furniture ordering                                  | 45         | 370 | 415 |
| 52 | Furniture installation                              | 30         | 585 | 615 |
| 53 | Paint, Finishing                                    | 50         | 535 | 585 |
| 55 | Signage , films & blinds                            | 30         | 585 | 615 |
| 56 | <b>FINISHING</b>                                    | <b>30</b>  |     |     |
| 57 | Final finishing, checking and commissioning         | 45         | 615 | 660 |
| 58 | Buffer  | 70         | 660 | 730 |
| 59 | <b>External Development</b>                         | <b>120</b> |     |     |
| 54 | External development & terrace Garden work          | 120        | 315 | 435 |

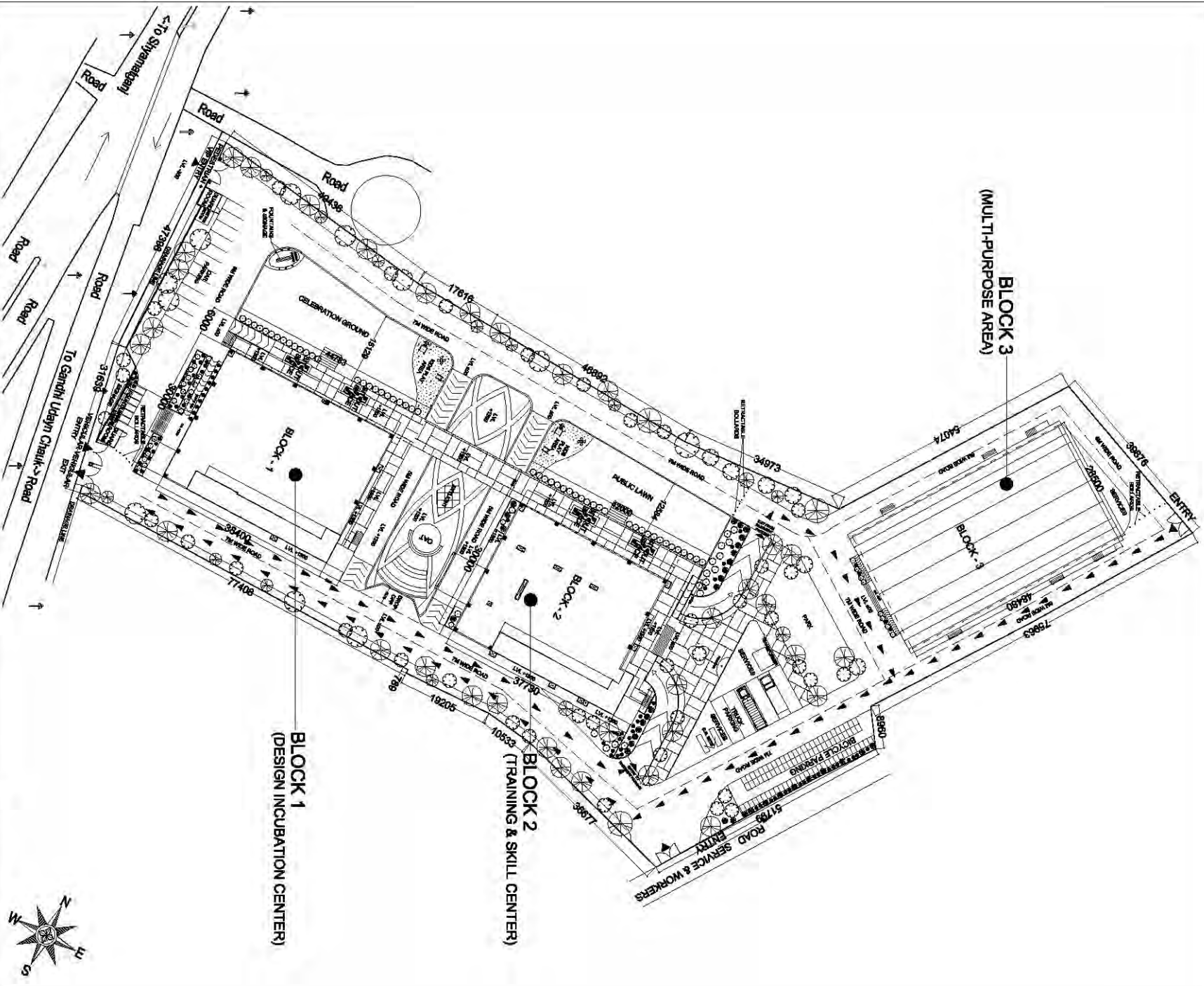
## **Section X**

### **DRAWINGS Annexure 20**

**ANNEXURE 20**  
**TENDER DRAWING SET**







# GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
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3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| A   | -        | 03.07.19 | NG         |
| B   | -        | 28.07.19 | NG         |
| C   | -        | 18.10.19 | NG         |
|     | -        | 11.11.19 | NG         |

## Note:

1. This is a Tender Drawing. Selected Contractor shall submit a detailed site drawing (GFC) for approval by the client.

Purpose :

**TENDER  
DRAWING**

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: **Not to Scale @ A3**



DN No: **01**

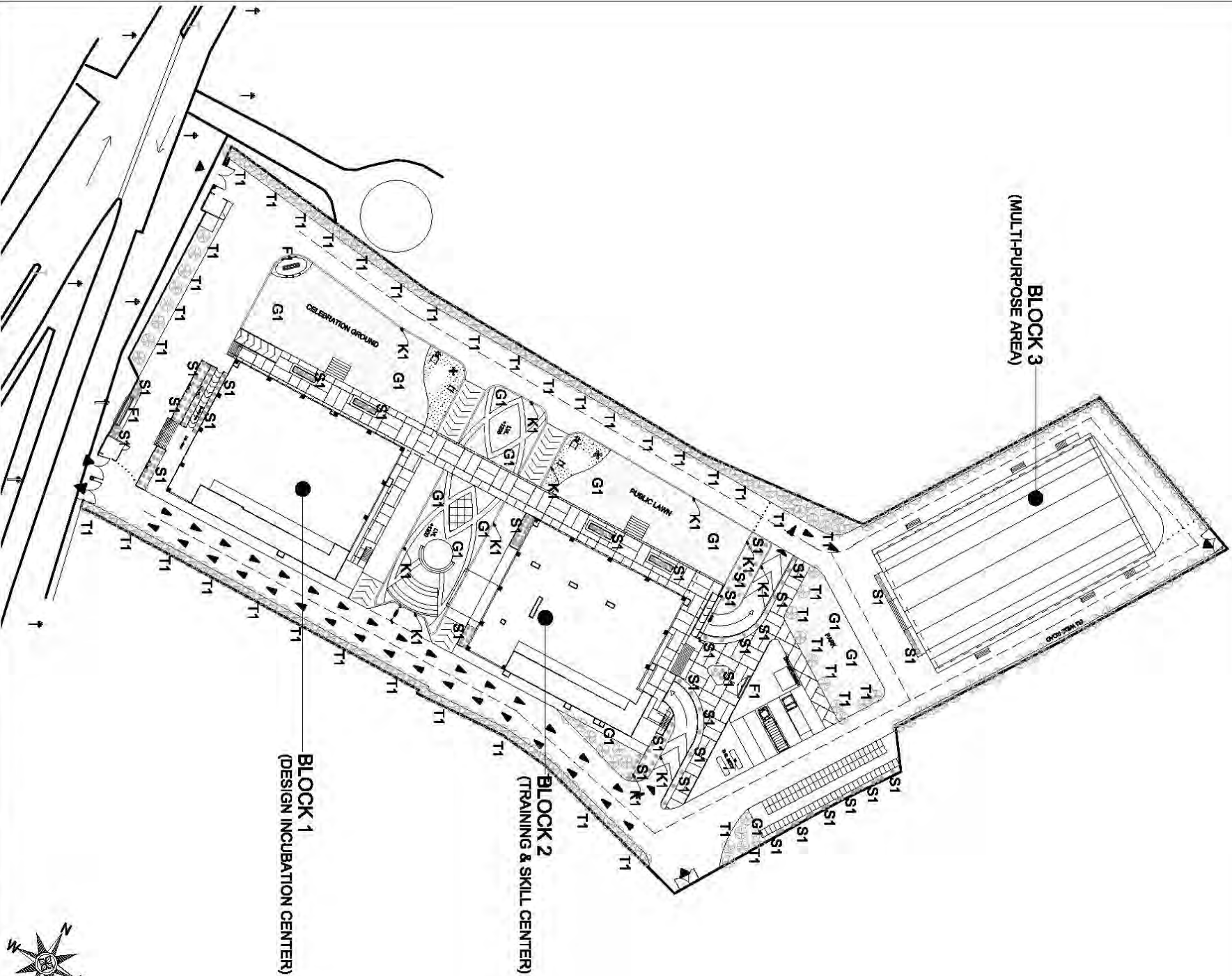
Checked by: **NG**

Date: **11.11.19**

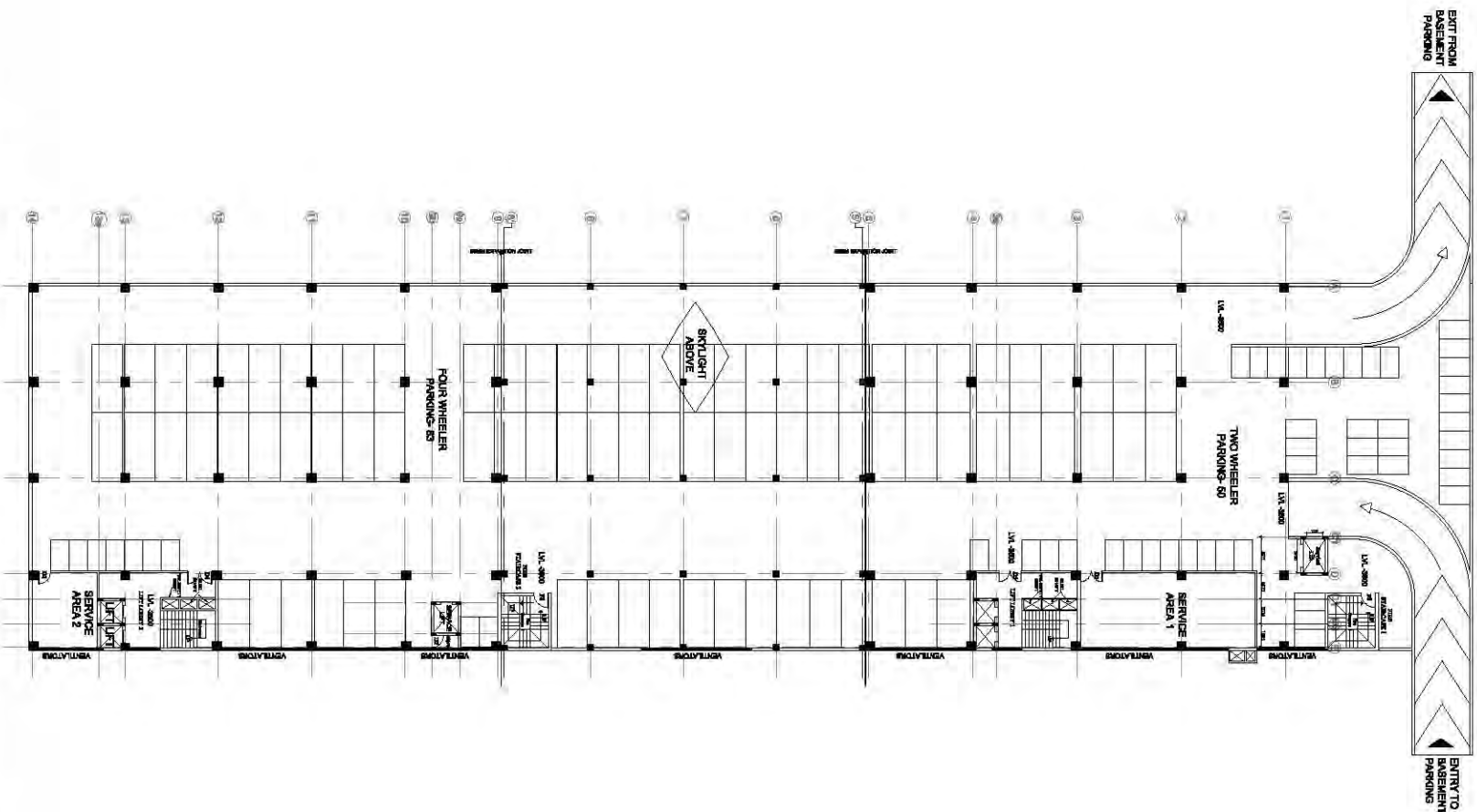
Drawn by:

Title: **HANDICRAFT CENTRE-  
SITE PLAN**





| GENERAL NOTES:   |          |   |            |
|--|----------|---|------------|
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| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |   |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |   |            |
| NO.  | REVISION | DATE  | CHECKED BY |
|  |          | 26.11.18                                    | NG         |
| LEGEND   |          |   |            |
| T1 Ficus Benjamina of height 160-185 cm  |          |   |            |
| S1 Basaltine Acornums of height 80-75 cm   |          |   |            |
| G1 Medway Grass  |          |   |            |
| F1 Concrete Water Fountain with 15 Feet Diameter Nozzle and Openwell   |          |   |            |
| K1 Submersible pump 5 HP   |          |   |            |
| Note: 1. This is a Tender Drawing. Selected Contractors shall submit a detailed shop drawing (DPC) for approval by the client.                                     |          |   |            |
| Purpose :  |          | Client:                                     |            |
| TENDER DRAWING   |          | BAREILLY SMART CITY LTD.                    |            |
|  |          | Project:- HANDICRAFTS PROMOTION CENTRE      |            |
| Scale: Not to Scale @ A3   |          | North:                                      |            |
| Drawn by: NG   |          | Date: 26.11.18                              |            |
|  |          | Dwg No: 01-A                                |            |
|  |          | Drawn by:                                   |            |
|  |          | THIRUPATI HANDICRAFT CENTRE- LANDSCAPE PLAN |            |
|  |          |   |            |



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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 26.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

## TENDER DRAWING

Client- **BAREILLY SMART CITY LTD.**

Project- **HANDICRAFTS PROMOTION CENTRE**

Scale- **Not to Scale @ A3**

Month- **11**

Day No- **02**

Checked by- **NG**

Date- **11.11.19**

Drawn by-

Title- **HANDICRAFT CENTRE-  
BASEMENT PLAN**



| DOOR / WINDOW SCHEDULE BLOCK 3 |        |        |      |        |        |
|--------------------------------|--------|--------|------|--------|--------|
| D/W                            | LENGTH | HEIGHT | SILL | LINTEL | NUMBER |
| D1                             | 1200   | 2400   | 0    | 2400   | 6      |
| D2                             | 1000   | 2400   | 0    | 2400   | 0      |
| D3                             | 750    | 2100   | 0    | 2100   | 4      |
| D4                             | 2000   | 2400   | 0    | 2400   | 6      |
| D5                             | 1800   | 2400   | 0    | 2400   | 0      |
| FS                             | 1200   | 2400   | 0    | 2400   | 0      |
| W1                             | 1500   | 1500   | 900  | 2400   | 22     |
| V1                             | 1500   | 600    | 1800 | 2400   | 0      |
| V2                             | 600    | 450    | 1950 | 2400   | 2      |

### DOOR / WINDOW SCHEDULE

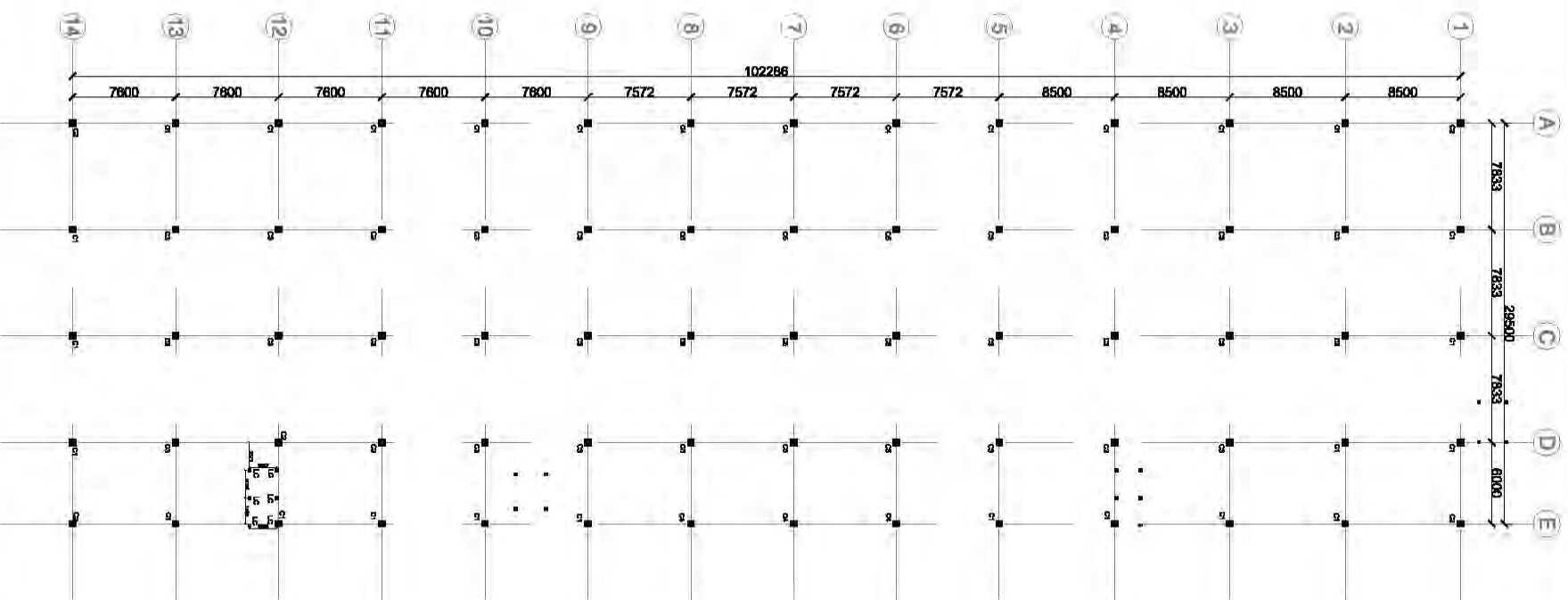
| DW | LENGTH | HEIGHT | SILL | LINTEL | BLOCK-1 |    |    |    |    |   | BLOCK-2 |    |    |    |   |    | TOTAL |
|----|--------|--------|------|--------|---------|----|----|----|----|---|---------|----|----|----|---|----|-------|
|    |        |        |      |        | BS      | GF | FF | SF | TF | T | GF      | FF | SF | TF | T |    |       |
| D1 | 1200   | 2400   | 0    | 2400   | 0       | 2  | 1  | 2  | 2  | 1 | 4       | 5  | 3  | 17 | 2 | 39 |       |
| D2 | 1000   | 2400   | 0    | 2400   | 2       | 2  | 2  | 8  | 3  | 0 | 6       | 4  | 4  | 1  | 2 | 34 |       |
| D3 | 750    | 2100   | 0    | 2100   | 0       | 0  | 0  | 0  | 1  | 0 | 0       | 0  | 0  | 9  | 0 | 10 |       |
| D4 | 2000   | 2400   | 0    | 2400   | 1       | 3  | 2  | 4  | 4  | 0 | 2       | 2  | 4  | 0  | 0 | 22 |       |
| D5 | 1800   | 2400   | 0    | 2400   | 2       | 3  | 7  | 5  | 6  | 4 | 1       | 2  | 2  | 4  | 1 | 37 |       |
| FS | 1200   | 2400   | 0    | 2400   | 2       | 2  | 0  | 0  | 0  | 0 | 2       | 0  | 0  | 0  | 0 | 6  |       |
| W1 | 1500   | 1500   | 900  | 2400   | 0       | 2  | 6  | 11 | 12 | 2 | 4       | 8  | 8  | 20 | 3 | 76 |       |
| V1 | 1500   | 600    | 1800 | 2400   | 0       | 2  | 2  | 1  | 0  | 0 | 2       | 3  | 3  | 2  | 0 | 15 |       |
| V2 | 600    | 450    | 1950 | 2400   | 0       | 0  | 0  | 3  | 3  | 0 | 2       | 0  | 0  | 9  | 0 | 17 |       |

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4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

|   |          |          |            |   |  |
|---|----------|----------|------------|---|--|
| NO.   | REVISION | DATE     | CHECKED BY |   | Note:<br>1. This is a Tender Drawing.<br>Selected Contractor shall<br>submit a detailed shop<br>drawing (GFC) for approval<br>by the client. |
|   | -        | 11.11.19 | NG         |   |  |
|   |          |          |            |   |  |
|   |          |          |            |   |  |
|   |          |          |            |   |  |
| Purpose :                                       |          |          |            | Client-<br><b>BAREILLY SMART CITY LTD.</b>                        |  |
| Project-<br><b>HANDICRAFTS PROMOTION CENTRE</b> |          |          |            | Scale-<br>Not to Scale @ A3                                       | Drawn By:<br><b>2A</b>   |
|   |          |          |            | Checked By: NG  | Date: 11.11.19   |
|   |          |          |            | Title-<br><b>HANDICRAFT CENTRE-<br/>DOOR/ WINDOW<br/>SCHEDULE</b> | <br>SREI<br>Sri Ram Engineering & Design                  |



**GENERAL NOTES:**

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3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

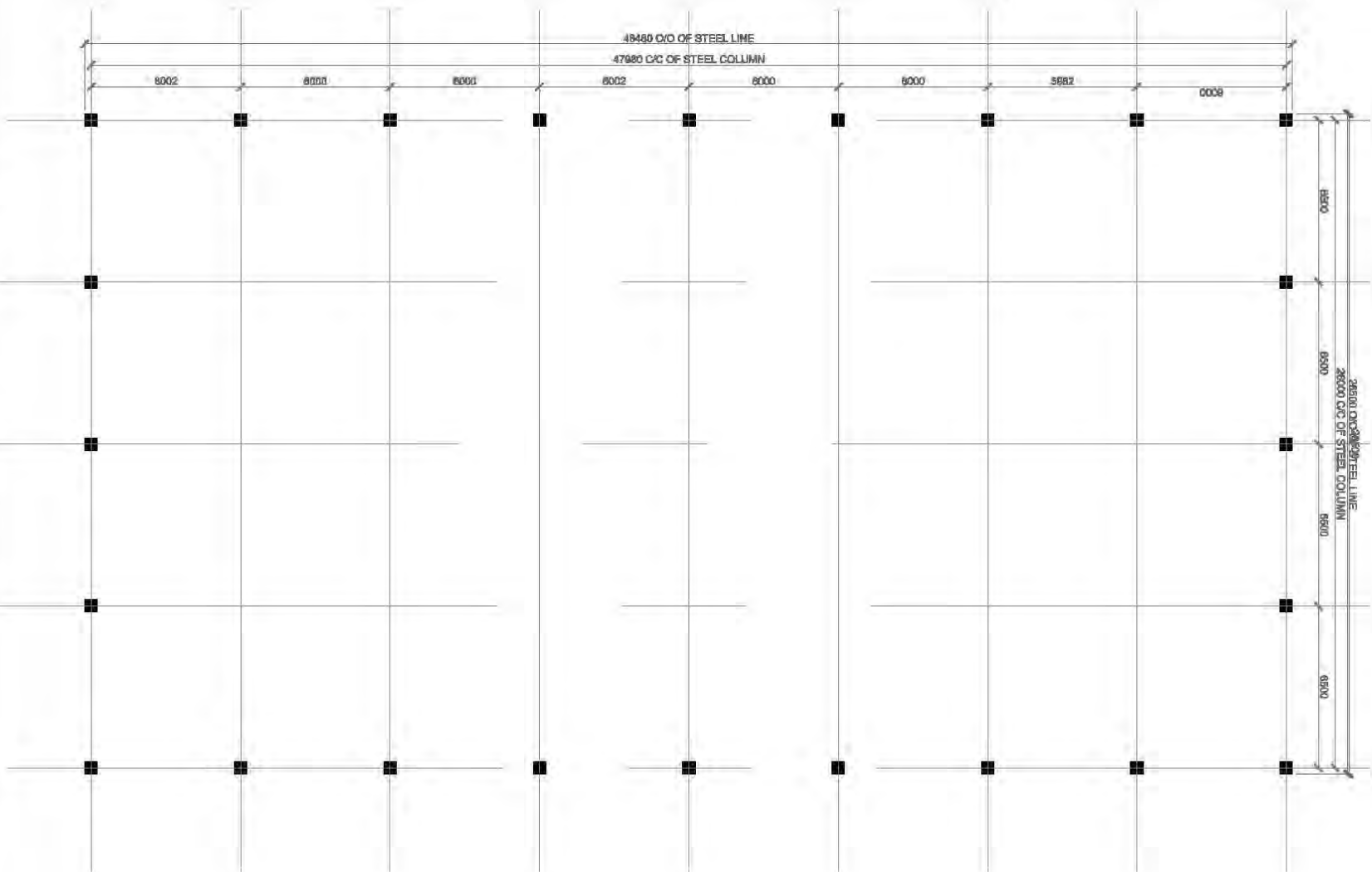
[illegible]

**Note:**  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

**Purpose:**

# TENDER DRAWING

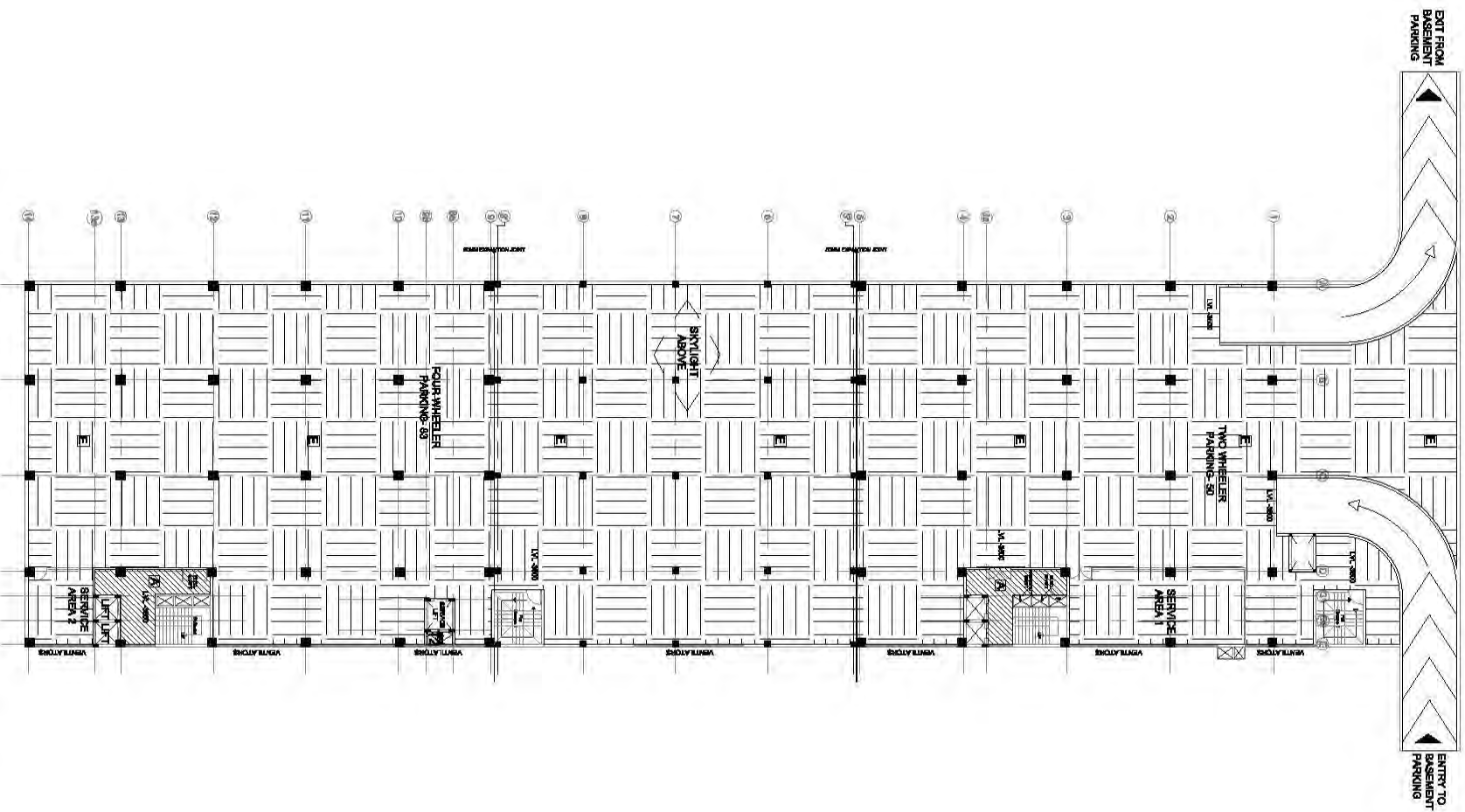
|                              |               |                              |  |
|------------------------------|---------------|------------------------------|--|
| Client:                      |               | BAREILLY SMART CITY LTD.     |  |
| Project:                     |               | HANDICRAFTS PROMOTION CENTRE |  |
| Source:<br>Not in Scale @ A3 | Notes:        | Dwg No:<br><b>03-A</b>       |  |
| Created by: NG               | Date: 13.1.19 | Drawn by:                    |  |



| GENERAL NOTES:   |          |                                       |                       |
|--|----------|---------------------------------------|-----------------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |                                       |                       |
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| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |                                       |                       |
| 4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |                                       |                       |
| NO.  | REVISION | DATE                                  | CHECKED BY            |
|  | -        | 03.07.19                              | NG                    |
|  | A        | 13.11.19                              | NG                    |
| Note:<br>1. Title is a Tender Drawing.<br>Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                               |          |                                       |                       |
| Purpose :  |          | Client: BAREILLY SMART CITY L.TD.     |                       |
| TENDER DRAWING   |          | Project: HANDICRAFTS PROMOTION CENTRE |                       |
| Title: HANDICRAFT CENTRE- CENTRE LINE PLAN BLOCK 3   |          | Scale: Not to Scale @ A3              | North:                |
| Created by: NG   |          | Date: 13.11.19                        | Drawn by: <b>03-B</b> |
|  |          |                                       |                       |







### GENERAL NOTES:

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3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 03/07/19 | NG         |
|     | A        | 11.11.19 |            |

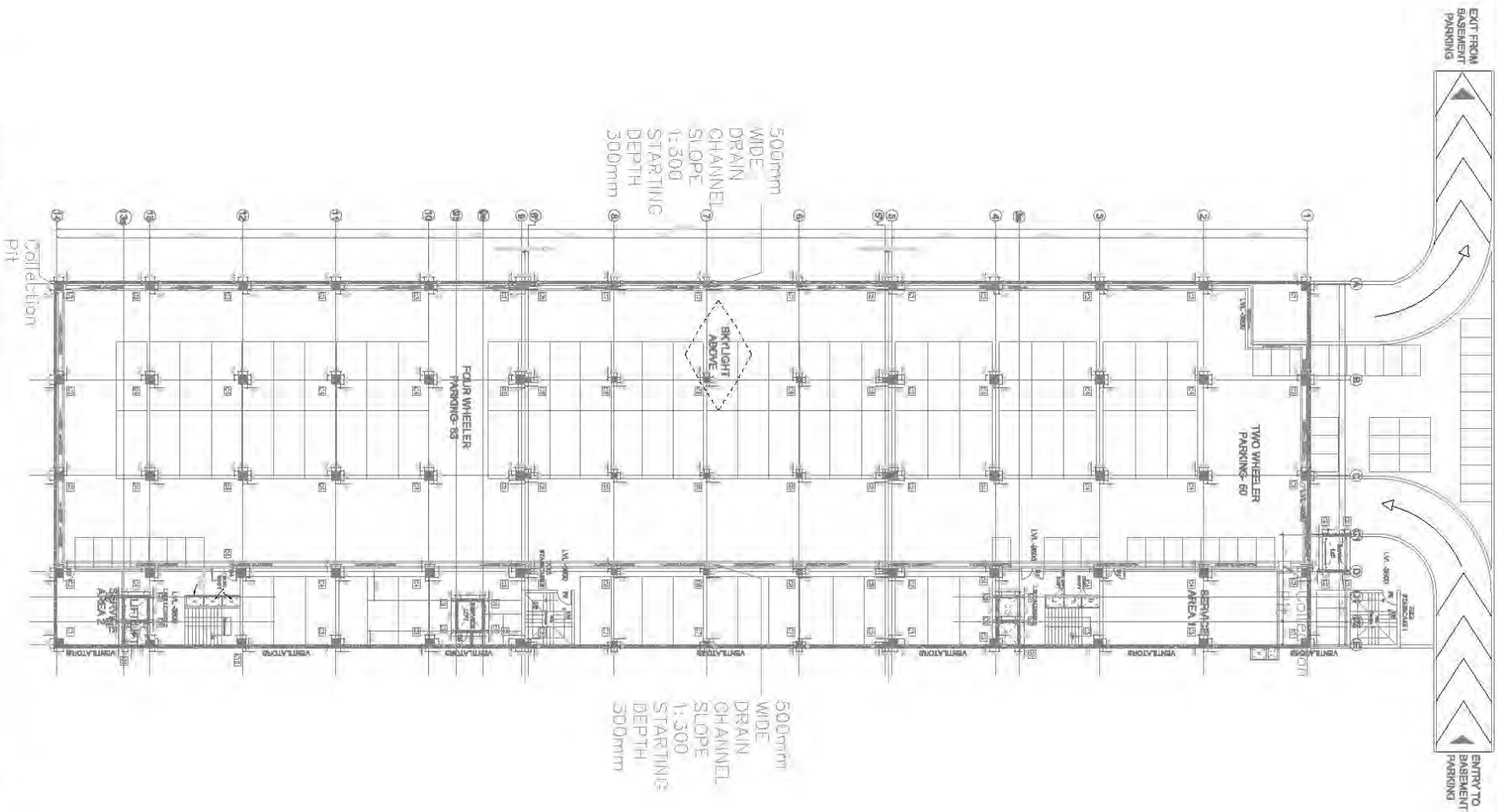
| LEGEND    |                  |
|-----------|------------------|
| TILE TYPE | DESCRIPTION      |
| A         | GRANITE          |
| B         | BRICK KOSA       |
| C         | SOLID WOOD FLOOR |
| D         | CARPET           |
| T1        | TILES 800X800    |
| T2        | TILES 800X800    |
| G         | GRASS CARPET     |
| E         | EXPORT FLOORING  |

### Purpose : TENDER DRAWING

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (SD) for approval by the client.

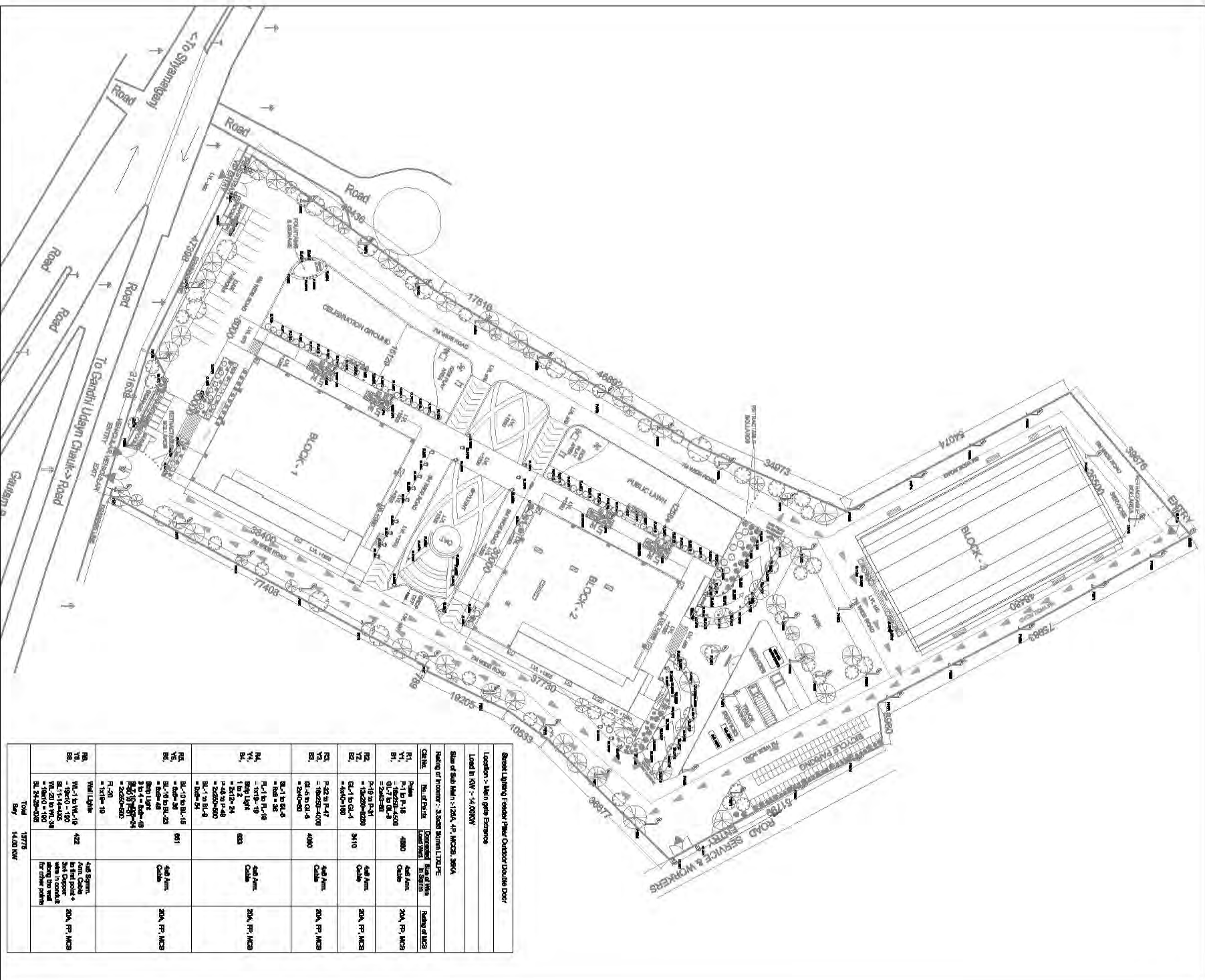
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| Client:<br><b>BAREILLY SMART CITY LTD.</b>                                | Project:<br><b>HANDICRAFTS PROMOTION CENTRE</b> |
| Scale:<br>Not to Scale @ A3   | North:<br>▲                                     |
| Checked by:<br>NG   | Date:<br>11.11.19                               |
| Drawn by:<br>05   | Drawn by:<br>05                                 |
| Title:<br><b>HANDICRAFT CENTRE-<br/>BASEMENT<br/>FLOORING LAYOUT PLAN</b> |   |
| SREI<br>Specialty in Real Estate Solutions                                |   |





| GENERAL NOTES:   |  |  |  | NO. |  | REVISION |  | DATE     |  | CHECKED BY |  |
|--|--|--|--|-----|--|----------|--|----------|--|------------|--|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |  |  |  |     |  | -        |  | 03/07/19 |  | NG         |  |
| 2. All levels are in metres and are finished unless otherwise specified. All levels are mentioned in the section.  |  |  |  | A   |  | 13.11.19 |  |          |  | NG         |  |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |  |  |  |     |  |          |  |          |  |            |  |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, external sections etc. refer relevant architectural/landscape drawings.              |  |  |  |     |  |          |  |          |  |            |  |
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| GENERAL NOTES:   |          |          |            |
|--|----------|----------|------------|
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| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |          |            |
| NO.  | REVISION | DATE     | CHECKED BY |
|  | A        | 03.07.19 | NG         |
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |          |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |          |            |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |          |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |          |            |
| Purpose: TENDER DRAWING  |          |          |            |
| Note: 1. This is a Tender Drawing. Selected Contractor shall submit a detailed site drawing (SFD) for approval by the client.                                      |          |          |            |
| Client: BAREILLY SMART CITY LTD.   |          |          |            |
| Project: HANDICRAFTS PROMOTION CENTRE  |          |          |            |
| Scale: Not to Scale @ A3   |          |          |            |
| Checked by: NG   |          |          |            |
| Date: 11.11.19   |          |          |            |
| Drawn by: 09   |          |          |            |
| Title: HANDICRAFT CENTRE SITE ELECTRICAL   |          |          |            |
| SREI   |          |          |            |





DB L7 - :- ( Light & Row Power 8Way TPN DB )

Location :- BASEMENT

Size of Sub Main :-4x16Sqmm AL.ARM.XLPE CABLE

Rating of Incomer :- 63 Amp 4 Pole MCCB)

| Ckt No. | No. of Points                                 | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
|---------|---|---------------------|----------------------|---------------|
| L7/R1   | L2= 8x18<br>L5= 6x6<br>FP=1x60                | 240                 | 3 x 1.5              | 10A/SP        |
| L7/Y1   | L2= 12x18<br>L4= 10x12<br>L5= 6x6<br>FP= 2x60 | 492                 | 3 x 1.5              | 10A/SP        |
| L7/B1   | L2= 14x18                                     | 252                 | 3 x 1.5              | 10A/SP        |
| L7/R2   | L2= 32x18                                     | 576                 | 3 x 1.5              | 10A/SP        |
| L7/Y2   | L2= 19x18<br>L4= 15x12                        | 522                 | 3 x 1.5              | 10A/SP        |
| L7/B2   | L2= 19x18<br>L4= 15x12                        | 522                 | 3 x 1.5              | 10A/SP        |
| L7/R3   | L2= 19x18<br>L4= 15x12                        | 522                 | 3 x 1.5              | 10A/SP        |
| L7/Y3   | L2= 19x18<br>L4= 15x12                        | 522                 | 3 x 1.5              | 10A/SP        |
| L7/B3   | L2= 19x18<br>L4= 15x12                        | 522                 | 3 x 1.5              | 10A/SP        |
| L7/R4   | 1x 1000                                       | 1000                | 3 x 4                | 25A/SP        |
| L7/Y4   | 1 x 1000                                      | 1000                | 3 x 4                | 25A/SP        |
| L7/B4   |   |                     |                      |               |
| Total   |   | 6170W               | Say                  | 7.00 KW       |

GENERAL NOTES:

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2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO | REVISION | DATE     | CHECKED BY |
|----|----------|----------|------------|
| -  | A        | 03.07.19 | NG         |
|    |          | 11.11.19 | NG         |
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|    |          |          |            |
|    |          |          |            |

Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

TENDER  
DRAWING

Client  
**BAREILLY SMART CITY LTD.**

Project  
HANDICRAFTS PROMOTION CENTRE

|                             |                      |
|-----------------------------|----------------------|
| Scale:<br>Not to Scale @ A3 | Dwg No.<br><b>11</b> |
| Checked by: NG              | Drawn by: 11.11.19   |

Title:  
HANDICRAFT CENTRE-  
BASEMENT DB DETAIL



**ROOM DATA SHEET ; BLOCK-1 - HANDICRAFT - BAREILLY**

| Inside Conditions                |                         | DBT 24 ± 1 deg C (75 ± 2 deg F) |             |            |           |   |             | RH 55%              |                         |                       |                    |
|----------------------------------|-------------------------|---------------------------------|-------------|------------|-----------|---|-------------|---------------------|-------------------------|-----------------------|--------------------|
| 5. No.                           | Room Name               | Room Area                       | Room Height | F/C Height | Occupancy | Lighting Load   | Equip. Load | Fresh Air           | Calculated Cooling Load | Selected Cooling Load | Selected Equipment |
|                                  |                         | (Sq.Ft.)                        | (Ft.)       | (Ft.)      | Nos.      | (Watt)  | (kW)        | (CFM)               | (TR)                    | (CFM)                 | (TR)               |
| Ground Floor                     |                         |                                 |             |            |           |   |             |                     |                         |                       |                    |
| 1                                | Reception & Waiting     | 1533                            | 22.15       | 20         | 20        | 1533  | 0.5         | 250                 | 10.6                    | 4144                  | 8.0                |
| 2                                | Display Area            | 1274                            | 11.32       | 10         | 12        | 1274  | 0.2         | 180                 | 7.9                     | 3125                  | 8.0                |
| 3                                | Shops 1 to 6 (6 Nos.)   | 1908                            | 11.32       | 10         | 60        | 1908  | 3.0         | 540                 | 18.7                    | 6948                  | 18.0               |
| 4                                | Café - 1                | 670                             | 11.32       | 10         | 30        | 670   | 2.0         | 250                 | 5.2                     | 1666                  | 6.0                |
| 5                                | Café - 2 & 3 (2 Nos.)   | 1484                            | 11.32       | 10         | 70        | 1484  | 4.0         | 580                 | 11.8                    | 3702                  | 12.0               |
| 6                                | Work Station Area       | 1420                            | 11.32       | 10         | 25        | 1420  | 2.5         | 270                 | 5.8                     | 1952                  | 6.0                |
| 7                                | Meeting Room            | 340                             | 11.32       | 10         | 8         | 340   | 0.3         | 80                  | 1.5                     | 454                   | 1.5                |
| 8                                | Cabin                   | 307                             | 11.32       | 10         | 3         | 307   | 0.2         | 40                  | 0.8                     | 260                   | 1.0                |
| 9                                | Corridor                | 533                             | 11.32       | 10         | 2         | 533   | 0           | 70                  | 1.6                     | 590                   | 1.5                |
| TOTAL                            |                         | 9469                            |             |            | 230       | 9469  | 12.7        | 2260                | 63.83                   | 22841                 | 62.0               |
| PROPOSED                         |                         | Total IDU Capacity = 62.0 TR    |             |            |           | Total ODU Capacity= 52.8 TR / 66 H.P. (3 x 22 H.P.)             |             |                     |                         |                       |                    |
| First Floor                      |                         |                                 |             |            |           |   |             |                     |                         |                       |                    |
| 1                                | Reception Double Height |                                 |             |            |           |   |             |                     |                         | 3.0                   | 1200               |
| 2                                | Designer                | 2134                            | 10.33       | 10         | 20        | 2134  | 5.0         | 300                 | 11.8                    | 4619                  | 12.0               |
| 3                                | Sitting Area            | 2860                            | 10.33       | 10         | 20        | 2860  | 0           | 380                 | 5.2                     | 1551                  | 6.0                |
| 4                                | Conference -1           | 450                             | 10.33       | 10         | 10        | 450   | 0.2         | 100                 | 3.2                     | 1159                  | 3.0                |
| 5                                | Conference-2            | 450                             | 10.33       | 10         | 10        | 450   | 0.2         | 100                 | 3.2                     | 1159                  | 3.0                |
| 6                                | Sampling Unit           | 2341                            | 10.33       | 10         | 10        | 2341  | 2.0         | 310                 | 11.7                    | 4639                  | 12.0               |
| TOTAL                            |                         | 8235                            |             |            | 70        | 8235  | 7.4         | 1190                | 35.0                    | 13127                 | 39.0               |
| PROPOSED                         |                         | Total IDU Capacity = 39.0 TR    |             |            |           | ODU Capacity= 33.6 TR / 42 H.P. (1 x 22 H.P. + 1 x 20 H.P.)     |             |                     |                         |                       |                    |
| Second Floor                     |                         |                                 |             |            |           |   |             |                     |                         |                       |                    |
| 1                                | Pre Function Area       | 4108                            | 10.33       | 10         | 50        | 4108  | 20.0        | 650                 | 17.6                    | 6396                  | 18.0               |
| 2                                | Green Room Women        | 422                             | 10.33       | 10         | 12        | 422   | 0.5         | 110                 | 3.0                     | 1033                  | 3.0                |
| 3                                | Green Room Men          | 279                             | 10.33       | 10         | 10        | 279   | 0.5         | 90                  | 2.9                     | 1053                  | 3.0                |
| 3                                | Back Stage              | 861                             | 10.33       | 10         | 15        | 861   | 1.0         | 160                 | 4.1                     | 1437                  | 4.0                |
| TOTAL                            |                         | 5670                            |             |            | 87        | 5670  | 22          | 1010                | 27.5                    | 9919                  | 28.0               |
| PROPOSED                         |                         | Total IDU Capacity = 28.0 TR    |             |            |           | Total ODU Capacity= 24 TR / 30 H.P. (1 x 18 H.P. + 1 x 12 H.P.) |             |                     |                         |                       |                    |
| Third Floor                      |                         |                                 |             |            |           |   |             |                     |                         |                       |                    |
| 1                                | VIP Lounge              | 2989                            | 10.33       | 10         | 50        | 2989  | 1.0         | 560                 | 20.2                    | 7692                  | 21.0               |
| 2                                | Scenery Workshop        | 568                             | 10.33       | 10         | 15        | 568   | 1.0         | 140                 | 4.4                     | 1598                  | 5.0                |
| 3                                | Auditorium              | 4100                            | 22.15       | 20         | 200       | 4100  | 2.0         | 1620                | 28.9                    | 8516                  | 29.0               |
| TOTAL                            |                         | 7657                            |             |            | 265       | 7657  | 4.0         | 2320                | 53.5                    | 17806                 | 55.0               |
| PROPOSED                         |                         | Total IDU Capacity = 55.0 TR    |             |            |           | Total ODU Capacity= 48 TR / 60 H.P. (2 x 22 H.P. + 1 x 16 H.P.) |             |                     |                         |                       |                    |
| Total IDU Capacity for Block-1 = |                         | 184.0 TR                        |             |            |           | Total ODU Capacity for Block-1 =                                |             | 158.4 TR / 198 H.P. |                         |                       |                    |



|                   |     |                             |    |     |  |  |
|-------------------|-----|-----------------------------|----|-----|--|--|
| Inside Conditions | DBT | 24 ± 1 deg C (75 ± 2 deg F) | RH | 55% |  |  |
|-------------------|-----|-----------------------------|----|-----|--|--|

| S. No.   | Room Name                                    | Room Area                    | Room Height | F/C Height | Occupancy | Lighting Load | Equip. Load | Fresh Air | Calculated Cooling Load | Selected Cooling Load | Selected Equipment |
|--|--|------------------------------|-------------|------------|-----------|---------------|-------------|-----------|-------------------------|-----------------------|--------------------|
|  |  | (Sq.Ft.)                     | (Ft.)       | (Ft.)      | Nos.      | (Watt)        | (kW)        | (CFM)     | (TR)                    | (CFM)                 | (TR)               |
| Ground Floor   |  |                              |             |            |           |               |             |           |                         |                       |                    |
| 1  | Reception                                    | 961                          | 11.32       | 10         | 15        | 961           | 0.5         | 170       | 6.2                     | 2359                  | 6.0                |
| 2  | Café -1, 2, 3 (3 Nos.)                       | 1050                         | 11.32       | 10         | 36        | 1050          | 3           | 360       | 7.5                     | 2460                  | 7.5                |
| 3  | Shops - 8 (1 Nos.)                           | 371                          | 11.32       | 10         | 10        | 371           | 0.5         | 100       | 4.0                     | 1513                  | 4.0                |
| 4  | Shops - 2 to 7 (6 Nos.)                      | 2226                         | 11.32       | 10         | 60        | 2226          | 3.0         | 600       | 21.1                    | 7896                  | 24.0               |
| 5  | Shops - 1 (1 Nos.)                           | 371                          | 11.32       | 10         | 10        | 371           | 0.5         | 100       | 4.0                     | 1542                  | 4.0                |
| 6  | Production Unit                              | 3758                         | 11.32       | 10         | 80        | 3758          | 5           | 810       | 16.1                    | 8178                  | 16.0               |
| TOTAL  |  | 8737                         |             |            | 211       | 8737          | 12.5        | 2140      | 58.8                    | 23948                 | 61.5               |
| PROPOSED   |  | Total IDU Capacity = 61.5 TR |             |            |           |               |             |           |                         |                       |                    |
| First Floor  |  |                              |             |            |           |               |             |           |                         |                       |                    |
| 1  | Class-1                                      | 648                          | 10.33       | 10         | 25        | 648           | 0.5         | 250       | 6.3                     | 2198                  | 6.0                |
| 2  | Class-2                                      | 648                          | 10.33       | 10         | 25        | 648           | 0.5         | 250       | 3.3                     | 858                   | 4.0                |
| 3  | Class-3                                      | 648                          | 10.33       | 10         | 25        | 648           | 0.5         | 250       | 4.0                     | 1184                  | 4.0                |
| 3  | Lobby  | 3066                         | 10.33       | 10         | 30        | 3066          | 0           | 430       | 9.0                     | 3065                  | 9.0                |
| 4  | Lab-1  | 1480                         | 10.33       | 10         | 25        | 1480          | 2.0         | 270       | 8.0                     | 2897                  | 8.0                |
| 5  | Lab-2  | 1394                         | 10.33       | 10         | 25        | 1394          | 2.0         | 270       | 6.9                     | 2410                  | 8.0                |
| TOTAL  |  | 7884                         |             |            | 155       | 7884          | 5.5         | 1720      | 37.5                    | 12612                 | 39.0               |
| PROPOSED   |  | Total IDU Capacity = 39.0 TR |             |            |           |               |             |           |                         |                       |                    |
| Second Floor   |  |                              |             |            |           |               |             |           |                         |                       |                    |
| 1  | Cafeteria                                    | 1480                         | 10.33       | 10         | 50        | 1480          | 1.0         | 500       | 9.7                     | 3071                  | 10.0               |
| 2  | Lab-1  | 1446                         | 10.33       | 10         | 25        | 1446          | 2.0         | 280       | 6.9                     | 2426                  | 8.0                |
| 3  | Lab-2  | 1446                         | 10.33       | 10         | 25        | 1446          | 2.0         | 220       | 6.9                     | 2426                  | 8.0                |
| 4  | Lobby  | 1836                         | 10.33       | 10         | 12        | 1836          | 0.0         | 220       | 3.5                     | 1105                  | 4.0                |
| 5  | Admin  | 792                          | 10.33       | 10         | 16        | 792           | 1.0         | 170       | 4.0                     | 1380                  | 4.0                |
| 6  | Conference                                   | 302                          | 10.33       | 10         | 12        | 302           | 0.2         | 120       | 3.0                     | 1048                  | 3.0                |
| 7  | Cabin  | 147                          | 10.33       | 10         | 3         | 147           | 0.2         | 30        | 0.7                     | 256                   | 1.0                |
| 8  | Meeting Room                                 | 167                          | 10.33       | 10         | 8         | 167           | 0.2         | 80        | 1.4                     | 439                   | 1.5                |
| 9  | Staff Room                                   | 329                          | 10.33       | 10         | 12        | 329           | 1.0         | 120       | 2.5                     | 836                   | 2.5                |
| TOTAL  |  | 7945                         |             |            | 163       | 7945          | 7.6         | 1740      | 38.7                    | 12987                 | 42.0               |
| PROPOSED   |  | Total IDU Capacity = 42.0 TR |             |            |           |               |             |           |                         |                       |                    |
| Third Floor  |  |                              |             |            |           |               |             |           |                         |                       |                    |
| 1  | Corner Rooms 1,2,3 & Suite Bed Room (4 Nos.) | 1268                         | 10.33       | 10         | 8         | 1268          | 0           | 160       | 7.6                     | 3016                  | 8.0                |
| 2  | Suite Living Room                            | 384                          | 10.33       | 10         | 4         | 384           | 0           | 40        | 1.9                     | 754                   | 2.0                |
| 3  | Side Rooms 4 to 8 (5 Nos.)                   | 1585                         | 10.33       | 10         | 10        | 1585          | 0           | 200       | 7.3                     | 2845                  | 7.5                |
| 4  | Lobby  | 1700                         | 10.33       | 10         | 35        | 1700          | 0           | 360       | 6.3                     | 1909                  | 6.0                |
| 5  | Dormitory (2 NOS)                            | 1374                         | 10.33       | 10         | 14        | 1374          | 0           | 200       | 6.8                     | 2576                  | 8.0                |
| 6  | Dinning Room                                 | 400                          | 10.33       | 10         | 8         | 400           | 0           | 80        | 3.3                     | 1252                  | 3.0                |
| TOTAL  |  | 6711                         |             |            | 79        | 6711          | 0.0         | 1040      | 33.0                    | 12352                 | 34.5               |
| PROPOSED   |  | Total IDU Capacity = 34.5 TR |             |            |           |               |             |           |                         |                       |                    |
| Total IDU Capacity for Block-2 = 177.0 TR            |  |                              |             |            |           |               |             |           |                         |                       |                    |
| Total ODU Capacity for Block-2 = 150.4 TR / 188 H.P. |  |                              |             |            |           |               |             |           |                         |                       |                    |

| ROOM DATA SHEET : MULTI PURPOSE AREA - HANDICRAFT - BAREILLY |                    |                             |                   |                      |                |   |                  |                 |                              |                            |                           |
|--|--------------------|-----------------------------|-------------------|----------------------|----------------|---|------------------|-----------------|------------------------------|----------------------------|---------------------------|
|  | Inside Conditions  | DBT                         | 24 ± 1 deg C      | deg C (75 ± 2 deg F) |                | RH  | 55%              |                 |                              |                            |                           |
| S. No.   | Room Name          | Room Area (Sq.Ft.)          | Room Height (Ft.) | F/C Height (Ft.)     | Occupancy Nos. | Lighting Load (Watt)  | Equip. Load (kW) | Fresh Air (CFM) | Calculated Cooling Load (TR) | Selected Cooling Load (TR) | Selected Equipment        |
|  | Ground Floor       |                             |                   |                      |                |   |                  |                 |                              |                            |                           |
| 1  | Multi Purpose Area | 13428                       | 19.68             | 16.40                | 600            | 13428   | 5.0              | 4950            | 100.4                        | 100.0                      | 4 # 25 TR / 10000 cfm AHU |
|  | TOTAL              | 13428                       |                   |                      | 600            | 13428   | 5.0              | 4950            | 100.4                        | 100.0                      | 40000                     |
|  | PROPOSED           | Total IDU Capacity = 100 TR |                   |                      |                | Total ODU Capacity= 83.2 TR / 104 H.P. (2 Circuits of 52 H.P. each)<br>(52 H.P = 1 x 22 HP + 1 x 18 HP + 1 x 12 HP) |                  |                 |                              |                            |                           |

| Data Sheet for Basement Car Parking Ventilation Handicraft Bareilly  |             |         |               |                      |               |
|--|-------------|---------|---------------|----------------------|---------------|
| As per CPWD General Specifications for HVAC Works- Amendment-2017  |             |         |               |                      |               |
| Minimum 6 Air Changes Per Hour (ACPH) required for normal ventilation and 12 ACPH required for Smoke Extraction. |             |         |               |                      |               |
| Space  | Area        | Height  | Volume        | Air Qty/Required for |               |
|  | (SQM)       | (Mtrs.) | (Cu. Mtrs.)   | CMH                  | CMH           |
|  |             |         |               | 6 ACPH               | 12 ACPH       |
| Basement Car Parking   | 2670        | 3.35    | 8944.5        | 53667                | 107334        |
| <b>TOTAL</b>   | <b>2670</b> |         | <b>8944.5</b> | <b>53667</b>         | <b>107334</b> |
| Air quantity reqd. for Normal Ventilation for each floor   |             |         | 31569         | Say 32000 cfm        |               |
| Air quantity reqd. for Smoke Extraction for each floor   |             |         | 63138         | Say 64000 cfm        |               |

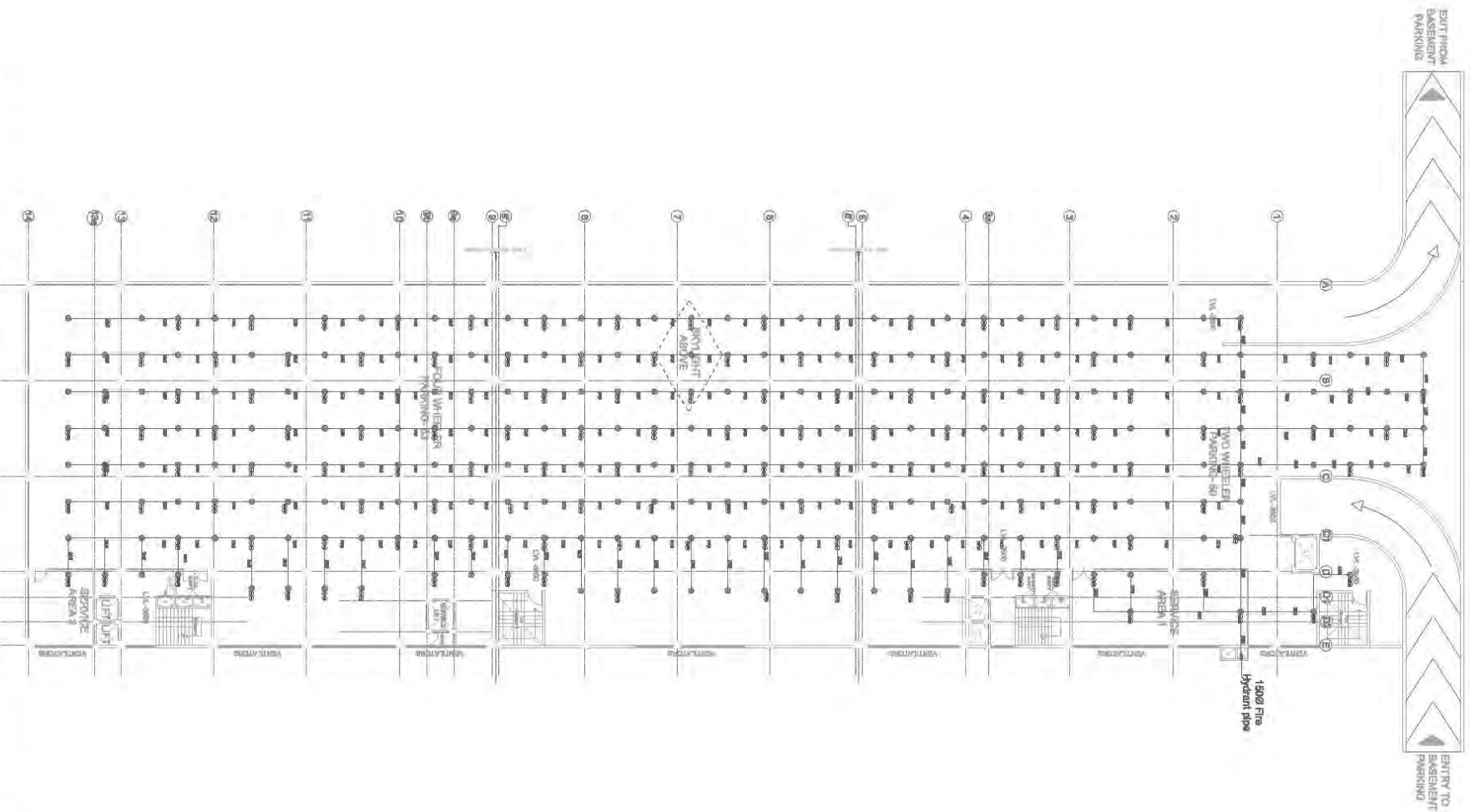


## LOAD CALCULATIONS & TRANSFORMER DESIGN

| HANDICRAFT CENTRE, BAREILLY |  |                   |                     |                          |                 |
|-----------------------------|--|-------------------|---------------------|--------------------------|-----------------|
| Sl. No.                     | Category   | Lighting Load(KW) | Equipment Load (KW) | Total Designed Load (KW) | Demand Load(KW) |
| 1                           | Parking,SS & External                                | 10                |                     | 10                       | 10              |
| 2                           | Block-A Incubation Centre                            | 108               |                     | 108                      | 108             |
| 3                           | Block-B, Training Centre + Auditorium stage lighting | 142               |                     | 142                      | 142             |
| 4                           | Block-C- Multipurpose Hall                           | 35                |                     | 35                       | 35              |
| 5                           | Lifts 2+2= 4   |                   |                     | 20                       | 20              |
| 6                           | Plumbing & Water Supply                              |                   |                     | 15                       | 15              |
| 7                           | Sewerage Treatment Plant                             |                   |                     | 15                       | 15              |
| 8                           | UPS  |                   |                     | 5                        | 5               |
| 9                           | Water Treatment Filtration Plant                     |                   |                     | 15                       | 15              |
| 10                          | Fire Fighting  |                   |                     | 15                       | 15              |
| 11                          | HVAC 250+250+50= 550                                 |                   |                     | 550                      | 550             |
|                             | <b>Total</b>   |                   |                     | <b>890</b>               | <b>930</b>      |
|                             | 10% for Contingencies                                |                   |                     | 90                       | 90              |
|                             | <b>Grand Total in KW</b>                             |                   |                     | <b>980</b>               | <b>1020</b>     |
|                             | Load In KVA at 0.8 pf.                               |                   |                     |                          | 1360            |
|                             | <b>Designed Transformer Capacity @ 80%1531 KVA</b>   |                   |                     |                          | <b>1600 KVA</b> |
|                             |  |                   |                     |                          |                 |



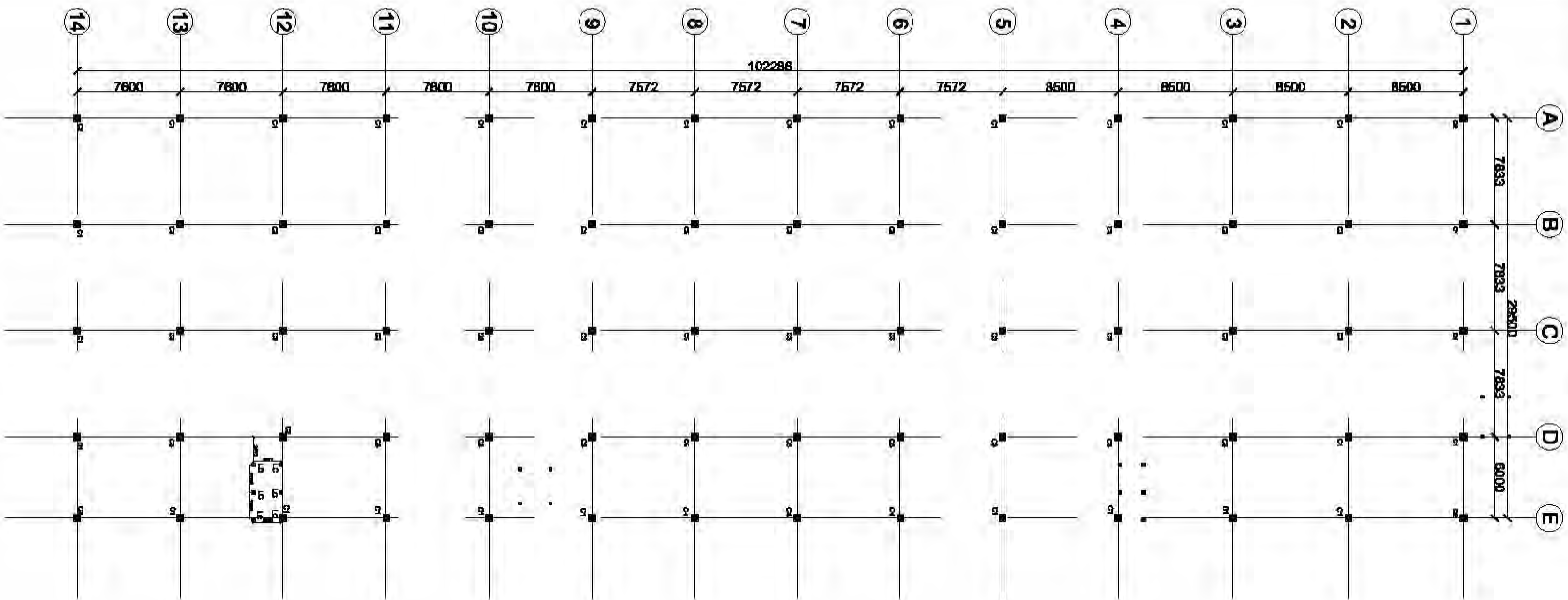




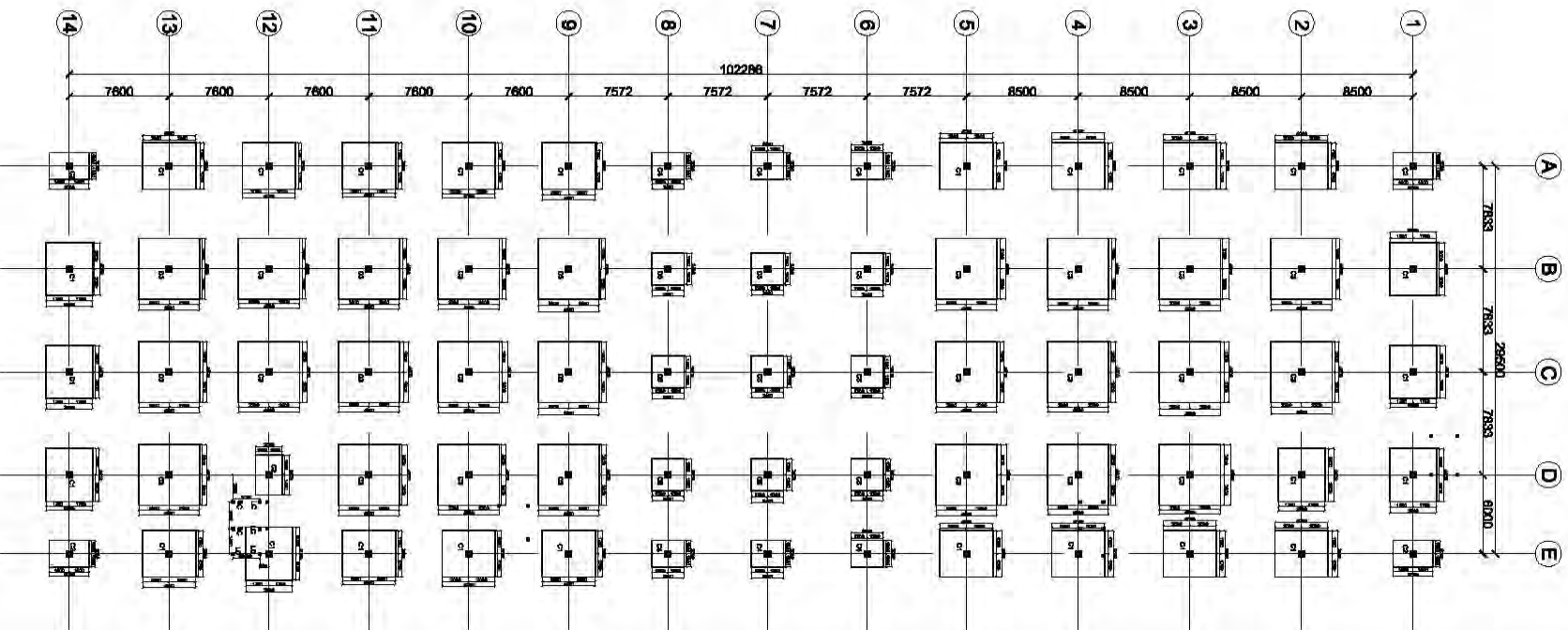
## GENERAL NOTES:

1. All dimensions are in meters and are dimensional unless otherwise specified.
2. All levels are in millimeters and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be shown. Any discrepancy noted shall be brought to the notice of the Architect prior to the construction.
4. For details such as pathways, fencing, railing, gates, lighting fixtures, street sections etc., refer relevant architectural and landscape drawings.

|            |                 |             |                   |  |   |  |   |   |                       |                  |
|------------|-----------------|-------------|-------------------|--|---|--|---|---|-----------------------|------------------|
| <b>NO.</b> | <b>REVISION</b> | <b>DATE</b> | <b>CHECKED BY</b> |  | <b>Purpose :</b><br><br><b>TENDER<br/>DRAWING</b> | <b>Draft:</b><br><br><b>BAREILLY SMART CITY LTD.</b> | <b>Fragile:-</b><br><br><b>HANDICRAFTS PROMOTION CENTRE</b> | <b>Scales</b>   | <b>Metric</b>         | <b>Dwg No.</b>   |
|            | -               | 11.11.18    | NG                |  |   |  |   | <b>Scale:</b><br>Not to Scale @ A3  |                       | <b>15</b>        |
|            |                 |             |                   |  |   |  |   | <b>Checked by:</b> NG   | <b>Date:</b> 11.11.18 | <b>Drawn By:</b> |
|            |                 |             |                   |  |   |  |   | <b>Notes:</b><br>1. This is a Tender Drawing. Detailed Contractor will submit a detailed shop drawing (GEO) for approval by the client. |                       |                  |
|            |                 |             |                   |  |   |  |   | <b>TITLE:</b><br><b>HANDICRAFT CENTRE-<br/>BASEMENT<br/>FIRE FIGHTING LAYOUT</b>  |                       |                  |
|            |                 |             |                   |  |   |  |   |   |                       |                  |
|            |                 |             |                   |  |   |  |   | SREI ENGINEERING & ARCHITECTURE PRIVATE LIMITED<br>Kirti Vihar, Main Crossing Kirti Nagar   |                       |                  |



Column Layout Plan



Foundation Layout

**GENERAL NOTES:**

- All dimensions are in metres and are dimensions unless otherwise specified.
- All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
- Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
- For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE                 | CHECKED BY |
|-----|----------|----------------------|------------|
|     | A        | 03.07.19<br>13.11.19 | NG         |

**Purpose :**

**TENDER DRAWING**

**Client:** BAREILLY SMART CITY LTD.

**Project:** HANDICRAFTS PROMOTION CENTRE

|                          |                |              |
|--------------------------|----------------|--------------|
| Scale: Not to Scale @ A3 | North:         | Dwg No: 16-A |
| Checked by: NG           | Date: 13.11.19 | Drawn by:    |

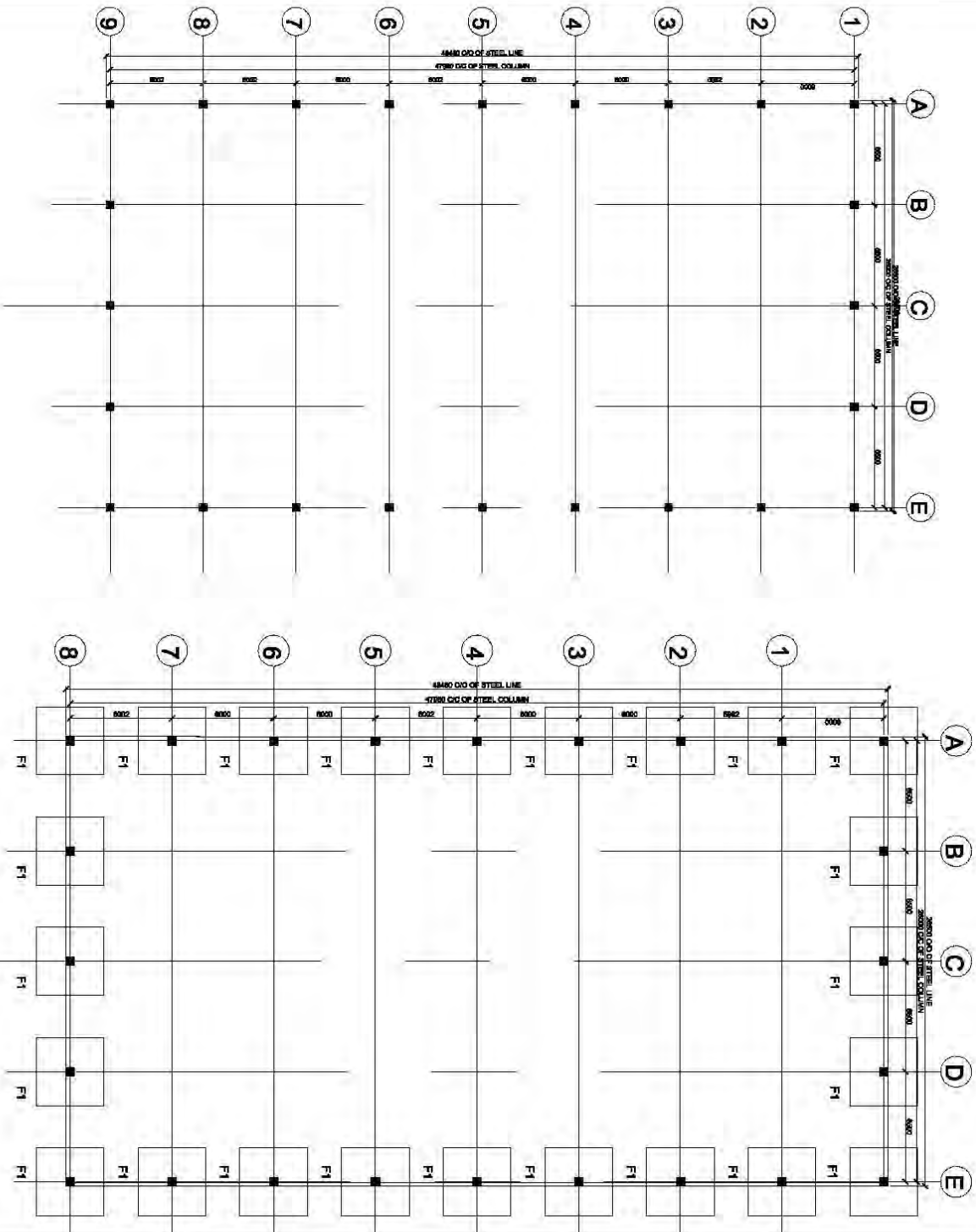
**Note:**

1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

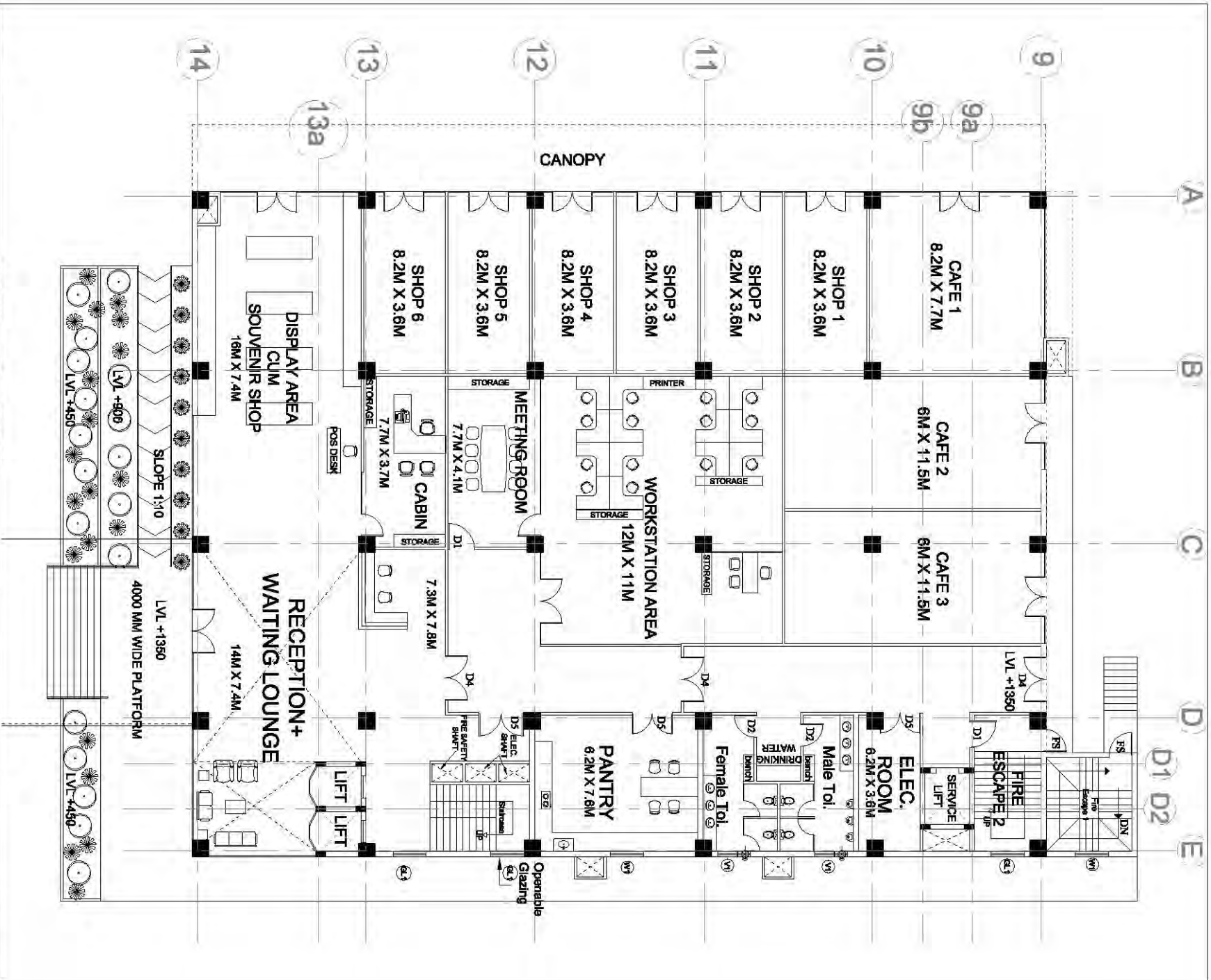
**Title:** HANDICRAFT CENTRE-STRUCTURE PLAN

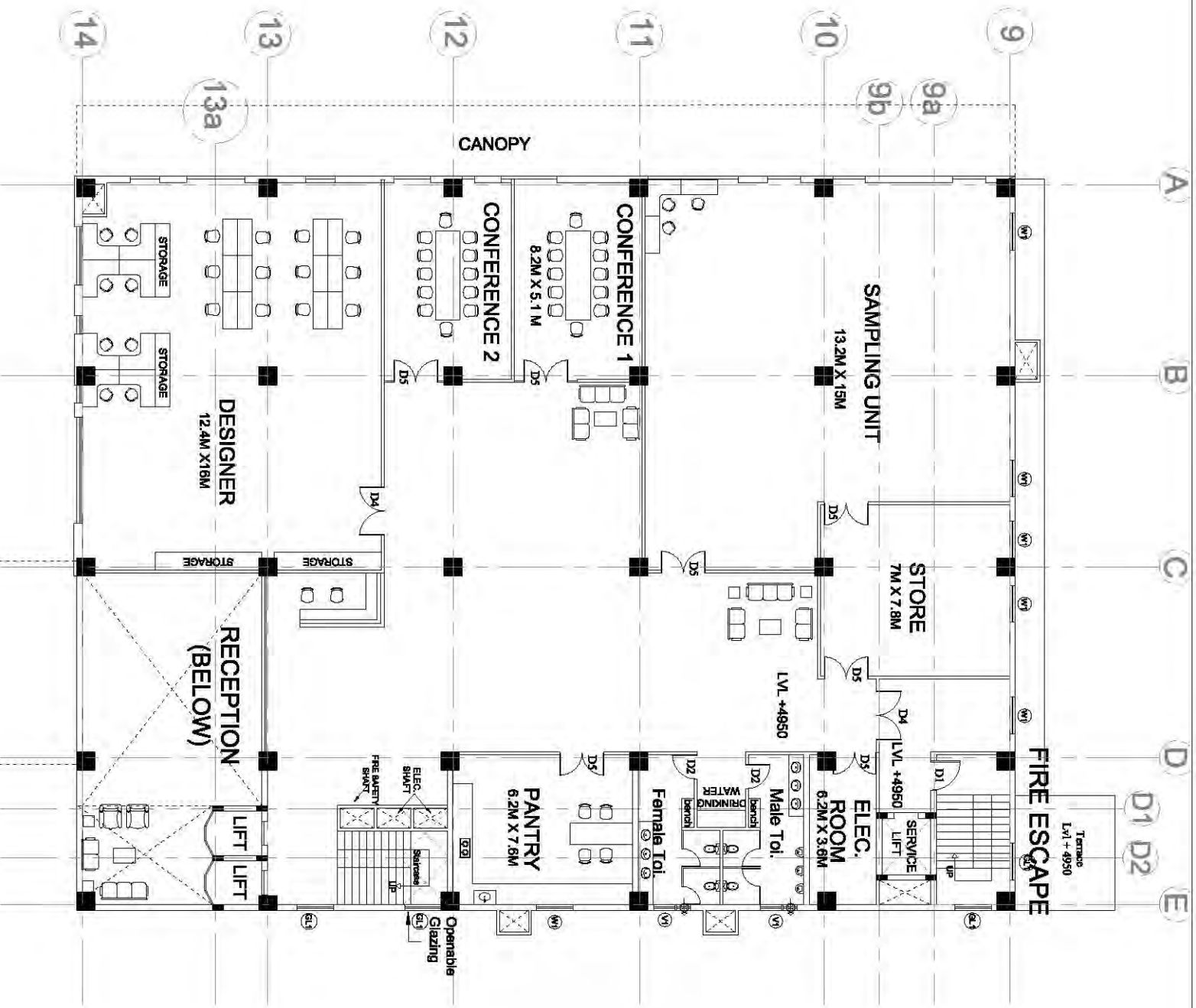
**Block 1 AND 2**





| GENERAL NOTES:   |          |                |              |
|--|----------|----------------|--------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |                |              |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |                |              |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |                |              |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |                |              |
| NO.  | REVISION | DATE           | CHECKED BY   |
|  | -        | 03.07.19       | NG           |
|  | A        | 13.11.19       | NG           |
| Note:<br>1. This is a Tender Drawing.<br>Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                                |          |                |              |
|  |          |                |              |
| Purpose :  |          |                |              |
| Client: BAREILLY SMART CITY LTD.   |          |                |              |
| Project:- HANDICRAFTS PROMOTION CENTRE   |          |                |              |
| Scale: As to Show @ As   |          | North          | Dwg No: 16-B |
| Drawn by: NG   |          | Date: 03.07.19 | Drawn by :   |
| Title: HANDICRAFT CENTRE- STRUCTURE PLAN BLOCK 3   |          | SREI           |              |





# GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 26.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Purpose :

**TENDER  
DRAWING**

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: **Not to Scale @ A3**

Model: **✓**

DN No: **B1-02**

Checked by: **NG**

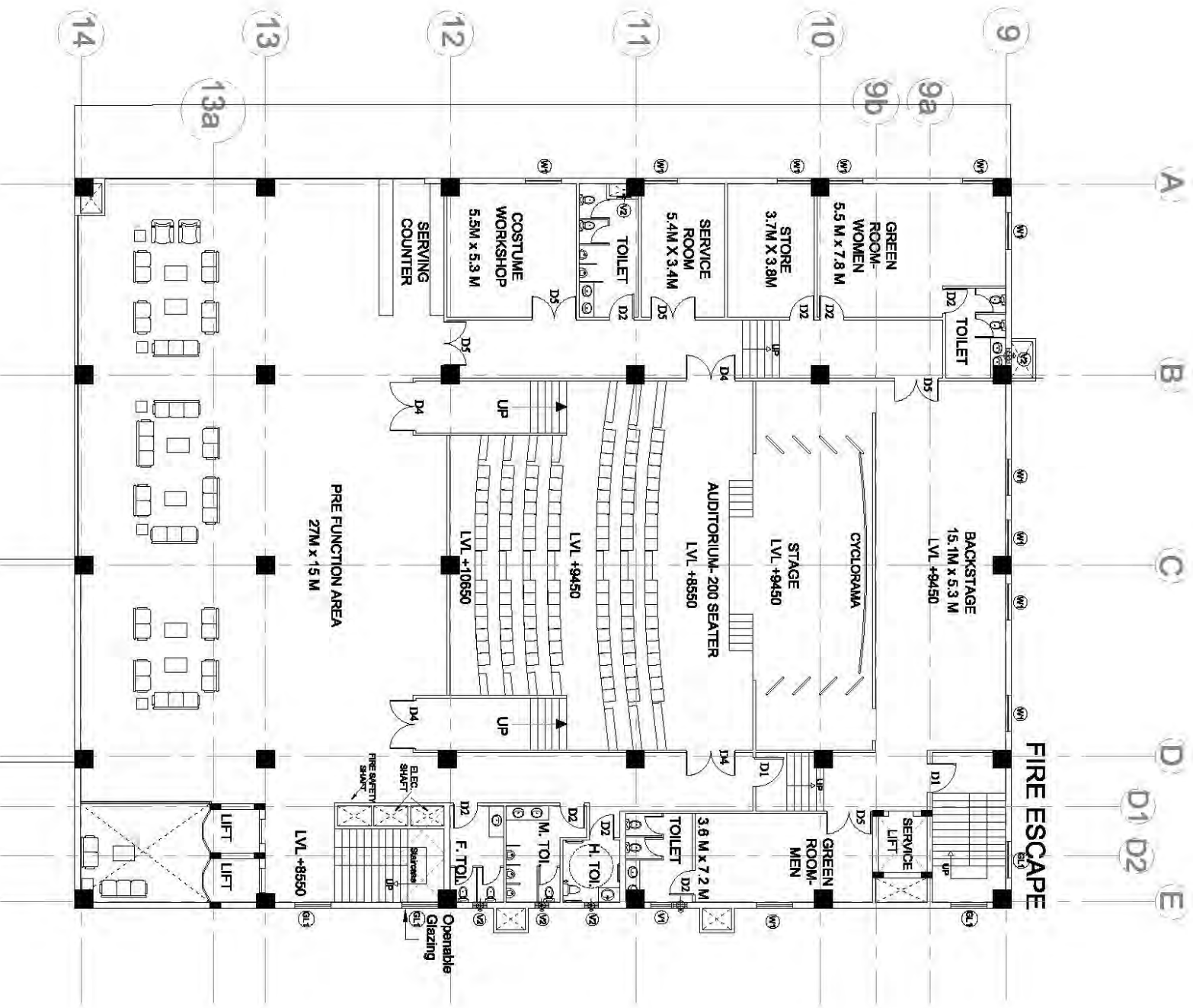
Date: **11.11.19**

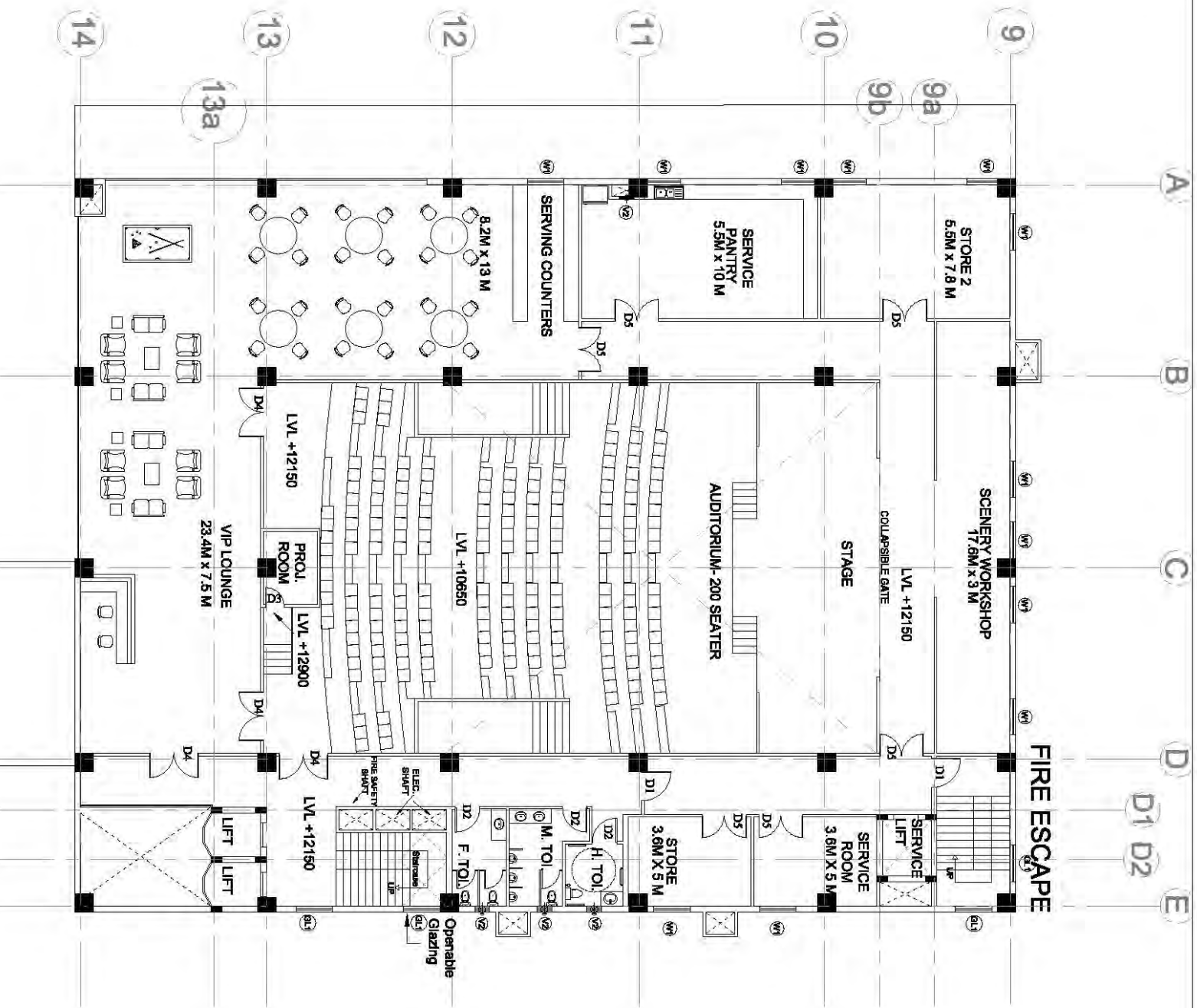
Drawn by:

Title: **HANDICRAFT  
CENTRE- BLOCK-1  
FIRST FLOOR PLAN**

DRP  
DRAWN BY THE ARCHITECT

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall  
submit a detailed shop  
drawing (GFC) for approval  
by the client.





# GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

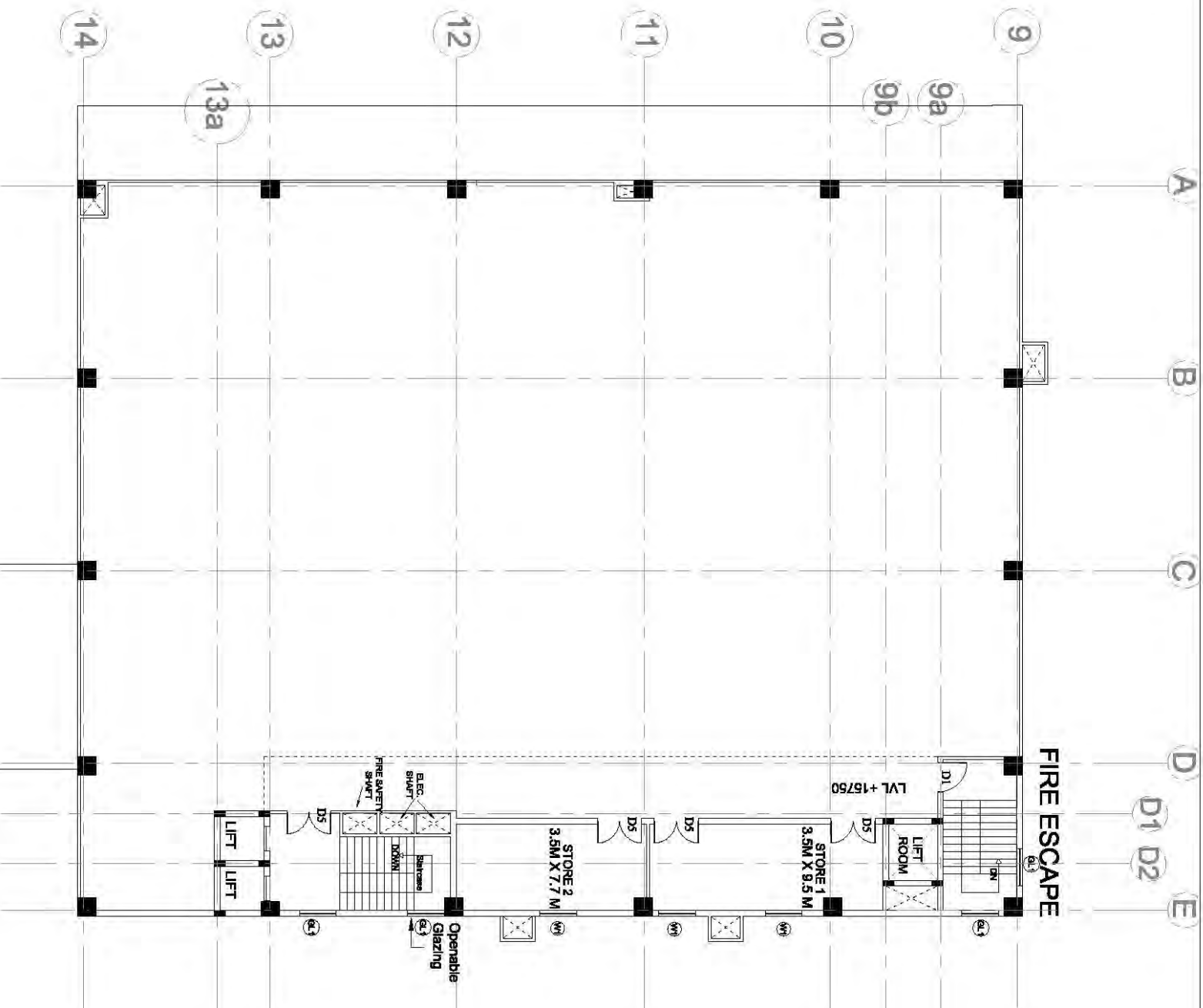
| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 28.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Purpose :

**TENDER  
DRAWING**

|             |  |
|-------------|--|
| Client:     | BAREILLY SMART CITY LTD.                       |
| Project:    | HANDICRAFTS PROMOTION CENTRE                   |
| Scale:      | As to Show @ A3                                |
| Checked by: | NG   |
| Drawn by:   | B1-04  |
| Title:      | HANDICRAFT CENTRE- BLOCK-1<br>THIRD FLOOR PLAN |
| Drawn by:   | NG   |





**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   |          | 03.07.19 | NG         |
| A   |          | 28.07.19 | NG         |
| B   |          | 18.10.19 | NG         |
| C   |          | 11.11.19 | NG         |

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

**TENDER  
DRAWING**

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDCRAFT'S PROMOTION CENTRE**

Scale: **As to Show @ 1/4"**

Next:

Dwg No: **B1-05**

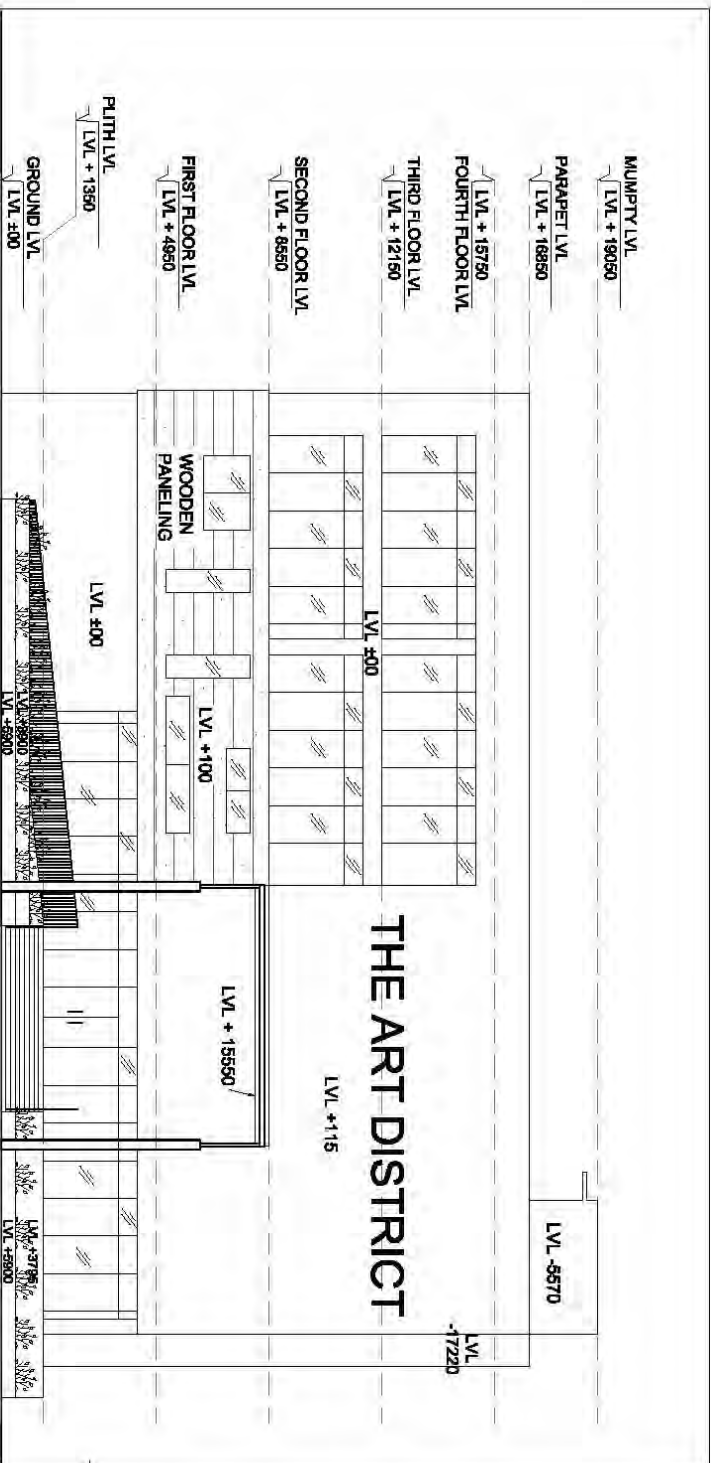
Checked by: **NG**

Drawn by:

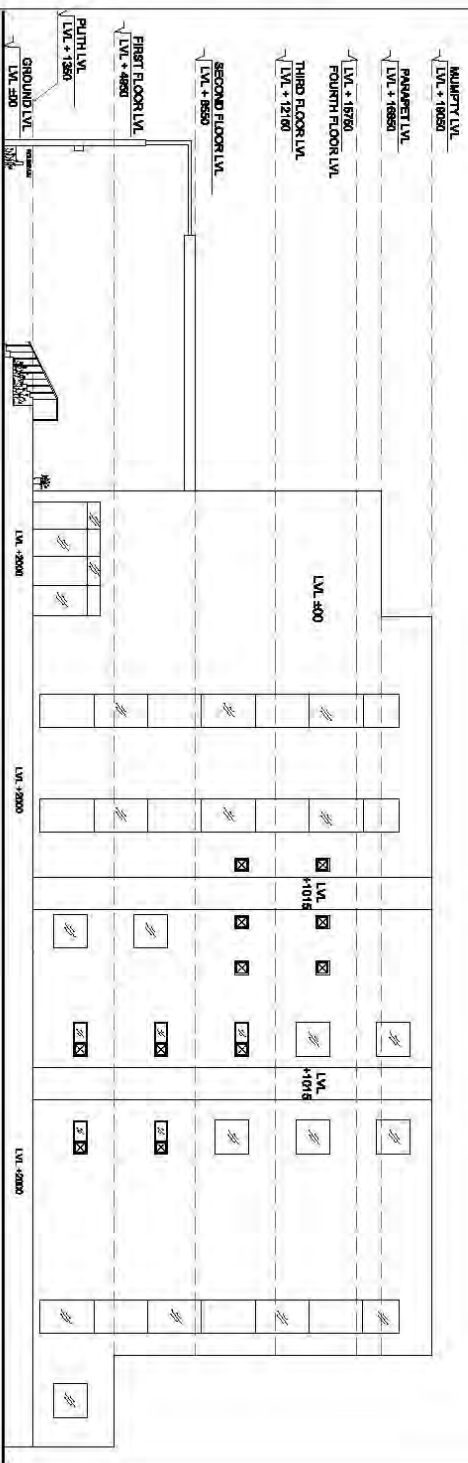
Title: **HANDCRAFT CENTRE-  
BLOCK-1  
TERRACE PLAN**

**PREPARED BY**  
NIGHTINGALE ARCHITECTS



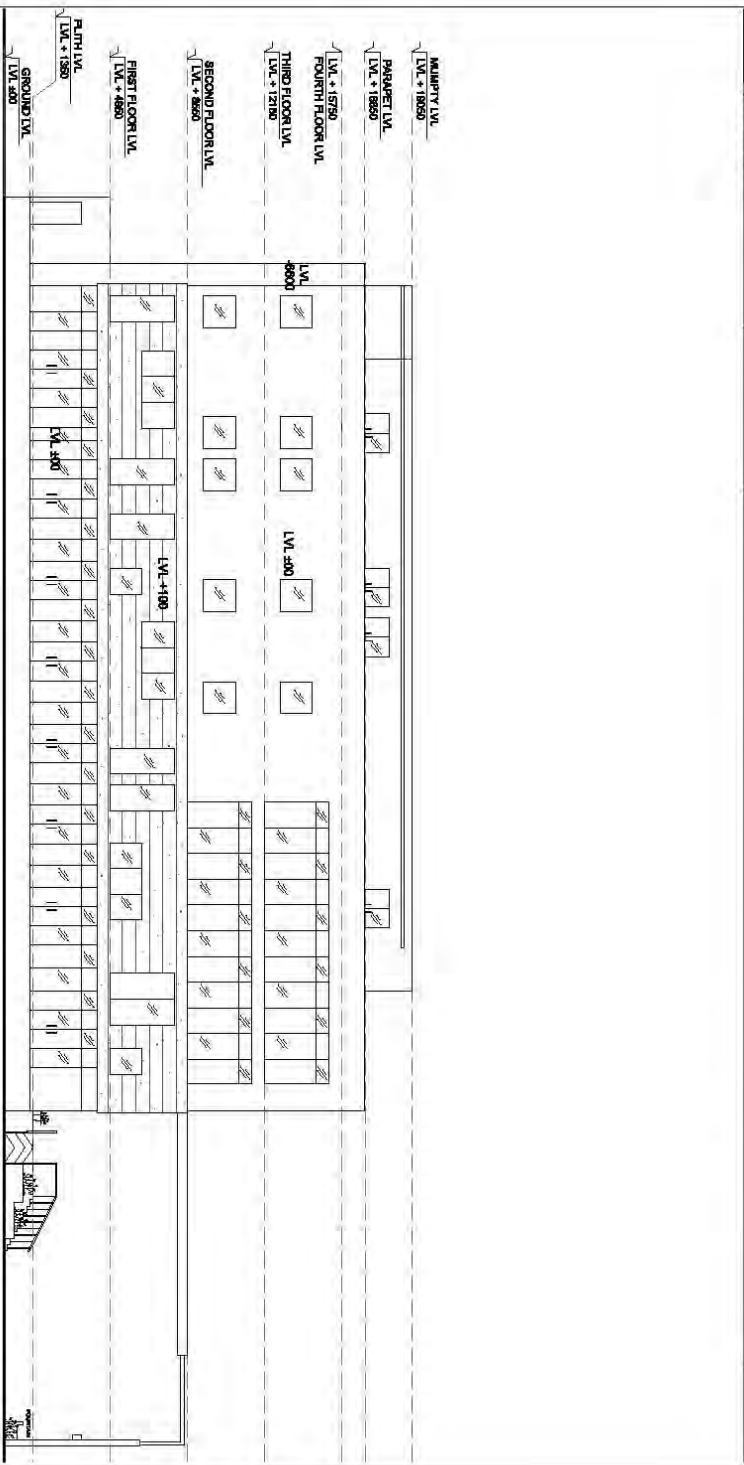
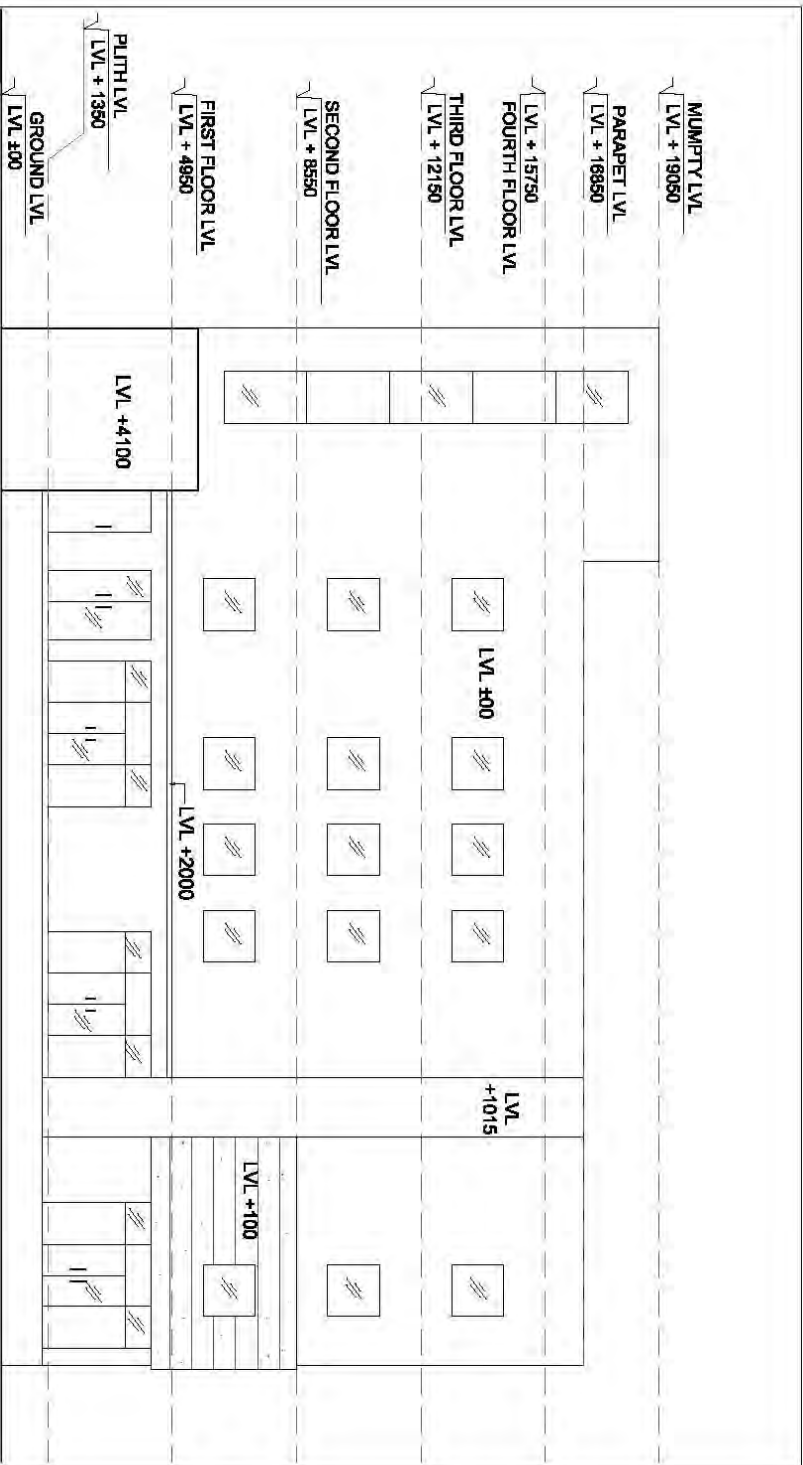


ELEVATION A



ELEVATION B

| GENERAL NOTES:   |  |  |  | NO. |  | REVISION |  | DATE     |  | CHECKED BY |  | Purpose :   |  | Client         |  | Title                        |  | Drawn by :               |  |
|--|--|--|--|-----|--|----------|--|----------|--|------------|--|---|--|----------------|--|------------------------------|--|--------------------------|--|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |  |  |  |     |  | -        |  | 03.07.19 |  | NG         |  | BAREILLY SMART CITY L.TD.   |  | Project:-      |  | HANDICRAFTS PROMOTION CENTRE |  | Scale: Not to Scale @ A3 |  |
| 2. All levels are in metres and are finished unless otherwise specified. All levels are mentioned in the section.  |  |  |  |     |  | A        |  | 13.11.19 |  | NG         |  | TENDER  |  | Checked by: NG |  | Date:03.07.19                |  | Drawn by :               |  |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |  |  |  |     |  |          |  |          |  |            |  | Note:   |  |                |  |                              |  |                          |  |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |  |  |  |     |  |          |  |          |  |            |  | 1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client. |  |                |  |                              |  |                          |  |
|  |  |  |  |     |  |          |  |          |  |            |  | DRAWING   |  |                |  |                              |  |                          |  |
|  |  |  |  |     |  |          |  |          |  |            |  | BLOCK-1 ELEVATIONS  |  |                |  |                              |  |                          |  |
|  |  |  |  |     |  |          |  |          |  |            |  | B1-06A  |  |                |  |                              |  |                          |  |
|  |  |  |  |     |  |          |  |          |  |            |  | SREI  |  |                |  |                              |  |                          |  |

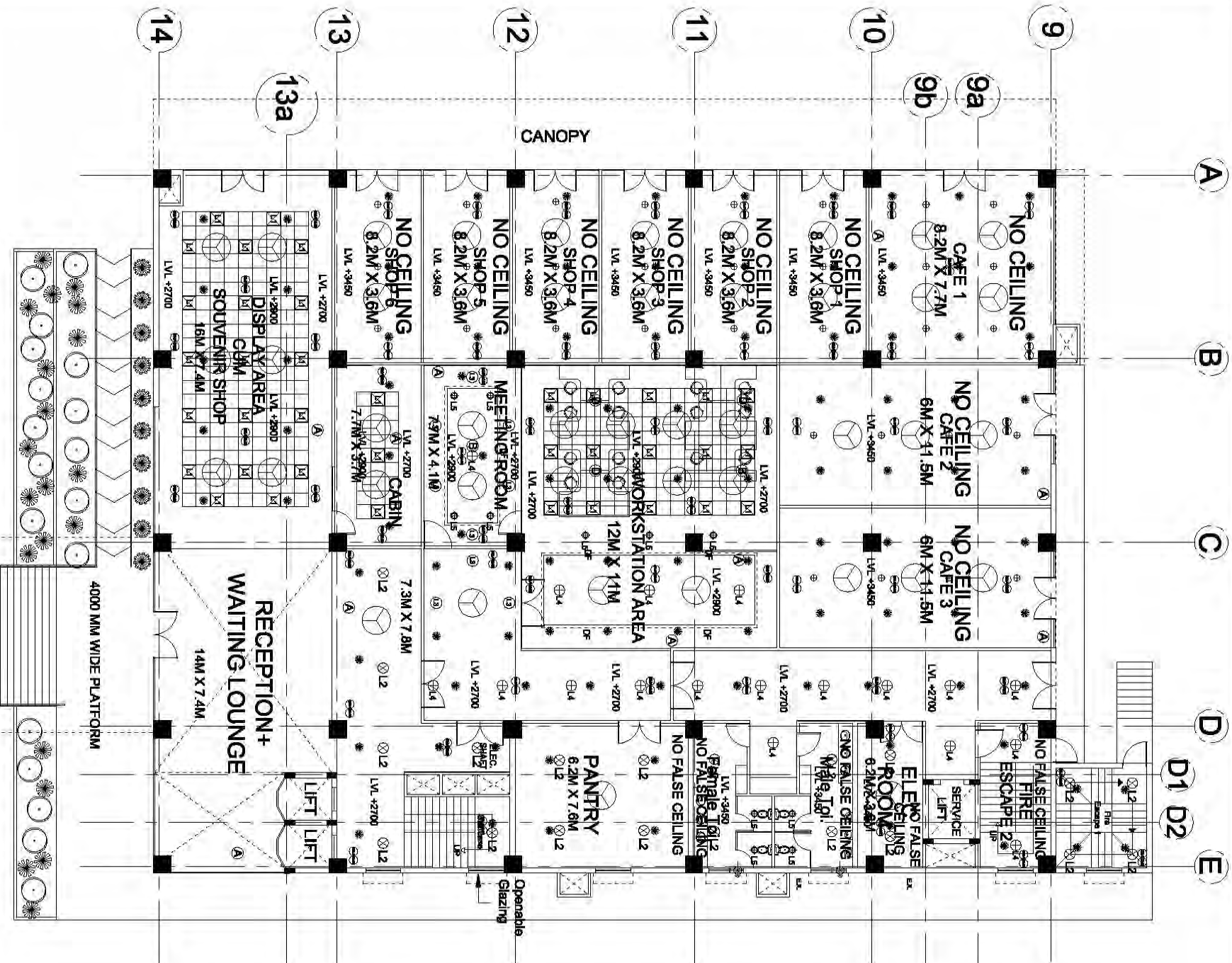


ELEVATION D

| GENERAL NOTES:   |  |  | NO. REVISION                                       |   | DATE  | CHECKED BY                     |
|--|--|--|--|---|---|--------------------------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |  |  | -  | - | 30.05.19  | NG                             |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |  |  |  |   | 13.11.19  | NG                             |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |  |  |  |   |   |                                |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |  |  |  |   |   |                                |
| Note:<br>1. This is a Tender Drawing.<br>Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                                |  |  | Purpose :  |   | Client:<br>BAREILLY SMART CITY LTD.<br>Project:<br>HANDICRAFTS PROMOTION CENTRE |                                |
| TENDER<br>DRAWING  |  |  | Title:<br>HANDICRAFT CENTRE-<br>BLOCK-1 ELEVATIONS |   | Scale:<br>Not to Scale @ A3<br>Checked by: NG<br>Date: 30.05.19                 | Drawn by:<br>Dwg No:<br>B1-06B |
|  |  |  |  |   | SREI<br>Sri Ram Engineering & Infrastructure Pvt. Ltd.                          |                                |



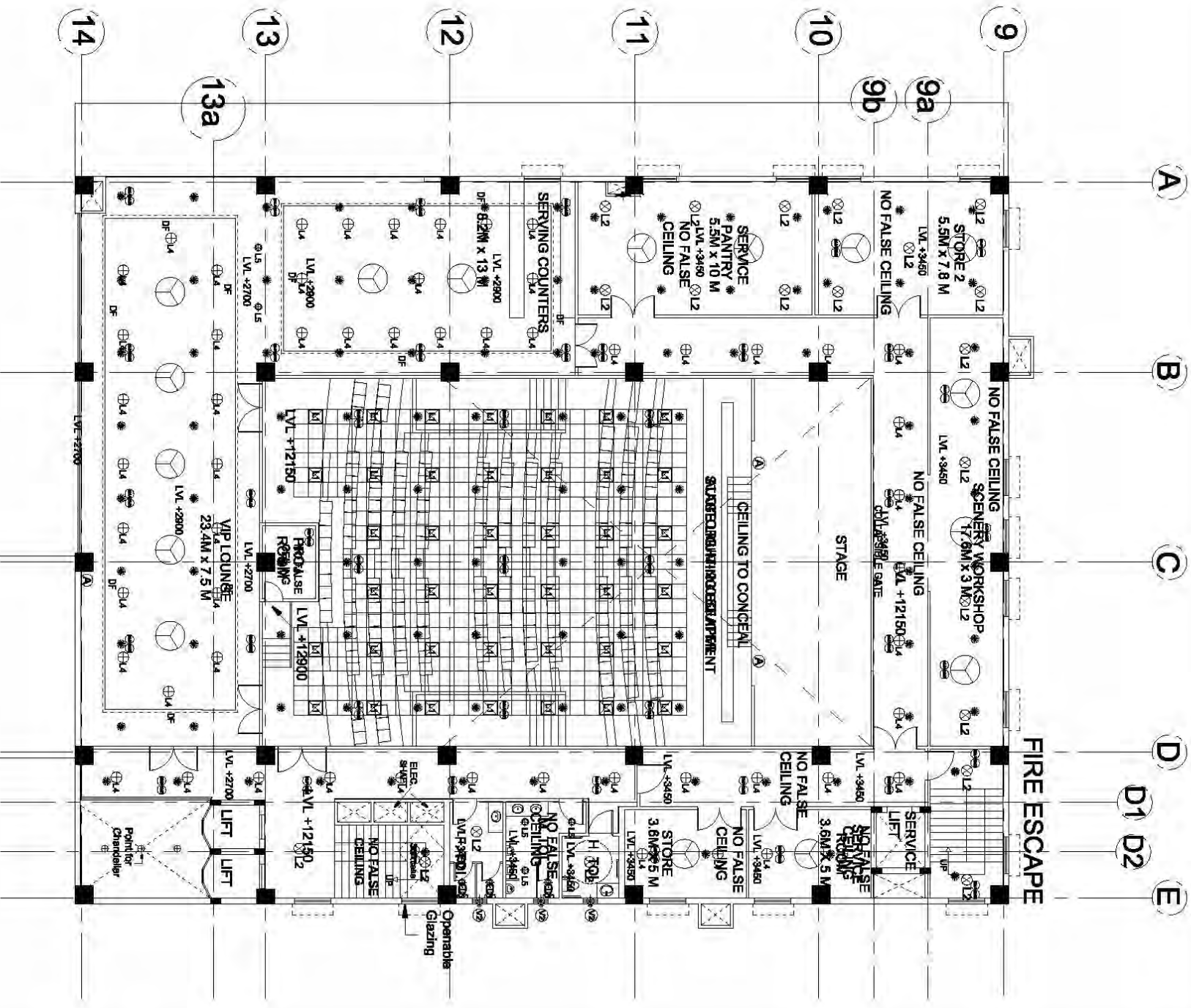


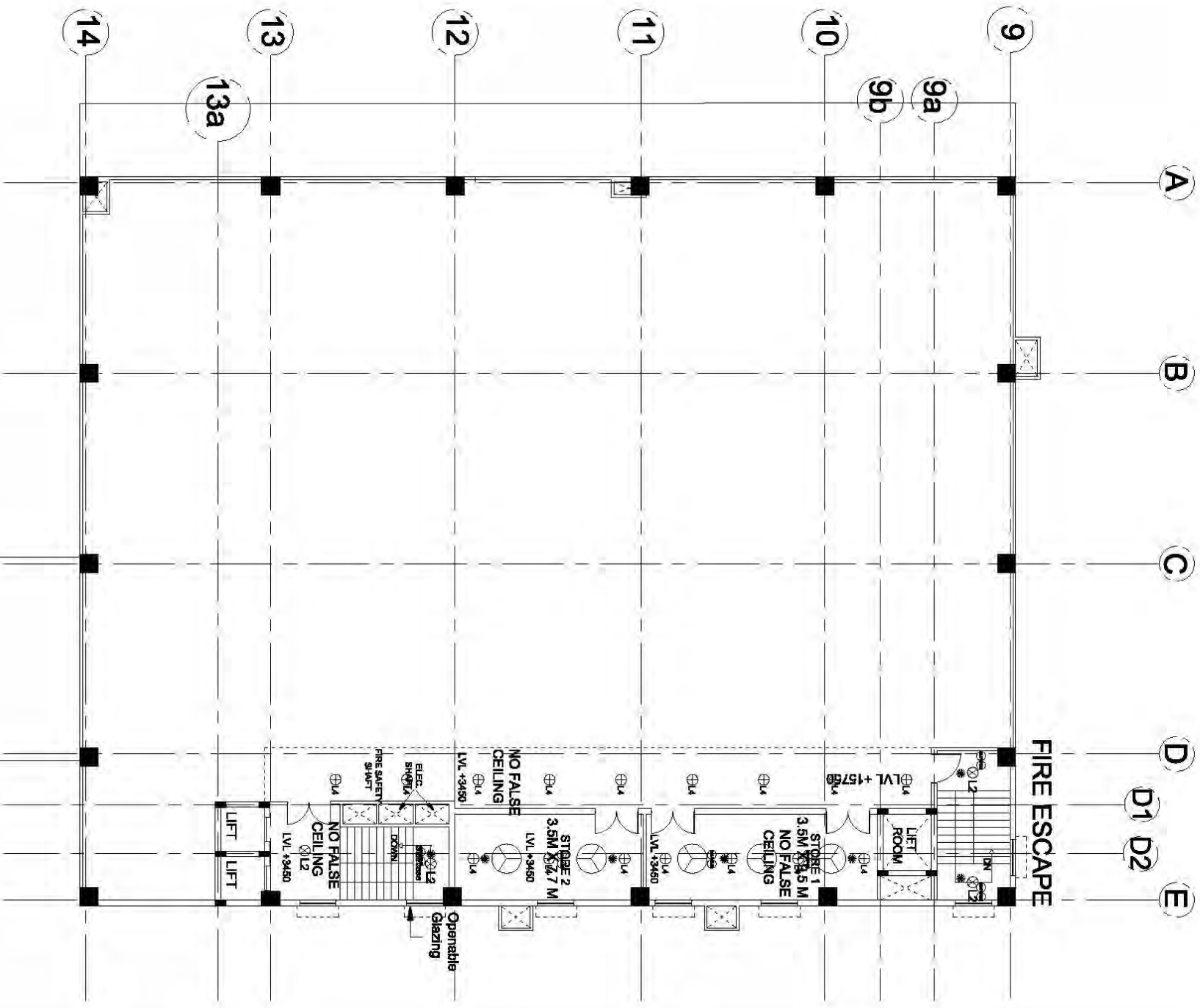




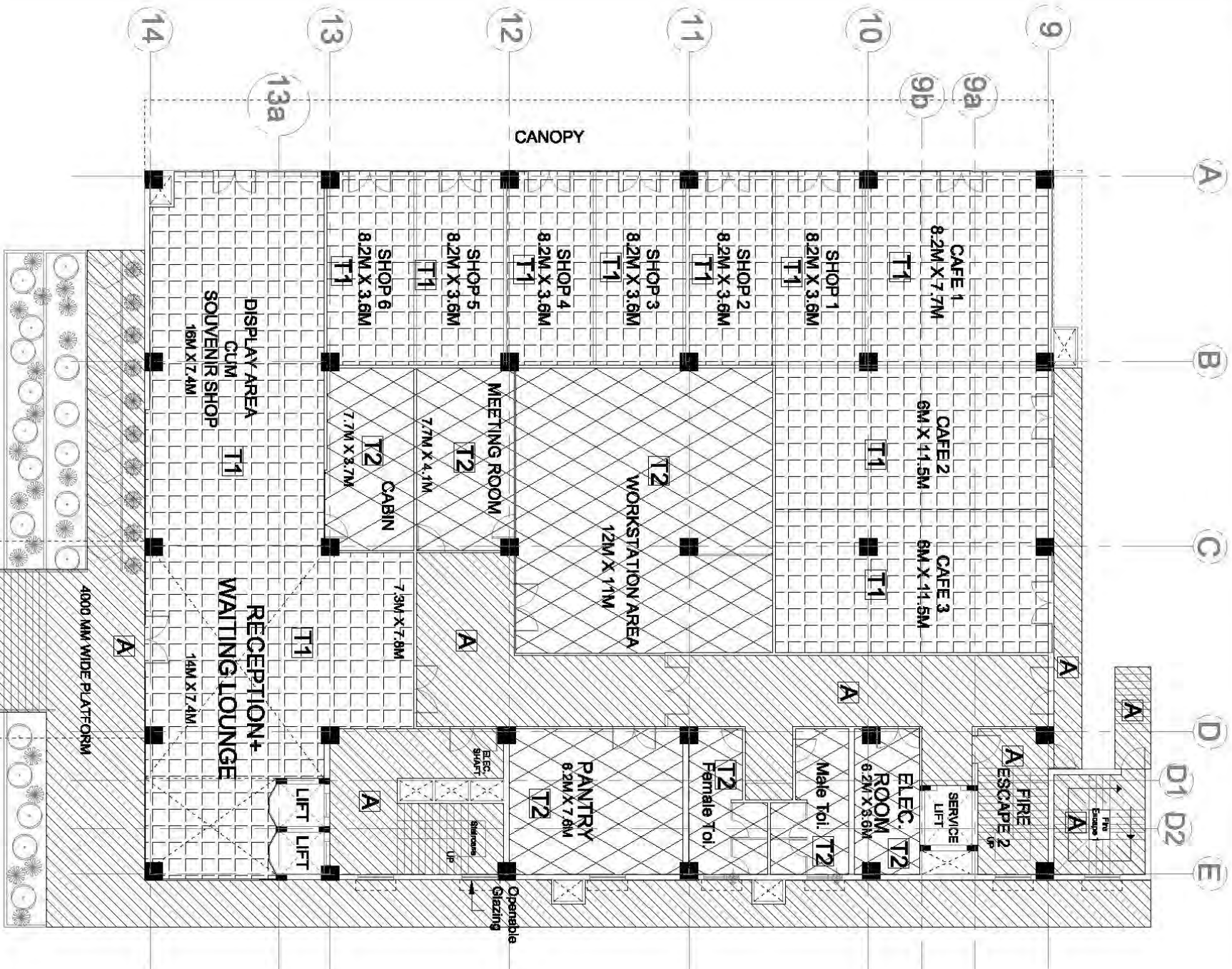








| GENERAL NOTES:   |                |                       |              |
|--|----------------|-----------------------|--------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |                |                       |              |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |                |                       |              |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |                |                       |              |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |                |                       |              |
| NO.  | REVISION       | DATE                  | CHECKED BY   |
|  | -              | 03.07.18              | NG           |
|  | A              | 11.11.18              | NG           |
| LIGHTING FIXTURES LEGEND   |                |                       |              |
| Scale  | LIGHTS         | DESCRIPTION           |              |
| 1.   |                | 30W LED Panel (2 x 2) |              |
| 2.   |                | 10W LED Down Light    |              |
| 3.   |                | 10W LED Down Light    |              |
| 4.   |                | 10W LED Down Light    |              |
| 5.   |                | 10W LED Down Light    |              |
| 6.   |                | 10W LED Down Light    |              |
| 7.   |                | 10W LED Down Light    |              |
| 8.   |                | 10W LED Down Light    |              |
| 9.   |                | 10W LED Down Light    |              |
| Notes:   |                |                       |              |
| 1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.  |                |                       |              |
| Purpose :  |                |                       |              |
| Client: BAREILLY SMART CITY LTD.   |                |                       |              |
| Project: HANDICRAFTS PROMOTION CENTRE  |                |                       |              |
| Scale: As to Scale @ A3  | North:         | Drawn by: NG          | Drawn by: NG |
| Checked by: NG   | Date: 11.11.18 | Drawn by: NG          | Drawn by: NG |
| Title: HANDICRAFT CENTRE- BLOCK-1 TERRACE FALSE CEILING PLAN   |                |                       |              |
| Drawn by: B1-12  |                |                       |              |
|  |                |                       |              |

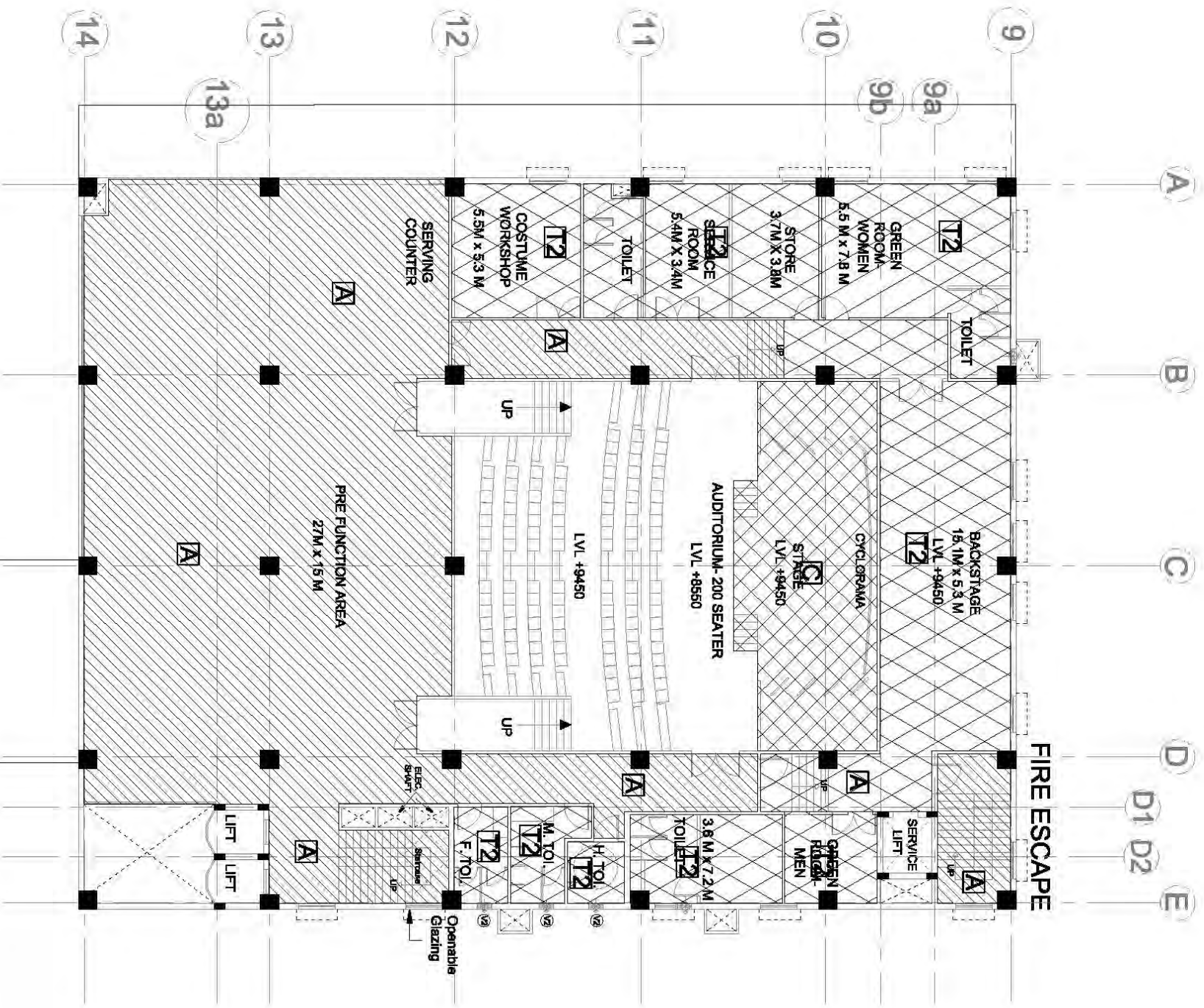


| GENERAL NOTES:   |                |                  |            |
|--|----------------|------------------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |                |                  |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |                |                  |            |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |                |                  |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |                |                  |            |
| NO.  | REVISION       | DATE             | CHECKED BY |
|  | A              | 08.07.19         | NG         |
|  | A              | 11.11.19         | NG         |
| LEGEND   |                |                  |            |
| TILE TYPE  | FINISH         | DESCRIPTION      |            |
| A  |                | GRANITE          |            |
| B  |                | BRICK 100A       |            |
| C  |                | SOLID WOOD FLOOR |            |
| D  |                | CARPET           |            |
| T1   |                | TILES 800X800    |            |
| T2   |                | TILES 600X600    |            |
| G  |                | GRASS CARPET     |            |
| E  |                | EPOXY FLOORING   |            |
| Purpose :  |                |                  |            |
| TENDER DRAWING   |                |                  |            |
| Note: 1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                                      |                |                  |            |
| Client: BAREILLY SMART CITY LTD.   |                |                  |            |
| Project: HANDICRAFTS PROMOTION CENTRE  |                |                  |            |
| Scale: Not to Scale @ A3   | North:         | Drawn By: B1-13  |            |
| Checked By: NG   | Date: 11.11.19 | Drawn By: B1-13  |            |
| Title: HANDICRAFT CENTRE- BLOCK-1 (GP)- FLOORING LAYOUT PLAN   |                |                  |            |
|  |                |                  |            |
| Supplied by SREI Engineering & Design  |                |                  |            |



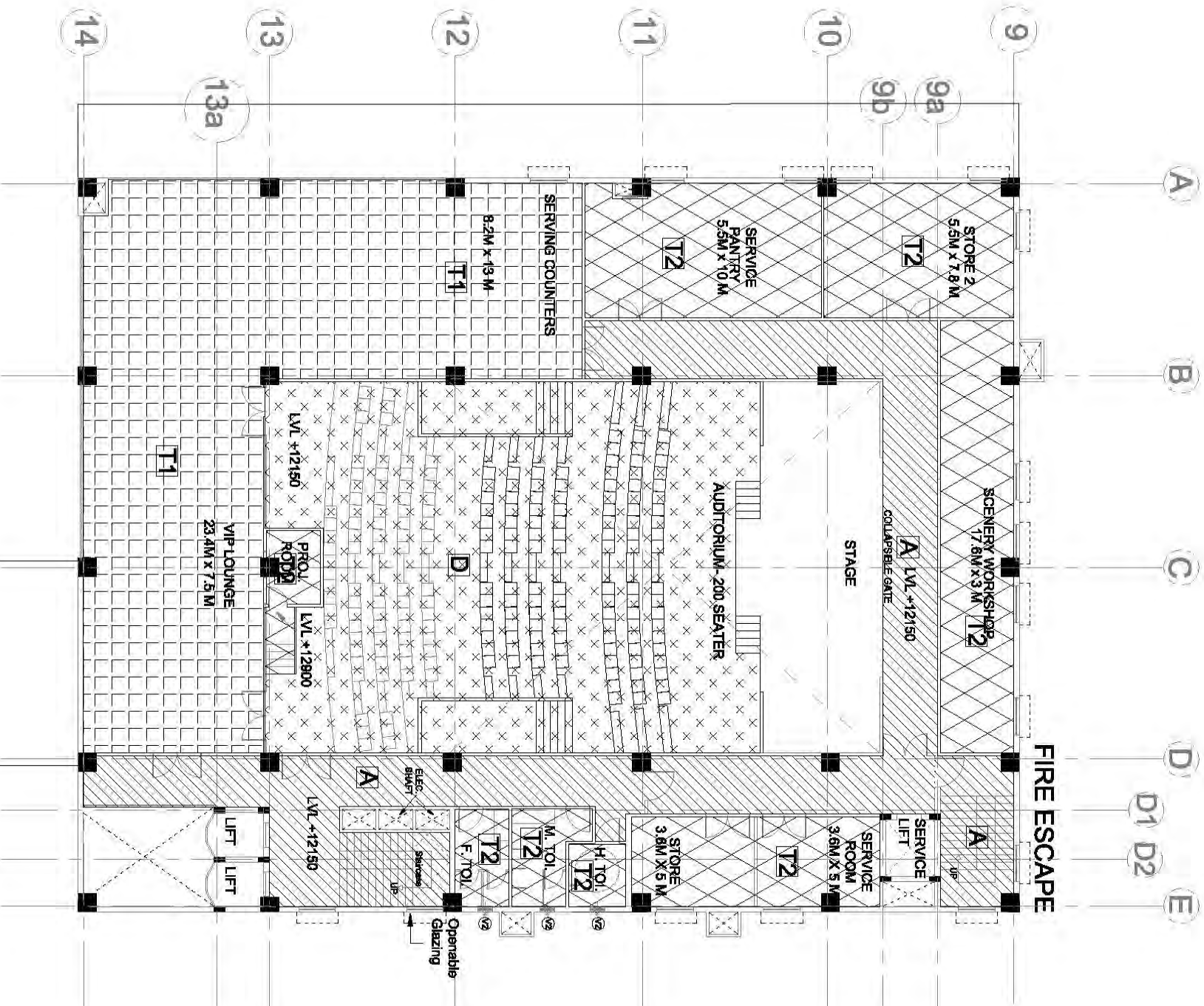






| GENERAL NOTES:   |          |                  |            |
|--|----------|------------------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |                  |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |                  |            |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |                  |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |                  |            |
| NO.  | REVISION | DATE             | CHECKED BY |
|  | -        | 03.07.19         | NG         |
|  | A        | 11.11.19         | NG         |
| LEGEND   |          |                  |            |
| TILE   | HATCH    | DESCRIPTION      |            |
| A  |          | GRANITE          |            |
| B  |          | BRICK MOQA       |            |
| C  |          | SOLID WOOD FLOOR |            |
| D  |          | CARPET           |            |
| T1   |          | TILES 600X900    |            |
| T2   |          | TILES 600X900    |            |
| G  |          | GRASS OUTLET     |            |
| E  |          | EXPOSED FLOORING |            |

|   |  |   |                         |
|---|--|---|-------------------------|
| Purpose :<br><b>TENDER<br/>DRAWING</b>  |  | Client:<br><b>BARREILLY SMART CITY LTD.</b>     |                         |
| Notes:<br>1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client. |  | Project:<br><b>HANDICRAFTS PROMOTION CENTRE</b> |                         |
|   |  | Scale:<br>Not to Scale @ A3                     | North:<br>              |
| Created by: NG  |  | Date: 11.11.19                                  | Day No:<br><b>B1-15</b> |
| Title:<br><b>HANDICRAFT CENTRE-<br/>BLOCK-1 SF-<br/>FLOORING LAYOUT PLAN</b>  |  | Drawn by:                                       |                         |
|   |  |   |                         |



**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed. any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 03/07/19 | NG         |
|     | A        | 11.11.19 |            |

| LEGEND     |                  |
|------------|------------------|
| TILE MATCH | DESCRIPTION      |
| A          | GRANITE          |
| B          | BRICK ROOF       |
| C          | SOLID WOOD FLOOR |
| D          | CARPET           |
| T1         | TILES 600X600    |
| T2         | TILES 600X600    |
| Q          | GRASS CARPET     |
| E          | EPoxy FLOORING   |

**Purpose :**

**TENDER DRAWING**

Note:

1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GRC) for approval by the client.

Client

**BAREILLY SMART CITY LTD.**

Project

**HANDICRAFTS PROMOTION CENTRE**

Scale

Not to Scale @ A3

North

Checked by

NG

Date

11.11.19

Drawn by

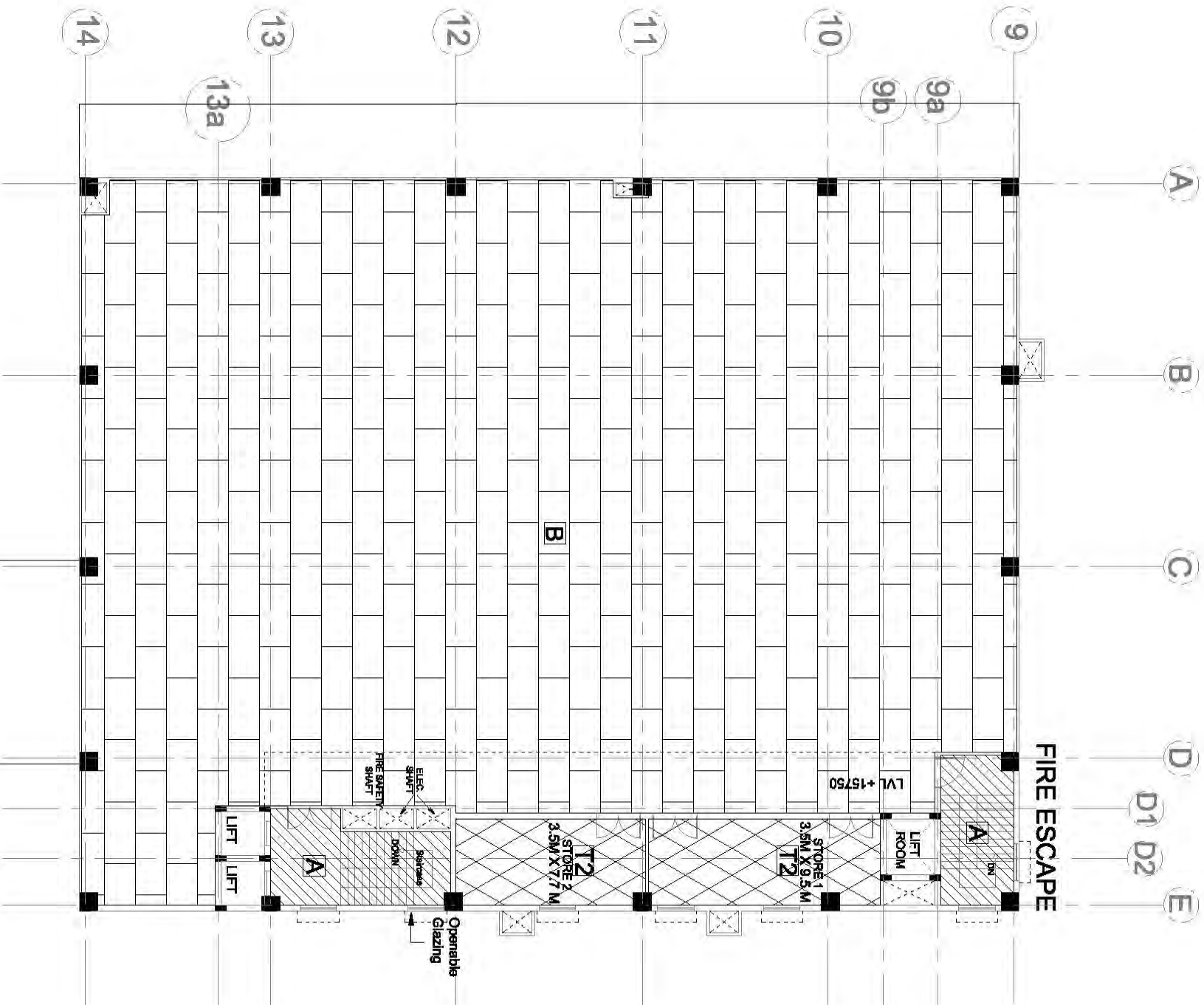
Draw No.

**B1-16**

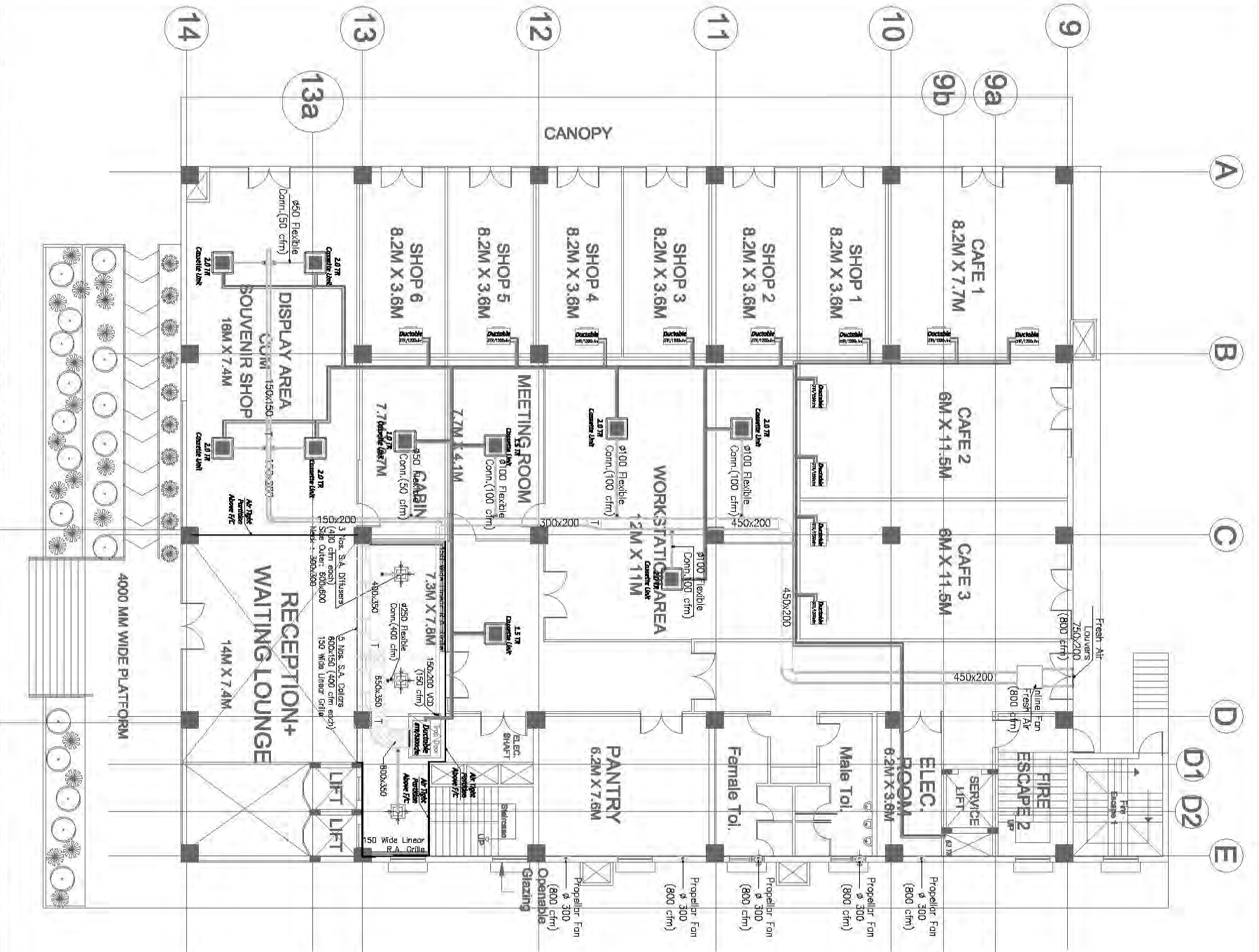
Title

**HANDICRAFT CENTRE- BLOCK-C-17F- FLOORING LAYOUT PLAN**

Approved For Submission

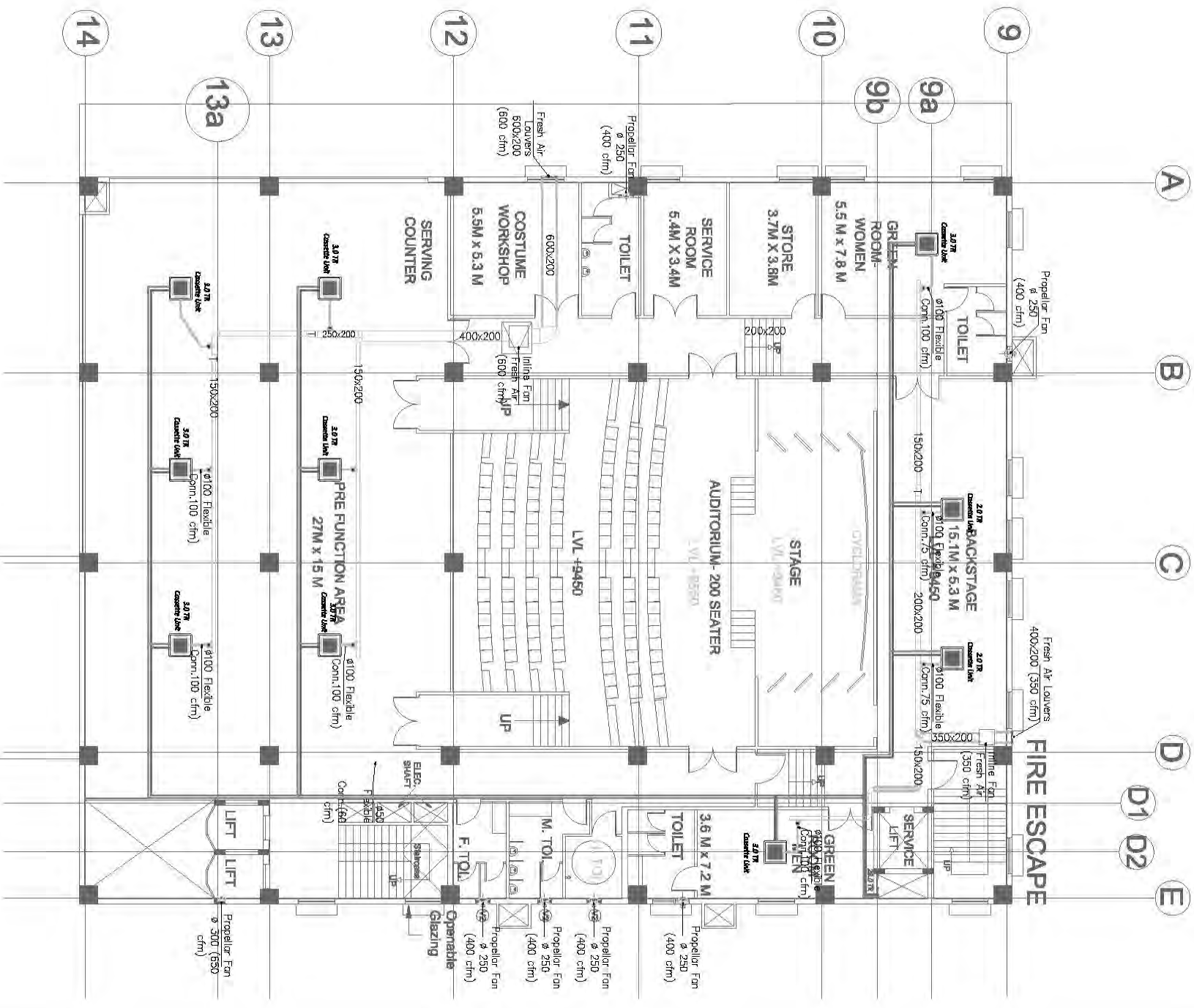


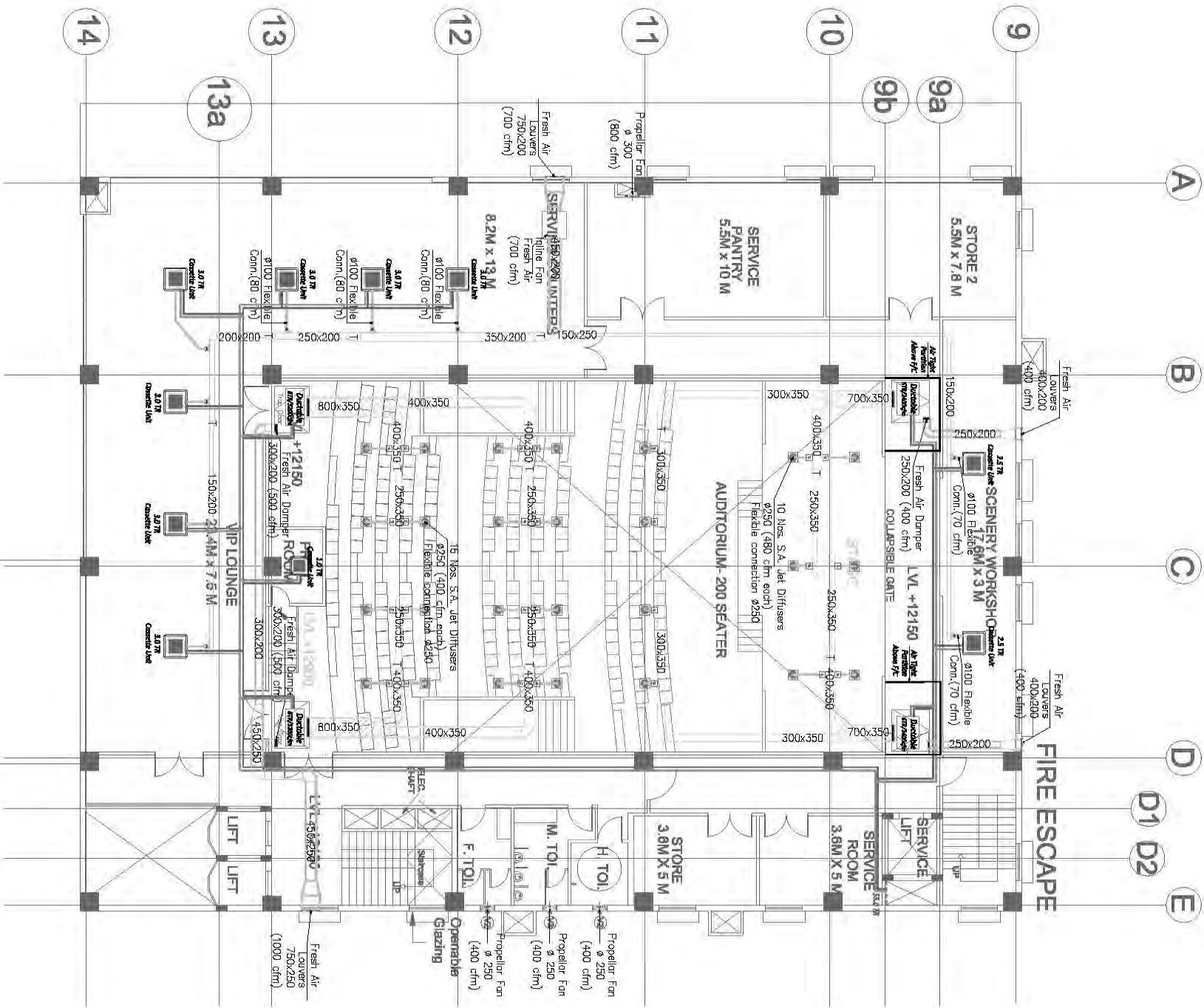
| GENERAL NOTES:   |     |          |          |
|--|-----|----------|----------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   | NO. | REVISION | DATE     |
|  |     | -        | 09.07.19 |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   | A   |          | 11.11.19 |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |     |          |          |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.               |     |          |          |
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| GENERAL NOTES:   |                |  |                    |
|--|----------------|--|--------------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |                |  |                    |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |                |  |                    |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |                |  |                    |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |                |  |                    |
| NO.  | REVISION       | DATE   | CHECKED BY         |
| -  | -              | 03.07.19   | NG                 |
| -  | -              | 11.11.19   | NG                 |
| Note:<br>1. This is a Tender Drawing.<br>Selected Connectors shall submit a detailed shop drawing (GFC) for approval by the client.                                |                |  |                    |
| Purpose :  |                | TENDER DRAWING   |                    |
| Client:  |                | BAREILLY SMART CITY LTD.                                 |                    |
| Project:   |                | HANDICRAFTS PROMOTION CENTRE                             |                    |
| Scale:<br>Not to Scale @ A3  | North<br>↑     | Drawn By:<br>NG  | Proj. No.<br>B1-21 |
| Checked By:  | Date: 11.11.19 | Drawn by:  |                    |
| Title:   |                | HANDICRAFT CENTRE-<br>BLOCK-1 THIRD FLOOR<br>HVAC LAYOUT |                    |
|  |                | SREI   |                    |







| P1 DB-1 :- ( POWER PLUG TPN DB )          |               |                     |                      |               |
|---|---------------|---------------------|----------------------|---------------|
| Location :- GROUND FLOOR                  |               |                     |                      |               |
| Size of Sub Main :-4x16 AL.ARM XLPE CABLE |               |                     |                      |               |
| Rating of Incoming :- 63 Amp 4 Pole MCCB) |               |                     |                      |               |
| Ckt No.                                   | No. of Points | Connected Load Watt | Size of Wire in Sqmm | Rating of MCB |
| P1/R1                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/Y1                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/B1                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/R2                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/Y2                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/B2                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/R3                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| P1/Y3                                     | 2x500         | 1000                | 3 x 4                | 16A/SP        |
| P1/B3                                     | 2x500         | 1000                | 3 x 4                | 16A/SP        |
| P1/R4                                     | 2x500         | 1000                | 3 x 4                | 16A/SP        |
| P1/Y4                                     | 1x1000        | 1000                | 3 x 4                | 16A/SP        |
| TOTAL                                     |               | 11000               | SAY                  | 11.0 KW       |

| L2 DB-2 :- ( Light & Row Power TPN DB )         |               |                     |                      |               |
|---|---------------|---------------------|----------------------|---------------|
| Location :- Shops & Restaurants GROUND FLOOR    |               |                     |                      |               |
| Size of Sub Main :-3.5x35 AL. ARM.LT XLPE CABLE |               |                     |                      |               |
| Rating of Incoming :- 125 Amp 4 Pole MCCB)      |               |                     |                      |               |
| Ckt No.   | No. of Points | Connected Load Watt | Size of Wire in Sqmm | Rating of MCB |
| L2/R1   | SHOP NO<br>6  | 3000                | 3 x 6                | 32A/DP        |
| L2/Y1   | SHOP NO<br>2  | 3000                | 3 X 6                | 32A/DP        |
| L2/B1   | SHOP NO<br>5  | 3000                | 3 x 6                | 32A/DP        |
| L2/R2   | SHOP NO<br>4  | 3000                | 3 X 6                | 32 A/DP       |
| L2/Y2   | SHOP NO<br>2  | 3000                | 3 X 6                | 32A/DP        |
| L2/B2   | SHOP NO<br>1  | 3000                | 3 X 6                | 32A/DP        |
| L2/R3   | CAFE-1        | 3000                | 3X 6                 | 32A/DP        |
| L2/Y3   | CAFE-2        | 3000                | 3X 6                 | 32A/DP        |
| L2/B3.  | CAFE-3        | 3000                | 3X 6                 | 32A/DP        |
| Total   |               | 27000               | Say                  | 27.00 KW      |

| L1 DB-1 :- ( Light & Row Power 8Way TPN DB ) |  |                     |                      |               |
|--|--|---------------------|----------------------|---------------|
| Location :- GROUND FLOOR                     |  |                     |                      |               |
| Size of Sub Main :-4x16 AL.ARM XLPE CABLE    |  |                     |                      |               |
| Rating of Incoming :- 63 Amp 4 Pole MCCB)    |  |                     |                      |               |
| Ckt No.                                      | No. of Points  | Connected Load Watt | Size of Wire in Sqmm | Rating of MCB |
| L1/R1  | L4= 13x12<br>L5= 12x6                                  | 228                 | 3 x 1.5              | 6A/SP         |
| L1/Y1  | L2= 13x18<br>L3= 3x6<br>L4=19x12<br>FP=1x60            | 540                 | 3 x 1.5              | 6A/SP         |
| L1/B1  | L2= 10x18<br>L5= 4x6<br>FP= 1x60<br>EX.FP=2x60         | 384                 | 3 x 1.5              | 6A/SP         |
| L1/R2  | L1= 19x36<br>FP= 6x60                                  | 1044                | 3 x 1.5              | 6A/SP         |
| L1/Y2  | L1= 3x36<br>L3= 6x6<br>L4= 1x12<br>L5= 4x6<br>FP= 4x60 | 420                 | 3 x 1.5              | 6A/SP         |
| L1/B2  | L1= 15x36<br>L4= 3x36                                  | 648                 | 3 x 1.5              | 6A/SP         |
| Total  |  | 3264                |                      |               |
|  |  | Say                 | 4.00 KW              |               |

|  |          |  |  |      |            |   |          |    |   |          |    |  |  |
|--|----------|--|--|------|------------|---|----------|----|---|----------|----|--|--|
| <b>GENERAL NOTES:</b><br>1. All dimensions are in metres and are dimensions unless otherwise specified.<br>2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.<br>3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.<br>4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings. |          | NO. REVISION<br><table border="1"> <tr> <td></td> <td>DATE</td> <td>CHECKED BY</td> </tr> <tr> <td>-</td> <td>02.07.19</td> <td>NG</td> </tr> <tr> <td>A</td> <td>11.11.19</td> <td>NG</td> </tr> </table> |  | DATE | CHECKED BY | - | 02.07.19 | NG | A | 11.11.19 | NG | Client: <b>BAREILLY SMART CITY LTD.</b><br>Project: <b>HANDICRAFTS PROMOTION CENTRE</b><br>Scale: Not to Scale @ A3<br>Drawn by: NG<br>Date: 11.11.19<br>Check by: | Purpose :<br><b>TENDER DRAWING</b><br>Title: <b>HANDICRAFT CENTRE- BLOCK-1 GROUND FLOOR DB DETAIL</b><br>Drawn by: <b>SREI</b> |
|  | DATE     | CHECKED BY   |  |      |            |   |          |    |   |          |    |  |  |
| -  | 02.07.19 | NG   |  |      |            |   |          |    |   |          |    |  |  |
| A  | 11.11.19 | NG   |  |      |            |   |          |    |   |          |    |  |  |



**L3 DB-3 :- ( Light 4Way TPN DB )**

| <b>Location :- FIRST FLOOR</b>                         |  |                     |                                    |
|--|--|---------------------|------------------------------------|
| <b>Size of Sub Main :-4x16 SQMM AL,ARM, XLPE CABLE</b> |  |                     |                                    |
| <b>Rating of Incomer :- 63 Amp 4 Pole MCCB)</b>        |  |                     |                                    |
| Ckt No.  | No. of Points  | Connected Load Watt | Size of Wire in Sqmm Rating of MCB |
| L3/R1  | L2= 3x18<br>L3= 2x6<br>L4= 5x12<br>L5= 2x6<br>FP= 2x60 | 258                 | 3 x 1.5 6A/SP                      |
| L3/Y1  | L3= 4x6<br>L4= 25x12<br>FP= 2x60                       | 420                 | 3 x 1.5 6A/SP                      |
| L3/B1  | L2= 10X18<br>L5= 4x6<br>EX.F=2X60<br>FP= 1x60          | 364                 | 3 x 1.5 6A/SP                      |
| L3/R2  | L2= 6x18<br>L4= 3x12<br>FP= 2x60                       | 264                 | 3 x 1.5 6A/SP                      |
| L3/Y2  | L1= 15x36<br>L2= 3x18<br>L3= 5x6<br>FP= 6x60           | 984                 | 3 x 1.5 6A/SP                      |
| L3/B2  | L1= 18x36<br>L3= 4x6<br>FP= 8x60                       | 1152                | 3 x 1.5 6A/SP                      |
| L3/R3  | L3= 8x6<br>L4= 5x12<br>FP= 4x60                        | 348                 | 3 x 1.5 6A/SP                      |
| L3/B3  | L1=16x36<br>L2= 1x18<br>FP= 8x60                       | 1074                | 3 x 1.5 6A/SP                      |
| <b>TOTAL</b>   |  | <b>6264 W</b>       |                                    |
| <b>SAY</b>   |  | <b>6A/SP</b>        |                                    |

**P-2 DB-2 :- ( POWER PLUG 8 WAY TPN DB )**

| <b>Location :- FIRST FLOOR</b>                   |                 |                     |                                    |
|--|-----------------|---------------------|------------------------------------|
| <b>Size of Sub Main :-4x16 AL,ARM,XLPE CABLE</b> |                 |                     |                                    |
| <b>Rating of Incomer :- 63 Amp 4 Pole MCCB)</b>  |                 |                     |                                    |
| Ckt No.  | No. of Points   | Connected Load Watt | Size of Wire in Sqmm Rating of MCB |
| P2/R1  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/Y1  | 1X1000<br>=1000 | 1000                | 3 x 4 16A/SP                       |
| P2/B1  | 1X1000<br>=1000 | 1000                | 3 x 4 16A/SP                       |
| P2/R2  | 1X1000<br>=1000 | 1000                | 3 x 4 16A/SP                       |
| P2/Y2  | 1X1000<br>=1000 | 1000                | 3 x 4 16A/SP                       |
| P2/B2  | 1X1000<br>=1000 | 1000                | 3 x 4 16A/SP                       |
| P2/R3  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/Y3  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/B3  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/R4  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/Y4  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| P2/B4  | 1X1000          | 1000                | 3 x 4 16A/SP                       |
| <b>TOTAL</b>                                     |                 | <b>12000 W</b>      |                                    |
| <b>SAY</b>                                       |                 | <b>12,00KW</b>      |                                    |

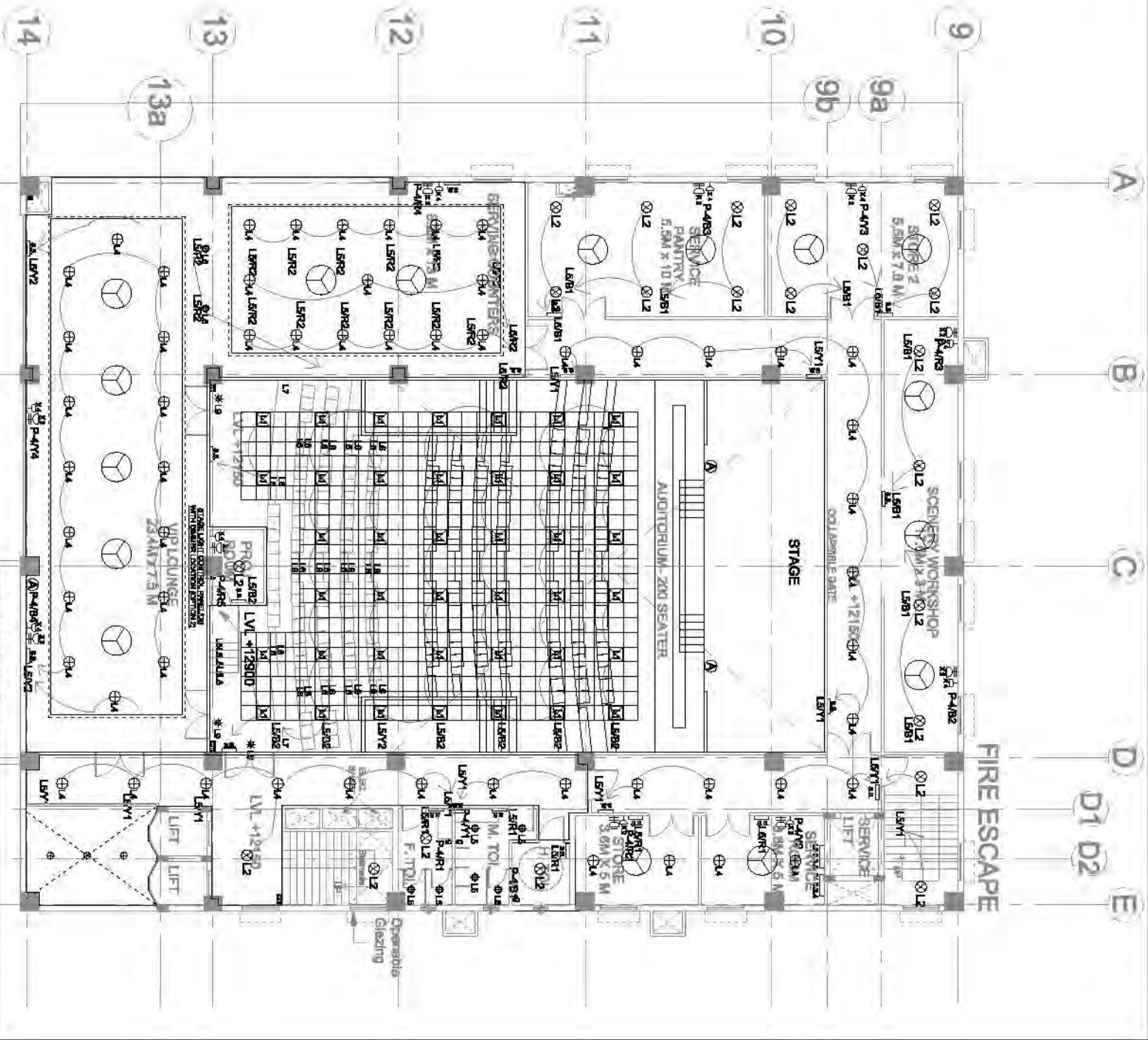
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|--|--|---|------------------------------|------------------------|
| <b>GENERAL NOTES:</b><br>1. All dimensions are in metres and are dimensions unless otherwise specified.<br>2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.<br>3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.<br>4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings. |  | NO. REVISION<br>-<br>A  | DATE<br>03.07.19<br>11.11.19 | CHECKED BY<br>NG<br>NG |
| Purpose :<br><b>TENDER DRAWING</b>   |  | Disg-<br><b>BAREILLY SMART CITY LTD.</b><br>Project-<br><b>HANDICRAFTS PROMOTION CENTRE</b><br>Title-<br><b>HANDICRAFT CENTRE- BLOCK-I FIRST FLOOR DB DETAIL</b><br>Scale-<br>Not to Exceed @ A3<br>Checked by- NG<br>Date- 11.11.19<br>Drawn by-<br><b>B1-26</b> |                              |                        |









**GENERAL NOTES:**

1. All dimensions are in meters and are dimensionless unless otherwise specified.
2. All fluids are in millimetres and are filtered unless otherwise specified. All vessels are mentioned in the section on the vessel.
3. Do not scale drawings. Only written dimensions shall be shown. Any dimensioning shall be in millimetres to the nearest millimetre.
4. For details such as padding, tending, tending, gifts, lighting fixtures, wheel, etc., refer to the relevant architectural/interior design.

| NO. | REVISION | DATE    | CHECKED BY | NO. |
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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

| SL. NO | SYM | DESCRIPTION         | SL. NO | SYM | DESCRIPTION         | SL. NO | SYM | DESCRIPTION         |
|--------|-----|---------------------|--------|-----|---------------------|--------|-----|---------------------|
| 1.     | D1  | SWITCH PANEL (R-1)  | 10.    | D1  | SWITCH PANEL (R-1)  | 10.    | D1  | SWITCH PANEL (R-1)  |
| 2.     | D2  | SWITCH PANEL (R-2)  | 11.    | D2  | SWITCH PANEL (R-2)  | 11.    | D2  | SWITCH PANEL (R-2)  |
| 3.     | D3  | SWITCH PANEL (R-3)  | 12.    | D3  | SWITCH PANEL (R-3)  | 12.    | D3  | SWITCH PANEL (R-3)  |
| 4.     | D4  | SWITCH PANEL (R-4)  | 13.    | D4  | SWITCH PANEL (R-4)  | 13.    | D4  | SWITCH PANEL (R-4)  |
| 5.     | D5  | SWITCH PANEL (R-5)  | 14.    | D5  | SWITCH PANEL (R-5)  | 14.    | D5  | SWITCH PANEL (R-5)  |
| 6.     | D6  | SWITCH PANEL (R-6)  | 15.    | D6  | SWITCH PANEL (R-6)  | 15.    | D6  | SWITCH PANEL (R-6)  |
| 7.     | D7  | SWITCH PANEL (R-7)  | 16.    | D7  | SWITCH PANEL (R-7)  | 16.    | D7  | SWITCH PANEL (R-7)  |
| 8.     | D8  | SWITCH PANEL (R-8)  | 17.    | D8  | SWITCH PANEL (R-8)  | 17.    | D8  | SWITCH PANEL (R-8)  |
| 9.     | D9  | SWITCH PANEL (R-9)  | 18.    | D9  | SWITCH PANEL (R-9)  | 18.    | D9  | SWITCH PANEL (R-9)  |
| 10.    | D10 | SWITCH PANEL (R-10) | 19.    | D10 | SWITCH PANEL (R-10) | 19.    | D10 | SWITCH PANEL (R-10) |
| 11.    | D11 | SWITCH PANEL (R-11) | 20.    | D11 | SWITCH PANEL (R-11) | 20.    | D11 | SWITCH PANEL (R-11) |
| 12.    | D12 | SWITCH PANEL (R-12) | 21.    | D12 | SWITCH PANEL (R-12) | 21.    | D12 | SWITCH PANEL (R-12) |
| 13.    | D13 | SWITCH PANEL (R-13) | 22.    | D13 | SWITCH PANEL (R-13) | 22.    | D13 | SWITCH PANEL (R-13) |
| 14.    | D14 | SWITCH PANEL (R-14) | 23.    | D14 | SWITCH PANEL (R-14) | 23.    | D14 | SWITCH PANEL (R-14) |
| 15.    | D15 | SWITCH PANEL (R-15) | 24.    | D15 | SWITCH PANEL (R-15) | 24.    | D15 | SWITCH PANEL (R-15) |
| 16.    | D16 | SWITCH PANEL (R-16) | 25.    | D16 | SWITCH PANEL (R-16) | 25.    | D16 | SWITCH PANEL (R-16) |
| 17.    | D17 | SWITCH PANEL (R-17) | 26.    | D17 | SWITCH PANEL (R-17) | 26.    | D17 | SWITCH PANEL (R-17) |
| 18.    | D18 | SWITCH PANEL (R-18) | 27.    | D18 | SWITCH PANEL (R-18) | 27.    | D18 | SWITCH PANEL (R-18) |
| 19.    | D19 | SWITCH PANEL (R-19) | 28.    | D19 | SWITCH PANEL (R-19) | 28.    | D19 | SWITCH PANEL (R-19) |
| 20.    | D20 | SWITCH PANEL (R-20) | 29.    | D20 | SWITCH PANEL (R-20) | 29.    | D20 | SWITCH PANEL (R-20) |
| 21.    | D21 | SWITCH PANEL (R-21) | 30.    | D21 | SWITCH PANEL (R-21) | 30.    | D21 | SWITCH PANEL (R-21) |
| 22.    | D22 | SWITCH PANEL (R-22) | 31.    | D22 | SWITCH PANEL (R-22) | 31.    | D22 | SWITCH PANEL (R-22) |
| 23.    | D23 | SWITCH PANEL (R-23) | 32.    | D23 | SWITCH PANEL (R-23) | 32.    | D23 | SWITCH PANEL (R-23) |
| 24.    | D24 | SWITCH PANEL (R-24) | 33.    | D24 | SWITCH PANEL (R-24) | 33.    | D24 | SWITCH PANEL (R-24) |
| 25.    | D25 | SWITCH PANEL (R-25) | 34.    | D25 | SWITCH PANEL (R-25) | 34.    | D25 | SWITCH PANEL (R-25) |
| 26.    | D26 | SWITCH PANEL (R-26) | 35.    | D26 | SWITCH PANEL (R-26) | 35.    | D26 | SWITCH PANEL (R-26) |
| 27.    | D27 | SWITCH PANEL (R-27) | 36.    | D27 | SWITCH PANEL (R-27) | 36.    | D27 | SWITCH PANEL (R-27) |
| 28.    | D28 | SWITCH PANEL (R-28) | 37.    | D28 | SWITCH PANEL (R-28) | 37.    | D28 | SWITCH PANEL (R-28) |
| 29.    | D29 | SWITCH PANEL (R-29) | 38.    | D29 | SWITCH PANEL (R-29) | 38.    | D29 | SWITCH PANEL (R-29) |
| 30.    | D30 | SWITCH PANEL (R-30) | 39.    | D30 | SWITCH PANEL (R-30) | 39.    | D30 | SWITCH PANEL (R-30) |
| 31.    | D31 | SWITCH PANEL (R-31) | 40.    | D31 | SWITCH PANEL (R-31) | 40.    | D31 | SWITCH PANEL (R-31) |
| 32.    | D32 | SWITCH PANEL (R-32) | 41.    | D32 | SWITCH PANEL (R-32) | 41.    | D32 | SWITCH PANEL (R-32) |
| 33.    | D33 | SWITCH PANEL (R-33) | 42.    | D33 | SWITCH PANEL (R-33) | 42.    | D33 | SWITCH PANEL (R-33) |
| 34.    | D34 | SWITCH PANEL (R-34) | 43.    | D34 | SWITCH PANEL (R-34) | 43.    | D34 | SWITCH PANEL (R-34) |
| 35.    | D35 | SWITCH PANEL (R-35) | 44.    | D35 | SWITCH PANEL (R-35) | 44.    | D35 | SWITCH PANEL (R-35) |
| 36.    | D36 | SWITCH PANEL (R-36) | 45.    | D36 | SWITCH PANEL (R-36) | 45.    | D36 | SWITCH PANEL (R-36) |
| 37.    | D37 | SWITCH PANEL (R-37) | 46.    | D37 | SWITCH PANEL (R-37) | 46.    | D37 | SWITCH PANEL (R-37) |
| 38.    | D38 | SWITCH PANEL (R-38) | 47.    | D38 | SWITCH PANEL (R-38) | 47.    | D38 | SWITCH PANEL (R-38) |
| 39.    | D39 | SWITCH PANEL (R-39) | 48.    | D39 | SWITCH PANEL (R-39) | 48.    | D39 | SWITCH PANEL (R-39) |
| 40.    | D40 | SWITCH PANEL (R-40) | 49.    | D40 | SWITCH PANEL (R-40) | 49.    | D40 | SWITCH PANEL (R-40) |
| 41.    | D41 | SWITCH PANEL (R-41) | 50.    | D41 | SWITCH PANEL (R-41) | 50.    | D41 | SWITCH PANEL (R-41) |
| 42.    | D42 | SWITCH PANEL (R-42) | 51.    | D42 | SWITCH PANEL (R-42) | 51.    | D42 | SWITCH PANEL (R-42) |
| 43.    | D43 | SWITCH PANEL (R-43) | 52.    | D43 | SWITCH PANEL (R-43) | 52.    | D43 | SWITCH PANEL (R-43) |
| 44.    | D44 | SWITCH PANEL (R-44) | 53.    | D44 | SWITCH PANEL (R-44) | 53.    | D44 | SWITCH PANEL (R-44) |
| 45.    | D45 | SWITCH PANEL (R-45) | 54.    | D45 | SWITCH PANEL (R-45) | 54.    | D45 | SWITCH PANEL (R-45) |
| 46.    | D46 | SWITCH PANEL (R-46) | 55.    | D46 | SWITCH PANEL (R-46) | 55.    | D46 | SWITCH PANEL (R-46) |
| 47.    | D47 | SWITCH PANEL (R-47) | 56.    | D47 | SWITCH PANEL (R-47) | 56.    | D47 | SWITCH              |


**Notes:**  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

|     |     |     |
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| 10  | 11  | 12  |
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| 364 | 365 | 366 |
| 367 | 368 | 369 |
| 370 | 371 | 372 |
| 373 | 374 | 375 |
| 376 | 377 | 378 |

**Handicraft Centre - Block 4 Third Floor**  
Electrical Layout

| P4 DB-4 :- ( POWER PLUG 8 WAY TPN DB )         |                  |                     |                      |               |
|--|------------------|---------------------|----------------------|---------------|
| Location :- THIRD FLOOR                        |                  |                     |                      |               |
| Size of Sub Main :-4x16sqmm AL-ARM,XLPE CABLE. |                  |                     |                      |               |
| Rating of Incoming :- 63 Amp 4 Pole MCCB)      |                  |                     |                      |               |
| Ckt No.  | No. of Points    | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
| P4/R1  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/Y1  | 1X1000<br>= 1000 | 1000                | 3 x 4                | 16A/SP        |
| P4/B1  | 1X1000<br>= 1000 | 1000                | 3 x 4                | 16A/SP        |
| P4/R2  | 1X1000<br>= 1000 | 1000                | 3 x 4                | 16A/SP        |
| P4/Y2  | 1X1000<br>= 1000 | 1000                | 3 x 4                | 16A/SP        |
| P4/B2  | 1X1000<br>= 3000 | 1000                | 3 x 4                | 16A/SP        |
| P4/R3  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/Y3  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/B3  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/R4  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/Y4  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| P4/B4  | 1X1000           | 1000                | 3 x 4                | 16A/SP        |
| TOTAL  |                  | 12000W              |                      |               |
| SAY  |                  | 12.00 KW            |                      |               |

| L5 DB-5 :- ( Light 4 Way TPN DB )             |  |                     |                      |               |
|---|--|---------------------|----------------------|---------------|
| Location :- THIRD FLOOR                       |  |                     |                      |               |
| Size of Sub Main :-4x16sqmm AL-ARM,XLPE CABLE |  |                     |                      |               |
| Rating of Incoming :- 63 Amp 4 Pole MCCB)     |  |                     |                      |               |
| Ckt No.                                       | No. of Points  | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
| L5/R1   | L2= 2x18<br>L5= 6x6<br>ML= 3x12<br>FP= 1x60<br>EX-F=3x60 | 372                 | 3 x 1.5              | 6A/SP         |
| L5/Y1   | L2= 6x18<br>L4= 22x12                                    | 372                 | 3 x 1.5              | 6A/SP         |
| L5/B1   | L2= 15x18<br>FP= 7x60                                    | 690                 | 3 x 1.5              | 6A/SP         |
| L5/R2   | L4= 14x12<br>L5= 2x6<br>FP= 2x60                         | 300                 | 3 x 1.5              | 6A/SP         |
| L5/Y2   | L4= 18x12<br>FP= 5x60                                    | 516                 | 3 x 1.5              | 6A/SP         |
| L5/Y2   | L4= 22x12  | 1440                | 3X 2.5               | 10A/SP        |
| Total Say                                     |  | 3690 W<br>4.00 KW   |                      |               |

|  |  |  |  |  |                              |                        |
|--|--|--|--|--|------------------------------|------------------------|
| <b>GENERAL NOTES:</b><br>1. All dimensions are in metres and are dimensions unless otherwise specified.<br>2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.<br>3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.<br>4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings. |  |  |  | NCI REVISION<br>-<br>A   | DATE<br>03.07.19<br>11.11.19 | CHECKED BY<br>NG<br>NG |
| Note:<br>1. This is a Tender Drawing. Selected Contractors shall submit a detailed shop drawing (GFC) for approval by the client.  |  |  |  |  |                              |                        |
| Purpose :<br><div style="text-align: center; font-size: 24px; font-weight: bold;">TENDER<br/>DRAWING</div>   |  |  |  | Disg-<br><b>BAREILLY SMART CITY LTD.</b><br>Project-<br><b>HANDICRAFTS PROMOTION CENTRE</b><br>Title-<br><b>HANDICRAFT CENTRE-<br/>BLOCK-1 THIRD FLOOR<br/>DB DETAIL</b><br>Scale-<br>Not to Scale @ A3<br>Checked by-<br>NG<br>Date-<br>11.11.19<br>Dwg No-<br><b>B1-30</b><br>Drawn by-<br> |                              |                        |





**L6 DB-6 :- ( Light & Raw Power 4way TPN DB )**

**Location :- TERRACE FLOOR**

**Size of Sub Main :- 4X16 AL. ARM.LT XLPE CABLE**

**Rating of Incomer :- 63 Amp 4 Pole MCCB)**

| Ckt No. | No. of Points      | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
|---------|--------------------|---------------------|----------------------|---------------|
| L6/R1   | L2=4X18<br>L4=8X12 | 168                 | 3 x 1.5              | 10A/SP        |
| L6/Y1   | L4=3X12<br>FP=2X60 | 156                 | 3 x 1.5              | 10A/SP        |
| L6/B1   | L4=4X12<br>FP=3X60 | 168                 | 3 x 1.5              | 10A/SP        |
| L6/R2   | SPARE              |                     |                      |               |
| L6/Y2   | SPARE              |                     |                      |               |
| L6/B2   | SPARE              |                     |                      |               |
| L6/R3   | 1X1000             | 1000                | 3X 4                 | 20A/SP        |
| L6/Y3   | 1X1000             | 1000                | 3X 4                 | 20A/SP        |
| L6/B3,  | SPARE              |                     |                      |               |
| Total   |                    | 2496                | Say                  | 27.00 KW      |

**GENERAL NOTES:**

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4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     |          | 11.11.19 |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |

Note:  
1. This is a Tender Drawing. Selected Contractors shall submit a detailed shop drawing (SPC) for approval by the client.

Purpose :

**TENDER  
DRAWING**

Client- **BAREILLY SMART CITY LTD.**

Project- **HANDICRAFTS PROMOTION CENTRE**

Scale- **Not to Scale @ As**

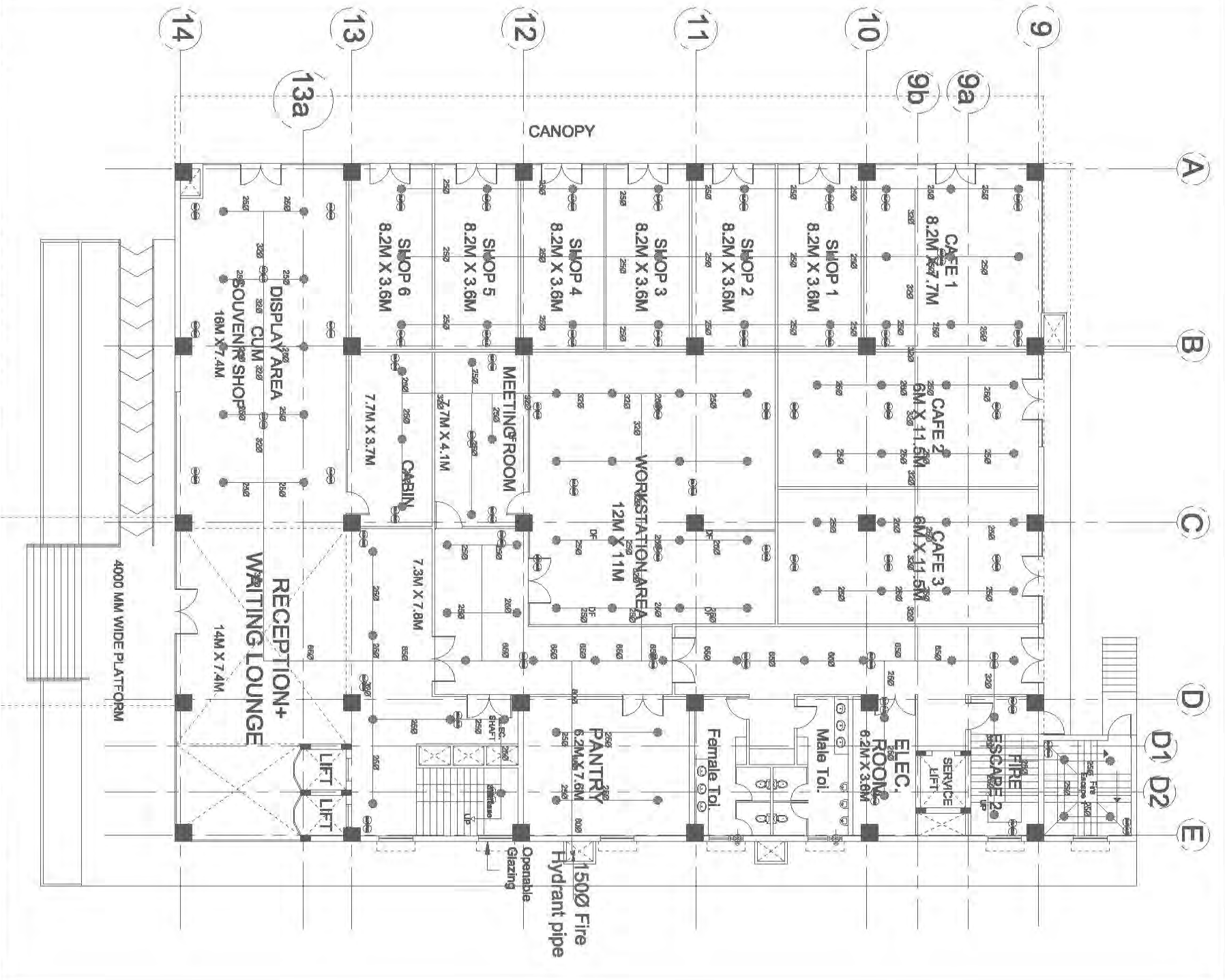
Checked by- **NG**

Date- **11.11.19**

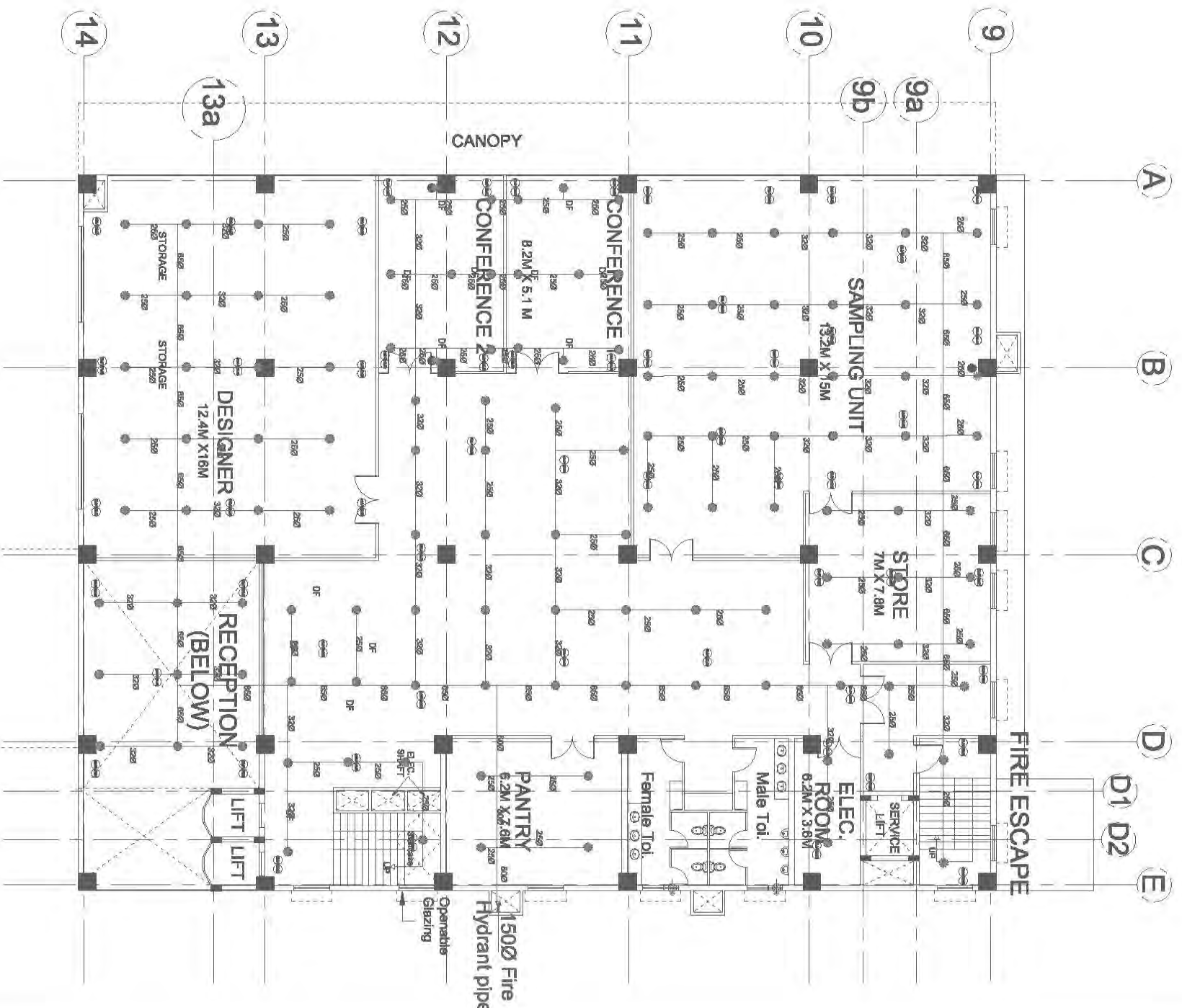
Drawn by- **B1-31B**

Title- **HANDICRAFT CENTRE-  
BLOCK-1 TERRACE  
DB DETAIL**

**SREI**  
SRI RAMESH ENGINEERING



| GENERAL NOTES:   |                   |                               |            |
|--|-------------------|-------------------------------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |                   |                               |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |                   |                               |            |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |                   |                               |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |                   |                               |            |
| NO.  | REVISION          | DATE                          | CHECKED BY |
|  |                   | 11.11.19                      | NG         |
| <div>LEGEND</div> <div>  Sprinklers </div>   |                   |                               |            |
| Purpose :  |                   | TENDER DRAWING                |            |
| Client:  |                   | BAREILLY SMART CITY LTD.      |            |
| Project:   |                   | HANDICRAFTS PROMOTION CENTRE  |            |
| Scale:   | Not to Scale @ A4 | North:                        |            |
| Drawn by:  | NG                | Date:                         | 11.11.19   |
| Checked by:  |                   | Date:                         |            |
| Title:   |                   | HANDICRAFT CENTRE- BLOCK-1 GF |            |
| FIRE FIGHTING LAYOUT   |                   | <div> </div>                  |            |



**GENERAL NOTES:**  
 1. All dimensions are in metres and are dimensions unless otherwise specified.  
 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.  
 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution.  
 4. For details such as pathways, fencing, railing, gates, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| 1   |          | 11.11.19 | NG         |

LEGEND

Sprinklers

Purpose :  
**TENDER DRAWING**

Note:  
 1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Client:  
**BAREILLY SMART CITY LTD.**

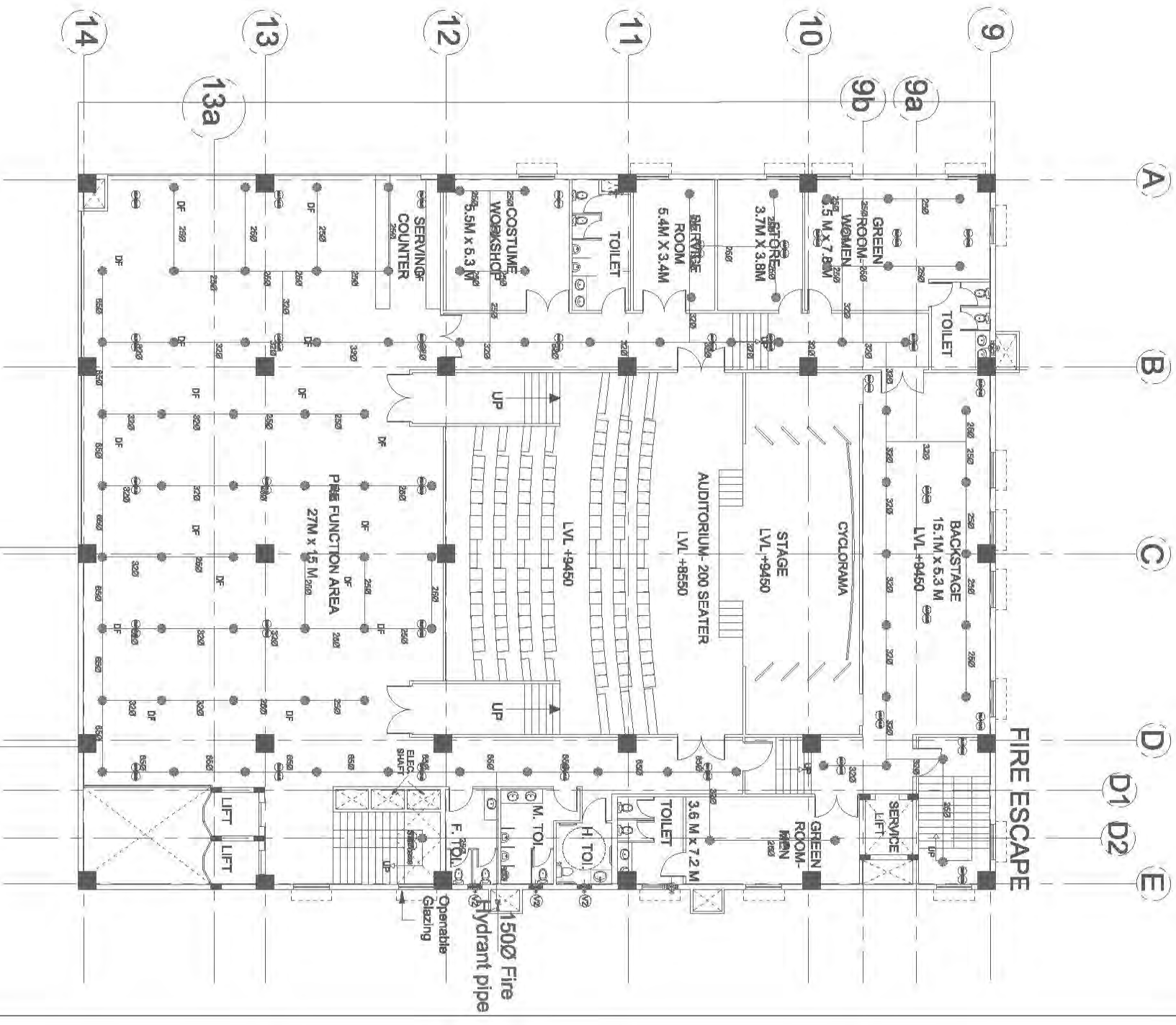
Project:  
**HANDICRAFTS PROMOTION CENTRE**

Scale:  
 Not to Scale @ A4

North:

Drawn by:  
**B-1-33**

Title:  
**HANDICRAFT CENTRE- BLOCK-1 FF FIRE FIGHTING LAYOUT**

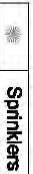


# GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
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3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, gates, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| 1   |          | 11.11.19 | NG         |

## LEGEND



Sprinklers

Purpose :

**TENDER  
DRAWING**

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: Not to Scale @ A4



Proj. No: **B1-34**

Checked by: NG

Date: 11.11.19

Drawn by:

Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

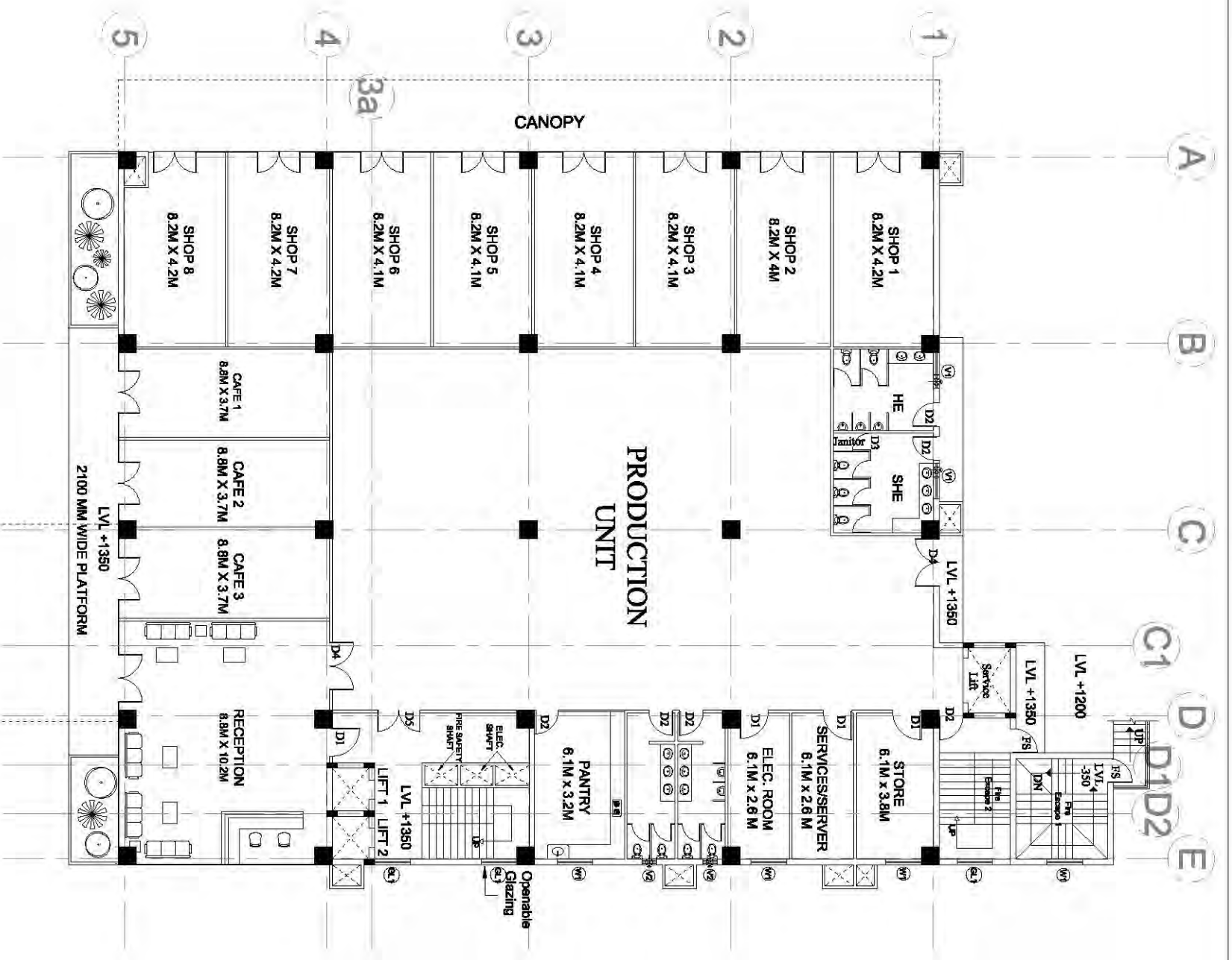
Title: **HANDICRAFT CENTRE-  
BLOCK-1 SF  
FIRE FIGHTING LAYOUT**











**GENERAL NOTES:**

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- 4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 26.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Purpose :

**TENDER  
DRAWING**

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: **Not to Scale @ A3**

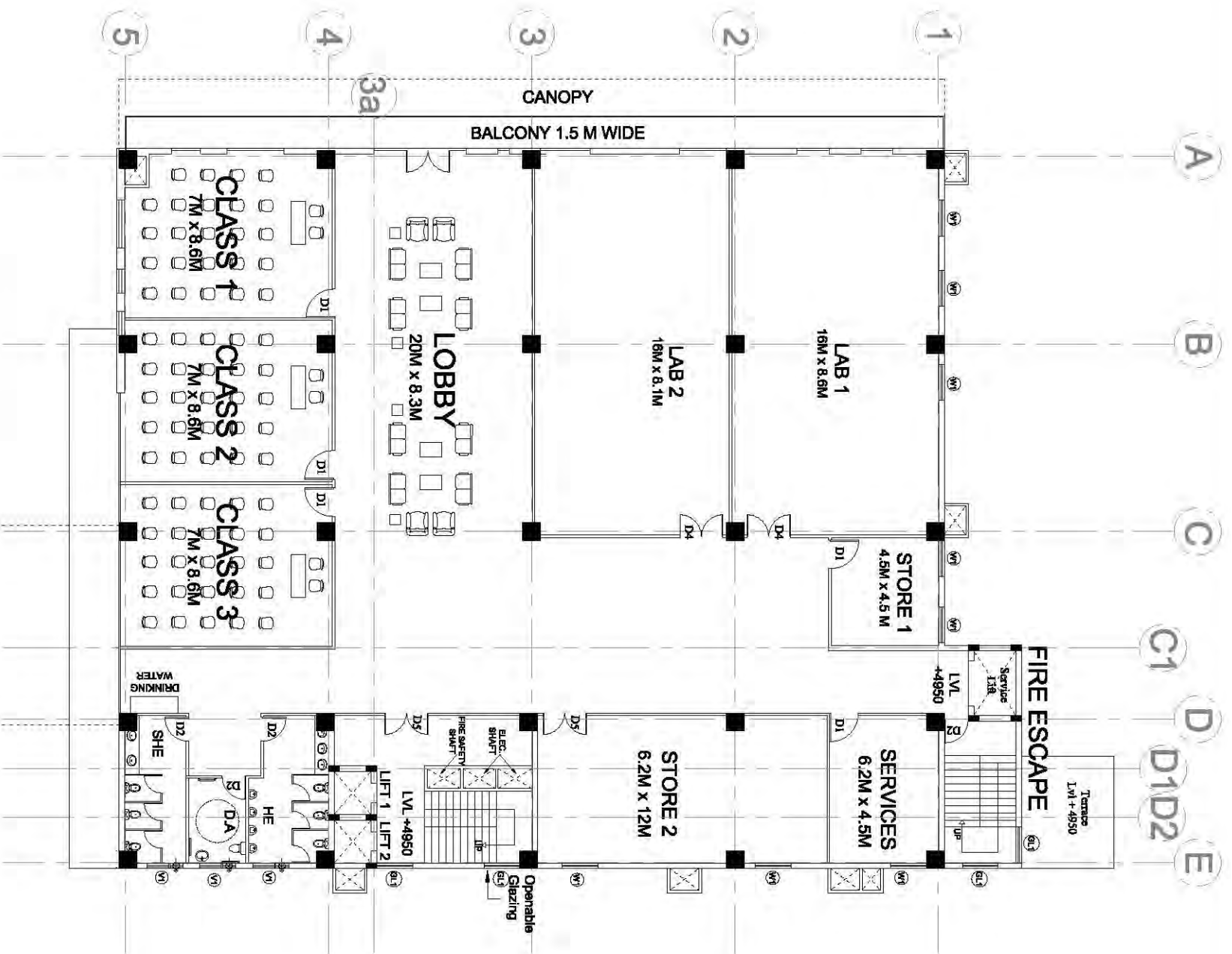
Checked by: **NG**

Date: **11.11.19**

Drawn by: **B2-01**







**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
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4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 26.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

**TENDER  
DRAWING**

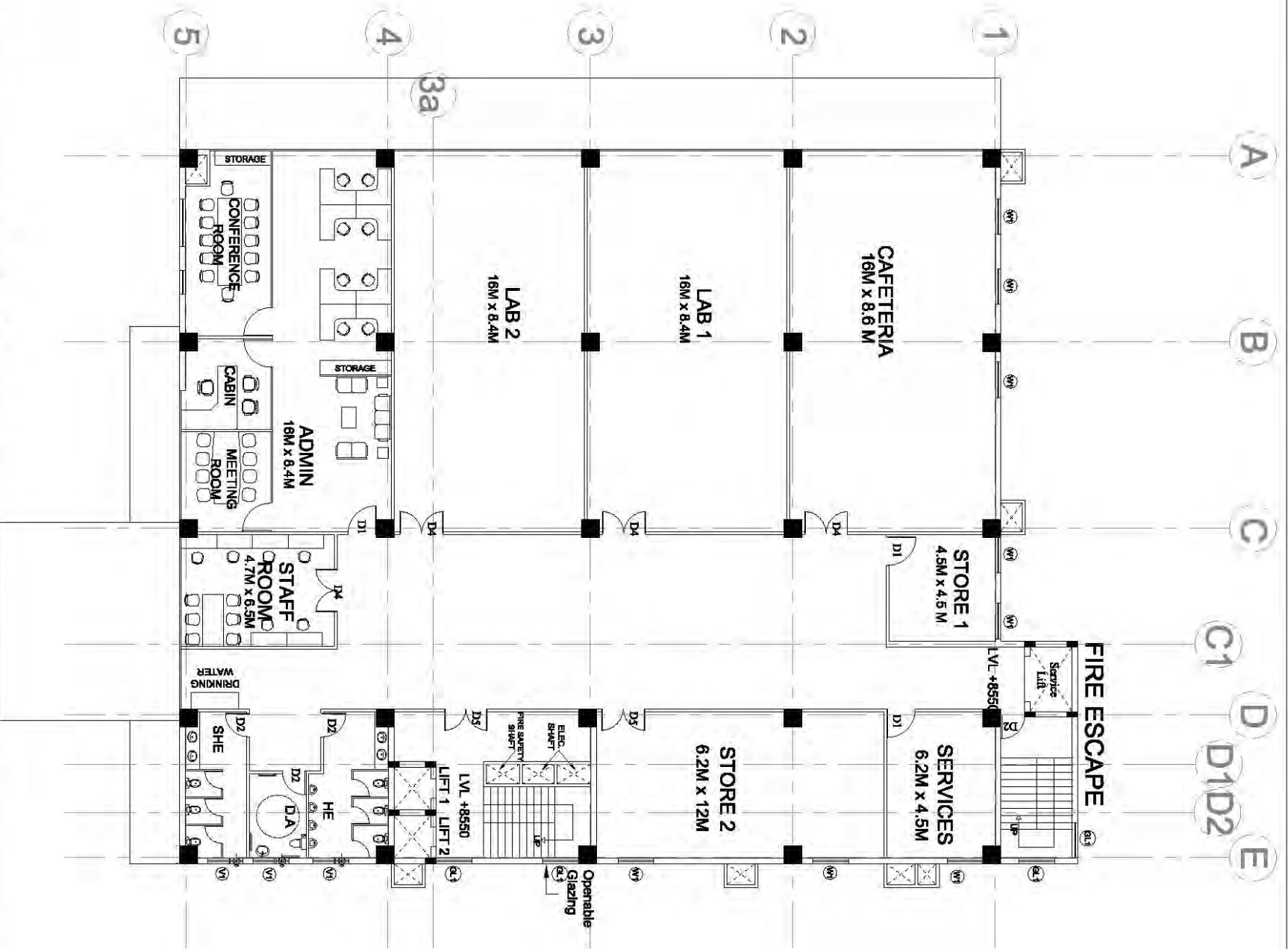
Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: **Not to Scale @ A3**  
Checked by: **NG**  
Date: **11.11.19**  
Drawn by: **B2-02**

Title: **HANDICRAFT  
CENTRE- BLOCK-2  
FIRST FLOOR PLAN**





# GENERAL NOTES:

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4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   |          | 03.07.19 | NG         |
| A   |          | 28.07.19 | NG         |
| B   |          | 18.10.19 | NG         |
| C   |          | 11.11.19 | NG         |

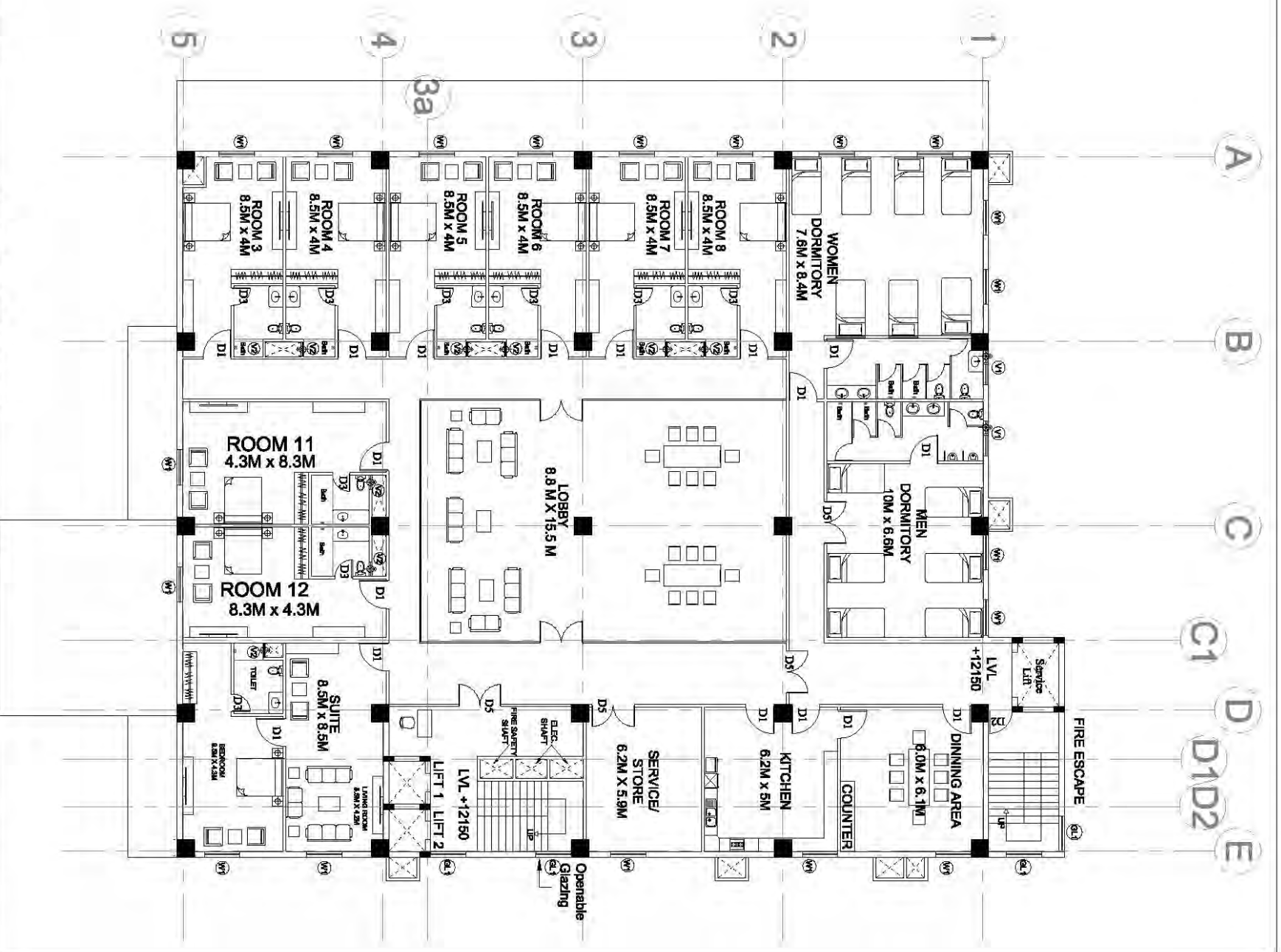
Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

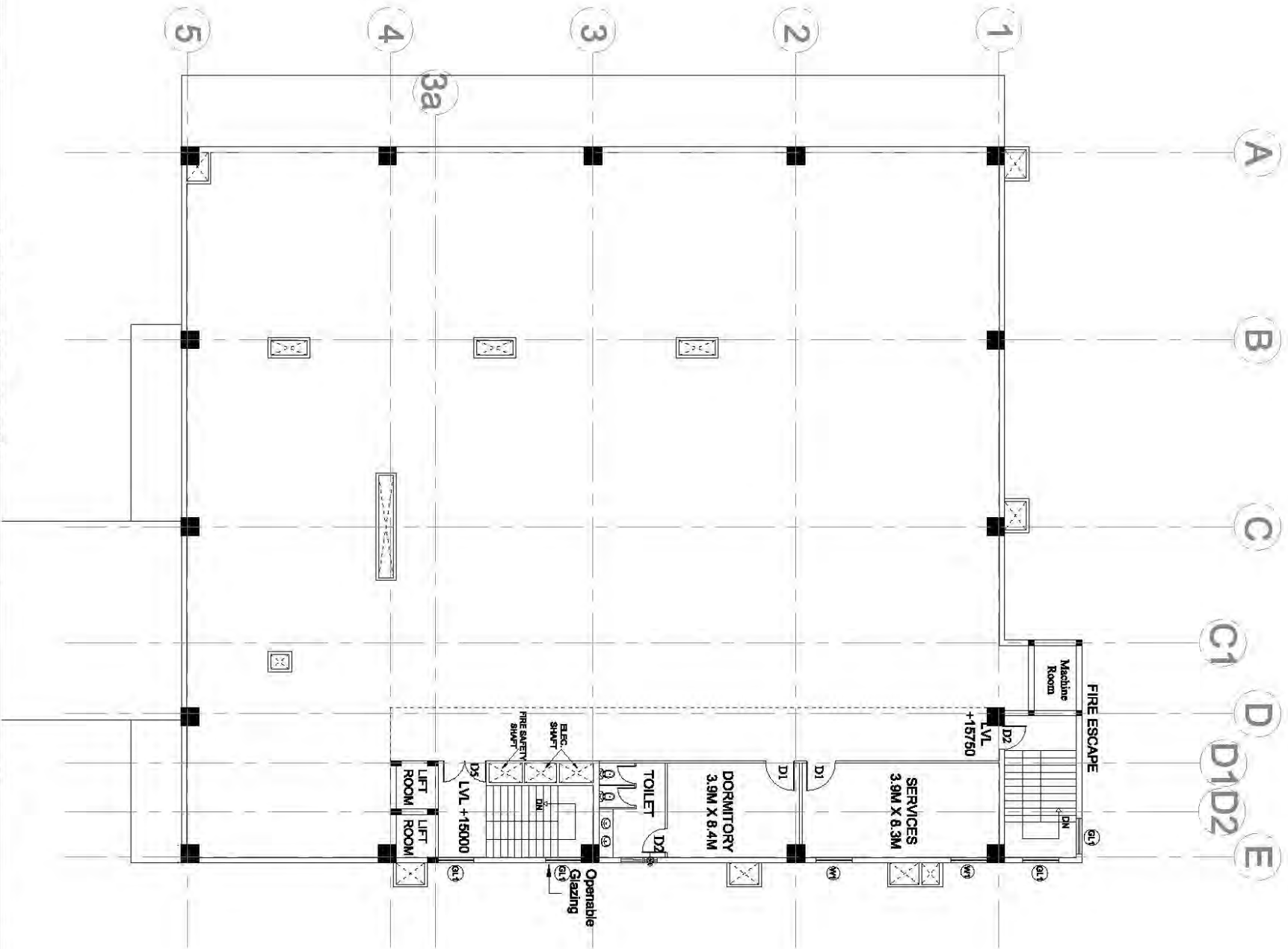
Purpose :

**TENDER  
DRAWING**

|             |  |       |                 |
|-------------|--|-------|-----------------|
| Client:     | BAREILLY SMART CITY LTD.                     |       |                 |
| Project:    | HANDICRAFTS PROMOTION CENTRE                 |       |                 |
| Scale:      | As to Show @ A3                              | Next: | As to Show @ A3 |
| Checked by: | NG   | Date: | 11.11.19        |
| Title:      | HANDICRAFT CENTRE, BLOCK-2 SECOND FLOOR PLAN |       |                 |
| Drawn by:   | B2-03  |       |                 |







**GENERAL NOTES:**

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4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     | B        | 28.07.19 | NG         |
|     | C        | 18.10.19 | NG         |
|     |          | 11.11.19 | NG         |

Note:  
1. This is a Tender Drawing.  
Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

## TENDER DRAWING

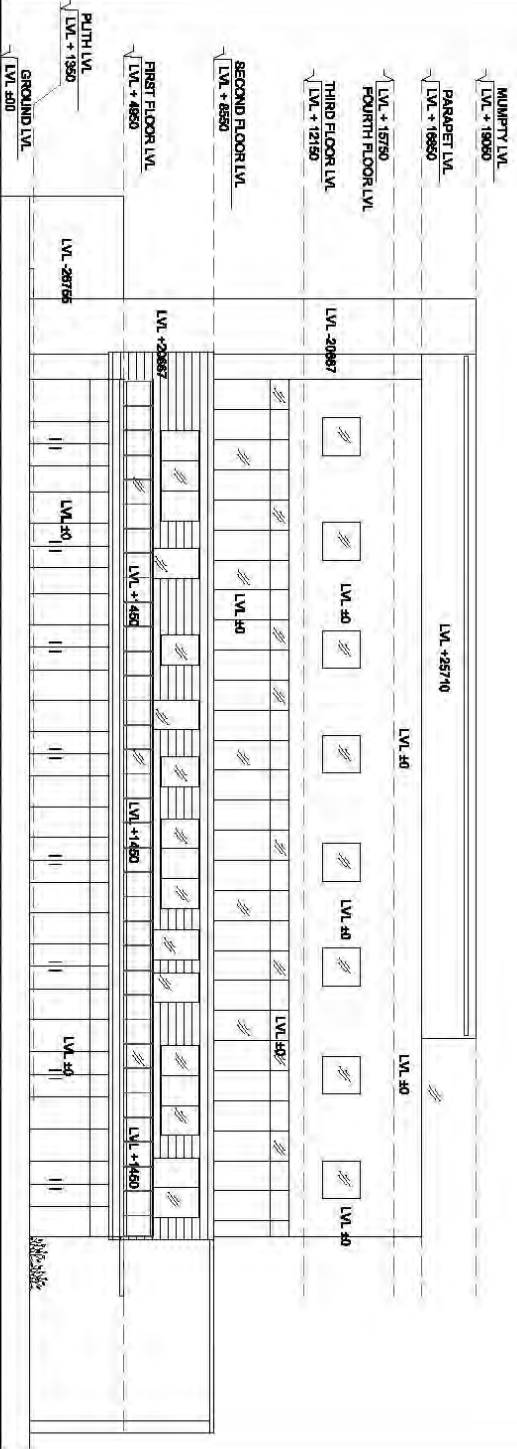
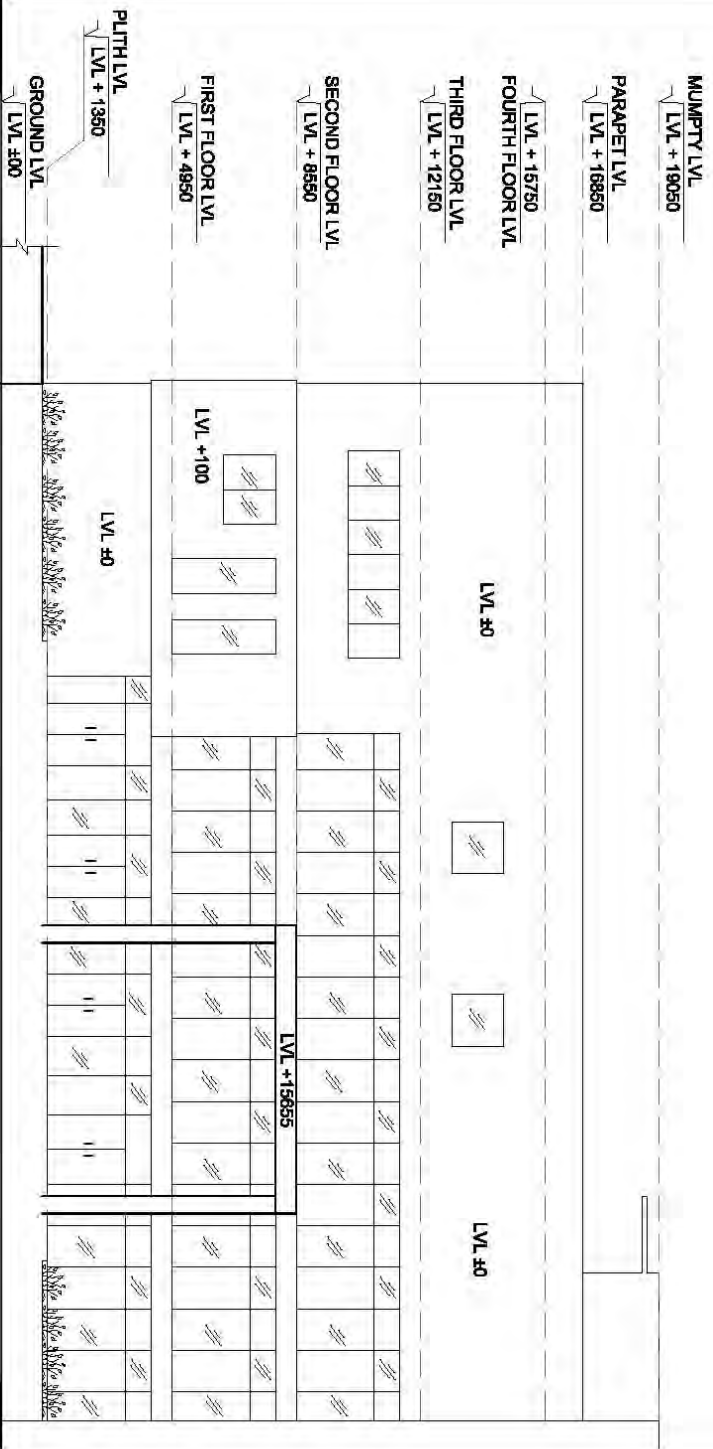
Client: **BAREILLY SMART CITY LTD.**

Project: **HANDCRAFTS PROMOTION CENTRE**

|                          |                |                      |
|--------------------------|----------------|----------------------|
| Scale: Not to Scale @ A3 | North:         | Dwg No: <b>B2-05</b> |
| Checked by: NG           | Date: 11.11.19 | Drawn by:            |

Title: **HANDCRAFT CENTRE-  
BLOCK-2  
TERRACE PLAN**





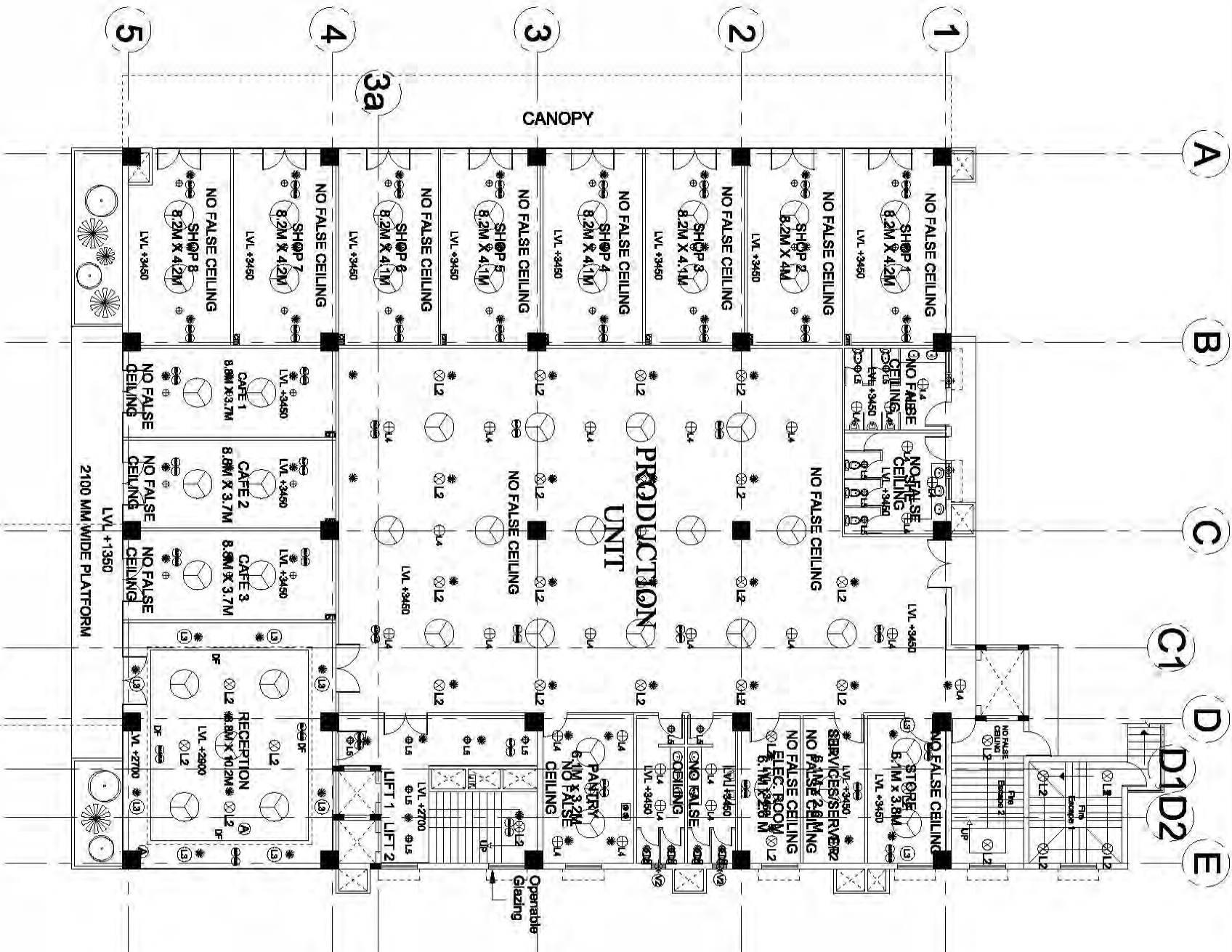
## ELEVATION F

| GENERAL NOTES:   |  |  | NO. REVISION                |                | DATE                         | CHECKED BY       |
|--|--|--|-----------------------------|----------------|------------------------------|------------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |  |  | -                           | -              | 03.07.19                     | NG               |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |  |  |                             |                | 13.11.19                     | NG               |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |  |  |                             |                |                              |                  |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |  |  |                             |                |                              |                  |
| Note:<br>1. This is a Tender Drawing.<br>Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                                |  |  | Purpose :                   |                | Client:                      |                  |
| TENDER<br>DRAWING  |  |  | BAREILLY SMART CITY L.TD.   |                | HANDICRAFTS PROMOTION CENTRE |                  |
|  |  |  |                             |                |                              |                  |
| Title: HANDICRAFT CENTRE-<br>BLOCK-2 ELEVATIONS  |  |  | Scale:<br>Not to Scale @ A3 | North:         | Drawn by:                    | By No:<br>B2-06A |
|  |  |  | Checked by: NG              | Date: 03.07.19 | Drawn by:                    |                  |
|  |  |  |                             |                | SREI                         |                  |









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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 03.07.19 | NG         |
|     | A        | 11.11.19 |            |

| LIGHTING FIXTURES LEGEND |                     |
|--------------------------|---------------------|
| SYMBOL                   | DESCRIPTION         |
| 1                        | 2W 1200 mm x 600 mm |
| 2                        | 3W 1200 mm x 600 mm |
| 3                        | 4W 1200 mm x 600 mm |
| 4                        | 5W 1200 mm x 600 mm |
| 5                        | 6W 1200 mm x 600 mm |
| 6                        | 7W 1200 mm x 600 mm |
| 7                        | 8W 1200 mm x 600 mm |
| 8                        | 9W 1200 mm x 600 mm |

**Purpose :**  
BAREILLY SMART CITY LTD.  
HANDICRAFTS PROMOTION CENTRE

**TENDER DRAWING**

**Title:**  
HANDICRAFT CENTRE-  
BLOCK-2 GROUND FLOOR  
FALSE CEILING PLAN

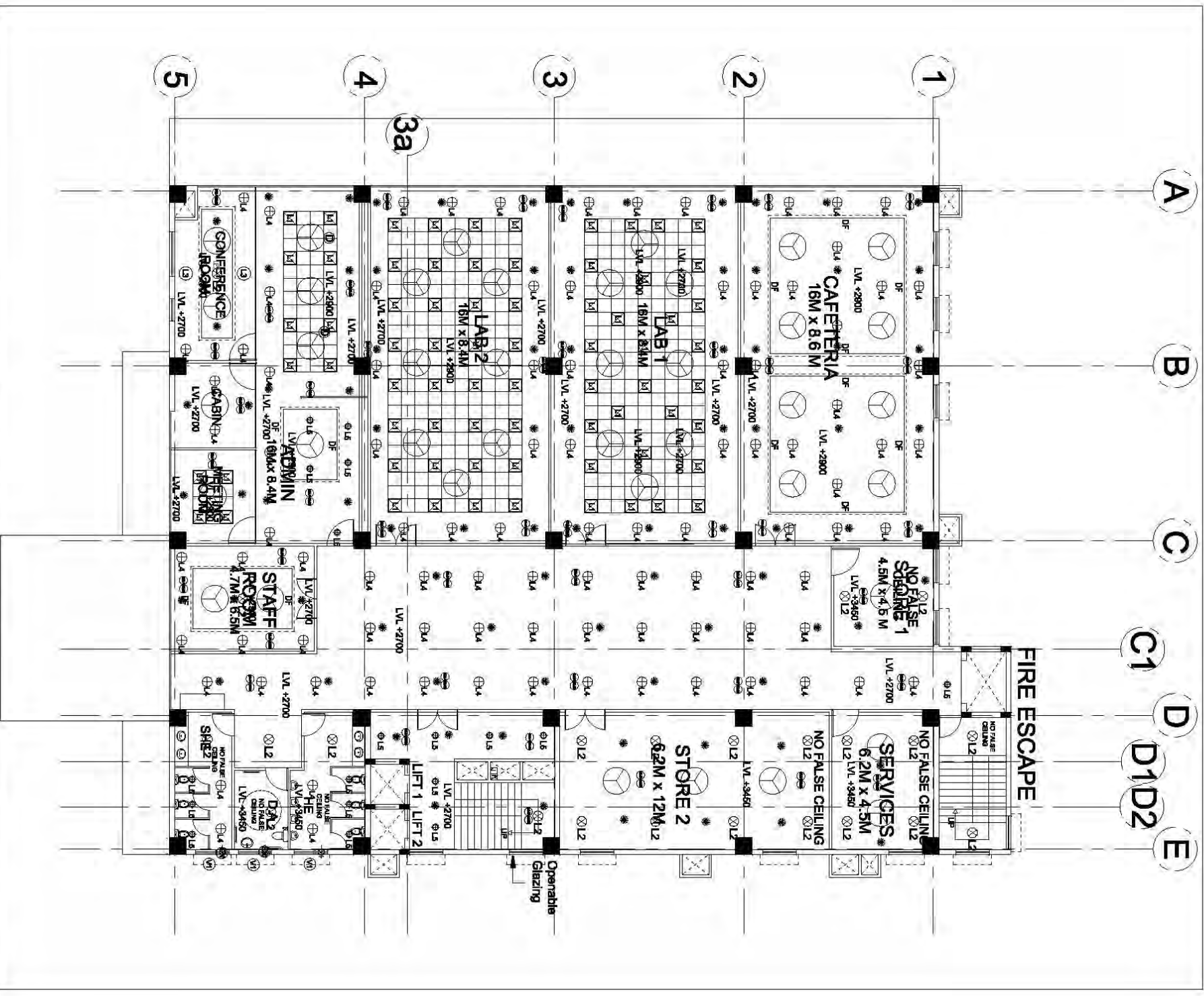
**Checked by:** NG  
**Date:** 11.11.19  
**Drawn by:**

**Scale:**  
As Shown  
**North:**  
N  
**Dwg No:**  
B2-08









**GENERAL NOTES:**

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4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

NO.

REVISION

DATE

CHECKED BY

|  |   |          |    |
|--|---|----------|----|
|  | A | 03.07.19 | NG |
|  |   | 11.11.19 |    |

SLNO

LIGHTS

DESCRIPTION

|    |     |                            |
|----|-----|----------------------------|
| 1. | ⊙12 | 8W 1200 Round (7 x 2)      |
| 2. | ⊙12 | 8W 1200 Down Light         |
| 3. | ⊙12 | 8W 1200 Circular 300W 180° |
| 4. | ⊙12 | 10W 1200 Down Light        |
| 5. | ⊙12 | 8W 1200 Down Light         |
| 6. | ⊙12 | 8W 1200 Down Light         |
| 7. | ⊙12 | 8W 1200 Down Light         |
| 8. | ⊙12 | 8W 1200 Down Light         |
| 9. | ⊙12 | 8W 1200 Down Light         |

Purpose :

Client:

TENDER DRAWING

BAREILLY SMART CITY LTD.

Scale:

Project:

1:1

HANDICRAFTS PROMOTION CENTRE

Drawn by:

Checked by:

Date:

NG

NG

11.11.19

Drawn by:

Checked by:

Date:

Scale:

Project:

1:1

HANDICRAFTS PROMOTION CENTRE

Drawn by:

Checked by:

Date:

Scale:

Project:

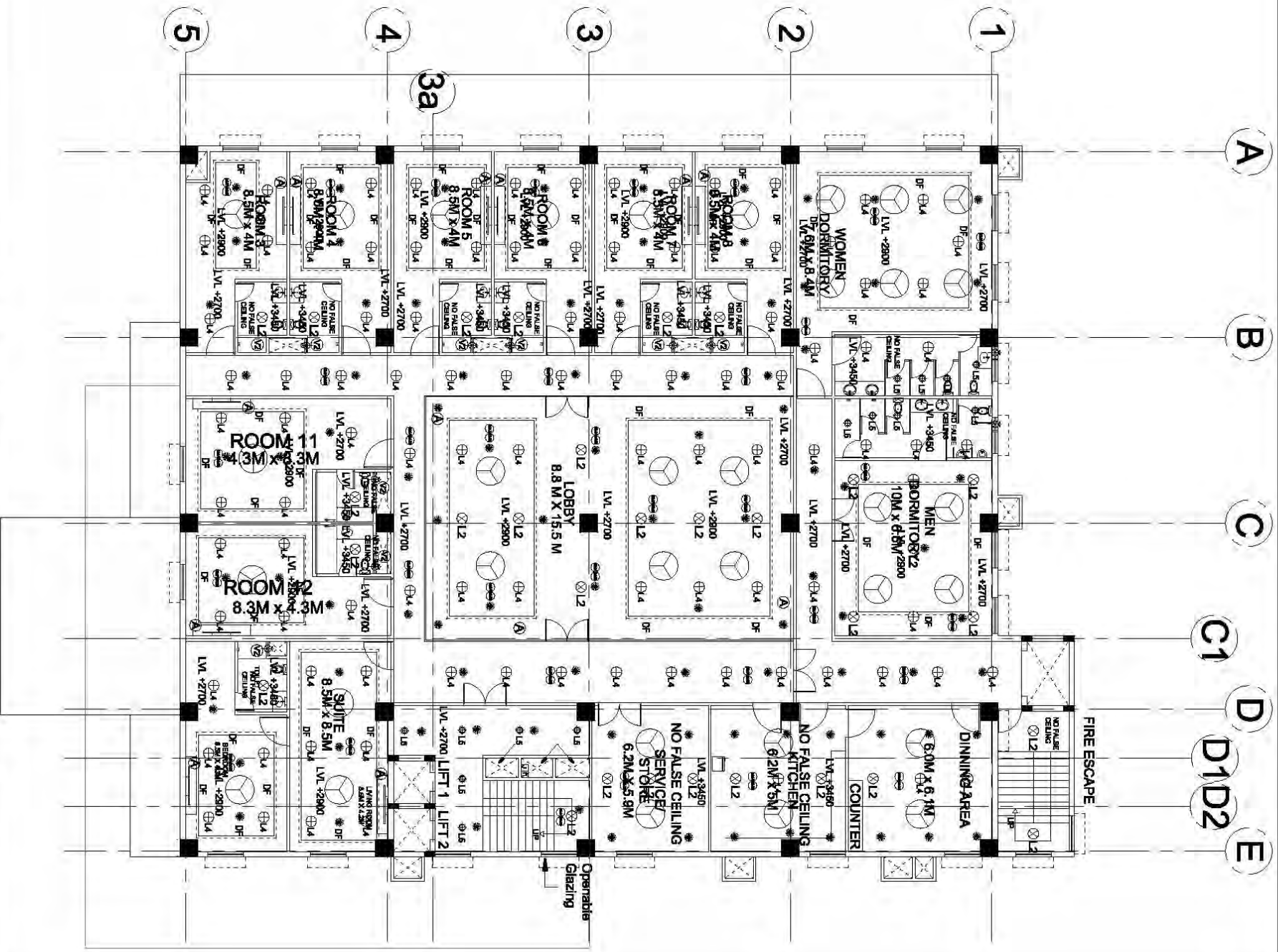
1:1

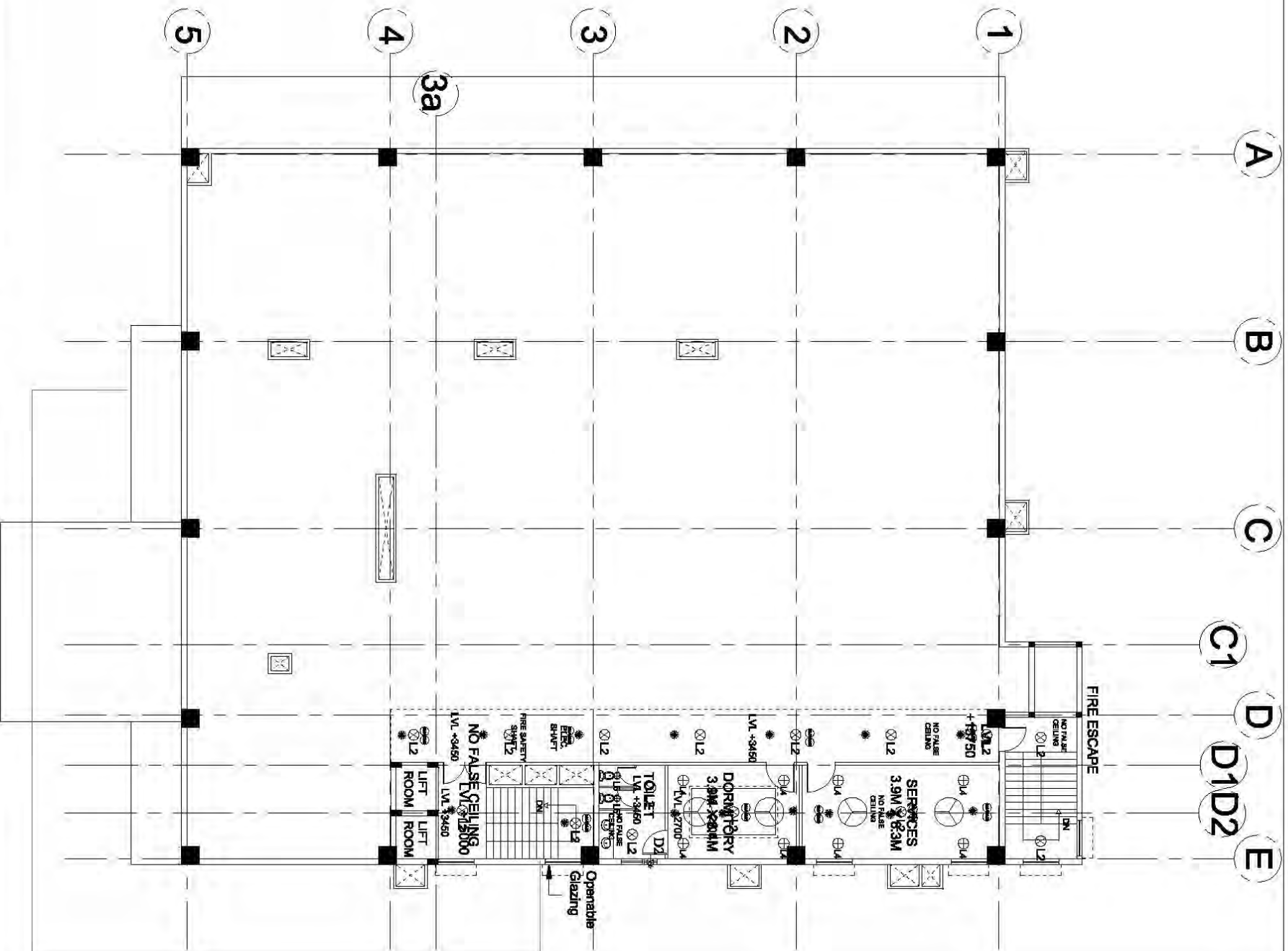
HANDICRAFTS PROMOTION CENTRE

Drawn by:

Checked by:

Date:





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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 03.07.19 | NG         |
|     | A        | 11.11.19 |            |

**LIGHTING FIXTURES LEGEND**

| Sl.No | LIGHTS | DESCRIPTION          |
|-------|--------|----------------------|
| 1.    |        | 8W LED Panel (2 x 2) |
| 2.    |        | 8W LED Down Light    |
| 3.    |        | 8W LED Track Light   |
| 4.    |        | 1W LED Linear Light  |
| 5.    |        | 8W LED Down Light    |
| 6.    |        | 8W LED Track Light   |
| 7.    |        | 8W LED Down Light    |
| 8.    |        | 8W LED Track Light   |

**Purpose :**

**TENDER DRAWING**

**Client:**  
BAREILLY SMART CITY LTD.

**Project:**  
HANDICRAFTS PROMOTION CENTRE

**Scale:**  
Not to Scale @ A3

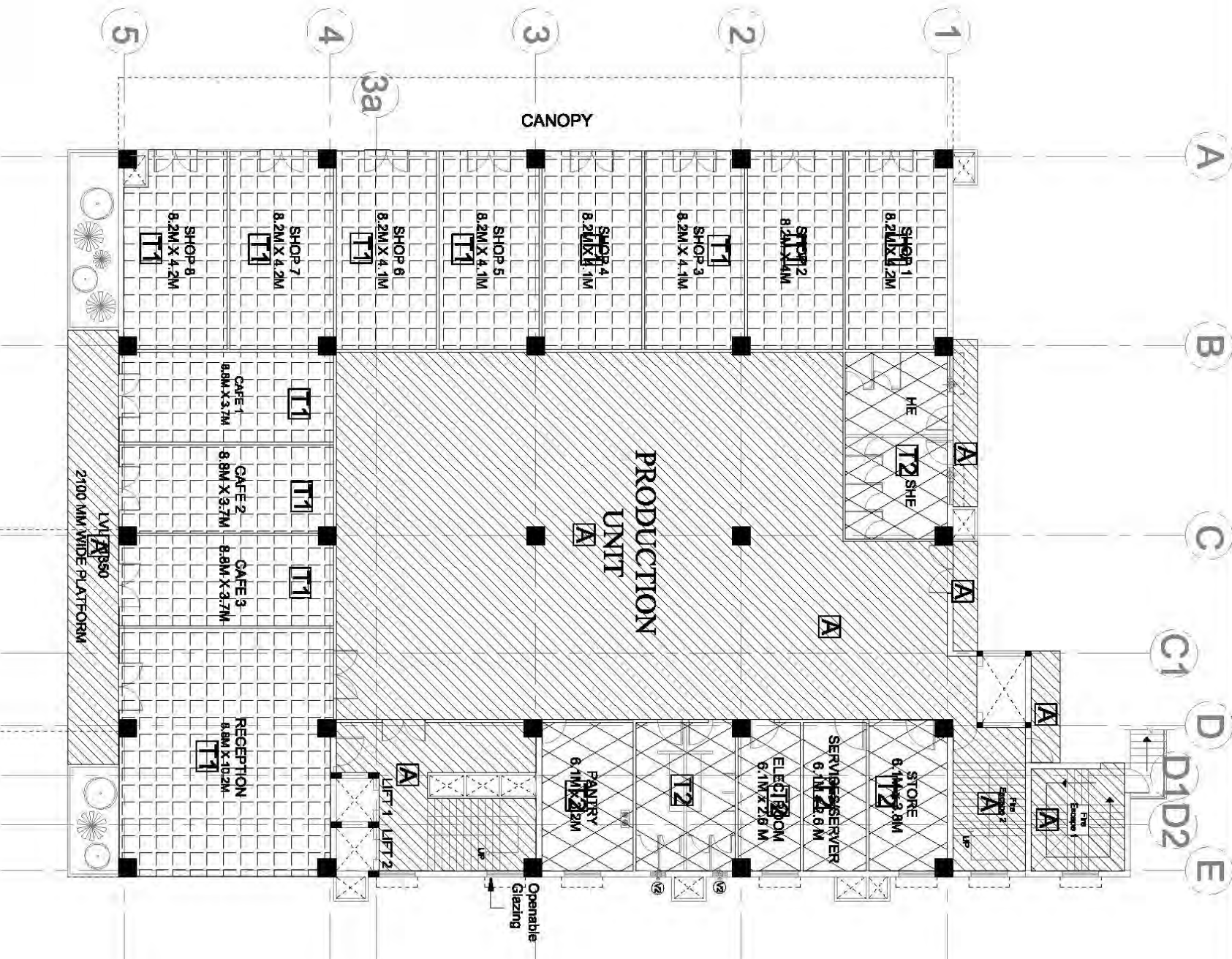
**Drawn by:**  
NG

**Date:**  
11.11.19

**Drawn by:**  
B2-12

**Title:**  
HANDICRAFT CENTRE-  
BLOCK-2 TERRACE  
FALSE CEILING PLAN





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| NO.      | REVISION | DATE     | CHECKED BY |
|----------|----------|----------|------------|
| -        | A        | 03/07/19 | NG         |
| 11.11.19 |          |          |            |

| LEGEND |                  |
|--------|------------------|
| TYPE   | DESCRIPTION      |
| A      | GRAVITE          |
| B      | BRICK MOGA       |
| C      | SOLID WOOD FLOOR |
| D      | CARPET           |
| T1     | TILES 600X900    |
| T2     | TILES 600X900    |
| G      | GRASS GRAPET     |
| E      | EPoxy FLOORING   |

**Purpose :**  
**TENDER DRAWING**

**Note:**  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

**Client:**  
BAREILLY SMART CITY LTD.

**Project:**  
HANDICRAFTS PROMOTION CENTRE

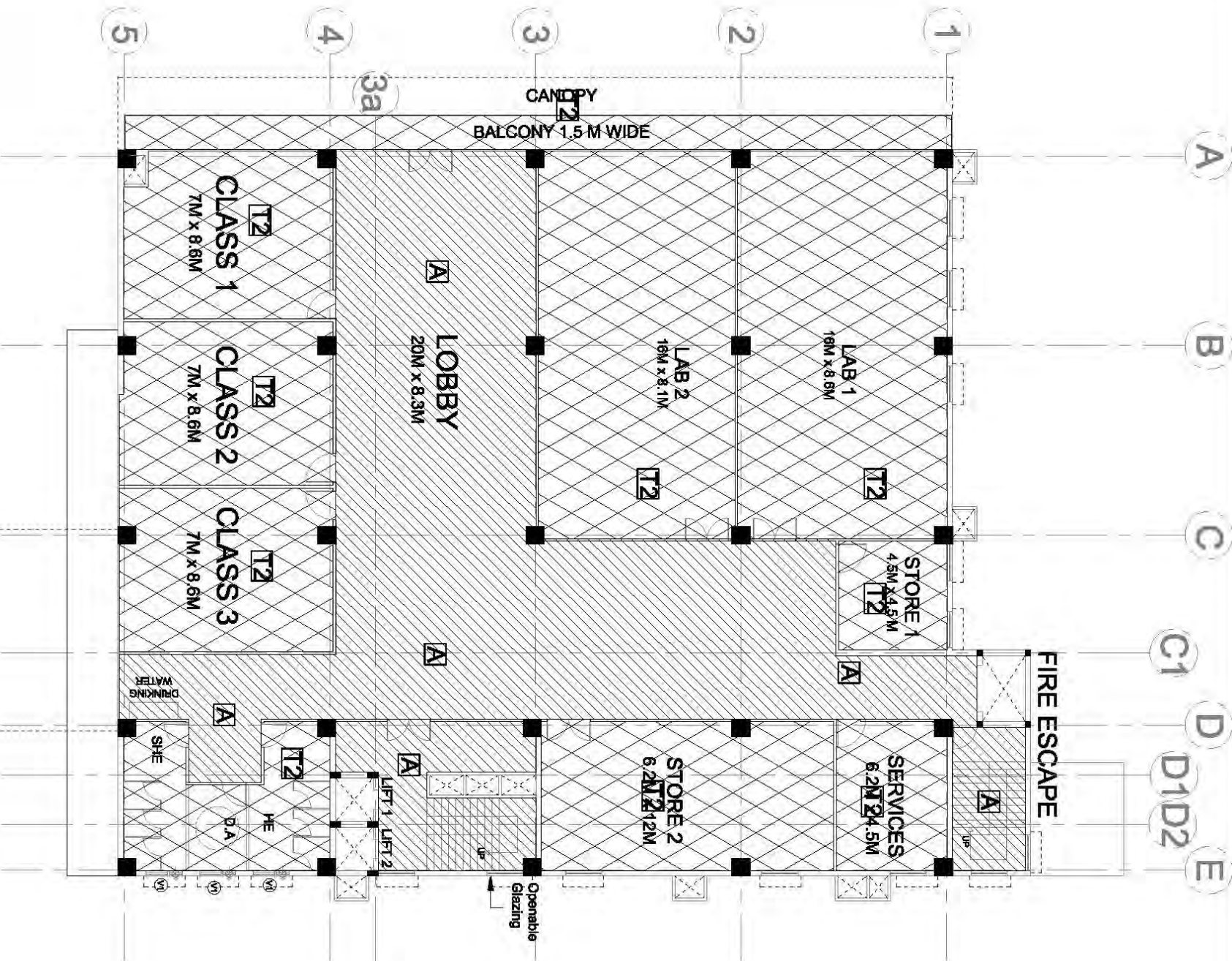
**Scale:**  
Not to Scale @ A3

**North:**  
↗

**Drawn by:**  
B2-13

**Title:**  
HANDICRAFT CENTRE-  
BLOCK 2- GF-  
FLOORING LAYOUT PLAN

**Drawn by:**



**GENERAL NOTES:**  
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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 09.07/19 | NG         |
|     |          | 11.11.19 |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |

| LEGEND     |                  |
|------------|------------------|
| TILE MATCH | DESCRIPTION      |
| A          | GRANITE          |
| B          | BRICK MOQA       |
| C          | SOLID WOOD FLOOR |
| D          | CARPET           |
| T1         | TILES 600X900    |
| T2         | TILES 600X900    |
| G          | GRASS CARPET     |
| E          | EPoxy FLOORING   |

**Purpose :**  
**TENDER DRAWING**

**Note:**  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Client:  
**BAREILLY SMART CITY LTD.**

Project:  
**HANDICRAFTS PROMOTION CENTRE**

Scale:  
Not to Scale @ A3

North:  
↗


Day No:  
**B2-14**

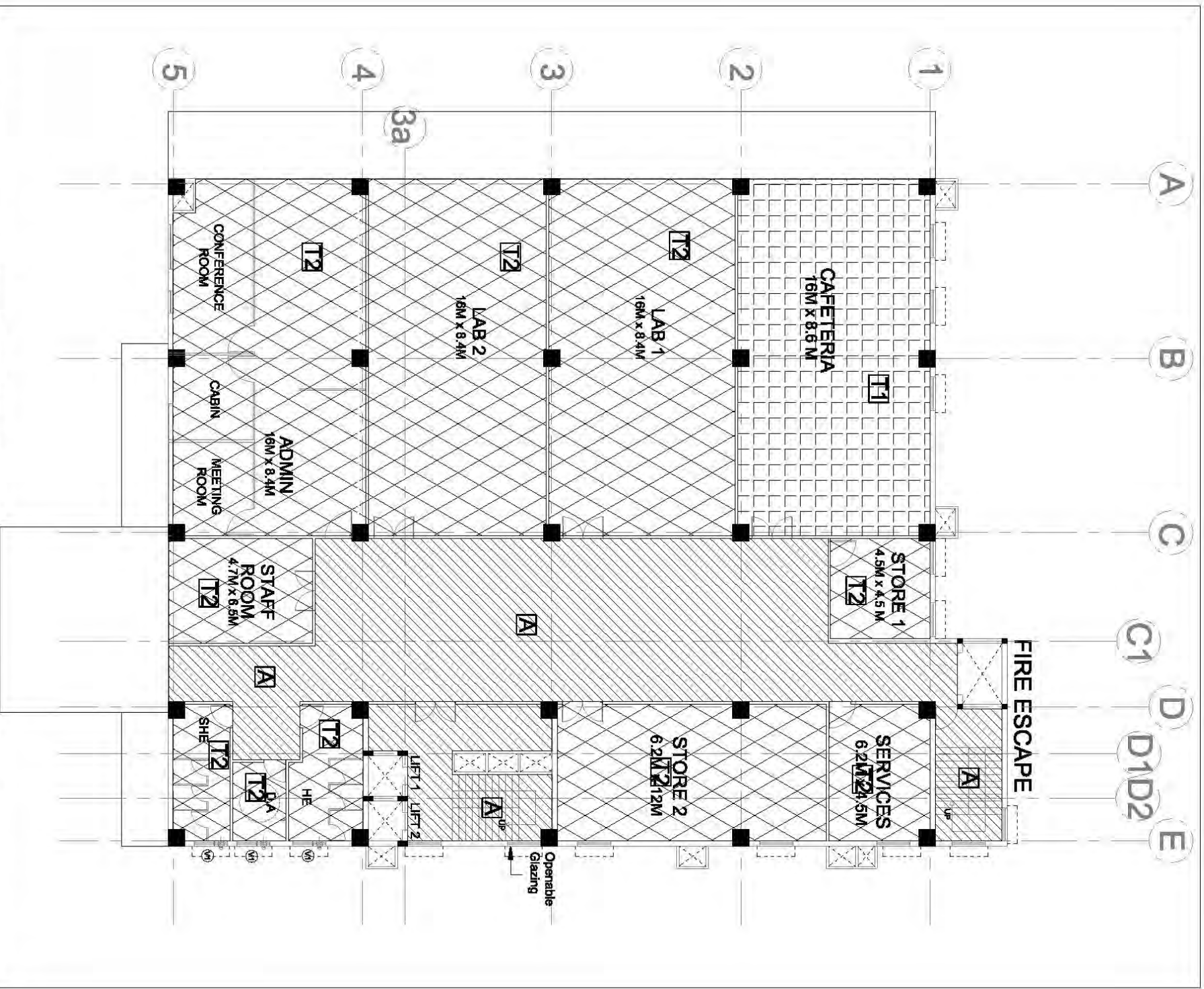
Checked By: NG

Date: 11.11.19

Drawn by:

Title:  
**HANDICRAFT CENTRE- BLOCK 2, FF- FLOORING LAYOUT PLAN**

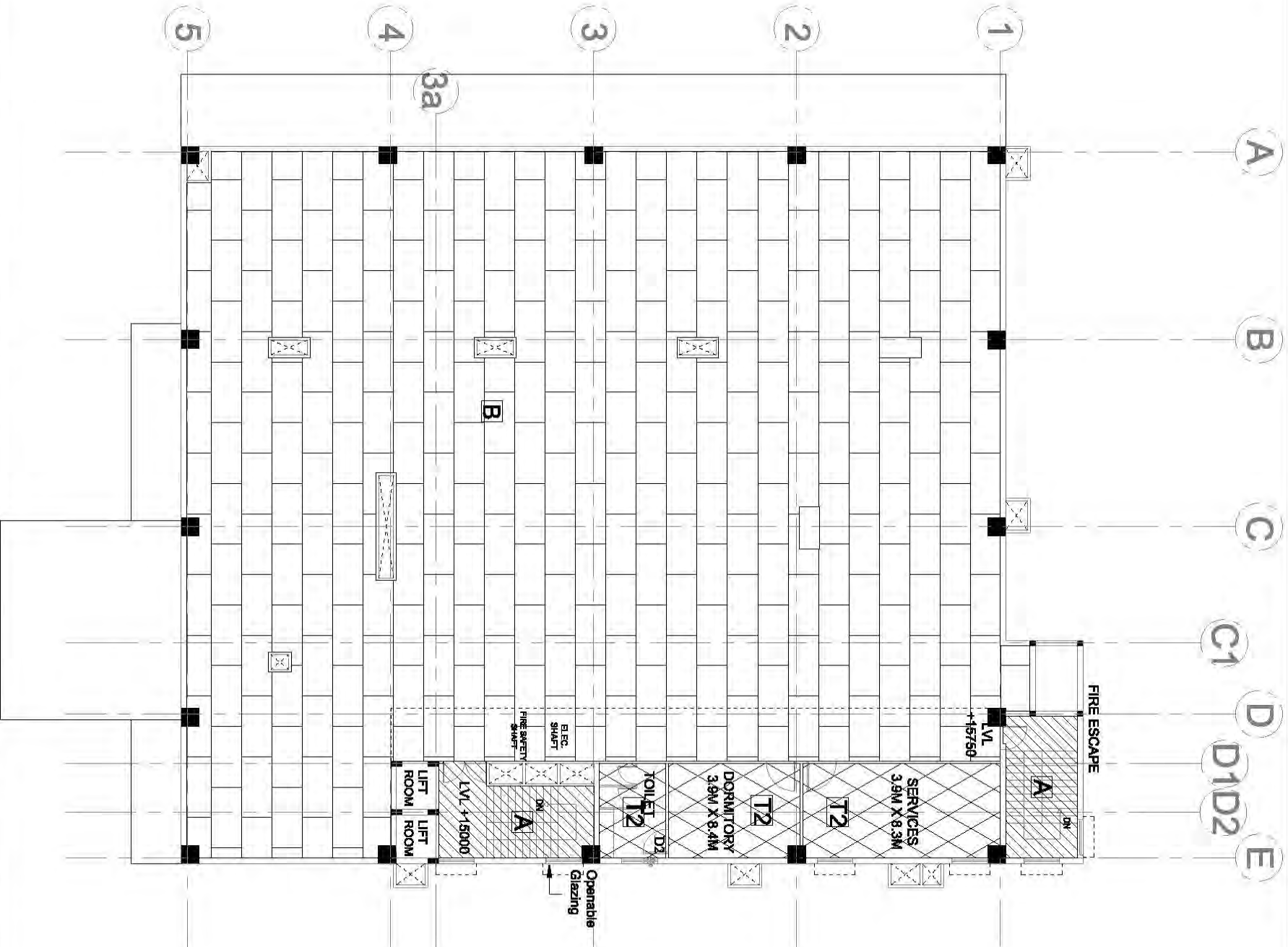
**SREI**  
Specialised Real Estate Services











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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 09/07/19 | NG         |
|     | A        | 11/11/19 |            |

| LEGEND       |                  |
|--------------|------------------|
| TYPE / HATCH | DESCRIPTION      |
| A            | GRANITE          |
| B            | BRICK ROOF       |
| C            | SOLID WOOD FLOOR |
| D            | CARPET           |
| T1           | TILES 600X600    |
| T2           | TILES 600X300    |
| Q            | GRASS CARPET     |
| E            | EPOXY FLOORING   |

**Purpose :**

**TENDER DRAWING**

**Note:**

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**Client:**

**BAREILLY SMART CITY LTD.**

**Project:**

**HANDICRAFTS PROMOTION CENTRE**

**Scale:**

Not to Scale @ A3

**North:**

**Drawn by:**

**B2-17**

**Checked by:**

NG

**Date:**

11.11.19

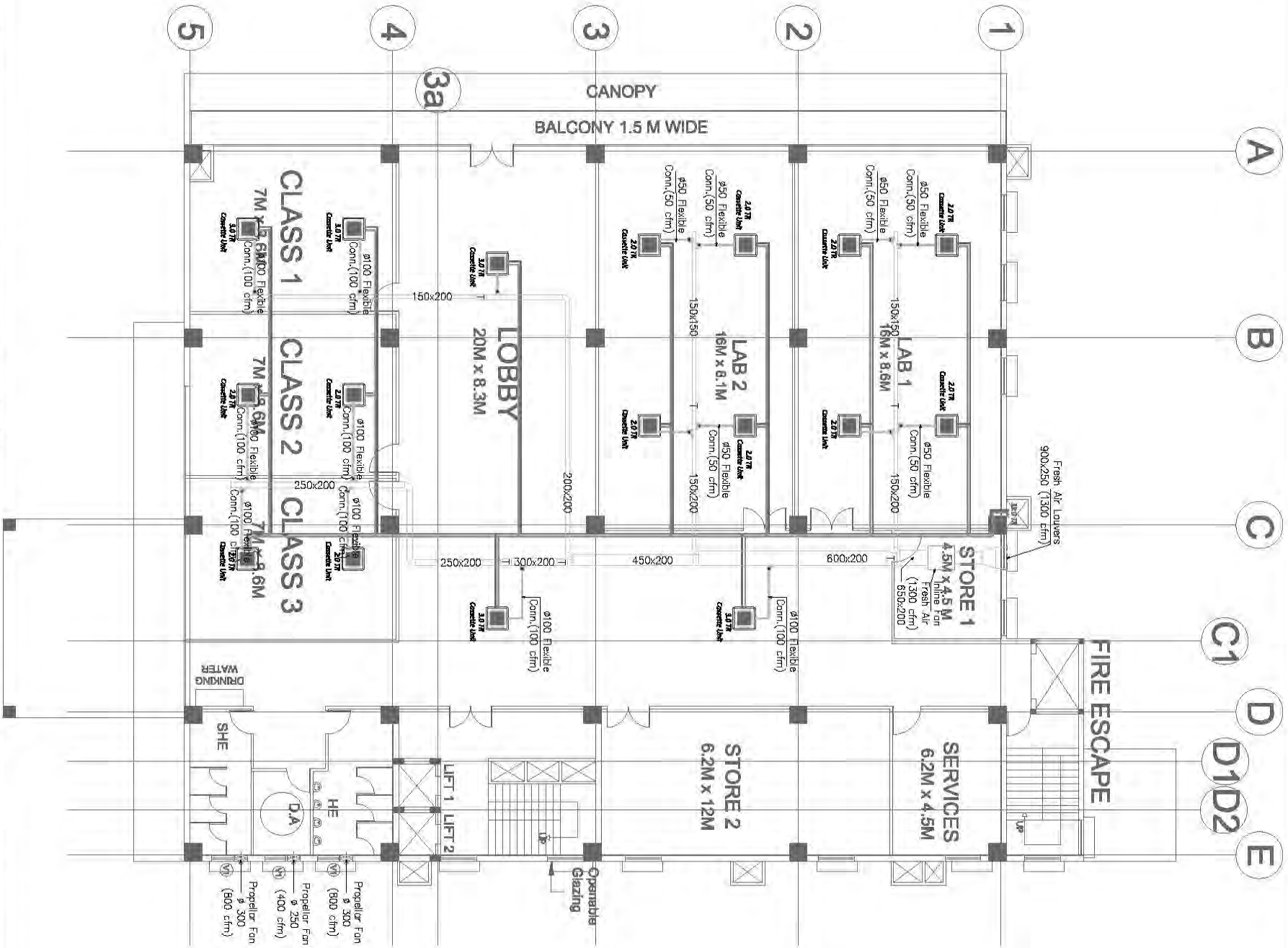
**Drawn by:**

**Title:**

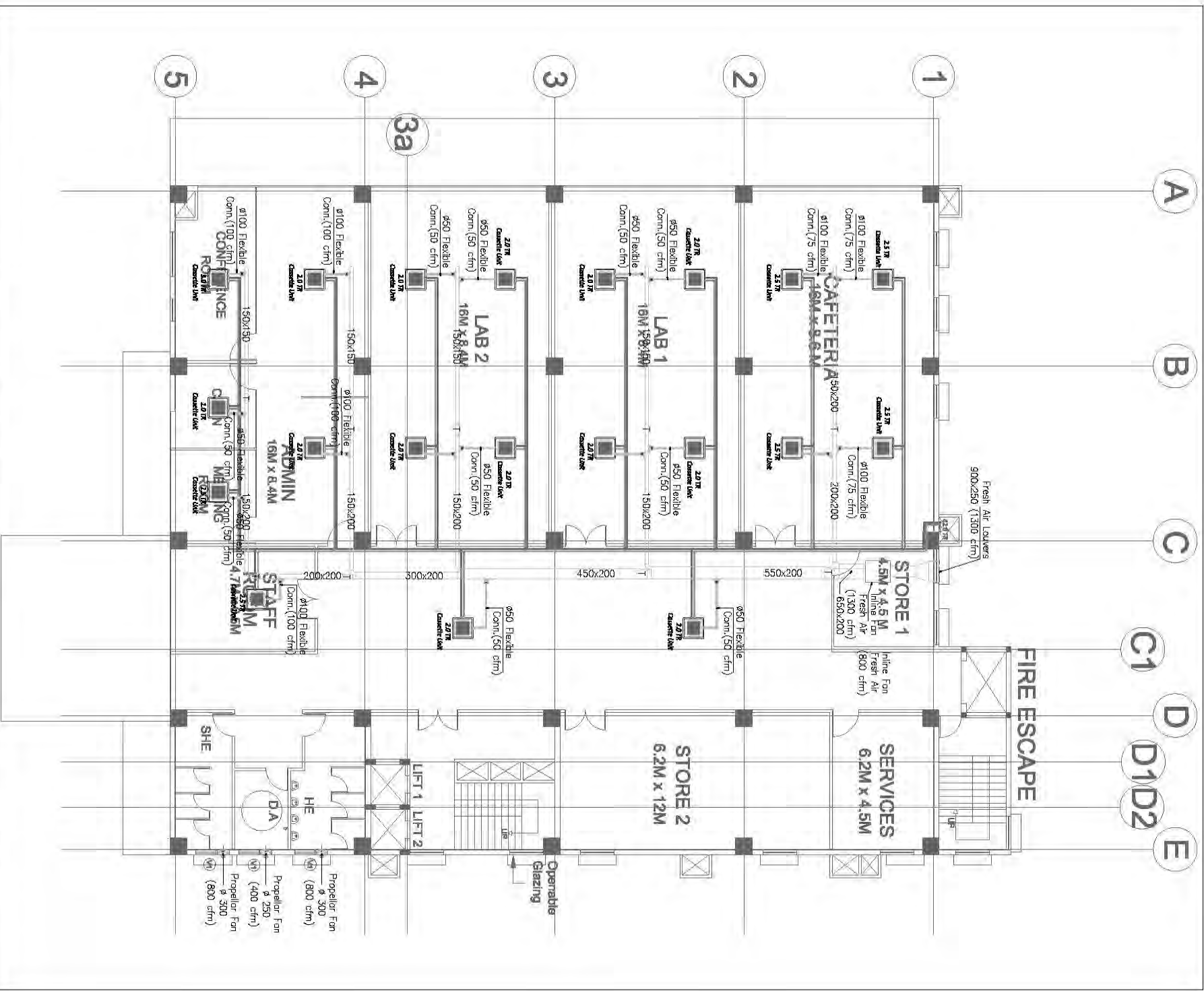
**HANDICRAFT CENTRE- BLOCK 2- TERRACE- FLOORING LAYOUT PLAN**

**SREI**





| GENERAL NOTES:   |                |  |            |
|--|----------------|--|------------|
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| NO.  | REVISION       | DATE                                   | CHECKED BY |
| -  | -              | 03.07.19                               | NG         |
| -  | -              | 11.11.19                               | NG         |
| Note:<br>1. This is a Tender Drawing.<br>Selected Connectors shall submit a detailed shop drawing (GFC) for approval by the client.                                |                |  |            |
| Purpose :  |                | Client : BAREILLY SMART CITY LTD.      |            |
| TENDER DRAWING   |                | Project : HANDICRAFTS PROMOTION CENTRE |            |
| Scale: Not to Scale @ A3   | North:         | Dwg No: B2-19                          |            |
| Checked by: NG   | Date: 11.11.19 | Drawn by:                              |            |
| Title: HANDICRAFT CENTRE- BLOCK-2 FIRST FLOOR HVAC LAYOUT  |                | SREI                                   |            |



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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | -        | 03.07.19 | NG         |
| -   | -        | 11.11.19 | NG         |

**Purpose :**

**TENDER DRAWING**

**Client:**  
BAREILLY SMART CITY LTD.

**Project:**  
HANDICRAFTS PROMOTION CENTRE

**Scale:**  
Not to Scale @ A3

**Checked by:** NG

**North:**  
↗

**Date:** 11.11.19

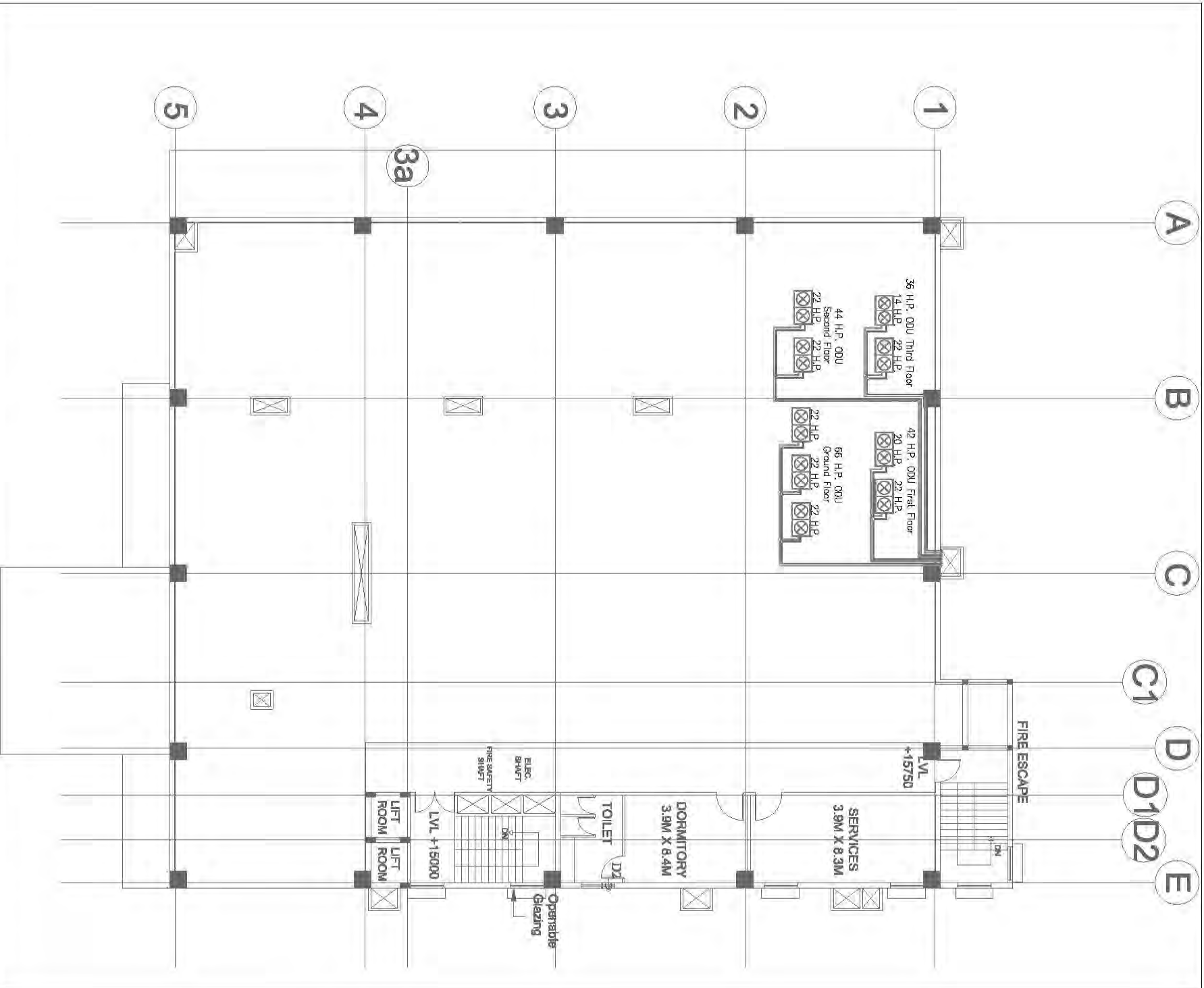
**Drawn by:**

**Proj. No.:** B2-20

**Title:**  
HANDICRAFT CENTRE-  
BLOCK-2 SECOND FLOOR  
HVAC LAYOUT








| GENERAL NOTES:   |          |                                       |            |
|--|----------|---------------------------------------|------------|
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| NO.  | REVISION | DATE                                  | CHECKED BY |
|  | -        | 03.07.19                              | NG         |
|  |          | 11.11.19                              |            |
| Note:<br>1. This is a Tender Drawing.<br>Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.                                |          |                                       |            |
| Purpose :  |          | Client: BAREILLY SMART CITY LTD.      |            |
| TENDER DRAWING   |          | Project: HANDICRAFTS PROMOTION CENTRE |            |
| Scale: Not to Scale @ A4   |          | North:                                |            |
| Checked by: NG   |          | Date: 11.11.19                        |            |
| Title: HANDICRAFT CENTRE- BLOCK-2 TERRACE HVAC LAYOUT  |          | Dwg No: B2-22                         |            |
|  |          | Drawn by:                             |            |



| DB L1 :- ( Light & RAW Power 12 WAYTPN VERTICAL DB ) |                  |                        |                      |               |
|--|------------------|------------------------|----------------------|---------------|
| Location :- SHOPS , GROUND FLOOR,BLOCK-2             |                  |                        |                      |               |
| Size of Sub Main :-3.5x95 Sqmm AL ARM XLPE CABLE     |                  |                        |                      |               |
| Rating of Incomer :- 125 A4POLE,MCCB)                |                  |                        |                      |               |
| Ckt No.  | Location of Load | Connected in Load Watt | Size of Wire in Sqmm | Rating of MCB |
| B2/L1/R1   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/Y1   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/B1   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/R2   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/Y2   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/B2   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/R3   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/Y3   | (Shope)          | 3000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/B3   | (SPARE)          |                        |                      |               |
| B2/L1/R4   | (CAFE-1)         | 5000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/Y4   | (CAFE-2)         | 5000                   | 4X16                 | 63A/TP/MCB    |
| B2/L1/B4   | (CAFE-3)         | 5000                   | 4X16                 | 63A/TP/MCB    |
| Total  |                  | 39000                  | Say                  | 40.00 KVV     |

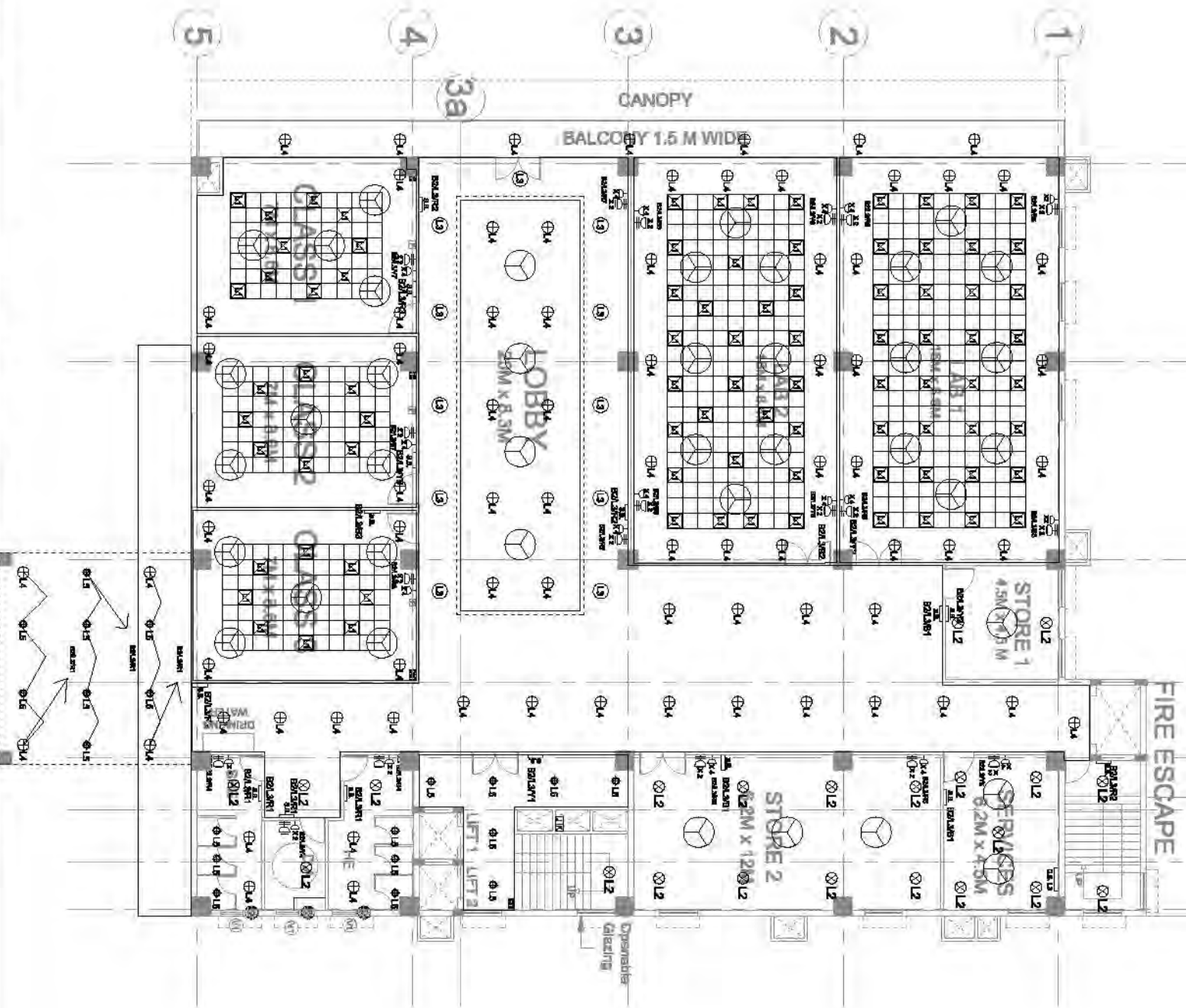
| DB-L2 :- ( Light & Row Power 12 Way TPN DB VERTICAL ) |                                 |                     |                      |               |
|---|---------------------------------|---------------------|----------------------|---------------|
| Location :- GROUND FLOOR                              |                                 |                     |                      |               |
| Size of Sub Main :-3.5x95sqmm AL ARM XLPE CABLE       |                                 |                     |                      |               |
| Rating of Incomer :- 125 Amp 4 Pole MCCB,36KA)        |                                 |                     |                      |               |
| Ckt No.   | No. of Points                   | Connected Load Watt | Size of Wire in Sqmm | Rating of MCB |
| B2/L2/R1  | L2= 4X18<br>L3= 8X6<br>FP= 5X60 | 420                 | 3 X 1.5              | 6A/SP         |
| B2/L2/Y1  | L5= 6X6                         | 72                  | 3 X 1.5              | 6A/SP         |
| B2/L2/B1  | L4= 6X12<br>FP= 1X60            | 180                 | 3 X 1.5              | 6A/SP         |
| B2/L2/R2  | L4= 4X12<br>L5= 6X6<br>ML= 2X12 | 132                 | 3 X 1.5              | 6A/SP         |
| B2/L2/Y2  | L2= 5X18<br>L3= 2X6<br>FP= 4X60 | 342                 | 3 X 1.5              | 6A/SP         |
| B2/L2/B2  | L2= 6X18                        | 108                 | 3 X 1.5              | 6A/SP         |
| B2/L2/R3  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y3  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B3  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R4  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y4  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B4  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R6  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y6  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B6  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R7  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y7  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B7  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R8  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y8  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B8  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R9  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y9  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B9  | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R10   | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y10   | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/B10   | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/R11   | 1X1000                          | 1000                | 3 X 4                | 20A/SP        |
| B2/L2/Y11   |                                 |                     |                      |               |
| B2/L2/B11   |                                 |                     |                      |               |
| TOTAL   |                                 | 23254W              | SAY                  | 24.00KVV      |

|  |  |   |          |   |            |
|--|--|---|----------|---|------------|
| <b>GENERAL NOTES:</b>  |  | NO. REVISION  |          | DATE  | CHECKED BY |
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| Note: This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.   |  |   |          |   |            |
| <div> <div>Purpose :</div> <div>TENDER DRAWING</div> </div>  |  | <div> <div>Client</div> <div>BAREILLY SMART CITY LTD.</div> </div>  |          | <div> <div>Project</div> <div>HANDICRAFTS PROMOTION CENTRE</div> </div> |            |
| <div> <div>Scale:</div> <div>As per Scale @ A3</div> </div>  |  | <div> <div>Date</div> <div>11.11.19</div> </div>  |          | <div> <div>Draw No.</div> <div>B2-24</div> </div>                       |            |
| <div> <div>Checked by:</div> <div>NG</div> </div>  |  | <div> <div>Date</div> <div>11.11.19</div> </div>  |          | <div> <div>Drawn by:</div> <div></div> </div>                           |            |
| <div> <div>Title:</div> <div>HANDICRAFT CENTRE- BLOCK-2 GROUND FLOOR DB DETAIL</div> </div>  |  | <div> <div>Stamp</div> <div>  </div> </div> |          |   |            |





D1D2



**GENERAL NOTES:**

1. All dimensions are in metres and are dimensionless unless otherwise specified.
2. All loads are in millimilles and are directed unless otherwise specified. All loads are mentioned in the section.
3. Do not state dimension. Only within dimensions shall be followed, any dimensionality must be brought to the notice of the Architect prior to the execution.
4. For details such as partitions, flooring, railing, grills, lighting fixtures, street furniture etc., refer to relevant architectural drawings.

| NO. | REVISION | DATE | CHECKED BY |
|-----|----------|------|------------|
|     |          |      |            |

|   |          |    |
|---|----------|----|
| - | 03.07.18 | NG |
| - | 01.04.18 | NG |

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|---|----------|----|
| Y | 81.1.1.1 | NG |
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**Note:**

**Contractor shall submit a detailed shop**

ELECTRICAL MATERIALS

| NO. | DESCRIPTION | UNIT | QTY | AMOUNT |
|-----|-------------|------|-----|--------|
| 1   | ...         | ...  | ... | ...    |
| 2   | ...         | ...  | ... | ...    |
| 3   | ...         | ...  | ... | ...    |
| 4   | ...         | ...  | ... | ...    |
| 5   | ...         | ...  | ... | ...    |
| 6   | ...         | ...  | ... | ...    |
| 7   | ...         | ...  | ... | ...    |
| 8   | ...         | ...  | ... | ...    |
| 9   | ...         | ...  | ... | ...    |
| 10  | ...         | ...  | ... | ...    |
| 11  | ...         | ...  | ... | ...    |
| 12  | ...         | ...  | ... | ...    |
| 13  | ...         | ...  | ... | ...    |
| 14  | ...         | ...  | ... | ...    |
| 15  | ...         | ...  | ... | ...    |
| 16  | ...         | ...  | ... | ...    |
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| 18  | ...         | ...  | ... | ...    |
| 19  | ...         | ...  | ... | ...    |
| 20  | ...         | ...  | ... | ...    |
| 21  | ...         | ...  | ... | ...    |
| 22  | ...         | ...  | ... | ...    |
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| 24  | ...         | ...  | ... | ...    |
| 25  | ...         | ...  | ... | ...    |
| 26  | ...         | ...  | ... | ...    |
| 27  | ...         | ...  | ... | ...    |
| 28  | ...         | ...  | ... | ...    |
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| 35  | ...         | ...  | ... | ...    |
| 36  | ...         | ...  | ... | ...    |
| 37  | ...         | ...  | ... | ...    |
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

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| 4 | 8-5.5 | 8-5.5 | 8-5.5 | 8-5.5 | 8-5.5 |
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

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**Purpose:**

## TENDER

## DRAWING

A.  $\ln\left(\frac{1}{1-N}\right) \approx \frac{1}{1-N}$  and

D -  $4x(\text{ } \overset{\text{H}}{\underset{\text{H}}{\text{C}}} \text{ } \overset{\text{H}}{\underset{\text{H}}{\text{C}}} \text{ } \overset{\text{H}}{\underset{\text{H}}{\text{C}}} \text{ } \overset{\text{H}}{\underset{\text{H}}{\text{C}}})$

**BARRELLY SMART CITY LTD.**

**Project -**  
**HANDICRAFTS PROMOTION CENTRE**

|                             |   |                          |
|-----------------------------|---|--------------------------|
| South:<br>Met to South @ AS | North:<br> | Drug No:<br><b>B2-25</b> |
|-----------------------------|---|--------------------------|

|                |                |           |
|----------------|----------------|-----------|
| Checked by: NG | Date: 11.11.19 | Draft by: |
|----------------|----------------|-----------|

**THE:**  
HANDICRAFT CENTRE-  
BLOCK-2 FIRST FLOOR

**SREI**

DB-L3 :- ( Light & Row Power 12 Way TPN DB VERTICAL )

Location :- FIRST FLOOR

Size of Sub Main :- 3.5x95Ssqmm AL ARM XLPE CABLE

| Rating of Incoming :- 125 Amp 4 Pole MCCB,36KA) | Size of Sub Main :- 3.5x95Ssqmm AL ARM XLPE CABLE         |   |
|---|---|---|
|   | Rating of Incoming :- 125 Amp 4 Pole MCCB,36KA)           | Size of Sub Main :- 3.5x95Ssqmm AL ARM XLPE CABLE |
| Ckt No.   | No. of Points   | Connected Load Watt                               |
| B2/L3/R1  | L2= 3x18<br>L4= 4x12<br>L5= 6x6<br>M1= 2x12<br>EX.F= 3x60 | 342   |
| B2/L3/Y1  | L5= 6x6<br>L2= 6x18                                       | 144   |
| B2/L3/B1  | L2= 13x18<br>FP= 5x60                                     | 534   |
| B2/L3/R2  | L2= 1x18<br>L3= 1x12<br>L4= 28x12<br>FP= 4x60             | 726   |
| B2/L3/Y2  | L1= 32x36<br>L2= 2x18<br>L4= 12x12<br>FP= 9x60            | 1872  |
| B2/L3/B2  | L1= 26x36<br>L4= 12x12<br>FP= 8x60                        | 1560  |
| B2/L3/R3  | L1= 8x36<br>L4= 4x12<br>FP= 5x60                          | 636   |
| B2/L3/Y3  | L1= 8x36<br>L4= 4x12<br>FP= 5x60                          | 636   |
| B2/L3/B3  | L1= 8x36<br>L4= 4x12<br>FP= 5x60                          | 636   |
| B2/L3/R4  | 1X1000  | 1000  |
| B2/L3/Y4  | 1X1000  | 1000  |
| B2/L3/B4  | 1X1000  | 1000  |
| B2/L3/R5  | 2X500   | 1000  |
| B2/L3/Y5  | 1X1000  | 1000  |
| B2/L3/B5  | 2X500   | 1000  |
| B2/L3/R6  | 2X500   | 1000  |
| B2/L3/Y6  | 2X500   | 1000  |
| B2/L3/B6  | 2X500   | 1000  |
| B2/L3/R7  | 2X500   | 1000  |
| B2/L3/Y7  | 1X1000  | 1000  |
| B2/L3/B7  | 1X1000  | 1000  |
| B2/L3/R8  | 1X1000  | 1000  |
| B2/L3/Y8  |   |   |
| B2/L3/B8  |   |   |
| B2/L3/R9  |   |   |
| B2/L3/Y9  |   |   |
| Total   |   | 20086W SAY 21.00 KW                               |

GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | A        | 03.07.19 | NG         |
|     |          | 11.11.19 | NG         |

Purpose :

TENDER  
DRAWING

|  |   |                              |                   |
|--|---|------------------------------|-------------------|
| Client<br><b>BAREILLY SMART CITY LTD.</b>                      | Project<br>HANDICRAFTS PROMOTION CENTRE | Scale<br>As per drawing @ A3 | Drawn By<br>B2-26 |
|  |   | Checked by<br>NG             | Date<br>11.11.19  |
| Title<br>HANDICRAFT CENTRE<br>BLOCK-2 FIRST FLOOR<br>DB DETAIL |   | Drawn By<br><b>SREI</b>      |                   |



DB-L4 :- ( Light & Raw Power 12 Way TPN DB,VERTICAL )

Location :- SECOND FLOOR

Size of Sub Main :- 3.5x95Sqmm AL ARM XLPE CABLE

Rating of Incomer :- 125 Amp 4 Pole MCCB,36KA)

| Ckt No.  | No. of Points                        | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
|----------|--------------------------------------|---------------------|----------------------|---------------|
| B2/L4/R1 | L2=2,L5=3,<br>L4=2,ML=1,<br>EX,FP= 1 | 210                 | 3 x 1.5              | 6A/SP         |
| B2/L4/Y1 | L2=1,L4=2,<br>L5=3,ML=1,<br>EX,FP=1  | 132                 | 3 x 1.5              | 6A/SP         |
| B2/L4/B1 | L2= 6x18<br>L5= 6x6                  | 144                 | 3 x 1.5              | 6A/SP         |
| B2/L4/R2 | L2= 8x18<br>FP= 3x60                 | 324                 | 3 x 1.5              | 6A/SP         |
| B2/L4/Y2 | L2= 4x18<br>L3=0<br>FP= 2x60         | 192                 | 3 x 1.5              | 6A/SP         |
| B2/L4/B2 | L2= 6x18                             | 108                 | 3 x 1.5              | 6A/SP         |
| B2/L4/R3 | L4=29,L2=3,<br>L5=1,FP=1,            | 468                 | 3 x 1.5              | 6A/SP         |
| B2/L4/Y3 | L4=20x12<br>DF=8x36<br>FP=8x60       | 1008                | 3 x 1.5              | 6A/SP         |
| B2/L4/B3 | L1=28x36<br>L4=12x12<br>FP=8x60      | 1632                | 3 x 1.5              | 6A/SP         |
| B2/L4/R4 | L1=32x36<br>L4=12x12<br>FP= 8x60     | 1776                | 3 x 1.5              | 6A/SP         |
| B2/L4/Y4 | L1=8,L4=5,<br>L5=5,FP=4              | 618                 | 3 x 1.5              | 6A/SP         |
| B2/L4/B4 | L1=4,L2=2,<br>L4=12x12<br>FP=6x60    | 696                 | 3 x 1.5              | 6A/SP         |
| B2/L4/R5 | 1X1000<br>2X500                      | 2000                | 3 x 4                | 20A/SP        |
| B2/L4/Y5 | 1X1000<br>1X500                      | 1500                | 3 x 4                | 20A/SP        |
| B2/L4/B5 | 1X1000                               | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/R6 | 1X1000                               | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/Y6 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/B6 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/R7 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/Y7 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/B7 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/R8 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/Y8 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/B8 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/R9 | 2X500                                | 1000                | 3 x 4                | 20A/SP        |
| B2/L4/Y9 | SPARE                                |                     |                      |               |
| B2/L4/B9 | SPARE                                |                     |                      |               |
| TOTAL    |                                      | 21808W, SAY 22.0 KW |                      |               |

GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

NO

REVISION

DATE

CHECKED BY

-

A

11.11.19

NG

Note:

1. This is a Tender/Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

TENDER DRAWING

Client

BAREILLY SMART CITY LTD.

Project

HANDICRAFTS PROMOTION CENTRE

Scale:

Not to Scale @ A3

Checked by:

NG

Drawn by:

B2-28

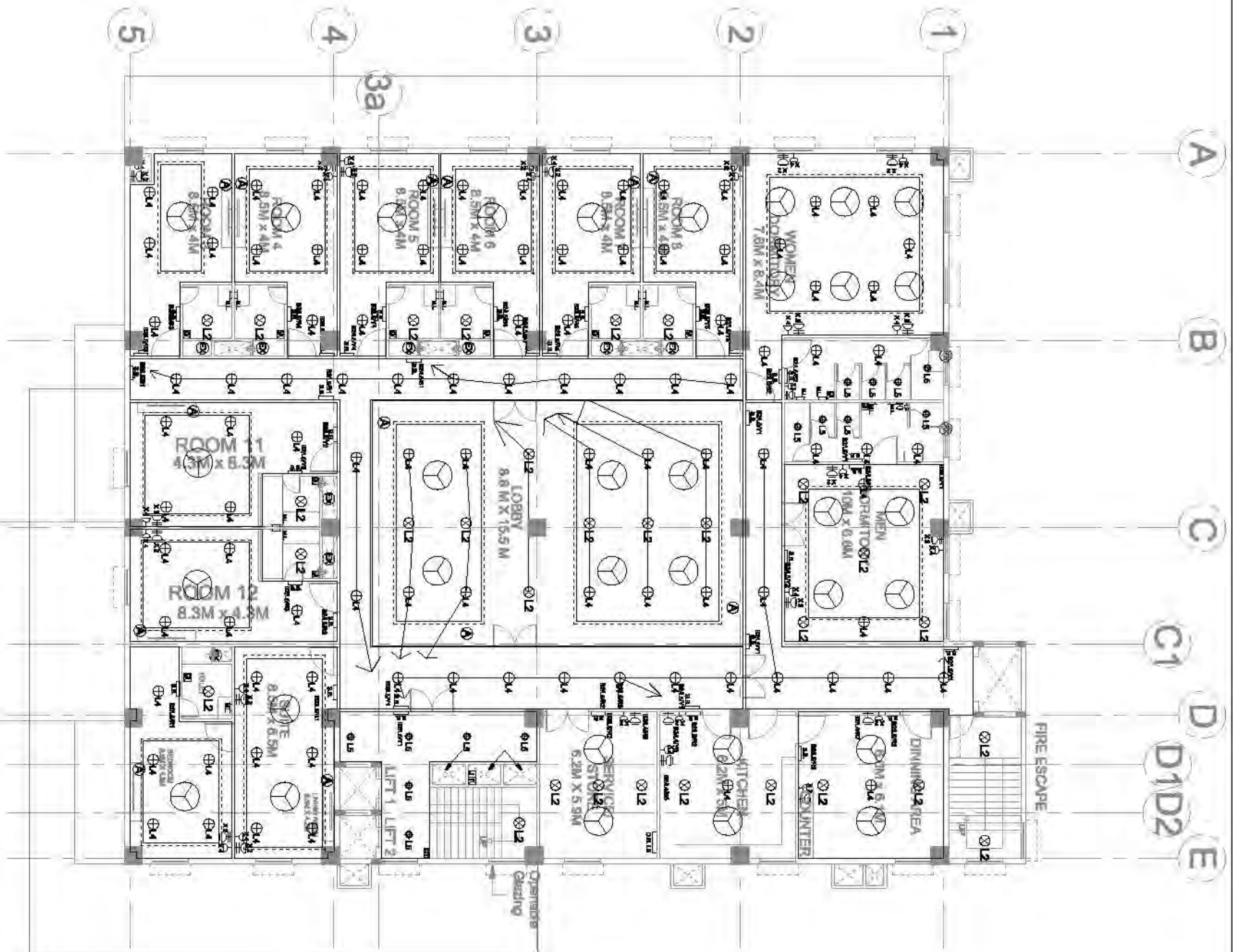
Title:

HANDICRAFT CENTRE- BLOCK-2 SECOND FLOOR DB DETAIL

Drawn by:

SREI





| GENERAL NOTES:   |             |          |            |
|--|-------------|----------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |             |          |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |             |          |            |
| 3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |             |          |            |
| 4. For details such as partitions, tending, railing, grills, lighting fixtures, steel sections etc. refer relevant architectural/landscape drawings.               |             |          |            |
| NO.  | REVISION    | DATE     | CHECKED BY |
| 1  | A           | 08.07.18 | NG         |
| 2  | A           | 11.11.18 | NG         |
| ELECTRICAL SYMBOLS   |             |          |            |
| SYMBOL   | DESCRIPTION | UNIT     | NO.        |
| ⊕  | Lighting    | W        | 1          |
| ⊕  | Lighting    | W        | 2          |
| ⊕  | Lighting    | W        | 3          |
| ⊕  | Lighting    | W        | 4          |
| ⊕  | Lighting    | W        | 5          |
| ⊕  | Lighting    | W        | 6          |
| ⊕  | Lighting    | W        | 7          |
| ⊕  | Lighting    | W        | 8          |
| ⊕  | Lighting    | W        | 9          |
| ⊕  | Lighting    | W        | 10         |
| ⊕  | Lighting    | W        | 11         |
| ⊕  | Lighting    | W        | 12         |
| ⊕  | Lighting    | W        | 13         |
| ⊕  | Lighting    | W        | 14         |
| ⊕  | Lighting    | W        | 15         |
| ⊕  | Lighting    | W        | 16         |
| ⊕  | Lighting    | W        | 17         |
| ⊕  | Lighting    | W        | 18         |
| ⊕  | Lighting    | W        | 19         |
| ⊕  | Lighting    | W        | 20         |
| ⊕  | Lighting    | W        | 21         |
| ⊕  | Lighting    | W        | 22         |
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DB-L5 :- ( Light & Raw Power 12 Way TPN VERTICAL DB )

Location :- THIRD FLOOR

Size of Sub Main :-3.5x95Ssqmm AL ARM XLPE CABLE

Rating of Incomer :- 125 Amp 4 Pole MCCB, 36KA)

| Ckt No.  | No. of Points                     | Connected          | Size of Wire<br>In Sqmm | Rating of MCB |
|----------|-----------------------------------|--------------------|-------------------------|---------------|
|          |                                   | Load Watt          |                         |               |
| B2/L5/R1 | SUITE                             | 3000               | 3 x 6                   | 6A/SP         |
| B2/L5/R1 | L2=8,L4=19<br>L5= 6X6<br>FP=6X60  | 768                | 3 x 1.5                 | 6A/SP         |
| B2/L5/B1 | L2= 5x18<br>L4= 17x12<br>FP= 4x60 | 534                | 3 x 1.5                 | 6A/SP         |
| B2/L5/R2 | L2= 7x18<br>L4= 2x12<br>FP= 6x60  | 510                | 3 x 1.5                 | 6A/SP         |
| B2/L5/N2 | MEN<br>DORMATRY                   | 2000               | 3 x 6                   | 6A/SP         |
| B2/L5/B2 | WOMEN<br>DORMATRY                 | 2000               | 3 x 6                   | 6A/SP         |
| B2/L5/R3 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/Y3 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/B3 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/R4 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/Y4 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/B4 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/R5 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/Y5 | ROOM                              | 3000               | 3 x 6                   | 30A/SP        |
| B2/L5/B5 | SPARE                             |                    |                         |               |
| B2/L5/R6 | 1X1000                            | 1000               | 3 x 4                   | 20A/SP        |
| B2/L5/Y6 | 1X1000                            | 1000               | 3 x 4                   | 20A/SP        |
| B2/L5/B6 | 1X1000                            | 1000               | 3 x 4                   | 20A/SP        |
| B2/L5/R7 | 1X1000                            | 1000               | 3 x 4                   | 20A/SP        |
| B2/L5/Y7 | SPARE                             |                    |                         |               |
| B2/L5/B7 | SPARE                             |                    |                         |               |
| B2/L5/R8 | SPARE                             |                    |                         |               |
| B2/L5/Y8 | SPARE                             |                    |                         |               |
| B2/L5/B8 | SPARE                             |                    |                         |               |
| B2/L5/R9 | SPARE                             |                    |                         |               |
| B2/L5/Y9 | SPARE                             |                    |                         |               |
| B2/L5/R9 | SPARE                             |                    |                         |               |
| TOTAL    |                                   | 36812W SAY 37.0 KW |                         |               |

GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO | REVISION | DATE     | CHECKED BY |
|----|----------|----------|------------|
| -  |          | 03.07.19 | NG         |
| A  |          | 11.11.19 | NG         |
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|    |          |          |            |
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Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

TENDER  
DRAWING

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

|  |                |  |
|--|----------------|--|
| Scale:<br>Not to Scale @ A3                                      |                | Dwg No:<br><b>B2-30</b>  |
| Checked by: NG   | Date: 11.11.19 | Drawn by:  |
| Title:<br>HANDICRAFT CENTRE-<br>BLOCK-2 THIRD FLOOR<br>DB DETAIL |                |  |



**DB-L6 :- ( Light & Row Power 4Way TPN DB )**

**Location :- TERRACE FLOOR**

Size of Sub Main :-4x16Sqmm AL.ARM.XLPE CABLE

Rating of Incomer :- 63 Amp 4 Pole MCCB)

| Ckt No. | No. of Points                                | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
|---------|--|---------------------|----------------------|---------------|
| L6/R1   | L2= 12x18                                    | 216                 | 3 x 1.5              | 10A/SP        |
| L6/Y1   | L2= 2x18<br>L5= 2x6<br>ML=1 x12<br>EXFP=1x60 | 120                 | 3 x 1.5              | 10A/SP        |
| L6/B1   | L2= 1x18<br>L4= 4x12<br>FP= 2x60             | 186                 | 3 x 1.5              | 10A/SP        |
| L6/R2   | L2= 1x18<br>L4= 4x12<br>FP= 2x60             | 186                 | 3 x 1.5              | 10A/SP        |
| L6/Y2   | SPARE  |                     |                      |               |
| L6/B2   | SPARE  |                     |                      |               |
| L6/R3   | 1x 1000                                      | 1000                | 3 x 4                | 25A/SP        |
| L6/Y3   | 1x 1000                                      | 1000                | 3 x 4                | 25A/SP        |
| L6/B3   | 1x 1000                                      | 1000                | 3 x 4                | 25A/SP        |
| L6/R4   | 1x 1000                                      | 1000                | 3 x 4                | 25A/SP        |
| L6/Y4   | SPARE  |                     |                      |               |
| L6/B4   | SPARE  |                     |                      |               |
| Total   |  | 4708 W              |                      |               |
| Say     |  | 5.00 KW             |                      |               |

**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO | REVISION | DATE     | CHECKED BY |
|----|----------|----------|------------|
| -  | A        | 03.07.19 | NG         |
|    |          | 11.11.19 | NG         |
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Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

**TENDER  
DRAWING**

Client: **BAIREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

|                             |                          |
|-----------------------------|--------------------------|
| Scale:<br>Not to Scale @ A3 | Dwg No:<br><b>B2-31B</b> |
| Checked by: NG              | Drawn by: 11.11.19       |

Title:  
**HANDICRAFT CENTRE-  
BLOCK-2 TERRACE  
DB DETAIL**

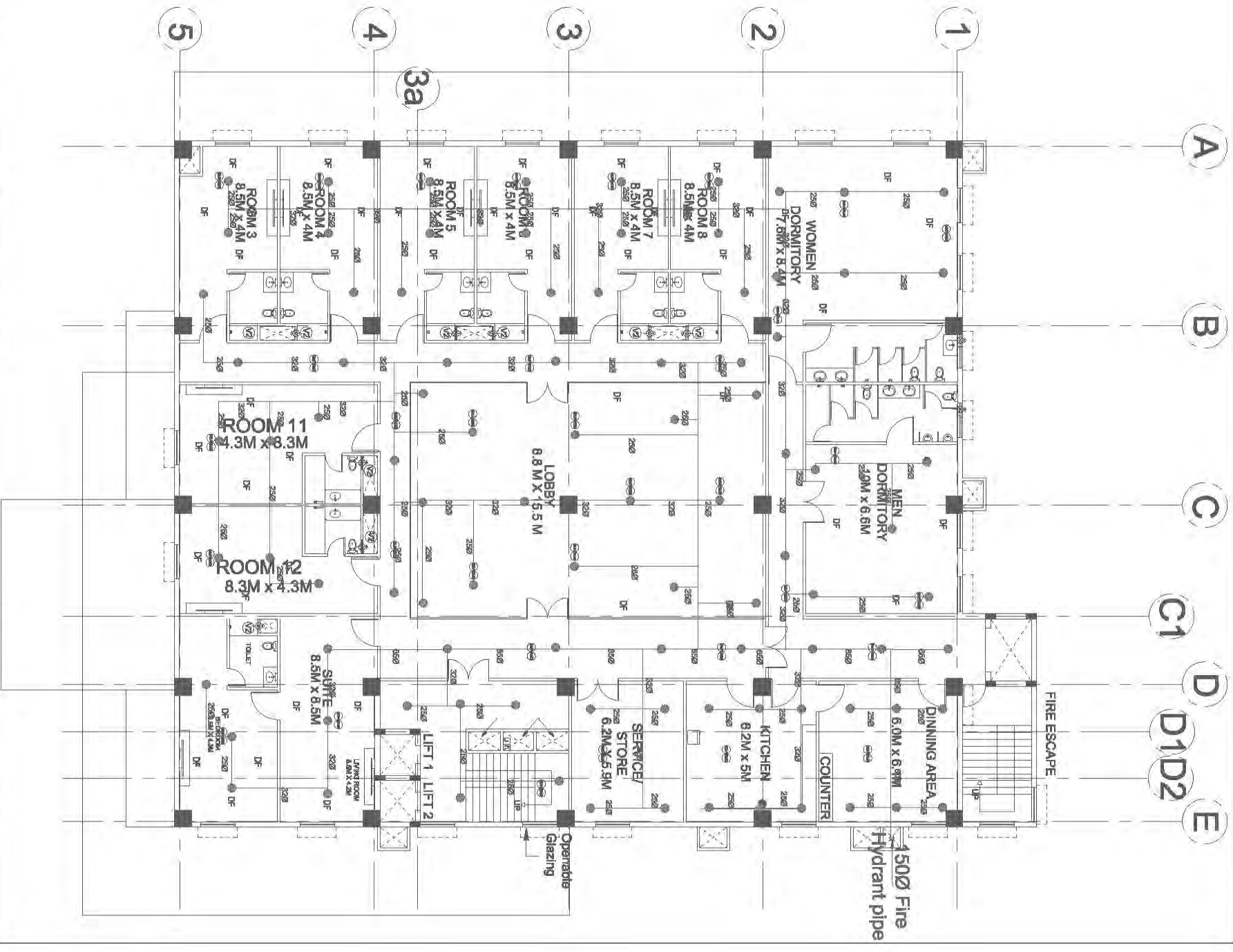









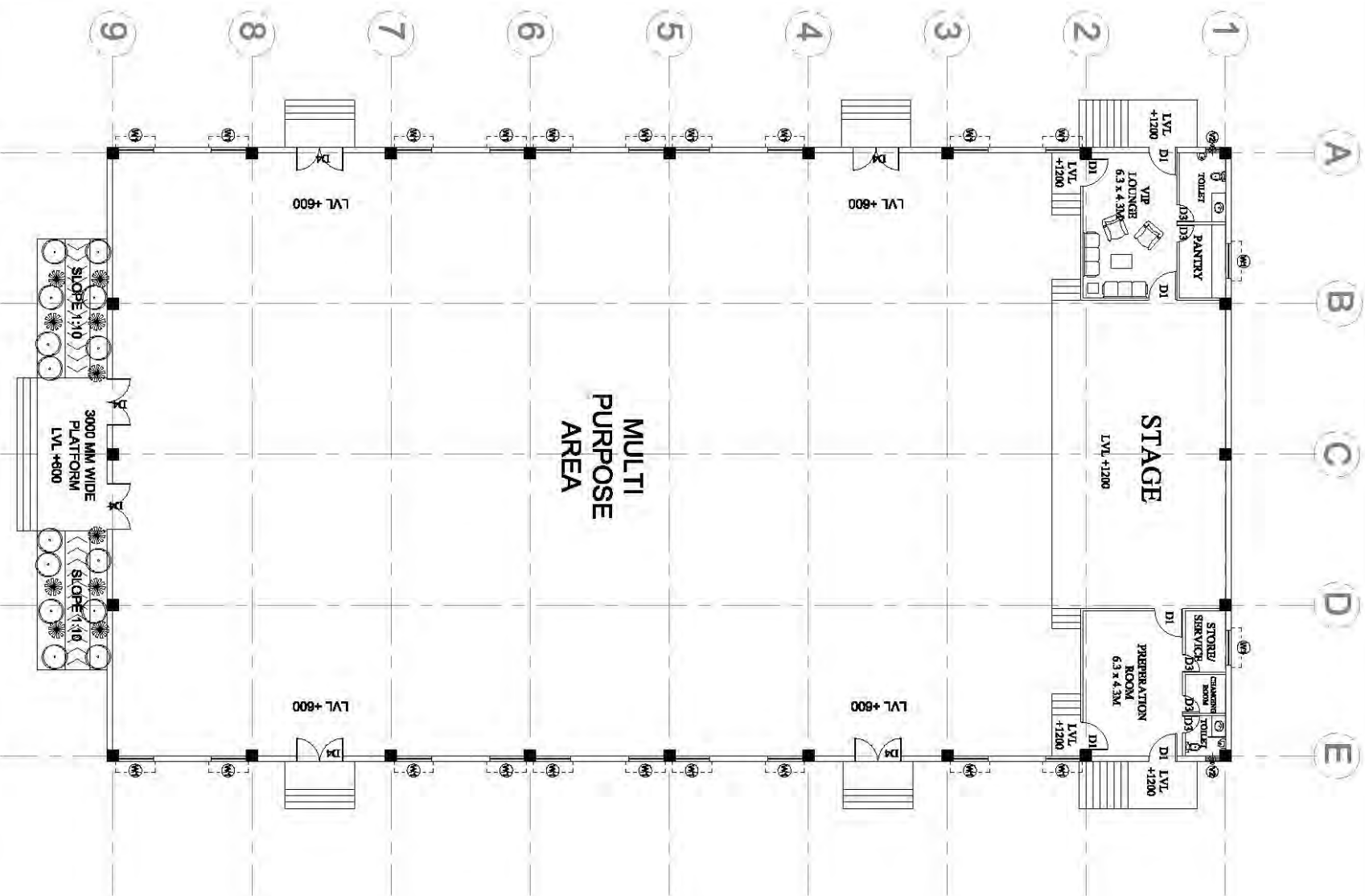




| GENERAL NOTES:   |          |   |            |
|--|----------|---|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |   |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |   |            |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |   |            |
| 4. For details such as pathways, fencing, railing, gates, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                 |          |   |            |
| NO.  | REVISION | DATE  | CHECKED BY |
|  |          | 11.11.19  | NG         |
| LEGEND   |          |   |            |
|  Sprinklers   |          |   |            |
| Purpose :  |          | TENDER DRAWING  |            |
| Client: BAREILLY SMART CITY LTD.   |          | Title: HANDICRAFT CENTRE- BLOCK-2-TF FIRE FIGHTING LAYOUT |            |
| Project: HANDICRAFTS PROMOTION CENTRE  |          | Scale: Not to Scale @ A3                                  |            |
| Drawn by: NG   |          | Date: 11.11.19  |            |
| Checked by: NG   |          | Drawn by: B2-35   |            |
| SREI   |          |   |            |







**GENERAL NOTES:**

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4. For details such as pathways, fencing, milling, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| A   | -        | 03.07.19 | NG         |
| B   | -        | 28.07.19 | NG         |
| C   | -        | 18.10.19 | NG         |
|     | -        | 11.11.19 | NG         |

Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

**TENDER DRAWING**

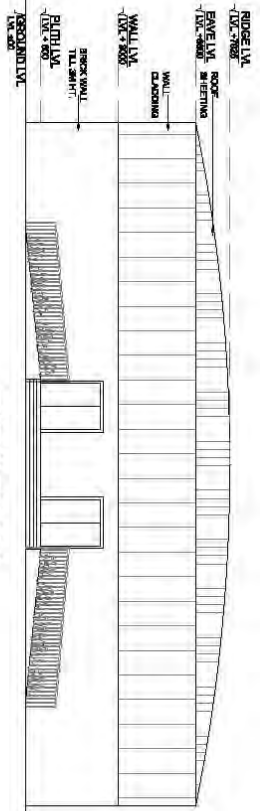
Title: **HANDICRAFT CENTRE- BLOCK 3- GF PLAN**

Scale: **As to Show @ A4**

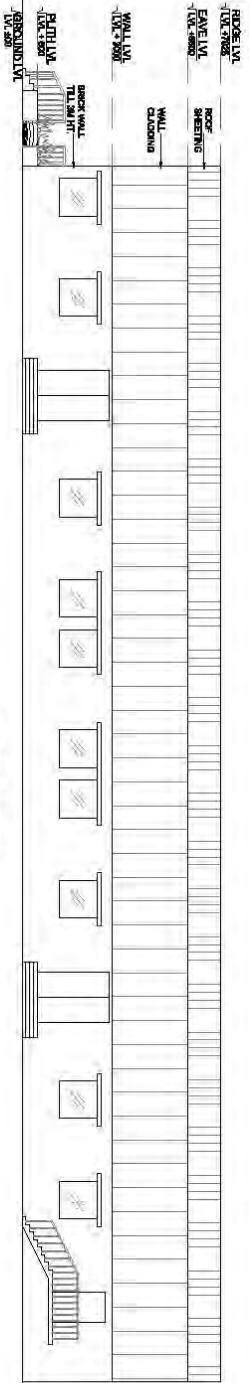


Drawn by: **B3-01**

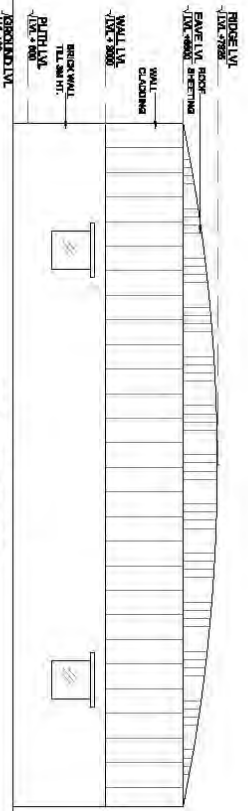




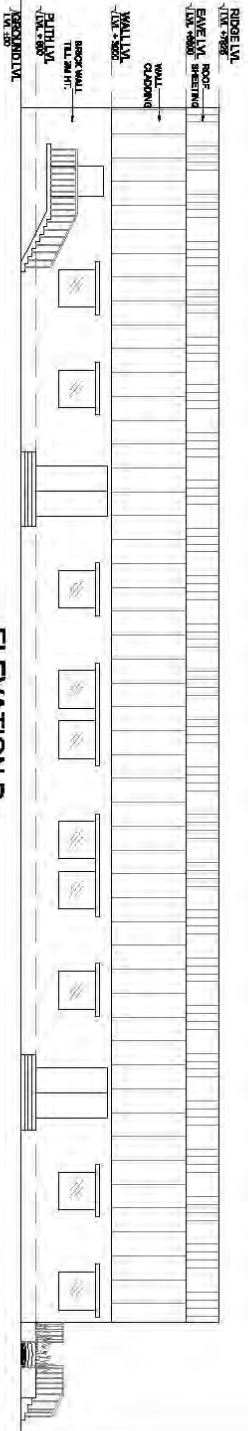
ELEVATION A



ELEVATION B



ELEVATION C



ELEVATION D

**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in this section.

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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| -   | -        | 03.07.19 | NG         |
| A   |          | 13.11.18 |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |
|     |          |          |            |

KEY

PLAN

**Purpose :**

**TENDER DRAWING**

Note:

1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (detailed) for approval by the client.

Client:

**BAREILLY SMART CITY LTD.**

Project:

**HANDICRAFTS PROMOTION CENTRE**

Scale:

**Not to Scale @ A3**

Drawn by:

**NG**

Checkd by:

**NG**

Date:

**13.11.18**

Drawn by:

**B3-02**

Title:

**HANDICRAFT CENTRE: BLOCK-3 ELEVATIONS**

Scale:

**Not to Scale @ A3**

Drawn by:

**NG**

Checkd by:

**NG**

Date:

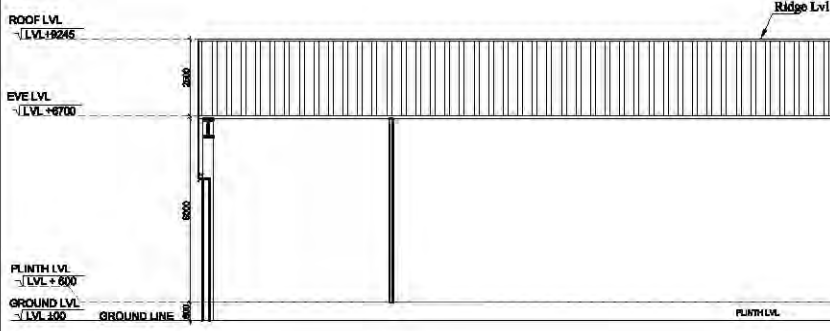
**13.11.18**

Drawn by:

**B3-02**

**SREI**

Surat Ravi Engineering & Infra



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO.   | REVISION | DATE     | CHECKED BY |
|-------|----------|----------|------------|
| -     | -        | 03.07.19 | NG         |
| REV-A |          | 18.10.19 | NG         |
| REV-B |          | 11.11.19 | NG         |
|       |          |          |            |
|       |          |          |            |
|       |          |          |            |
|       |          |          |            |
|       |          |          |            |
|       |          |          |            |
|       |          |          |            |

Note:  
1. This is a Tender Drawing. Selected Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

Purpose :

## TENDER DRAWING

Client: **BAREILLY SMART CITY LTD.**

Project: **HANDICRAFTS PROMOTION CENTRE**

Scale: Not to Scale @ A3

North:

Drawn by: **B3-03**

Checked by: **NG**

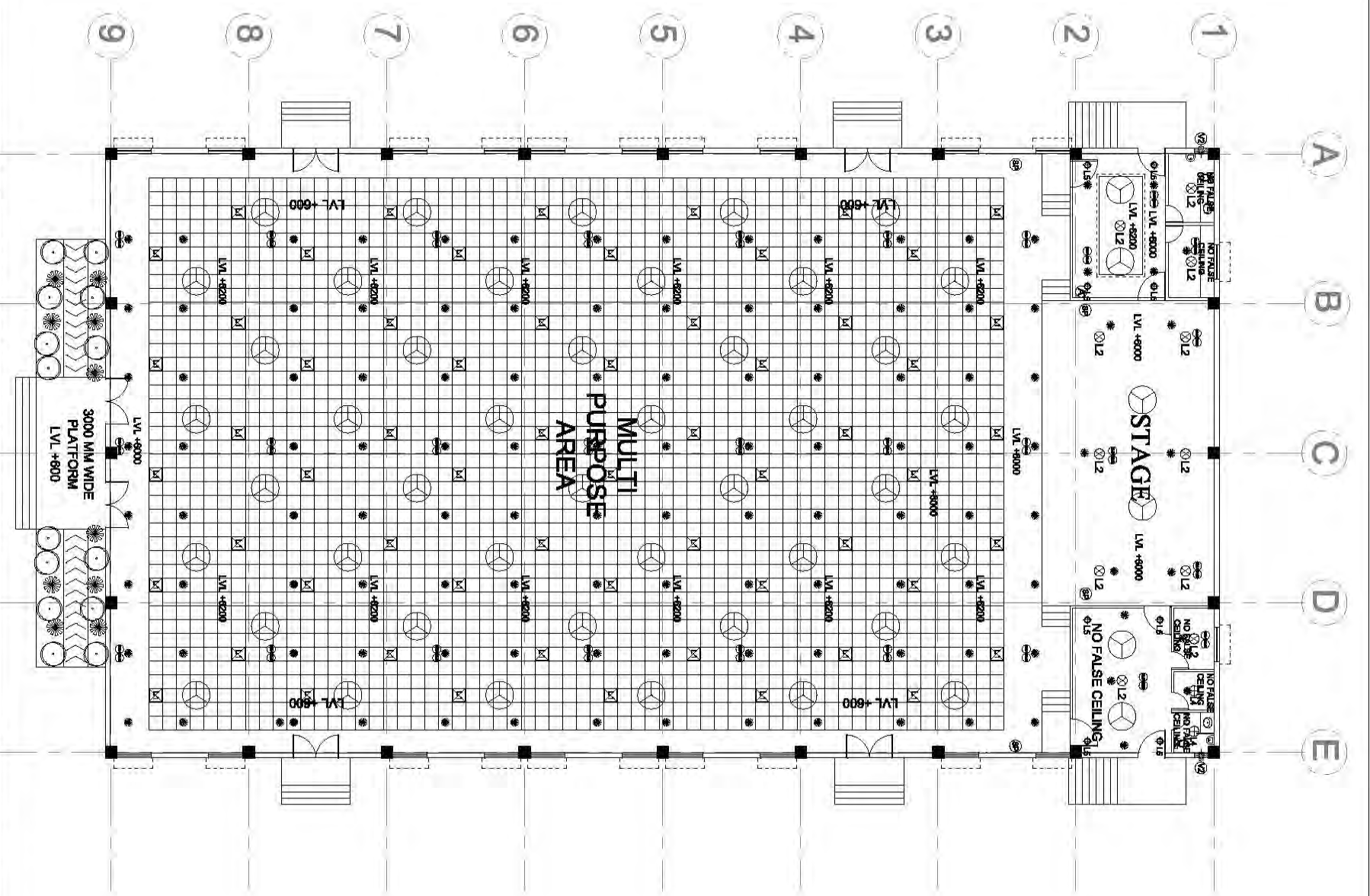
Date: 11.11.18

Drawn by:

Title: **HANDICRAFT CENTRE-  
BLOCK 3 SECTION**







**GENERAL NOTES:**

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| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
| A   | -        | 09/07/19 | NG         |
| A   | 11.11.19 |          |            |

| SL. NO. | LIGHTS | DESCRIPTION       |
|---------|--------|-------------------|
| 1.      | 1      | SPOT LIGHT (2.75) |
| 2.      | 2      | SPOT LIGHT (2.75) |
| 3.      | 3      | SPOT LIGHT (2.75) |
| 4.      | 4      | SPOT LIGHT (2.75) |
| 5.      | 5      | SPOT LIGHT (2.75) |
| 6.      | 6      | SPOT LIGHT (2.75) |
| 7.      | 7      | SPOT LIGHT (2.75) |
| 8.      | 8      | SPOT LIGHT (2.75) |
| 9.      | 9      | SPOT LIGHT (2.75) |

**Purpose :**

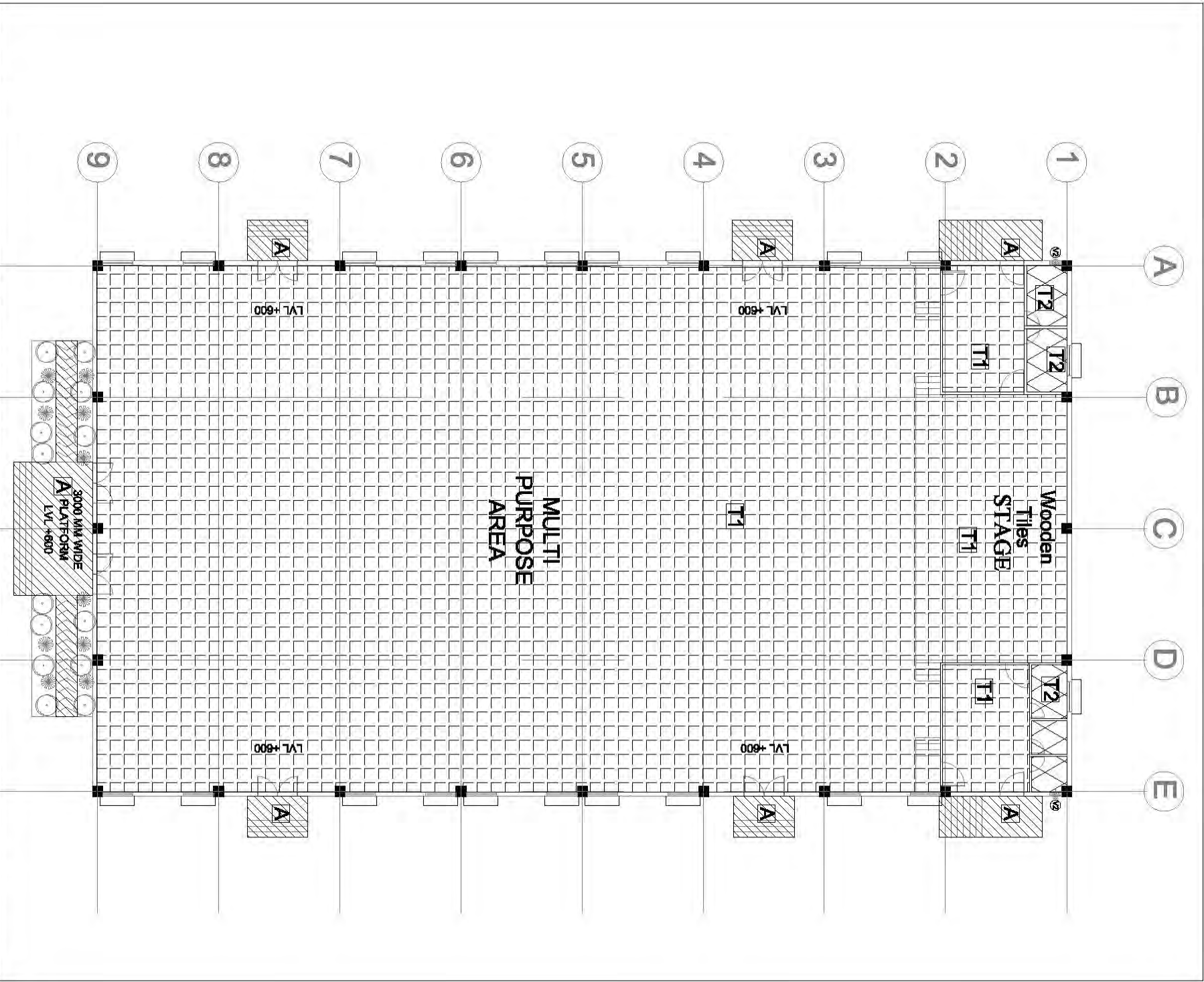
**TENDER DRAWING**

Note:

1. This is a Tender Drawing. Submitted Contractor shall submit a detailed shop drawing (GFC) for approval by the client.

|                       |                              |
|-----------------------|------------------------------|
| Client:               | BAREILLY SMART CITY LTD.     |
| Project:              | HANDICRAFTS PROMOTION CENTRE |
| Scale:                | As per drawing               |
| Drawn by:             | NG                           |
| Date:                 | 11.11.19                     |
| Drawn by:             | B3-04                        |
| Handicraft Centre:    | BLOCK 3-6F                   |
| False Ceiling Layout: |                              |





**GENERAL NOTES:**  
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 03/07/19 | NG         |
|     | A        | 11.11.19 |            |

| LEGEND    |                   |
|-----------|-------------------|
| TILE TYPE | HATCH DESCRIPTION |
| A         | GRANITE           |
| B         | BRICK KIOSK       |
| C         | SOLID WOOD FLOOR  |
| D         | CARPET            |
| T1        | TILES 800X800     |
| T2        | TILES 800X800     |
| G         | GRASS CARPET      |
| E         | EXPORT FLOORING   |

**Purpose :**  
**TENDER DRAWING**

**Note:**  
1. This is a Tender Drawing. Selected Contractors will submit a detailed shop drawing (GFC) for approval by the client.

**Client:**  
BAREILLY SMART CITY LTD.

**Project:**  
HANDICRAFTS PROMOTION CENTRE

**Scale:**  
Not to Scale @ A3

**Checked by:** NG


**Next:**  
↗

**Date:** 11.11.19

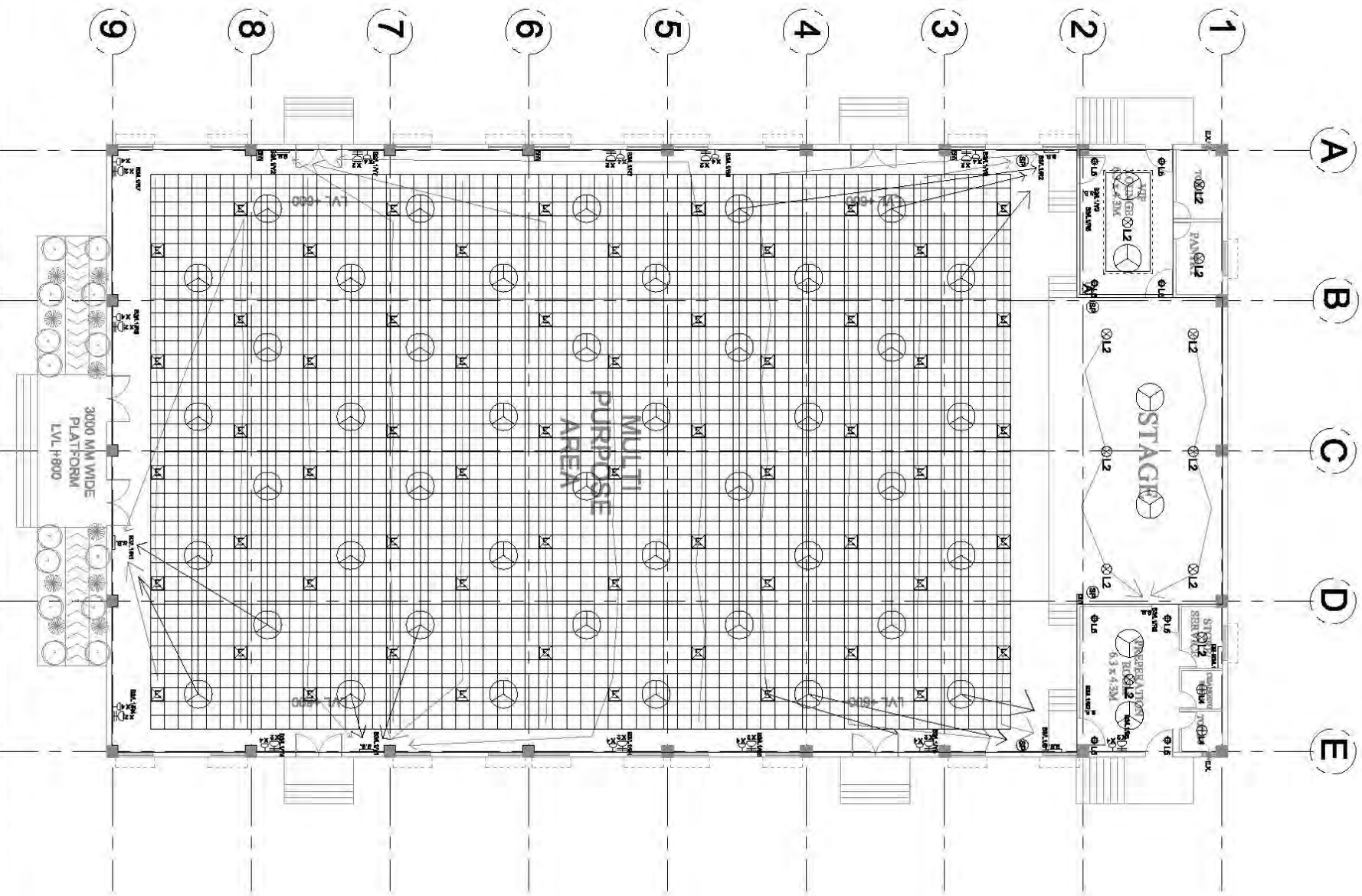
**Draw No:**  
B3-05

**Drawn by:**

**HANDICRAFT CENTRE- BLOCK 3- 6F- FLOORING LAYOUT PLAN**

**SREI**  
Specialty Real Estate Solutions





**GENERAL NOTES:**  
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NG. REVISION

DATE

CHECKED BY

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|---|----------|----|
|   | 03.07.19 | NG |
| A | 11.11.19 |    |

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DB-B3/L1 :- ( Light & Raw Power 8 Way TPN VERTICAL DB )

Location :- BLOCK-3,MULTIPURPOSE HALL

Size of Sub Main :-3.5x95Ssqmm AL,ARM,XLPE CABLE

Rating of Incomer :- 125 Amp 4 Pole MCCB,36KA)

| Qkt No.  | No. of Points                              | Connected Load Watt | Size of Wire In Sqmm | Rating of MCB |
|----------|--|---------------------|----------------------|---------------|
| B3/L1/R1 | L1=10X36<br>FP=8X60                        | 840                 | 3 x 2.5              | 10A/SP        |
| B3/L1/Y1 | L1=15X36<br>FP=8X60                        | 1020                | 3 x 2.5              | 10A/SP        |
| B3/L1/B1 | L1=15X36<br>FP=8X60                        | 1020                | 3 x 2.5              | 10A/SP        |
| B3/L1/R2 | L1= 10x36<br>FP=12X60                      | 1080                | 3 x 2.5              | 10A/SP        |
| B3/L1/Y2 | L1=10X36<br>L1=8X60                        | 840                 | 3 x 2.5              | 10A/SP        |
| B3/L1/B2 | L2=3X18,L5=<br>4X6,FP=2X60,<br>EX,FP=1X60  | 258                 | 3 x 1.5              | 6A/SP         |
| B3/L1/R3 | L2=6X18<br>FP=2X60                         | 228                 | 3 x 1.5              | 6A/SP         |
| B3/L1/Y3 | L2=2X18<br>L5=4X6<br>FP=2X60<br>EX,FP=1X60 | 240                 | 3 x 1.5              | 6A/SP         |
| B3/L1/B3 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/R4 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/Y4 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/B4 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/R5 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/Y5 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/B5 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/R6 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/Y6 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/B6 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/R7 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/Y7 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/B7 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/R8 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/Y8 | 1X1000                                     | 1000                | 3 x 4                | 20A/SP        |
| B3/L1/B8 | SPARE                                      |                     |                      |               |
| TOTAL    |  | 20526W              | SAY                  | 21,00KW       |

GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

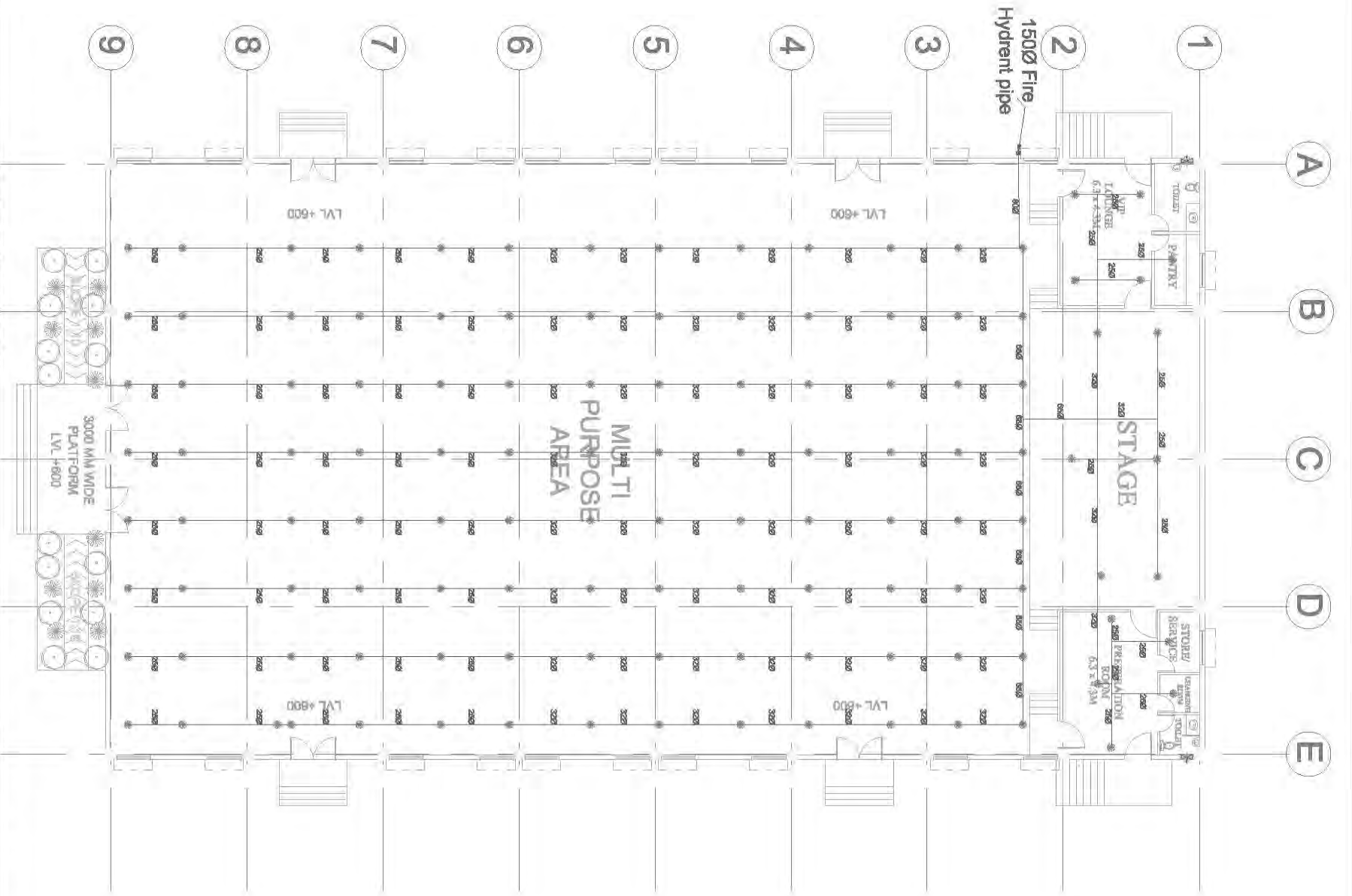
| NO | REVISION | DATE     | CHECKED BY |
|----|----------|----------|------------|
| -  |          | 03.07.19 | NG         |
| A  |          | 11.11.19 | NG         |

Purpose :

TENDER  
DRAWING

|   |  |                             |                          |
|---|--|-----------------------------|--------------------------|
| Client<br><b>BAREILLY SMART CITY LTD.</b>                         |  | Scale:<br>As per Scale @ A3 | Draw No.<br><b>B3-08</b> |
| Project<br>HANDICRAFTS PROMOTION CENTRE                           |  | Checked by: NG              | Drawn by:                |
| Title:<br>HANDICRAFT CENTRE-<br>BLOCK-3 GROUND FLOOR<br>DB DETAIL |  | Date: 11.11.19              |                          |





GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.


2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.


3. Do not scale drawings. Only written dimensions shall be followed. Any discrepancy noted shall be brought to the notice of the Architect prior to the execution.


4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

| NO. | REVISION | DATE     | CHECKED BY |
|-----|----------|----------|------------|
|     | -        | 11.11.19 | NG         |

LEGEND

 Sprinklers

 Smoke Detector

 Above + Below ceiling

Purpose :  
TENDER  
DRAWING

Note:  
1. This is a Tender Drawing.  
Sealed Contract shall  
submit a detailed shop  
drawing (GFC) for approval  
by the client.

Client:  
BAREILLY SMART CITY LTD.

Project:  
HANDICRAFTS PROMOTION CENTRE

Scale:  
Not to Scale @ A4


Sheet No to Scale @ A4

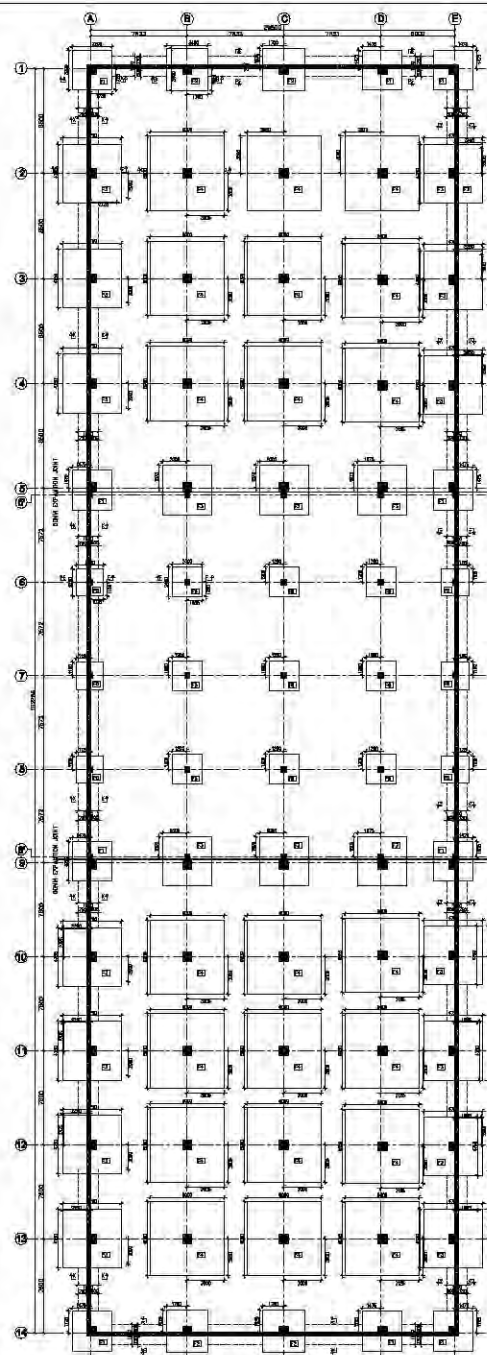
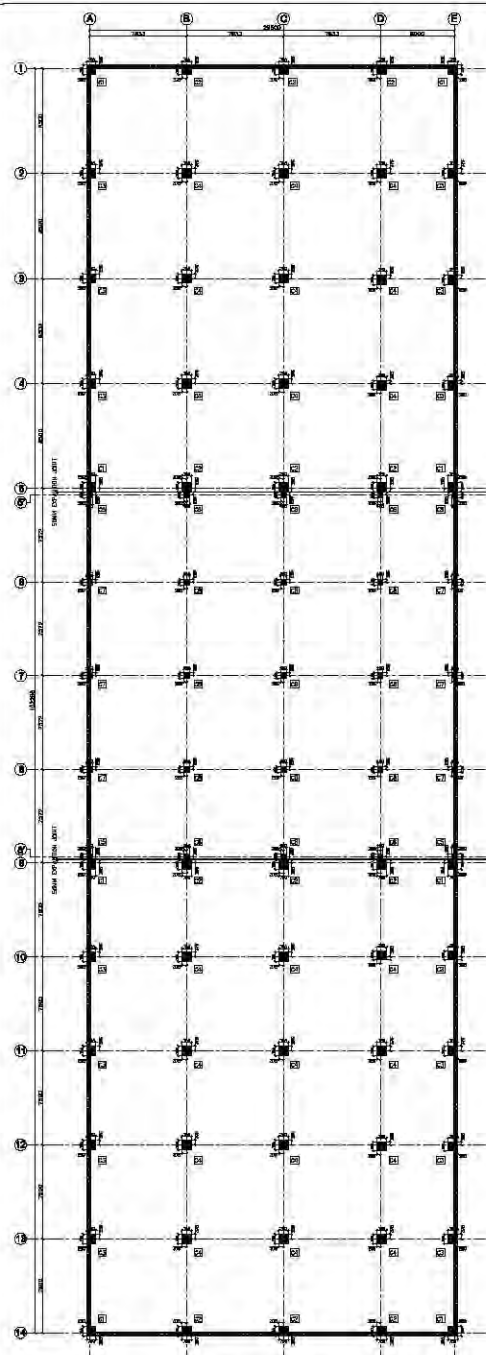
Drawn by:  
B3-09

Checked by:  
NG

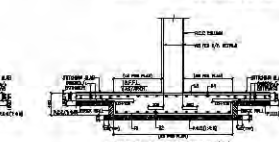
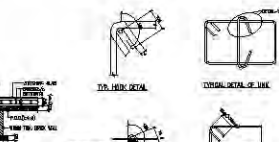
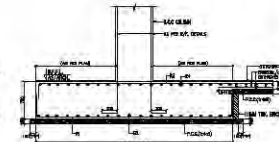
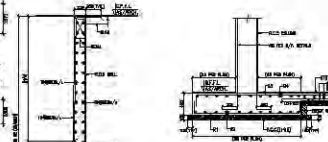
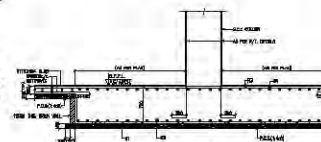
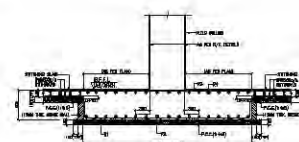
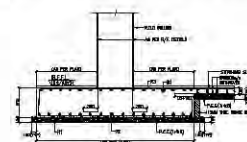
Date:  
11.11.19

Handicraft Centre-  
Block 3-6F-  
Fire Fighting Layout

SREI  
Specialty in High Risen Building

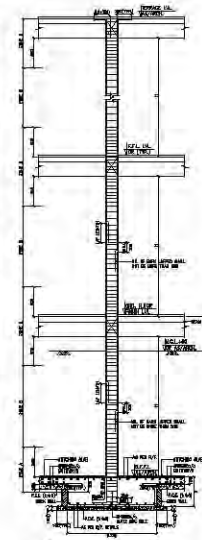


### COLUMN SCHEDULES

[illegible]

### EDITING SCHEDULES: -

| FOOTING<br>VARI. | SIZE |      |     | BOTTOM REINFORCEMENT     |                          | TOP REINFORCEMENT        |                          | REF. 34 |
|------------------|------|------|-----|--------------------------|--------------------------|--------------------------|--------------------------|---------|
|                  | L    | B    | D   | ALONG THE LENGTH<br>(P1) | ACROSS THE WIDTH<br>(P2) | ALONG THE LENGTH<br>(P3) | ACROSS THE WIDTH<br>(P4) |         |
| F1               | 3300 | 3300 | 800 | 16 #5@50c                | 16 #5@50c                | 10 #5@50c                | 10 #5@50c                | A-1     |
| F2               | 3400 | 3400 | 800 | 16 #5@50c                | 16 #5@50c                | 10 #5@50c                | 10 #5@50c                | B-1     |
| F3               | 4750 | 4750 | 750 | 16 #5@50c                | 16 #5@50c                | 10 #5@50c                | 10 #5@50c                | C-1     |
| F4               | 6030 | 6030 | 750 | 20 #5@50c                | 20 #5@50c                | 12 #5@50c                | 12 #5@50c                | D-1     |
| F5               | 2290 | 2290 | 450 | 12 #5@50c                | 12 #5@50c                | 10 #5@50c                | 10 #5@50c                | E-1     |
| F6               | 3400 | 2400 | 450 | 12 #5@50c                | 12 #5@50c                | 10 #5@50c                | 10 #5@50c                | F-1     |




|                 |
|-----------------|
| GENERAL NOTES - |
|-----------------|

NOTES &amp; REFERENCES

5. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
  6. ALL DIMENSIONS ARE IN MM & CIRCLES IN MILLIMETERS.
  7. DO NOT SCALE ANY DIMENSION.
  8. CONTAIN LOCATION OF WALLS WITH RELEVANT ANGLE, DIMS & R/S
  9. ALL REINFORCEMENT SHALL BE SOLIDIFIED DEFINED DIMS (SIZES) OR TANT, BARS HAVE YIELD STRENGTH NOT LESS THAN 500 N/MM<sup>2</sup> AND CONFORMING TO IS 1786 - 2004.
  10. THE CLEAR COVER OF ALL BARS ARE AS FOLLOWS -
    - (a) FOUNDATION 50 MM
    - (b) COLUMNS 40 MM
    - (c) BEAMS (top & bottom) 30 MM above COVER 25mm
    - (d) SLABS 20 MM
    - (e) WALLS/CANOPY / 30 MM
    - (f) R.C.C. WALL 30 MM (EXTERIOR FACE) & 25MM (INTERIOR FACE)
  11. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS SHOULD BE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE USED.
  12. INDICATES TOP BARS INDICATES BOTTOM BARS
- Opening in structural element

100x100 mm

100x100 mm


13. ALL R.C.C. TO BE 40MM MIN. UNPAVED AND BARED THEORETICALLY AS PER IS 456 & IS 456-1987.
  14. ALL FOOTING ARE GENERALLY PLACED WITH REDUCED TO THE CENTER LINE OF COLUMN.
  15. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHENEVER FOUND NECESSARY WITH SPACES (S/D) TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENT AS PER IS 456-1987.
  16. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWING & IN CASE OF ANY DISCREPANCY ARCHITECTS DRAWS SHALL PREVAIL.
  17. ALL CONSTRUCTION JOINTS SHALL BE PROVIDED BY CONSULTANT ON THE BASIS OF DESIGN CONSIDERED BY THE ARCHITECT.
  18. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF COLUMN IN TWO UNLESS OTHERWISE SPECIFIED.
  19. THE FIRST STRIPBARS IS BECOME SHALL BE AT A DISTANCE OF 50MM FROM THE JANT FACE THE SPECIAL CONTAINING REINFORCEMENT SHALL BE PROVIDED FOR THE FIRST STRIPBARS.
  20. ALL ANCHORS ARE POINT ANCHORS UNLESS OTHERWISE SPECIFIED.
  21. PROVIDE HOT STEEL GRADE EXTRA TOP BARS AS BEING
- ANCHOR 500 C/C
22. BLACK COTTON PIPE, IF ENCOUNTERED IN PIPES SHALL BE FULLY REMOVED.
  23. ALL LOWER PORTIONS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILL AS PER

|         |            |              |
|---------|------------|--------------|
| R1      | 26-06-2019 | FOR APPROVAL |
| RD      | 24-06-2019 | FOR APPROVAL |
| REV.NO. | DATE       | REVISION     |

|               |  |
|---------------|--|
| PROJECT NAME: |  |
|---------------|--|

## HANDICRAFT

|               |  |
|---------------|--|
| PROJECT TITLE |  |
|---------------|--|

## HANDICRAFT

DRAWING TITLE :

BWE NO.

STR-17

SCALE:-

|        |
|--------|
| N.T.S. |
|--------|

DRAWN BY: -

RAJESH

DESIGNED BY:

ROSHAN

CHECKED BY: -

ROSHAN

DATE:—

30-11-2019

DRAWING RELEASED FOR:

- |  |                                       |
|--|---------------------------------------|
| <input checked="" type="checkbox"/> APPROVAL | <input type="checkbox"/> FOR TENDER   |
| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |

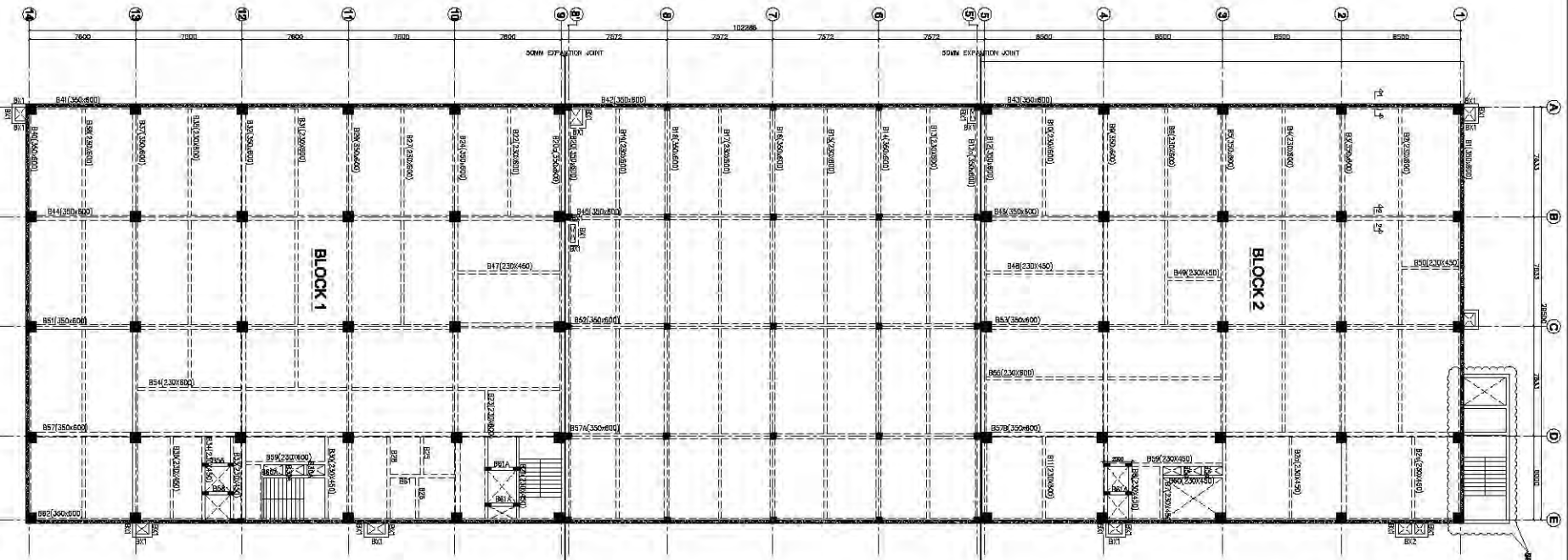
ARCHITECT'S SIGN

OWNER'S SIGN \_\_\_\_\_

GENERAL NOTES -

NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONSTRUCTION OF WALLS WITH RELEVANT
5. AGRI. DPCS
6. THE REINFORCEMENT SHALL BE SQUATTERED DEFORMED BARS (S.T.D) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS. 1786 - 2006.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a). FOUNDATION 50 MM
  - (b). COLUMNS 40 MM
  - (c). BEAMS (top & bottom) 30 MM side Cover 25mm
  - (d). SLABS 25 MM
  - (e). CHAJJAS/CANOPY 30 MM
  - (f). R.C.C. WALL 30 MM(EARTH FACE) & 25MM(INNER FACE)& NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
8. INDICATES TOP BARS
9. INDICATES BOTTOM BARS
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND SURED THROUGHOUT, AS PER IS-486- LATEST
11. ALL DIMENSIONS TO BE CONTROLLY PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456-SPACER BARS
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DPCS & IN CASE OF ANY DISCREPANCY, THE DIMENSIONS TO BE AS PER ARCHITECT'S DPCS
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SQUEE PREPARED BY CONTRACTOR
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE END OF THE BEAM
17. THE FIRST STIRRUPS IN CHAJJAS/CANOPY SHALL BE PROVIDED THROUGH THE CORNER JOINTS
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS IS 8@200 C/C (R)
19. BRICK COTTON SOIL IF ENCOUNTERED IN F.T.P.S. SHALL BE FULLY REMOVED.
20. ALL LOOSE ROCKETS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.C.S.1:4:6



FRAMING PLAN AT GROUND FLOOR LVL.(BASEMENT FLOOR ROOF LVL.)  
ALL BEAM SIZE ARE (350X600),(230X600),(230X450)  
ALL SLAB ARE THIK. 150MM (U.N.O.)

DRAWING RELEASED FOR:

- APPROVAL ☒ FOR TENDER  
ADVANCE COPY ☐ CONSTRUCTION  
ARCHITECT'S SIGN OWNER'S SIGN



GENERAL NOTES -

NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY F FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONSTRUCTION OF WALLS WITH RELEVANT AGED DPCS
5. CONCRETE GRADE IS M25
6. THE REINFORCEMENT SHALL BE SQUATTEST DEFORMED BARS (S.T.D) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2006.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM(EARTH FACE) & 25MM(INNER FACE)
8. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9. INDICATES TOP BARS
10. INDICATES BOTTOM BARS
11. Opening in structural element
12. p.c.d. work
13. Brick work
14. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND SURED THROUGHOUT, AS PER IS-486- LATEST.
15. ALL JOINTS AND CORNERS TO BE CORNERS PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN
16. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456-SPACER BAR
17. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DPCS & IN CASE OF ANY DISCREPANCY, JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SKETCH PREPARED BY CONTRACTOR.
18. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
19. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE END OF THE SECTION. CORNER STIRRUPS IN CORNERS SHALL BE PROVIDED THROUGH THE CORNERS. ALL ANGLES ARE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
20. PROVIDE DIST STEEL OVER EXTRA TOP BARS IS 50000 C/C (10')
21. BRICK COTTON SOIL IF ENCOUNTERED IN FIT PTS. SHALL BE FULLY REMOVED.
22. ALL LOOSE ROCKETS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.C.S.1:4:6

|          |            |              |
|----------|------------|--------------|
| REV. NO. | DATE       | REVISION     |
| R0       | 26-06-2019 | FOR APPROVAL |

PROJECT NAME:

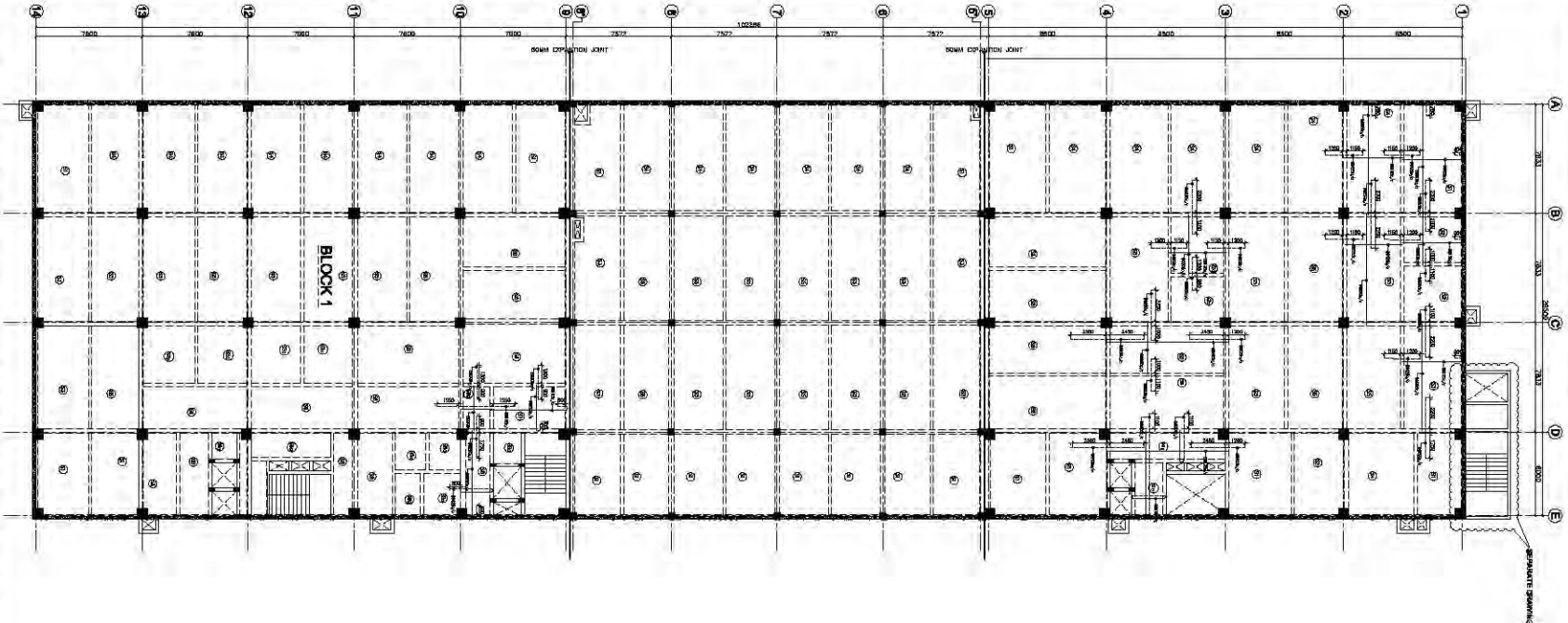
HANDCRAFT

PROJECT TITLE

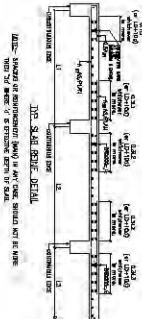
HANDCRAFT

|                                   |         |
|-----------------------------------|---------|
| DRAWING TITLE :                   | DWG NO. |
| FRAMING PLAN AT GROUND FLOOR LVL. | SFR-19  |

|               |            |
|---------------|------------|
| SCALE:-       | N.T.S      |
| DRAWN BY:-    | RAJESH     |
| DESIGNED BY:- | ROSHAN     |
| CHECKED BY:-  | ROSHAN     |
| DATE:-        | 30-11-2019 |

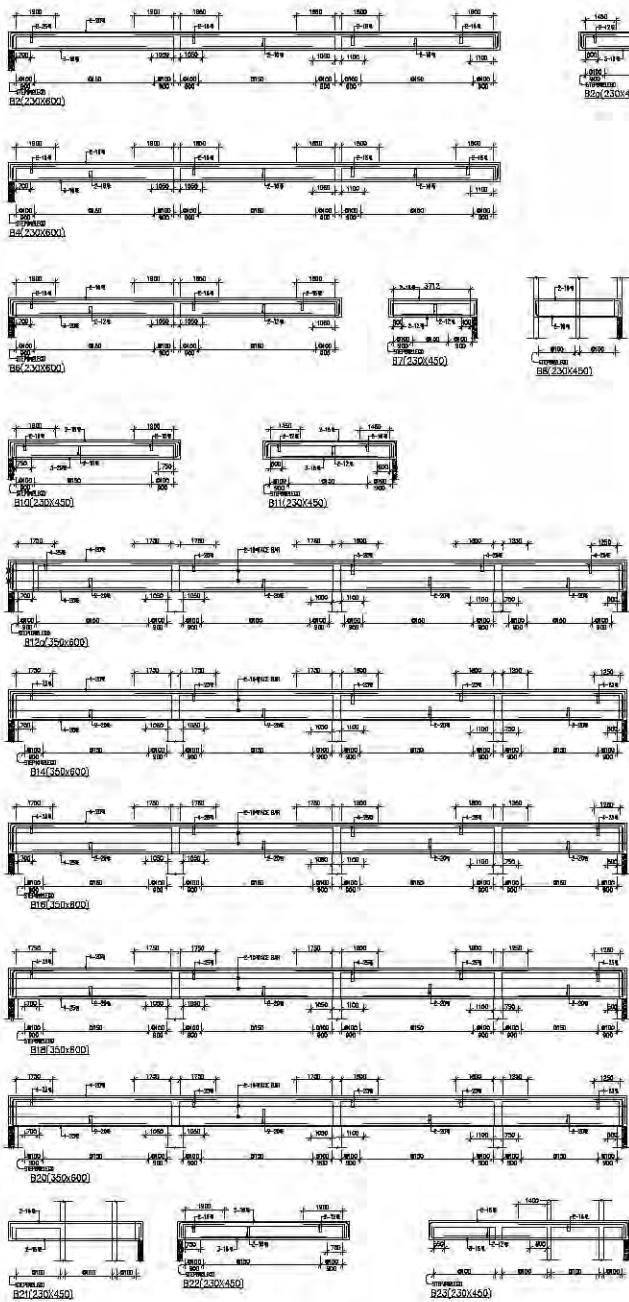


SLAB REINFORCEMENT PLAN AT GROUND FLOOR LVL.(BASEMENT FLOOR ROOF LVL.)  
ALL BEAM SIZE ARE (350X600),(230X600),(230X450)  
ALL SLAB ARE THICK. 150MM (U.N.O)



NOTE:- SHOWED OF REINFORCEMENT BARS IN ANY CASE, SHOULD NOT BE SCALE  
THIS IS NOT A STRUCTURAL DRAWING

|  |                                       |
|--|---------------------------------------|
| DRAWING RELEASED FOR:                        | FOR TENDER                            |
| <input checked="" type="checkbox"/> APPROVAL | <input type="checkbox"/> CONSTRUCTION |
| <input type="checkbox"/> ADVANCE COPY        |                                       |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |



## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSIONS.
4. CONFIRM LOCATION OF WALLS WITH RELEVANT ARCH. DRAWS.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE SQUARED/DEFORMED BARS (B.L.) ON T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
 

|                          |  |
|--------------------------|--|
| (a) FOUNDATION           | 50 MM                                  |
| (b) COLUMNS              | 40 MM                                  |
| (c) BEAMS (top & bottom) | 30 MM side Cover 25mm                  |
| (d) SLABS                | 25 MM                                  |
| (e) CHAJJAS/GARHPY       | 30 MM                                  |
| (f) R.C.C. WALL          | 30 MM (EARTH FADE) & 25MM (INNER FACE) |
8. NOT MORE THAN 50% OF THE BARS SHALL BE LIFTED AT ANY SECTION. LBSA CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9.
 

|                               |
|-------------------------------|
| INDICATES TOP BARS            |
| INDICATES BOTTOM BARS         |
| Opening in structural element |
| P.O.C work                    |
| BRICK work                    |
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED INDIVIDUALLY AS PER IS 4620 (PART 1).
11. ALL JOINTS ARE TO BE CENTRALLY PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 4620.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRAWS SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWD UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FASE. THE SPECIAL CORNER REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE CORNER SPACING IN COLUMNS.
17. 90° ANGLED AND 90° RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST. STEEL OVER EXTRA TOP BARS @ 60000 C/C (8").
19. BLACK COLOUR SOL. IF ENCOUNTERED IN PM. PHTL. SHALL BE FULLY REMOVED.
20. ALL LOOSE ROCKETS OF SOL. BELOW FOUNDATION SHALL BE FILLED WITH F.F.S. 1:4:8.

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|  |            |              |
| RO   | 26-08-2019 | FOR APPROVAL |
| REV.NO.  | DATE       | REVISION     |
| PROJECT NAME:  |            |              |
| HANDICRAFT   |            |              |
| PROJECT TITLE  |            |              |
| HANDICRAFT   |            |              |
| DRAWING TITLE :  |            | DWG NO.      |
| BEAMS DETAILS AT GROUND FLOOR LVL.   |            | STR-20       |
| SCALE:-  | N.T.S      |              |
| DRAWN BY:-   | RAJESH     |              |
| DESIGNED BY:-  | ROSHAN     |              |
| CHECKED BY:-   | ROSHAN     |              |
| DATE:-   | 30-11-2019 |              |
|  |            |              |
| DRAWING RELEASED FOR:  |            |              |
| <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> FOR TENDER |            |              |
| <input type="checkbox"/> ADVANCE COPY <input type="checkbox"/> CONSTRUCTION      |            |              |
| ARCHITECT'S SIGN   |            | OWNER'S SIGN |

# NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CHECK THE LOCATION OF WALLS WITH RELEVANT ARCH. DRAWS.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE GALVANIZED DEFORMED BARS (B.L.) ON T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FLOOR SLAB : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 50 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/GARHPY : 30 MM
8. NOT MORE THAN 50% OF THE BARS SHALL BE LIFTED AT ANY SECTION. BARS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9.
  - INDICATES TOP BARS
  - INDICATES BOTTOM BARS
  - Opening in structural element
  - p.c.c work
  - brick work
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED INDIVIDUALLY AS PER IS 456-LATEST.
11. ALL JOINTS ARE GENERALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456-SPACER BARS.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRAWS SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEDULE PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWD UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FASE. THE SPECIAL CORNER REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE CORNER SPACING IN COLUMNS.
17. 90° ANGLED ONE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST. STEEL OVER EXTRA TOP BARS @ 500MM C/C (8°)
19. BLACK OSTEON 50C. IF ENCOVERED IN PH. PHTL. SHALL BE FULLY REMOVED.
20. ALL LOOSE PRODUCTS OF SOIL BED FOUNDATION SHALL BE FILLED WITH F.F.S.S. 4:1:8

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| RO      | 26-08-2019 | FOR APPROVAL |
| REV.NO. | DATE       | REVISION     |

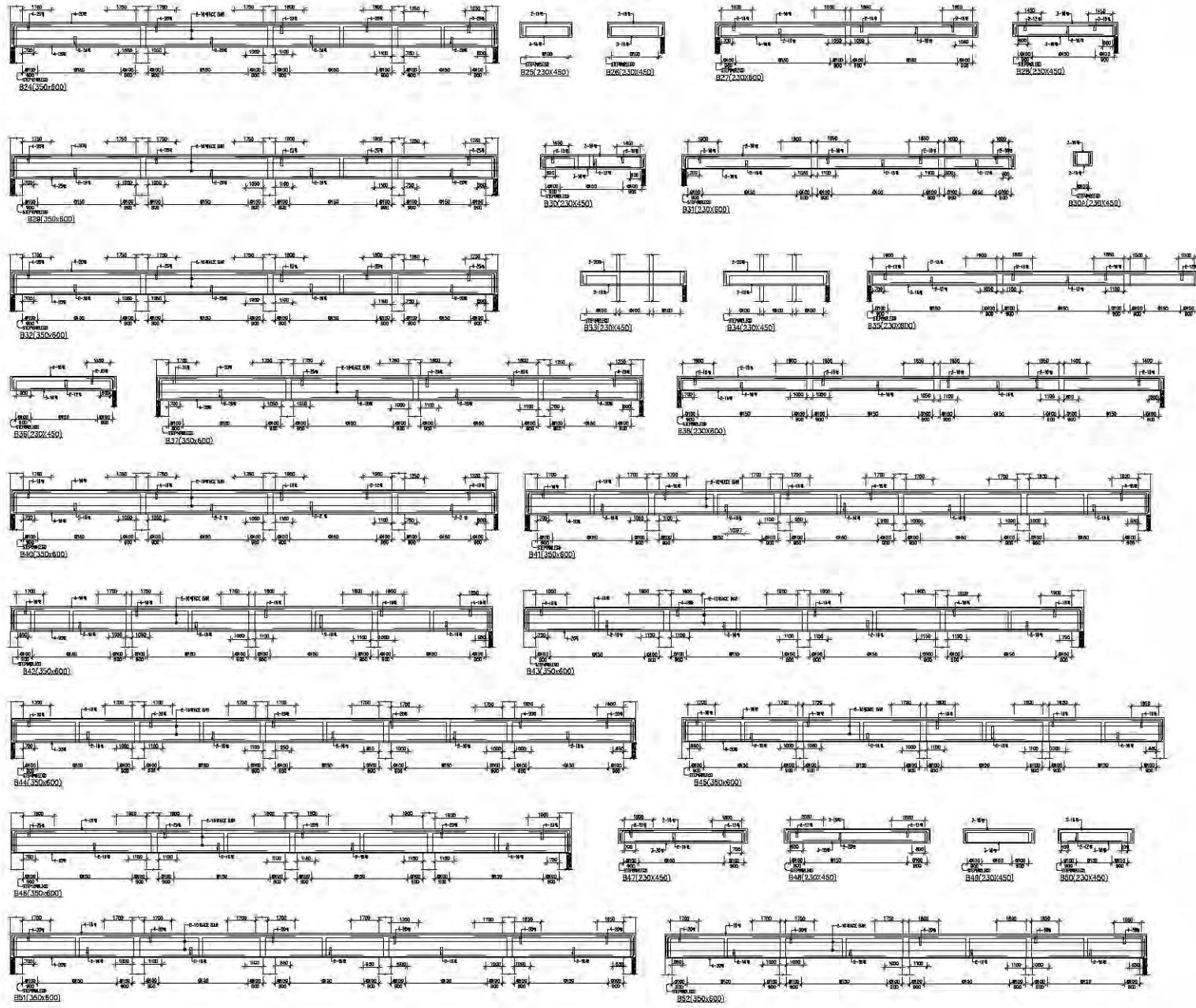
PROJECT NAME: HANDICRAFT

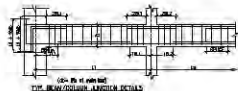
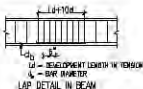
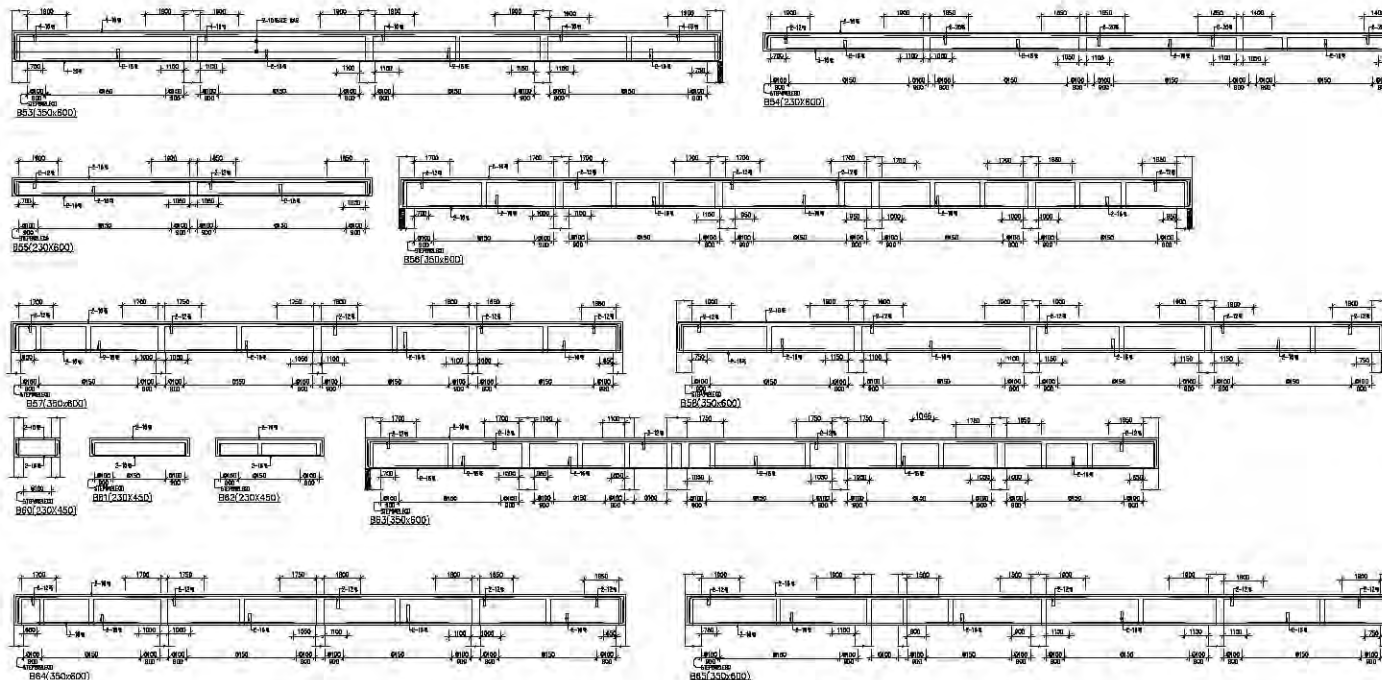
PROJECT TITLE: HANDICRAFT

DRAWING TITLE : BEAMS DETAILS AT GROUND FLOOR LVL. DWS NO. STR-11

SCALE:- N.T.S.  
 DRAWN BY:- RAJESH  
 DESIGNED BY:- ROSHAN  
 CHECKED BY:- ROSHAN  
 DATE:- 30-11-2019

DRAWING RELEASED FOR:  
☒ APPROVAL ☐ FOR TENDER  
☐ ADVANCE COPY ☐ CONSTRUCTION  
 ARCHITECT'S SIGN OWNER'S SIGN





# NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSIONS.
4. CONFIRM LOCATION OF WALLS WITH RELEVANT ARCH. DRAWS.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE SLD/MSD/DEFORMED BARS (B.L.) ON T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR SPACING TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION 50 MM
  - (b) COLUMNS 40 MM
  - (c) BEAMS (top & bottom) 50 MM side cover 25mm
  - (d) SLABS 25 MM
  - (e) CHAJJAS/GADROPY 25 MM
  - (f) R.C.C. WALL 30 MM (EARTH FADE) & 25MM (INNER FACE)
8. NOT MORE THAN ONE OF THE BARS SHALL BE LIFTED AT ANY SECTION. BARS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9.
  - INDICATES TOP BARS
  - INDICATES BOTTOM BARS
  - Opening in structural element
  - p.c.c. work
  - brick work
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED INDIVIDUALLY AS PER IS 456-LATEST.
11. ALL JOINTS AND CORNERS SHALL BE PROVIDED WITH RESPECTED TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRAWS SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWD UNLESS OTHERWISE SHOWN.
16. THE FIRST STROPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT LINE. THE SECOND CORNER REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
17. ALL ANGLES ARE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST. STEEL OVER EXTRA TOP BARS @ 600MM C/C (8").
19. BLACK COTTON SOL. IF ENCOUNTERED IN PM. PHT. SHALL BE FULLY REMOVED.
20. ALL LOOSE ROCKETS OF SOL. BELOW FOUNDATION SHALL BE FILLED WITH F.F.S.S./M.S.

|                                    |            |              |
|------------------------------------|------------|--------------|
| RO                                 | 26-08-2019 | FOR APPROVAL |
| REV. NO.                           | DATE       | REVISION     |
| PROJECT NAME:                      |            |              |
| HANDICRAFT                         |            |              |
| PROJECT TITLE                      |            |              |
| HANDICRAFT                         |            |              |
| DRAWING TITLE :                    |            | DWG NO.      |
| BEAMS DETAILS AT GROUND FLOOR LVL. |            | STR-22       |
| SCALE:-                            | N.T.S      |              |
| DRAWN BY:-                         | RAJESH     |              |
| DESIGNED BY:-                      | ROSHAN     |              |
| CHECKED BY:-                       | ROSHAN     |              |
| DATE:-                             | 30-11-2019 |              |

## DRAWING RELEASED FOR:

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- ☐ ADVANCE COPY
- ☐ CONSTRUCTION



ARCHITECT'S SIGN

OWNER'S SIGN



GENERAL NOTES -

NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONSTRUCTION SHOULD BE IN ACCORDANCE WITH RELEVANT APPLICABLE CODES.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE SQUATTEST DEFLECTED BARS (S.T.D) OR 1.4M, BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS. 1786 - 2006.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C. WALL : 30 MM(EARTH FACE) & 25MM(INNER FACE)
8. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
  - (a) INDICATES TOP BARS
  - (b) INDICATES BOTTOM BARS
9.  Opening in structural element  
 BRICK work
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THROUGHOUT, AS PER IS-483-LATEST.
11. ALL REINFORCEMENT SHALL BE CONTROLLY PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, WHEREVER FOUND NECESSARY, WITH SPACER BARS TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456-SPACER BARS.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRS'S & IN CASE OF ANY DISCREPANCY, IT SHALL BE CORRECTED BY ARCHITECT'S DRS'S.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SQUEE PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE END OF THE SECTION. CONFINING STIRRUPS IN CORNERS SHALL BE PROVIDED THROUGHOUT THE SECTION UNLESS OTHERWISE SPECIFIED.
17. ALL ANGLES ARE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS IS 5.0000 C/C (R)  
B46000 C/C (R)
19. BLACK COTTON SOIL IF ENCOUNTERED IN FUTURE, SHALL BE FULLY REMOVED.
20. ALL LOOSE ROCKS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.S.S.1:4:6

|          |            |              |
|----------|------------|--------------|
| REV. NO. | 26-06-2019 | FOR APPROVAL |
| DATE     |            | REVISION     |

PROJECT NAME:

HANDCRAFT

PROJECT TITLE

HANDCRAFT

|                                  |         |
|----------------------------------|---------|
| DRAWING TITLE :                  | DWG NO. |
| FRAMING PLAN AT FIRST FLOOR LVL. | STR-23  |

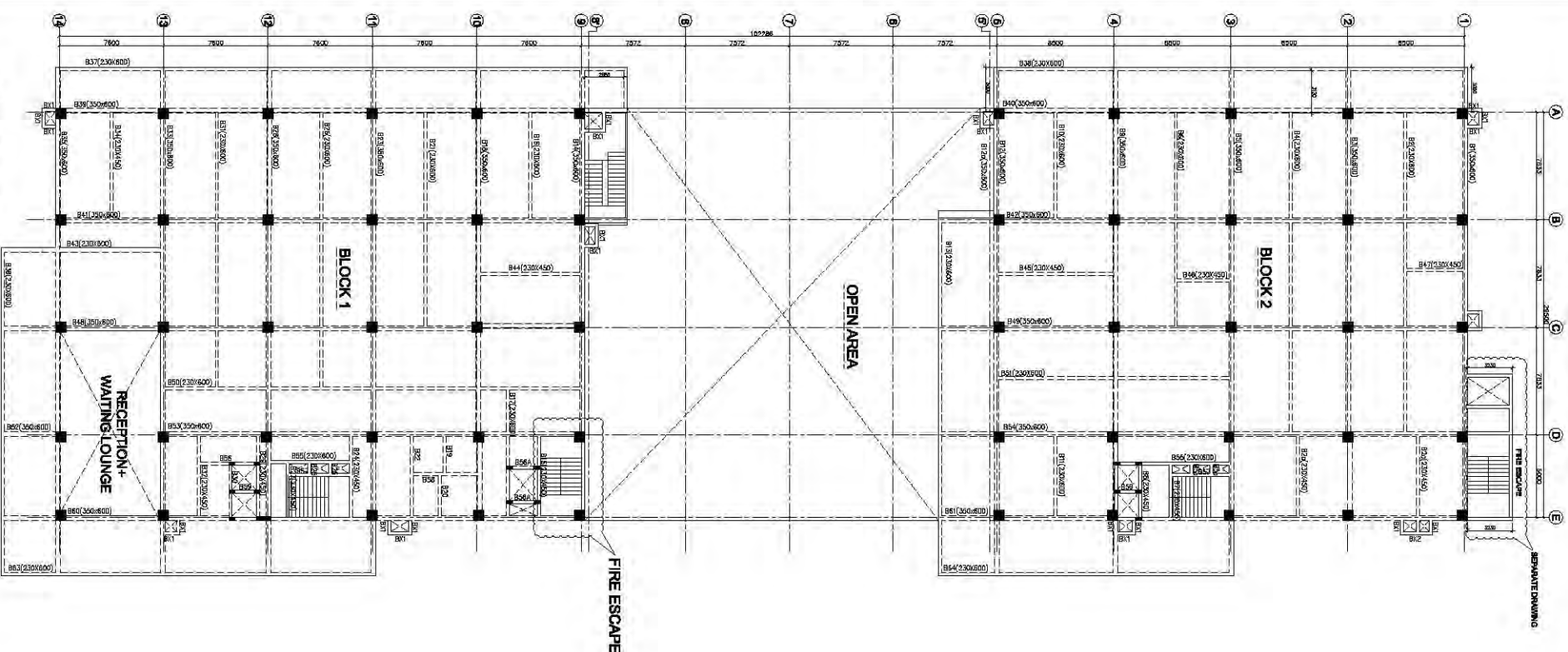
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|---------------|------------|
| SCALE:-       | N.T.S      |
| DRAWN BY:-    | RAJESH     |
| DESIGNED BY:- | ROSHAN     |
| CHECKED BY:-  | ROSHAN     |
| DATE:-        | 30-11-2019 |

DRAWING RELEASED FOR:

- ☒ APPROVAL ☐ FOR TENDER
- ☐ ADVANCE COPY ☐ CONSTRUCTION

ARCHITECT'S SIGN

OWNER'S SIGN

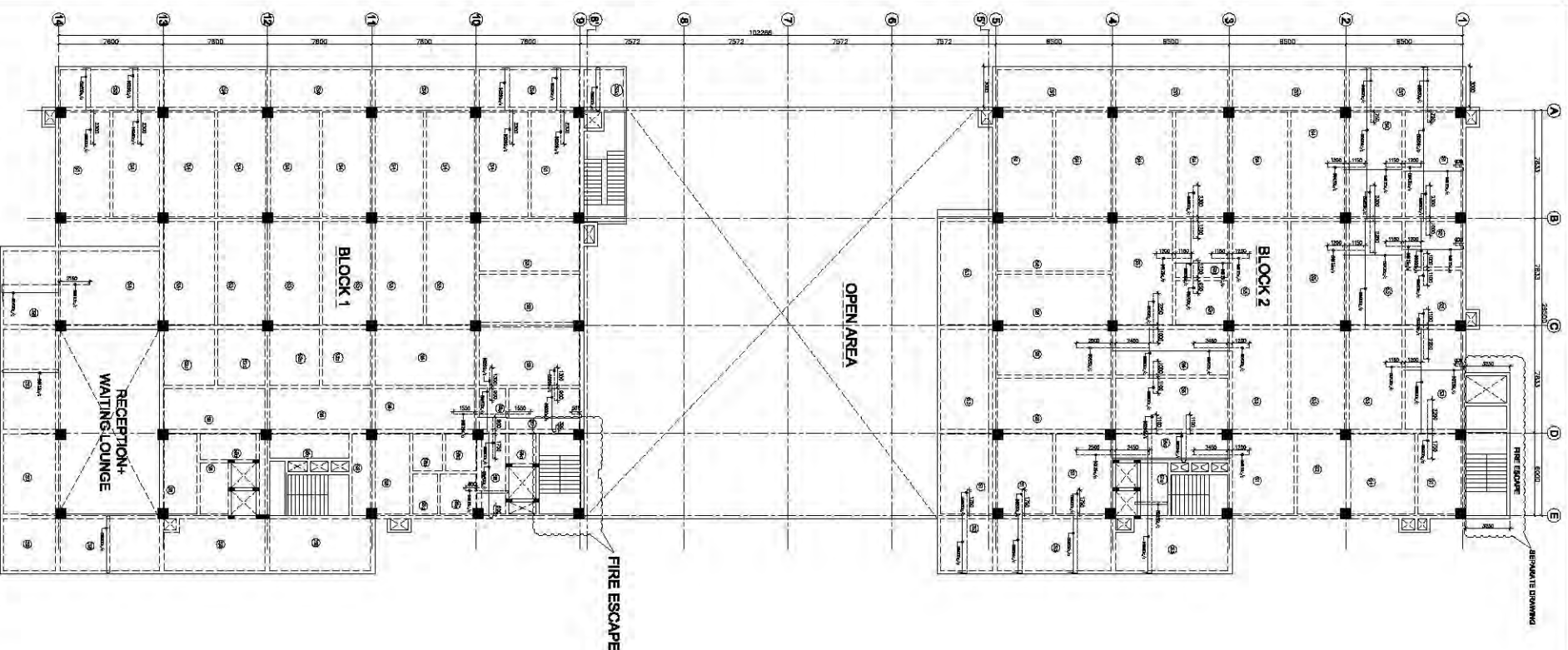


FRAMING PLAN AT FIRST FLOOR LVL.(GROUND FLOOR ROOF LVL.)  
ALL BEAM SIZE ARE (350X600),(230X600),(230X450)  
ALL SLAB ARE THICK 150MM (UNO)

GENERAL NOTES -

NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONSTRUCTION OF WALLS WITH RELEVANT AGED BRCS
5. CONCRETE GRADE IS M25
6. THE REINFORCEMENT SHALL BE SQUARED/DEFORMED BARS (S.T.D) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS. 1786 - 2006.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a). FOUNDATION : 50 MM
  - (b). COLUMNS : 40 MM
  - (c). BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d). SLABS : 25 MM
  - (e). CHAJJAS/CANOPY : 30 MM
  - (f). R.C.C. WALL : 30 MM(EARTH FACE) & 25MM(INNER FACE)& NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
8. INDICATES TOP BARS  
INDICATES BOTTOM BARS  
Opening in structural element  
p.c.d work  
BRICK work
9. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRS & IN CASE OF ANY DISCREPANCY, THE DIMENSIONS SHALL BE APPROVED BY ARCHITECT.
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND SURED THROUGHOUT, AS PER IS-482-LATEST
11. ALL CONSTRUCTION JOINTS TO BE CONTROLLED PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, WHEREVER FOUND NECESSARY, WITH SPACER BAR TO BE PROVIDED, BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456-SPACER BAR
13. ALL DIMENSIONS SHALL BE CHECKED WITH ARCHITECT'S DRS & IN CASE OF ANY DISCREPANCY, THE DIMENSIONS SHALL BE APPROVED BY ARCHITECT.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCOPE PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE END OF THE BEAM.
17. THE SPECIAL CORNER REINFORCEMENT IN CORNERS SHALL BE PROVIDED THROUGHOUT THE ENTIRE PERIMETER OF THE CORNER.
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS IS 50000 C/C (R)
19. BRICK COTTON SOIL IF ENCOUNTERED IN F.T.P.S. SHALL BE FULLY REMOVED.
20. ALL LOOSE FLOCKS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.S.S.1:4:8



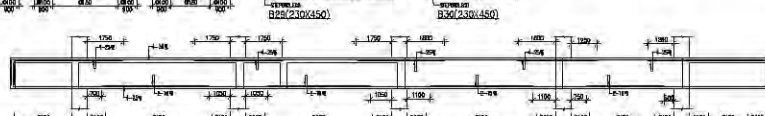
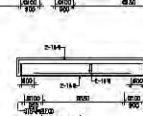
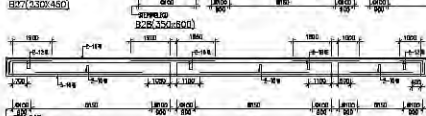
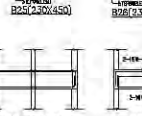
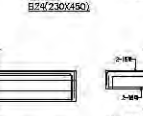
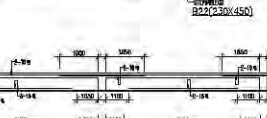
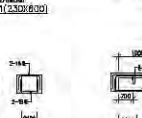
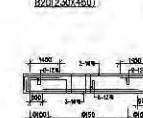
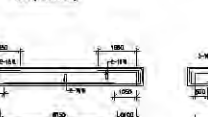
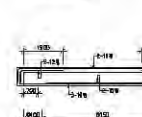
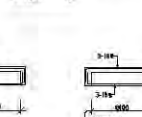
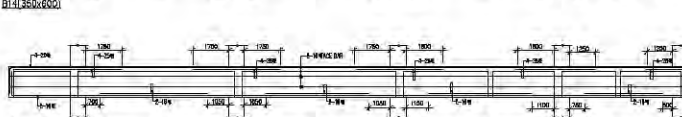
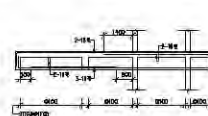
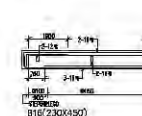
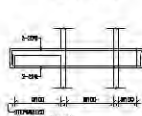
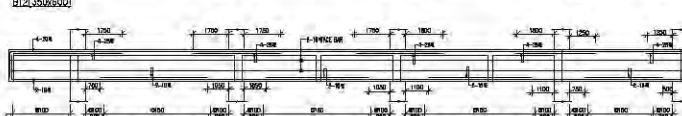
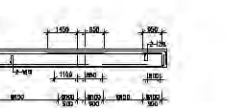
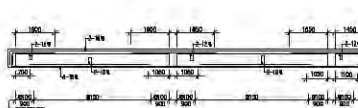
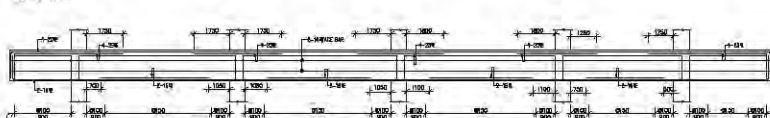
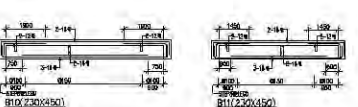
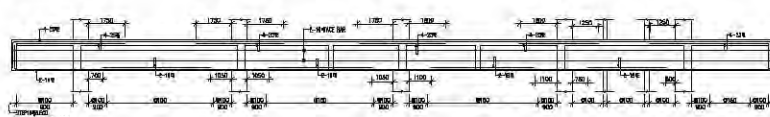
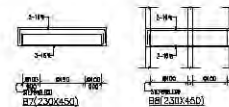
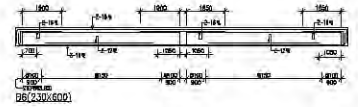
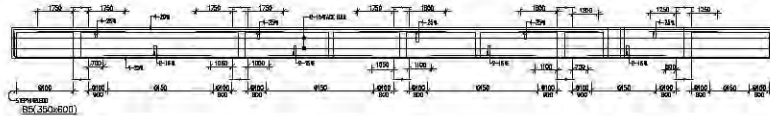
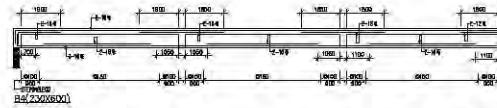
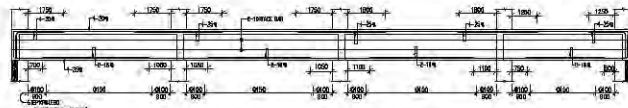
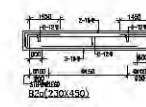
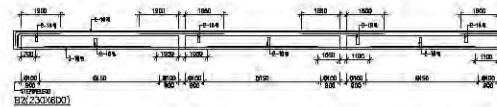
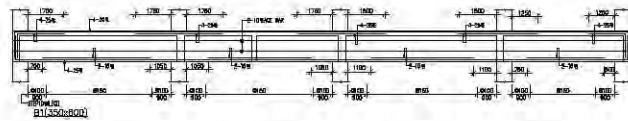
SLAB REINFORCEMENT PLAN AT FIRST FLOOR L.V.L.(GROUND FLOOR ROOF L.V.L.)  
ALL BEAM SIZE ARE (350X600),(230X600),(230X450).  
ALL SLAB ARE THK. 150MM (U.N.O)

PROJECT NAME: HANDCRAFT  
PROJECT TITLE: HANDCRAFT

| DRAWING TITLE :                  |            | DWG NO. |  |
|----------------------------------|------------|---------|--|
| FRAMING PLAN AT FIRST FLOOR LVL. |            | STR-24  |  |
| SCALE:-                          | N.I.S      |         |  |
| DRAWN BY:-                       | RAJESH     |         |  |
| DESIGNED BY:-                    | ROSHAN     |         |  |
| CHECKED BY:-                     | ROSHAN     |         |  |
| DATE:-                           | 30-11-2019 |         |  |

DRAWING RELEASED FOR:  
☒ APPROVAL ☐ FOR TENDER  
☐ ADVANCE COPY ☐ CONSTRUCTION

ARCHITECT'S SIGN OWNER'S SIGN

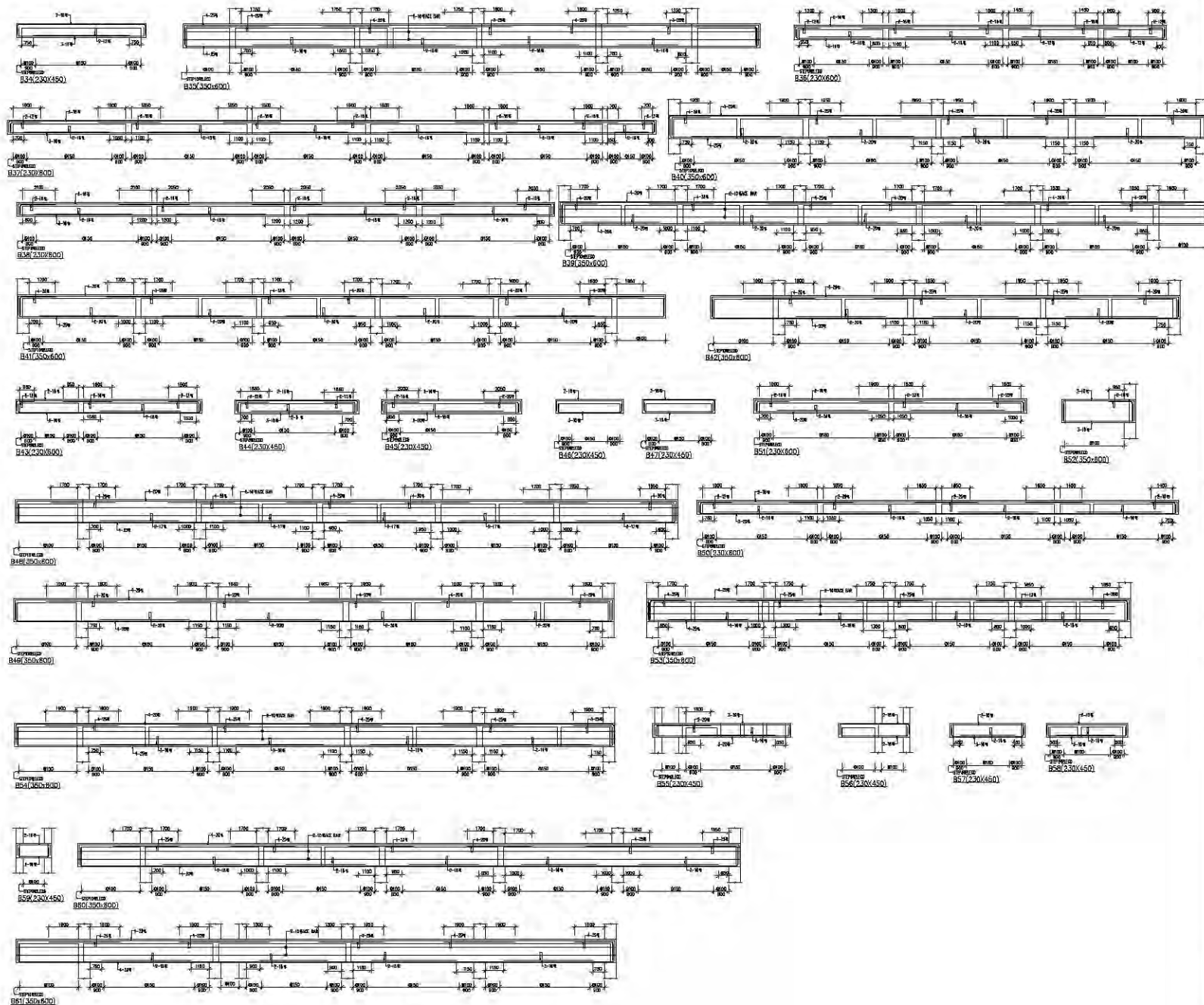


# NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONFIRM LOCATION OF WALLS WITH RELEVANT ARCH. DRAWS.
5. CONCRETE GRADE IS M25
6. THE REINFORCEMENT SHALL BE SUPPLIED AS DEFORMED BARS (B.L.D) ON T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 50 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/GARDENY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FADE) & 25MM (INNER FACE)
8. NOT MORE THAN 50% OF THE BARS SHALL BE LIFTED AT ANY SECTION. BARS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9.
  - INDICATES TOP BARS
  - INDICATES BOTTOM BARS
  - Opening in structural element
  - P.O.C work
  - Block work
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED INDIVIDUALLY AS PER IS 456-LATEST.
11. ALL JOINTS AND CORNERS SHALL BE PLACED WITH RESPECTED TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRAWS SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEDULE PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWD UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT LINE. THE SPECIAL CORNER REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE CORNER SPACING IN COLUMNS.
17. ALL ANGLES ARE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DET. STEEL OVER EXTRA TOP BARS @ 600MM C/C (B'')
19. BLACK COTTON S.C. IF ENCOUNTERED IN PM. PITS SHALL BE FULLY REMOVED.
20. ALL LOOSE ROCKETS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.F.S. 1:4:8

|                                   |            |              |
|-----------------------------------|------------|--------------|
| RO                                | 26-08-2019 | FOR APPROVAL |
| REV. NO.                          | DATE       | REVISION     |
| PROJECT NAME:                     |            |              |
| HANDICRAFT                        |            |              |
| PROJECT TITLE                     |            |              |
| HANDICRAFT                        |            |              |
| DRAWING TITLE :                   |            | DWS NO.      |
| BEAMS DETAILS AT FIRST FLOOR LVL. |            | STR-25       |
| SCALE:-                           | N.T.S      |              |
| DRAWN BY:-                        | RAJESH     |              |
| DESIGNED BY:-                     | ROSHAN     |              |
| CHECKED BY:-                      | ROSHAN     |              |
| DATE:-                            | 30-11-2019 |              |

|  |                                       |
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| DRAWING RELEASED FOR:                        |                                       |
| <input checked="" type="checkbox"/> APPROVAL | <input type="checkbox"/> FOR TENDER   |
| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |



# NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSIONS.
4. COMPLETE LOCATION OF WALLS WITH RELEVANT ARCH. DRAWS.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE SQUARED/DEFORMED BARS (B.L.) ON T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR SPACING TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
 

|                          |  |
|--------------------------|--|
| (a) FUNDATION            | 50 MM                                  |
| (b) COLUMNS              | 40 MM                                  |
| (c) BEAMS (top & bottom) | 30 MM side Cover 25mm                  |
| (d) SLABS                | 25 MM                                  |
| (e) CHAJJAS/GANTRY       | 30 MM                                  |
| (f) R.C.C. WALL          | 30 MM (EARTH FADE) & 25MM (INNER FACE) |
8. NOT MORE THAN 50% OF THE BARS SHALL BE LIFTED AT ANY SECTION. LIFTING SHALL BE DONE IN SUCH A MANNER THAT THE BARS SHALL BE AVOIDED.
9.
 

|                               |
|-------------------------------|
| INDICATES TOP BARS            |
| INDICATES BOTTOM BARS         |
| Opening in structural element |
| p.c.c. work                   |
| brick work                    |
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED INDIVIDUALLY AS PER IS 456-LATEST.
11. ALL JOINTS ARE TO BE MAINTAINED WITH RESPECT TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRAWS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRAWS SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWD UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FASE. THE SECOND CORNER REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
17. 90° ANGLED AND RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DST STEEL OVER EXTRA TOP BARS (B&B) G/G (B'').
19. BLACK COLOUR 303. IF ENCOURED IN PR. PTL, SHALL BE FULLY REMOVED.
20. ALL LOOSE PRODUCTS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F.F.S. 1/4 IS.

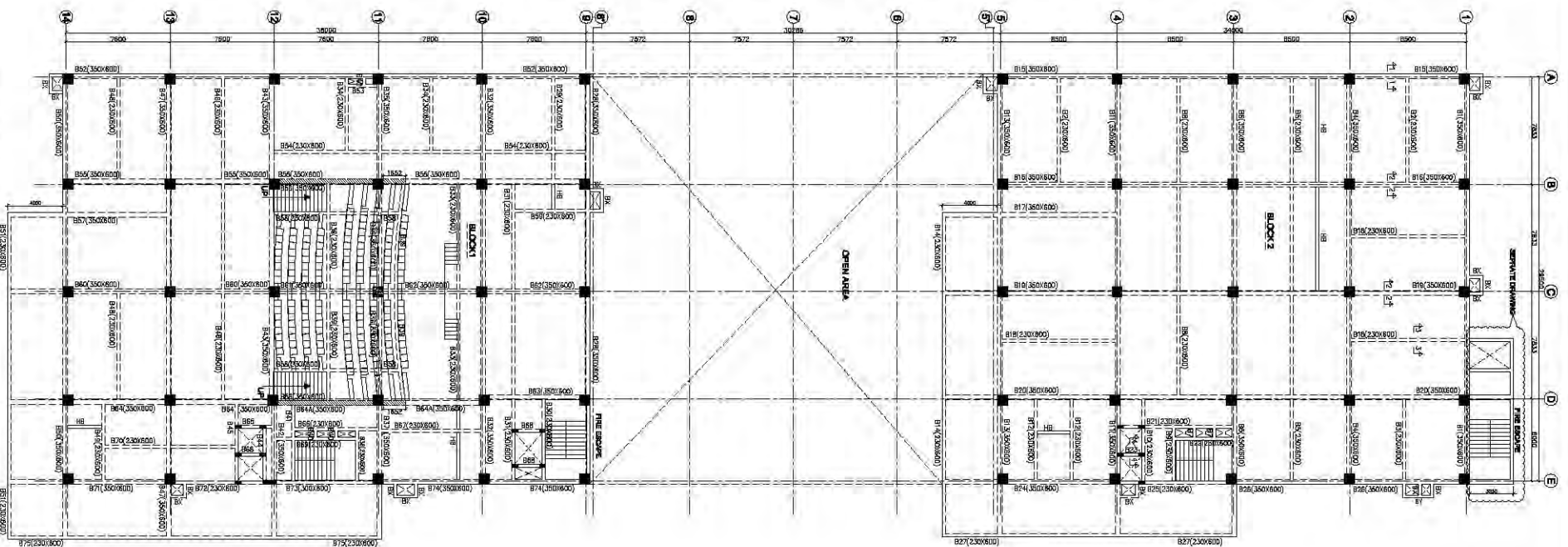
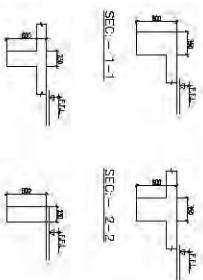
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| RO   | 26-08-2019 | FOR APPROVAL |
| REV.NO.  | DATE       | REVISION     |
| PROJECT NAME:  |            |              |
| HANDICRAFT   |            |              |
| PROJECT TITLE  |            |              |
| HANDICRAFT   |            |              |
| DRAWING TITLE :  |            | DWG NO.      |
| BEAMS DETAILS AT FIRST FLOOR LVL.  |            | STR-26       |
| SCALE:-  | N.T.S      |              |
| DRAWN BY:-   | RAJESH     |              |
| DESIGNED BY:-  | ROSHAN     |              |
| CHECKED BY:-   | ROSHAN     |              |
| DATE:-   | 30-11-2019 |              |
|  |            |              |
| DRAWING RELEASED FOR:  |            |              |
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| <input type="checkbox"/> ADVANCE COPY <input type="checkbox"/> CONSTRUCTION      |            |              |
| ARCHITECT'S SIGN   |            | OWNER'S SIGN |



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| DRAWING RELEASED FOR:                        |                                       |
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| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |

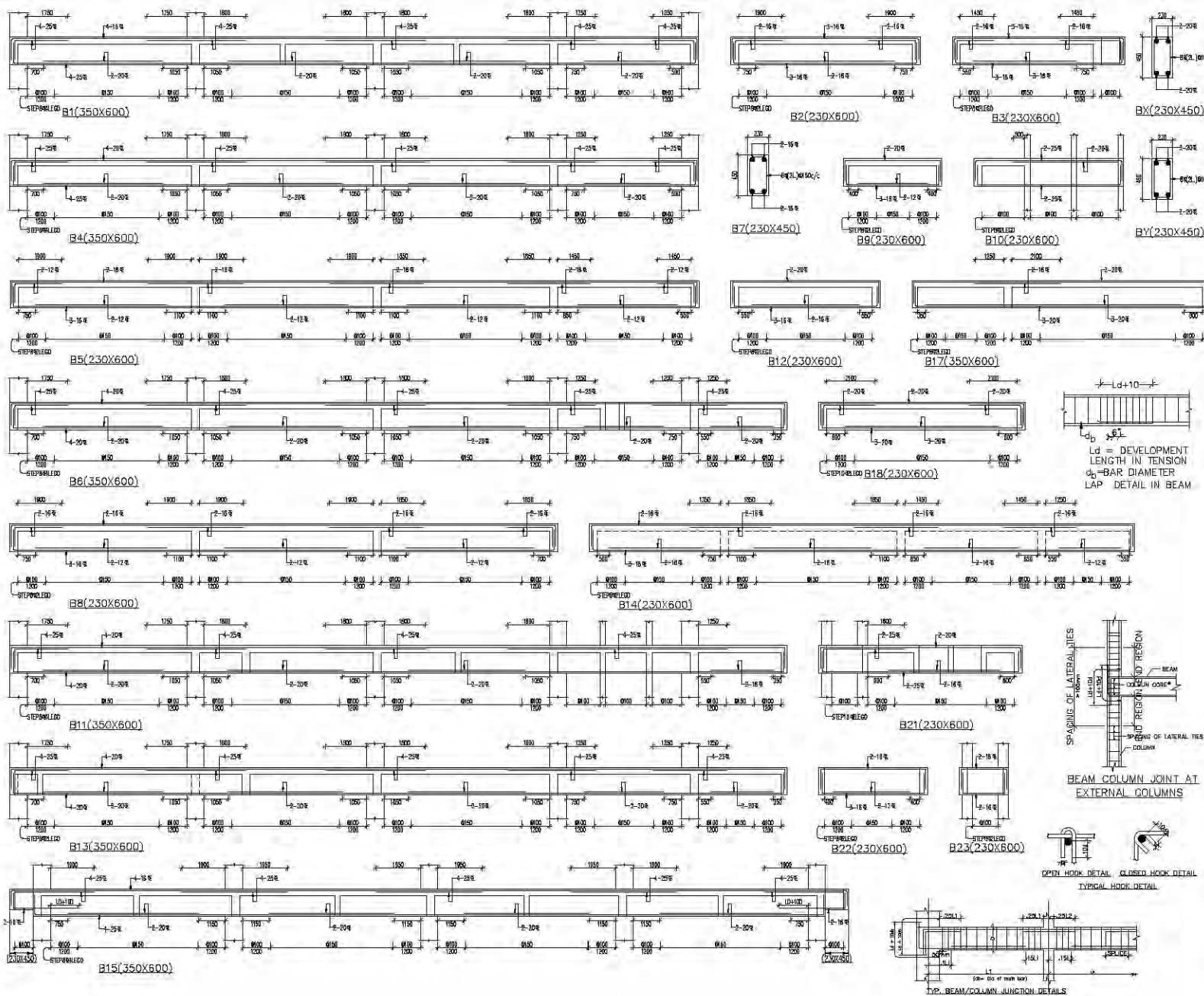
## NOTES &amp; REFERENCES

- [illegible]



FRAMING PLAN AT SECOND FLOOR LVL. (FIRST FLOOR ROOF LVL.)  
ALL BEAM SIZE ARE (350X900),(230X600),(230X450)  
ALL SLAB ARE THIK. 150MM (U.N.C.)

|   |            |                    |
|---|------------|--------------------|
| NO  | 06-07-2019 | FOR APPROVAL       |
| REV. NO.  | DATE       | REVISION           |
| PROJECT NAME: HANDCRAFT BLOCK-1, & 2  |            |                    |
| PROJECT TITLE: HANDCRAFT BLOCK-1, & 2   |            |                    |
| DRAWING TITLE :<br>PARKED PLANT AT SECOND FLOOR (LA FIRST FLOOR ROOF (LA BLOCK-1 & 2)   |            | DWG. NO.<br>STR-28 |
| SCALE:-   | M.T.S      |                    |
| DRAWN BY:-  | RUSHAN     |                    |
| DESIGNED BY:-   | RUSHAN     |                    |
| CHECKED BY:-  | RUSHAN     |                    |
| DATE:-  | 30-11-2018 |                    |
| DRAWING RELEASED FOR:<br><input checked="" type="checkbox"/> APPROVAL<br><input type="checkbox"/> ADVANCE COPY<br><input type="checkbox"/> ARCHITECT'S SIGN |            |                    |
| <input type="checkbox"/> FOR TENDER<br><input type="checkbox"/> CONSTRUCTION<br>OWNER'S SIGN  |            |                    |



# GENERAL NOTES -

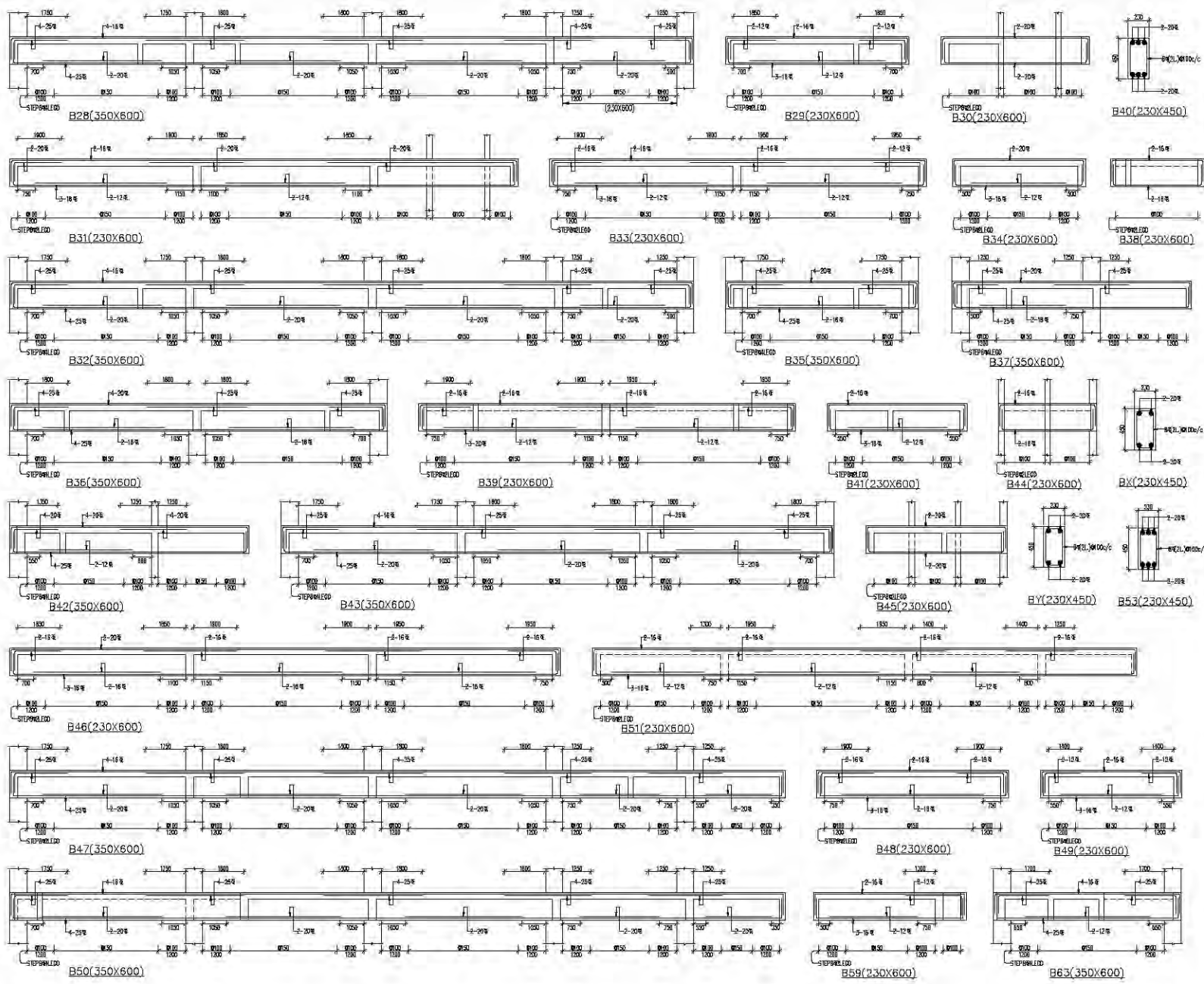
## NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONTRA LOCATION OF WALLS WITH RELEVANT ARCH. DRGS.
5. CONCRETE GRADE IS M20.
6. THE REINFORCEMENT SHALL BE EPOXY COATED DEFORMED BARS (STD) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
8. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9.
 

|  | INDICATES TOP BARS               |
|--|----------------------------------|
|  | Opening in reinforcement element |
|  | d.c.c. work                      |
|  | Brick work                       |
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
11. ALL JOINTS ARE VERTICALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456, SPACER BARS.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DRG'S & IN CASE OF ANY DISCREPANCY ARCHITECT'S DRG'S SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FACE THE SPECIAL CONCRETE REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
17. ALL ANGLES ARE RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS AS 8@200 C/C (R)
19. BLACK COTTON SOIL F. ENCOUNTERED IN 5% PITS, SHALL BE FULLY REMOVED.
20. ALL LOOSE PORTERS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILLING.

|  |            |              |
|--|------------|--------------|
|  |            |              |
| RD   | 08-07-2019 | FOR APPROVAL |
| REV.NO.  | DATE       | REVISION     |
| PROJECT NAME:  |            |              |
| HANDICRAFT BLOCK-2   |            |              |
| PROJECT TITLE  |            |              |
| HANDICRAFT BLOCK-2   |            |              |
| DRAWING TITLE :  |            | DWG NO.      |
| BEAM DETAILS AT SECOND FLOOR<br>LVL. (BLOCK-2)                                   |            | STR-29       |
| SCALE:-  | N.T.S      |              |
| DRAWN BY:-   | RAJESH     |              |
| DESIGNED BY:-  | ROSHAN     |              |
| CHECKED BY:-   | ROSHAN     |              |
| DATE:-   | 30-11-2019 |              |
|  |            |              |
| DRAWING RELEASED FOR:  |            |              |
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| <input type="checkbox"/> ADVANCE COPY <input type="checkbox"/> CONSTRUCTION      |            |              |
| ARCHITECT'S SIGN   |            | OWNER'S SIGN |





# GENERAL NOTES -

## NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS. DO NOT SCALE ANY DIMENSION.
3. INDICATE LOCATION OF WALLS WITH RELEVANT ARCH. DIMS.
4. CONCRETE GRADE IS M25.
5. THE REINFORCEMENT SHALL BE HOTWROUGHT DEFORMED BARS (STD) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
6. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
7. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
8.
  - INDICATES TOP BARS
  - INDICATES BOTTOM BARS
  - Spacing in accordance with element
  - 1:1:1 work
  - 1:1:1 work
9. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
10. ALL JOINTS ARE VERTICALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
11. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BARS TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456-SPACER BARS.
12. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DIMS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DIMS SHALL PREVAIL.
13. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
14. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
15. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FACE THE SPECIAL CONTINUING REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
16. AT ANGLES JOINT RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
17. PROVIDE DIST STEEL OVER EXTRA TOP BARS AS 8mm @ 100 C/C (R)
18. BLACK COTTON SOIL F. ENCOUNTERED IN FTY PITS, SHALL BE FULLY REMOVED.
19. ALL LOOSE PORTION OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH F55 & R.S.

|  |            |              |
|--|------------|--------------|
|  |            |              |
| RD   | 08-07-2019 | FOR APPROVAL |
| REV.NO.  | DATE       | REVISION     |
| PROJECT NAME:  |            |              |
| HANDICRAFT BLOCK-1   |            |              |
| PROJECT TITLE  |            |              |
| HANDICRAFT BLOCK-1   |            |              |
| DRAWING TITLE :  |            | DWG NO.      |
| BEAM DETAILS AT SECOND FLOOR<br>LVL. (BLOCK-1)                                   |            | STR-31       |
| SCALE:-  | N.T.S      |              |
| DRAWN BY:-   | RAJESH     |              |
| DESIGNED BY:-  | ROSHAN     |              |
| CHECKED BY:-   | ROSHAN     |              |
| DATE:-   | 30-11-2019 |              |
|  |            |              |
| DRAWING RELEASED FOR:  |            |              |
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| ARCHITECT'S SIGN   |            | OWNER'S SIGN |



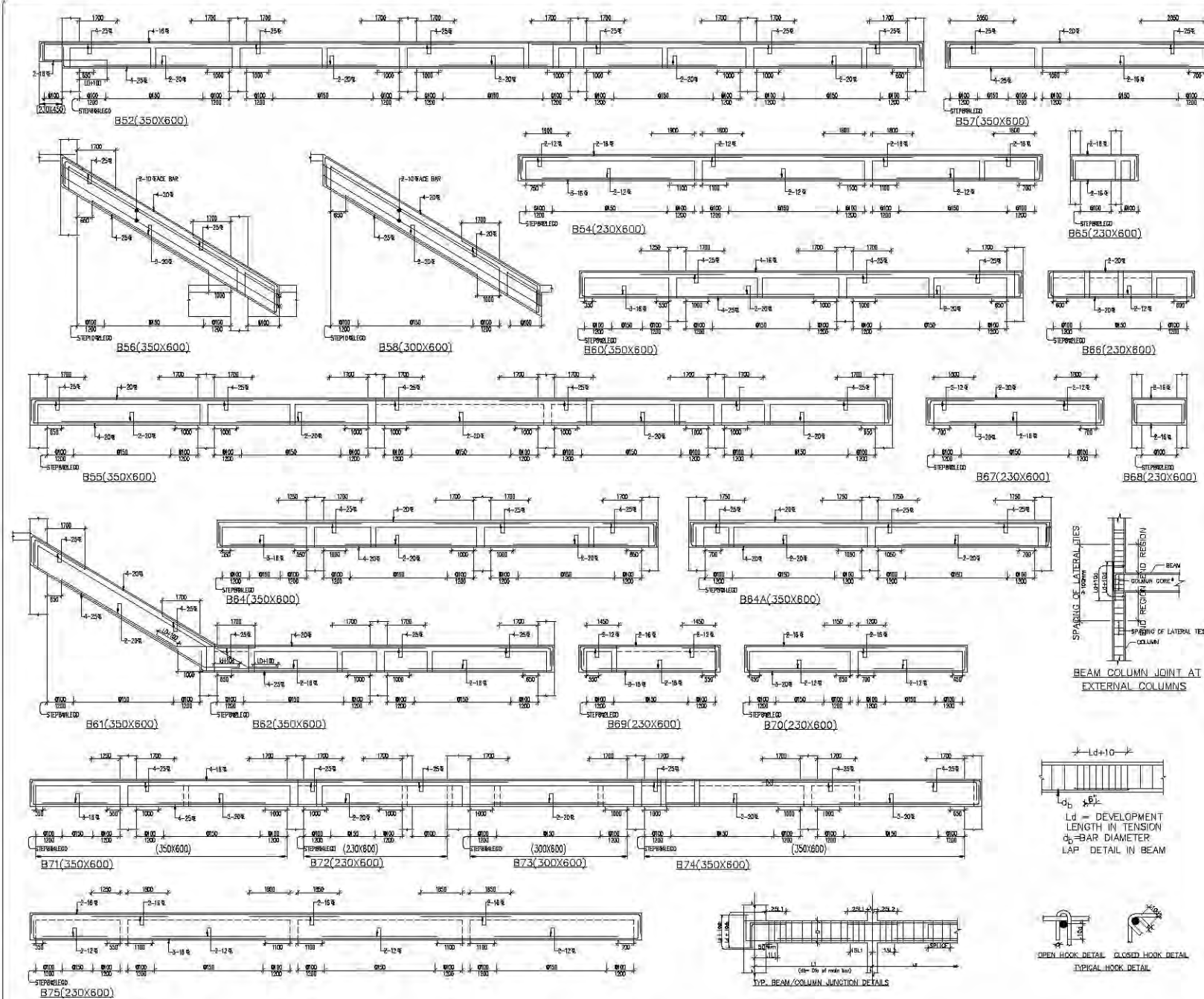
## GENERAL NOTES

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONCRETE GRADE IS M20.
5. CONCRETE GRADE IS M20.
6. THE REINFORCEMENT SHALL BE EPOXY COATED DEFORMED BARS (STD) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
8. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
9. INDICATES TOP BARS  
 INDICATES BOTTOM BARS  
 Spacing in arc/skip element  
 1:1:1 work  
 1:1:1 work
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
11. ALL JOINTS ARE VERTICALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
12. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS 456.
13. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S Dwg's & IN CASE OF ANY DISCREPANCY ARCHITECT'S Dwg's SHALL PREVAIL.
14. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FACE. THE SPECIAL CONFINING REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
17. AT ANGLES JOINT RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS AS 8mm @ 100 C/C (R/C).
19. BLACK COTTON SOIL F SANDWATERED IN FIVE PITS. SHALL BE FULLY REMOVED.
20. ALL LOOSE PORTS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILLING.

|                              |            |              |
|------------------------------|------------|--------------|
| RD                           | 08-07-2019 | FOR APPROVAL |
| REV.NO.                      | DATE       | REVISION     |
| PROJECT NAME:                |            |              |
| HANDICRAFT BLOCK-1           |            |              |
| PROJECT TITLE                |            |              |
| HANDICRAFT BLOCK-1           |            |              |
| DRAWING TITLE :              |            |              |
| BEAM DETAILS AT SECOND FLOOR |            | DWG NO.      |
| LVL. (BLOCK-1)               |            | STR-32       |
| SCALE:-                      | N.T.S      |              |
| DRAWN BY:-                   | RAJESH     |              |
| DESIGNED BY:-                | ROSHAN     |              |
| CHECKED BY:-                 | ROSHAN     |              |
| DATE:-                       | 30-11-2018 |              |

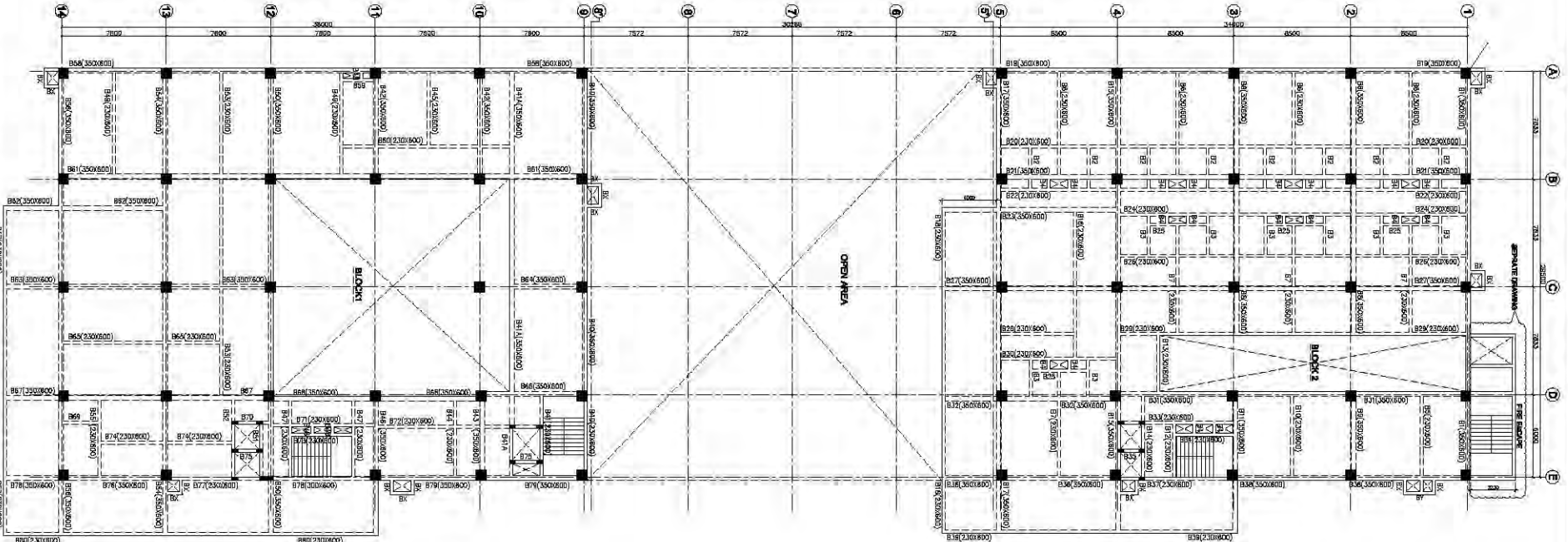
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| DRAWING RELEASED FOR:                        |                                       |
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| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |



# GENERAL NOTES -

## NOTES & REFERENCES

1. READ THE DRAWING IN CONJUNCTION WITH RELEVANT SPECIFICATIONS, CODES, AND ORDINANCES IF APPLICABLE.
2. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
4. CORNER LOCATIONS OF WALLS WITH BELLAIR.
5. CORNER LOCATIONS OF WALLS WITH BELLAIR.
6. CORNER LOCATIONS OF WALLS WITH BELLAIR.
7. CORNER LOCATIONS OF WALLS WITH BELLAIR.
8. CORNER LOCATIONS OF WALLS WITH BELLAIR.
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FRAMING PLAN AT THIRD FLOOR LVL (SECOND FLOOR ROOF LVL)  
ALL BEAM SIZE ARE (350X600), (230X600), (230X450)  
ALL SLAB ARE THICK 150MM (U.M.M)

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|-----|------------|--------------|
| NO  | 06-07-2019 | FOR APPROVAL |
| REV | DATE       | REVISION     |

PROJECT NAME

HANDICRAFT BLOCK-1 & 2

PROJECT TITLE

HANDICRAFT BLOCK-1 & 2

DRAWING TITLE

FRAMING PLAN AT THIRD FLOOR LVL

SECOND FLOOR ROOF (LVL) BLOCK-1 & 2

STR-33

SCALE

N.T.S

DRAWN BY

RAJESH

DESIGNED BY

ROSHAN

CHECKED BY

ROSHAN

DATE

30-11-2019

DRAWING RELEASED FOR:

APPROVAL

FOR TENDER

ADVANCE COPY

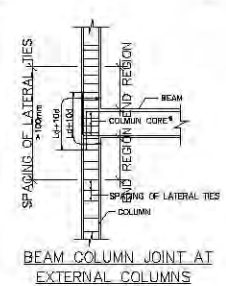
CONSTRUCTION

ARCHITECTS SIGN

ENGINEER'S SIGN

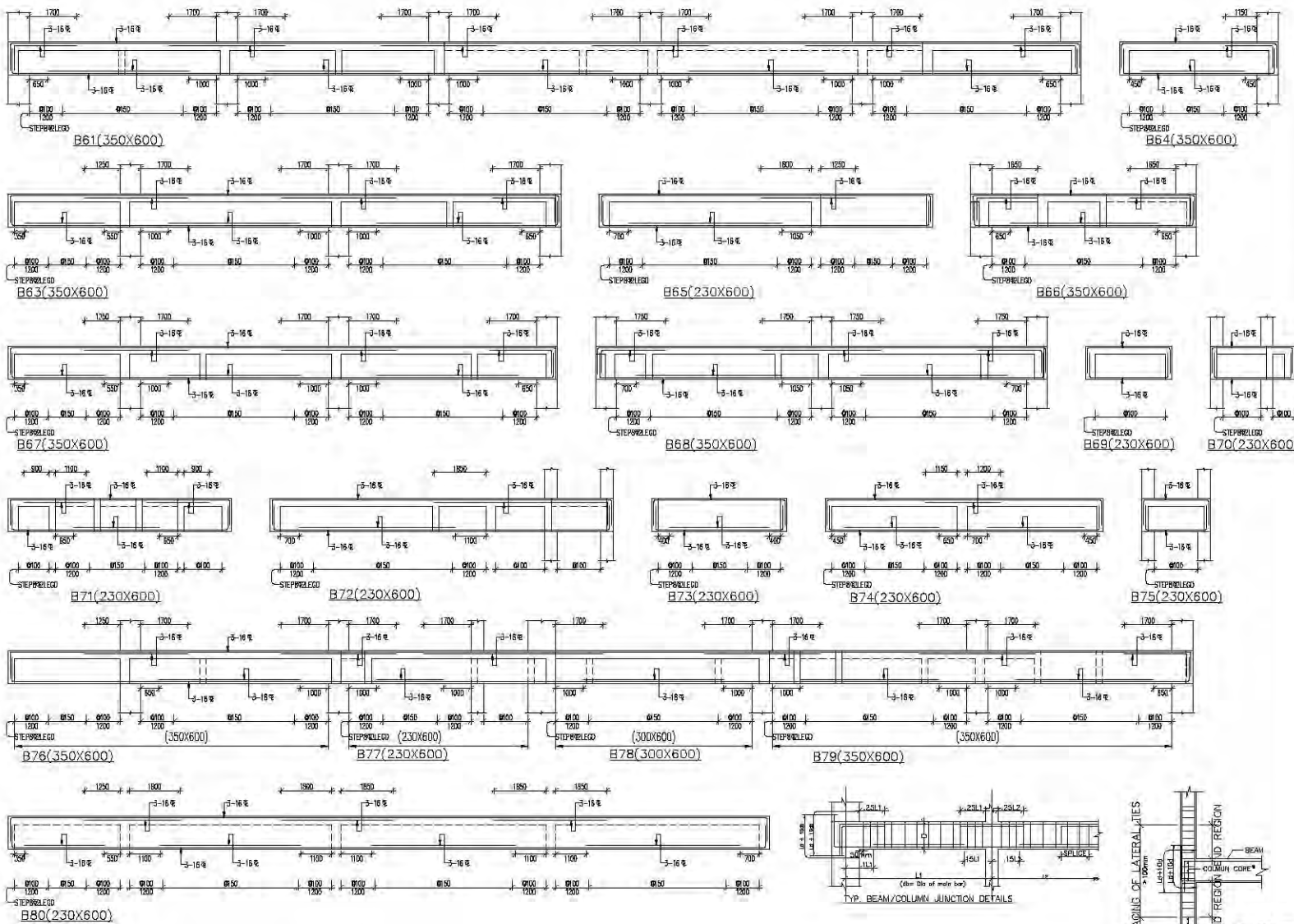






OWNER'S SIGN \_\_\_\_\_





## GENERAL NOTES

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS. DO NOT SCALE ANY DIMENSION.
3. CONTAIN LOCATION OF WALLS WITH RELEVANT ARCH. DIMS.
4. CONCRETE GRADE IS M20.
5. THE REINFORCEMENT SHALL BE HOT-ROLLED DEFORMED BARS (STD) OR T.M.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
6. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
7. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
8.
 

| INDICATES TOP BARS |                               |
|--------------------|-------------------------------|
|                    | Opening in and around element |
|                    | Steel work                    |
|                    | Brick work                    |
9. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
10. ALL JOINTS ARE INTERNALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
11. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER FOUND NECESSARY WITH SPACER BARS TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456, SPACER BARS.
12. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DIMS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DIMS SHALL PREVAIL.
13. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
14. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FACE THE SPECIAL CONTINUING REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
15. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
16. PROVIDE DIST STEEL OVER EXTRA TOP BARS AS 10000 C/C (10' BEHIND C/C (10'))
17. BLACK COTTON SOIL F REINFORCED IN F.N PITS, SHALL BE FULLY REMOVED.
18. ALL LOOSE PORTION OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILL BARS.

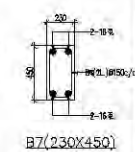
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| REVNO.                                     | DATE       | REVISION     |
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| HANDICRAFT BLOCK-1                         |            |              |
| PROJECT TITLE                              |            |              |
| HANDICRAFT BLOCK-1                         |            |              |
| DRAWING TITLE :                            |            | DWG NO.      |
| BEAM DETAILS AT THIRD FLOOR LVL. (BLOCK-1) |            | STR-37       |
| SCALE:-                                    | N.T.S      |              |
| DRAWN BY:-                                 | RAJESH     |              |
| DESIGNED BY:-                              | ROSHAN     |              |
| CHECKED BY:-                               | ROSHAN     |              |
| DATE:-                                     | 30-11-2019 |              |

### DRAWING RELEASED FOR:

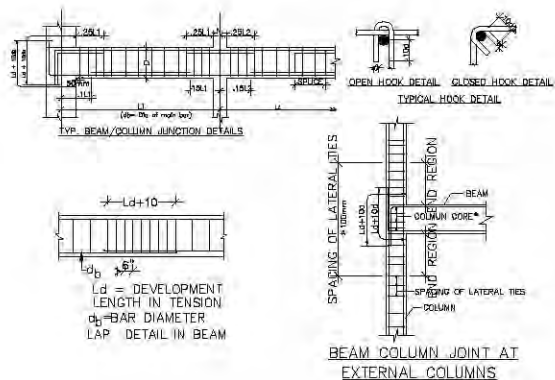
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| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |



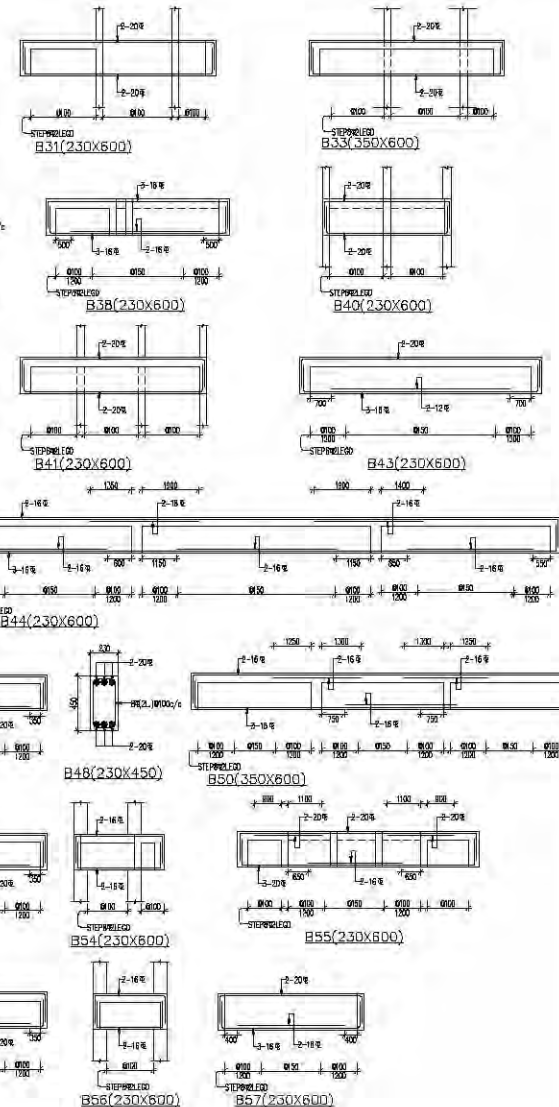
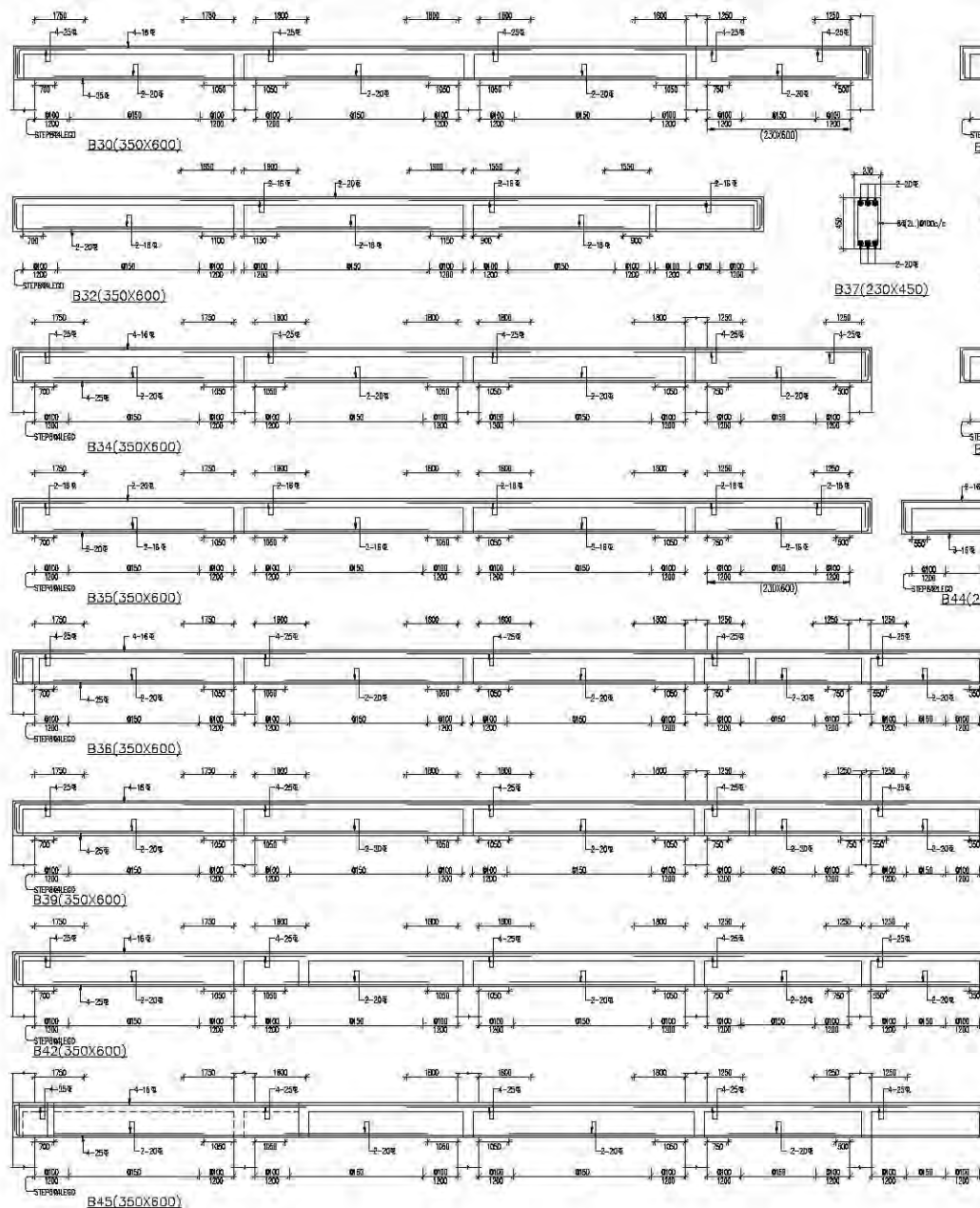




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| OWNER'S SIGN |
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| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |
| ARCHITECT'S SIGN                             | OWNER'S SIGN                          |



## GENERAL NOTES -

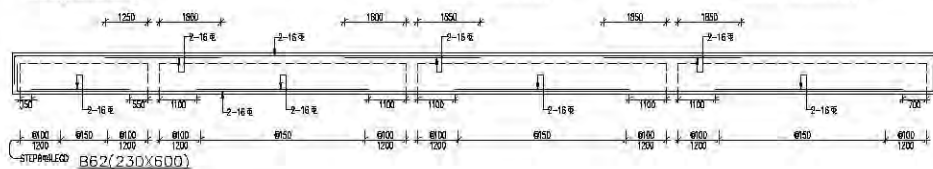
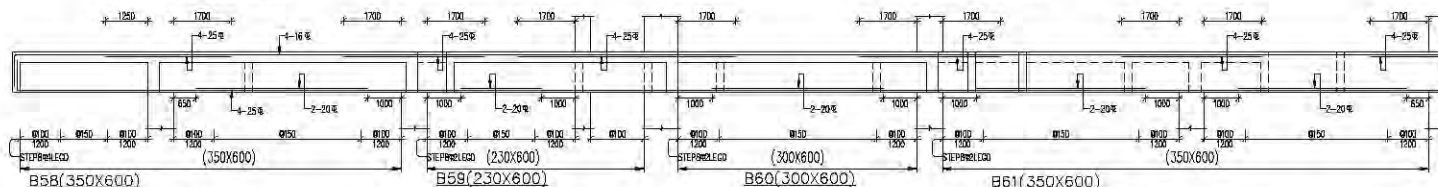
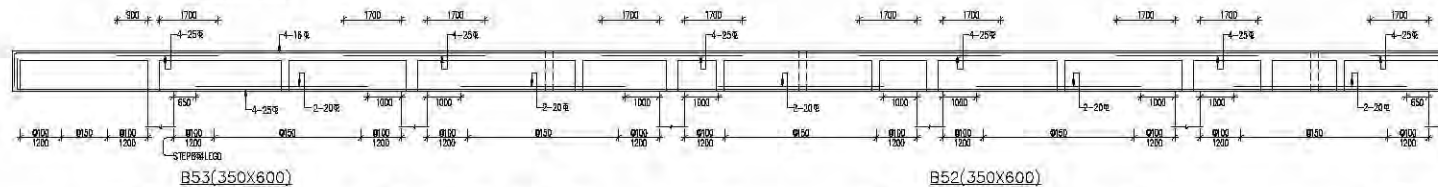
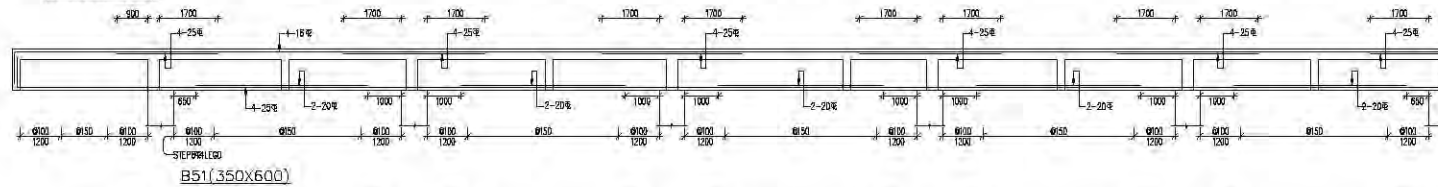
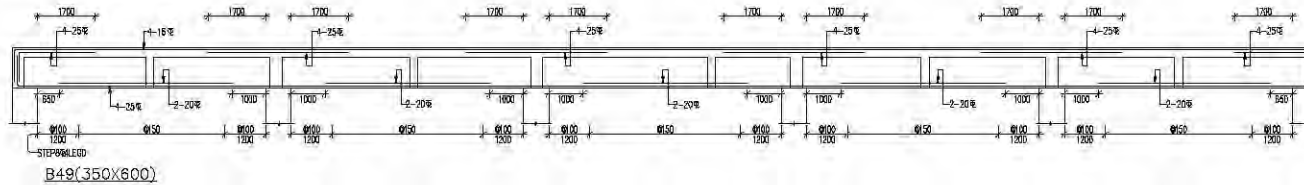
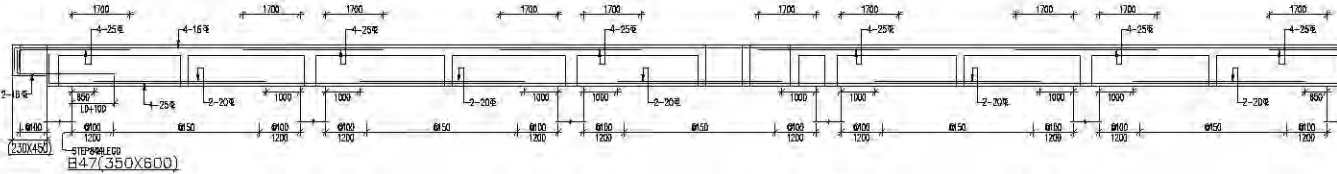
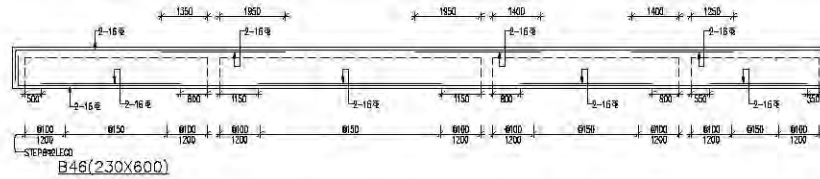
### NOTES & REFERENCES

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2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS. DO NOT SCALE ANY DIMENSION.
3. CONCRETE GRADE IS M20.
4. THE REINFORCEMENT SHALL BE EPOXY COATED DEFORMED BARS (STD) OR TMT BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
5. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) : 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
6. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY SECTION. LAPS CLOSE TO THE MID SPAN IN BOTTOM BARS & CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
7. INDICATES TOP BARS.
  - INDICATES BOTTOM BARS
  - Spacing in arc/square element
  - 1:100 scale
  - 1:100 scale
8. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
9. ALL JOINTS ARE VERTICALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
10. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER REQUIRED. NECESSARY WITH SPACER BAR TO BE PROVIDED BETWEEN TWO LAYERS OF REINFORCEMENTS AS PER IS-456, SPACER BARS.
11. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DIMS & IN CASE OF ANY DISCREPANCY ARCHITECT'S DIMS SHALL PREVAIL.
12. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY CONSULTANT ON THE BASIS OF SCHEME PREPARED BY CONTRACTOR.
13. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN DWG UNLESS OTHERWISE SHOWN.
14. THE FIRST STIRRUPS IN BEAMS SHALL BE AT A DISTANCE OF 50MM FROM THE JOINT FACE. THE SPECIAL CONCRETE REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AT THE GIVEN SPACING IN COLUMNS.
15. AT ANGLES JOINT RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
16. PROVIDE DIST STEEL OVER EXTRA TOP BARS AS 8mm @ 100 C/C (R/C).
17. BLACK COTTON SOIL IF ENCOUNTERED IN FILL PITS, SHALL BE FULLY REMOVED.
18. ALL LOOSE PORTION OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILLING.

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| RD   | 09-07-2019 | FOR APPROVAL |
| REVNO.                                     | DATE       | REVISION     |
| PROJECT NAME:                              |            |              |
| HANDICRAFT BLOCK-1                         |            |              |
| PROJECT TITLE                              |            |              |
| HANDICRAFT BLOCK-1                         |            |              |
| DRAWING TITLE :                            |            | DWG NO.      |
| BEAM DETAILS AT THIRD FLOOR LVL. (BLOCK-1) |            | STR-41       |
| SCALE:-                                    | N.T.S      |              |
| DRAWN BY:-                                 | RAJESH     |              |
| DESIGNED BY:-                              | ROSHAN     |              |
| CHECKED BY:-                               | ROSHAN     |              |
| DATE:-                                     | 30-11-2019 |              |

### DRAWING RELEASED FOR:

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## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY IF FOUND SHALL BE BROUGHT TO THE NOTICE OF CONSULTANT.
2. ALL DIMENSIONS ARE IN MM & LEVELS IN MILLIMETERS.
3. DO NOT SCALE ANY DIMENSION.
4. CONTAIN LOCATION OF WALLS WITH RELEVANT ARCH. DIMS.
5. CONCRETE GRADE IS M25.
6. THE REINFORCEMENT SHALL BE BOLD/WRITTEN DEFORMED BARS (STD) OR TM.T. BARS HAVING YIELD STRENGTH NOT LESS THAN 500 N/mm<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
  - (a) FOUNDATION : 50 MM
  - (b) COLUMNS : 40 MM
  - (c) BEAMS (top & bottom) 30 MM side Cover 25mm
  - (d) SLABS : 25 MM
  - (e) CHAJJAS/CANOPY : 30 MM
  - (f) R.C.C. WALL : 30 MM (EARTH FACE) & 25MM (INNER FACE)
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9.
  - (a) INDICATES TOP BARS
  - (b) INDICATES BOTTOM BARS
10. ALL R.C.C. TO BE MACHINE MIXED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-LATEST.
11. ALL JOINTS ARE VERTICALLY PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
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17. AT ANGLES JOINT RIGHT ANGLES UNLESS OTHERWISE SPECIFIED.
18. PROVIDE DIST STEEL OVER EXTRA TOP BARS @ 500MM C/C (RT) BENDING 1/2 C (RT)
19. BLACK COTTON BOL F 800/UNTERTERED IN FN PITS, SHALL BE FULLY REMOVED.
20. ALL LOOSE PORTERS OF SOIL BELOW FOUNDATION SHALL BE FILLED WITH FILL BARS.

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| RD   | 09-07-2019 | FOR APPROVAL |
| REV.NO.                                    | DATE       | REVISION     |
| PROJECT NAME:                              |            |              |
| HANDICRAFT BLOCK-1                         |            |              |
| PROJECT TITLE                              |            |              |
| HANDICRAFT BLOCK-1                         |            |              |
| DRAWING TITLE :                            |            | DWG NO.      |
| BEAM DETAILS AT THIRD FLOOR LVL. (BLOCK-1) |            | STR-42       |
| SCALE:-                                    | N.T.S      |              |
| DRAWN BY:-                                 | RAJESH     |              |
| DESIGNED BY:-                              | ROSHAN     |              |
| CHECKED BY:-                               | ROSHAN     |              |
| DATE:-                                     | 30-11-2019 |              |

### DRAWING RELEASED FOR:

- ☒ APPROVAL
 ☐ FOR TENDER
 ☐ CONSTRUCTION
- ARCHITECT'S SIGN
 OWNER'S SIGN







- EXISTING TREES= 108
- TREES TO BE SHIFTED= 41
- RETAINED TREES= 67
- NEW TREES= 102

#### GENERAL NOTES:

1. All dimensions are in metres and are dimensional unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

| REVISION | DATE | CHECKED BY |
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This drawing is copyright. It is the property of the Project Management Consultant and is not to be

Client: BAREILLY SMART CITY LTD.

Project: BAREILLY HAAT

|                             |             |                  |
|-----------------------------|-------------|------------------|
| Scale: Not to Scale<br># A3 | North:      | Dwg No: AR-00-01 |
| Drawn by:                   | Checked by: | Date: 01.12.20   |

Title: SITE TREES

A detailed site plan of a 13,000 SQM development. The plan shows a large rectangular building complex on the left, a smaller building complex on the right, and a central parking area. The plan includes various labels for building sections, parking spaces, and landscaping areas. The total area is 13,000 SQM.

**BASEMENT 1 AREA = 11,000 SQM**

This detailed floor plan of the basement level shows a complex arrangement of parking spaces and circulation paths. Key features include:

- Entrances:** Multiple points of access, including "ENTRY TO BASEMENT PARKING" and "ENTRY TO BASEMENT" (marked with a 0.300). A "DRIVE FROM BACKWARD PARKING" is also indicated.
- Structural Elements:** A central "80-ITCH BULLERY FOR SOIL PROTECTION" and various "CONCRETE" and "STEEL" structural components are labeled.
- Parking and Driveways:** Numerous parking spaces are distributed throughout the area. Driveways are labeled with dimensions such as "7M WIDE ALLEY", "8M WIDE ALLEY", and "5.2 M WIDE ALLEY".
- Level Markers:** Several "LVL. -0.000" markers are present, indicating the ground level reference.
- Other Labels:** "NO. OF PARKING - 18902 FOUR WHEELERS 50 TWO WHEELERS" is noted in the lower section. Other labels include "OPEN AIR TOILET", "STAIRS", and "ELEVATOR".

**BASEMENT 2 AREA = 2,000 SQM**



Diagram illustrating the layout of Basement 2, showing parking stalls, circulation paths, and key areas:

- EXIT FROM BASEMENT PARKING** (Left side)
- ENTRY TO BASEMENT PARKING** (Bottom right)
- NO. OF PARKING - 54X2 FOUR WHEELERS** (Center)
- 2.4M HEADROOM ACHIEVED** (Top center)
- 8.2** (Top right)
- 4.5** (Center left)
- 6** (Center left)
- 6** (Center right)
- 6** (Bottom right)

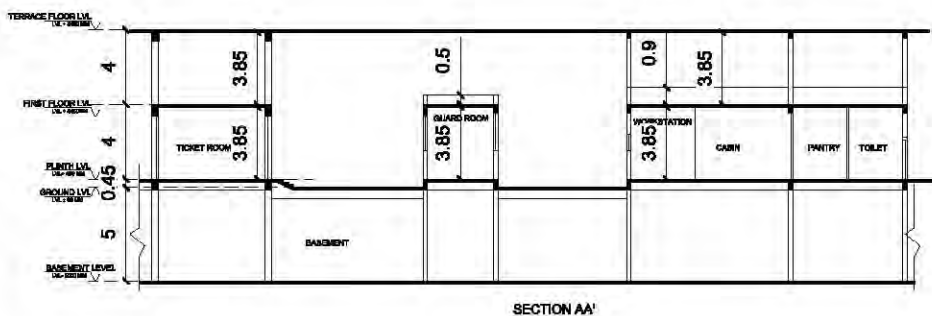
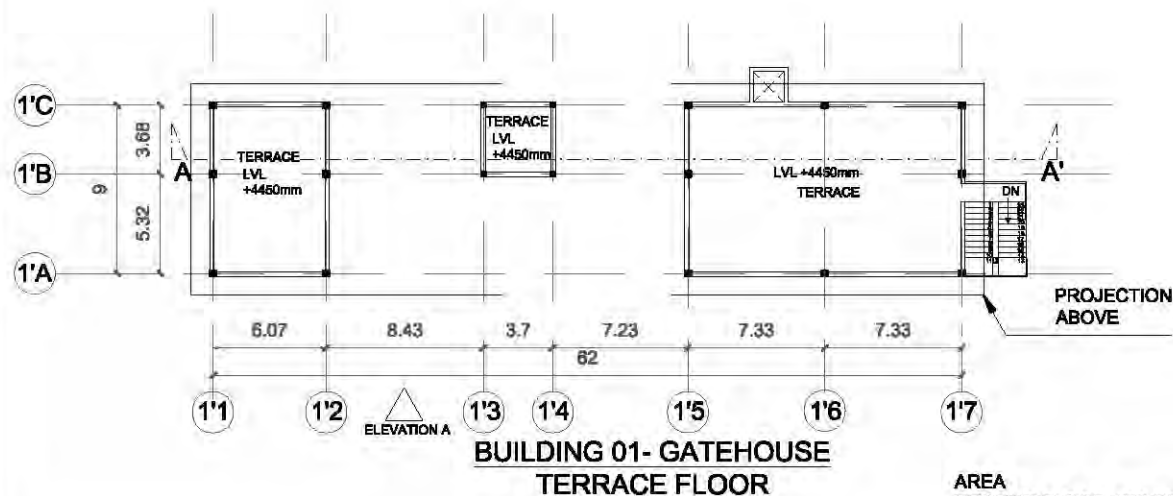
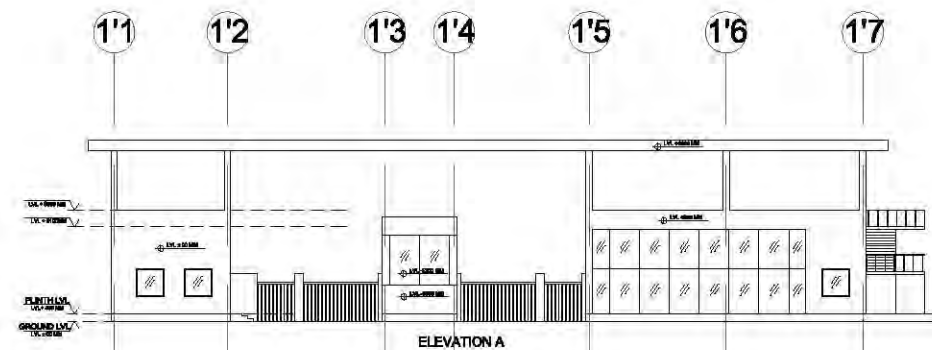
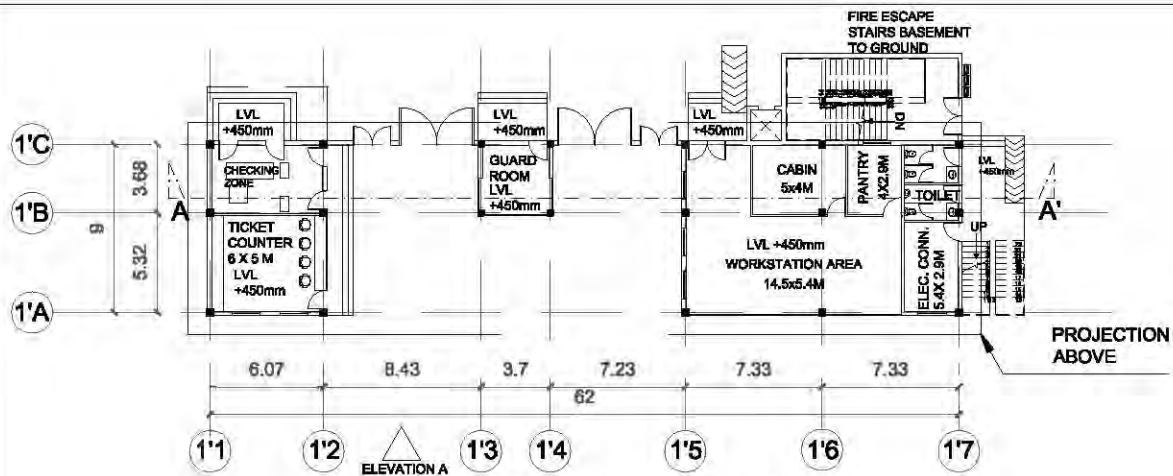
| GENERAL NOTES:   | REVISION | DATE | CHECKED BY |
|--|----------|------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |      |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |      |            |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |      |            |
| 4. For details such as pathways, fencing, railing, grille, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |      |            |

[illegible]

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|---|---|----------------------|
| Project: <b>BAREILLY HAAT</b>   |   |                      |
| Scale:<br>Not to Scale  A3 | North:<br> | Dwg No.:<br>AR-00-02 |
| Drawn by:   | Checked by:   | Date:<br>27.11.20    |

**Title:** BASEMENT PLAN



AREA  
GROUND FLOOR: 220 SQM

#### GENERAL NOTES:

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2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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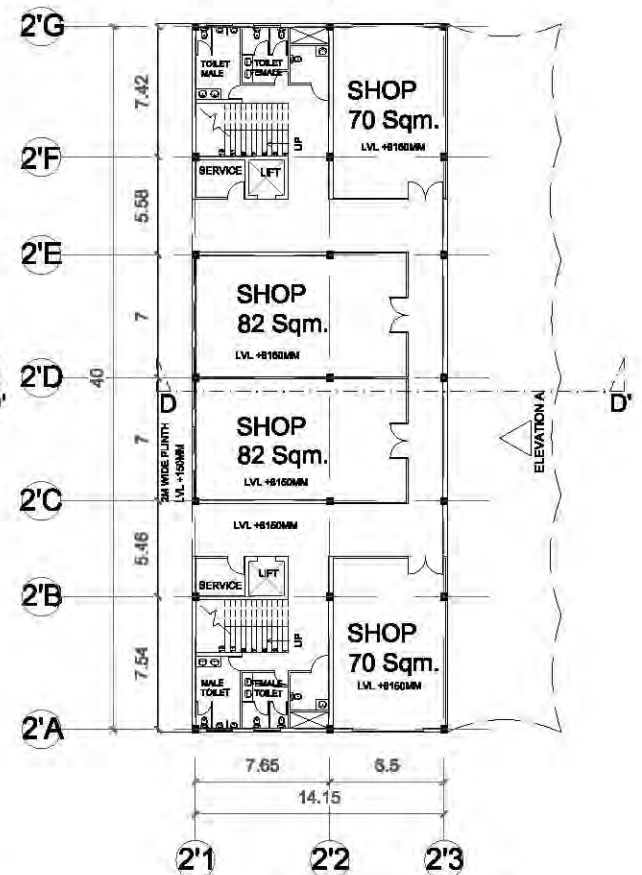
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|---|-------------|-----------------------|
| Client:<br><b>BAREILLY SMART CITY LTD.</b>    |             |                       |
| Project:<br><b>BAREILLY HAAT</b>              |             |                       |
| Scale:<br>Not to Scale @ A3                   | North:<br>← | Orig No:<br>A99-01-01 |
| Drawn by:                                     | Checked by: | Date:<br>27.11.20     |
| Title: Gatehouse Plans, section and elevation |             |                       |



02 SHOPPING CENTER-  
GROUND FLOOR



02 SHOPPING CENTER-  
FIRST FLOOR



02 SHOPPING CENTER-  
SECOND FLOOR

AREA  
GROUND FLOOR: 585 SQM  
FIRST FLOOR: 585 SQM  
SECOND FLOOR: 585 SQM

#### GENERAL NOTES:

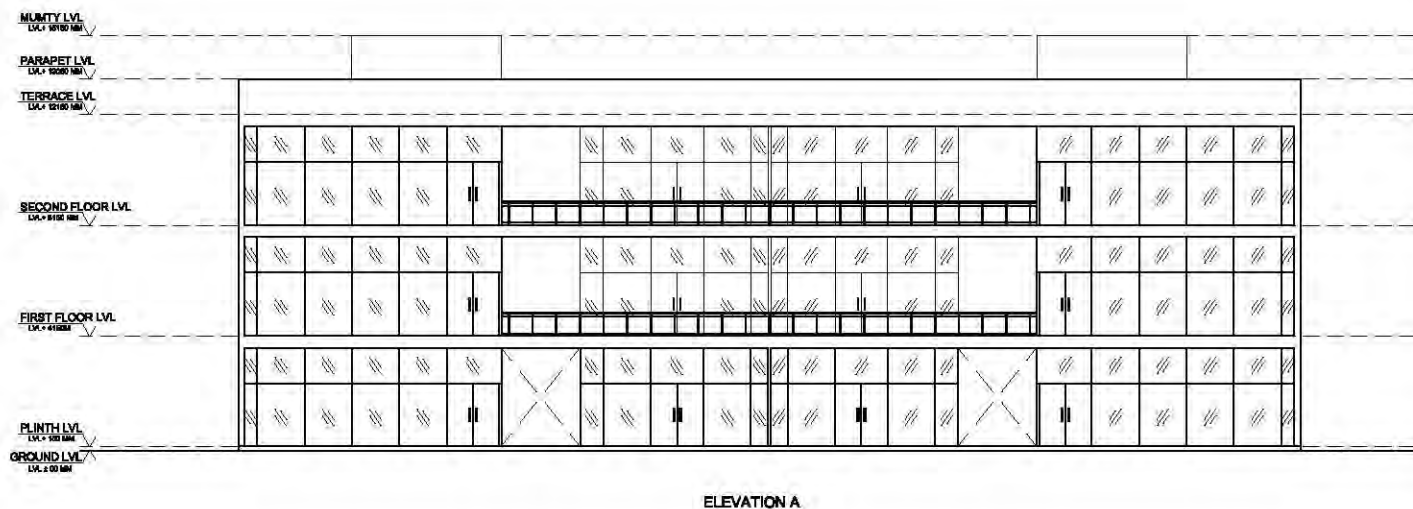
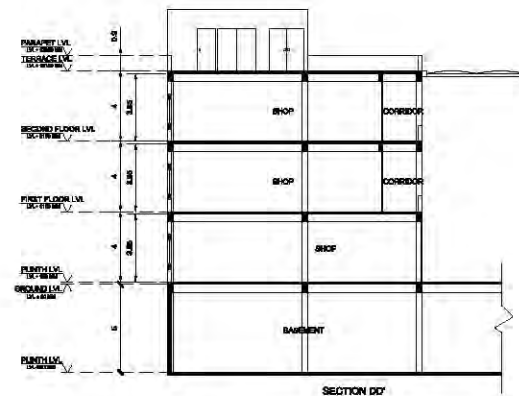
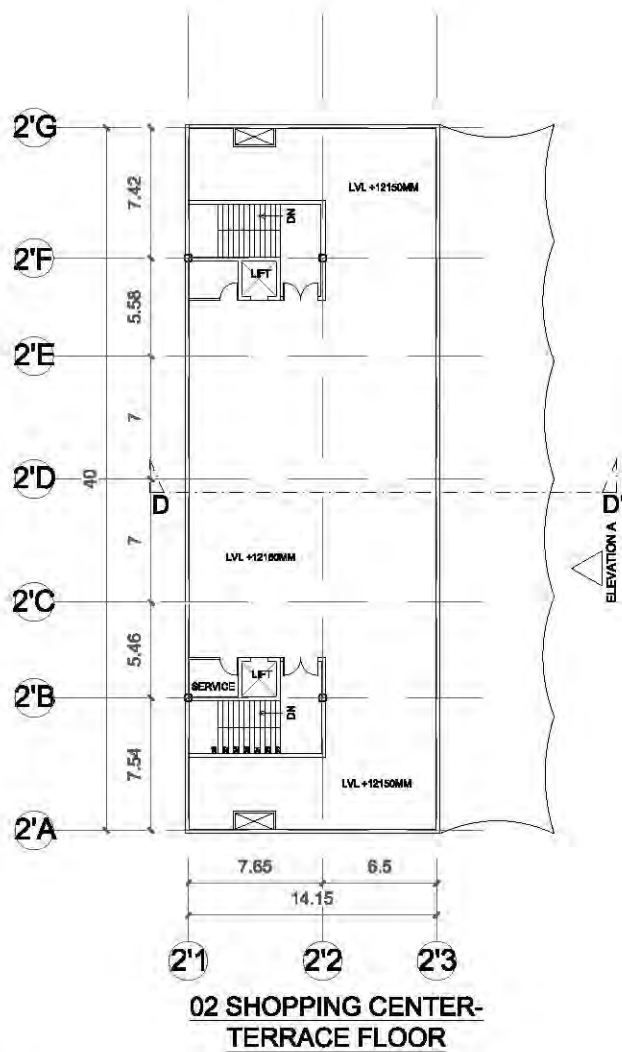
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                      |
| Project:<br><b>BAREILLY HAAT</b>           |             |                      |
| Scale:<br>Not to Scale @ A3                | North:<br>← | Orig No:<br>AR-02-01 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20    |
| Title: Shopping center plans               |             |                      |





#### GENERAL NOTES:

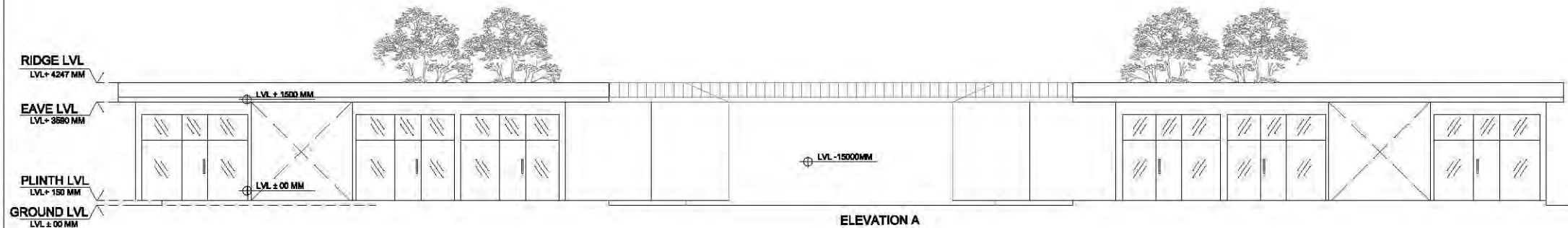
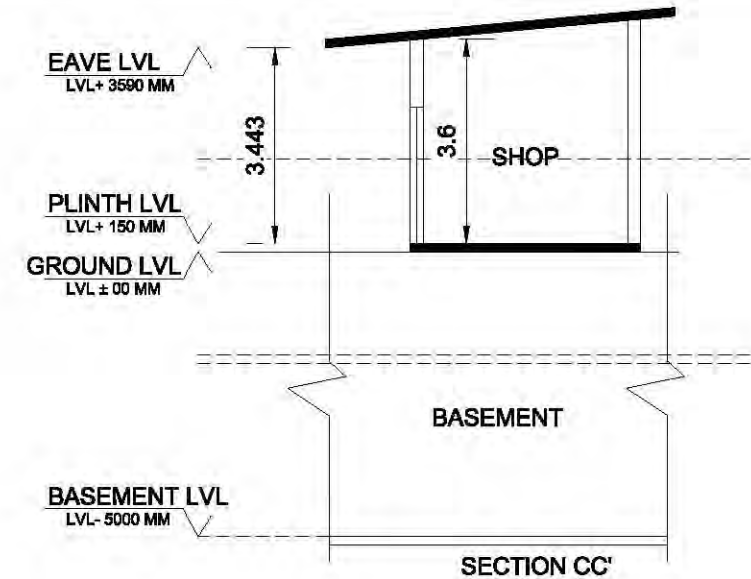
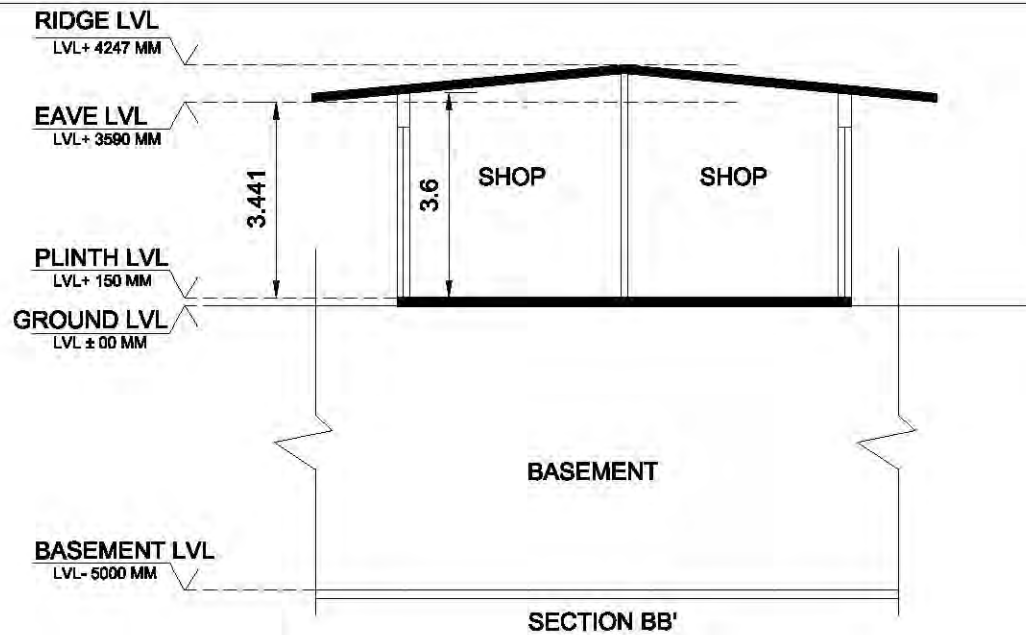
1. All dimensions are in metres and are dimensions unless otherwise specified.
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3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
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| Client:<br><b>BAREILLY SMART CITY LTD.</b>      |             |                       |
| Project:<br><b>BAREILLY HAAT</b>                |             |                       |
| Scale:<br>Not to Scale @ A3                     | North:<br>← | Orig No:<br>A/3-02-02 |
| Drawn by:                                       | Checked by: | Date:<br>27.11.20     |
| Title: Shopping center<br>section and elevation |             |                       |





#### GENERAL NOTES:

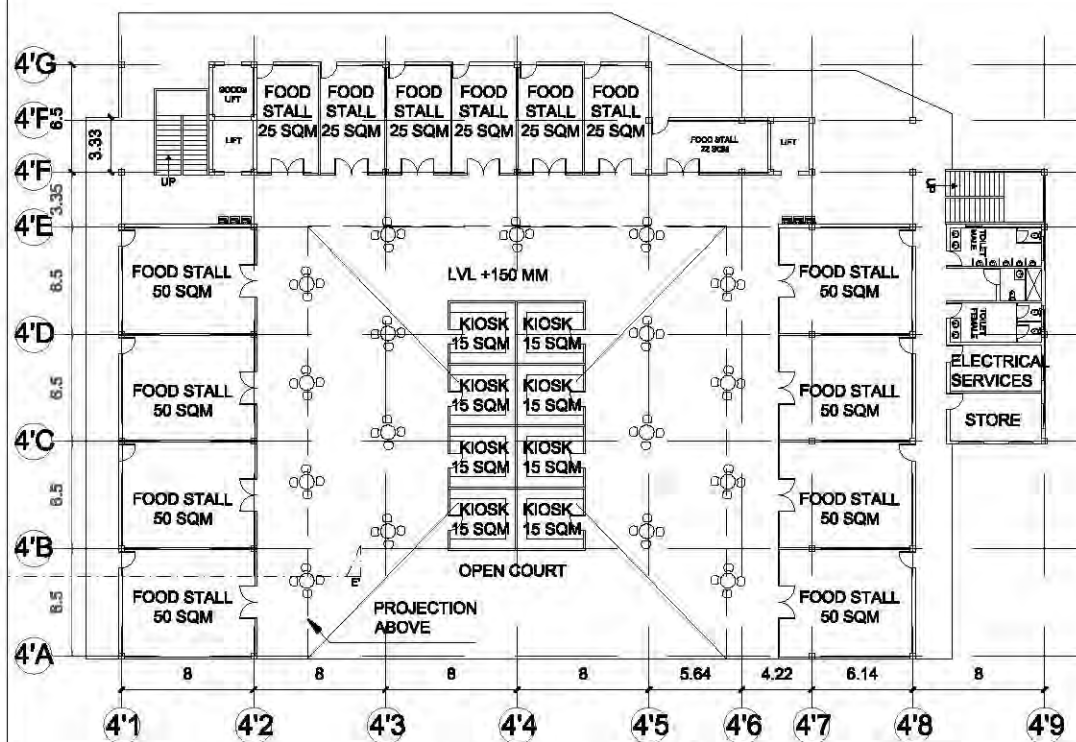
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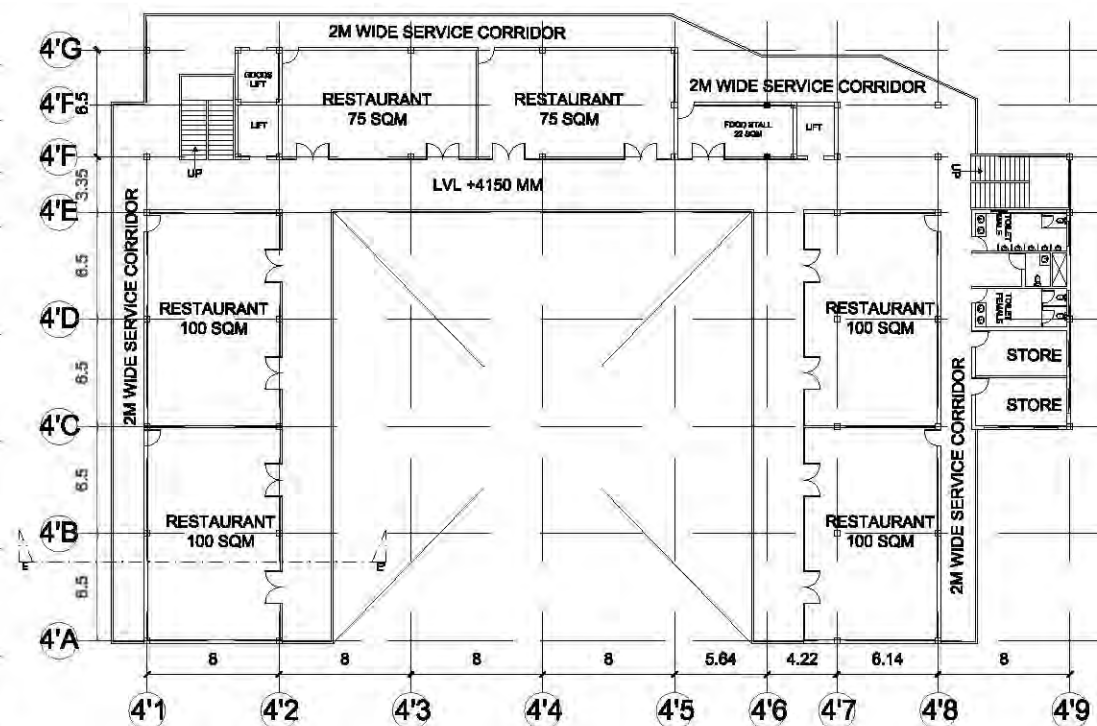
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| <b>Client:</b><br>BAREILLY SMART CITY LTD.           |                    |                               |
| <b>Project:</b><br>BAREILLY HAAT                     |                    |                               |
| <b>Scale:</b><br>Not to Scale @ A3                   | <b>North:</b><br>← | <b>Orig No.:</b><br>A/3-03-02 |
| <b>Drawn by:</b>                                     | <b>Checked by:</b> | <b>Date:</b><br>27.11.20      |
| <b>Title: Shopping kiosks elevation and sections</b> |                    |                               |





**04 FOOD CENTER-  
GROUND FLOOR**



**04 FOOD CENTER-  
FIRST FLOOR**

**TOTAL AREA**  
GROUND FLOOR: 750SQM  
FIRST FLOOR: 750 SQM  
SECOND FLOOR: 575 SQM

**GENERAL NOTES:**

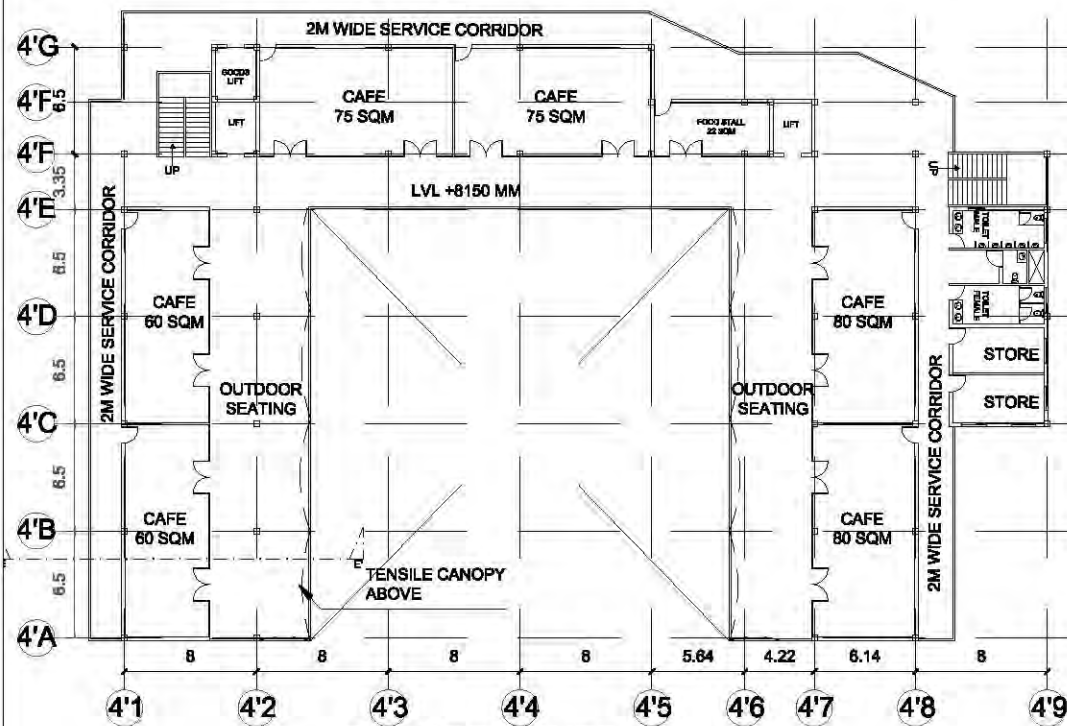
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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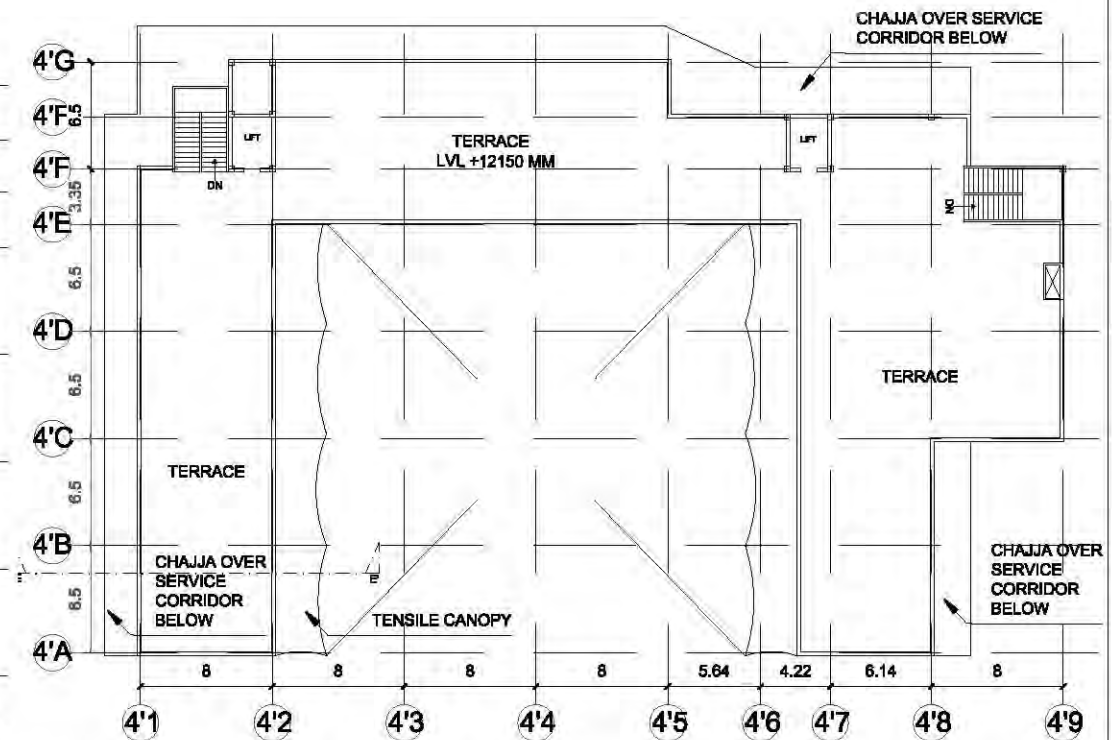
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| Project: <b>BAREILLY HAAT</b>           |                     |                          |
| Scale: <b>Not to Scale @ A4</b>         | North:              | Orig No: <b>A4-04-01</b> |
| Drawn by: <b></b>                       | Checked by: <b></b> | Date: <b>27.11.20</b>    |

**Title: Food center plans**



**04 FOOD CENTER-  
SECOND FLOOR**



**04 FOOD CENTER-  
TERRACE FLOOR**

**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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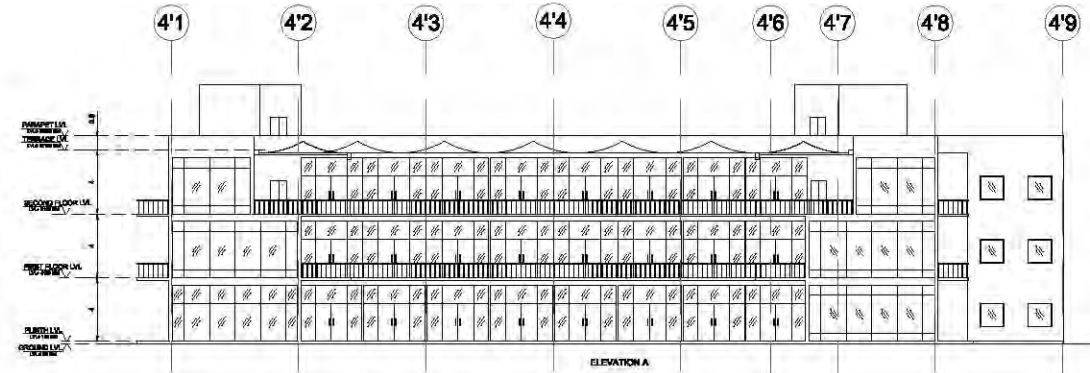
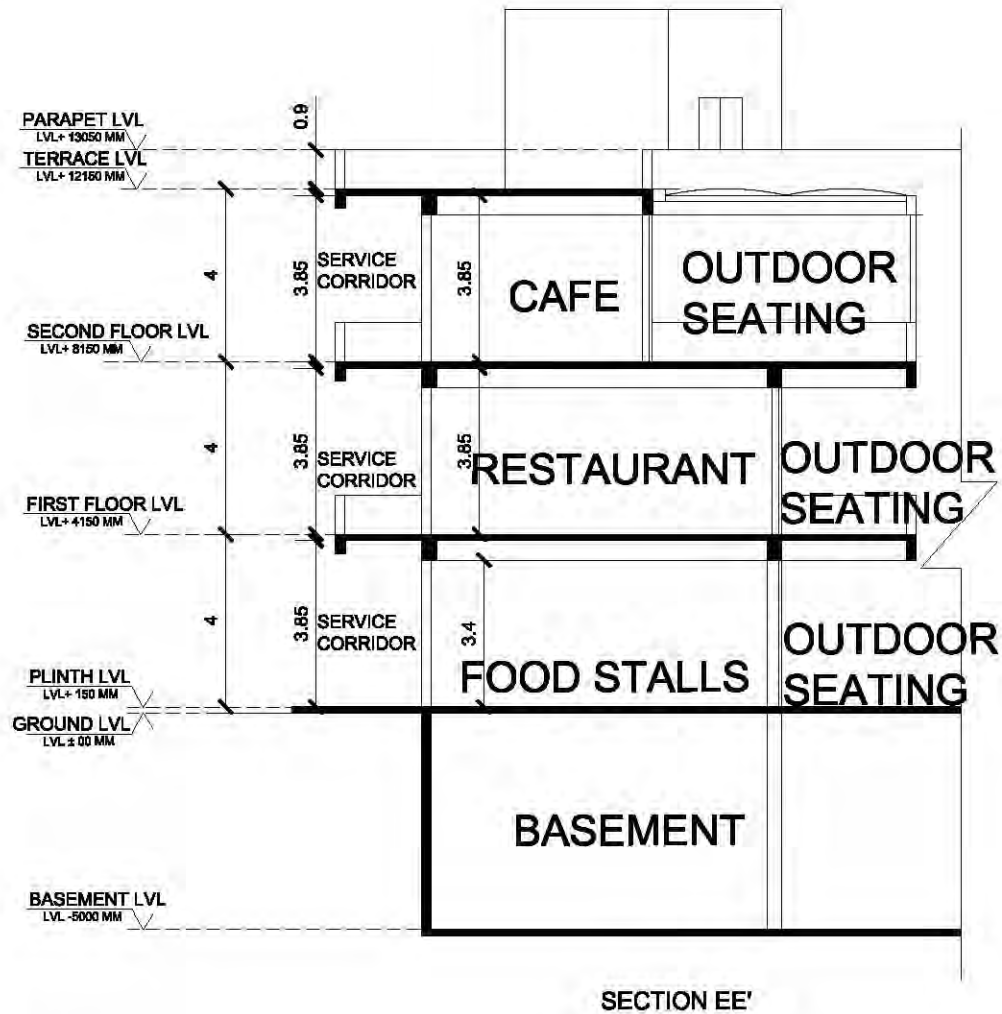
Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale @ A3 North: Dwg No: **AF-04-02**

Drawn by: Checked by: Date: **27.11.20**

Title: **Food center plans 2**



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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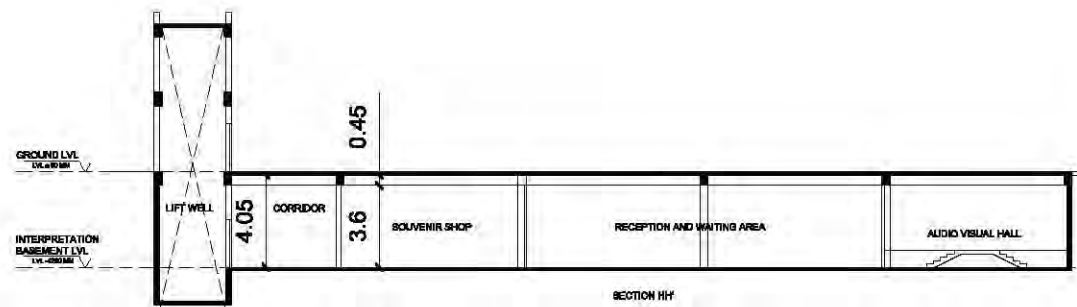
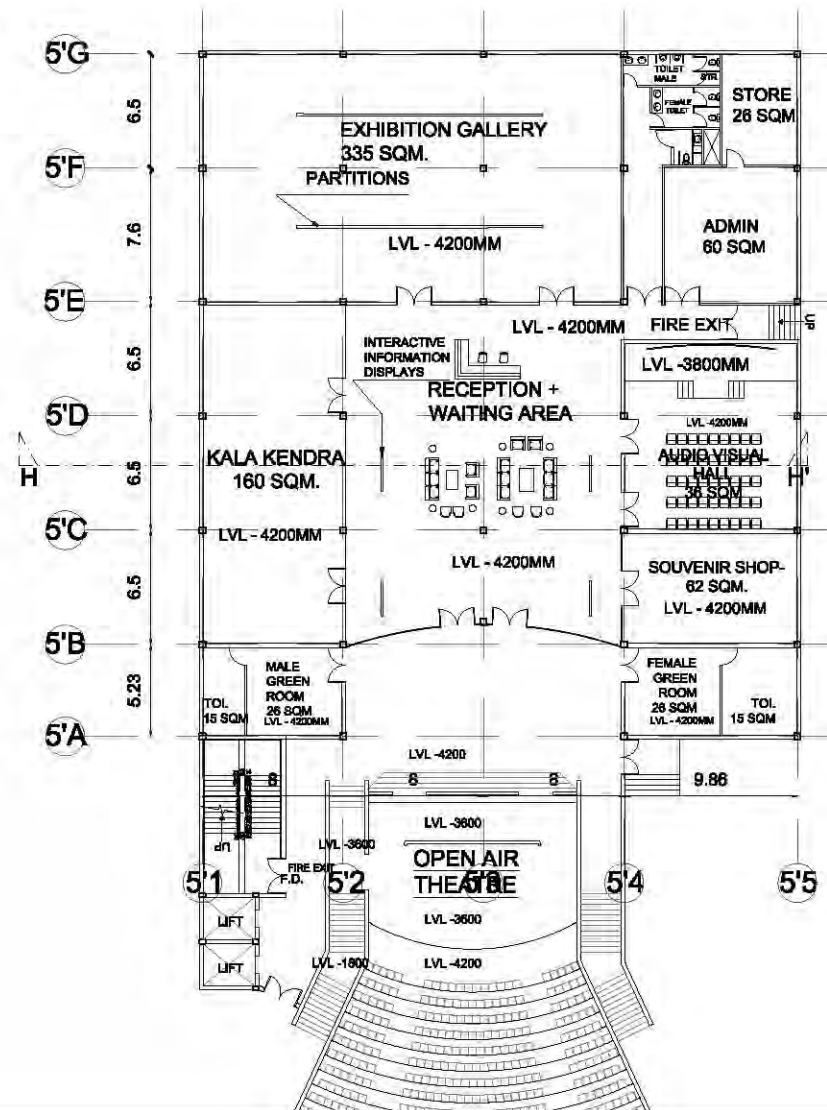
Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: **Not to Scale @ A3** North:  Dwg No: **AF9-04-03**

Drawn by:  Checked by:  Date: **27.11.20**

Title: **Food center elevation and sections**



TOTAL AREA: 1125 SQM

#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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Client:  
**BAREILLY SMART CITY LTD.**

Project:  
**BAREILLY HAAT**

Scale:  
Not to Scale @ A3

North:

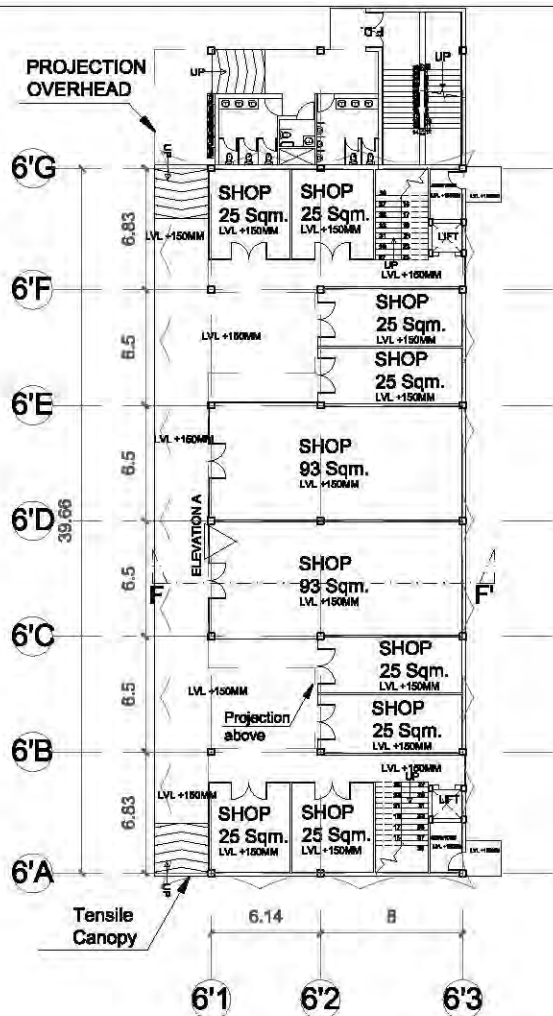
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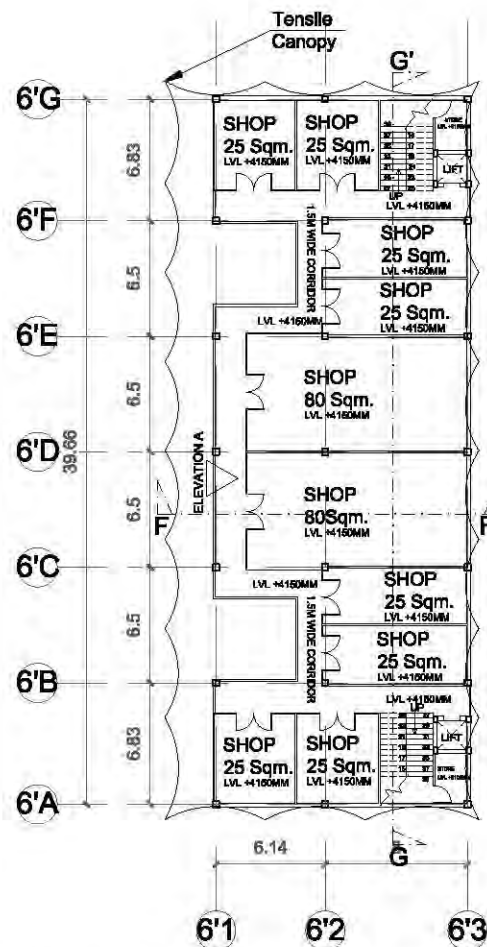
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Date:  
27.11.20

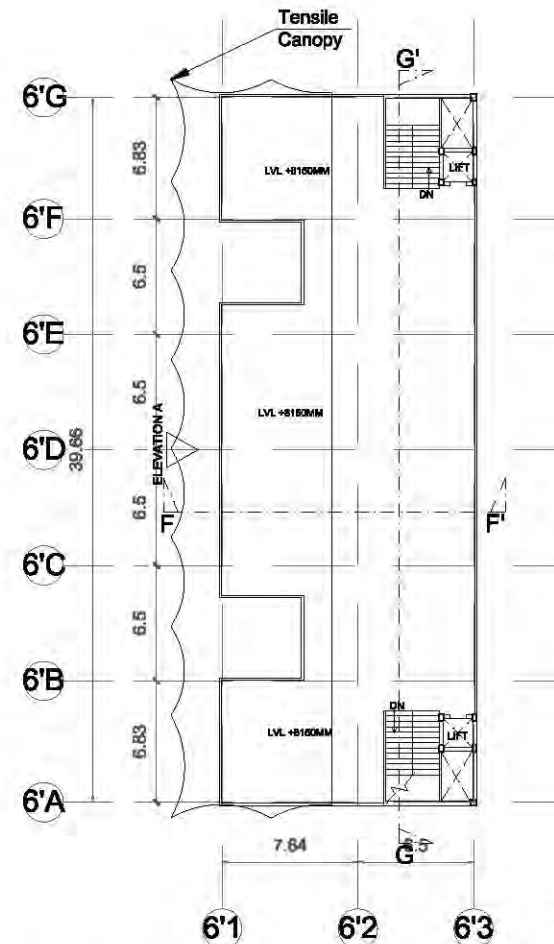
Title: interpretation center



**06- HANDICRAFT SHOPPING CENTER-  
GROUND FLOOR**



**06- HANDICRAFT SHOPPING CENTER-  
FIRST FLOOR**



**06- HANDICRAFT SHOPPING CENTER-  
TERRACE FLOOR**

AREA  
GROUND FLOOR: 500 SQM  
FIRST FLOOR: 500 SQM

**GENERAL NOTES:**

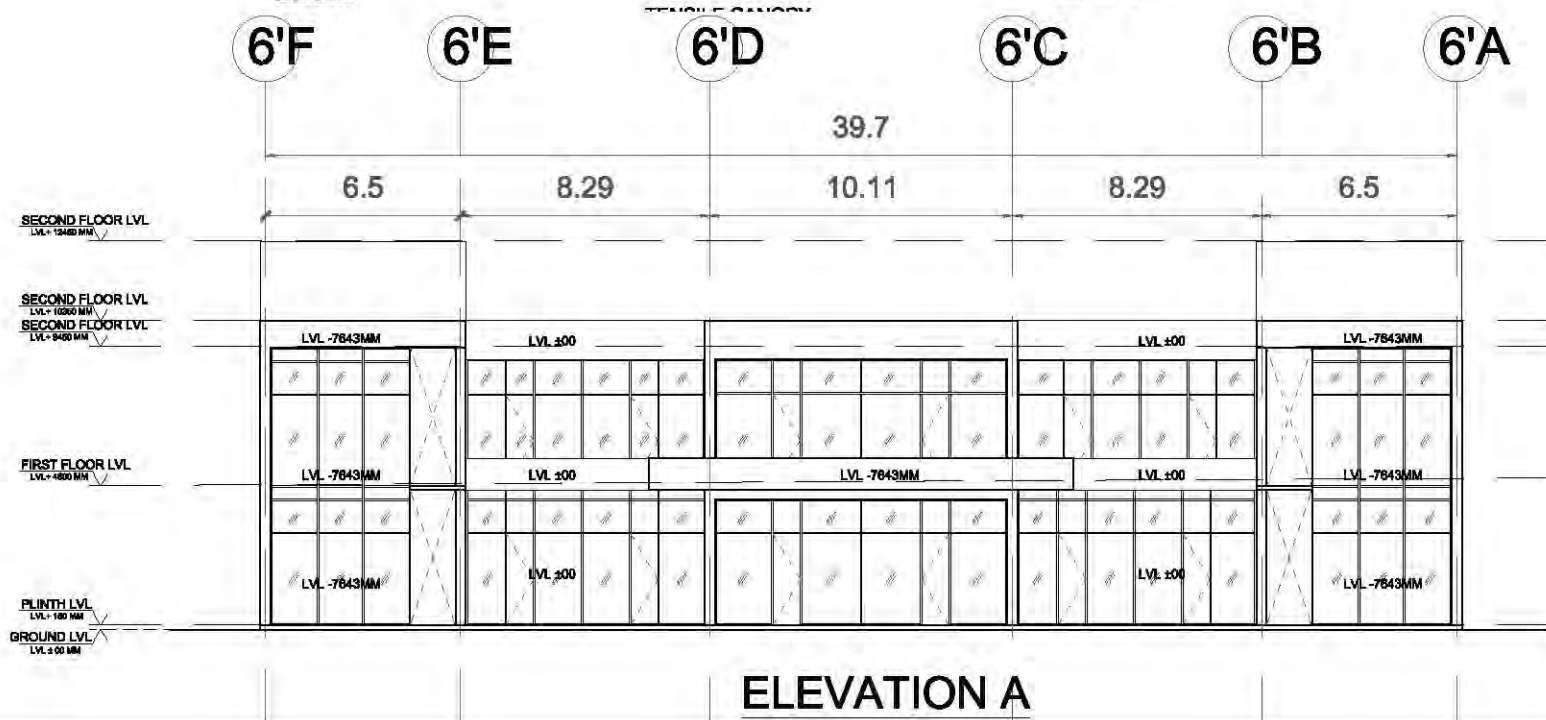
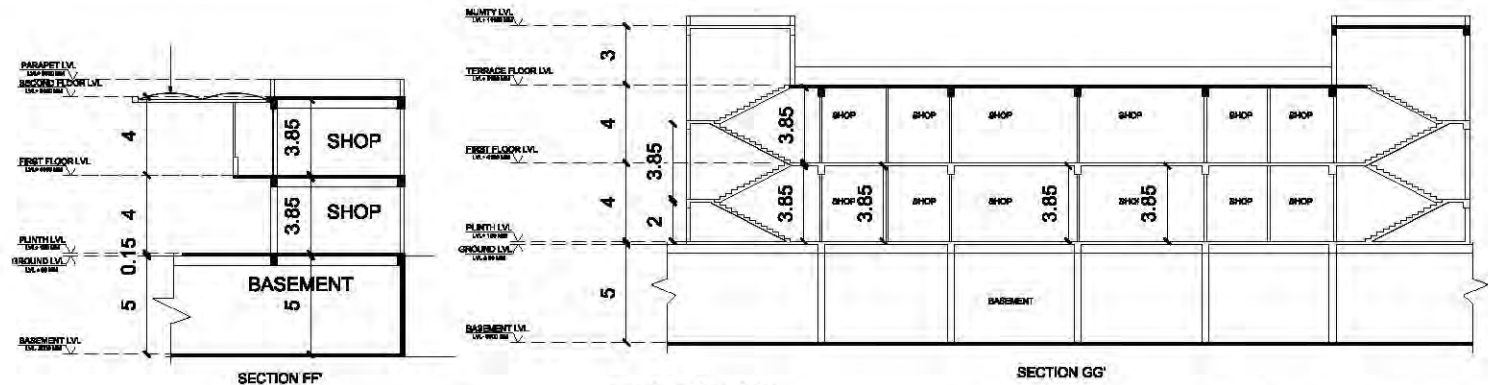
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                       |
| Project:<br><b>BAREILLY HAAT</b>           |             |                       |
| Scale:<br>Not to Scale @ A3                | North:      | Orig No:<br>A/3-05-01 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20     |

**Title: handicraft shopping  
center plans**



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
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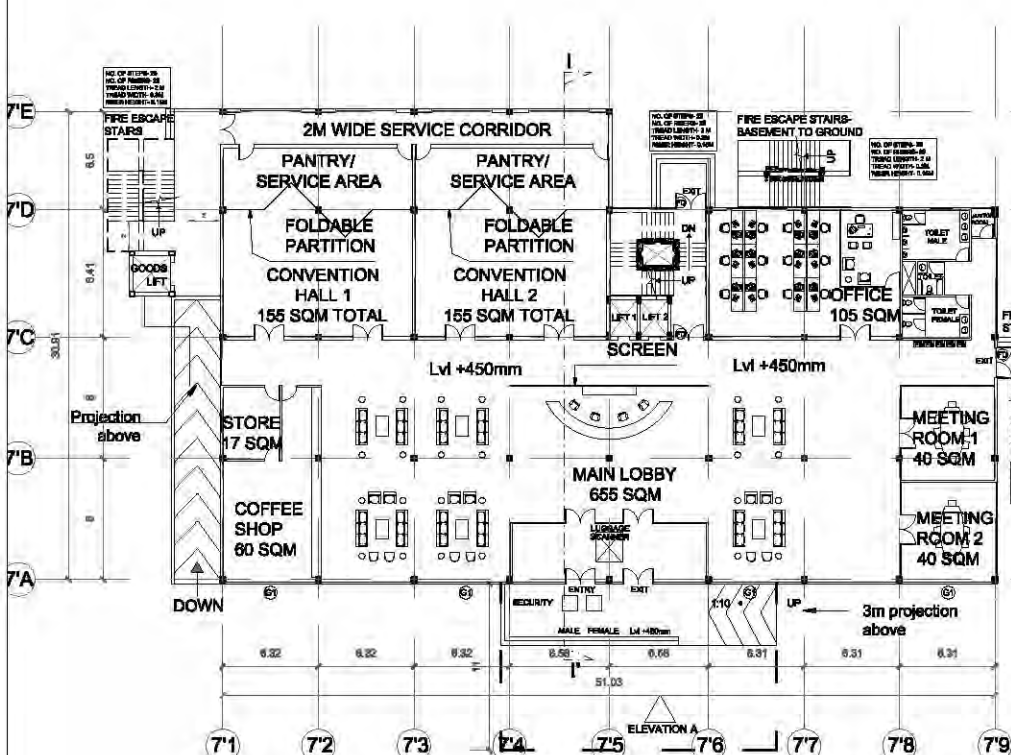
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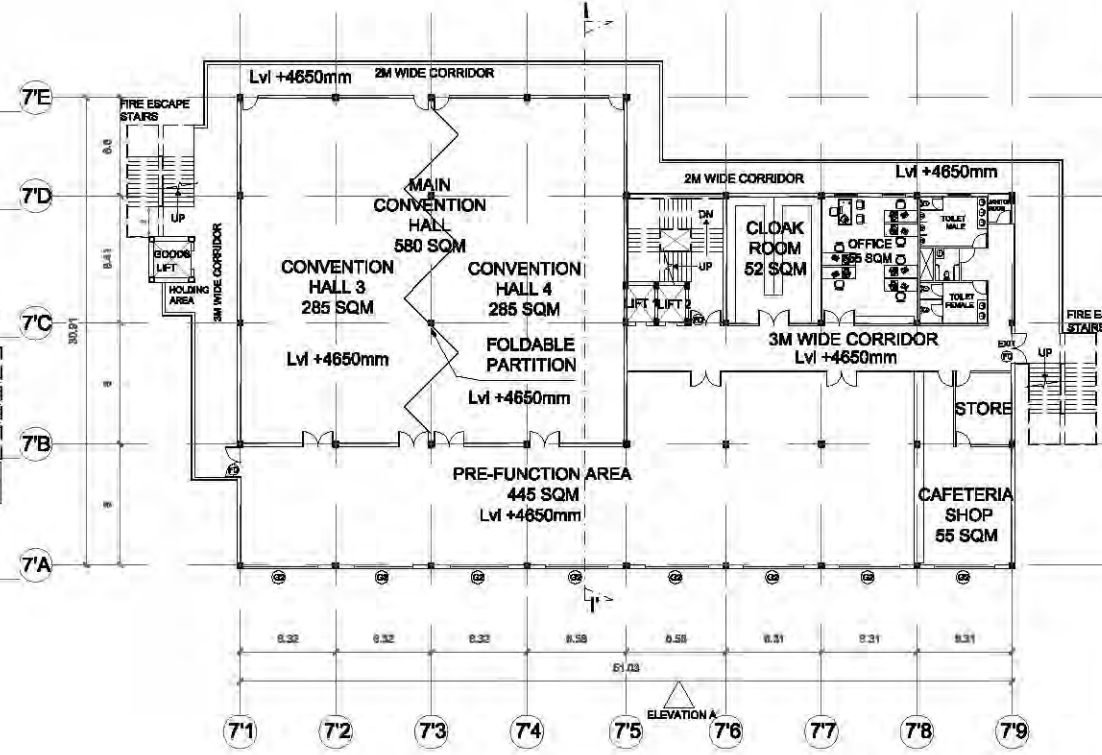
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                      |
| Project:<br><b>BAREILLY HAAT</b>           |             |                      |
| Scale:<br>Not to Scale @ A3                | North:      | Orig No:<br>A3-05-02 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20    |

Title: handicraft shopping center sections and elevations





**BUILDING 07- CONVENTION CENTER  
GROUND FLOOR**



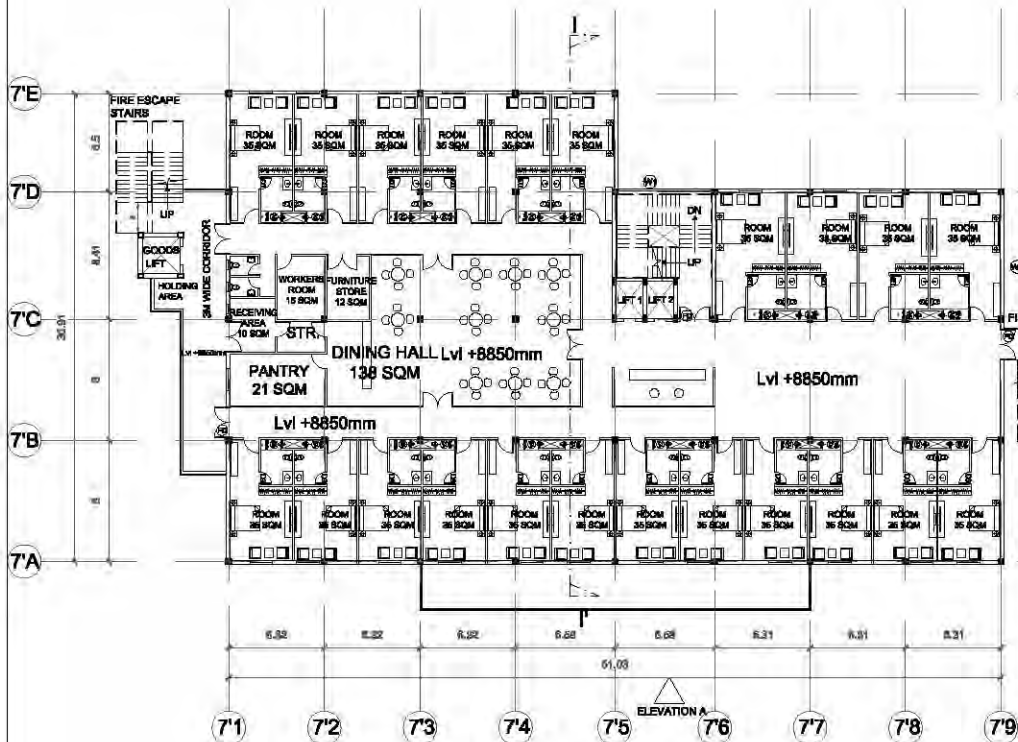
**BUILDING 07- CONVENTION CENTER  
FIRST FLOOR**

**AREA:**  
GROUND FLOOR= 1500 sqm  
FIRST FLOOR = 1500 SSQM  
SECOND FLOOR= 1500 SQM  
THIRD FLOOR= 1500 SQM

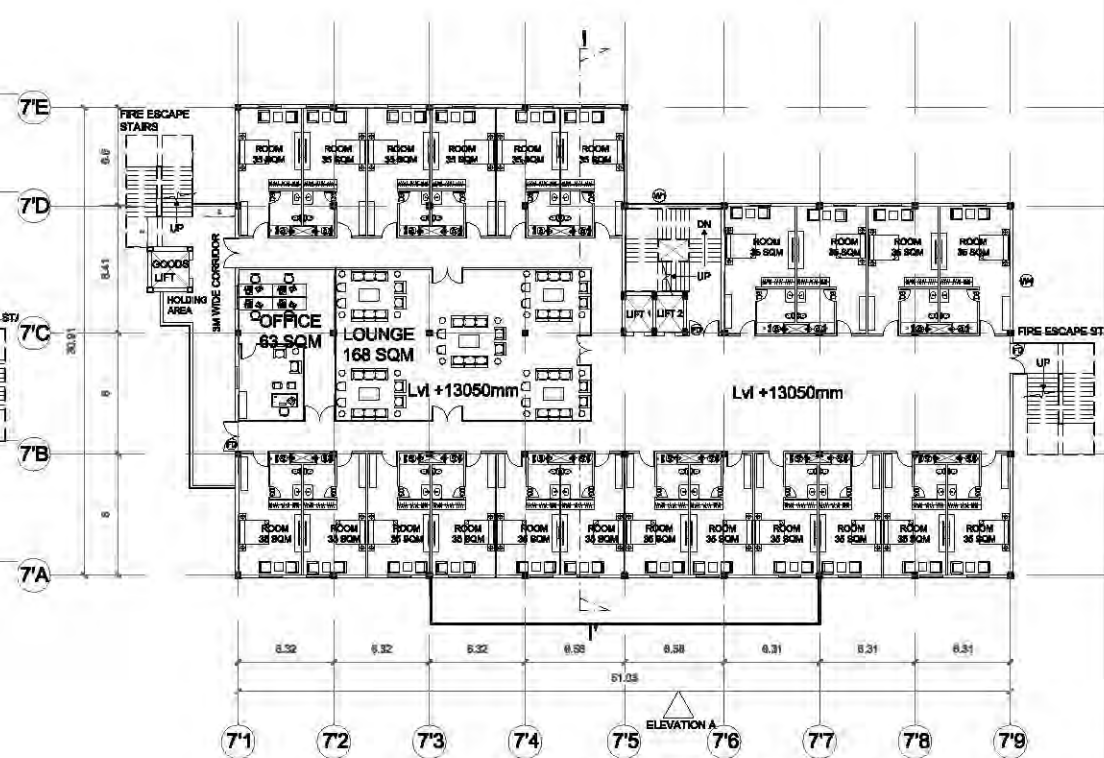
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| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |      |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |      |            |

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| Client: BAREILLY SMART CITY LTD. |             |                   |
| Project: BAREILLY HAAT           |             |                   |
| Scale: Not to Scale @ A3         | North:      | Orig No: A9-07-01 |
| Drawn by:                        | Checked by: | Date: 27.11.20    |
| Title: Convention Center plans 1 |             |                   |



**BUILDING 07- CONVENTION CENTER  
SECOND FLOOR**



**BUILDING 07- CONVENTION CENTER  
THIRD FLOOR**

**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
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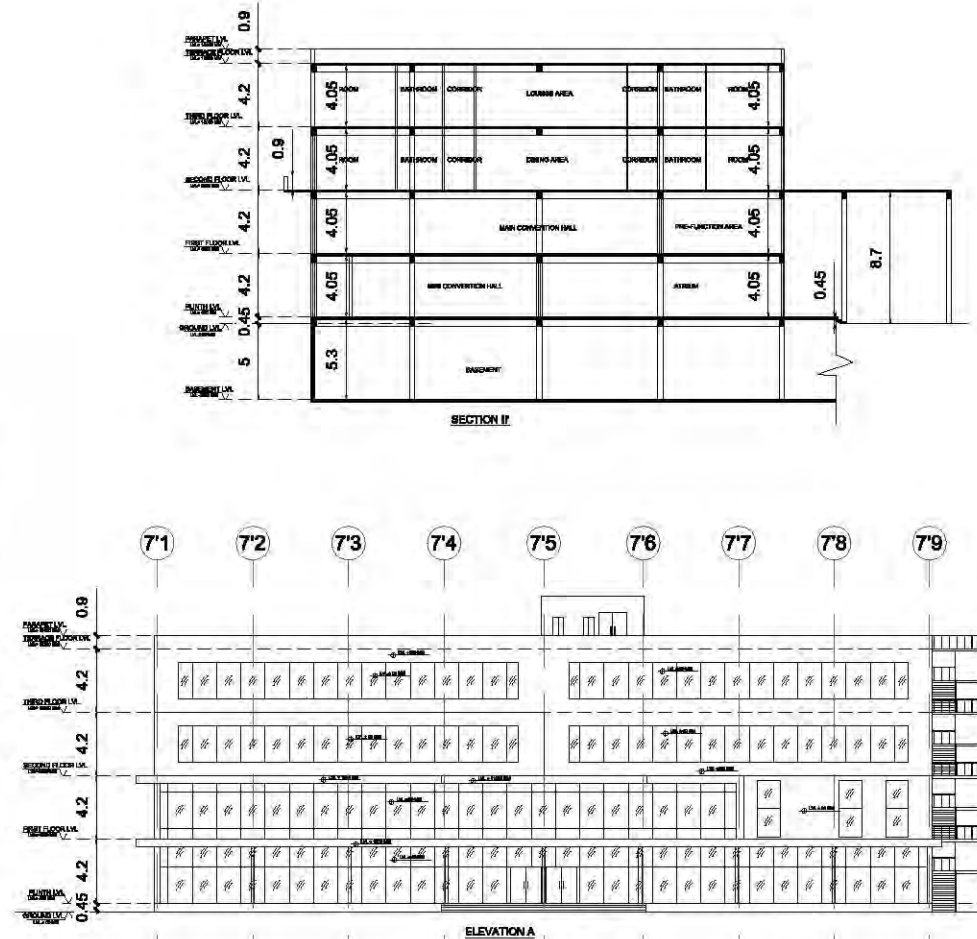
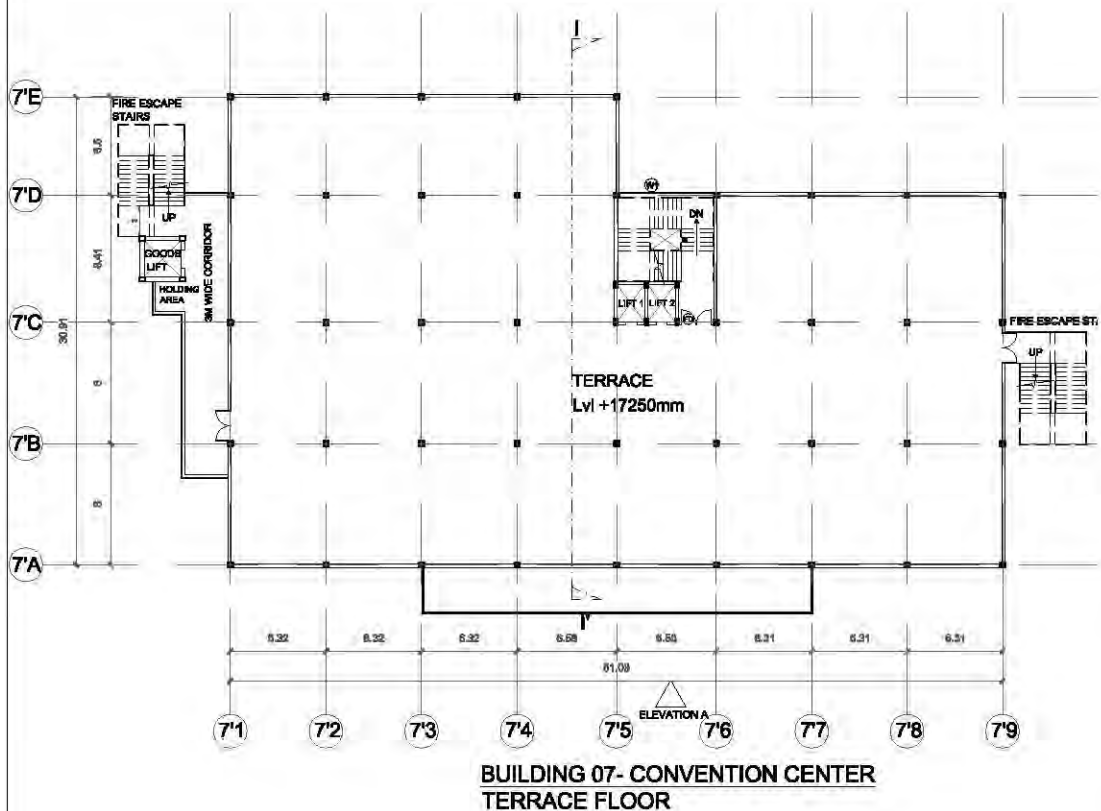
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                      |
| Project:<br><b>BAREILLY HAAT</b>           |             |                      |
| Scale:<br>Not to Scale @ A3                | North:      | Orig No:<br>A9-07-02 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20    |

**Title: Convention center  
plans 2**





**GENERAL NOTES:**

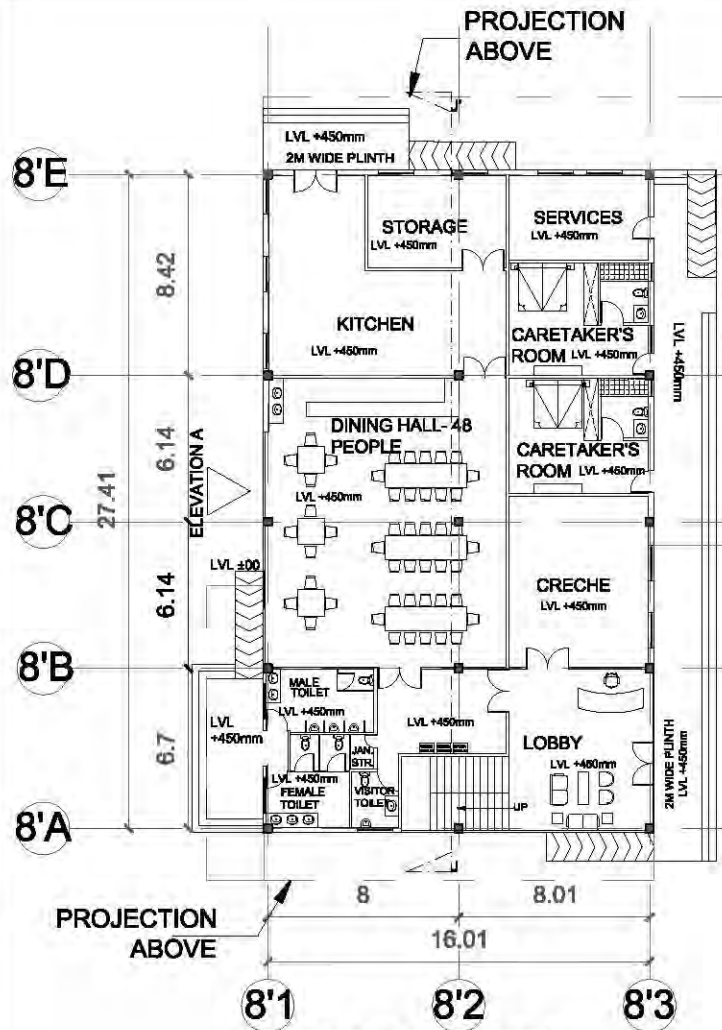
1. All dimensions are in metres and are dimensions unless otherwise specified.
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street excavations etc. refer relevant architecture/landscape drawings.

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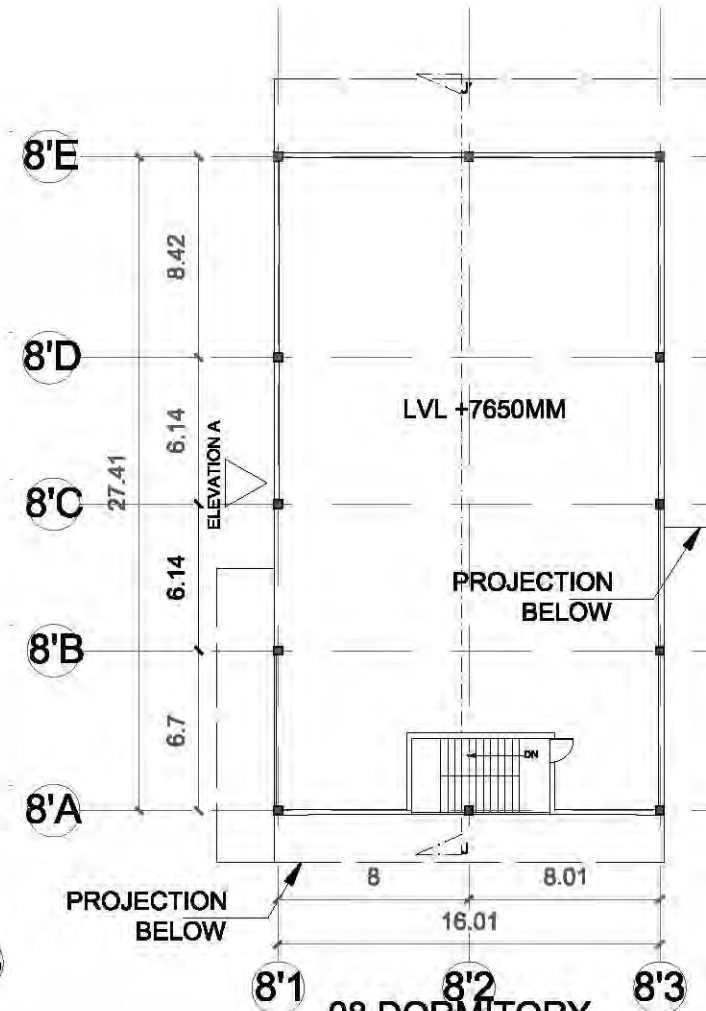
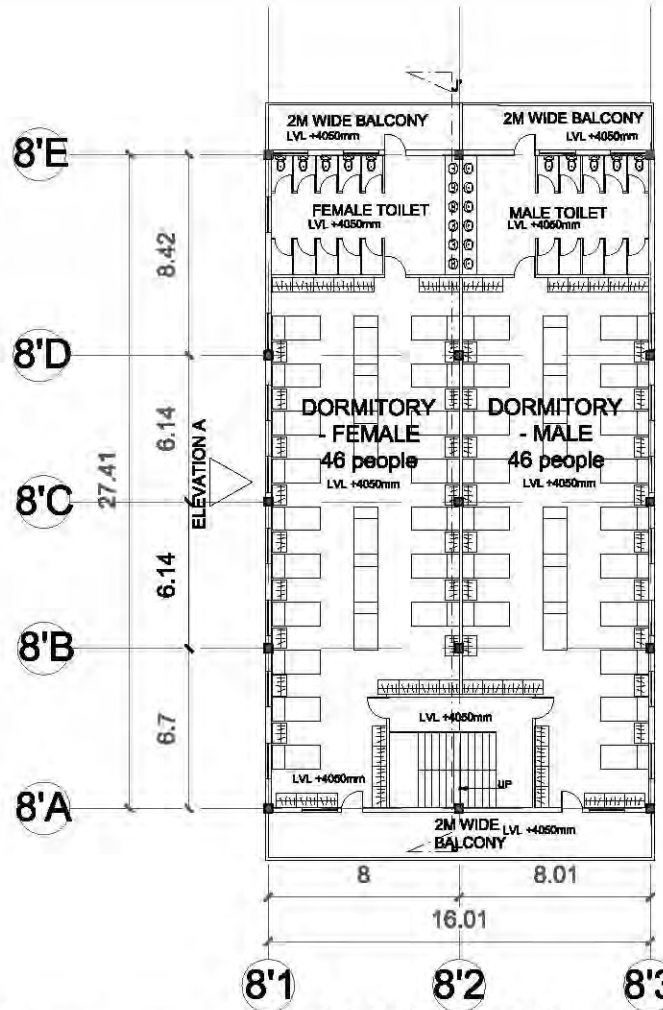
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| Client:-                     |  |             | <b>BAREILLY SMART CITY LTD.</b> |                       |  |
| Project:-                    |  |             | <b>BAREILLY HAAT</b>            |                       |  |
| Broker:<br>Not to Scale @ A3 |  | North:      |                                 | Orig No:<br>#A3-07-03 |  |
| Drawn by:                    |  | Checked by: |                                 | Date:<br>27.11.20     |  |

**Title:** Convention center plans, elevation and section



AREA  
GROUND FLOOR= 460 SQM  
FIRST FLOOR= 460 SQM



#### GENERAL NOTES:

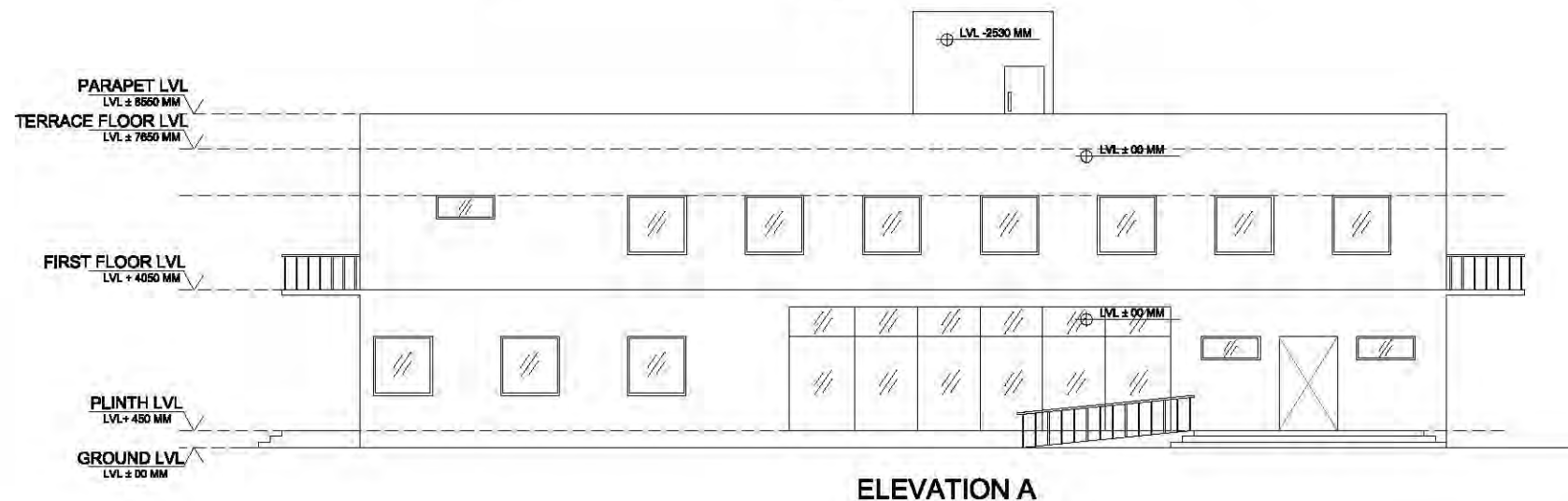
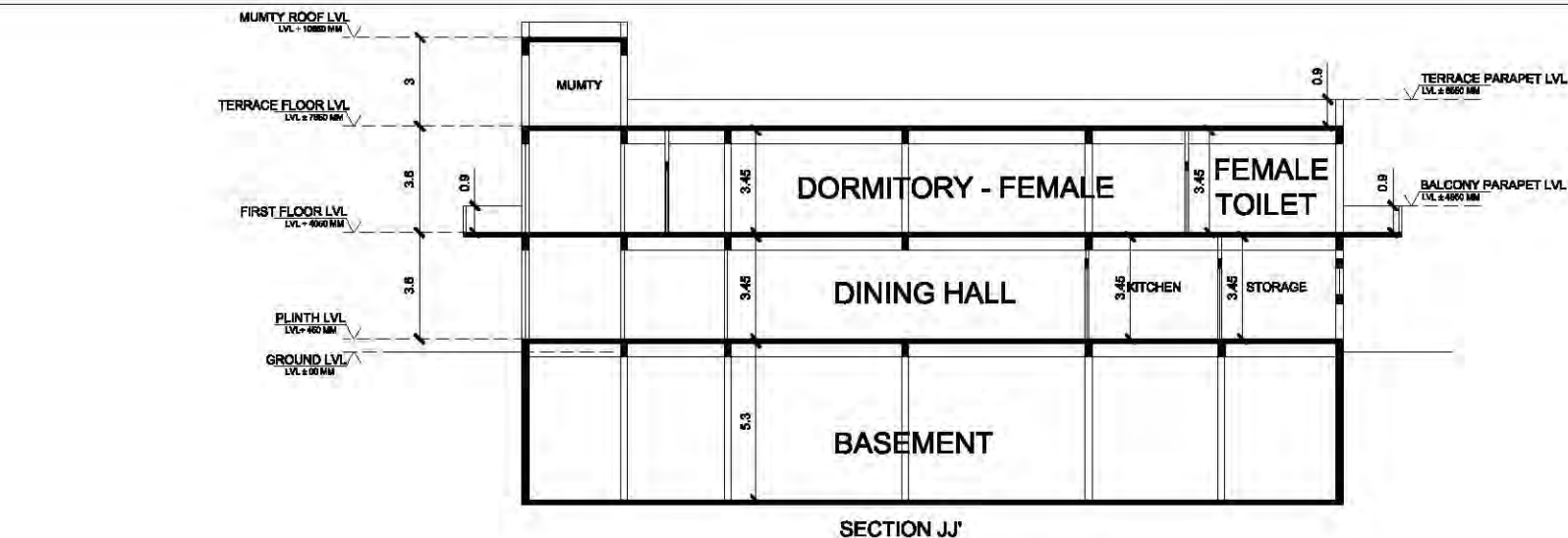
1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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|                   |                          |          |
|-------------------|--------------------------|----------|
| Client:           | BAREILLY SMART CITY LTD. |          |
| Project:          | BAREILLY HAAT            |          |
| Scale:            | North:                   | Orig No: |
| Not to Scale @ A3 |                          | AF-08-01 |
| Drawn by:         | Checked by:              | Date:    |
|                   |                          | 27.11.20 |

Title: dormitory plans



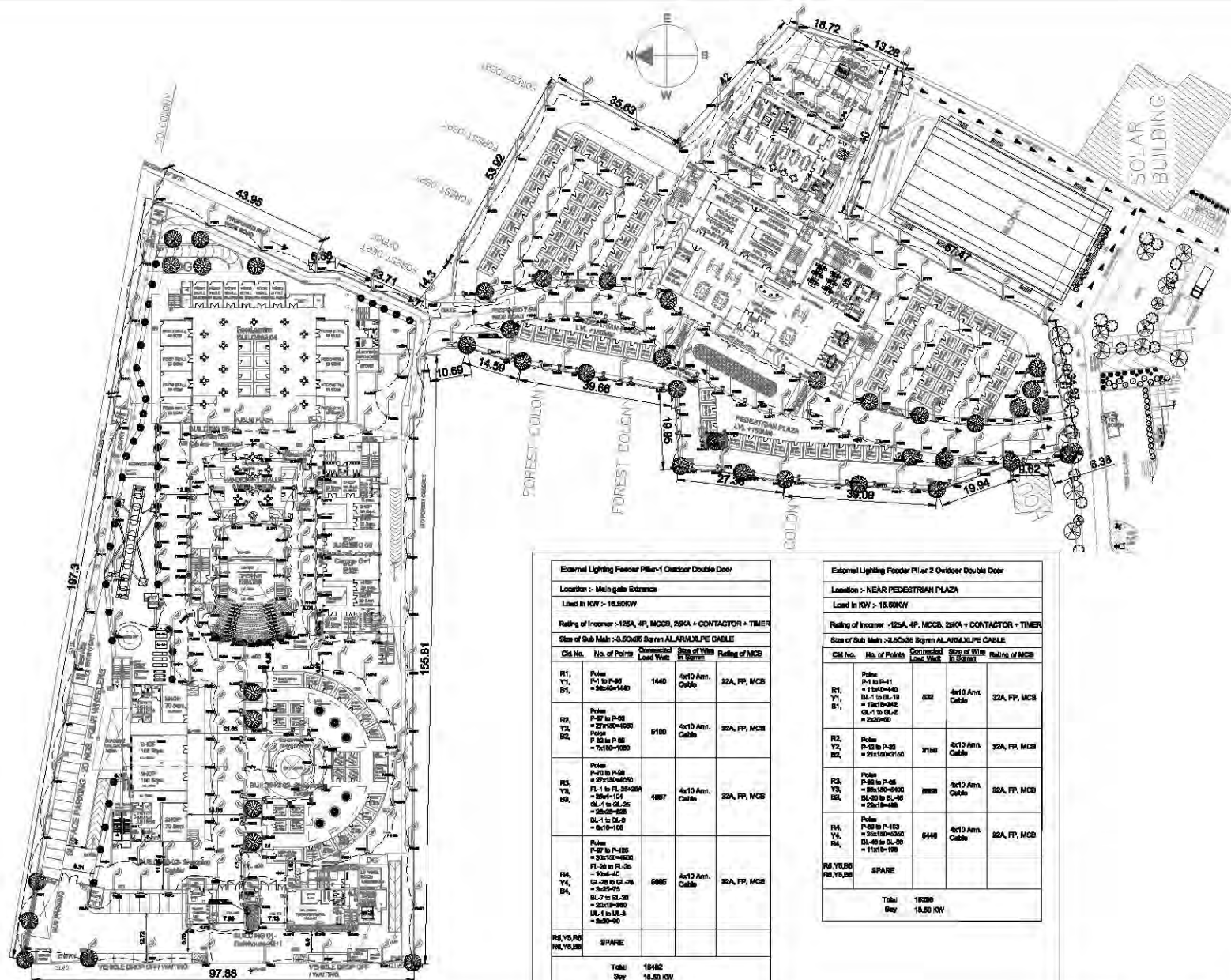
#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| Client: BAREILLY SMART CITY LTD.         |             |                   |
| Project: BAREILLY HAAT                   |             |                   |
| Scale: Not to Scale @ A3                 | North:      | Orig No: A3-04-02 |
| Drawn by:                                | Checked by: | Date: 27.11.20    |
| Title: dormitory sections and elevations |             |                   |



| External Lighting Feeder Plan-1 Outdoor Double Door           |  |                     |                      |                |  |
|---|--|---------------------|----------------------|----------------|--|
| Location :- Main gate Entrance                                |  |                     |                      |                |  |
| Load in KW :- 15.50KW   |  |                     |                      |                |  |
| Rating of Incomer :- 125A, 4P, MCCB, 25KA + CONTACTOR + TIMER |  |                     |                      |                |  |
| Size of Sub Main :- 3.00x0.65 Bore AL ALUMINUM CABLE          |  |                     |                      |                |  |
| Old No.   | No. of Points  | Connected Load Watt | Size of Wire In Sqmm | Rating of MCCB |  |
| R1, Y1, B1  | Pole P-1 to P-36 = 36x100=3600   | 1440                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R2, Y2, B2  | Pole P-37 to P-66 = 29x100=2900<br>Pole P-67 to P-68 = 7x100=700   | 6100                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R3, Y3, B3  | Pole P-69 to P-98 = 29x100=2900<br>FL-1 to FL-98x0.65 = 36x100 = 3600<br>GL-1 to GL-26 = 26x100 = 2600<br>BL-1 to BL-9 = 9x100 = 900                             | 4800                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R4, Y4, B4  | Pole P-99 to P-128 = 29x100=2900<br>FL-28 to FL-29 = 10x100 = 1000<br>GL-28 to GL-29 = 2x100 = 200<br>BL-27 to BL-28 = 2x100 = 200<br>LL-1 to LL-3 = 3x100 = 300 | 6000                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R5, Y5, B5<br>R6, Y6, B6                                      | SPARE  |                     |                      |                |  |
| Total   |  | 19400               |                      |                |  |
| Bay   |  | 15.50 KW            |                      |                |  |

| External Lighting Feeder Plan-2 Outdoor Double Door           |   |                     |                      |                |  |
|---|---|---------------------|----------------------|----------------|--|
| Location :- NEAR PEDESTRIAN PLAZA                             |   |                     |                      |                |  |
| Load in KW :- 15.50KW   |   |                     |                      |                |  |
| Rating of Incomer :- 125A, 4P, MCCB, 25KA + CONTACTOR + TIMER |   |                     |                      |                |  |
| Size of Sub Main :- 3.00x0.65 Bore AL ALUMINUM CABLE          |   |                     |                      |                |  |
| Old No.   | No. of Points   | Connected Load Watt | Size of Wire In Sqmm | Rating of MCCB |  |
| R1, Y1, B1  | Pole P-1 to P-11 = 11x100=1100<br>BL-1 to BL-19 = 19x100=1900<br>GL-1 to GL-2 = 2x100=200         | 3300                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R2, Y2, B2  | Pole P-12 to P-29 = 21x100=2100   | 2100                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R3, Y3, B3  | Pole P-30 to P-48 = 18x100=1800<br>GL-30 to GL-46 = 26x100 = 2600<br>BL-47 to BL-48 = 2x100 = 200 | 3600                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R4, Y4, B4  | Pole P-49 to P-103 = 54x100=5400<br>GL-49 to GL-49 = 1x100=100<br>BL-49 to BL-49 = 1x100=100      | 5400                | 4x10 Ann. Cable      | 32A, FP, MCS   |  |
| R5, Y5, B5<br>R6, Y6, B6                                      | SPARE   |                     |                      |                |  |
| Total   |   | 15300               |                      |                |  |
| Bay   |   | 15.50 KW            |                      |                |  |

| GENERAL NOTES:   | REVISION | DATE | CHECKED BY |
|--|----------|------|------------|
| 1. All dimensions are in meters and are dimensions unless otherwise specified.   |          |      |            |
| 2. All levels are in millimeters and are finished unless otherwise specified. All levels are mentioned in the section.   |          |      |            |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |      |            |
| 4. For details such as pathways, fencing, seating, cycle, lighting fixtures, street furniture etc. refer relevant architectural/landscape drawings.                |          |      |            |

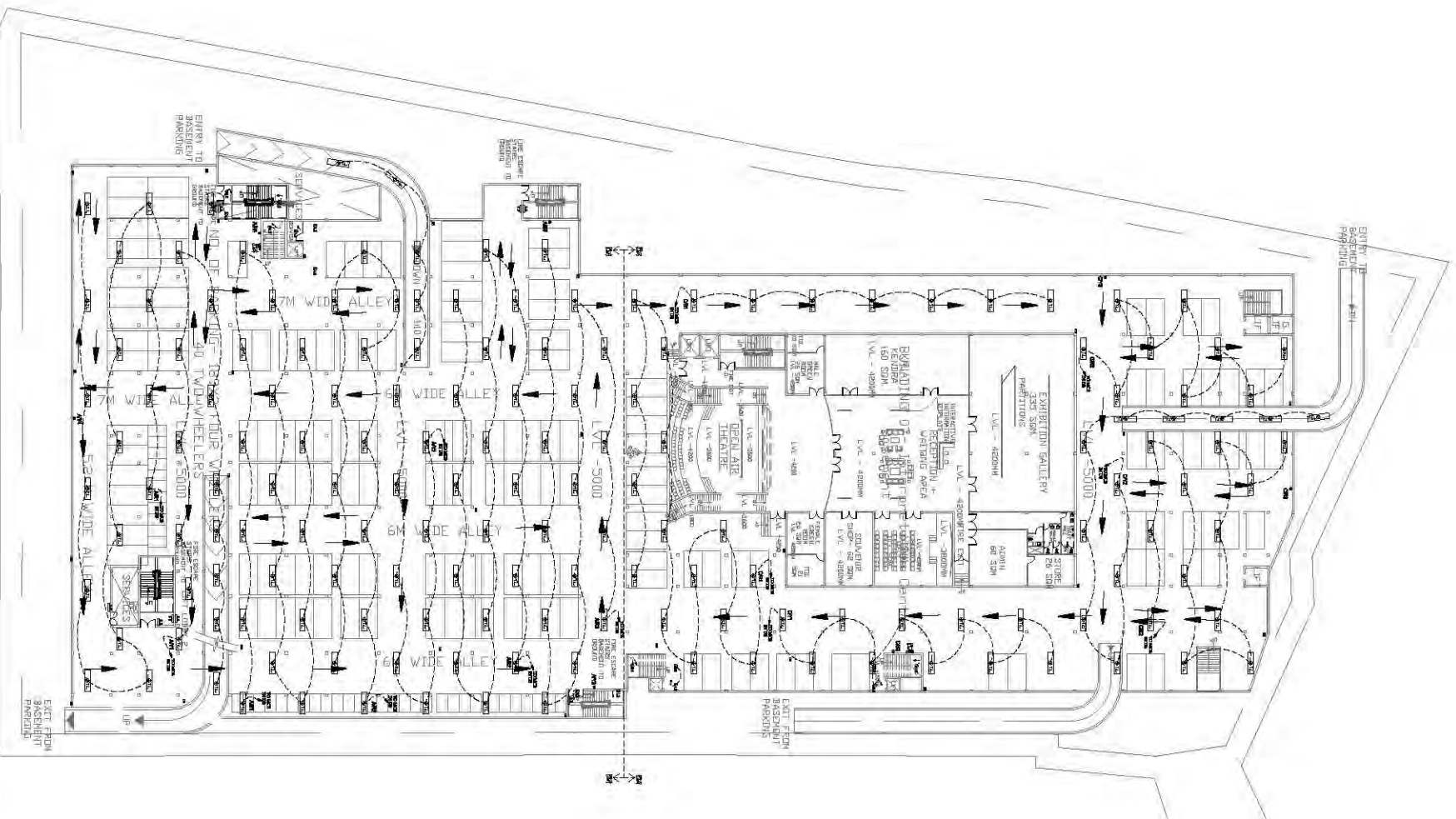
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|----------------------------------|-----------------------|-----------------------|----------------|
| Client: BAREILLY SMART CITY LTD. |                       |                       |                |
| Project: BAREILLY HAT            |                       |                       |                |
| Scale: As per drawing            | Drawn by: [Signature] | Check by: [Signature] | Date: 27.08.21 |
| Title: SITE PLAN ELECTRICAL      |                       |                       |                |

| Table of the following information: All values are in US dollars. |                    |                     |   |  |  |   |  |   |  |
|---|--------------------|---------------------|---|--|--|---|--|---|--|
| Year<br>(1990-2000)   | Number of<br>cases | Number of<br>deaths | Number of<br>cases per<br>100,000<br>population | Number of<br>deaths per<br>100,000<br>population | Number of<br>cases per<br>100,000<br>population<br>(1990-2000) | Number of<br>deaths per<br>100,000<br>population<br>(1990-2000) | Number of<br>cases per<br>100,000<br>population<br>(1990-2000) | Number of<br>deaths per<br>100,000<br>population<br>(1990-2000) | Number of<br>cases per<br>100,000<br>population<br>(1990-2000) |
| 1990  | 1,000              | 200                 | 3.1   | 0.6  | 1000   | 200   | 1000   | 200   | 1000   |
| 1991  | 1,100              | 200                 | 3.1   | 0.6  | 1100   | 200   | 1100   | 200   | 1100   |
| 1992  | 1,200              | 200                 | 3.1   | 0.6  | 1200   | 200   | 1200   | 200   | 1200   |
| 1993  | 1,300              | 200                 | 3.1   | 0.6  | 1300   | 200   | 1300   | 200   | 1300   |
| 1994  | 1,400              | 200                 | 3.1   | 0.6  | 1400   | 200   | 1400   | 200   | 1400   |
| 1995  | 1,500              | 200                 | 3.1   | 0.6  | 1500   | 200   | 1500   | 200   | 1500   |
| 1996  | 1,600              | 200                 | 3.1   | 0.6  | 1600   | 200   | 1600   | 200   | 1600   |
| 1997  | 1,700              | 200                 | 3.1   | 0.6  | 1700   | 200   | 1700   | 200   | 1700   |
| 1998  | 1,800              | 200                 | 3.1   | 0.6  | 1800   | 200   | 1800   | 200   | 1800   |
| 1999  | 1,900              | 200                 | 3.1   | 0.6  | 1900   | 200   | 1900   | 200   | 1900   |
| 2000  | 2,000              | 200                 | 3.1   | 0.6  | 2000   | 200   | 2000   | 200   | 2000   |

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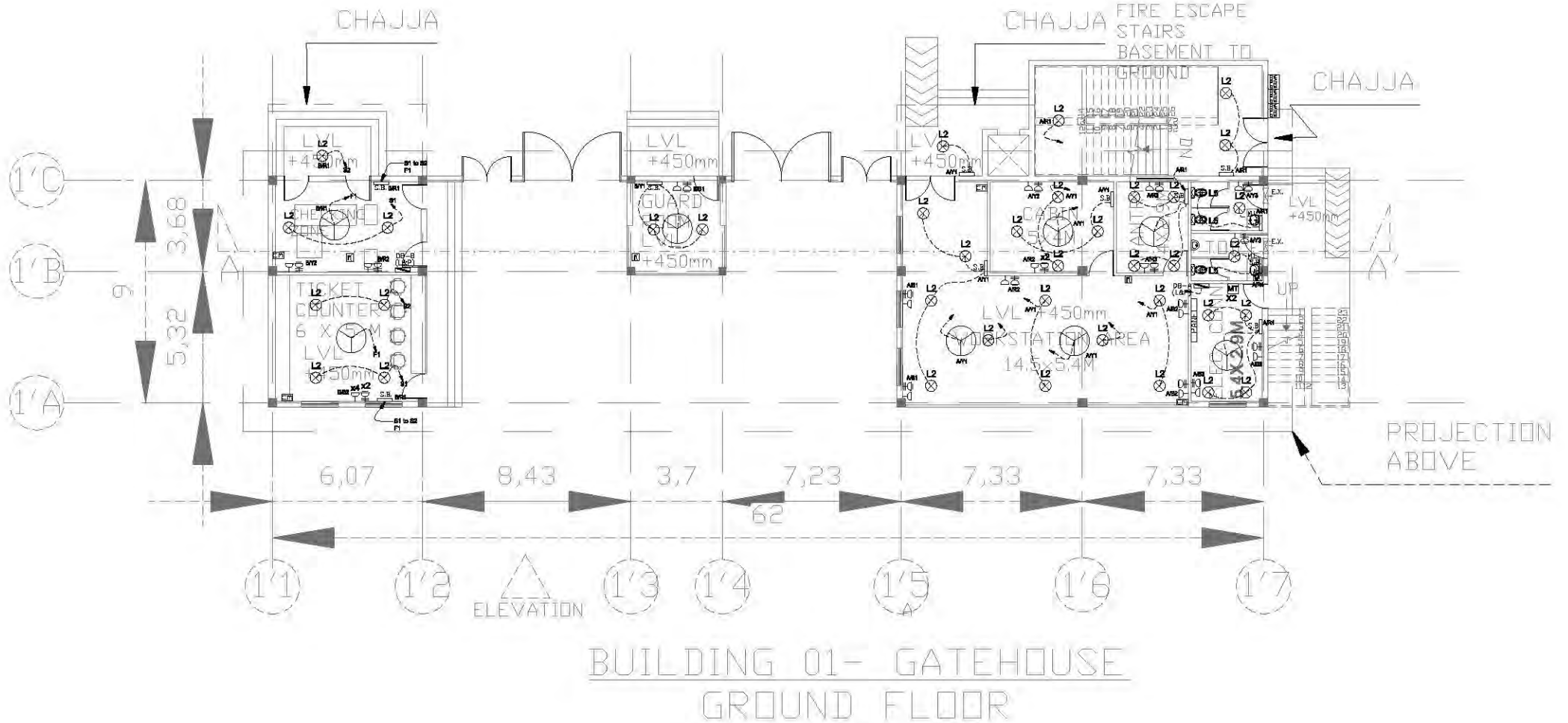
| LIGHTING FIXTURES LEGEND |   |                          |      |
|--------------------------|---|--------------------------|------|
| SR#                      | LIGHTS  | DESCRIPTION              | QTY  |
| 1.                       |  | MR 2'x4' 2nd and 3' x 3' | 185  |
| 2.                       |  | MR 2'x4' Down light      | 1065 |
| 3.                       |  | MR 2'x2' Counter light   | 50   |
| 4.                       |  | MR 2'x4' Down light      | 20   |
| 5.                       |  | MR 4' x 8' 10'x12' SHIP  | 55   |
| 6.                       |  | MR 4' x 8' 10'x12' SHIP  | 100  |
| 7.                       |  | MR 4' x 8' 10'x12' SHIP  | 10   |
| 8.                       |  | MR 4' x 8' 10'x12' SHIP  |      |
| 9.                       |  | MR 4' x 8' 10'x12' SHIP  |      |
| 10.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 11.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 12.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 13.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 14.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 15.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 16.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 17.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 18.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 19.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 20.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 21.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 22.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 23.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
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| 32.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
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| 49.                      |  | MR 4' x 8' 10'x12' SHIP  |      |
| 50.                      |  | MR 4' x 8' 10'x12' SHIP  |      |

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| Client:   |                    | BAREILLY SMART CITY LTD. |   |
| Project:  |                    | BAREILLY PHAT            |   |
| Spec:     | Not to Exceed @ A3 | Header:                  |  |
| Drawn by: |                    | Checked by:              |   |
|           |                    | By no:                   | EL-0003   |
|           |                    | Date:                    | 27.11.20  |

**Title: ASSESSMENT 1 PLAN ELECTRICAL**







#### GENERAL NOTES:

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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| Sr.No | DESCRIPTION | QTY | Sr.No | DESCRIPTION | QTY |
|-------|-------------|-----|-------|-------------|-----|
| 1     | SWITCH      | 10  | 11    | SWITCH      | 10  |
| 2     | SWITCH      | 10  | 12    | SWITCH      | 10  |
| 3     | SWITCH      | 10  | 13    | SWITCH      | 10  |
| 4     | SWITCH      | 10  | 14    | SWITCH      | 10  |
| 5     | SWITCH      | 10  | 15    | SWITCH      | 10  |
| 6     | SWITCH      | 10  | 16    | SWITCH      | 10  |
| 7     | SWITCH      | 10  | 17    | SWITCH      | 10  |
| 8     | SWITCH      | 10  | 18    | SWITCH      | 10  |
| 9     | SWITCH      | 10  | 19    | SWITCH      | 10  |
| 10    | SWITCH      | 10  | 20    | SWITCH      | 10  |

#### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                          | QTY  |
|-------|--------|--------------------------------------|------|
| 1.    | L1     | SW LED Panel (2' x 3')               | 185  |
| 2.    | L2     | SW LED Down Light                    | 1085 |
| 3.    | L3     | SW LED Circular Spot Light           | 20   |
| 4.    | L4     | SW LED Down Light                    | 60   |
| 5.    | L5     | SW LED Down Light                    | 55   |
| 6.    | DF     | DF -14 White LED Strip (Chain White) | 615M |
| 7.    | S      | Speaker                              | 10   |
| 8.    | SD     | Smoke Detector                       | 10   |
| 9.    | SP     | Smoke Detector                       | 10   |
| 10.   | P      | Probe                                | 10   |
| 11.   | L6     | Track Light                          | 60   |

|                                   |                          |             |                  |
|-----------------------------------|--------------------------|-------------|------------------|
| Client:                           | BAREILLY SMART CITY LTD. |             |                  |
| Project:                          | BAREILLY HAAT            |             |                  |
| Scale:                            | Not to Scale @ A3        | North:      | Org No: EL-01-01 |
| Drawn by:                         |                          | Checked by: | Date: 27.11.20   |
| Title: Gatehouse Plans ELECTRICAL |                          |             |                  |

# DB-A ( Light & Raw Power 4 Way TPN VERTICAL DB )

Location :- GATE HOUSE (GROUND FLOOR)

| Size of Sub Main :-4Cx16Sqmm AL-ARM.XLPE CABLE |                               |                     |                           |               |
|--|-------------------------------|---------------------|---------------------------|---------------|
| Rating of Incomer :- 63 Amp 4 Pole MCCB,25KA)  |                               |                     |                           |               |
| Ckt No.  | No. of Points                 | Connected Load Watt | Size of Wire In Sqmm 'Cu' | Rating of MCB |
| A/R1   | L2=13X18<br>L5=3X6<br>FP=2X60 | 372                 | 3 x 1.5                   | 10A/SP        |
| A/Y1   | L2=15X18<br>FP=3X60           | 450                 | 3 x 1.5                   | 10A/SP        |
| A/B1   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/R2   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/Y2   | 2x500                         | 1000                | 3 x 4                     | 20A/SP        |
| A/B2   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/R3   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/Y3   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/B3   | 2x1000                        | 2000                | 3x6 & 3x4                 | 20A/SP        |
| A/R4   | 1x2000                        | 2000                | 3 x 6                     | 20A/SP        |
| A/Y4 & A/B4                                    |                               | SPARE               |                           |               |
| TOTAL  |                               | 15822W              |                           |               |
| SAY  |                               | 16.00KW             |                           |               |

# DB-B ( Light & Raw Power 4 Way TPN VERTICAL DB )

Location :- GATE HOUSE (GROUND FLOOR)

| Size of Sub Main :-4Cx16Sqmm AL-ARM.XLPE CABLE |                    |                     |                           |               |
|--|--------------------|---------------------|---------------------------|---------------|
| Rating of Incomer :- 63 Amp 4 Pole MCCB,25KA)  |                    |                     |                           |               |
| Ckt No.  | No. of Points      | Connected Load Watt | Size of Wire In Sqmm 'Cu' | Rating of MCB |
| B/R1   | L2=7X18<br>FP=2X60 | 246                 | 3 x 1.5                   | 10A/SP        |
| B/Y1   | L2=2X18<br>FP=1X60 | 96                  | 3 x 1.5                   | 10A/SP        |
| B/B1   | 1x1000             | 1000                | 3 x 4                     | 20A/SP        |
| B/R2   | 1x1000             | 1000                | 3 x 4                     | 20A/SP        |
| B/Y2   | 1x1000             | 1000                | 3 x 4                     | 20A/SP        |
| B/B2   | 1x1000             | 1000                | 3 x 4                     | 20A/SP        |
| B/R3, B/Y3, B/B3<br>B/R4, B/Y4 & B/B4          |                    | SPARE               |                           |               |
| TOTAL  |                    | 4342W               |                           |               |
| SAY  |                    | 4.50KW              |                           |               |

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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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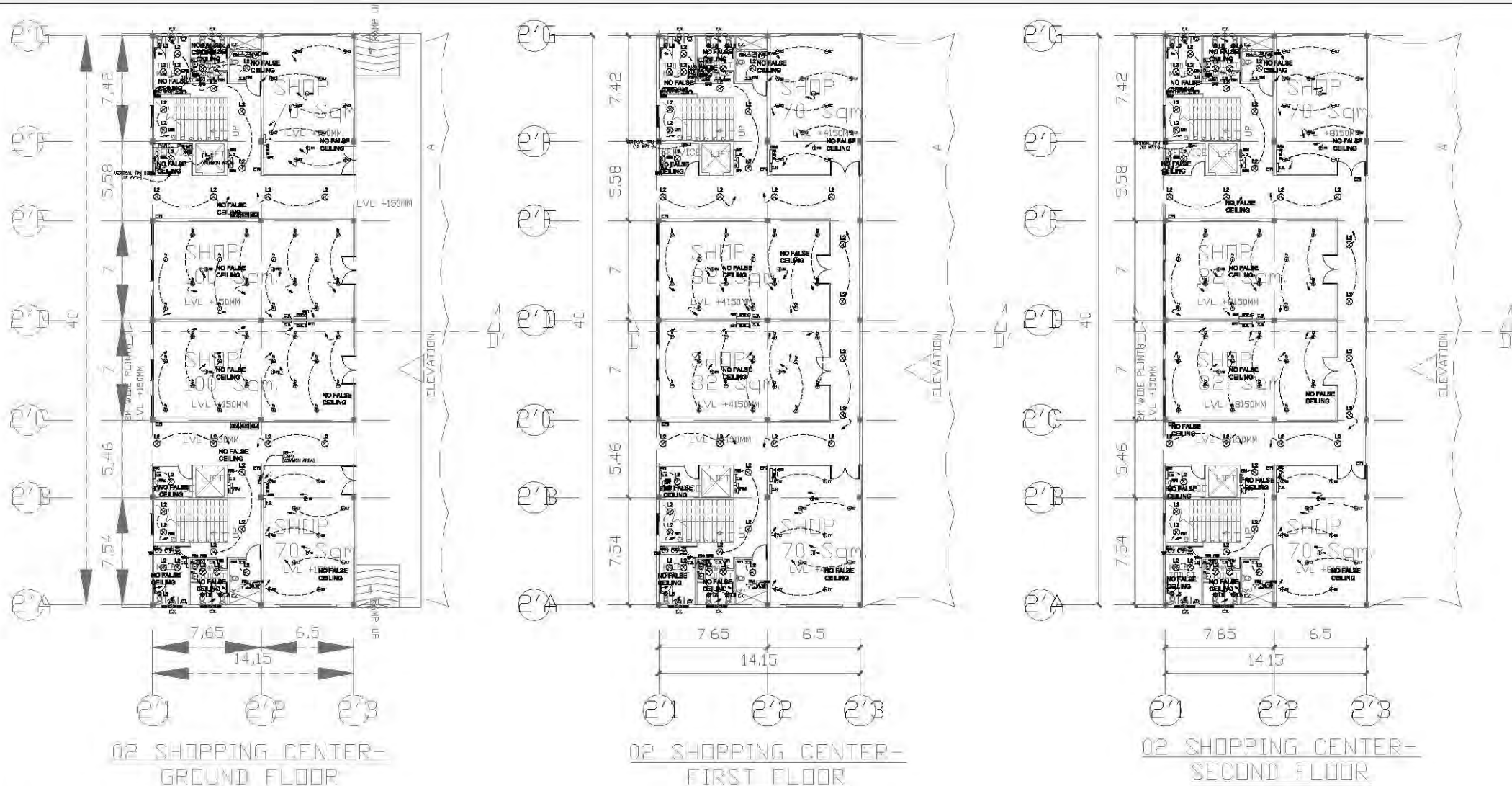
| ELECTRICAL SYMBOLS |             |        |       |             |        |
|--------------------|-------------|--------|-------|-------------|--------|
| Sr.No              | DESCRIPTION | SYMBOL | Sr.No | DESCRIPTION | SYMBOL |
| 1                  | SWITCH      | SW     | 11    | SWITCH      | SW     |
| 2                  | SWITCH      | SW     | 12    | SWITCH      | SW     |
| 3                  | SWITCH      | SW     | 13    | SWITCH      | SW     |
| 4                  | SWITCH      | SW     | 14    | SWITCH      | SW     |
| 5                  | SWITCH      | SW     | 15    | SWITCH      | SW     |
| 6                  | SWITCH      | SW     | 16    | SWITCH      | SW     |
| 7                  | SWITCH      | SW     | 17    | SWITCH      | SW     |
| 8                  | SWITCH      | SW     | 18    | SWITCH      | SW     |
| 9                  | SWITCH      | SW     | 19    | SWITCH      | SW     |
| 10                 | SWITCH      | SW     | 20    | SWITCH      | SW     |

## LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                    | QTY  |
|-------|--------|--------------------------------|------|
| 1.    | L1     | SW LED Panel (7 x 7)           | 185  |
| 2.    | L2     | SW LED Down Light              | 1065 |
| 3.    | L3     | SW LED Circular Spot Light     | 20   |
| 4.    | L4     | SW LED Down Light              | 60   |
| 5.    | L5     | SW LED Down Light              | 55   |
| 6.    | DF     | DF -14 Wm LED Strip (White Wm) | 015M |
| 7.    | SP     | Speaker                        | 10   |
| 8.    | SP     | Speaker                        | 10   |
| 9.    | SP     | Speaker                        | 10   |
| 10.   | SP     | Speaker                        | 10   |
| 11.   | L6     | Track Light                    | 60   |

|  |             |                     |
|--|-------------|---------------------|
| Client:-<br><b>BAREILLY SMART CITY LTD.</b>                |             |                     |
| Project:-<br><b>BAREILLY HAAT</b>                          |             |                     |
| Scale:<br>Not to Scale @ A3                                | North:<br>← | Org No:<br>EL-01-02 |
| Drawn by:  | Checked by: | Date:<br>27.11.20   |
| Title: Gatehouse Plans<br><b>ELECTRICAL DB<br/>DETAILS</b> |             |                     |





#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetre and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| SYMBOL | DESCRIPTION                | QTY  | SYMBOL | DESCRIPTION                | QTY  |
|--------|----------------------------|------|--------|----------------------------|------|
| 1      | SW L20 Down Light          | 185  | 1      | SW L20 Down Light          | 185  |
| 2      | SW L20 Circular Spot Light | 20   | 2      | SW L20 Circular Spot Light | 20   |
| 3      | SW L20 Down Light          | 60   | 3      | SW L20 Down Light          | 60   |
| 4      | SW L20 Down Light          | 55   | 4      | SW L20 Down Light          | 55   |
| 5      | SW L20 Down Light          | 615M | 5      | SW L20 Down Light          | 615M |
| 6      | SW L20 Down Light          | 10   | 6      | SW L20 Down Light          | 10   |
| 7      | SW L20 Down Light          | 10   | 7      | SW L20 Down Light          | 10   |
| 8      | SW L20 Down Light          | 10   | 8      | SW L20 Down Light          | 10   |
| 9      | SW L20 Down Light          | 10   | 9      | SW L20 Down Light          | 10   |
| 10     | SW L20 Down Light          | 10   | 10     | SW L20 Down Light          | 10   |
| 11     | SW L20 Down Light          | 10   | 11     | SW L20 Down Light          | 10   |

#### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                | QTY  |
|-------|--------|----------------------------|------|
| 1.    | L2     | SW L20 Down Light          | 185  |
| 2.    | L2     | SW L20 Circular Spot Light | 20   |
| 3.    | L2     | SW L20 Down Light          | 60   |
| 4.    | L2     | SW L20 Down Light          | 55   |
| 5.    | L2     | SW L20 Down Light          | 615M |
| 6.    | L2     | SW L20 Down Light          | 10   |
| 7.    | L2     | SW L20 Down Light          | 10   |
| 8.    | L2     | SW L20 Down Light          | 10   |
| 9.    | L2     | SW L20 Down Light          | 10   |
| 10.   | L2     | SW L20 Down Light          | 10   |
| 11.   | L2     | SW L20 Down Light          | 10   |

Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale @ A3

North:

Drawn by:

Checked by:

Date: 27.11.20

Title: Shopping center plans ELECTRICAL

# DB-E ( Light & Raw Power 8 Way TPN VERTICAL DB )

Location :- SHOPPING COMPLEX (GROUND FLOOR-COMMON AREA)

| Size of Sub Main :-3.5Cx35 Sqmm ALARMLPE CABLE |                               |                     |                         |               |
|--|-------------------------------|---------------------|-------------------------|---------------|
| Rating of Incoming :- 125 Amp 4 Pole MCCB,20KA |                               |                     |                         |               |
| Ckt No.  | No. of Points                 | Connected Load Watt | Size of Wire in Sqmm Cu | Rating of MCB |
| E/R1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| E/Y1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| E/B1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| E/R2   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/Y2   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/B2   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/R3   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/Y3   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| E/B3   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/R4   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/Y4   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/B4   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/R5   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/Y5   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| E/B5   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/R6   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/Y6   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/B6   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| E/R7   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/Y7   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| E/B7   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| E/R8, E/Y8 & E/B8 SPARE                        |                               |                     |                         |               |
| TOTAL  |                               | 34278W              |                         |               |
| SAY  |                               | 34.50KW             |                         |               |

# DB-F ( Light & Raw Power 8 Way TPN VERTICAL DB )

Location :- SHOPPING COMPLEX (GROUND FLOOR-COMMON AREA)

| Size of Sub Main :-3.5Cx35 Sqmm ALARMLPE CABLE |                               |                     |                         |               |
|--|-------------------------------|---------------------|-------------------------|---------------|
| Rating of Incoming :- 125 Amp 4 Pole MCCB,20KA |                               |                     |                         |               |
| Ckt No.  | No. of Points                 | Connected Load Watt | Size of Wire in Sqmm Cu | Rating of MCB |
| F/R1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| F/Y1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| F/B1   | L2=16X18<br>L3=3X8<br>EX=2X60 | 426                 | 3 x 1.5                 | 10A/SP        |
| F/R2   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/Y2   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/B2   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/R3   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/Y3   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| F/B3   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/R4   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/Y4   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/B4   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/R5   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/Y5   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| F/B5   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/R6   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/Y6   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/B6   | 2x1000                        | 2000                | 3x8 & 3x4               | 20A/SP        |
| F/R7   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/Y7   | 1x1000                        | 1000                | 3 x 4                   | 20A/SP        |
| F/B7   | 1x2000                        | 2000                | 3 x 8                   | 20A/SP        |
| F/R8, F/Y8 & F/B8 SPARE                        |                               |                     |                         |               |
| TOTAL  |                               | 34278W              |                         |               |
| SAY  |                               | 34.50KW             |                         |               |

## GENERAL NOTES:

- All dimensions are in metres and are dimensions unless otherwise specified.
- All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
- Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
- For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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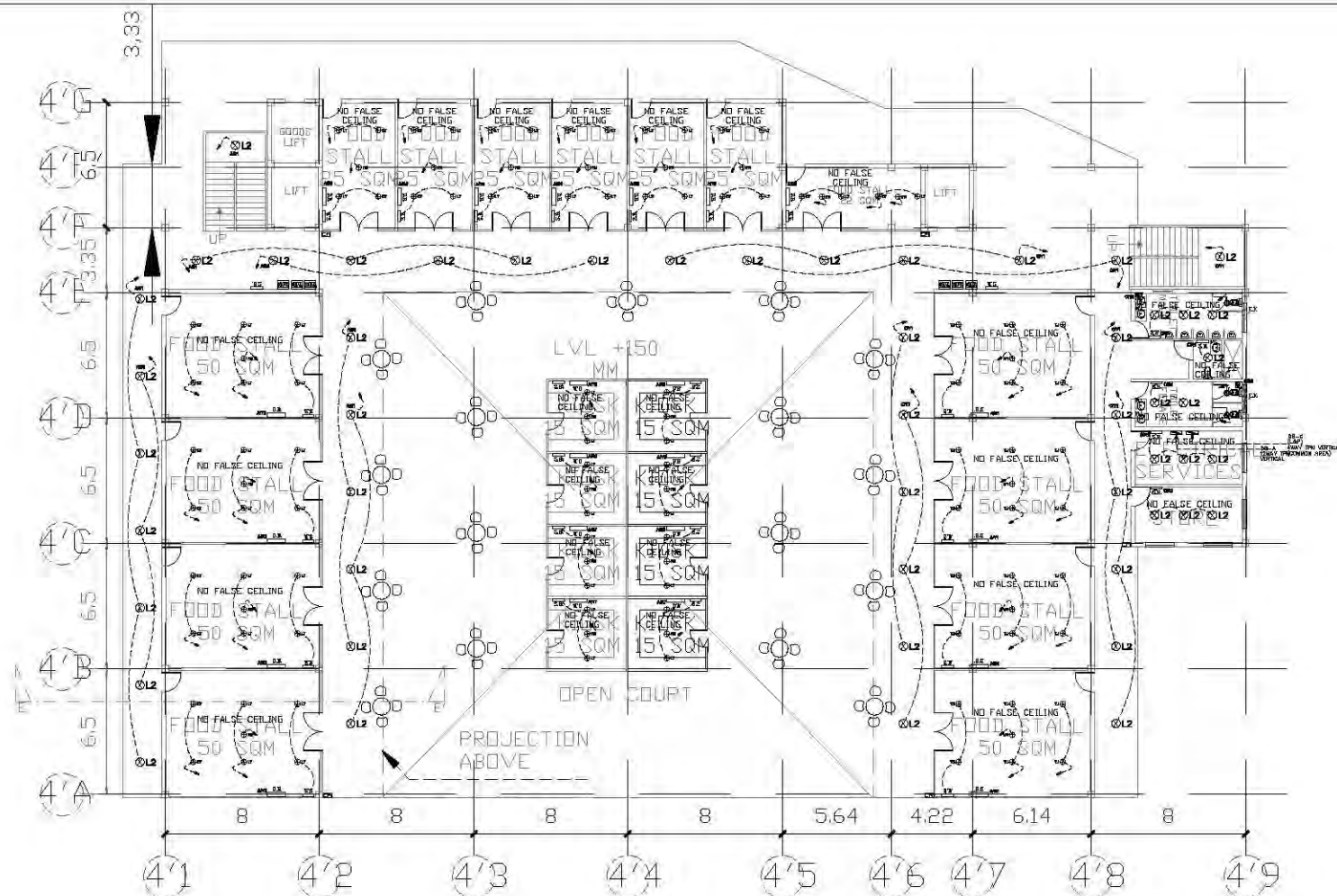
## LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                         | QTY  |
|-------|--------|-------------------------------------|------|
| 1.    |        | SW LED Panel (7 x 7)                | 185  |
| 2.    |        | SW LED Down Light                   | 1065 |
| 3.    |        | SW LED Circular Spot Light          | 20   |
| 4.    |        | SW LED Linear Light                 | 60   |
| 5.    |        | SW LED Area Light                   | 55   |
| 6.    |        | 2F -14 White LED Strip (White W/30) | 015M |
| 7.    |        | Speaker                             | 10   |
| 8.    |        | Shower Detector                     |      |
| 9.    |        | Smoke Detector                      |      |
| 10.   |        | Fire Alarm                          |      |
| 11.   |        | Track Light                         | 60   |

|  |             |                     |
|--|-------------|---------------------|
| Client:-<br><b>BAREILLY SMART CITY LTD.</b>        |             |                     |
| Project:-<br><b>BAREILLY HAAT</b>                  |             |                     |
| Scale:<br>Not to Scale @ A3                        | North:<br>  | Drp No:<br>EL-02-02 |
| Drawn by:  | Checked by: | Date:<br>27.11.20   |
| Title: Shopping center plans ELECTRICAL DB DETAILS |             |                     |

| ELECTRICAL SYMBOLS |                                     |        |                     |      |
|--------------------|-------------------------------------|--------|---------------------|------|
| SYMBOL             | DESCRIPTION                         | SYMBOL | DESCRIPTION         | QTY  |
|                    | SW LED Panel (7 x 7)                |        | SW LED Down Light   | 1065 |
|                    | SW LED Circular Spot Light          |        | SW LED Linear Light | 60   |
|                    | SW LED Area Light                   |        | SW LED Track Light  | 60   |
|                    | 2F -14 White LED Strip (White W/30) |        | Speaker             | 10   |
|                    | Shower Detector                     |        | Smoke Detector      |      |
|                    | Fire Alarm                          |        | Track Light         | 60   |





## 04 FOOD CENTER- GROUND FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| Sr.No | DESCRIPTION                | QTY | Sr.No | DESCRIPTION       | QTY |
|-------|----------------------------|-----|-------|-------------------|-----|
| 1     | SW LED Down Light          | 185 | 10    | SW LED Down Light | 185 |
| 2     | SW LED Circular Spot Light | 20  | 11    | SW LED Down Light | 55  |
| 3     | SW LED Down Light          | 60  | 12    | SW LED Down Light | 55  |
| 4     | SW LED Down Light          | 55  | 13    | SW LED Down Light | 55  |
| 5     | SW LED Down Light          | 55  | 14    | SW LED Down Light | 55  |
| 6     | SW LED Down Light          | 55  | 15    | SW LED Down Light | 55  |
| 7     | SW LED Down Light          | 55  | 16    | SW LED Down Light | 55  |
| 8     | SW LED Down Light          | 55  | 17    | SW LED Down Light | 55  |
| 9     | SW LED Down Light          | 55  | 18    | SW LED Down Light | 55  |
| 10    | SW LED Down Light          | 55  | 19    | SW LED Down Light | 55  |
| 11    | SW LED Down Light          | 55  | 20    | SW LED Down Light | 55  |

### LIGHTING FIXTURES LEGEND

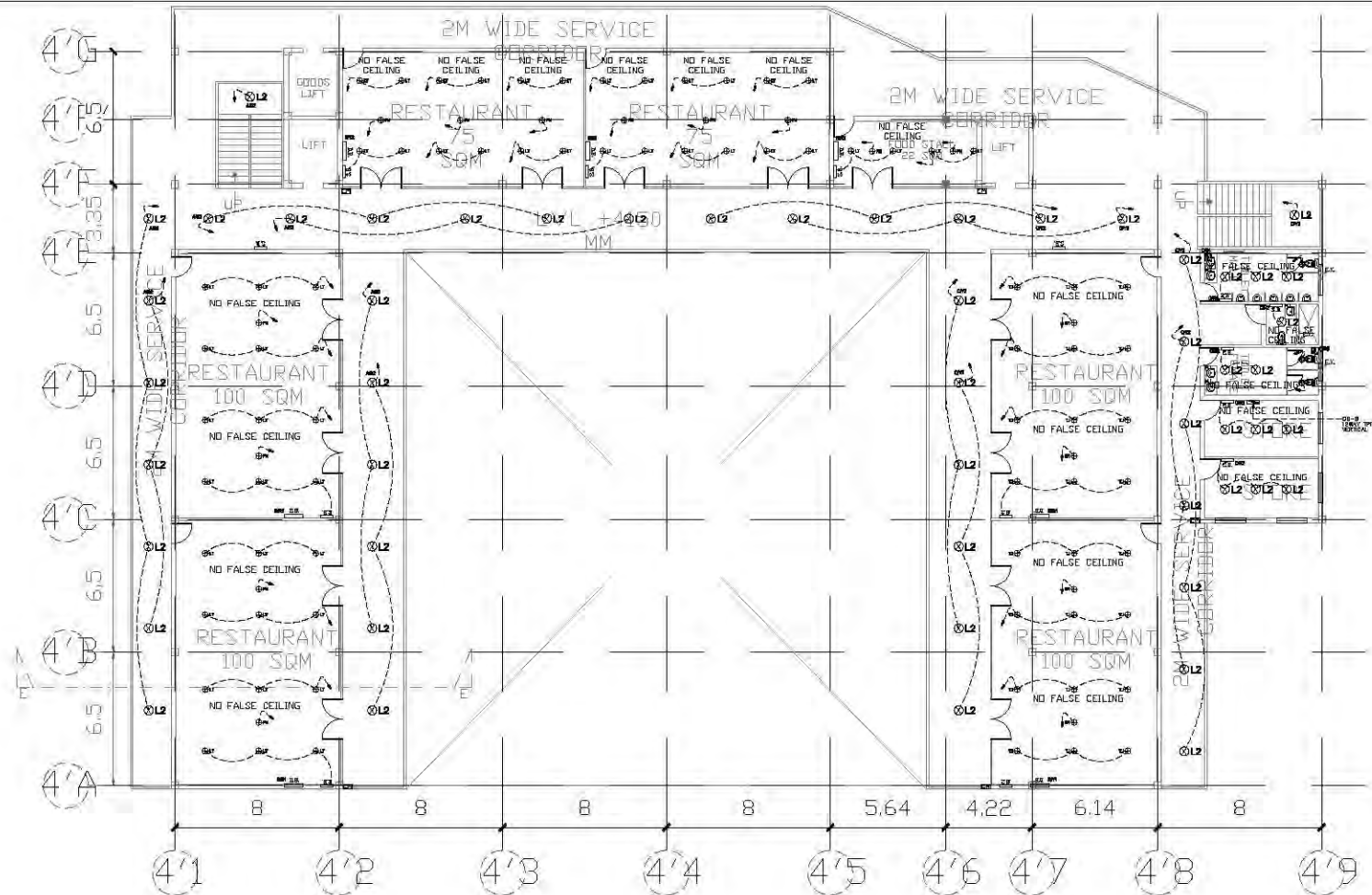
| Sr.No | LIGHTS                     | DESCRIPTION                | QTY |
|-------|----------------------------|----------------------------|-----|
| 1.    | SW LED Down Light          | SW LED Down Light          | 185 |
| 2.    | SW LED Circular Spot Light | SW LED Circular Spot Light | 20  |
| 3.    | SW LED Down Light          | SW LED Down Light          | 60  |
| 4.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 5.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 6.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 7.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 8.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 9.    | SW LED Down Light          | SW LED Down Light          | 55  |
| 10.   | SW LED Down Light          | SW LED Down Light          | 55  |
| 11.   | SW LED Down Light          | SW LED Down Light          | 55  |

Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale @ A3  
North:   
Date: 27.11.20

Title: **Food center plans  
ELECTRICAL GF**



## 04 FOOD CENTER- FIRST FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| ELECTRICAL SYMBOLS |             |        |             |        |             |
|--------------------|-------------|--------|-------------|--------|-------------|
| SYMBOL             | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
| 1. 1.1             | SWITCH      | 1.2    | SWITCH      | 1.3    | SWITCH      |
| 2. 2.1             | SWITCH      | 2.2    | SWITCH      | 2.3    | SWITCH      |
| 3. 3.1             | SWITCH      | 3.2    | SWITCH      | 3.3    | SWITCH      |
| 4. 4.1             | SWITCH      | 4.2    | SWITCH      | 4.3    | SWITCH      |
| 5. 5.1             | SWITCH      | 5.2    | SWITCH      | 5.3    | SWITCH      |
| 6. 6.1             | SWITCH      | 6.2    | SWITCH      | 6.3    | SWITCH      |
| 7. 7.1             | SWITCH      | 7.2    | SWITCH      | 7.3    | SWITCH      |
| 8. 8.1             | SWITCH      | 8.2    | SWITCH      | 8.3    | SWITCH      |
| 9. 9.1             | SWITCH      | 9.2    | SWITCH      | 9.3    | SWITCH      |
| 10. 10.1           | SWITCH      | 10.2   | SWITCH      | 10.3   | SWITCH      |
| 11. 11.1           | SWITCH      | 11.2   | SWITCH      | 11.3   | SWITCH      |

### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                | QTY  |
|-------|--------|----------------------------|------|
| 1.    | 1.1    | SW LED Panel (2' x 3')     | 185  |
| 2.    | 2.1    | SW LED Down light          | 1085 |
| 3.    | 3.1    | SW LED Circular Spot light | 20   |
| 4.    | 4.1    | SW LED Down light          | 60   |
| 5.    | 5.1    | SW LED Down light          | 55   |
| 6.    | 6.1    | SW LED Down light          | 615M |
| 7.    | 7.1    | SW LED Down light          | 10   |
| 8.    | 8.1    | SW LED Down light          | 10   |
| 9.    | 9.1    | SW LED Down light          | 10   |
| 10.   | 10.1   | SW LED Down light          | 10   |
| 11.   | 11.1   | SW LED Down light          | 60   |

Client:

**BAREILLY SMART CITY LTD.**

Project:

**BAREILLY HAAT**

Scale:  
Not to Scale @ A3

North:

EL-04-02

Drawn by:

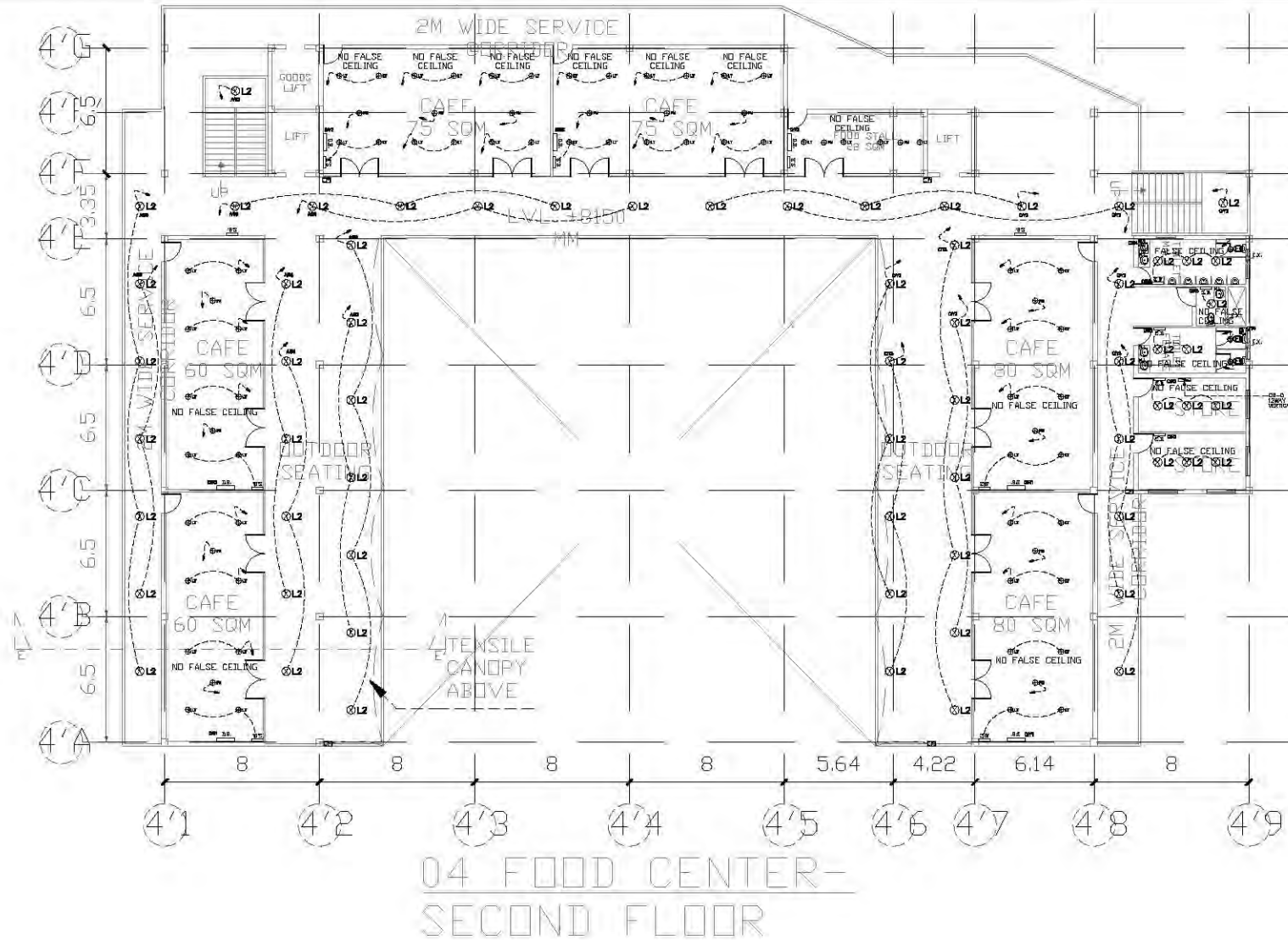
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Date:

27.11.20

**Title: Food center plans  
ELECTRICAL FF**





#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| ELECTRICAL SYMBOLS |             |        |        |             |        |
|--------------------|-------------|--------|--------|-------------|--------|
| SYMBOL             | DESCRIPTION | UNIT   | SYMBOL | DESCRIPTION | UNIT   |
| 1. 1.1             | 1.1.1       | 1.1.1  | 1.1.1  | 1.1.1       | 1.1.1  |
| 2. 2.1             | 2.1.1       | 2.1.1  | 2.1.1  | 2.1.1       | 2.1.1  |
| 3. 3.1             | 3.1.1       | 3.1.1  | 3.1.1  | 3.1.1       | 3.1.1  |
| 4. 4.1             | 4.1.1       | 4.1.1  | 4.1.1  | 4.1.1       | 4.1.1  |
| 5. 5.1             | 5.1.1       | 5.1.1  | 5.1.1  | 5.1.1       | 5.1.1  |
| 6. 6.1             | 6.1.1       | 6.1.1  | 6.1.1  | 6.1.1       | 6.1.1  |
| 7. 7.1             | 7.1.1       | 7.1.1  | 7.1.1  | 7.1.1       | 7.1.1  |
| 8. 8.1             | 8.1.1       | 8.1.1  | 8.1.1  | 8.1.1       | 8.1.1  |
| 9. 9.1             | 9.1.1       | 9.1.1  | 9.1.1  | 9.1.1       | 9.1.1  |
| 10. 10.1           | 10.1.1      | 10.1.1 | 10.1.1 | 10.1.1      | 10.1.1 |
| 11. 11.1           | 11.1.1      | 11.1.1 | 11.1.1 | 11.1.1      | 11.1.1 |

#### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION | QTY  |
|-------|--------|-------------|------|
| 1.    | 1.1    | 1.1.1       | 185  |
| 2.    | 2.1    | 2.1.1       | 1085 |
| 3.    | 3.1    | 3.1.1       | 20   |
| 4.    | 4.1    | 4.1.1       | 60   |
| 5.    | 5.1    | 5.1.1       | 55   |
| 6.    | 6.1    | 6.1.1       | 015M |
| 7.    | 7.1    | 7.1.1       | 10   |
| 8.    | 8.1    | 8.1.1       |      |
| 9.    | 9.1    | 9.1.1       |      |
| 10.   | 10.1   | 10.1.1      |      |
| 11.   | 11.1   | 11.1.1      | 80   |

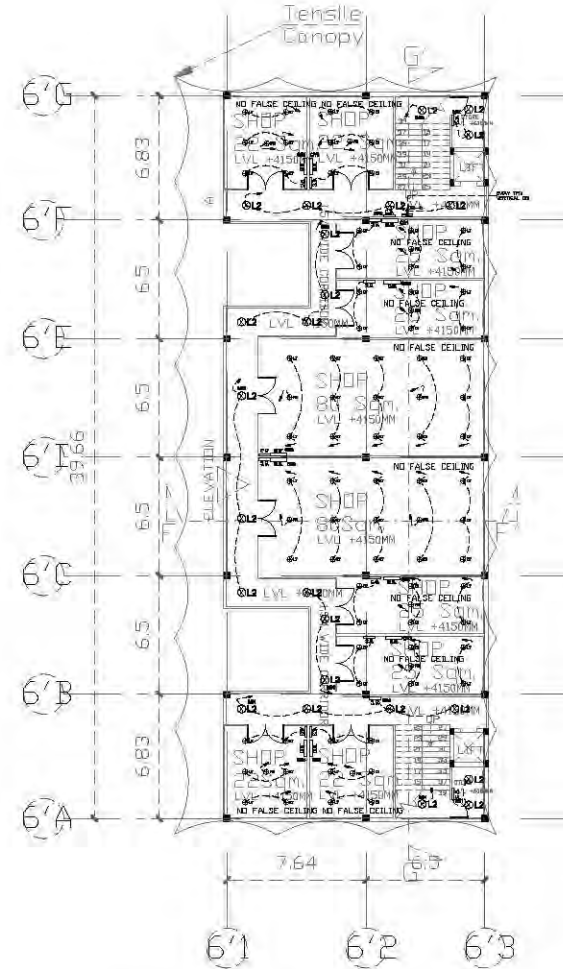
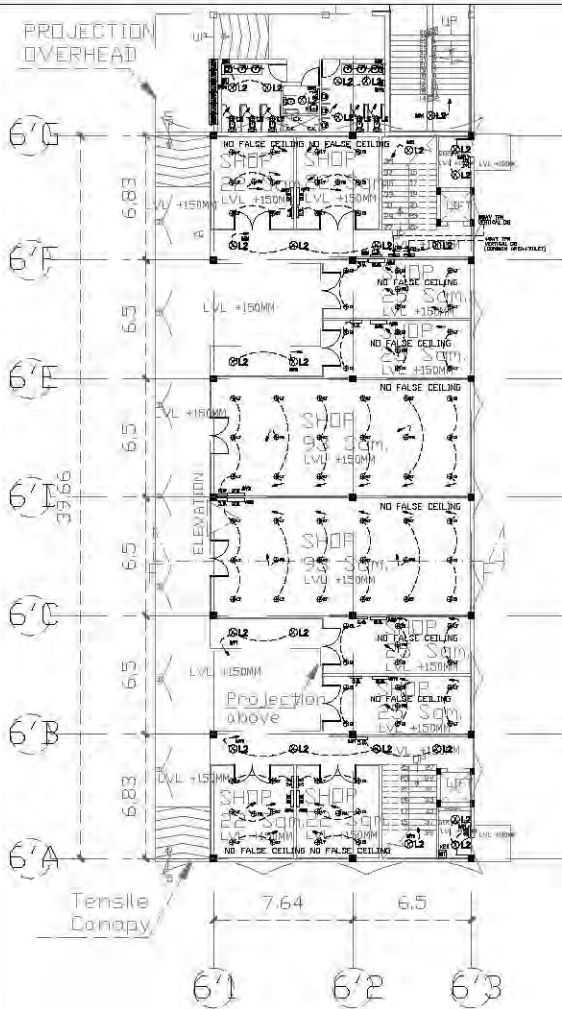
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| Client: BAREILLY SMART CITY LTD. |             |                  |
| Project: BAREILLY HAAT           |             |                  |
| Scale: Not to Scale @ A3         | North:      | Org No: EL-04-03 |
| Drawn by:                        | Checked by: | Date: 27.11.20   |

Title: Food center plans  
ELECTRICAL SF









06- HANDICRAFT SHOPPING CENTER-  
GROUND FLOOR

06- HANDICRAFT SHOPPING CENTER-  
FIRST FLOOR

DB-A ( 8 Way TPN VERTICAL DB )

Location : HANDICRAFTS SHOPPING CENTRE (COMMON AREA) TOILET - (GROUND FLOOR)

Size of Sub Main : 3.0000 Sqmm AL ARM XLPE CABLE

Rating of Incoming : 125 Amp 4 Pole MCCB, 250KA

| Out No.   | No. of Points | Connected Load (Watt) | Size of Wire in Sqmm Cu | Rating of MCCB |
|---|---------------|-----------------------|-------------------------|----------------|
| AV1   | SHOP-23 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV1   | SHOP-27 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV1   | SHOP-28 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV2   | SHOP-29 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV2   | SHOP-30 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV2   | SHOP-31 SCBL  | 15000                 | 3 x 10                  | 63ATP          |
| AV2   | SHOP-32 SCBL  | 15000                 | 3 x 10                  | 63ATP          |
| AV2   | SHOP-33 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV3   | SHOP-34 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV3   | SHOP-35 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV4   | SHOP-36 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| AV4, AV5, AV6, AV7, AV8, AV9, AV10, AV11, AV12, AV13, AV14, AV15, AV16, AV17, AV18, AV19, AV20, AV21, AV22, AV23, AV24, AV25, AV26, AV27, AV28, AV29, AV30, AV31, AV32, AV33, AV34, AV35, AV36, AV37, AV38, AV39, AV40, AV41, AV42, AV43, AV44, AV45, AV46, AV47, AV48, AV49, AV50, AV51, AV52, AV53, AV54, AV55, AV56, AV57, AV58, AV59, AV60, AV61, AV62, AV63, AV64, AV65, AV66, AV67, AV68, AV69, AV70, AV71, AV72, AV73, AV74, AV75, AV76, AV77, AV78, AV79, AV80, AV81, AV82, AV83, AV84, AV85, AV86, AV87, AV88, AV89, AV90, AV91, AV92, AV93, AV94, AV95, AV96, AV97, AV98, AV99, AV100 |               |                       |                         |                |
| TOTAL   | 4000W         |                       |                         |                |
| SAY   | 4000W         |                       |                         |                |

DB-B ( Light & Raw Power 4 Way TPN VERTICAL DB )

Location : HANDICRAFTS SHOPPING CENTRE (COMMON AREA) TOILET - (GROUND FLOOR)

Size of Sub Main : 4.0000 Sqmm AL ARM XLPE CABLE

Rating of Incoming : 63 Amp 4 Pole MCCB, 250KA

| Out No.   | No. of Points     | Connected Load (Watt) | Size of Wire in Sqmm Cu | Rating of MCCB |
|---|-------------------|-----------------------|-------------------------|----------------|
| BR1   | L2-12X18 L2-20X18 | 210                   | 3 x 1.5                 | 10AMP          |
| BR1   | L2-20X18          | 180                   | 3 x 1.5                 | 10AMP          |
| BR1   | L2-12X18          | 180                   | 3 x 1.5                 | 10AMP          |
| BR2   | L2-12X18          | 252                   | 3 x 1.5                 | 10AMP          |
| BR2   | L2-20X18          | 252                   | 3 x 1.5                 | 10AMP          |
| BR2   | L2-12X18          | 2500                  | 3 x 8                   | 20AMP          |
| BR2   | L2-20X18          | 2000                  | 3 x 8                   | 20AMP          |
| BR2, BR3, BR4, BR5, BR6, BR7, BR8, BR9, BR10, BR11, BR12, BR13, BR14, BR15, BR16, BR17, BR18, BR19, BR20, BR21, BR22, BR23, BR24, BR25, BR26, BR27, BR28, BR29, BR30, BR31, BR32, BR33, BR34, BR35, BR36, BR37, BR38, BR39, BR40, BR41, BR42, BR43, BR44, BR45, BR46, BR47, BR48, BR49, BR50, BR51, BR52, BR53, BR54, BR55, BR56, BR57, BR58, BR59, BR60, BR61, BR62, BR63, BR64, BR65, BR66, BR67, BR68, BR69, BR70, BR71, BR72, BR73, BR74, BR75, BR76, BR77, BR78, BR79, BR80, BR81, BR82, BR83, BR84, BR85, BR86, BR87, BR88, BR89, BR90, BR91, BR92, BR93, BR94, BR95, BR96, BR97, BR98, BR99, BR100 |                   |                       |                         |                |
| TOTAL   | 4812W             |                       |                         |                |
| SAY   | 5.000W            |                       |                         |                |

DB-C ( 8 Way TPN VERTICAL DB )

Location : HANDICRAFTS SHOPPING CENTRE (COMMON AREA) TOILET - (GROUND FLOOR)

Size of Sub Main : 3.0000 Sqmm AL ARM XLPE CABLE

Rating of Incoming : 125 Amp 4 Pole MCCB, 250KA

| Out No.   | No. of Points | Connected Load (Watt) | Size of Wire in Sqmm Cu | Rating of MCCB |
|---|---------------|-----------------------|-------------------------|----------------|
| CR1   | SHOP-23 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR1   | SHOP-27 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR1   | SHOP-28 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR2   | SHOP-29 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR2   | SHOP-30 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR2   | SHOP-31 SCBL  | 15000                 | 3 x 10                  | 63ATP          |
| CR2   | SHOP-32 SCBL  | 15000                 | 3 x 10                  | 63ATP          |
| CR2   | SHOP-33 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR3   | SHOP-34 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR3   | SHOP-35 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR4   | SHOP-36 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR4   | SHOP-37 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR4   | SHOP-38 SCBL  | 2000                  | 3 x 8                   | 20AMP          |
| CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR20, CR21, CR22, CR23, CR24, CR25, CR26, CR27, CR28, CR29, CR30, CR31, CR32, CR33, CR34, CR35, CR36, CR37, CR38, CR39, CR40, CR41, CR42, CR43, CR44, CR45, CR46, CR47, CR48, CR49, CR50, CR51, CR52, CR53, CR54, CR55, CR56, CR57, CR58, CR59, CR60, CR61, CR62, CR63, CR64, CR65, CR66, CR67, CR68, CR69, CR70, CR71, CR72, CR73, CR74, CR75, CR76, CR77, CR78, CR79, CR80, CR81, CR82, CR83, CR84, CR85, CR86, CR87, CR88, CR89, CR90, CR91, CR92, CR93, CR94, CR95, CR96, CR97, CR98, CR99, CR100 |               |                       |                         |                |
| TOTAL   | 4000W         |                       |                         |                |
| SAY   | 4000W         |                       |                         |                |

## GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

## REVISION

## DATE

## CHECKED BY

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| Sr.No | DESCRIPTION      | QTY | Sr.No | DESCRIPTION      | QTY |
|-------|------------------|-----|-------|------------------|-----|
| 1     | 250V 1000W 1000W | 100 | 11    | 250V 1000W 1000W | 100 |
| 2     | 250V 1000W 1000W | 100 | 12    | 250V 1000W 1000W | 100 |
| 3     | 250V 1000W 1000W | 100 | 13    | 250V 1000W 1000W | 100 |
| 4     | 250V 1000W 1000W | 100 | 14    | 250V 1000W 1000W | 100 |
| 5     | 250V 1000W 1000W | 100 | 15    | 250V 1000W 1000W | 100 |
| 6     | 250V 1000W 1000W | 100 | 16    | 250V 1000W 1000W | 100 |
| 7     | 250V 1000W 1000W | 100 | 17    | 250V 1000W 1000W | 100 |
| 8     | 250V 1000W 1000W | 100 | 18    | 250V 1000W 1000W | 100 |
| 9     | 250V 1000W 1000W | 100 | 19    | 250V 1000W 1000W | 100 |
| 10    | 250V 1000W 1000W | 100 | 20    | 250V 1000W 1000W | 100 |

## LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                | QTY  |
|-------|--------|----------------------------|------|
| 1.    | L1     | SW LED Down Light          | 185  |
| 2.    | L2     | SW LED Down Light          | 1085 |
| 3.    | L3     | SW LED Circular Spot Light | 20   |
| 4.    | L4     | SW LED Down Light          | 60   |
| 5.    | L5     | SW LED Down Light          | 55   |
| 6.    | L6     | SW LED Down Light          | 615M |
| 7.    | L7     | SW LED Down Light          | 10   |
| 8.    | L8     | SW LED Down Light          | 10   |
| 9.    | L9     | SW LED Down Light          | 10   |
| 10.   | L10    | SW LED Down Light          | 10   |
| 11.   | L11    | SW LED Down Light          | 80   |

## Client

BAREILLY SMART CITY LTD.

## Project

BAREILLY HAAT

## Scale

Not to Scale @ A3

## North

North

## Draw No

EL-06-01

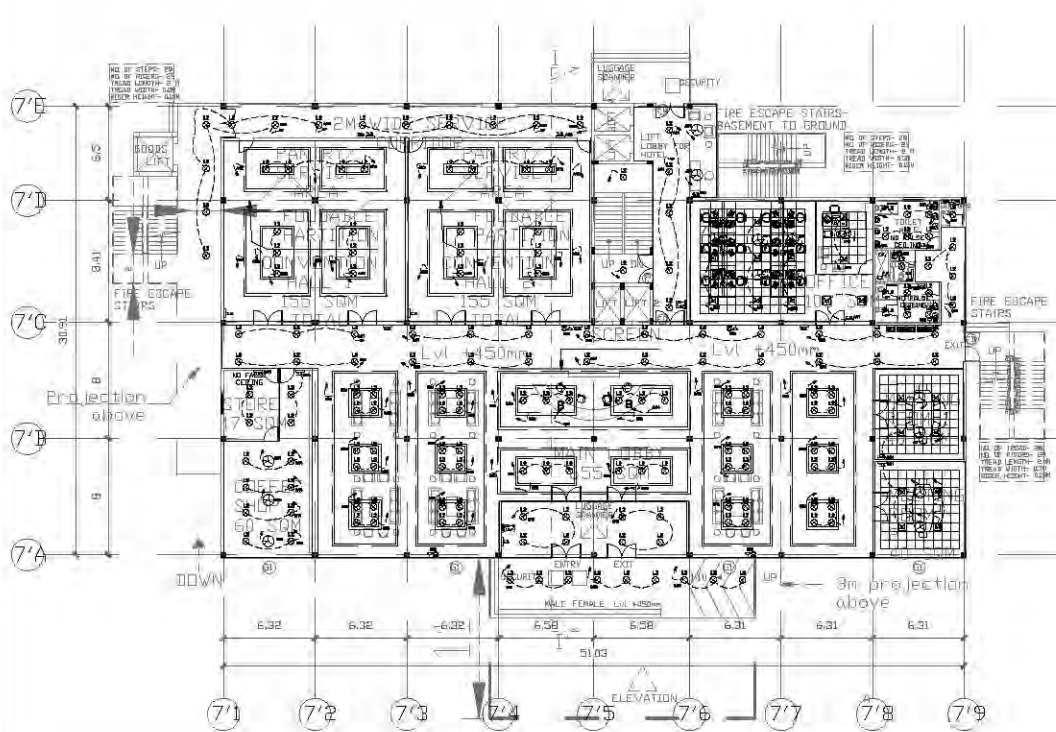
## Drawn by

## Checked by

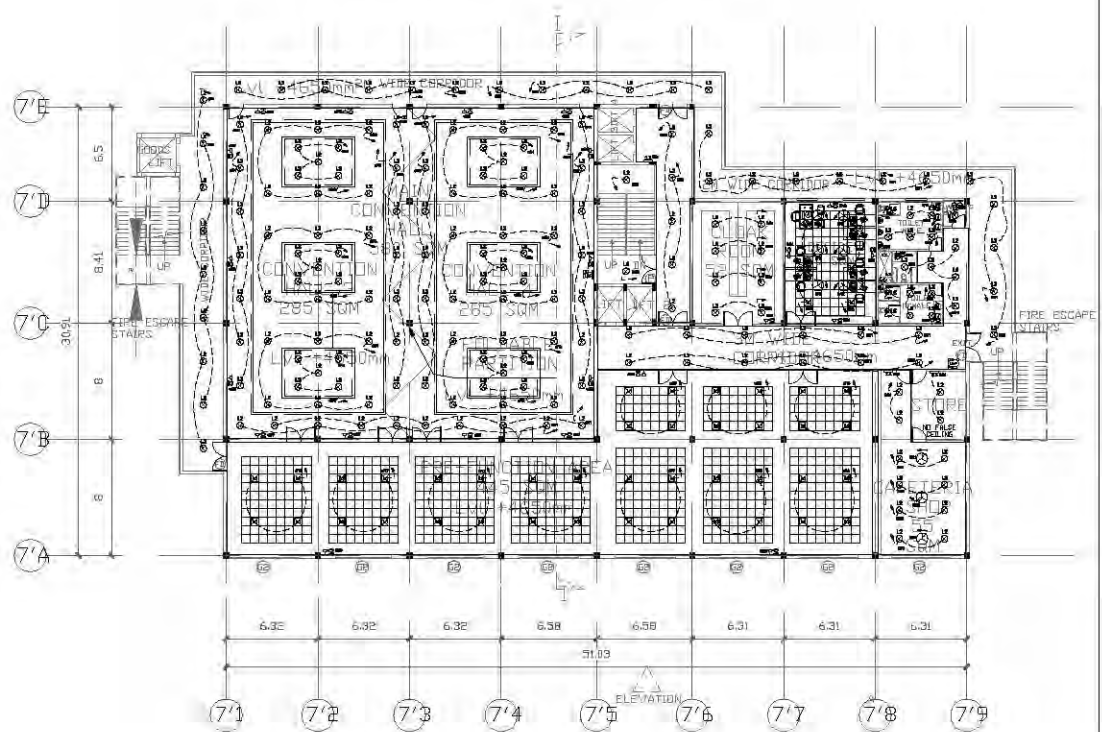
## Date

27.11.20

Title: handicraft shopping center plans ELECTRICAL



BUILDING 07- CONVENTION CENTER  
GROUND FLOOR



BUILDING 07- CONVENTION CENTER  
FIRST FLOOR

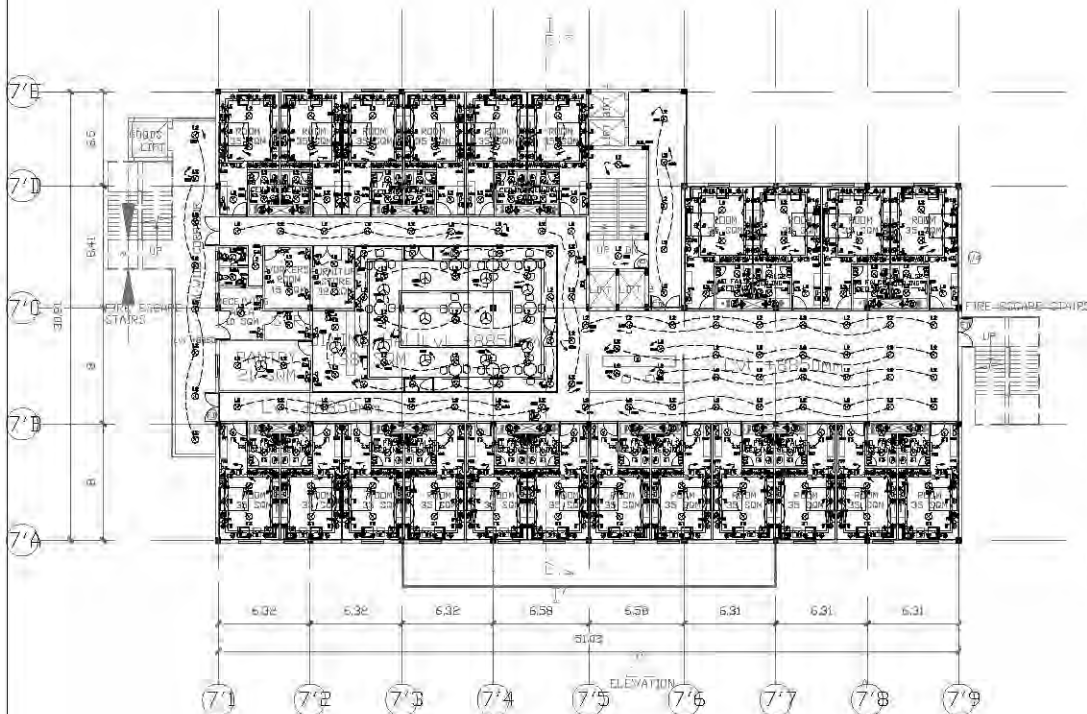
| GENERAL NOTES:   | REVISION | DATE | CHECKED BY |
|--|----------|------|------------|
| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |      |            |
| 2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.   |          |      |            |
| 3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution. |          |      |            |
| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.                |          |      |            |

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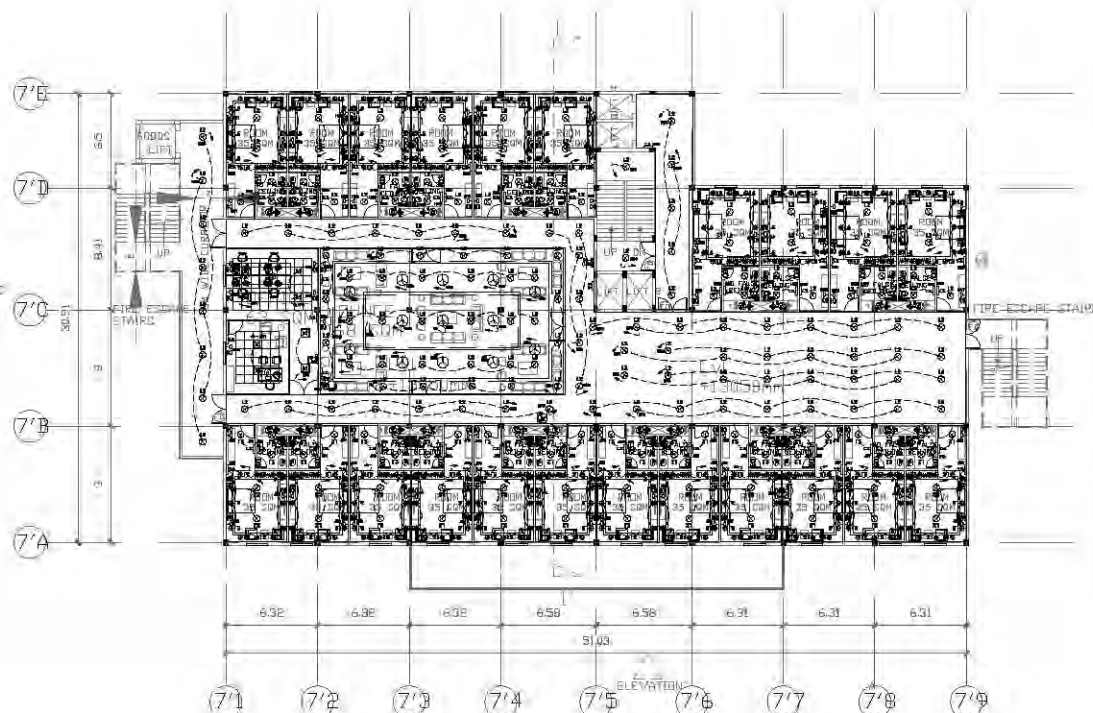
| Sr.No | DESCRIPTION                | QTY | Sr.No | DESCRIPTION       | QTY |
|-------|----------------------------|-----|-------|-------------------|-----|
| 1     | SW L2D Down Light          | 185 | 10    | SW L2D Down Light | 55  |
| 2     | SW L2D Circular Spot Light | 20  | 11    | SW L2D Down Light | 55  |
| 3     | SW L2D Down Light          | 55  | 12    | SW L2D Down Light | 55  |
| 4     | SW L2D Down Light          | 55  | 13    | SW L2D Down Light | 55  |
| 5     | SW L2D Down Light          | 55  | 14    | SW L2D Down Light | 55  |
| 6     | SW L2D Down Light          | 55  | 15    | SW L2D Down Light | 55  |
| 7     | SW L2D Down Light          | 55  | 16    | SW L2D Down Light | 55  |
| 8     | SW L2D Down Light          | 55  | 17    | SW L2D Down Light | 55  |
| 9     | SW L2D Down Light          | 55  | 18    | SW L2D Down Light | 55  |
| 10    | SW L2D Down Light          | 55  | 19    | SW L2D Down Light | 55  |
| 11    | SW L2D Down Light          | 55  | 20    | SW L2D Down Light | 55  |

| Sr.No | LIGHTS | DESCRIPTION                | QTY |
|-------|--------|----------------------------|-----|
| 1.    | SW L2D | SW L2D Down Light          | 185 |
| 2.    | SW L2D | SW L2D Circular Spot Light | 20  |
| 3.    | SW L2D | SW L2D Down Light          | 55  |
| 4.    | SW L2D | SW L2D Down Light          | 55  |
| 5.    | SW L2D | SW L2D Down Light          | 55  |
| 6.    | SW L2D | SW L2D Down Light          | 55  |
| 7.    | SW L2D | SW L2D Down Light          | 55  |
| 8.    | SW L2D | SW L2D Down Light          | 55  |
| 9.    | SW L2D | SW L2D Down Light          | 55  |
| 10.   | SW L2D | SW L2D Down Light          | 55  |
| 11.   | SW L2D | SW L2D Down Light          | 55  |

|                                |                          |        |                  |
|--------------------------------|--------------------------|--------|------------------|
| Client:                        | BAREILLY SMART CITY LTD. |        |                  |
| Project:                       | BAREILLY HAAT            |        |                  |
| Scale:                         | Not to Scale @ A3        | North: | Org No: EL-07-01 |
| Drawn by:                      | Checked by:              | Date:  | 27.11.20         |
| Title: MALL plans 1 ELECTRICAL |                          |        |                  |



BUILDING 07- CONVENTION CENTER  
SECOND FLOOR



BUILDING 07- CONVENTION CENTER  
THIRD FLOOR

#### GENERAL NOTES:

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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| ELECTRICAL SYMBOLS |             |        |             |        |
|--------------------|-------------|--------|-------------|--------|
| SYMBOL             | DESCRIPTION | SYMBOL | DESCRIPTION | QTY    |
| 1. 1.1             | 1.1.1       | 1.1.2  | 1.1.3       | 1.1.4  |
| 2. 2.1             | 2.1.1       | 2.1.2  | 2.1.3       | 2.1.4  |
| 3. 3.1             | 3.1.1       | 3.1.2  | 3.1.3       | 3.1.4  |
| 4. 4.1             | 4.1.1       | 4.1.2  | 4.1.3       | 4.1.4  |
| 5. 5.1             | 5.1.1       | 5.1.2  | 5.1.3       | 5.1.4  |
| 6. 6.1             | 6.1.1       | 6.1.2  | 6.1.3       | 6.1.4  |
| 7. 7.1             | 7.1.1       | 7.1.2  | 7.1.3       | 7.1.4  |
| 8. 8.1             | 8.1.1       | 8.1.2  | 8.1.3       | 8.1.4  |
| 9. 9.1             | 9.1.1       | 9.1.2  | 9.1.3       | 9.1.4  |
| 10. 10.1           | 10.1.1      | 10.1.2 | 10.1.3      | 10.1.4 |
| 11. 11.1           | 11.1.1      | 11.1.2 | 11.1.3      | 11.1.4 |

#### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION | QTY  |
|-------|--------|-------------|------|
| 1.    | 1.1    | 1.1.1       | 185  |
| 2.    | 2.1    | 2.1.1       | 1065 |
| 3.    | 3.1    | 3.1.1       | 20   |
| 4.    | 4.1    | 4.1.1       | 60   |
| 5.    | 5.1    | 5.1.1       | 55   |
| 6.    | 6.1    | 6.1.1       | 615M |
| 7.    | 7.1    | 7.1.1       | 10   |
| 8.    | 8.1    | 8.1.1       | 10   |
| 9.    | 9.1    | 9.1.1       | 10   |
| 10.   | 10.1   | 10.1.1      | 10   |
| 11.   | 11.1   | 11.1.1      | 60   |

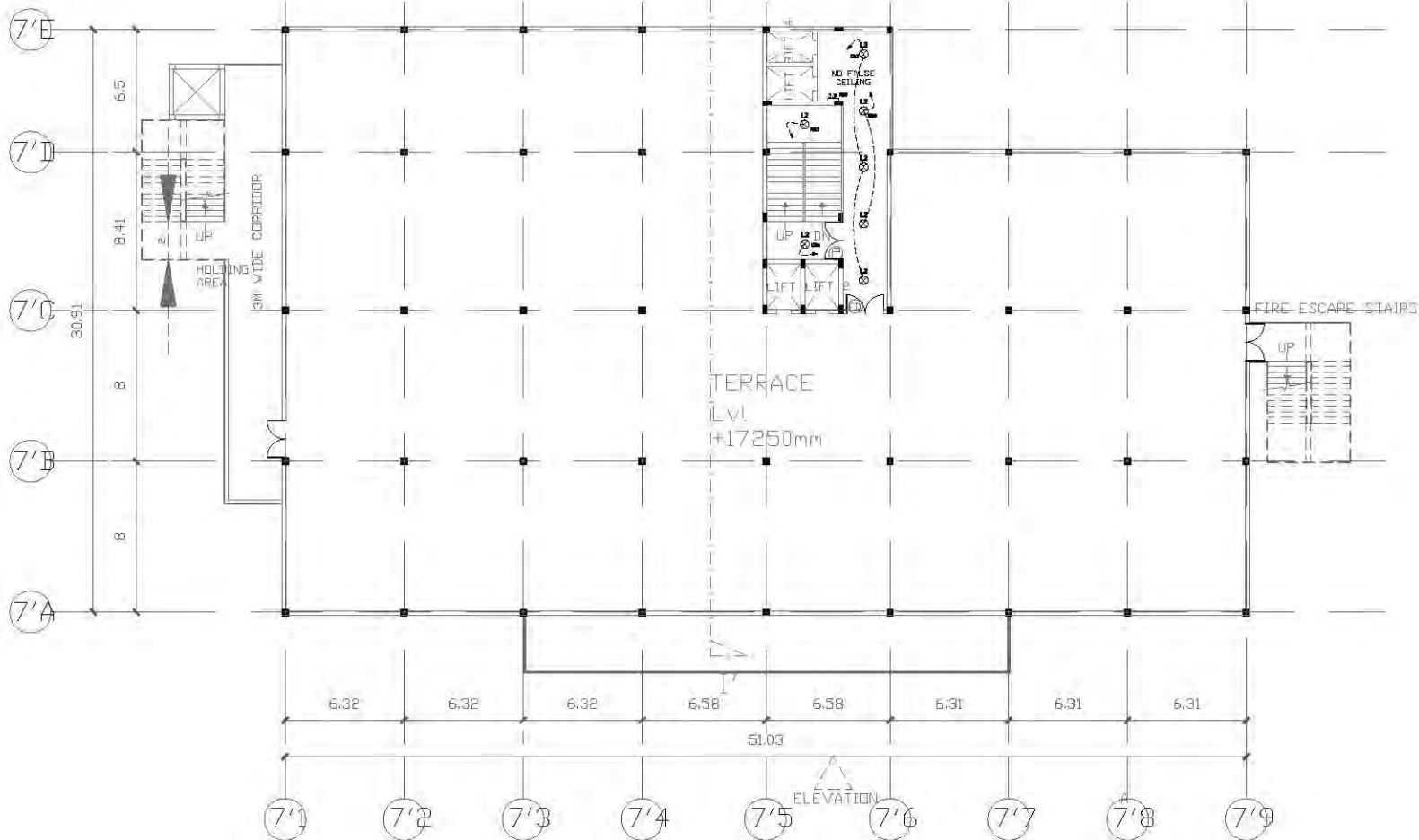
Client: BAREILLY SMART CITY LTD.

Project: BAREILLY HAAT

Scale: Not to Scale @ A3 North: Drg No: EL-07-02

Drawn by: Checked by: Date: 27.11.20

Title: MALL plans 2  
ELECTRICAL



## BUILDING 07- CONVENTION CENTER TERRACE FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

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| Sr.No | DESCRIPTION | QTY | Sr.No | DESCRIPTION | QTY |
|-------|-------------|-----|-------|-------------|-----|
| 1     | SW L2       | 100 | 11    | SW L2       | 100 |
| 2     | SW L2       | 100 | 12    | SW L2       | 100 |
| 3     | SW L2       | 100 | 13    | SW L2       | 100 |
| 4     | SW L2       | 100 | 14    | SW L2       | 100 |
| 5     | SW L2       | 100 | 15    | SW L2       | 100 |
| 6     | SW L2       | 100 | 16    | SW L2       | 100 |
| 7     | SW L2       | 100 | 17    | SW L2       | 100 |
| 8     | SW L2       | 100 | 18    | SW L2       | 100 |
| 9     | SW L2       | 100 | 19    | SW L2       | 100 |
| 10    | SW L2       | 100 | 20    | SW L2       | 100 |

### LIGHTING FIXTURES LEGEND

| Sr.No | LIGHTS | DESCRIPTION                    | QTY  |
|-------|--------|--------------------------------|------|
| 1.    | L1     | SW L2 (2 x 2)                  | 185  |
| 2.    | L2     | SW L2 (2 x 2)                  | 1085 |
| 3.    | L3     | SW L2 (2 x 2)                  | 20   |
| 4.    | L4     | SW L2 (2 x 2)                  | 50   |
| 5.    | L5     | SW L2 (2 x 2)                  | 55   |
| 6.    | DF     | DF -14 White LED (White White) | 015M |
| 7.    | SP     | Speaker                        | 10   |
| 8.    | SD     | Smoke Detector                 | 10   |
| 9.    | SP     | Smoke Detector                 | 10   |
| 10.   | P      | Probe                          | 10   |
| 11.   | L6     | Track light                    | 80   |

Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale (S.A.S.) North: Dwg No: EL-07-03

Drawn by: Checked by: Date: 27.11.20

**Title: MALL plans 3  
ELECTRICAL**





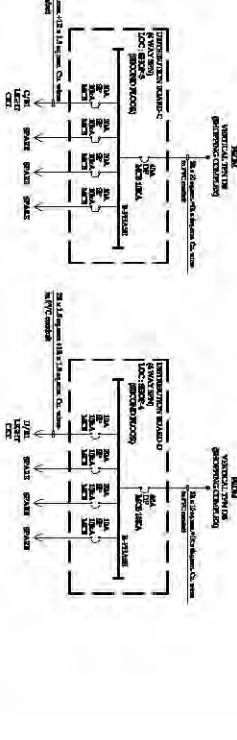
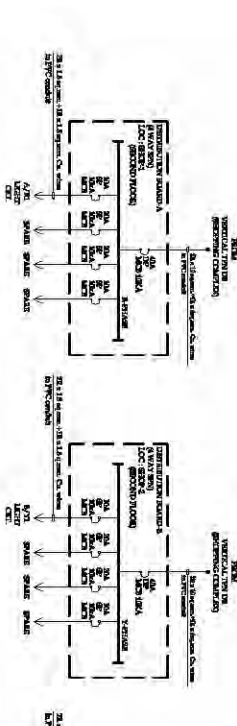
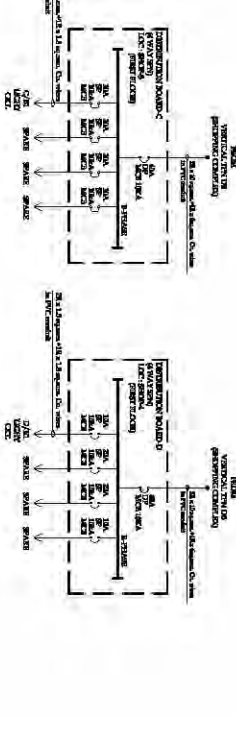
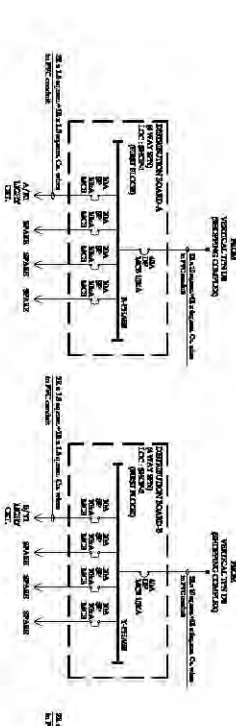
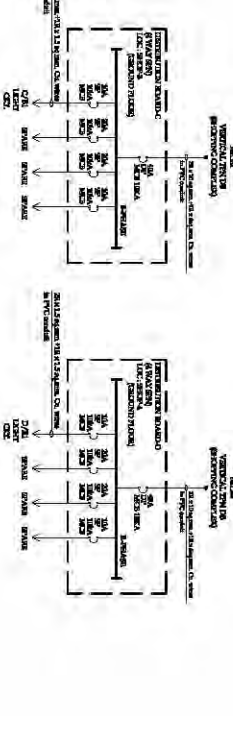
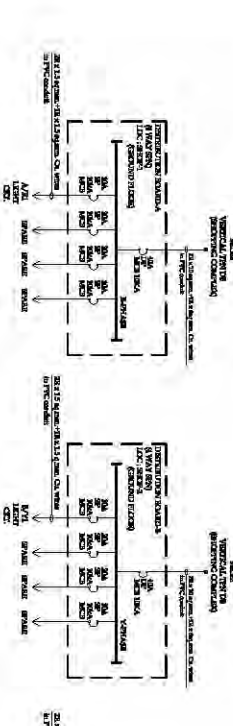
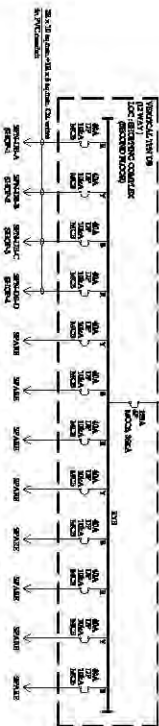
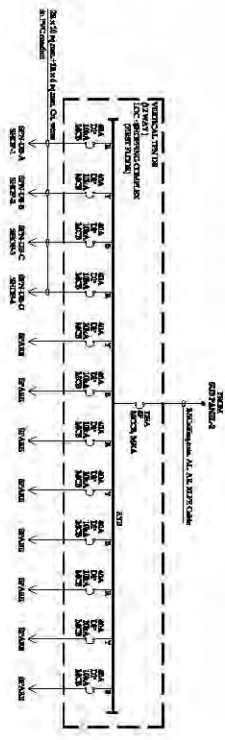
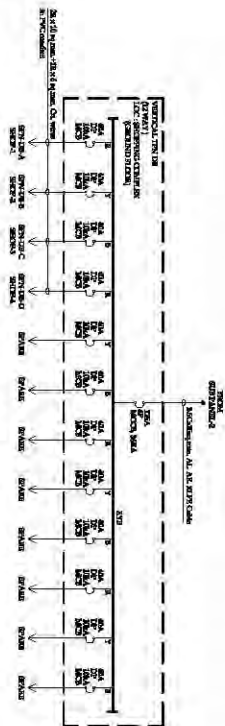












# GENERAL NOTES:

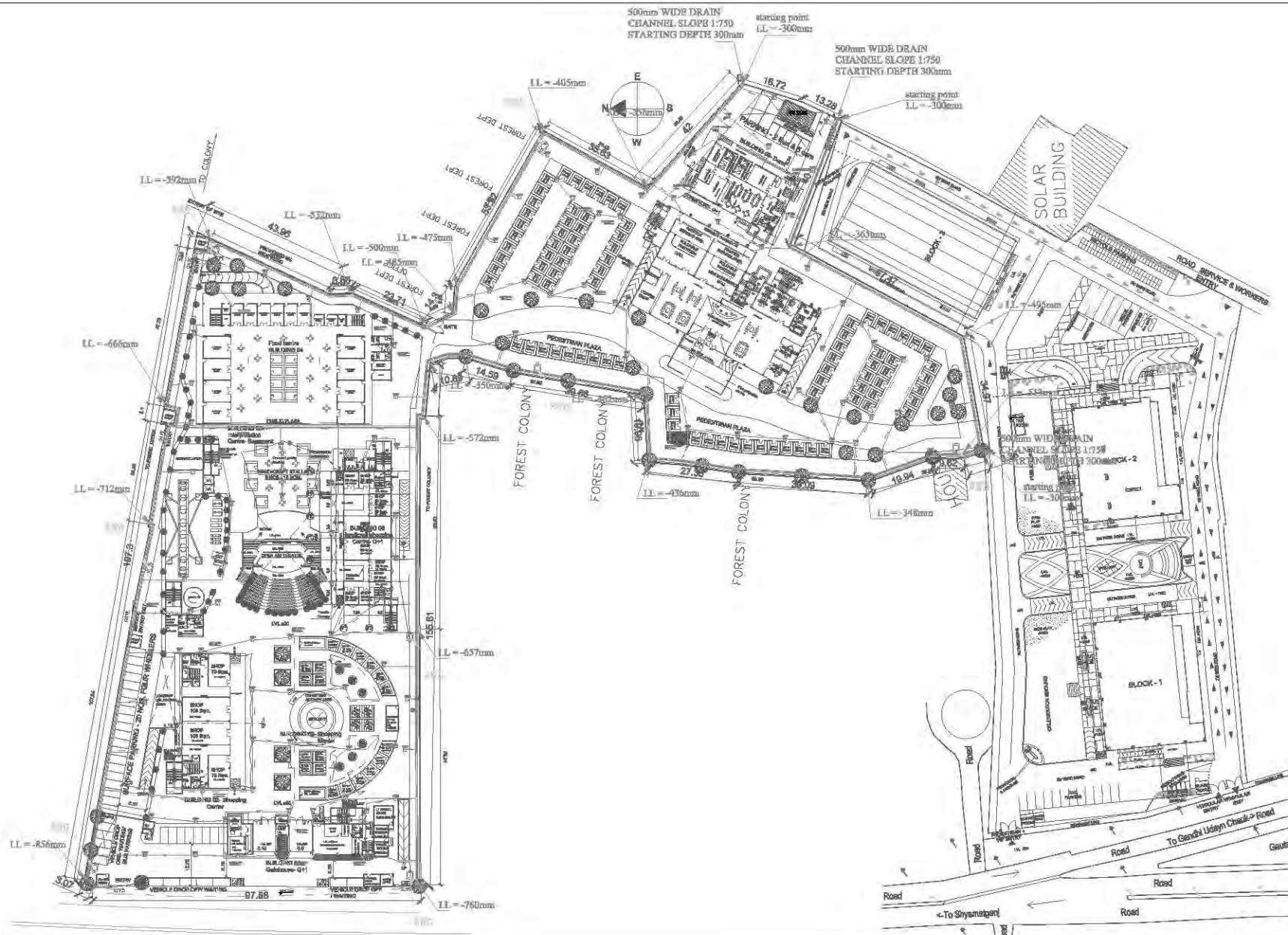
1. All dimensions are in meters and are dimensions unless otherwise specified.
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|---|-------------------------------|------------------------------|-------------------------|
| <b>Client:</b><br><b>BAREILLY SMART CITY LTD.</b> |                               |                              |                         |
| <b>Project:</b><br><b>BAREILLY PHAT</b>           |                               |                              |                         |
| <b>Scale:</b><br>Metro Scale @ A3                 | <b>Name:</b><br>[Blank]       | <b>Des. No.:</b><br>EL-08-03 | <b>Date:</b><br>27/1/20 |
| <b>Drawn by:</b><br>[Blank]                       | <b>Checked by:</b><br>[Blank] |                              |                         |
| <b>Title:</b> SHOPPING CENTER DETAILED BLD        |                               |                              |                         |





#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
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| REVISION | DATE | CHECKED BY |
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- Soil pipe
- Waste water pipe
- Fresh water pipe
- Rain water pipe
- RO pipe
- RWHT Pit
- Site Drainage Channel
- Storm Water Manhole

Client: BAREILLY SMART CITY LTD.

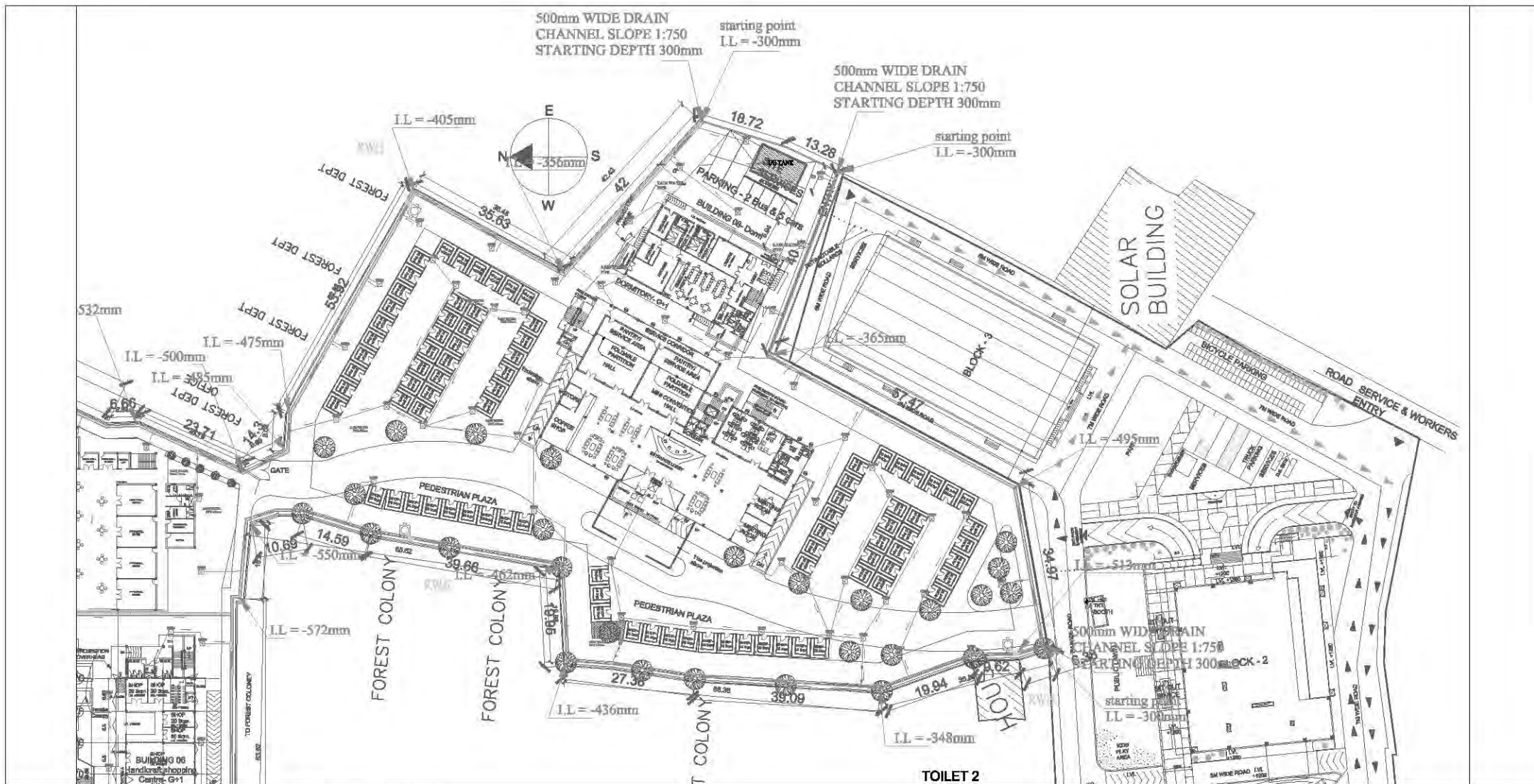
Project: BAREILLY HAT

Scale: As per IS 8821  
North:   
Drawn by:   
Checked by:   
Date: 27.11.20

Title: SITE DRAINAGE LAYOUT





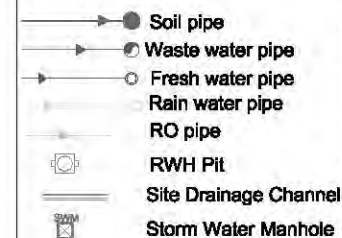


#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
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4. For details such as pathways, fencing, railing, grill, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

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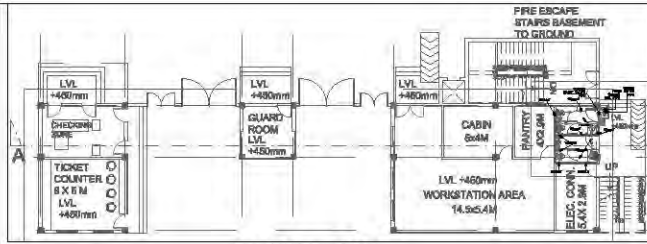
Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale @ A3 North: Dwg No: PL-00-04

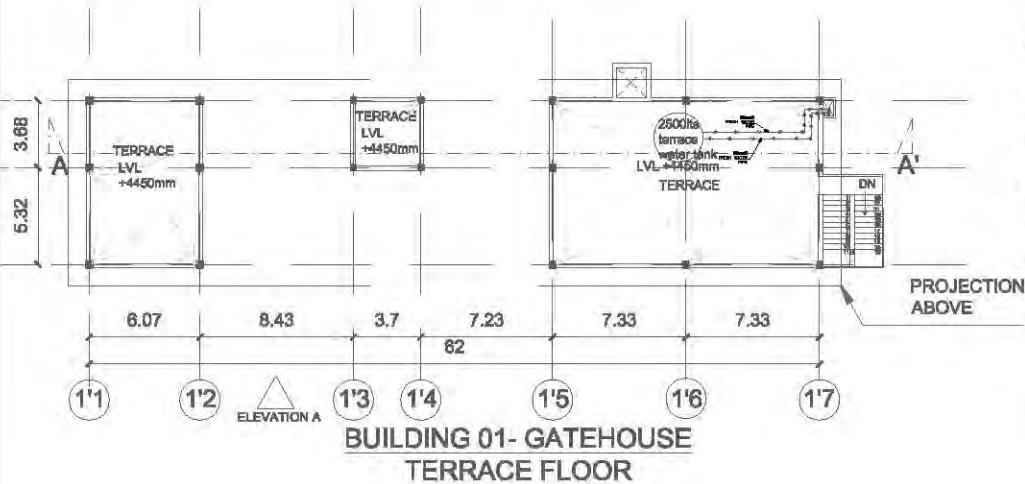
Drawn by: Checked by: Date: 27.11.20

**Title: BASEMENT**  
**PLUMBING PLAN - PART-II**

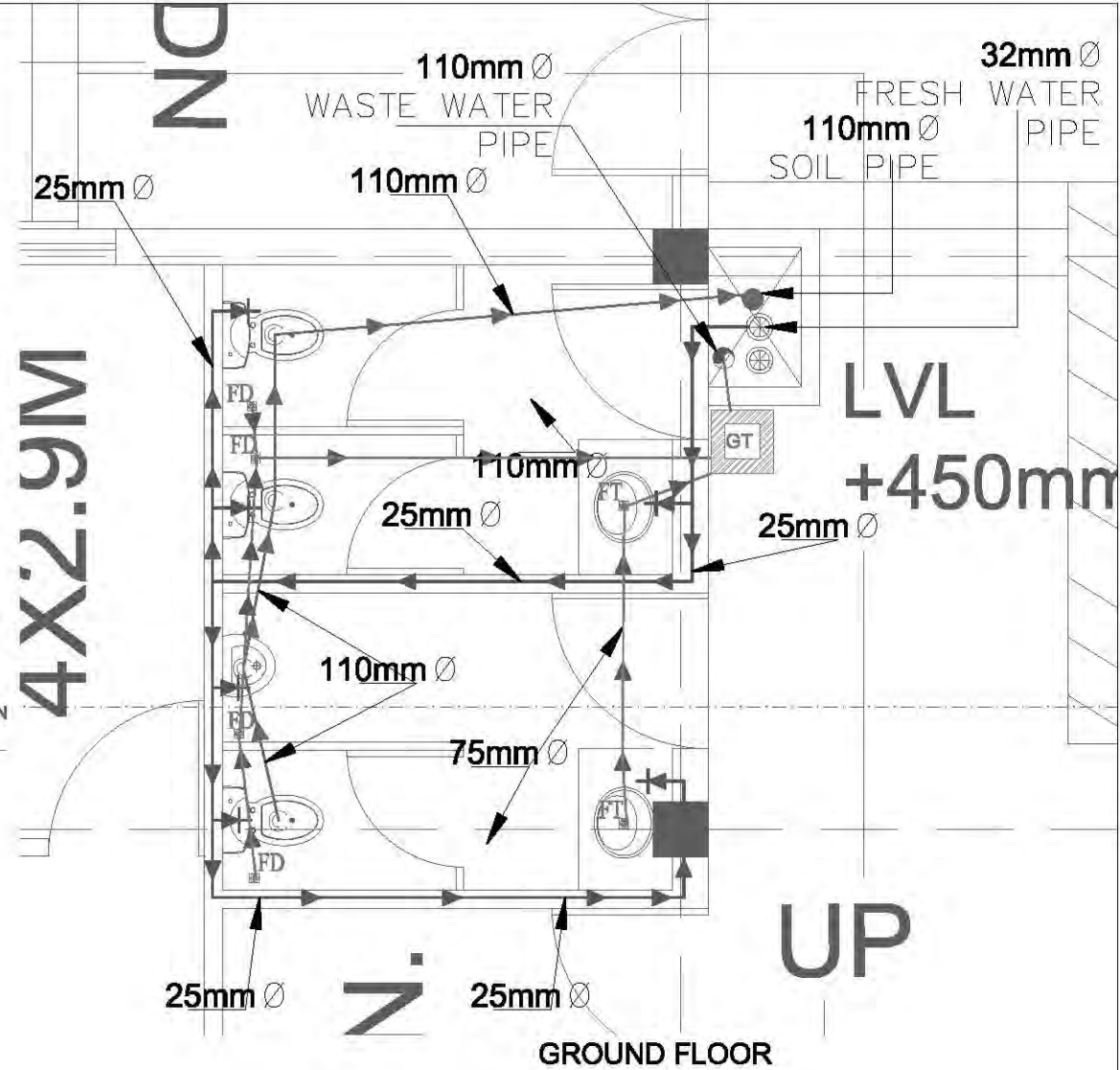


KEY PLAN

GROUND FLOOR



BUILDING 01- GATEHOUSE  
TERRACE FLOOR



GROUND FLOOR

GENERAL NOTES:

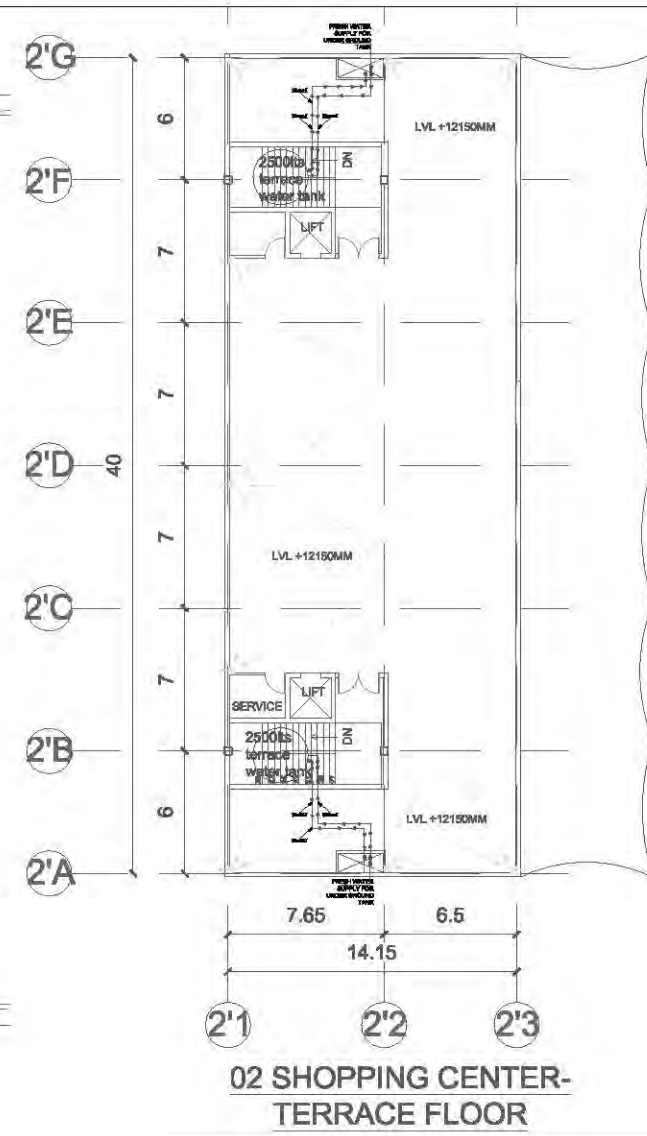
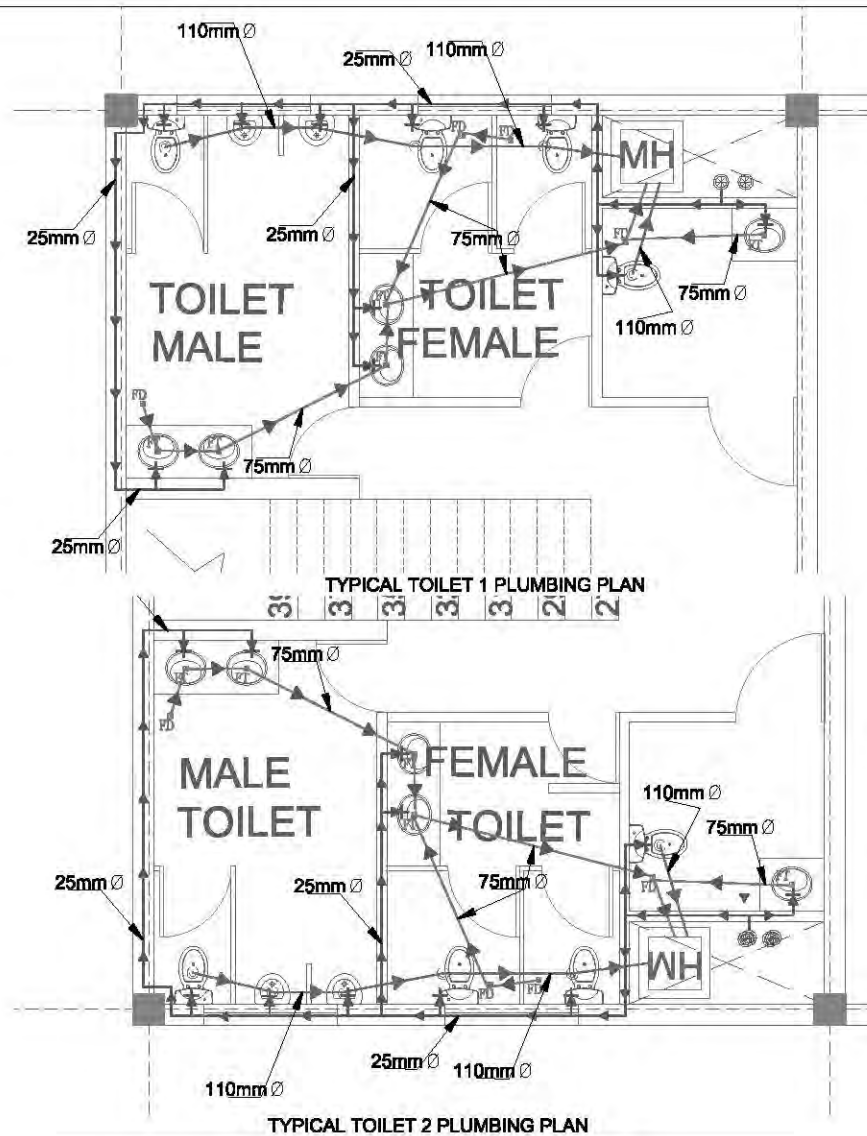
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- Soil pipe
- Waste water pipe
- Fresh water pipe
- Rain water pipe
- RO pipe
- RWH Pit
- Site Drainage Channel
- Storm Water Manhole
- Floor Trap (FT)

|                                       |             |                  |
|---------------------------------------|-------------|------------------|
| Client: BAREILLY SMART CITY LTD.      |             |                  |
| Project: BAREILLY HAAT                |             |                  |
| Scale: Not to Scale @ A3              | North:      | Dwg No: PL-01-01 |
| Drawn by:                             | Checked by: | Date: 27.11.20   |
| Title: GUARD HOUSE<br>PLUMBING LAYOUT |             |                  |



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- For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architecture/landscape drawings.

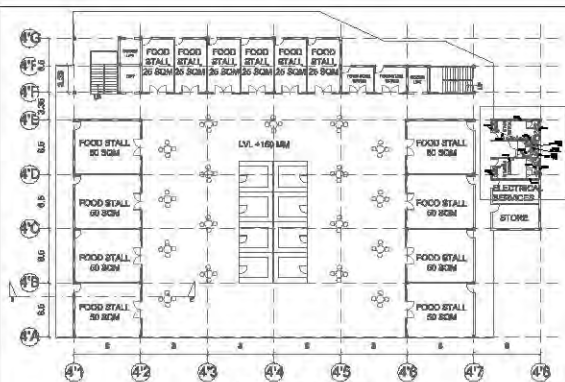
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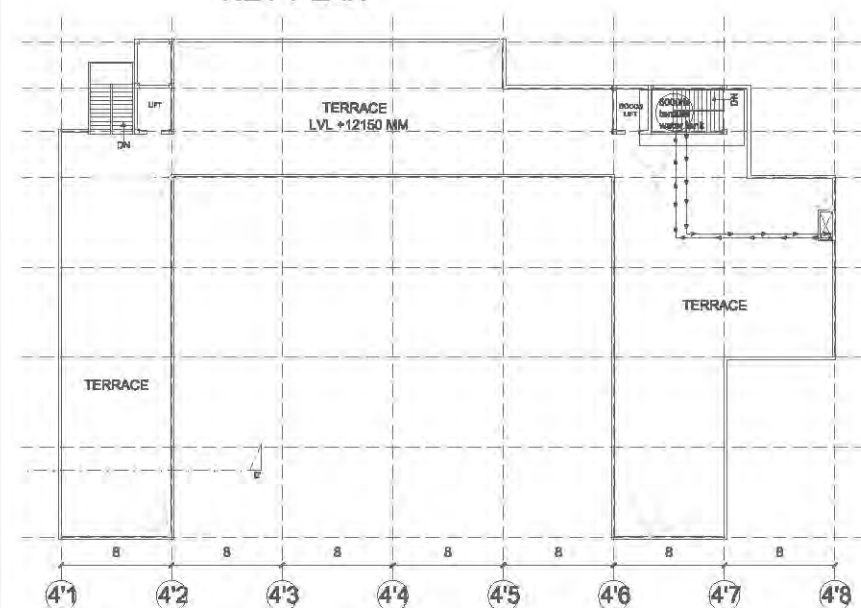
- Soil pipe
- Waste water pipe
- Fresh water pipe
- Rain water pipe
- RO pipe
- RWH Pit
- Site Drainage Channel
- Storm Water Manhole
- Floor Trap(FT)

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| Client: BAREILLY SMART CITY LTD.                      |             |                  |
| Project: BAREILLY HAAT                                |             |                  |
| Scale: Not to Scale @ A3                              | North:      | Dwg No: PL-02-01 |
| Drawn by:   | Checked by: | Date: 27.11.20   |
| <b>Title:</b> TYPICAL SHOPPING CENTER PLUMBING LAYOUT |             |                  |

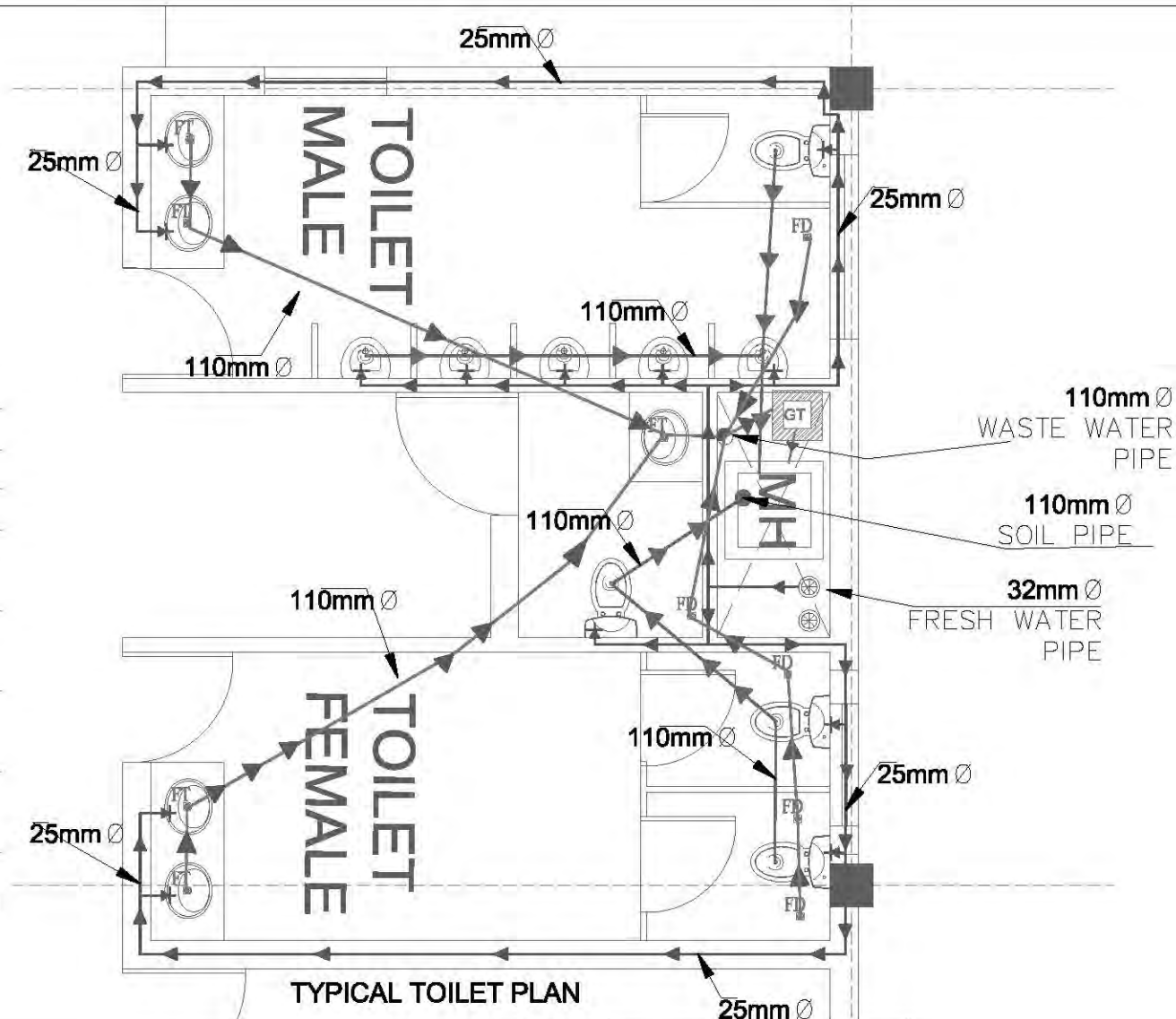




KEY PLAN



04 FOOD CENTER-  
TERRACE FLOOR

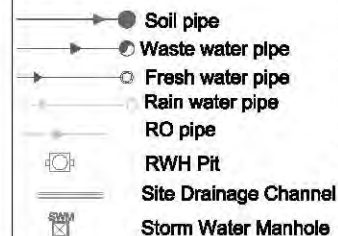


#### GENERAL NOTES:

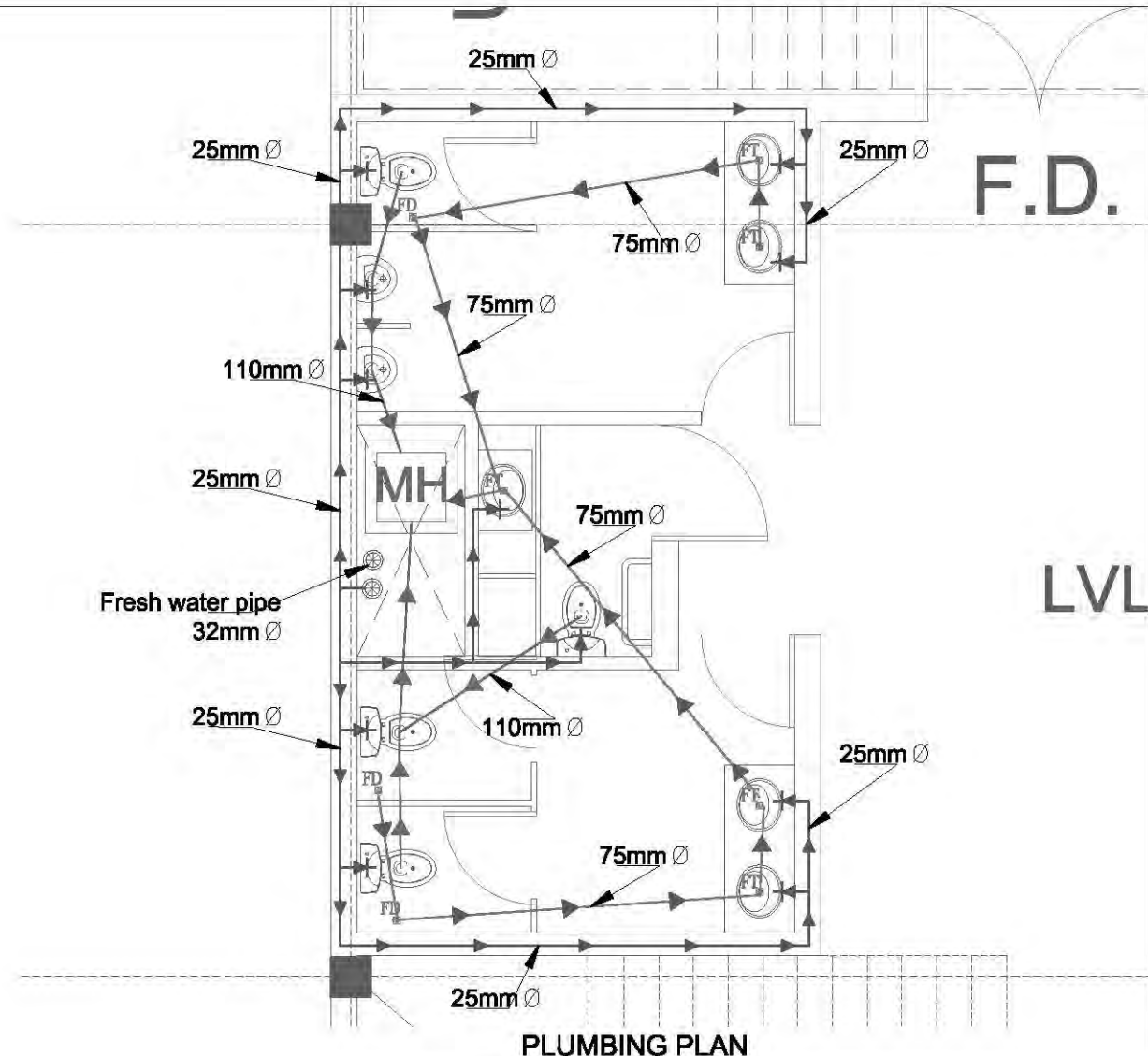
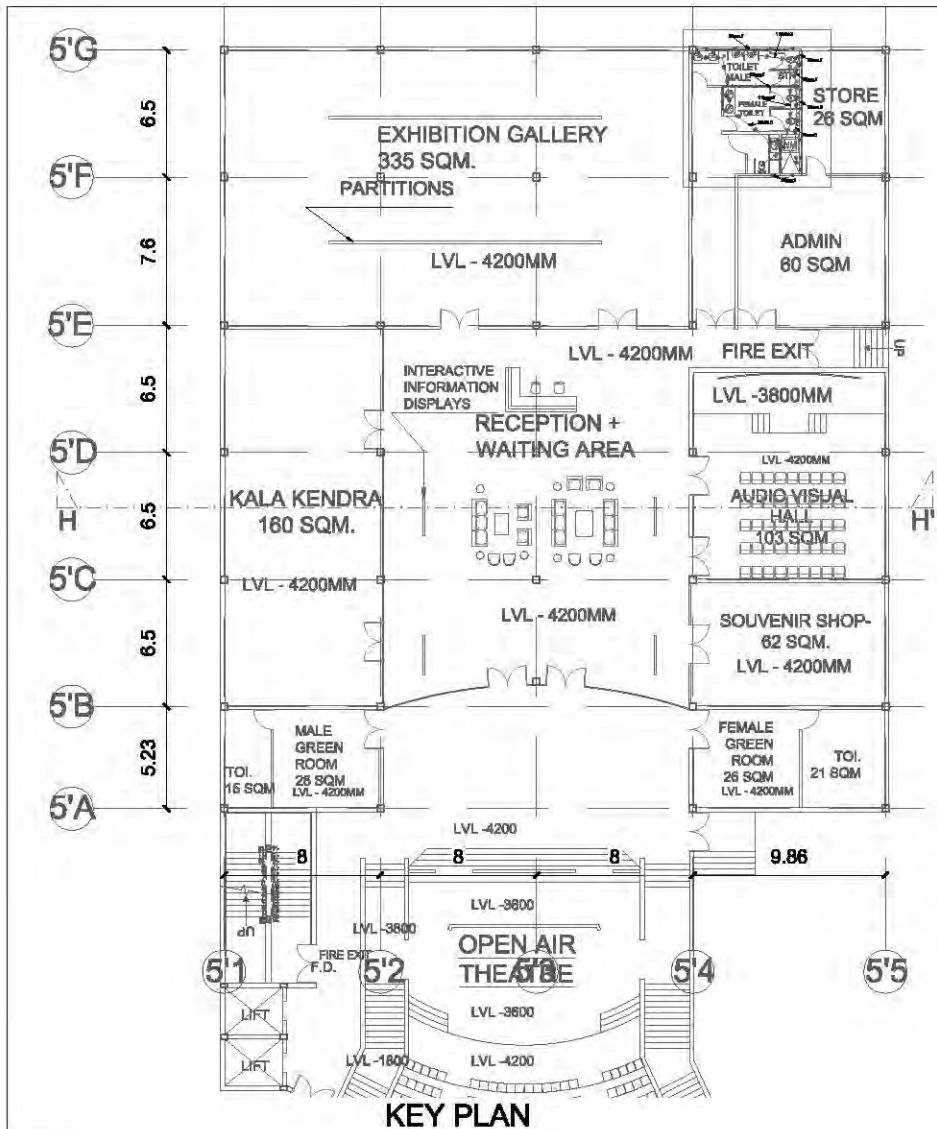
1. All dimensions are in metres and are dimensions unless otherwise specified.
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3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architecture/landscape drawings.

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| Client: BAREILLY SMART CITY LTD.                     |             |                  |
| Project: BAREILLY HAAT                               |             |                  |
| Scale: Not to Scale @ A3                             | North:      | Dwg No: PL-04-01 |
| Drawn by:  | Checked by: | Date: 27.11.20   |
| <b>Title:</b> TYPICLA FOOD<br>CENTER PLUMBING LAYOUT |             |                  |



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
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|   |             |                  |
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| Client: <b>BAREILLY SMART CITY LTD.</b>             |             |                  |
| Project: <b>BAREILLY HAAT</b>                       |             |                  |
| Scale: Not to Scale @ A3                            | North:      | Dwg No: PL-05-01 |
| Drawn by:   | Checked by: | Date: 27.11.20   |
| <b>Title: INTERPRETATION CENTER PLUMBING LAYOUT</b> |             |                  |

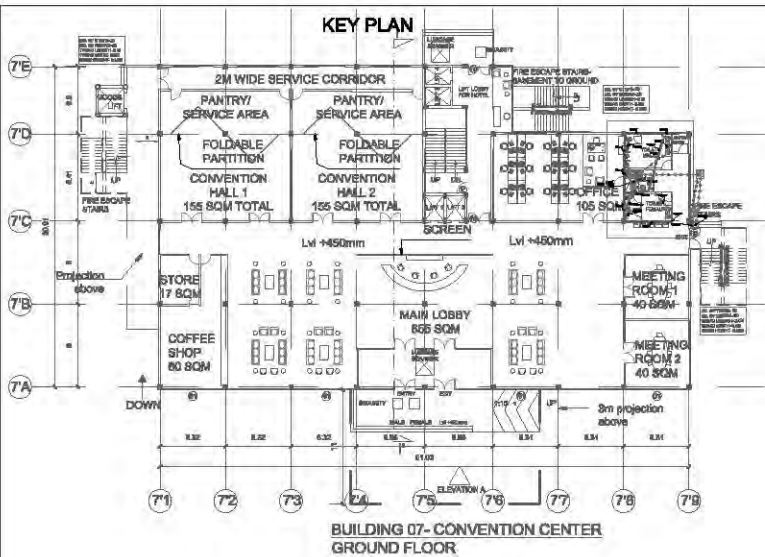


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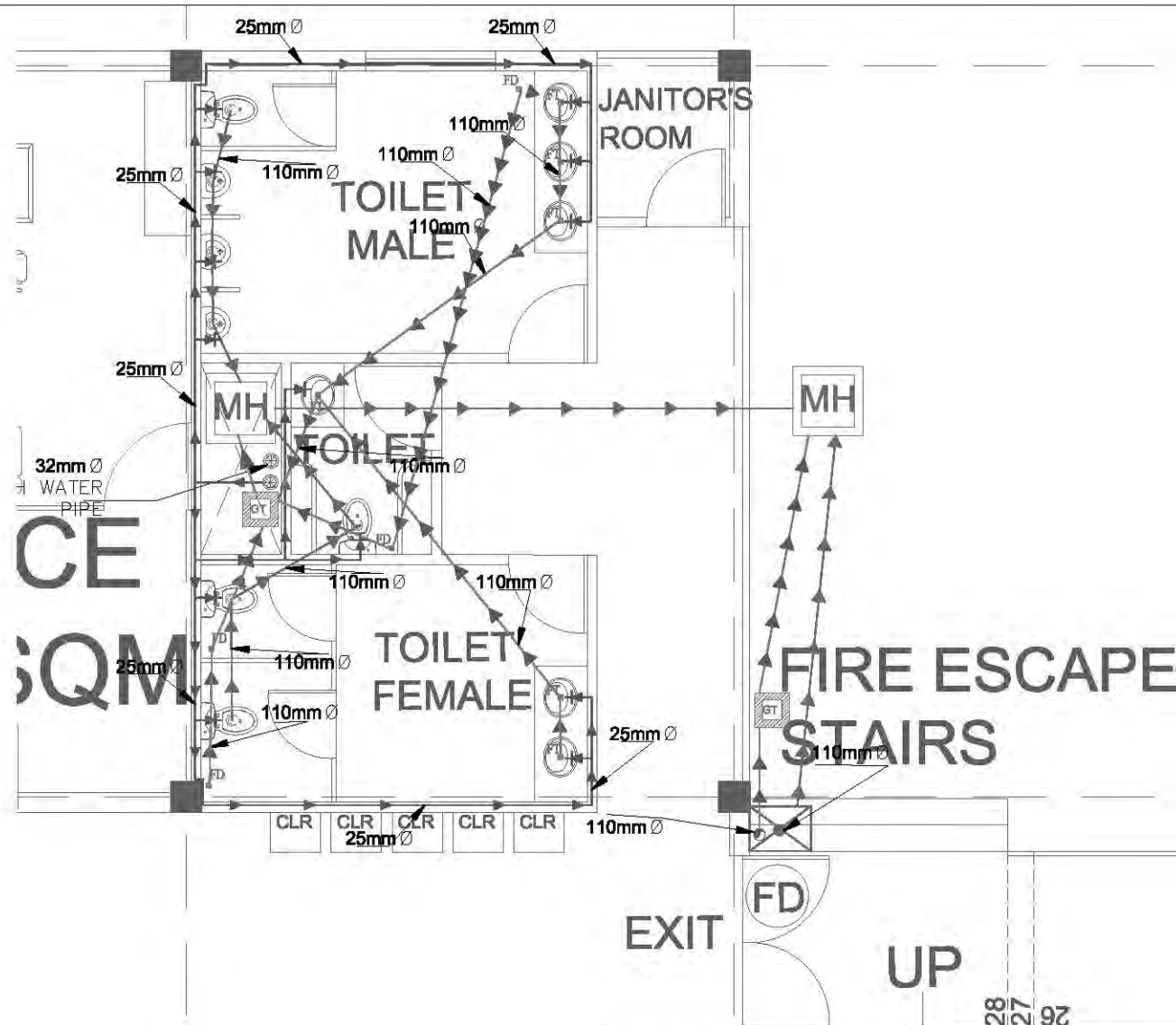


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| Client:<br><b>BAREILLY SMART CITY LTD.</b>                             |   |                            |
| Project:<br><b>BAREILLY HAAT</b>                                       |   |                            |
| Scale:<br><b>Not to Scale @ A3</b>                                     | North:<br> | Dwg No:<br><b>PL-05/01</b> |
| Drawn by:  | Checked by:   | Date:<br><b>27.11.20</b>   |
| <b>Title:</b> HANDICRAFT<br>SHOPPING CENTER TYPICAL<br>PLUMBING LAYOUT |   |                            |



KEY PLAN



| GENERAL NOTES:   | REVISION | DATE | CHECKED BY |
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| 1. All dimensions are in metres and are dimensions unless otherwise specified.   |          |      |            |
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| 4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architecture/landscape drawings.                 |          |      |            |

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- Soil pipe
- Waste water pipe
- Fresh water pipe
- Rain water pipe
- RO pipe
- RWH Pit
- Site Drainage Channel
- Storm Water Manhole
- Floor Trap(FT)

Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: Not to Scale @ A3

North:

Dwg No: PL-07-01

Drawn by:

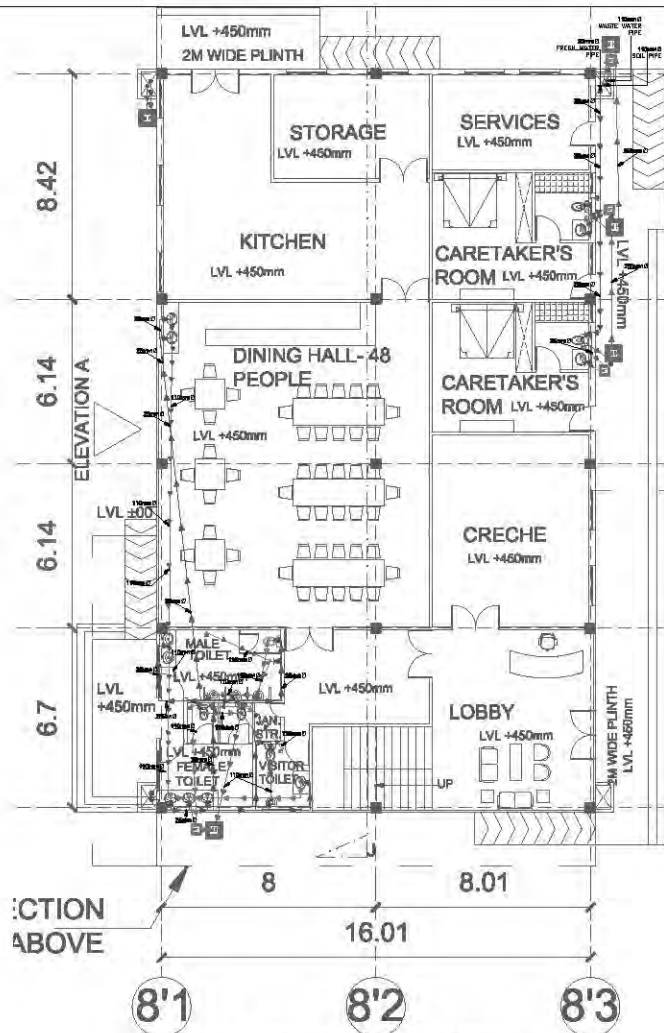
Checked by:

Date: 27.11.20

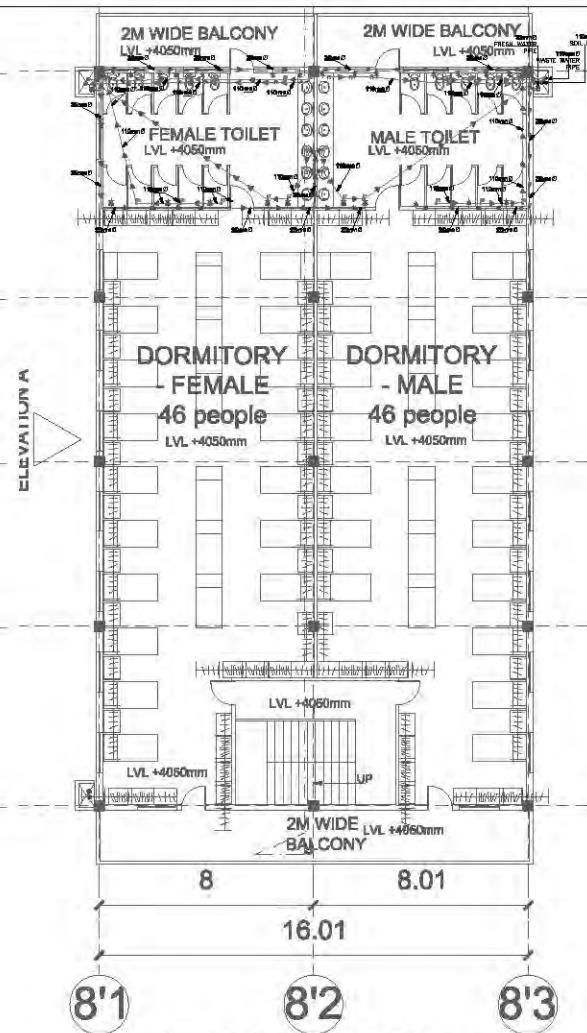
**Title:** CONV. CENT. GF + FF TYPICAL PLUMBING LAYOUT 1



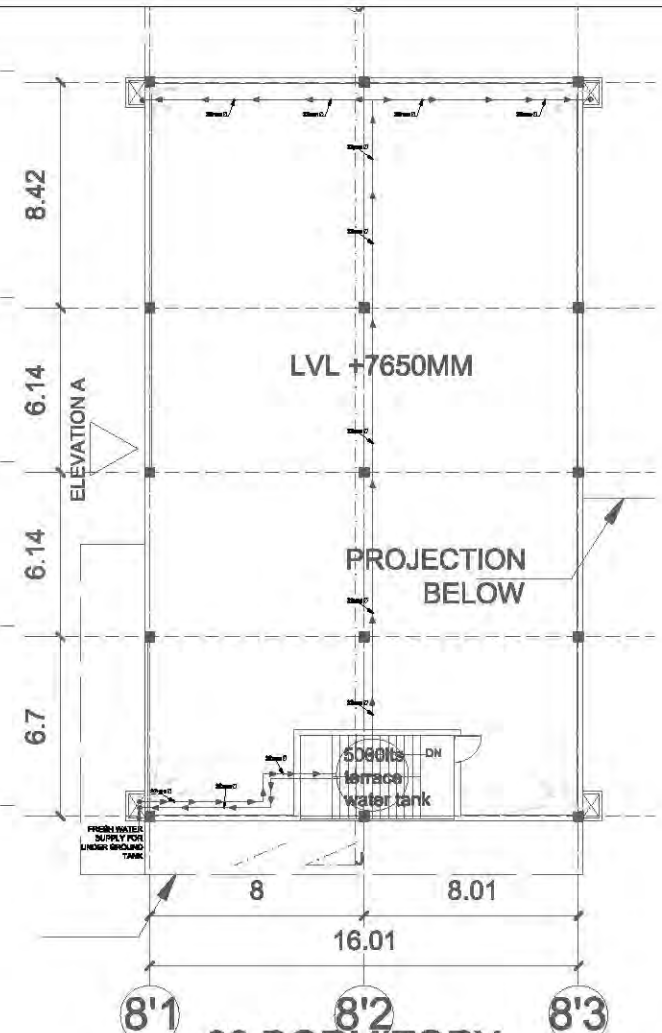




**08 DORMITORY-  
GROUND FLOOR**



**08 DORMITORY-  
FIRST FLOOR**



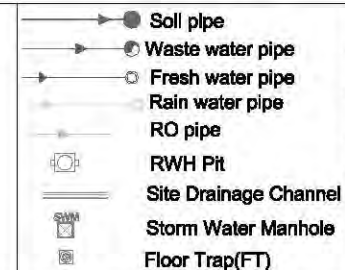
**08 DORMITORY-  
TERRACE FLOOR**

#### GENERAL NOTES:

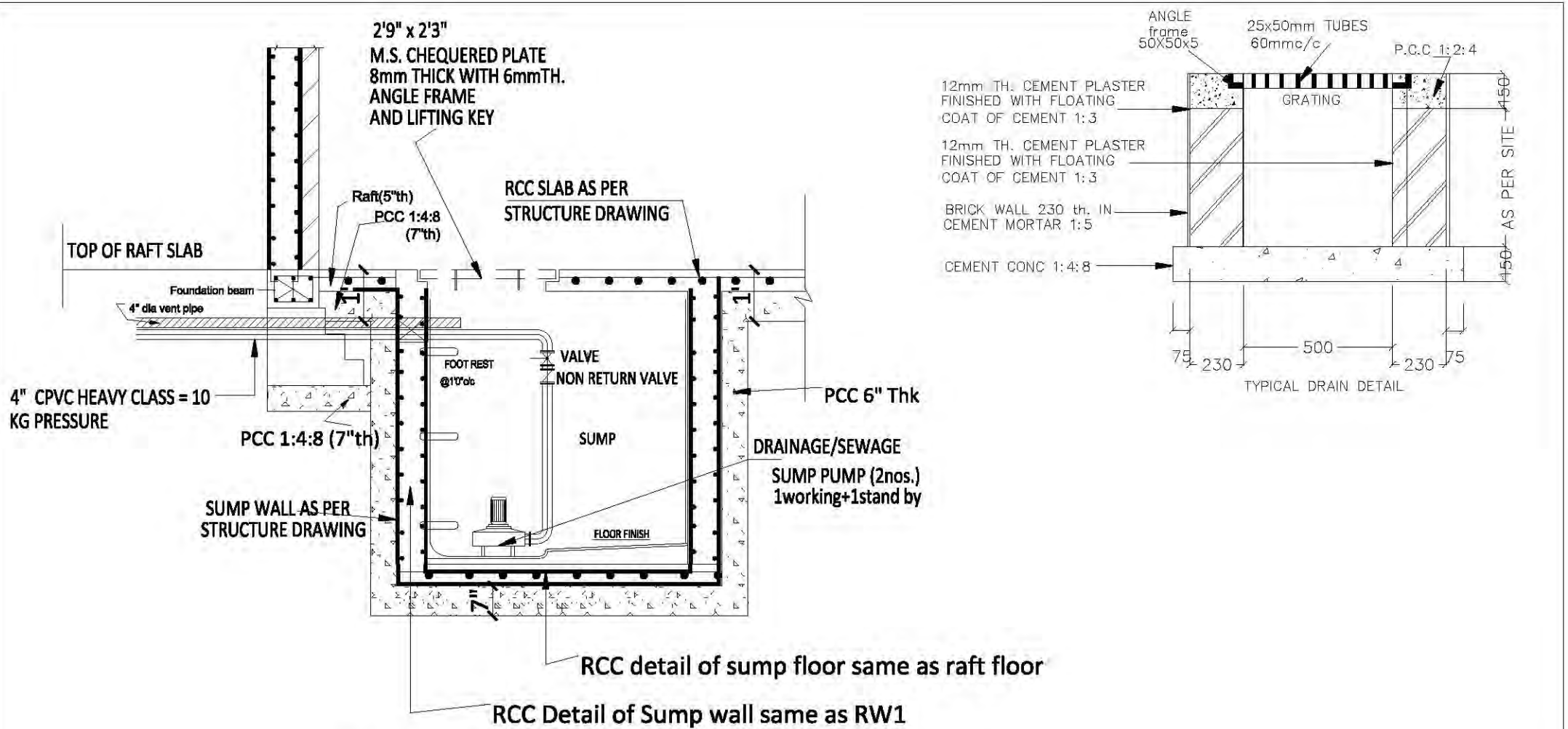
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| Client:<br><b>BAREILLY SMART CITY LTD.</b>  |             |                     |
| Project:<br><b>BAREILLY HAAT</b>            |             |                     |
| Scale:<br>Not to Scale @ A3                 | North:<br>← | Dwg No:<br>PL-05-01 |
| Drawn by:                                   | Checked by: | Date:<br>27.11.20   |
| <b>Title: DORMITORY<br/>PLUMBING LAYOUT</b> |             |                     |



## TYPICAL SECTION THRU SUMP

### GENERAL NOTES:

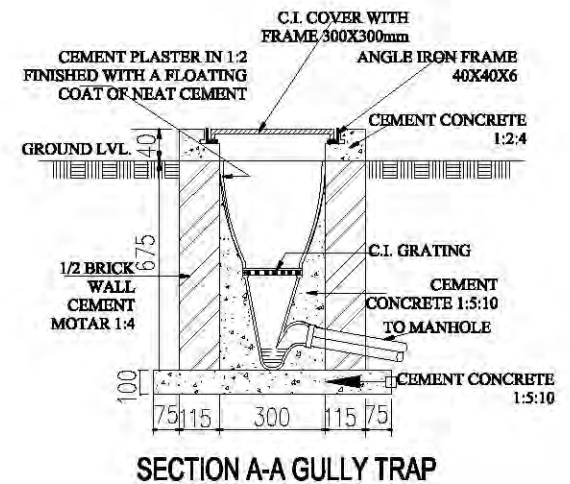
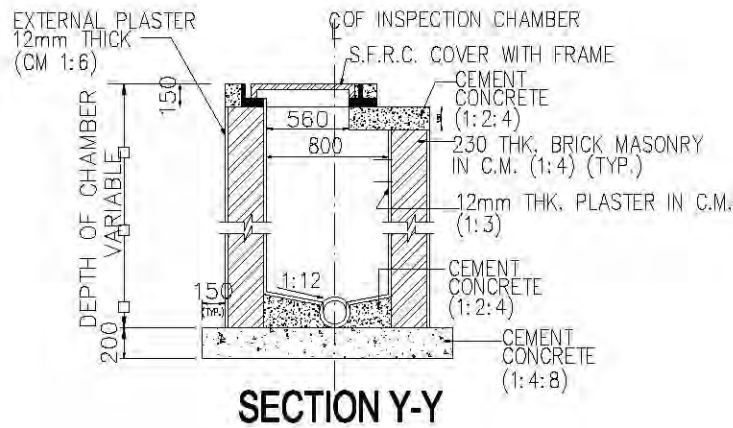
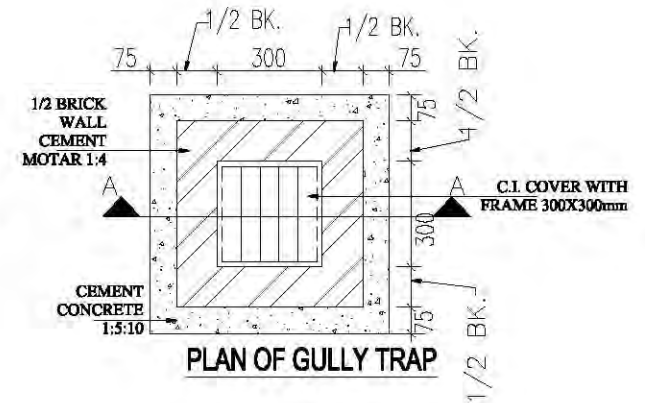
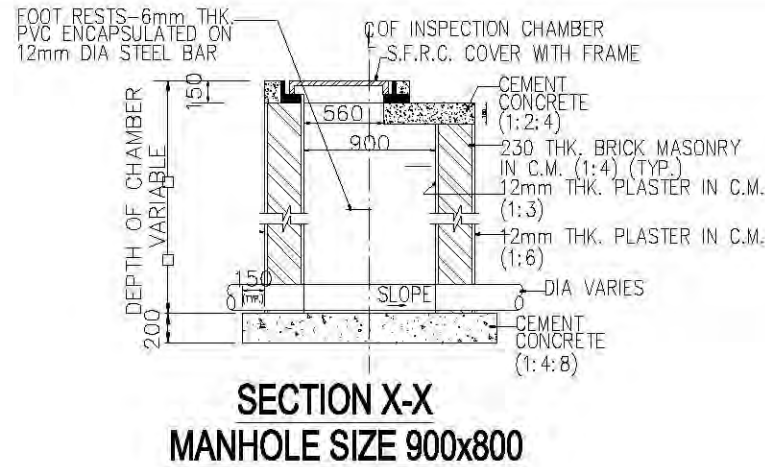
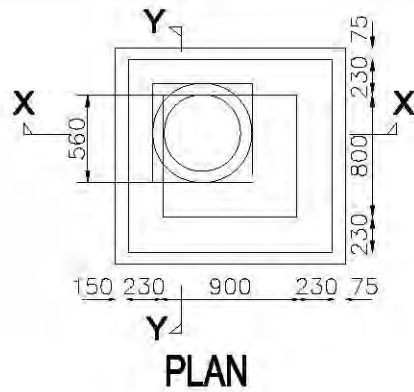
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| Client: <b>BAREILLY SMART CITY LTD.</b> |             |                           |
| Project: <b>BAREILLY HAAT</b>           |             |                           |
| Scale: <b>Not to Scale @ A3</b>         | North:      | Drawn by: <b>PL-09-01</b> |
| Drawn by:                               | Checked by: | Date: <b>27.11.20</b>     |

**Title:** TYPICAL SECTION  
 THROUGH SUMP + DRAIN  
 DETAIL



#### GENERAL NOTES:

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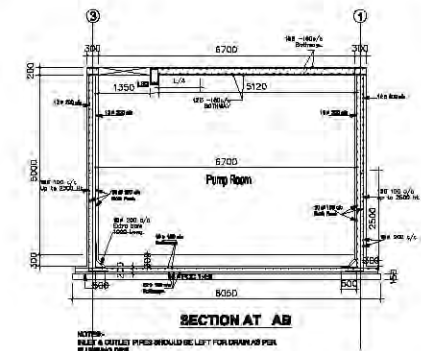
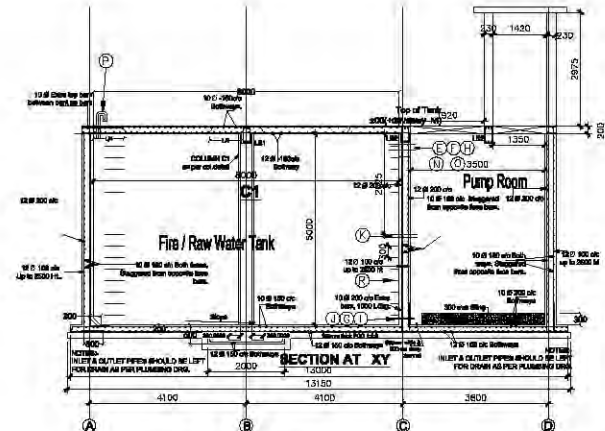
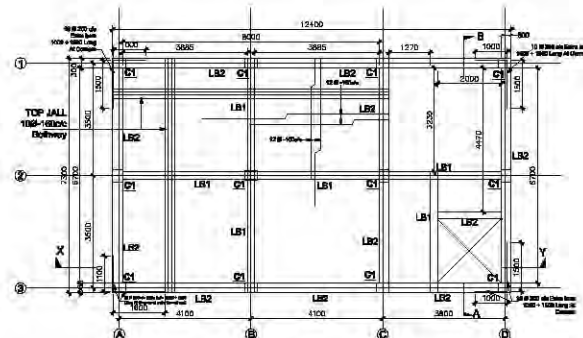
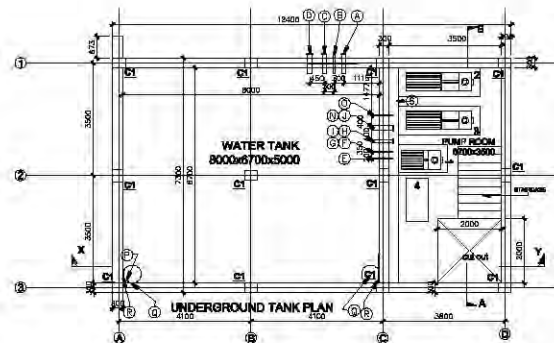
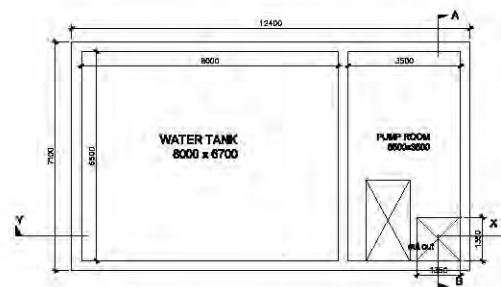
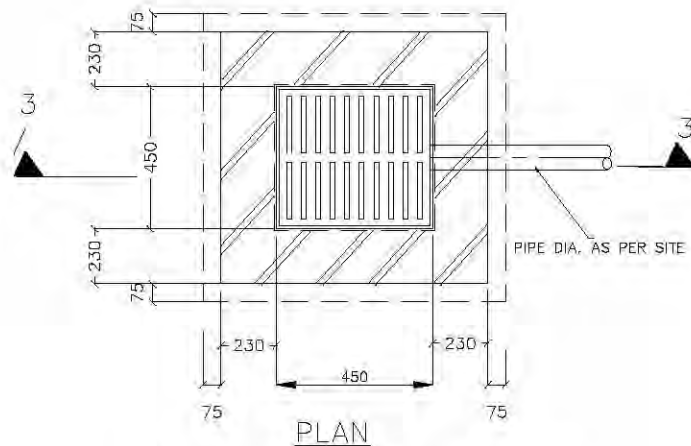
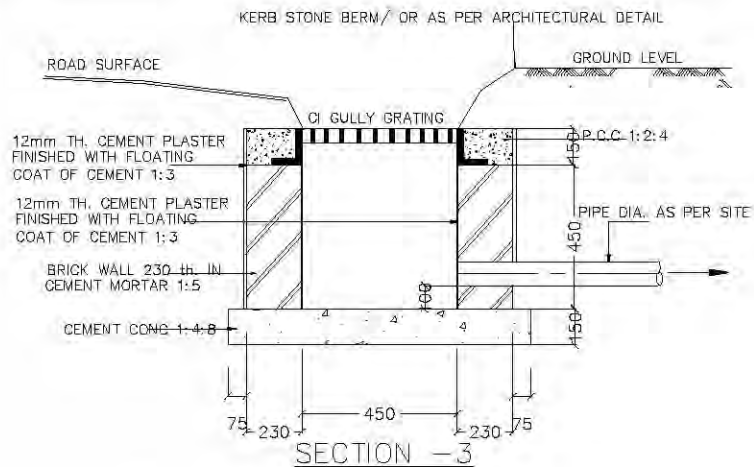
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| Client: <b>BAREILLY SMART CITY LTD.</b> |             |                  |
| Project: <b>BAREILLY HAAT</b>           |             |                  |
| Scale: Not to Scale (1:4)               | North:      | Dwg No: PL-09-02 |
| Drawn by:                               | Checked by: | Date: 27.11.20   |

**Title:** TYPICAL SECTION  
MANHOLE + GULLY TRAP  
DETAIL





#### GENERAL NOTES:

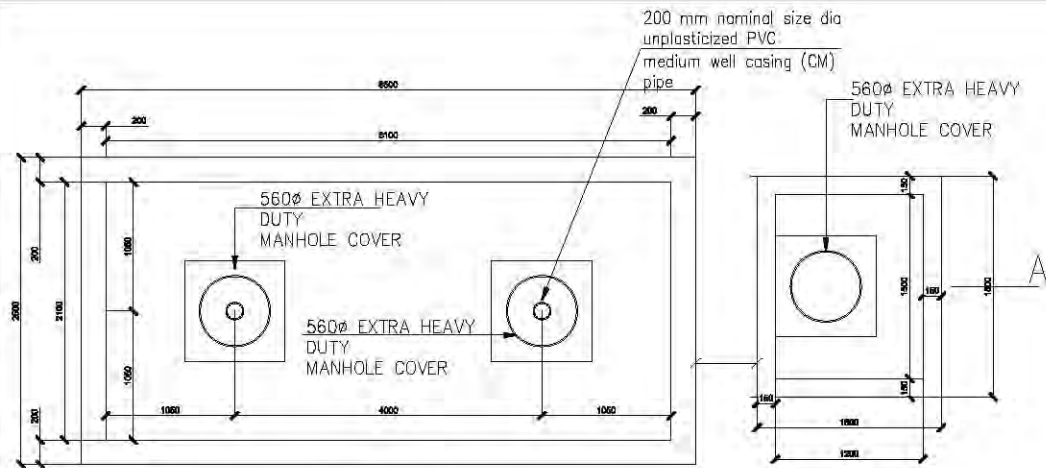
1. All dimensions are in metres and are dimensions unless otherwise specified.
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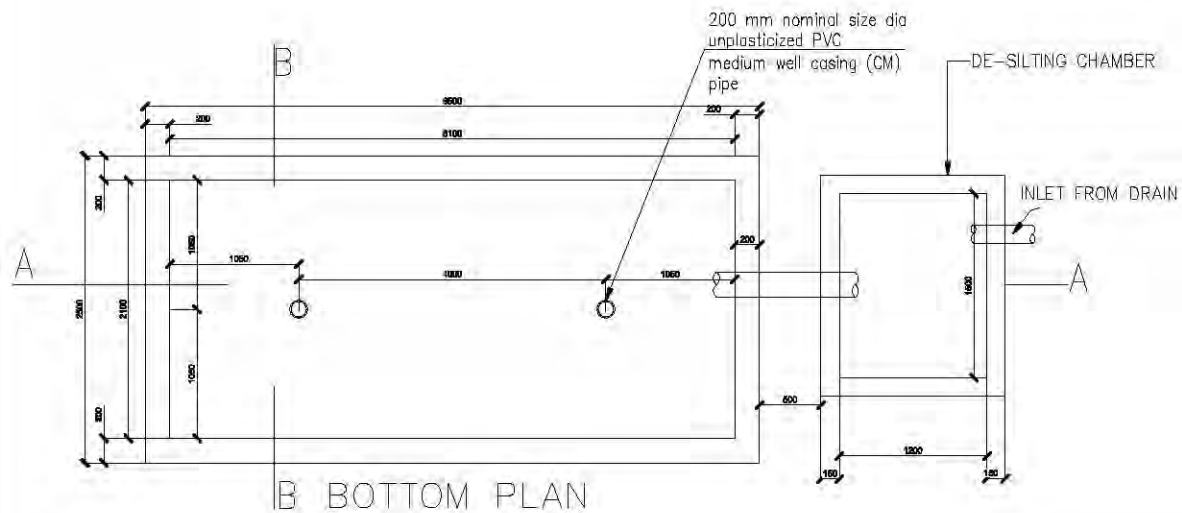
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                       |
| Project:<br><b>BAREILLY HAAT</b>           |             |                       |
| Scale:<br>Not to Scale @ A3                | North:<br>← | Drawn By:<br>PL-00-03 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20     |

**Title:** TYPICAL DETAIL  
CATCH BASIN + U.G. WATER  
TANK

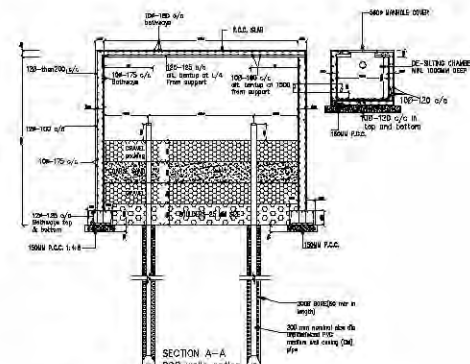
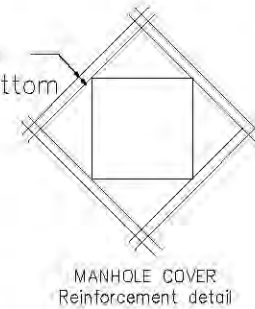


TOP PLAN

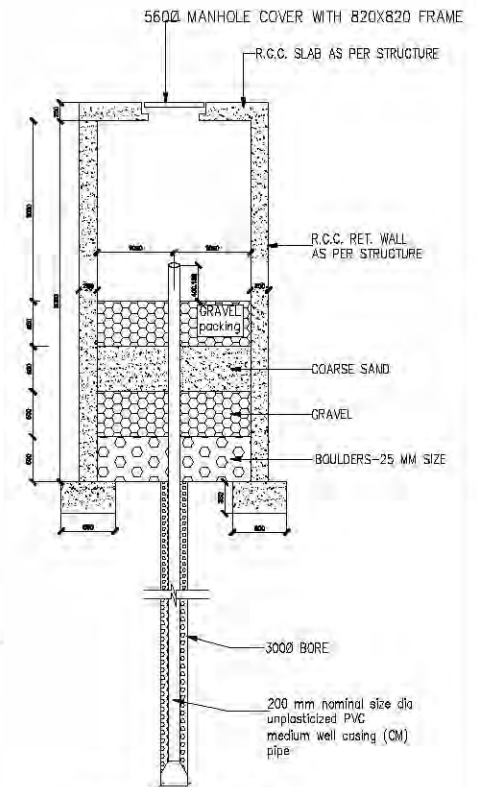


B-B BOTTOM PLAN

12Ø-75 c/c  
at top & bottom



Note: - R.C.C In M-20



SECTION B-B

#### GENERAL NOTES:

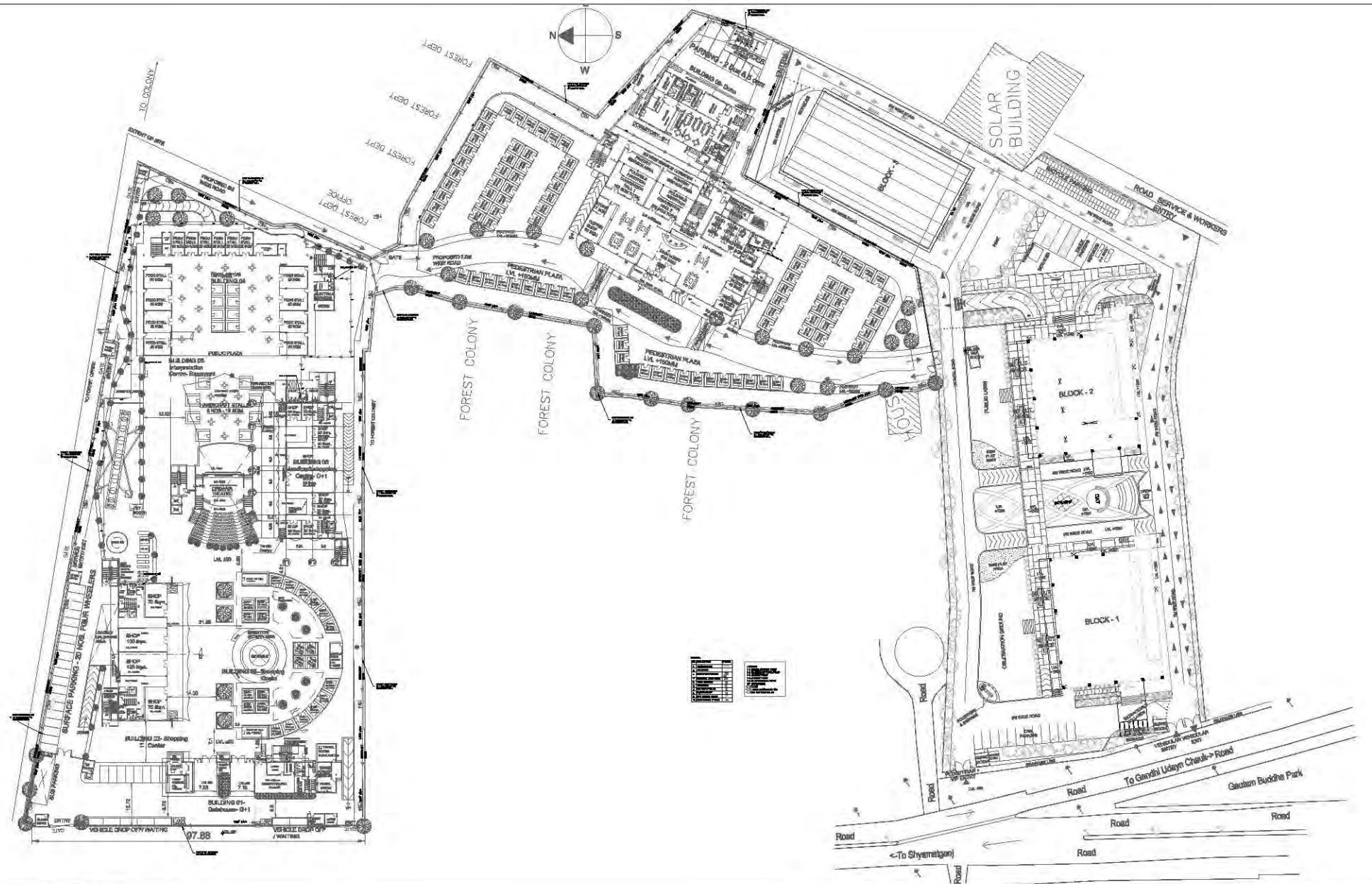
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| Client:   | BAREILLY SMART CITY LTD. |             |  |
| Project:  | BAREILLY HAAT            |             |  |
| Scale:    | Not to Scale @ A3        | North:      |  |
| Drawn by: |                          | Checked by: |  |
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**Title:** TYPICAL DETAIL  
RWH PIT



# GENERAL NOTES:

1. All dimensions are in meters and are dimensions unless otherwise specified.
2. All levels are in meters and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as partitions, flooring, ceiling, stairs, lighting fixtures, steel sections etc. refer relevant architectural/interior drawings.

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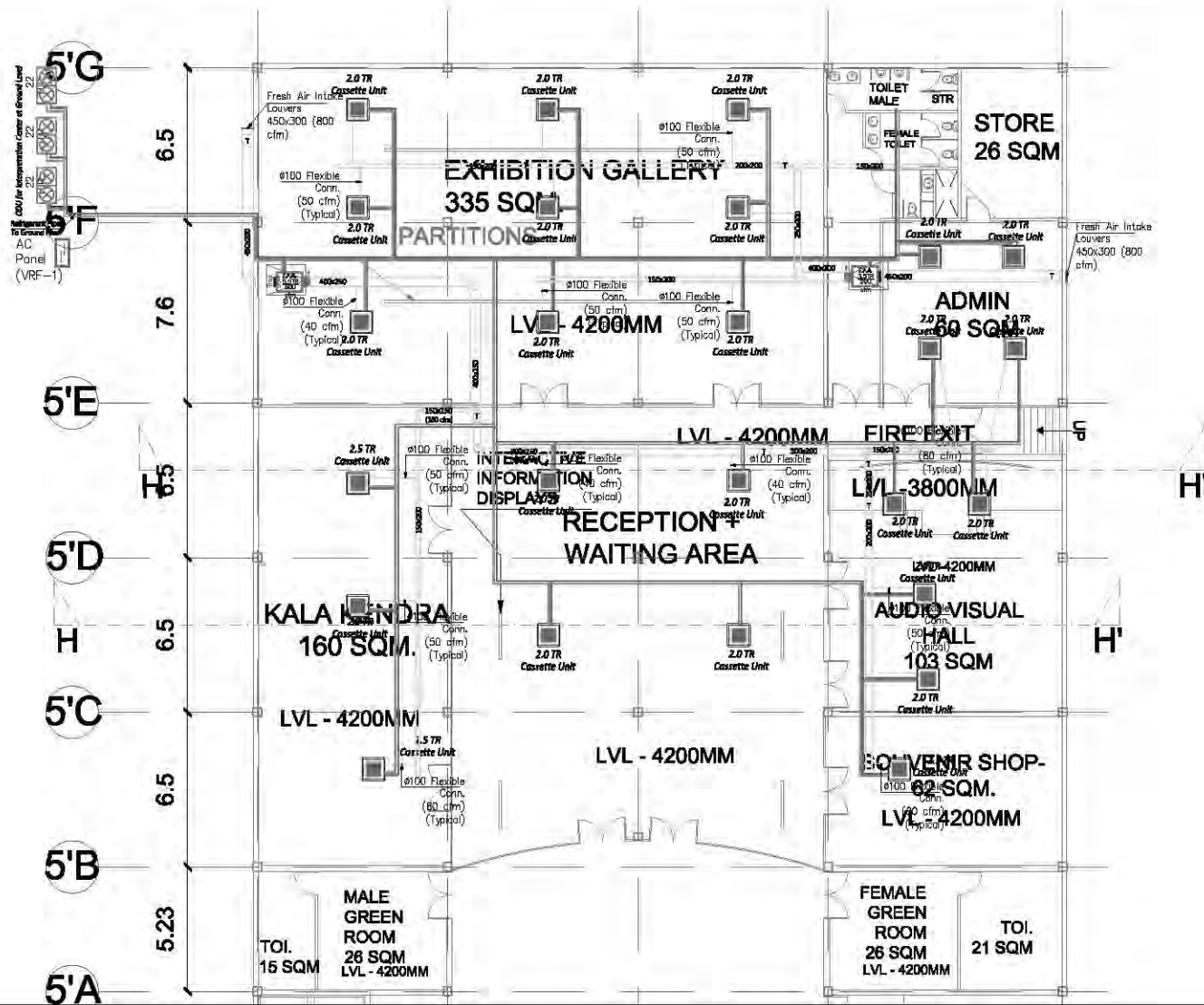
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| SL. NO. | DESCRIPTION           | SYMBOL |
|---------|-----------------------|--------|
| 1.      | 1000 PPS PPS          | —      |
| 2.      | SPRINKLER             | —      |
| 3.      | FIRE HYDRANT CANNIST  | —      |
| 4.      | EXTERNAL FIRE HYDRANT | —      |
| 5.      | VALVE                 | —      |
| 6.      | WATER TOWER           | —      |
| 7.      | WATER TOWER           | —      |
| 8.      | WATER TOWER           | —      |
| 9.      | WATER TOWER           | —      |
| 10.     | WATER TOWER           | —      |

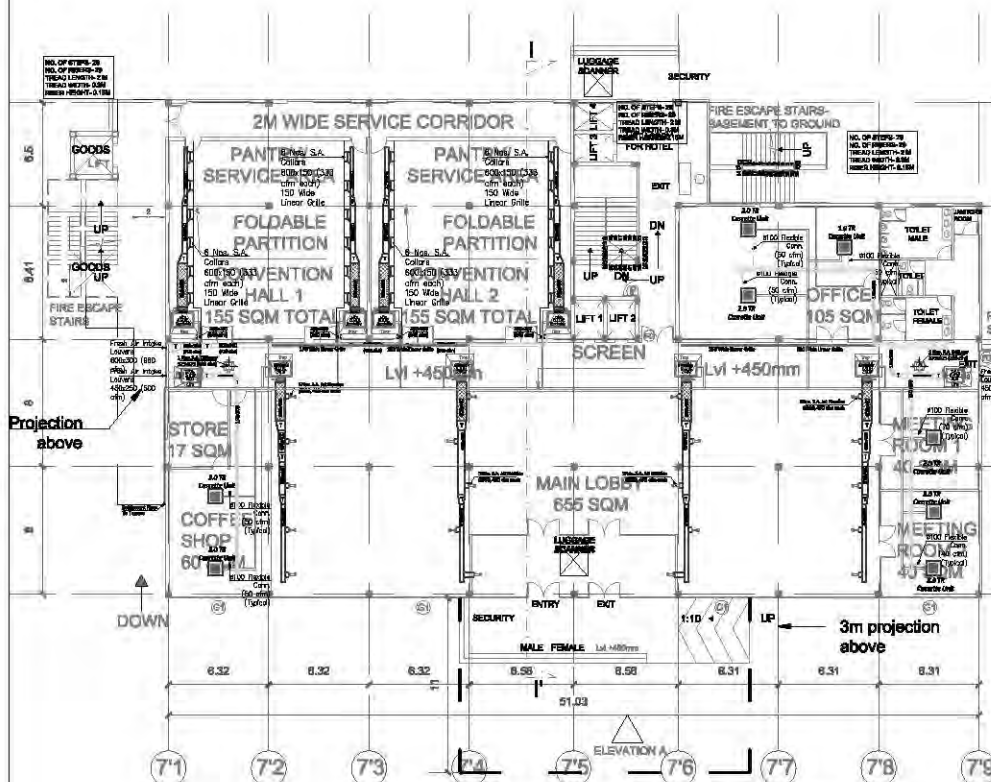
LEGEND:  
 F-1 FIRE DRIVEN PUMP  
 F-2 HYDRANT FIRE PUMP  
 F-3 JOCKEY PUMP  
 F-4 JOCKEY PUMP  
 F-5 EL SPRINKLER PLUM  
 F-6 VALVE  
 F-7 JOCKEY CONNECTION  
 F-8 NON RETURN VALVE

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| Client:     | BAREILLY SMART CITY LTD. |
| Project:    | BAREILLY HAT             |
| Scale:      | As per the drawing       |
| Drawn by:   | PPG-01                   |
| Checked by: | PPG-01                   |
| Date:       | 01.01.2021               |
| Title:      | SITE FIREFIGHTING PLAN   |

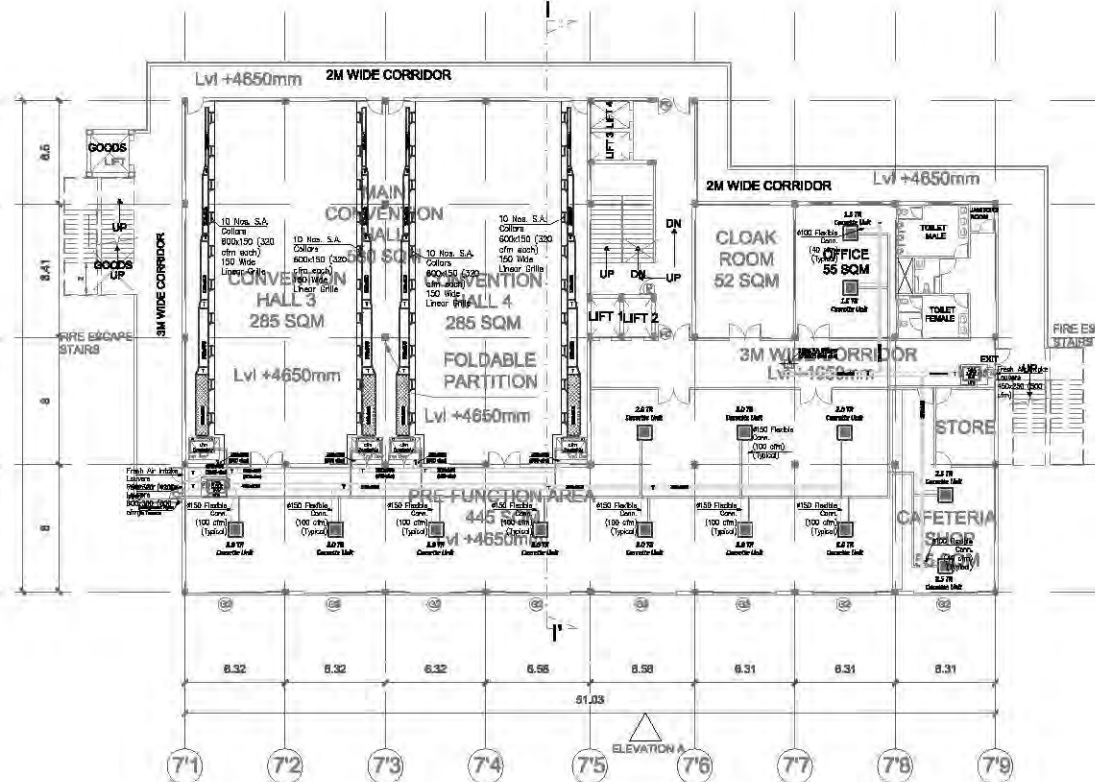








BUILDING 07- CONVENTION CENTER  
GROUND FLOOR



BUILDING 07- CONVENTION CENTER  
FIRST FLOOR

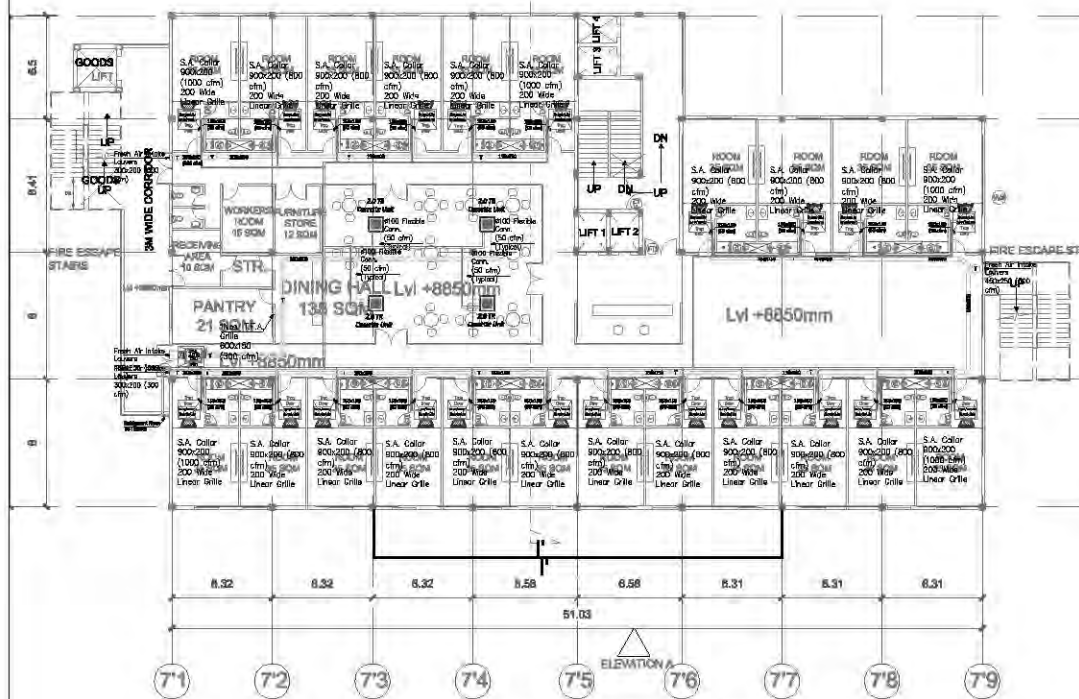
#### GENERAL NOTES:

- All dimensions are in metres and are dimensions unless otherwise specified.
- All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
- Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
- For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

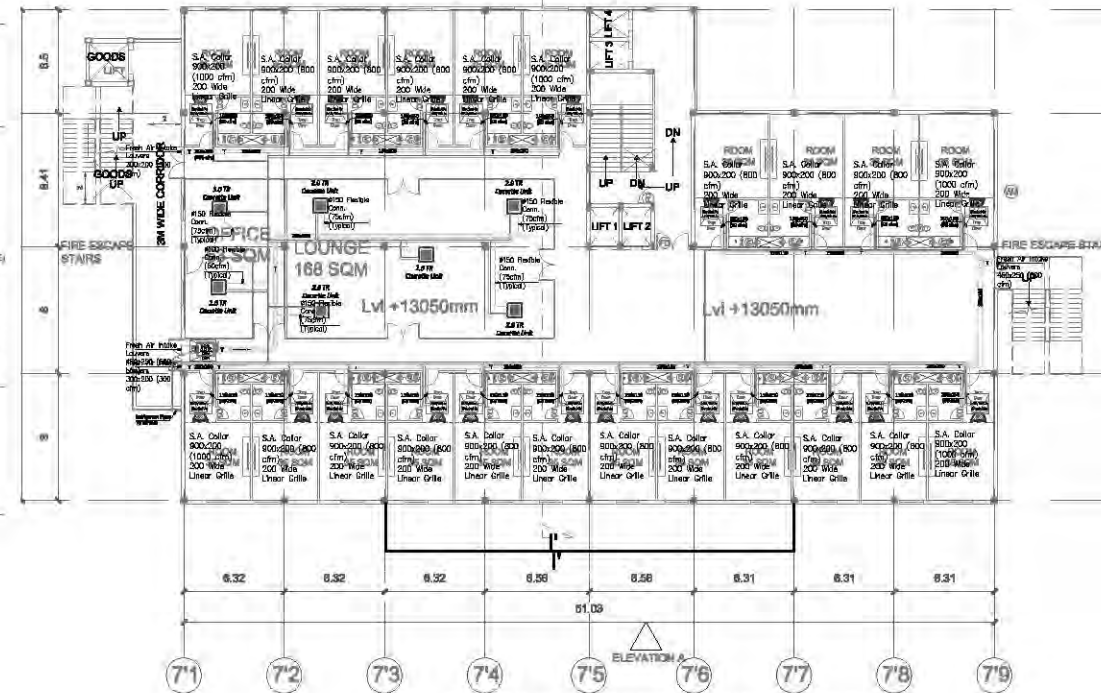
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| Client:<br>BAREILLY SMART CITY LTD. |             |                     |
| Project:<br>BAREILLY HAAT           |             |                     |
| Scale:<br>Not to Scale @ A3         | North:<br>← | Dwg No:<br>UT-07-01 |
| Drawn by:                           | Checked by: | Date:<br>27.11.20   |
| Title: CONVEN. CENT.<br>HVAC PLAN   |             |                     |



**BUILDING 07- CONVENTION CENTER  
SECOND FLOOR**



**BUILDING 07- CONVENTION CENTER  
THIRD FLOOR**

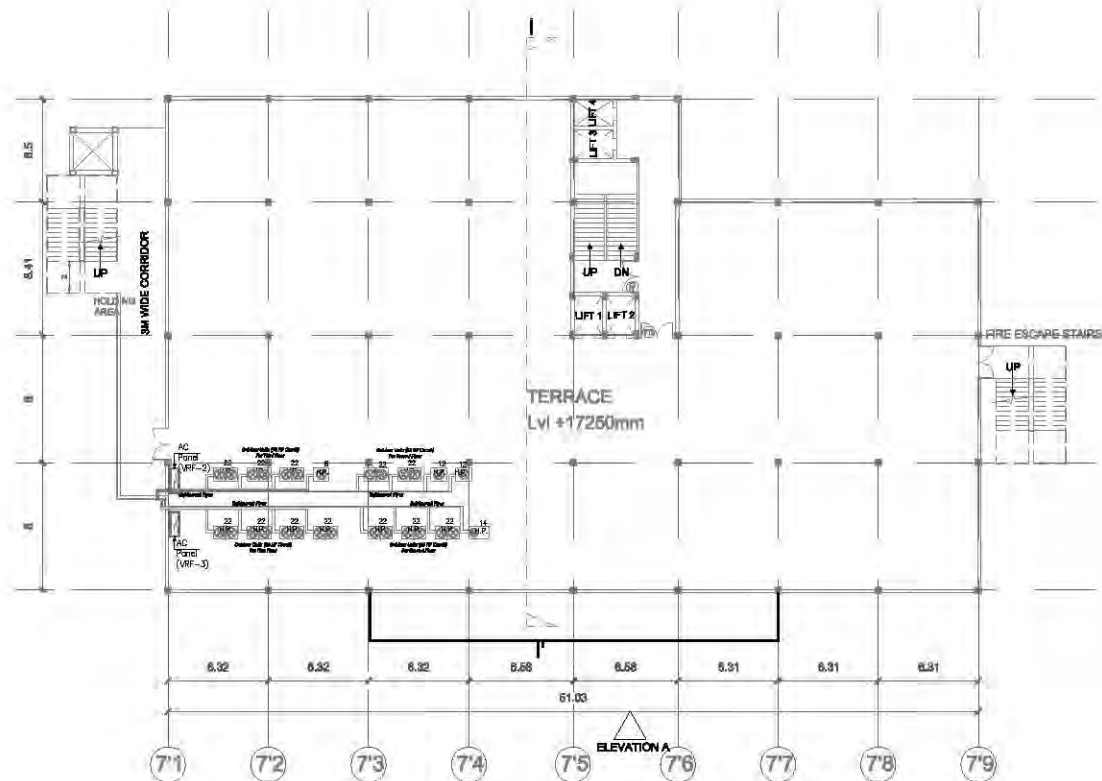
#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                     |
| Project:<br><b>BAREILLY HAAT</b>           |             |                     |
| Scale:<br>Not to Scale @ A3                | North:<br>← | Dwg No:<br>UT-07-02 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20   |
| Title: <b>CONVEN. CENT.<br/>HVAC PLAN</b>  |             |                     |



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

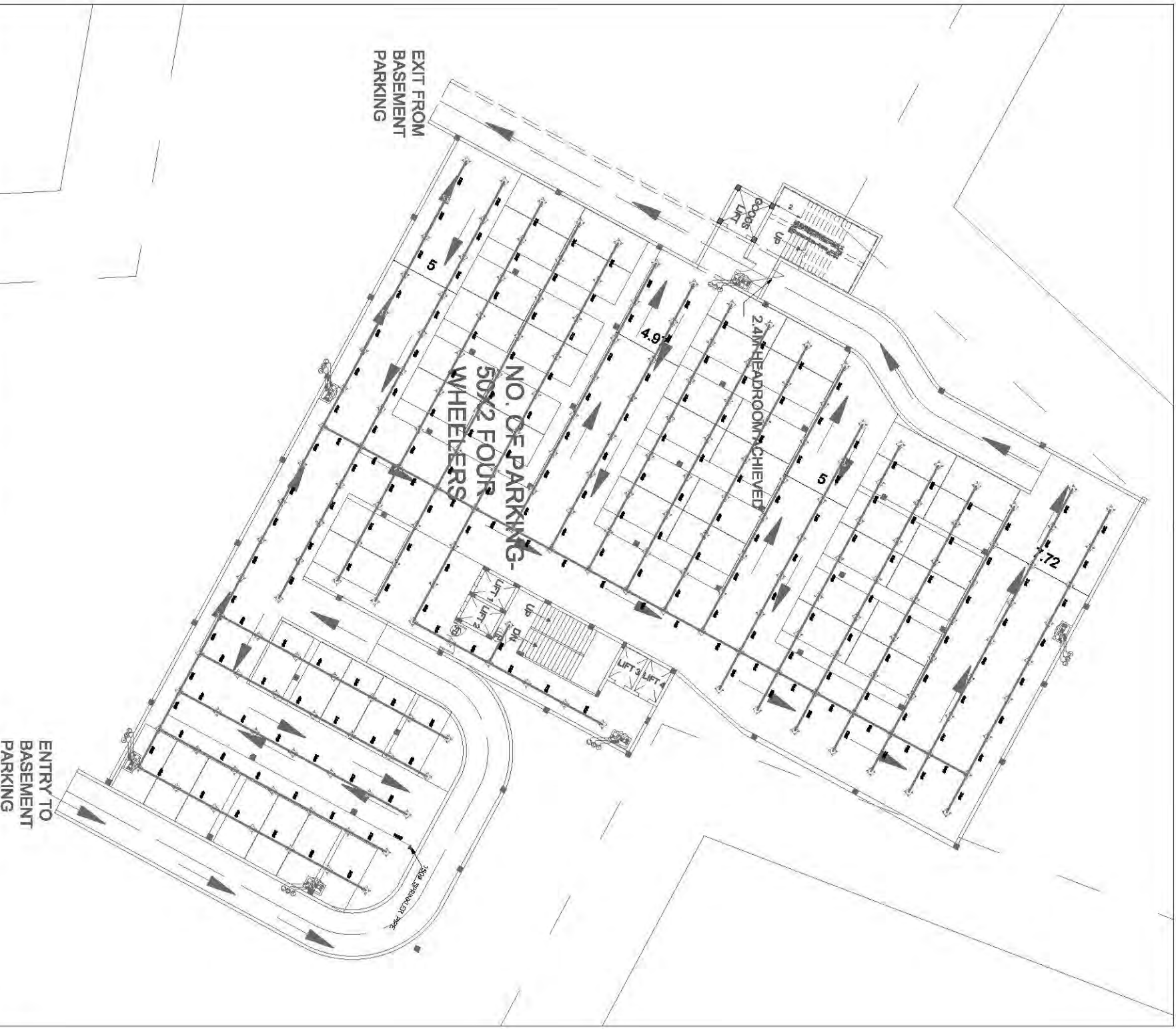
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|  |             |                     |
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| Client:<br><b>BAREILLY SMART CITY LTD.</b> |             |                     |
| Project:<br><b>BAREILLY HAAT</b>           |             |                     |
| Scale:<br>Not to Scale @ A3                | North:<br>← | Dwg No:<br>UT-07-08 |
| Drawn by:                                  | Checked by: | Date:<br>27.11.20   |
| Title: <b>CONVEN. CENT.<br/>HVAC PLAN</b>  |             |                     |







**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the schedule.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street furniture etc. refer relevant architectural/landscape drawings.

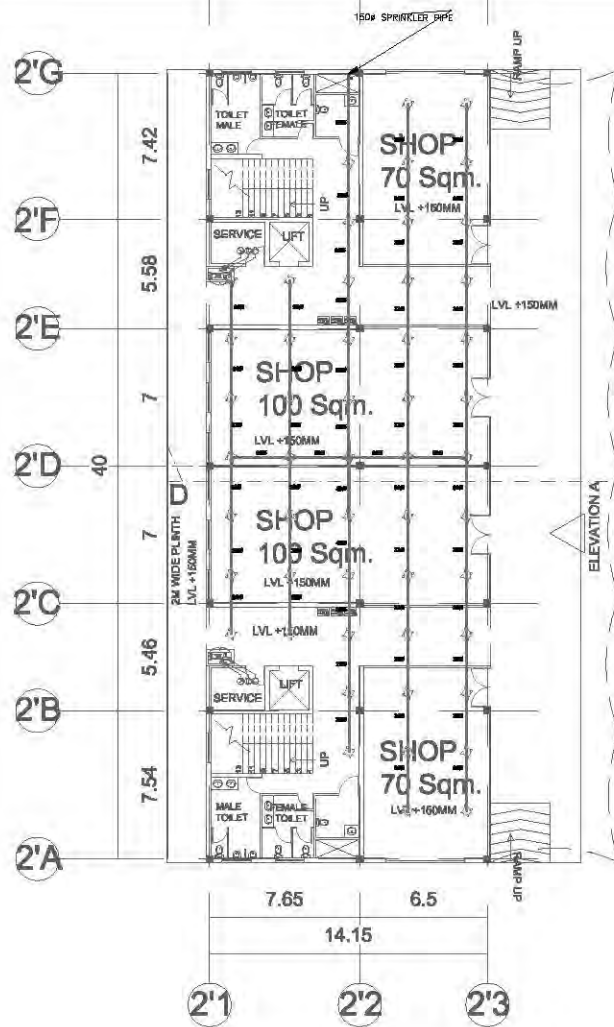
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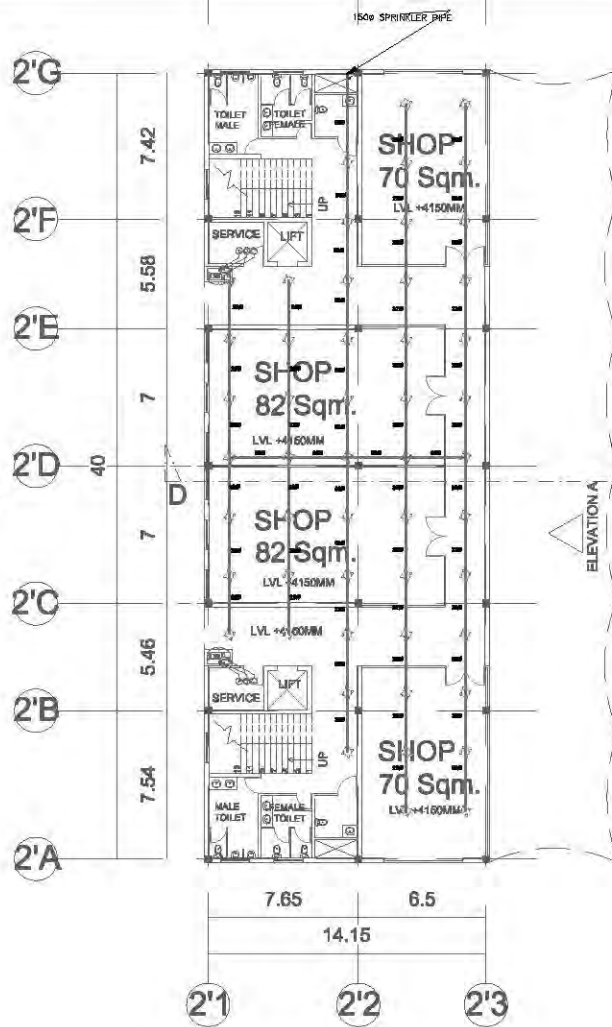
| LEGEND- |                              |        |
|---------|------------------------------|--------|
| SYMBOL  | DESCRIPTION                  | SYMBOL |
| 1       | 1. TEST FIRE PIPE            | 2      |
| 3       | 3. SPRINKLER                 | 4      |
| 5       | 5. FIRE HOUSE CONNECTION     | 6      |
| 7       | 7. INTERNAL FIRE HOUSE ENTRY | 8      |
| 9       | 9. VARIOUS PIPES             | 10     |
| 11      | 11. VALVES                   | 12     |
| 13      | 13. BUTTERFLY VALVE          | 14     |
| 15      | 15. RETURN VALVE             | 16     |
| 17      | 17. RETURN VALVE             | 18     |

| LEGEND- |                    |
|---------|--------------------|
| F-1     | DIESEL DRIVEN PUMP |
| F-2     | ROCKET PUMP        |
| F-3     | ROCKET PUMP        |
| F-4     | ROCKET PUMP        |
| F-5     | SPRINKLER PUMP     |
| F-6     | SPRINKLER PUMP     |
| F-7     | SPRINKLER PUMP     |
| F-8     | SPRINKLER PUMP     |
| F-9     | SPRINKLER PUMP     |
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| F-100   | SPRINKLER PUMP     |

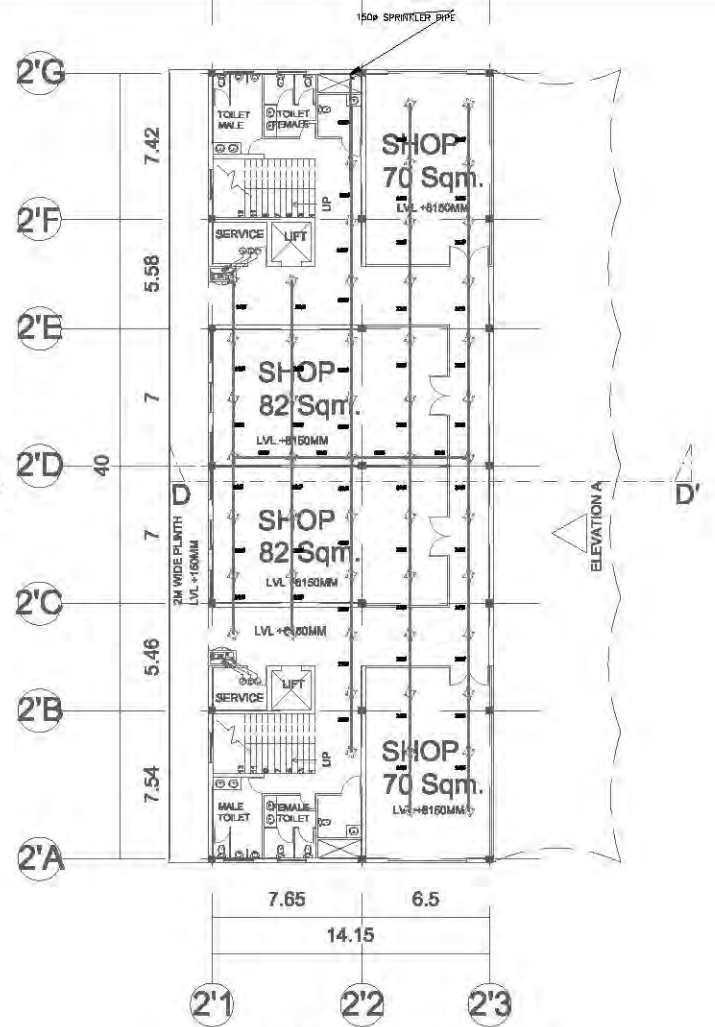
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| Client: BAREILLY SMART CITY LTD.     |             |                   |
| Project: BAREILLY HMT                |             |                   |
| Scale: As per Scale @ 1:2            | North:      | Drawn By: P-00-00 |
| Drawn By:                            | Checked By: | Date: 07/08/21    |
| Title: BASEMENT FIRE-FIGHTING PLAN 2 |             |                   |



02 SHOPPING CENTER-  
GROUND FLOOR



02 SHOPPING CENTER-  
FIRST FLOOR



02 SHOPPING CENTER-  
SECOND FLOOR

#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

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#### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 1500 FIRE PIPE      | —      |
| 2.   | SPRINKLER           | ⋈      |
| 3.   | FIRE HOUSE CABINET  | ⊞      |
| 4.   | EXTERNAL FIRE HOUSE | ⊞      |
| 5.   | YARD HYDRANT        | ⊞      |
| 6.   | Y STERNER           | ⋈      |
| 7.   | BUTTERFLY VALVE     | ⋈      |
| 8.   | RUBBER BLOW         | ⋈      |
| 9.   | NON RETURN VALVE    | ⋈      |

LEGEND:  
F-1 DIESEL DRIVEN PUMP  
F-2 EL HYDRANT FIRE PUMP  
F-3 JOCKEY PUMP  
F-4 JOCKEY PUMP  
F-5 EL SPRINKLER PUMP  
SP SPRINKLER  
⋈ VALVE  
⋈ FLEXIBLE CONNECTION  
⋈ NON RETURN VALVE

#### Client:-

BAREILLY SMART CITY LTD.

#### Project:-

BAREILLY HAAT

Scale:  
Not to Scale @ A3

North:  
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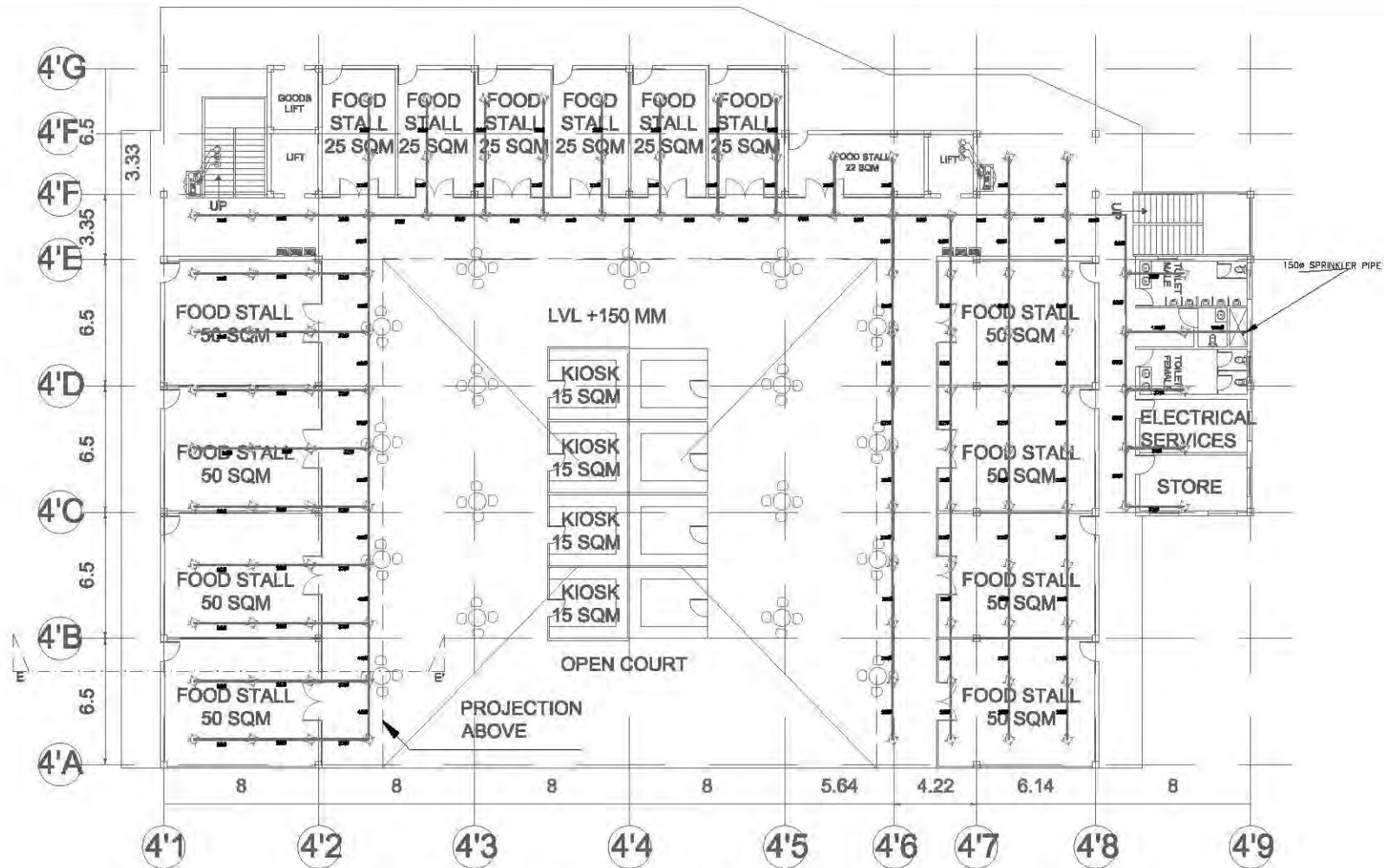
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FT-02-01

#### Drawn by:

Checked by:

Date:  
01.08.21

Title: SHOPPING CENTER  
FIREFIGHTING PLAN



## 04 FOOD CENTER- GROUND FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.

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### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 150mm FIRE PIPE     | —      |
| 2.   | SPRINKLER           | ⋈      |
| 3.   | FIRE HOUSE CABINET  | ⊞      |
| 4.   | EXTERNAL FIRE HOUSE | ⊞      |
| 5.   | YARD HYDRANT        | ⊞      |
| 6.   | Y STERNER           | ⋈      |
| 7.   | BUTTERFLY VALVE     | ⊞      |
| 8.   | RUBBER BLOW         | ⊞      |
| 9.   | NON RETURN VALVE    | ⊞      |

LEGEND:  
 F-1 DIESEL DRIVEN PUMP  
 F-2 EL HYDRANT FIRE PUMP  
 F-3 JOCKEY PUMP  
 F-4 JOCKEY PUMP  
 F-5 EL SPRINKLER PUMP  
 SP SPRINKLER  
 ⊞ VALVE  
 ⊞ FLEXIBLE CONNECTION  
 ⊞ NON RETURN VALVE

Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

Scale: **Not to Scale @ A3**

North:

Dwg No: **FF-02-01**

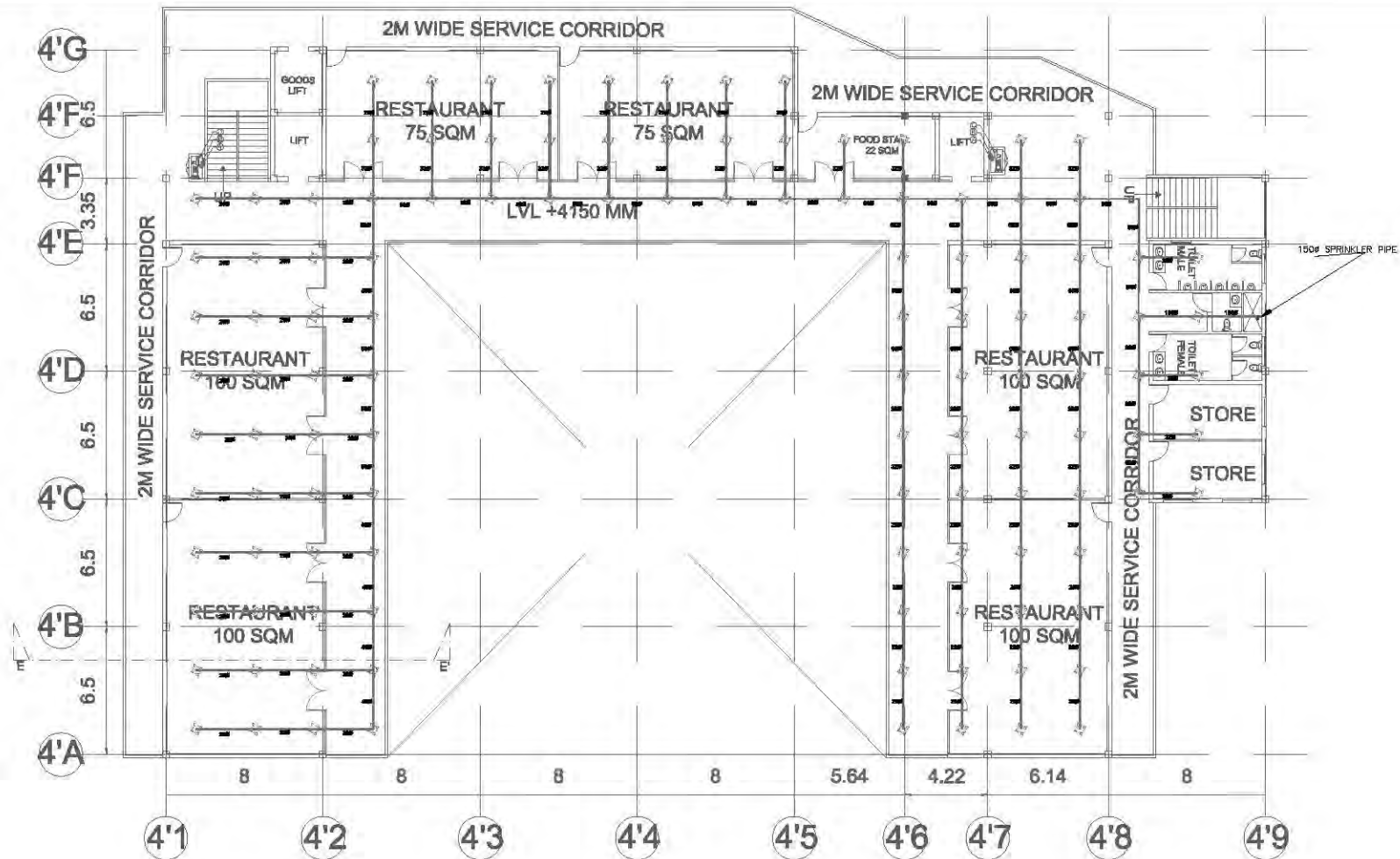
Drawn by:

Checked by:

Date: **01.02.21**

Title: **SHOPPING CENTER  
FIREFIGHTING PLAN**





## 04 FOOD CENTER- FIRST FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.

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### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 1500 FIRE PIPE      | —      |
| 2.   | SPRINKLER           | —      |
| 3.   | FIRE HOUSE CABINET  | —      |
| 4.   | EXTERNAL FIRE HOUSE | —      |
| 5.   | YARD HYDRANT        | —      |
| 6.   | Y STERNER           | —      |
| 7.   | BUTTERFLY VALVE     | —      |
| 8.   | RUBBER BLOW         | —      |
| 9.   | NON RETURN VALVE    | —      |

LEGEND:  
 F-1 DIESEL DRIVEN PUMP  
 F-2 EL HYDRANT FIRE PUMP  
 F-3 JOCKEY PUMP  
 F-4 JOCKEY PUMP  
 F-5 EL SPRINKLER PUMP  
 SP SPRINKLER  
 — VALVE  
 — FLEXIBLE CONNECTION  
 — NON RETURN VALVE

Client:

BAREILLY SMART CITY LTD.

Project:

BAREILLY HAAT

Scale:  
Not to Scale @ A3

North:  
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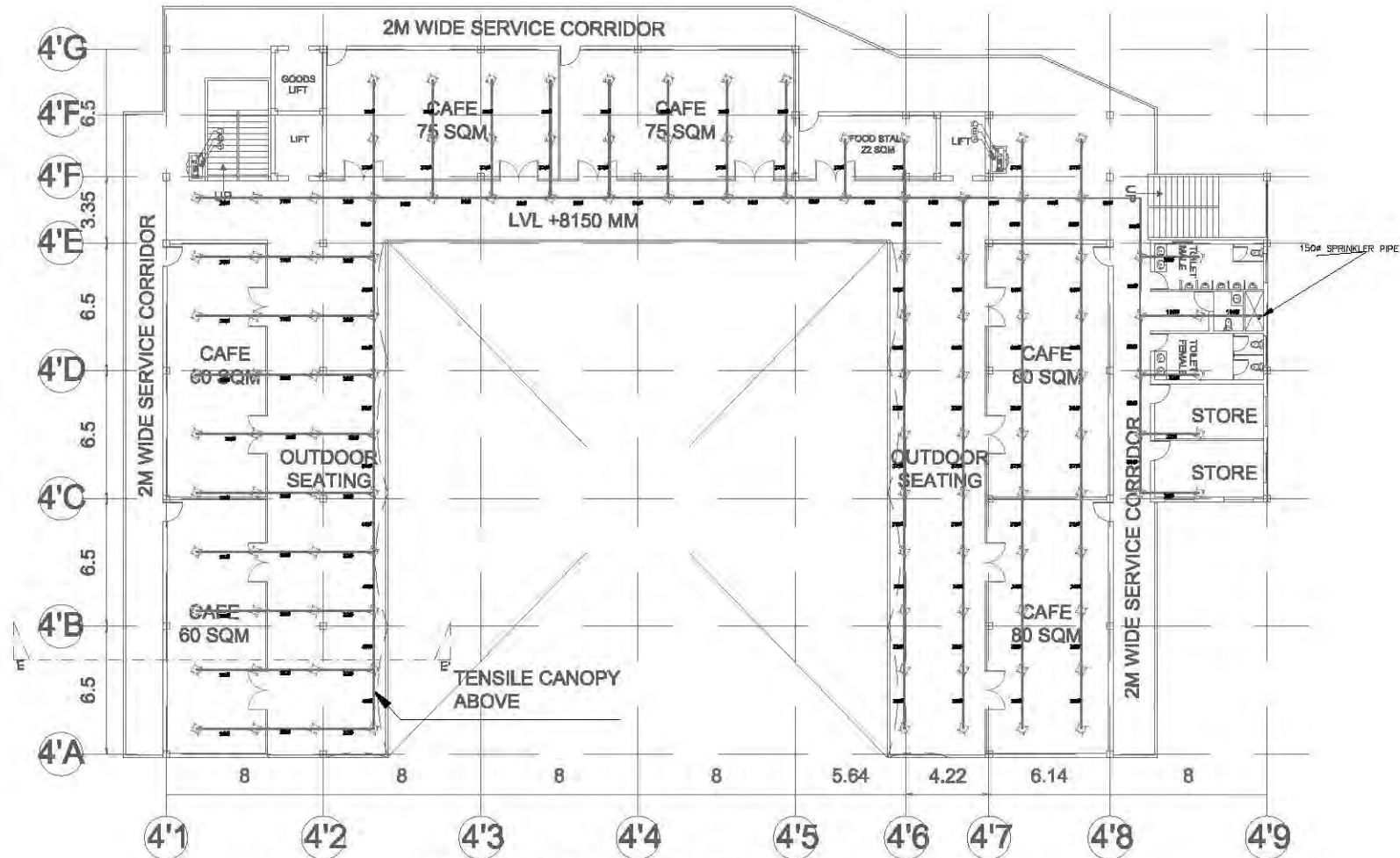
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Desk by:

Checked by:

Date:  
01.02.21

Title: SHOPPING CENTER  
FIREFIGHTING PLAN



## 04 FOOD CENTER- SECOND FLOOR

### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.

2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.

3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.

4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.

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### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 150mm FIRE PIPE     | —      |
| 2.   | SPRINKLER           | —      |
| 3.   | FIRE HOUSE CABINET  | —      |
| 4.   | EXTERNAL FIRE HOUSE | —      |
| 5.   | YARD HYDRANT        | —      |
| 6.   | Y STERNER           | —      |
| 7.   | BUTTERFLY VALVE     | —      |
| 8.   | RUBBER BLOW         | —      |
| 9.   | NON RETURN VALVE    | —      |

LEGEND:  
 F-1 DIESEL DRIVEN PUMP  
 F-2 EL HYDRANT FIRE PUMP  
 F-3 JOCKEY PUMP  
 F-4 JOCKEY PUMP  
 F-5 EL SPRINKLER PUMP  
 SP SPRINKLER  
 — VALVE  
 — FLEXIBLE CONNECTION  
 — NON RETURN VALVE

Client:

BAREILLY SMART CITY LTD.

Project:

BAREILLY HAAT

Scale:  
Not to Scale @ A3

North:  
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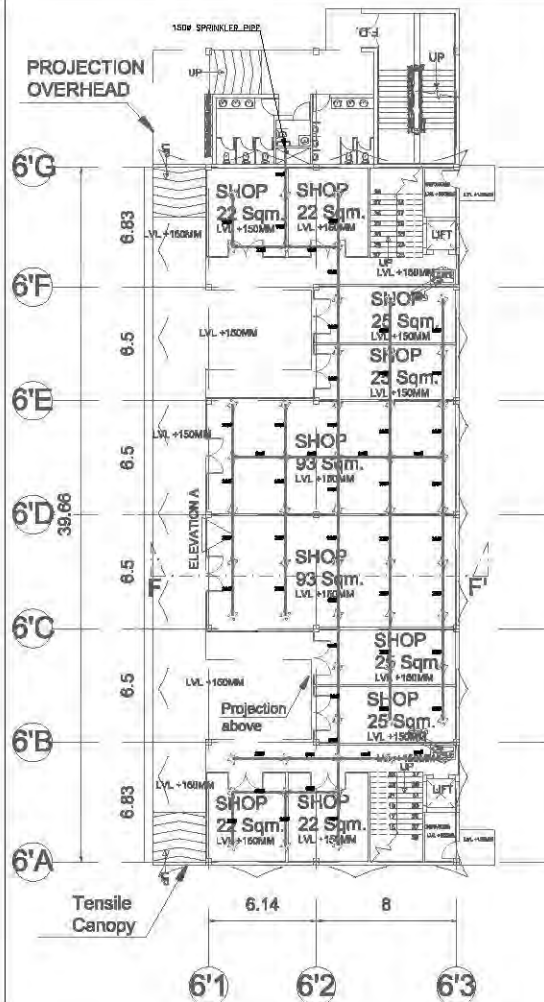
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FT-02-03

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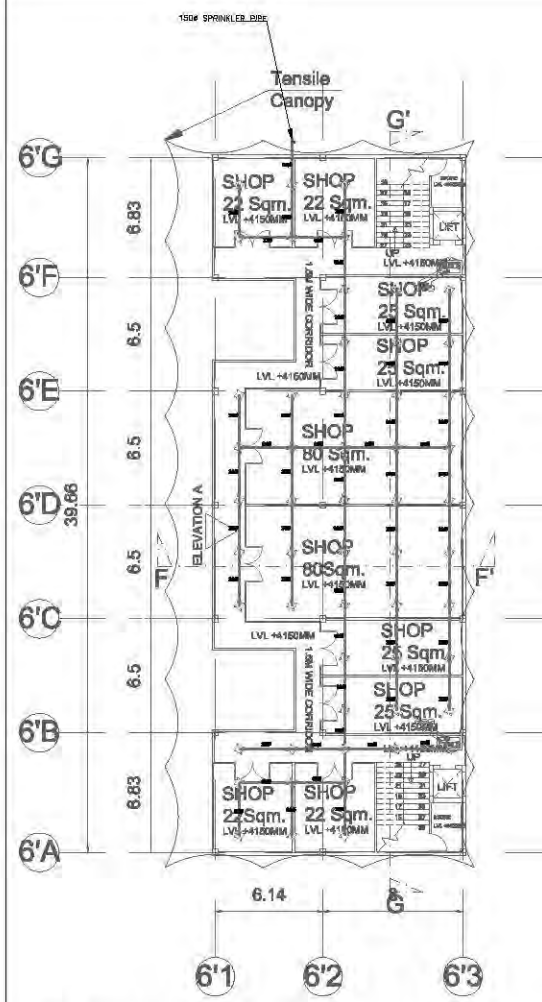
Checked by:

Date:  
01.02.21

Title: SHOPPING CENTER  
FIREFIGHTING PLAN



06- HANDICRAFT SHOPPING CENTER-  
GROUND FLOOR



06- HANDICRAFT SHOPPING CENTER-  
FIRST FLOOR

#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.

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#### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 100W FIRE PIPE      | —      |
| 2.   | SPRINKLER           | ⋈      |
| 3.   | FIRE HOUSE CABINET  | ⊞      |
| 4.   | EXTERNAL FIRE HOUSE | ⊞      |
| 5.   | YARD HYDRANT        | ⊞      |
| 6.   | Y STERNER           | ⋈      |
| 7.   | BUTTERFLY VALVE     | ⋈      |
| 8.   | RUBBER BLOW         | ⋈      |
| 9.   | NON RETURN VALVE    | ⋈      |

LEGEND:  
F-1 DIESEL DRIVEN PUMP  
F-2 EL HYDRANT FIRE PUMP  
F-3 JOCKEY PUMP  
F-4 JOCKEY PUMP  
F-5 EL SPRINKLER PUMP  
SP SPRINKLER  
⋈ VALVE  
⋈ FLEXIBLE CONNECTION  
⋈ NON RETURN VALVE

#### Client:-

BAREILLY SMART CITY LTD.

#### Project:-

BAREILLY HAAT

Scale:  
Not to Scale @ A3

North:  
⬅

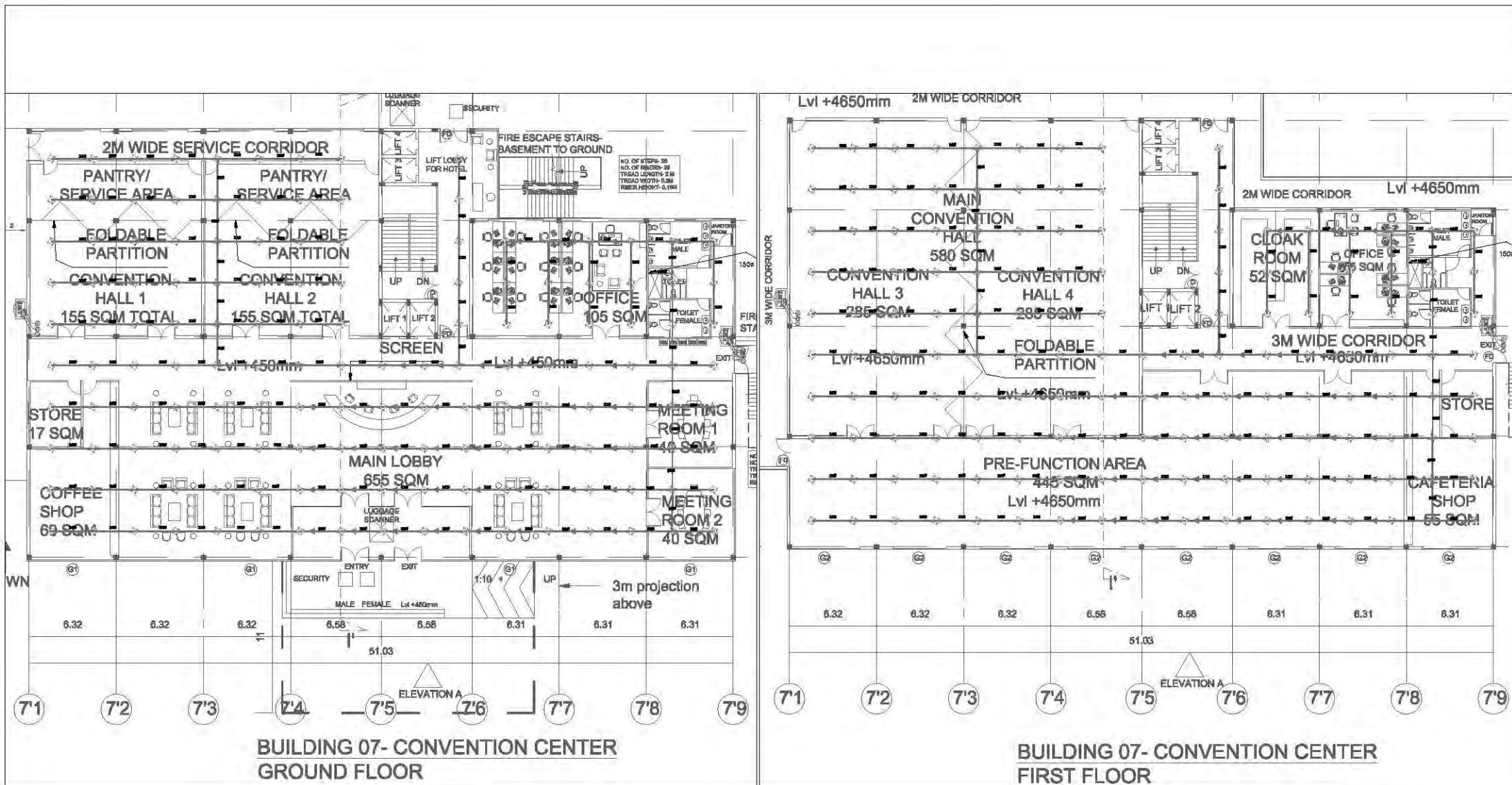
Dwg No:  
FT-06-01

#### Drawn by:

Checked by:

Date:  
01.08.21

Title: HANDICRAFT SHOPPING  
CENTER FIREFIGHTING PLAN



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc, refer relevant architectural/landscape drawings.

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#### LEGEND:-

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 1500 FIRE PIPE      | —      |
| 2.   | SPRINKLER           | ⋈      |
| 3.   | FIRE HOUSE CABINET  | ⌂      |
| 4.   | EXTERNAL FIRE HOUSE | ⌂      |
| 5.   | YARD HYDRANT        | ⌂      |
| 6.   | HYDRANT             | ⌂      |
| 7.   | BUTTERFLY VALVE     | ⌂      |
| 8.   | RUBBER BLOW         | ⌂      |
| 9.   | NON RETURN VALVE    | ⌂      |

LEGEND:  
 F-1 DIESEL DRIVEN PUMP  
 F-2 EL HYDRANT FIRE PUMP  
 F-3 JOCKEY PUMP  
 F-4 JOCKEY PUMP  
 F-5 EL SPRINKLER PUMP  
 SP SPRINKLER  
 ⋈ VALVE  
 ⋈ FLEXIBLE CONNECTION  
 ⌂ NON RETURN VALVE

#### Client:

BAREILLY SMART CITY LTD.

#### Project:

BAREILLY HAAT

#### Scale:

Not to Scale @ A3

#### North:

North

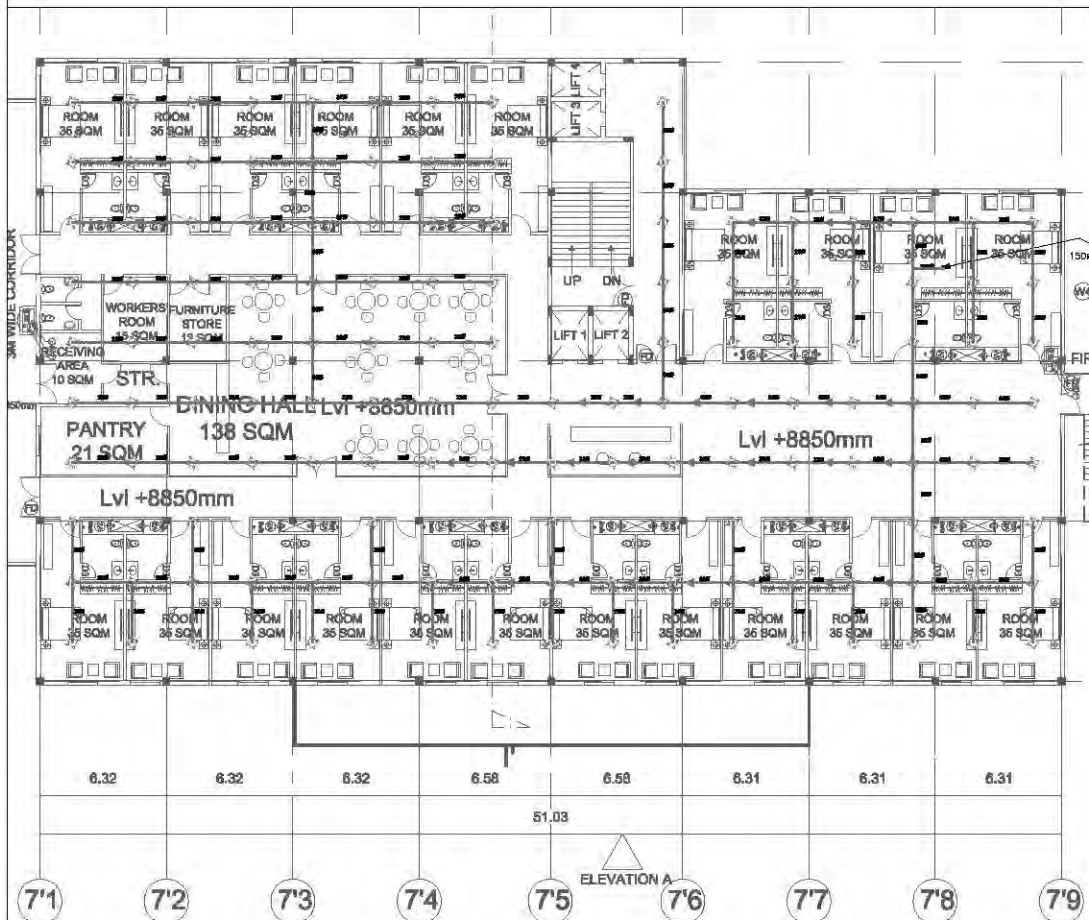
#### Drawn by:

Drawn by

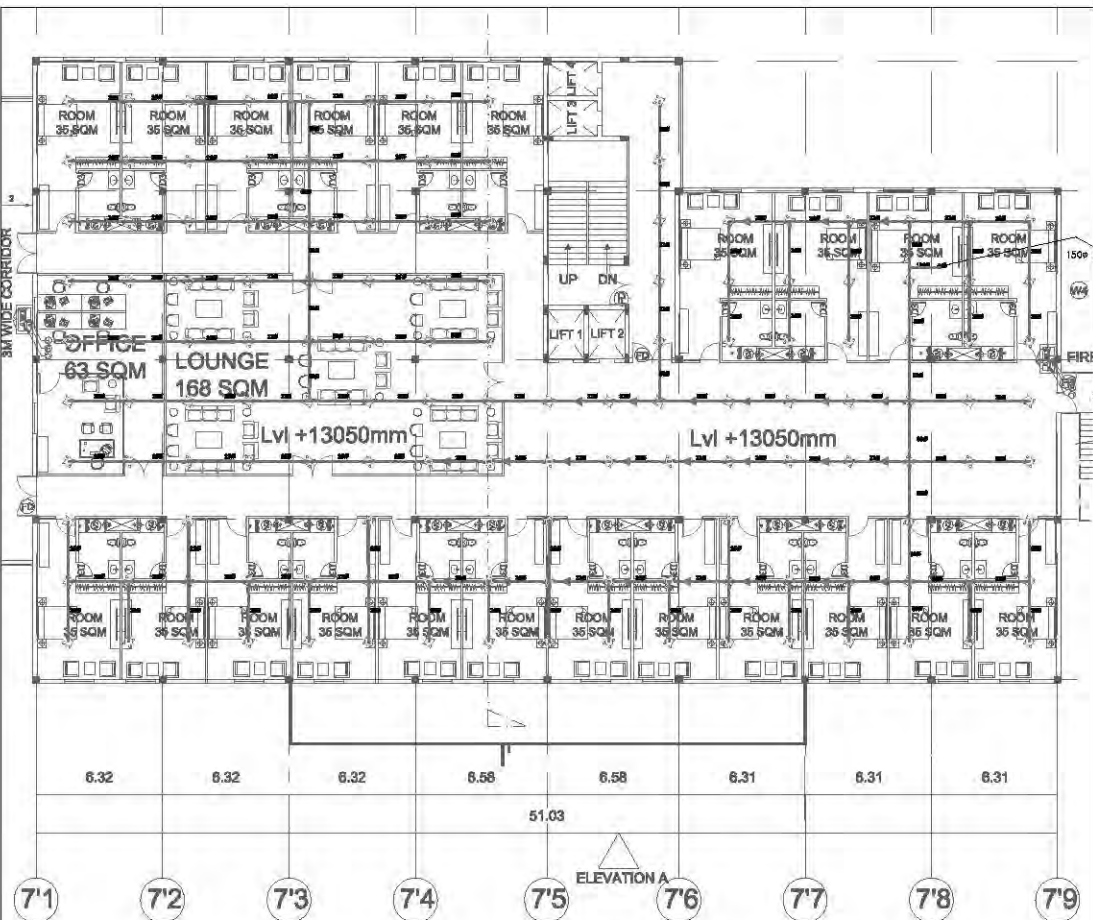
01.08.21

Title: CONVENTION CENTER  
FIREFIGHTING PLAN 2





**BUILDING 07- CONVENTION CENTER  
SECOND FLOOR**



**BUILDING 07- CONVENTION CENTER  
THIRD FLOOR**

**GENERAL NOTES:**

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc., refer relevant architectural/landscape drawings.

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**LEGEND:-**

| S.N. | DESCRIPTION         | SYMBOL |
|------|---------------------|--------|
| 1.   | 1000 FIRE PIPE      | —      |
| 2.   | SPRINKLER           | —      |
| 3.   | FIRE HOUSE CABINET  | —      |
| 4.   | EXTERNAL FIRE HOUSE | —      |
| 5.   | YARD HYDRANT        | —      |
| 6.   | Y STERNER           | —      |
| 7.   | BUTTERFLY VALVE     | —      |
| 8.   | RUBBER BLOW         | —      |
| 9.   | NON RETURN VALVE    | —      |

- LEGEND:**
- F-1 DIESEL DRIVEN PUMP
  - F-2 EL HYDRANT FIRE PUMP
  - F-3 JOCKEY PUMP
  - F-4 JOCKEY PUMP
  - F-5 EL SPRINKLER PUMP
  - SP SPRINKLER
  - VALVE
  - FLEXIBLE CONNECTION
  - NON RETURN VALVE

**Client:-**

**BAREILLY SMART CITY LTD.**

**Project:-**

**BAREILLY HAAT**

**Scale:**

Not to Scale @ A3

**North:**

**Dwg No:**

FT-07-02

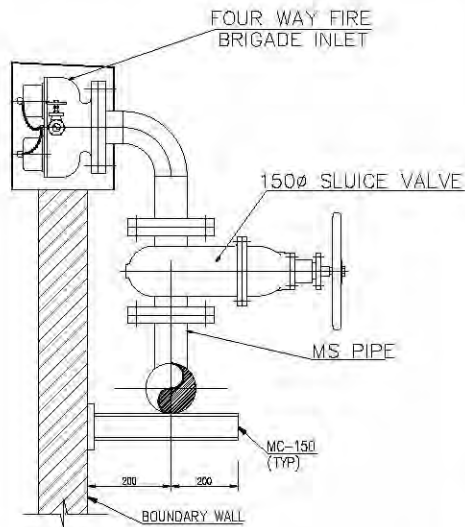
**Drawn by:**

**Checked by:**

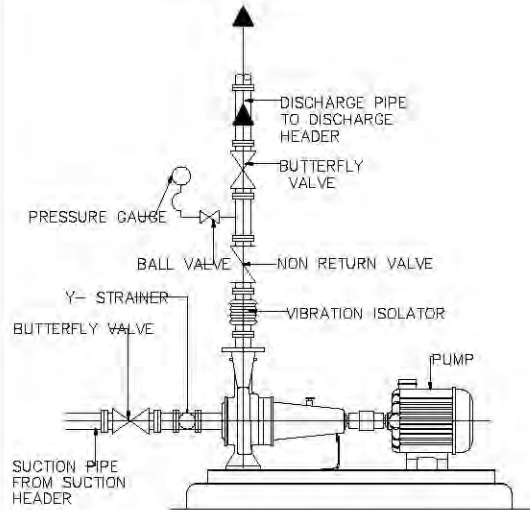
**Date:**

01.08.21

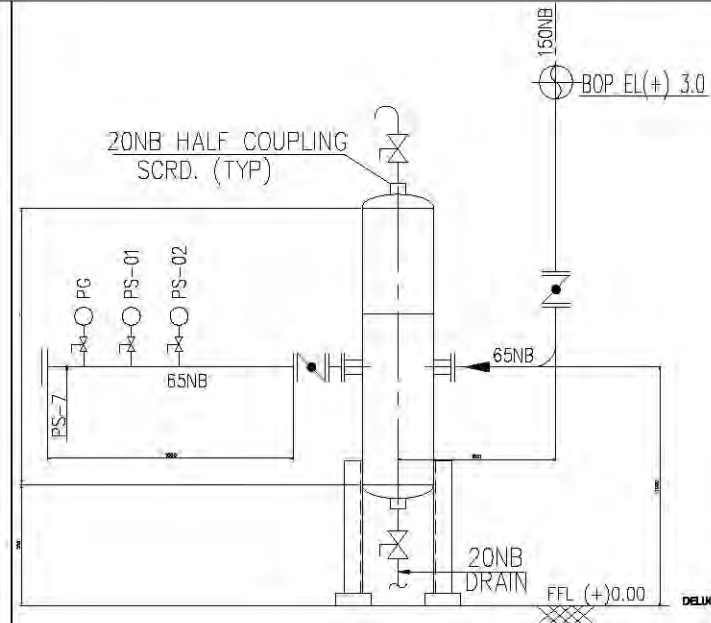
**Title: CONVENTION CENTER  
FIREFIGHTING PLAN 2**



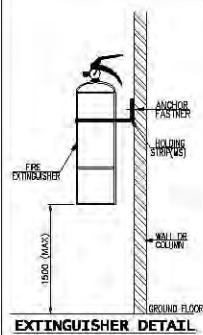
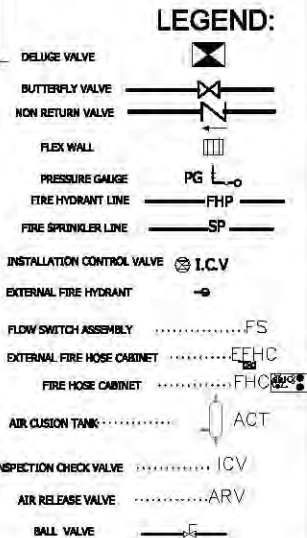
**TYPICAL SECTIONAL SIDE VIEW OF  
4 WAY FIRE BRIGADE INLET**



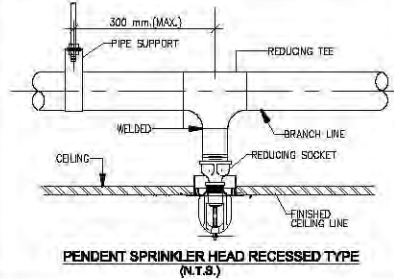
**TYPICAL DETAIL OF  
PUMP SUCTION /DISCHARGE CONNECTIONS**



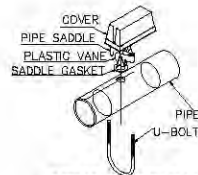
**DETAIL- AIR VESSEL**



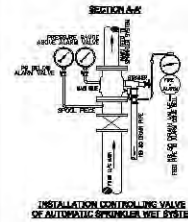
**EXTINGUISHER DETAIL**



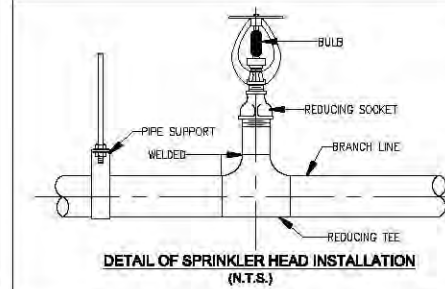
**PENDENT SPRINKLER HEAD RECESSED TYPE  
(N.T.S.)**



**DETAILS OF FLOW  
SWITCH ASSEMBLY**



**INSTALLATION CONTROLLING VALVE  
OF AUTOMATIC SPRINKLER HEAD SYSTEM**



**DETAIL OF SPRINKLER HEAD INSTALLATION  
(N.T.S.)**

**GENERAL NOTES:**

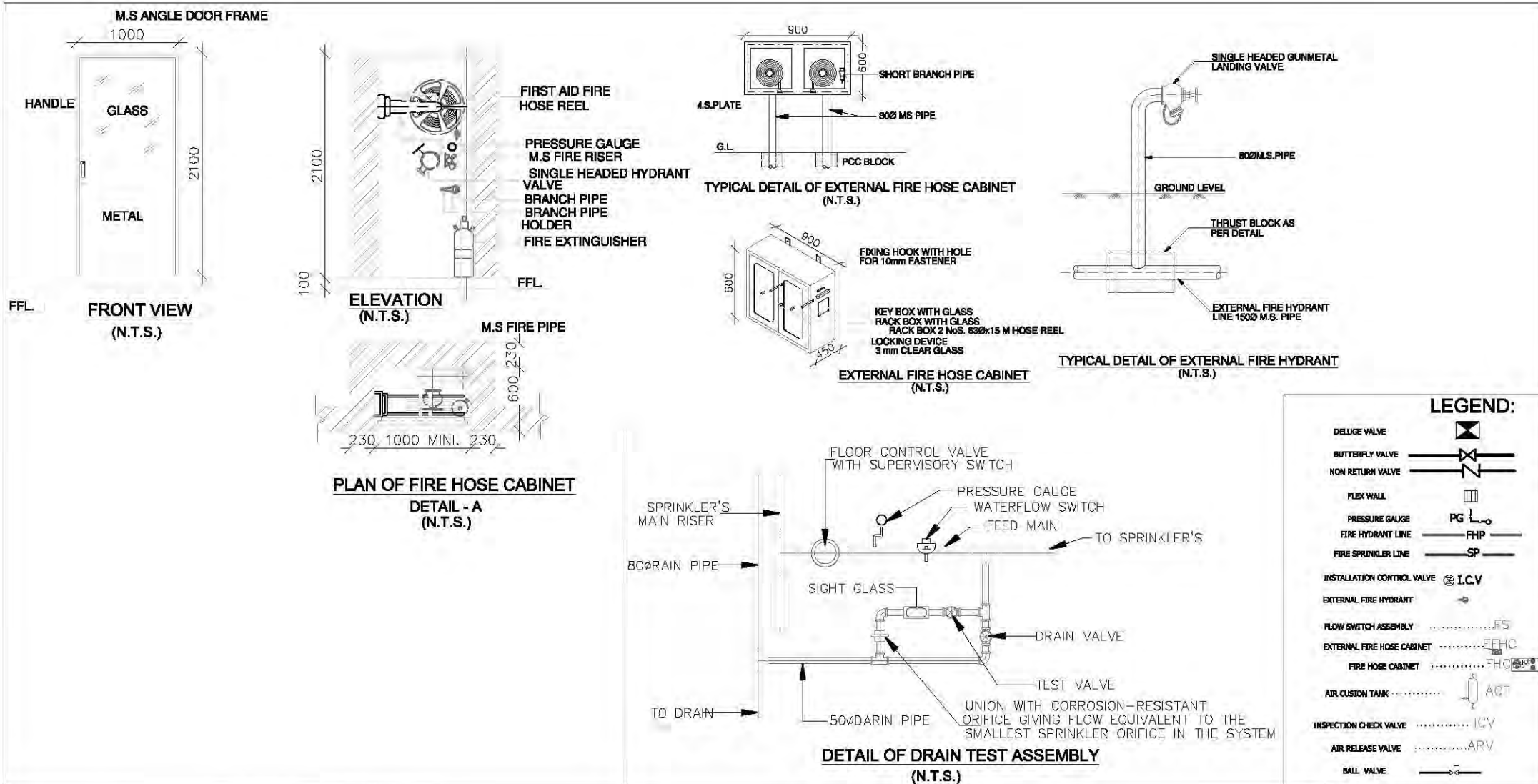
1. All dimensions are in metres and are dimensions unless otherwise specified.
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4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architectural/landscape drawings.

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|                             |                                 |                     |  |
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| Client:                     | <b>BAREILLY SMART CITY LTD.</b> |                     |  |
| Project:                    | <b>BAREILLY HAAT</b>            |                     |  |
| Drawn:<br>Not to Scale @ AS | North:                          | Dwg No:<br>FF-00-01 |  |
| Drawn by:                   | Checked by:                     | Date:<br>01.05.21   |  |

**Title: TYPICAL DETAIL OF FIRE  
BRIGADE INLETS, AIR  
VESSEL, PUMP SUCTION**



#### GENERAL NOTES:

1. All dimensions are in metres and are dimensions unless otherwise specified.
2. All levels are in millimetres and are finished unless otherwise specified. All levels are mentioned in the section.
3. Do not scale drawings. Only written dimensions shall be followed, any discrepancy noted shall be brought to the notice of the Architect prior to the execution.
4. For details such as pathways, fencing, railing, grills, lighting fixtures, street sections etc. refer relevant architecture/landscape drawings.

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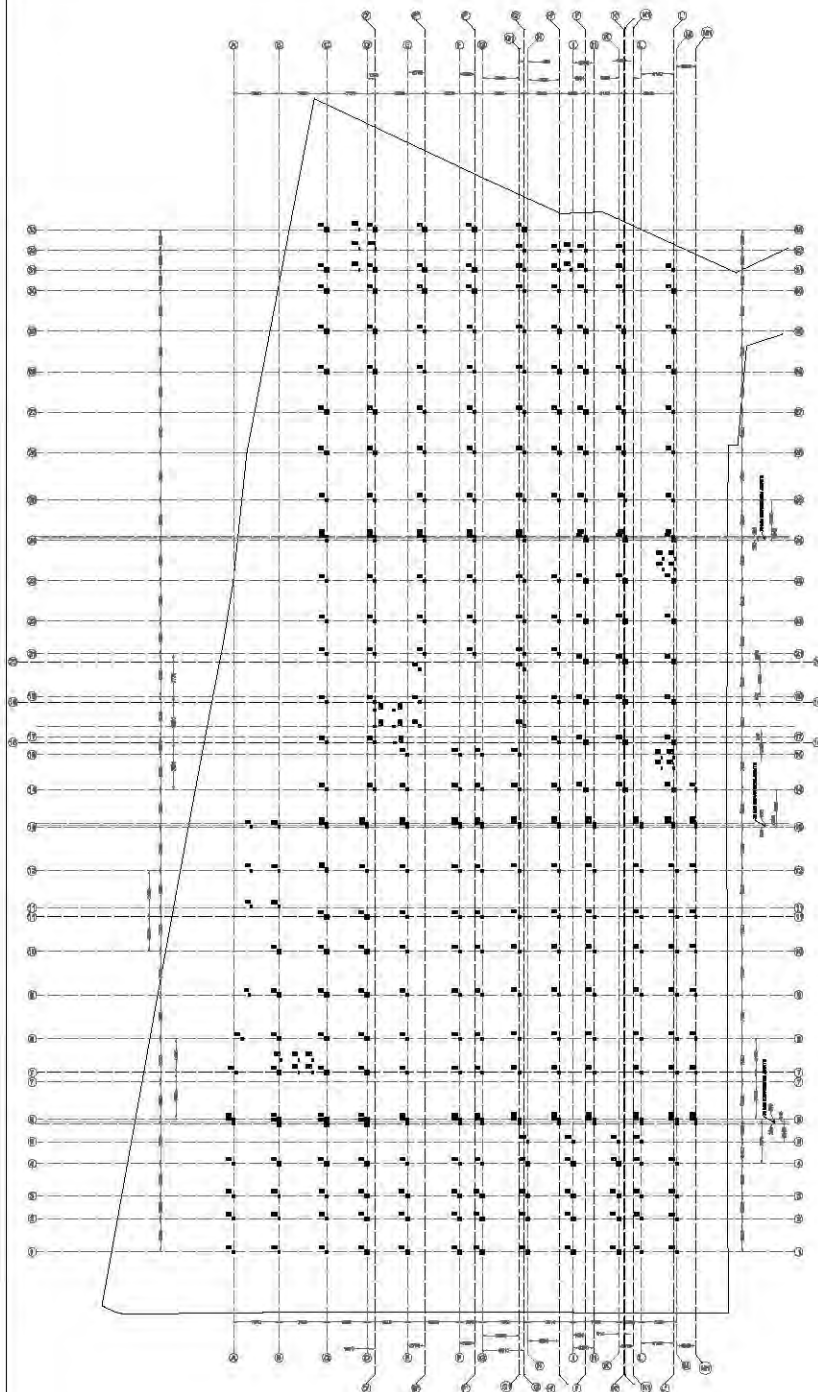
Client: **BAREILLY SMART CITY LTD.**

Project: **BAREILLY HAAT**

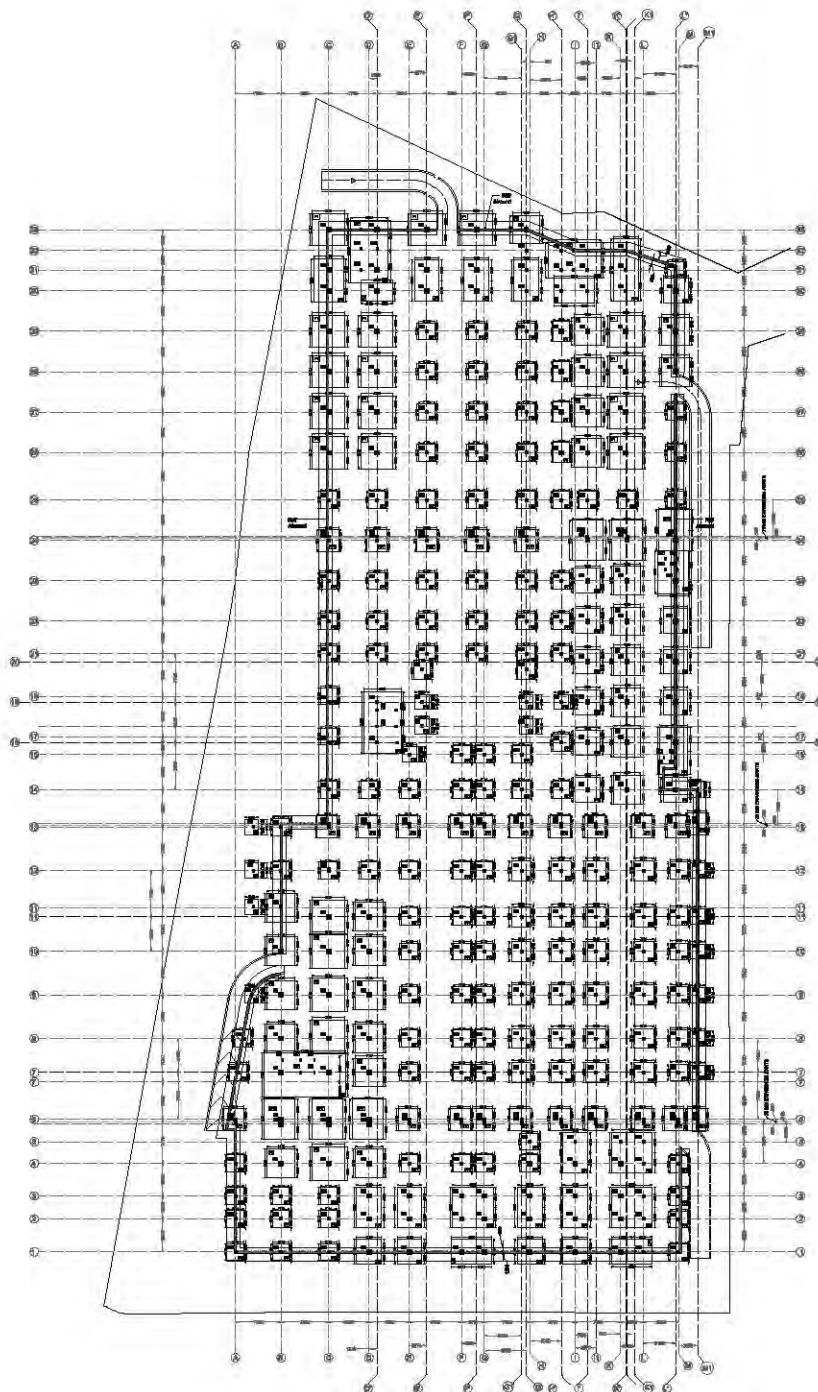
Scale: Not to Scale @ A3 North: Dwg No: FF-09-01

Drawn by: Checked by: Date: 01.02.21

**Title: TYPICAL DETAIL OF FIRE HOSE CABINET+DRAIN TEST ASSEMBLY**



**CENTRELINE PLAN FOR BASEMENT-1**



**FOOTING PLAN FOR BASEMENT-1**

## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS AND RELEVANT SPECIFICATIONS.
2. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE TO THE CENTERLINE OF THE MEMBER.
4. ALL DIMENSIONS ARE TO THE CENTERLINE OF THE MEMBER.
5. ALL DIMENSIONS ARE TO THE CENTERLINE OF THE MEMBER.
6. THE REINFORCEMENT SHALL BE COLOURED STEELING BARS (DIN 476) OR E.A.T. BARS TO 1000mm LONG WITH STRIKES NOT LESS THAN 200mm AND CONFORMING TO IS 1786-2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
 

|                   |       |
|-------------------|-------|
| (a) EXTERIOR      | 50 mm |
| (b) INTERIOR      | 40 mm |
| (c) SLAB          | 30 mm |
| (d) CHAIRS/CHAINS | 20 mm |
| (e) R.C.C. WALL   | 25 mm |
8. NORMAL COVER IS THE DEPTH OF CONCRETE COVER TO ALL STEEL REINFORCEMENT REQUIRED UNLESS SPECIFIED OTHERWISE.
9. ALL REINFORCEMENT SHALL BE LAPPED AT APPROPRIATE LAPS CLOSE TO THE JOINTS AND IN BETTER WAYS A CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
10. ALL REINFORCEMENT SHALL BE LAPPED AT APPROPRIATE LAPS CLOSE TO THE JOINTS AND IN BETTER WAYS A CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
11. REINFORCED TOP BARS SHALL BE LAPPED AT APPROPRIATE LAPS CLOSE TO THE JOINTS AND IN BETTER WAYS A CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
12. ALL DIMENSIONS SHALL BE TO THE CENTERLINE OF THE MEMBER.
13. ALL DIMENSIONS SHALL BE TO THE CENTERLINE OF THE MEMBER.
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### SPL NOTES-

1. IN NORMAL CIRCUMSTANCES AND WHERE ORDINARY PORTLAND CEMENT IS USED, THERE MAY BE MINOR CRACKS IN THE CONCRETE. SUCH CRACKS SHALL NOT BE DEEPER THAN 0.3mm AND NOT MORE THAN 100mm LONG.
2. IN CASE OF CRACKS IN THE CONCRETE, THE CRACKS SHALL BE REPAIRED WITH A CRACK REPAIR MORTAR.
3. IN CASE OF CRACKS IN THE CONCRETE, THE CRACKS SHALL BE REPAIRED WITH A CRACK REPAIR MORTAR.
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22. IN CASE OF CRACKS IN THE CONCRETE, THE CRACKS SHALL BE REPAIRED WITH A CRACK REPAIR MORTAR.

| R2       | 18-11-2020 | FOR APPROVAL |
|----------|------------|--------------|
| R1       | 03-11-2020 | FOR APPROVAL |
| RD       | 02-11-2020 | FOR APPROVAL |
| REV. NO. | DATE       | REVISION     |

CLIENT NAME: BAREILLY SMART CITY LTD.

PROJECT TITLE: URBAN HAAT BAREILLY

DRAWING TITLE : DWG NO. ST-00-01A

SCALE:- N.T.S.  
 DRAWN BY:- SHIVA  
 DESIGNED BY:- SHIVA  
 CHECKED BY:- NC  
 DATE:- 23-02-2021

DRAWING RELEASED FOR:  
☒ APPROVAL ☐ FOR TENDER  
☐ ADVANCE COPY ☐ CONSTRUCTION  
 ARCHITECT'S SIGN OWNER'S SIGN



COLUMN SCHEDULES:-

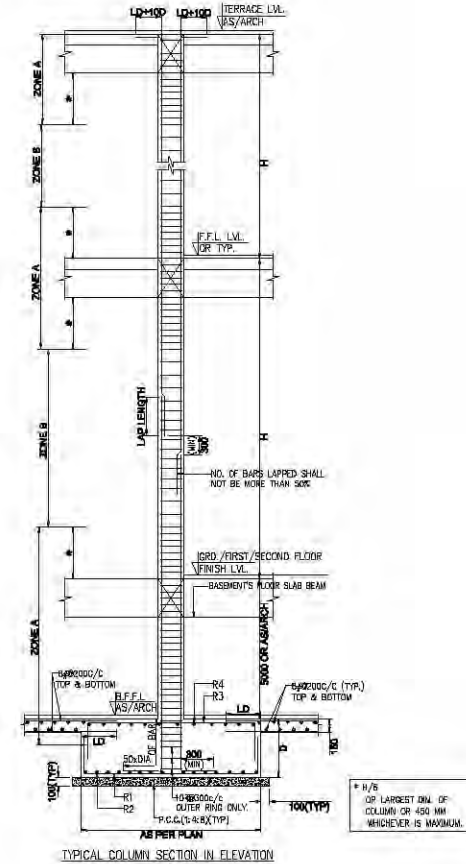
TYP. HOOK DETAIL

TYPICAL DETAIL OF LINK

DETAILS OF 135° HOOK  
TO BE PROVIDED TO ALL RINGS

GROSS TIE MUST ENGAGE PERIPHERAL TIE ALONG WITH VERTICAL BAR.

DETAIL -W



## NOTES &amp; REFERENCES

- [illegible]

- [illegible]

[illegible]

|         |            |              |
|---------|------------|--------------|
|         |            |              |
| R2      | 19-11-2020 | FOR APPROVAL |
| R1      | 03-11-2020 | FOR APPROVAL |
| R0      | 02-11-2020 | FOR APPROVAL |
| REV.NO. | DATE       | REVISION     |

|              |                          |
|--------------|--------------------------|
| CLIENT NAME: | BAREILLY SMART CITY LTD. |
|--------------|--------------------------|

|                     |
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| PROJECT TITLE       |
| URBAN HAAT BAREILLY |

|                 |           |
|-----------------|-----------|
| DRAWING TITLE : | DWG NO.   |
| COLUMN SCHEDULE | ST-00-01B |

|               |            |
|---------------|------------|
| SCALE:-       | N.T.S      |
| DRAWN BY:-    | SHIVA      |
| DESIGNED BY:- | SHIVA      |
| CHECKED BY:-  | NG         |
| DATE:-        | 23-02-2021 |

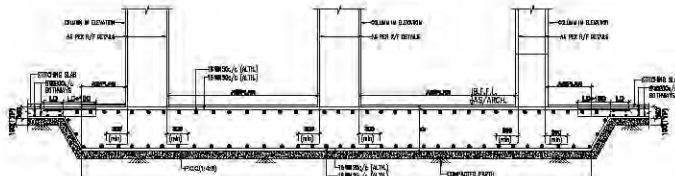
DRAWING RELEASED FOR:

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| <input type="checkbox"/> ADVANCE COPY        | <input type="checkbox"/> CONSTRUCTION |

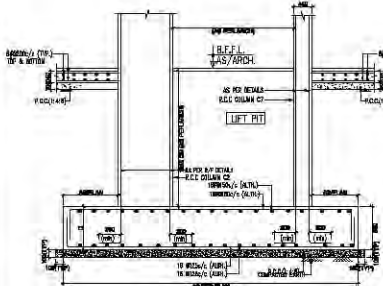
|                  |              |
|------------------|--------------|
| ARCHITECT'S SIGN | OWNER'S SIGN |
|------------------|--------------|

# FOOTING SCHEDULES -

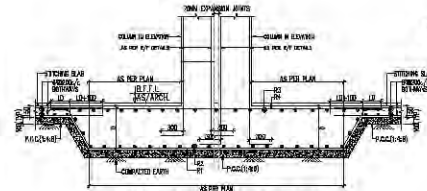
| FOOTING MARK | SIZE  |      |     |     | BOTTOM REINFORCEMENT  |                      |                       |                      | TOP REINFORCEMENT     |                      |                       |                      | REF. SEC. |
|--------------|-------|------|-----|-----|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------|
|              | L     | B    | D   | d   | ALONG THE LENGTH (R1) | ALONG THE WIDTH (R2) | ALONG THE LENGTH (R3) | ALONG THE WIDTH (R4) | ALONG THE LENGTH (R5) | ALONG THE WIDTH (R6) | ALONG THE LENGTH (R7) | ALONG THE WIDTH (R8) |           |
| F1           | 5500  | 5500 | 800 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | A-A       |
| F2           | 5000  | 3000 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | A-A       |
| F3           | 3500  | 2600 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | A-A       |
| F4           | 4000  | 4000 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | A-A       |
| F5           | 4800  | 4400 | 800 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | A-A       |
| F6           | 5200  | 5400 | 800 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | A-A       |
| F7           | 2700  | 2700 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | A-A       |
| F8           | 3200  | 3300 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | A-A       |
| CF1          | 5500  | 4000 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 1-1       |
| CF2          | 5500  | 3500 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 1-1       |
| CF3          | 7000  | 4800 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 1-1       |
| CF4          | 10000 | 4000 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 2-2       |
| CF5          | 8500  | 5800 | 900 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 3-3       |
| CF6          | 10000 | 6000 | 900 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 4-4       |
| CF7          | 13000 | 7000 | 800 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 5-5       |
| CF8          | 7000  | 5000 | 500 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 6-6       |
| CF9          | 7800  | 4500 | 500 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 7-7       |
| CF10         | 8000  | 5500 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 8-8       |
| CF11         | 8000  | 5500 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 8-8       |
| CF12         | 5000  | 5500 | 750 | --- | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 16 @ 100/c            | 16 @ 100/c           | 9-9       |
| CF13         | 3500  | 3500 | 800 | --- | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 12 @ 100/c            | 12 @ 100/c           | 9-9       |



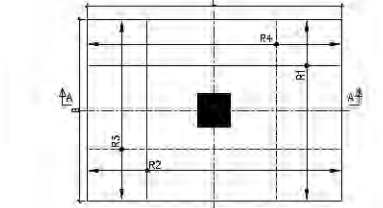
TYPICAL COMBINED FOOTING DETAILS FOR CF4 (SECTION 2-2)



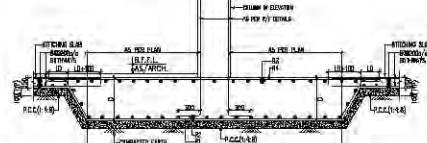
TYP. LIFT PIT DETAIL FOOTING FOR CF10 (SECTION 6-6)



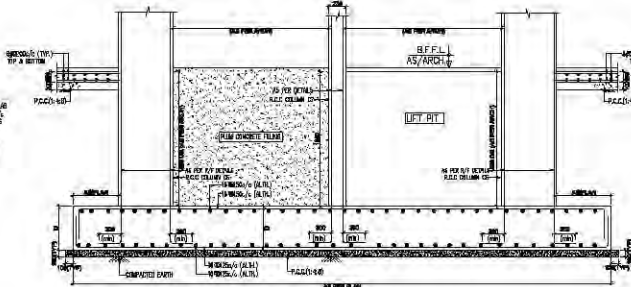
TYP. COMBINED FOOTING DETAILS FOR CF5, CF11 & CF7 (SECTION 4-4)



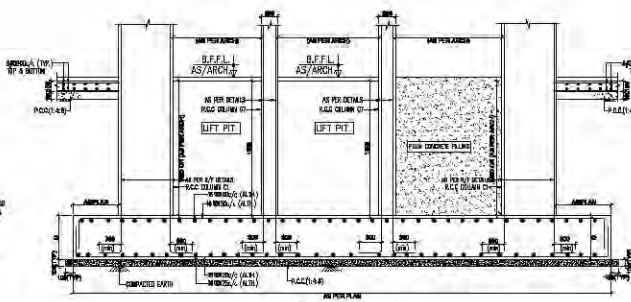
TYP. ISOLATED FOOTING PLAN FOR F1 TO F4



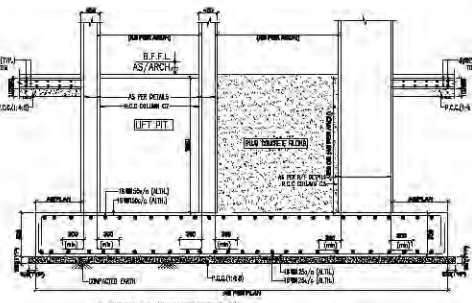
TYP. ISOLATED FOOTING DETAILS FOR F1 TO F4 (SECTION A-A)



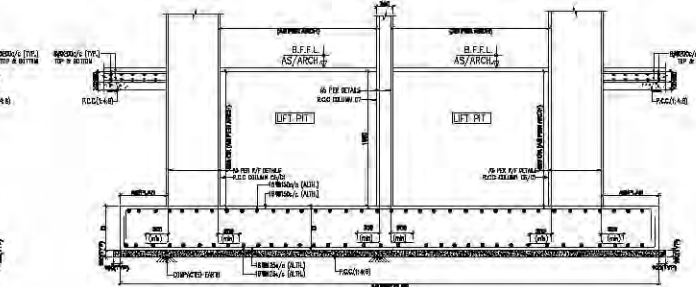
TYP. LIFT PIT DETAIL FOOTING FOR CF3 (SECTION 3-3)



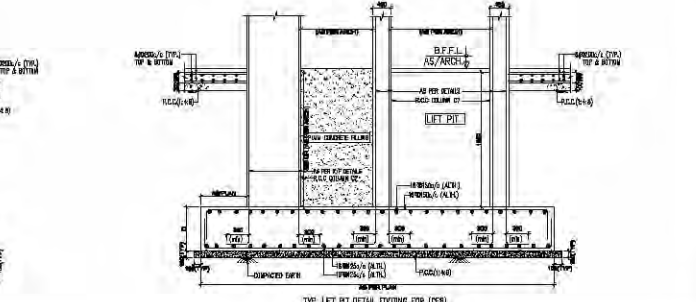
TYP. LIFT PIT DETAIL FOOTING FOR CF7 (SECTION 5-5)



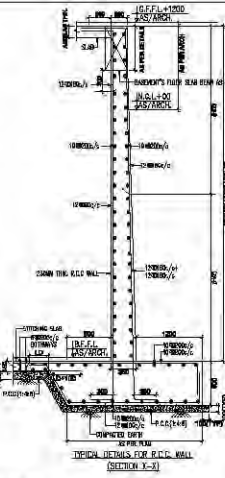
TYP. LIFT PIT DETAIL FOOTING FOR CF9 (SECTION 7-7)



TYP. LIFT PIT DETAIL FOOTING FOR CF8 (SECTION 4-4)



TYP. LIFT PIT DETAIL FOOTING FOR CF9 (SECTION 6-6)



TYPICAL DETAILS FOR R.C.C. WALL (SECTION Y-Y)

## GENERAL NOTES -

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
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## SPL. NOTES -

1. IN ALL DIMENSIONS AND MATERIALS, THE FOLLOWING SHALL BE USED UNLESS OTHERWISE SPECIFIED:
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| R2 | 16-11-2020 | FOR APPROVAL |
| R1 | 03-11-2020 | FOR APPROVAL |
| R0 | 02-11-2020 | FOR APPROVAL |

CLIENT NAME: BAREILLY SMART CITY LTD.

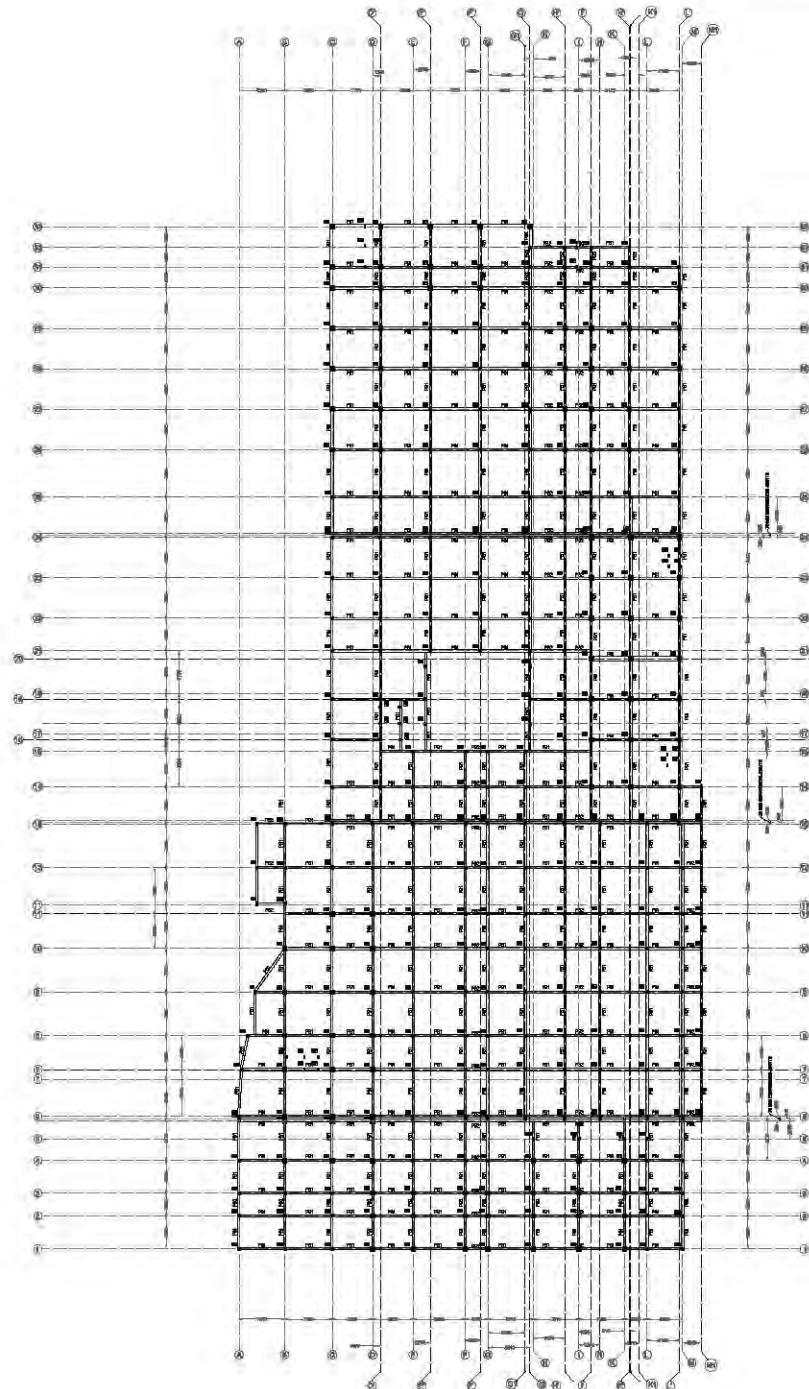
PROJECT TITLE: URBAN HAAT BAREILLY

DRAWING TITLE: FOUNDATION FOOTING DETAILS FOR TOWER & NON TOWER AREA

DWG NO: ST-00-01C

SCALE: N.T.S.  
 DRAWN BY: SHIVA  
 DESIGNED BY: SHIVA  
 CHECKED BY: NC  
 DATE: 23-02-2021

DRAWING RELEASED FOR:  
 APPROVAL FOR TENDER  
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 CONSTRUCTION  
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PLINTH BEAM PLAN FOR BASEMENT-1

GENERAL NOTES -

NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS, MAY BE MODIFIED.

2. ALL DIMENSIONS ARE TO THE CENTER LINE OF CONSTRUCTION.

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SPL NOTES-

1. IN MINIMAL CIRCUMSTANCES AND WHERE NECESSARY PORTLAND CEMENT IS USED, IT SHALL BE USED IN THE FOLLOWING PROPORTIONS:

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REVISION

R2

18-11-2020

FOR APPROVAL

R1

03-11-2020

FOR APPROVAL

R0

02-11-2020

FOR APPROVAL

REV. NO.

DATE

REVISION

CLIENT NAME:

BARRELLY SMART CITY LTD.

PROJECT TITLE

URBAN HAAT BARRELLY

DRAWING TITLE :

PLINTH BEAM LAYOUT PLAN

DWG NO.

ST-00-010

SCALE:-

N.T.S

DRAWN BY:-

SHIVA

DESIGNED BY:-

SIVA

CHECKED BY:-

NC

DATE:-

23-02-2021

DRAWING RELEASED FOR:

APPROVAL

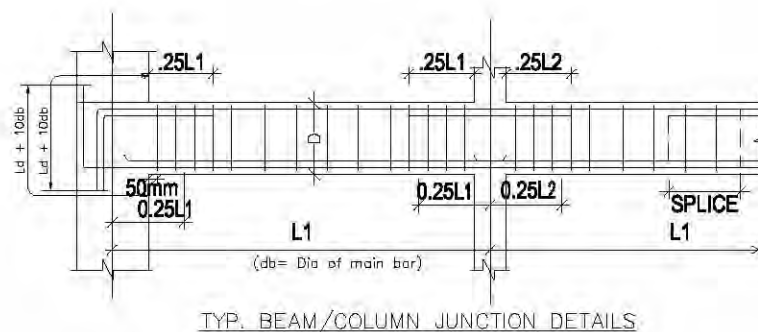
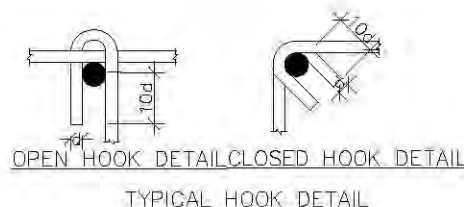
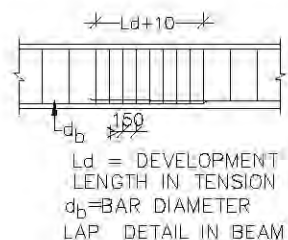
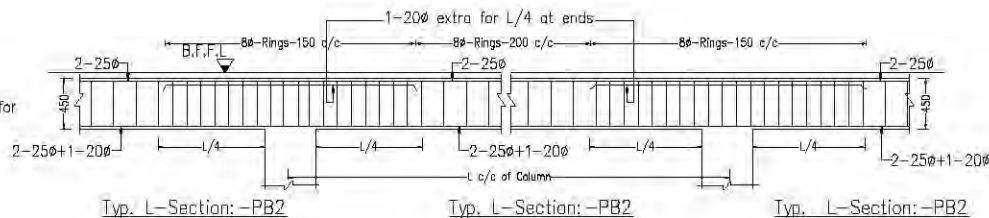
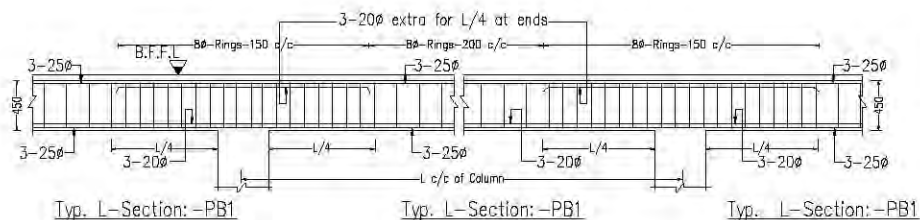
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## TYPICAL PLINTH BEAM DETAIL FOR BASEMENT-1 & 2

GENERAL NOTES -

## NOTES &amp; REFERENCES

- [illegible]

## SPI NOTES-

- [illegible]

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| R2      | 19-11-2020 | FOR APPROVAL |
| R1      | 03-11-2020 | FOR APPROVAL |
| RD      | 02-11-2020 | FOR APPROVAL |
| REV.NO. | DATE       | REVISION     |

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| CLIENT NAME: |  |
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BAREILLY SMART CITY LTD.

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| PROJECT TITLE |
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URBAN HAAT BAREILLY

DRAWING TITLE :

### PLINTH BEAM DETAILS

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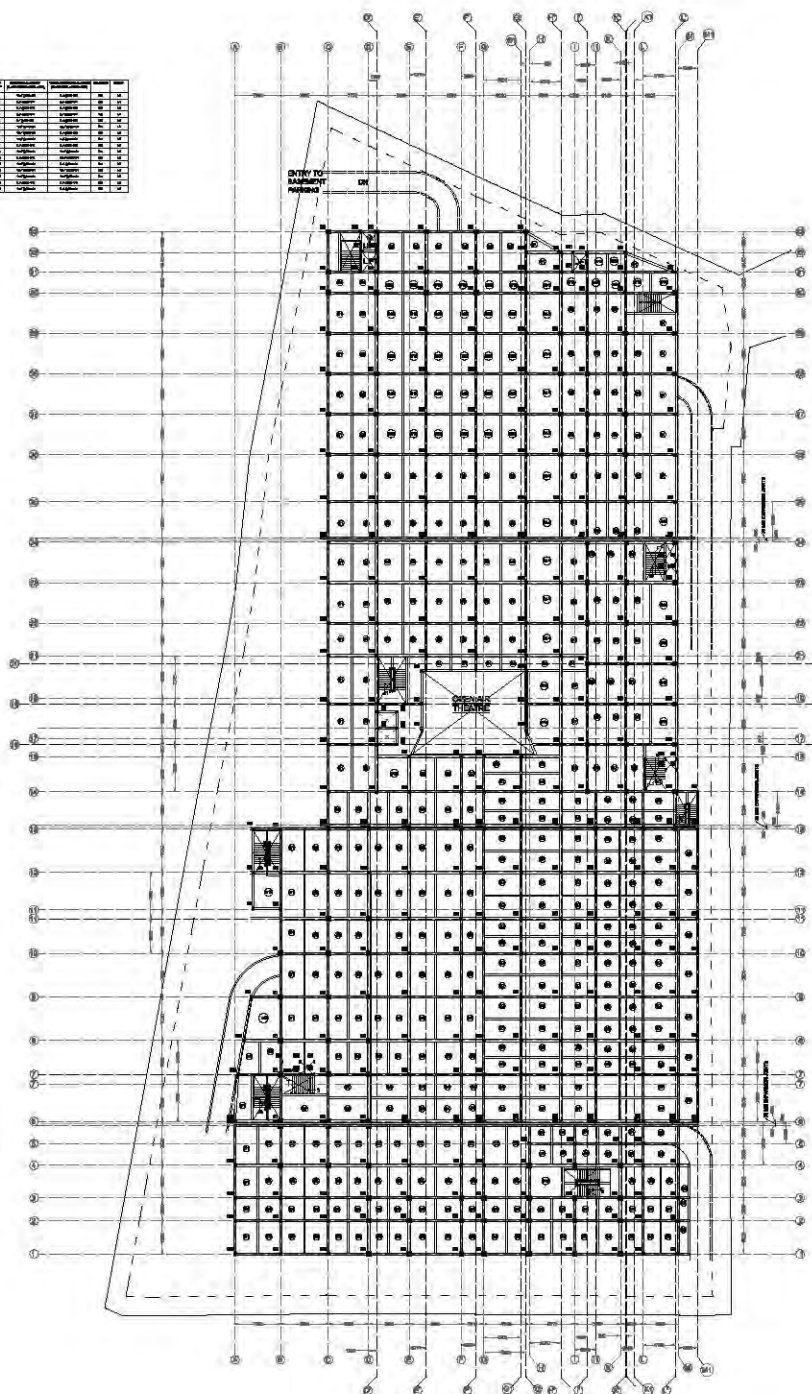
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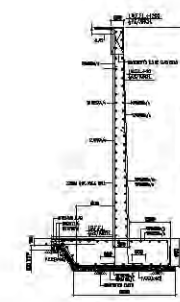
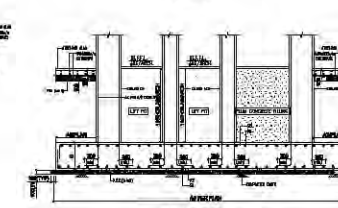
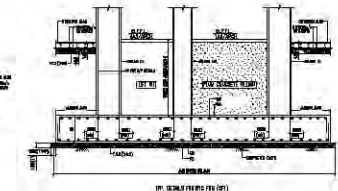
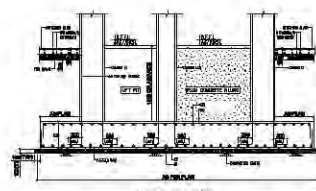
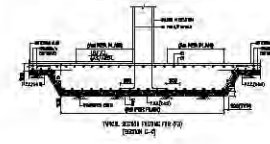
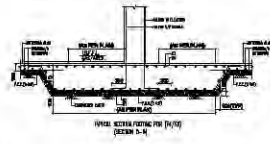
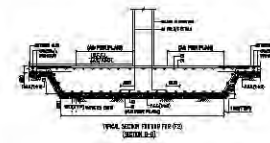
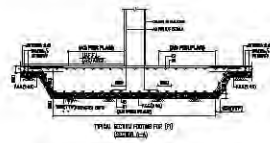
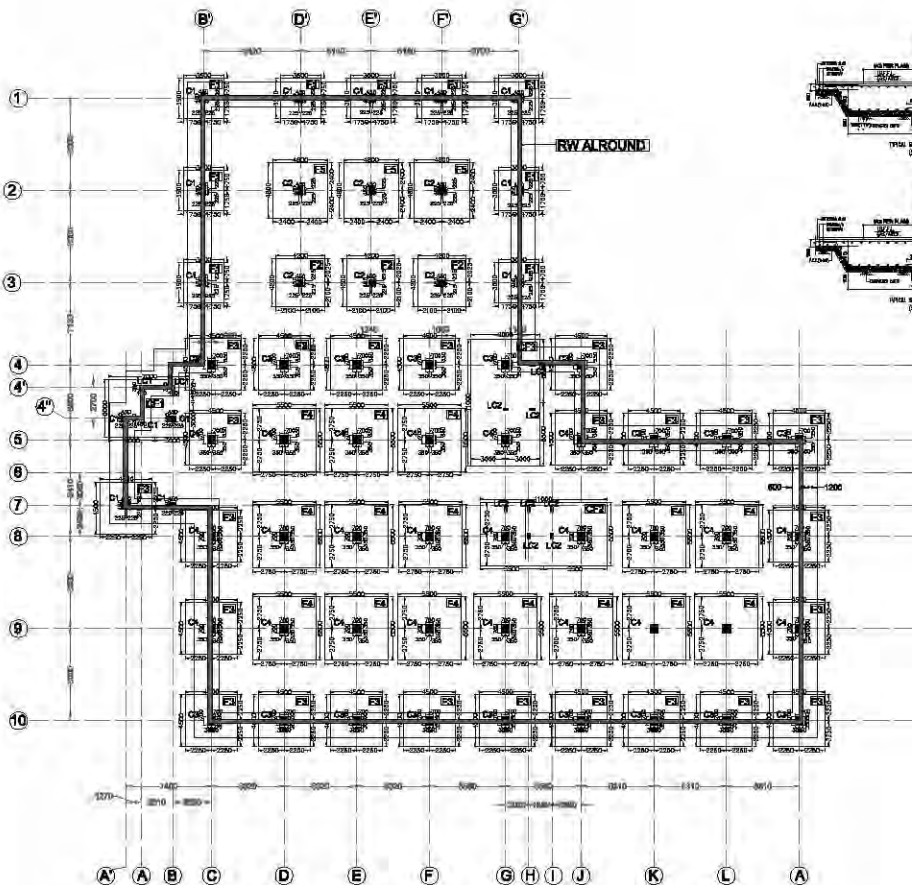
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ARCHITECT'S SIGNATURE \_\_\_\_\_

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FOOTING SCHEDULES:-

| FOOTING MARK | SIZE  |      |     | BOTTOM REINFORCEMENT  |                      |                       | TOP REINFORCEMENT     |                      |                      | REF. SEC. |
|--------------|-------|------|-----|-----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------|
|              | L     | B    | D   | ALONG THE LENGTH (mm) | ALONG THE WIDTH (mm) | ALONG THE LENGTH (mm) | ALONG THE LENGTH (mm) | ALONG THE WIDTH (mm) | ALONG THE WIDTH (mm) |           |
| F1           | 3500  | 3500 | 600 | 12.0 @ 250/c          | 12.0 @ 250/c         | 12.0 @ 250/c          | 12.0 @ 250/c          | 12.0 @ 250/c         | 12.0 @ 250/c         | A-A       |
| F2           | 4200  | 4200 | 750 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | B-B       |
| F3           | 4500  | 4500 | 750 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | C-C       |
| F4           | 3500  | 3500 | 600 | 12.0 @ 250/c          | 12.0 @ 250/c         | 12.0 @ 250/c          | 12.0 @ 250/c          | 12.0 @ 250/c         | 12.0 @ 250/c         | D-D       |
| F5           | 4600  | 4600 | 750 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | E-E       |
| F6           | 7500  | 5000 | 900 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | F-F       |
| F7           | 11000 | 3500 | 750 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | G-G       |
| F8           | 11000 | 3500 | 600 | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c          | 16.0 @ 300/c          | 16.0 @ 300/c         | 16.0 @ 300/c         | H-H       |

## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS, ANY SCHEDULES & SPECIFICATIONS.
2. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
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### SPL. NOTES:-

1. IN ALL CASES, THE REINFORCEMENT SHALL BE PLACED AS SHOWN IN THE DRAWING.
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|----|------------|--------------|
| R2 | 16-11-2020 | FOR APPROVAL |
| R1 | 03-11-2020 | FOR APPROVAL |
| R0 | 02-11-2020 | FOR APPROVAL |

REV. NO. DATE REVISION

CLIENT NAME: BAREILLY SMART CITY LTD.

PROJECT TITLE: URBAN HAAT BAREILLY

DRAWING TITLE: BASEMENT 2 FOUNDATION LAYOUT

DWG NO. ST-00-02B

SCALE:- N.T.S.

DRAWN BY:- SHWA

DESIGNED BY:- SIVA

CHECKED BY:- NG

DATE:- 30-01-2021

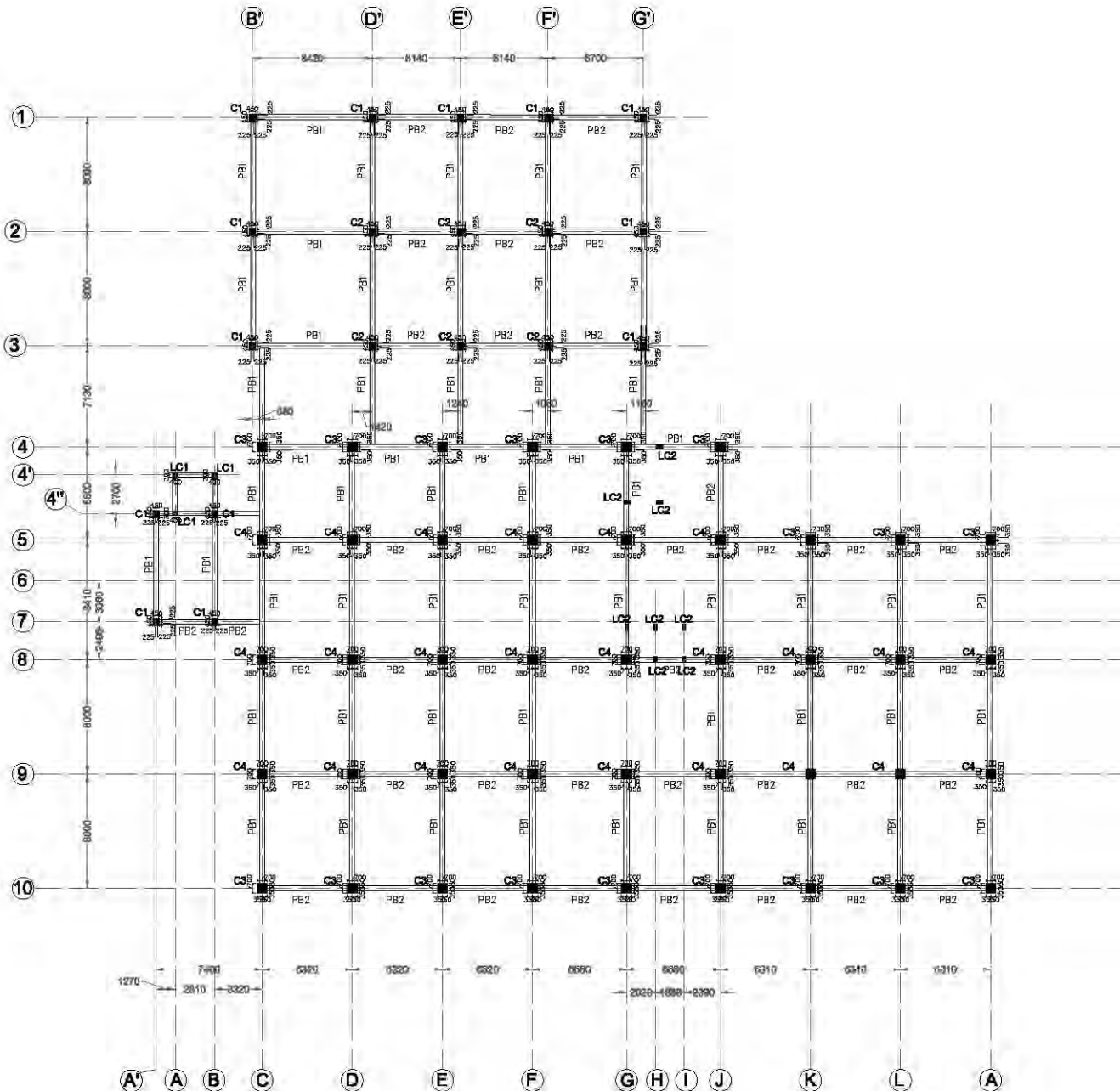
DRAWING RELEASED FOR:

APPROVAL FOR TENDER

ADVANCE COPY FOR CONSTRUCTION

ARCHITECT'S SIGN OWNER'S SIGN

# FOUNDATION LAYOUT



# PLINTH BEAM LAYOUT

## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS, ANY INSTRUMENTAL PLANS, AND ANY OTHER DOCUMENTS TO THE PROJECT.
2. ALL DIMENSIONS ARE IN METERS.
3. IN ANY CASE, THE DIMENSIONS SHALL BE AS SHOWN ON THE DRAWING.
4. DIMENSIONS OF WALLS WITH RELEVANT AREA SHALL BE AS SHOWN ON THE DRAWING.
5. FOR ALL DIMENSIONS, THE DIMENSIONS SHALL BE AS SHOWN ON THE DRAWING.
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### SPL. NOTES-

1. IN ALL DIMENSIONS, THE DIMENSIONS SHALL BE AS SHOWN ON THE DRAWING.
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| R2       | 16-11-2020 | FOR APPROVAL |
| R1       | 03-11-2020 | FOR APPROVAL |
| R0       | 02-11-2020 | FOR APPROVAL |
| REV. NO. | DATE       | REVISION     |

CLIENT NAME: BAREILLY SMART CITY LTD.

PROJECT TITLE: URBAN HAAT BAREILLY

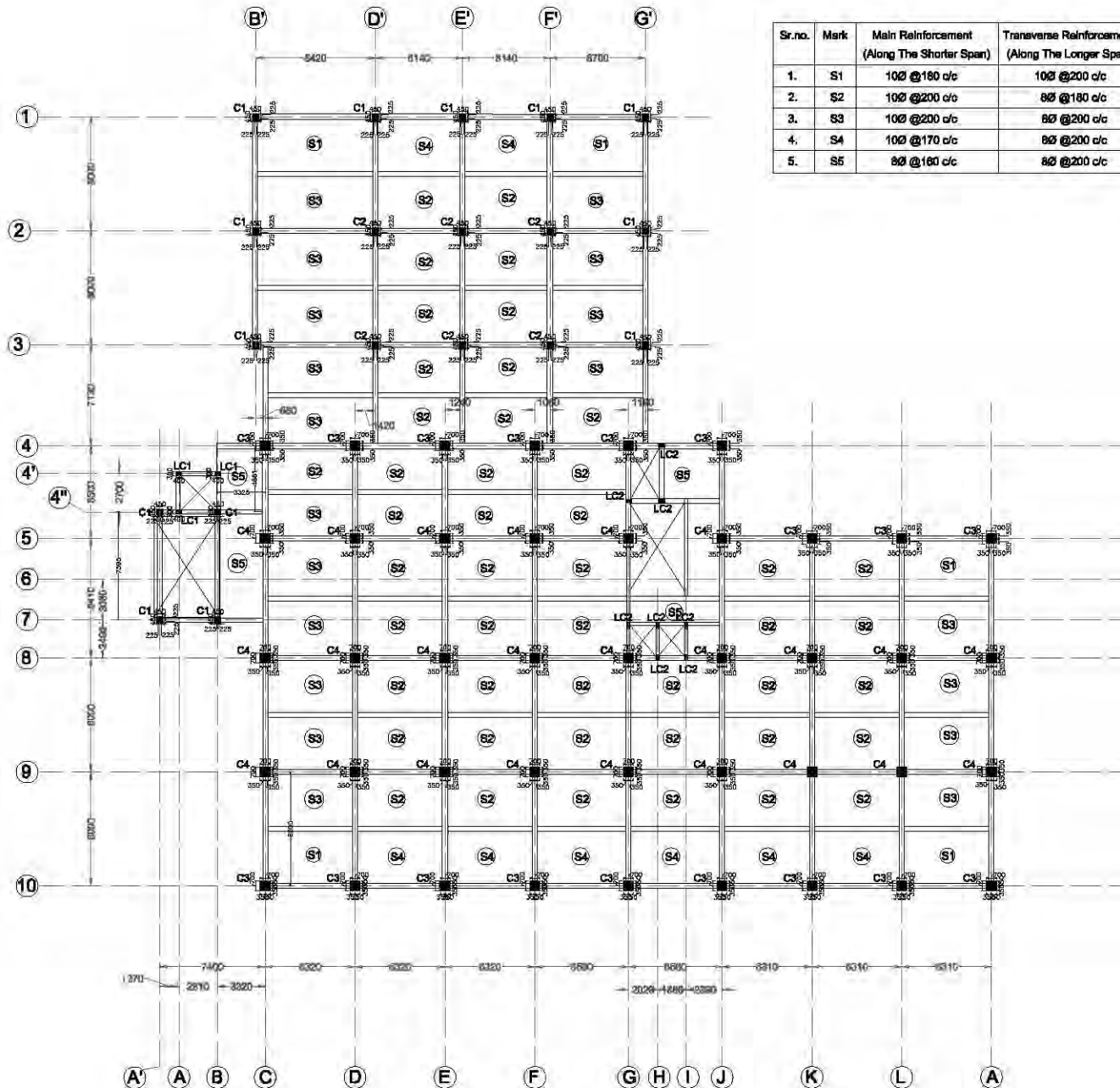
DRAWING TITLE: BASEMENT 2 PLINTH BEAM LAYOUT

|               |            |
|---------------|------------|
| SCALE:-       | N.T.S      |
| DRAWN BY:-    | SHIVA      |
| DESIGNED BY:- | SIVA       |
| CHECKED BY:-  | MC         |
| DATE:-        | 30-01-2021 |

DWG NO. ST-00-020

|                       |                  |
|-----------------------|------------------|
| DRAWING RELEASED FOR: | FOR TENDER       |
| APPROVAL              | FOR CONSTRUCTION |
| ADVANCE COPY          |                  |
| ARCHITECT'S SIGN      | OWNER'S SIGN     |





| Sr.no. | Mark | Main Reinforcement<br>(Along The Shorter Span) | Transverse Reinforcement<br>(Along The Longer Span) | Thickness | Bentup |
|--------|------|--|---|-----------|--------|
| 1.     | S1   | 100 @180 c/c                                   | 100 @200 c/c  | 200       | L/4    |
| 2.     | S2   | 100 @200 c/c                                   | 80 @180 c/c   | 200       | L/4    |
| 3.     | S3   | 100 @200 c/c                                   | 80 @200 c/c   | 200       | L/4    |
| 4.     | S4   | 100 @170 c/c                                   | 80 @200 c/c   | 200       | L/4    |
| 5.     | S5   | 80 @180 c/c                                    | 80 @200 c/c   | 200       | L/4    |

**GENERAL NOTES -**

NOTES & REFERENCES

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**SPL. NOTES-**

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**CLIENT NAME:** BAREILLY SMART CITY LTD.

**PROJECT TITLE:** URBAN HAAT BAREILLY

**DRAWING TITLE :** BASEMENT 2- SLAB BEAM LAYOUT OF BASEMENT FLOOR SLAB

**DWG NO.:** ST-00-02F

**SCALE:-** N.T.S

**DRAWN BY:-** SHIVA

**DESIGNED BY:-** SIVA

**CHECKED BY:-** NG

**DATE:-** 30-01-2021

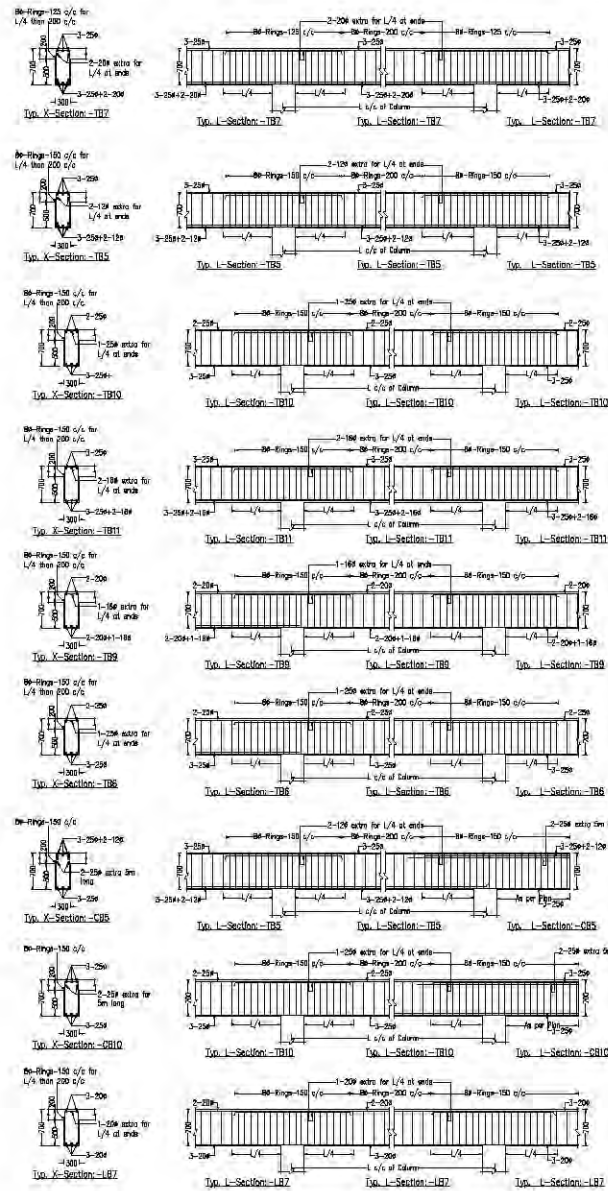
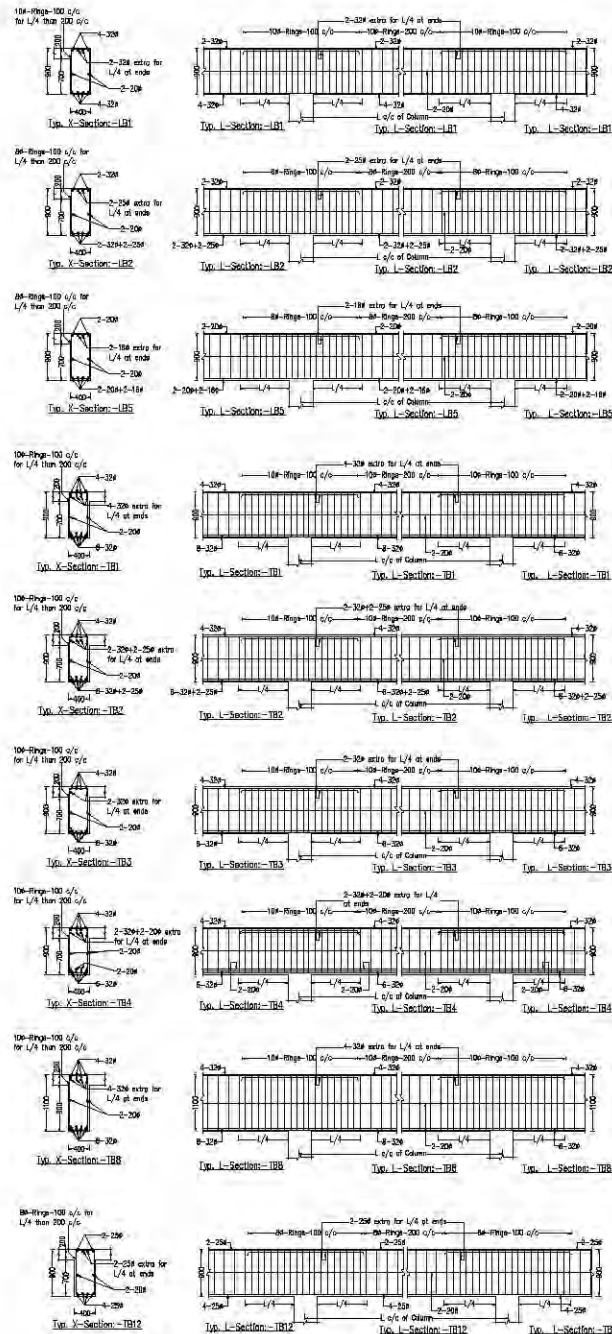
**DRAWING RELEASED FOR:**

☒ APPROVAL ☐ FOR TENDER

☐ ADVANCE COPY ☐ CONSTRUCTION

**ARCHITECT'S SIGN** **OWNER'S SIGN**

**BASEMENT FLOOR SLAB BEAM LAYOUT**



## TYPICAL BEAMS DETAILS FOR SLAB FOR BASEMENT 1 AND 2

### GENERAL NOTES -

#### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS. ANY DISCREPANCY SHALL BE RESOLVED TO THE FAVOR OF CONSULTANT.
2. ALL DIMENSIONS & LOCATIONS ARE IN METERS.
3. DO NOT SCALE ANY DIMENSIONS.
4. COVERING LOCATIONS OF BEAMS WITH RELEVANT AREA DRGS.
5. FOR RCC WORK, THE DESIGN MIX SHALL CONFORM TO IS 456 & IS 2000 OR AS SPECIFIED IN RELEVANT Dwg.
6. THE REINFORCEMENT SHALL BE CORRODED IN ACCORDANCE WITH IS 456 & IS 2000. MINIMUM BARS SHALL BE PROVIDED IN ALL DIRECTIONS.
7. THE CLEAN SURFACE OF THE REINFORCEMENT SHALL BE AS FOLLOWS:
  - (a) FERRITIZED: 50 mm, surface in contact with earth
  - (b) GALVANIZED: 40 mm
  - (c) BLENDED (Hot & Cold): 30 mm max. cover 25mm
  - (d) GALVANIZED: 20 mm
  - (e) GALVANIZED/COATED: 20 mm
  - (f) R.C.C. WALL: 25 mm
8. MINIMUM COVER IS THE DEPTH OF CONCRETE COVER TO ALL STEEL REINFORCEMENT REQUIRED UNLESS NEW STRUTTING.
9. NOT MORE THAN ONE OF THE BARS SHALL BE LAPPED AT ANY SECTION LONGER THAN 1.5 M. AND SPACING BETWEEN LAPS SHALL BE AS FOLLOWS:
  - (a) TOP BARS: 300 mm
  - (b) BOTTOM BARS: 400 mm
10. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS. MINIMUM SPACING BETWEEN SPACERS SHALL BE AS FOLLOWS:
  - (a) TOP BARS: 300 mm
  - (b) BOTTOM BARS: 400 mm
11. ALL DIMENSIONS MUST BE CHECKED WITH PROJECT'S DESIGN IN CASE OF ANY DISCREPANCY. DIMENSIONS SHALL BE PROVIDED BY CONSULTANT ON THE BASIS OF SCHEME PROVIDED BY CONTRACTOR.
12. TOP AND BOTTOM EXTRA BARS IN BEAMS TO BE EXTENDED BEYOND THE FACE OF SUPPORT AS SHOWN IN THE RELEVANT SECTION DRGS.
13. THE FIRST STRUTTING IN BEAMS SHALL BE AT A DISTANCE OF 500 mm FROM THE LEFT FACE OF THE SPECIAL REINFORCEMENT. REINFORCEMENT SHALL BE PROVIDED THROUGH THE JUNCTION OF THE SPECIAL REINFORCEMENT IN BEAMS.
14. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
15. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
16. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
17. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
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21. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
22. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).

### SPL. NOTES-

1. IN ALL DIMENSIONS AND LOCATIONS, THE REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS. MINIMUM SPACING BETWEEN SPACERS SHALL BE AS FOLLOWS:
  - (a) TOP BARS: 300 mm
  - (b) BOTTOM BARS: 400 mm
2. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
3. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
4. PROVIDE ONE STEEL BAR EXTRA TOP BARS IN BEAMS (1/4 BARS).
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| R2       | 16-11-2020 | FOR APPROVAL |
| R1       | 03-11-2020 | FOR APPROVAL |
| RD       | 02-11-2020 | FOR APPROVAL |
| REV. NO. | DATE       | REVISION     |

CLIENT NAME: BAREILLY SMART CITY LTD.

PROJECT TITLE: URBAN HAAT BAREILLY

|                      |           |
|----------------------|-----------|
| DRAWING TITLE :      | DWG NO.   |
| TYPICAL BEAM DETAILS | ST-DO-01G |

|               |            |
|---------------|------------|
| SCALE:-       | N.T.S.     |
| DRAWN BY:-    | SHIVA      |
| DESIGNED BY:- | SIVA       |
| CHECKED BY:-  | HC         |
| DATE:-        | 30-01-2021 |

|                       |              |
|-----------------------|--------------|
| DRAWING RELEASED FOR: | FOR TENDER   |
| ADVANCE COPY          | CONSTRUCTION |
| ARCHITECT'S SIGN      | OWNER'S SIGN |

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| DRAWING RELEASED FOR:                        |                                       |
| <input checked="" type="checkbox"/> APPROVAL | <input type="checkbox"/> FOR TENDER   |
| ADVANCE COPY                                 | <input type="checkbox"/> CONSTRUCTION |
| APPLICANT'S SIGN                             | OWNER'S SIGN                          |

| S/D/C | SLUG NAME | MAIN PERFORMANCE (L/1000 THERMAL SPIN) | TRANSFORMER PERFORMANCE (L/1000 THERMAL SPIN) | TRANSFORMER | WINDING |
|-------|-----------|--|---|-------------|---------|
| 1     | 3H        | 400-500°C                              | 400-500°C                                     | 300         | 1A      |
| 2     | 3H        | 400-500°C                              | 400-500°C                                     | 300         | 1A      |
| 3     | 3H        | 400-500°C                              | 400-500°C                                     | 300         | 1A      |
| 4     | 3H        | 400-500°C                              | 400-500°C                                     | 300         | 1A      |
| 5     | 3H        | 400-500°C                              | 400-500°C                                     | 300         | 1A      |

DINNER'S SIGN



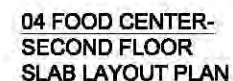
| DATE | IN. OF<br>SPRINT | HOW MANY CHAIRS<br>GAINED THE LATEST SPRINT | THE LATEST SPRINT CHAIRS<br>GAINED THE LATEST SPRINT | THE LATEST<br>SPRINT | THE LATEST<br>SPRINT |
|------|------------------|---|--|----------------------|----------------------|
| 1    | 10               | 10 IN. SPRINT                               | 10 IN. SPRINT  | 100                  | 100                  |
| 2    | 10               | 10 IN. SPRINT                               | 10 IN. SPRINT  | 100                  | 100                  |
| 3    | 10               | 10 IN. SPRINT                               | 10 IN. SPRINT  | 100                  | 100                  |

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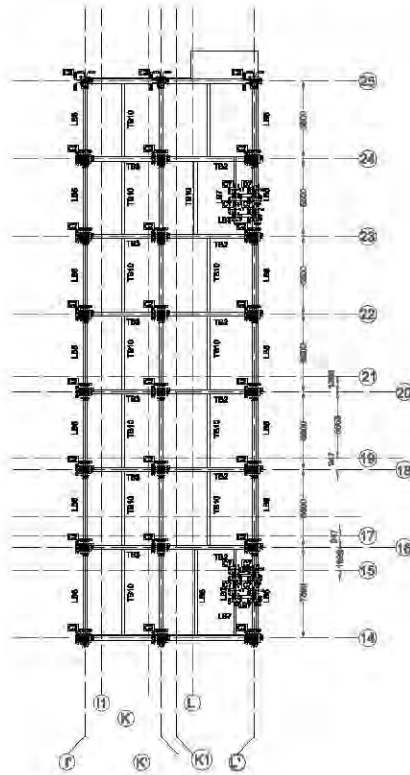


| Q. NO. | Q. NO. | Q. NO. (HINDI) | Q. NO. (HINDI) | Q. NO. | Q. NO. |
|--------|--------|----------------|----------------|--------|--------|
| 1      | 1      | 1              | 1              | 1      | 1      |
| 2      | 2      | 2              | 2              | 2      | 2      |
| 3      | 3      | 3              | 3              | 3      | 3      |

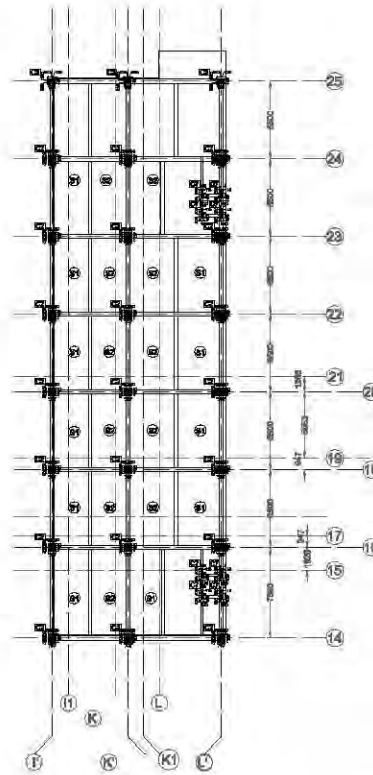
|                  |              |
|------------------|--------------|
| ARCHITECT'S SIGN | OWNER'S SIGN |
|------------------|--------------|



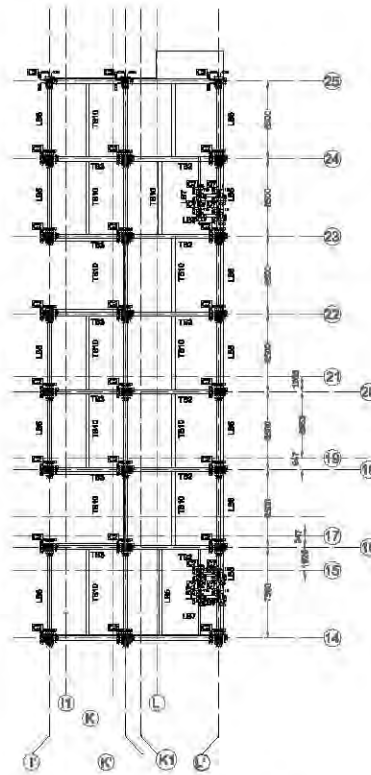
# BUILDING 06- HANDICRAFTS SHOPPING CENTRE- G+1



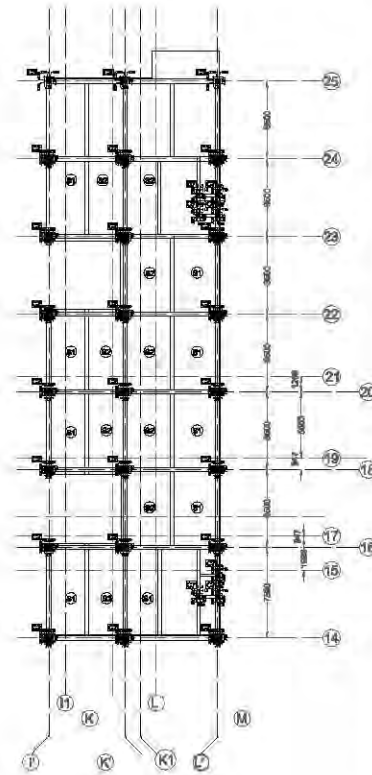
**SHOPPING CENTER HANDICRAFTS-  
GROUND FLOOR  
BEAM LAYOUT**



**02 SHOPPING CENTER HANDICRAFTS-  
GROUND FLOOR  
SLAB LAYOUT**



**02 SHOPPING CENTER HANDICRAFTS-  
FIRST FLOOR  
BEAM LAYOUT**



**02 SHOPPING CENTER HANDICRAFTS-  
FIRST FLOOR  
SLAB LAYOUT**

| NO. | SLAB NO. | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) |
|-----|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1   | 01       | 150 mm                              | 150 mm                              | 150 mm                              | 150 mm                              |
| 2   | 02       | 150 mm                              | 150 mm                              | 150 mm                              | 150 mm                              |

| NO. | SLAB NO. | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) | SLAB THICKNESS (AS PER THE DRAWING) |
|-----|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1   | 01       | 150 mm                              | 150 mm                              | 150 mm                              | 150 mm                              |
| 2   | 02       | 150 mm                              | 150 mm                              | 150 mm                              | 150 mm                              |

## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THE DRAWING IN CONNECTION WITH RELEVANT ARCHITECTURAL DRAWINGS, ANY DISCREPANCY IF FOUND SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY.
2. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
3. OF THE SCALE AND DIMENSIONS.
4. DIMENSIONS OF WALLS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
5. THE WALLS SHALL BE CONSTRUCTED WITH 200 mm THICK CONCRETE BLOCKS.
6. THE CONCRETE SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
7. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
8. THE FOUNDATION SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
9. THE WALLS SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
10. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
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12. THE WALLS SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
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22. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
23. THE FOUNDATION SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
24. THE WALLS SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
25. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.

## SPL NOTES-

1. IN ALL DIMENSIONS, THE WALLS SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
2. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
3. THE FOUNDATION SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
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23. THE SLAB SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
24. THE FOUNDATION SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.
25. THE WALLS SHALL BE OF GRADE C25/30 (OR EQUIVALENT) WITH 1% STEEL REINFORCEMENT.

| REV. | DATE       | REVISION     |
|------|------------|--------------|
| R1   | 18-11-2020 | FOR APPROVAL |
| R2   | 03-11-2020 | FOR APPROVAL |
| R3   | 02-11-2020 | FOR APPROVAL |

CLIENT NAME: BAREILLY SMART CITY LTD.

PROJECT TITLE: URBAN HAAT BAREILLY

DRAWING TITLE: HANDICRAFT SHOPPING CENTER BEAM AND SLAB LAYOUT

| SCALE:-       | N.T.S.     |
|---------------|------------|
| DRAWN BY:-    | SHIVA      |
| DESIGNED BY:- | SHIVA      |
| CHECKED BY:-  | NG         |
| DATE:-        | 30-01-2021 |

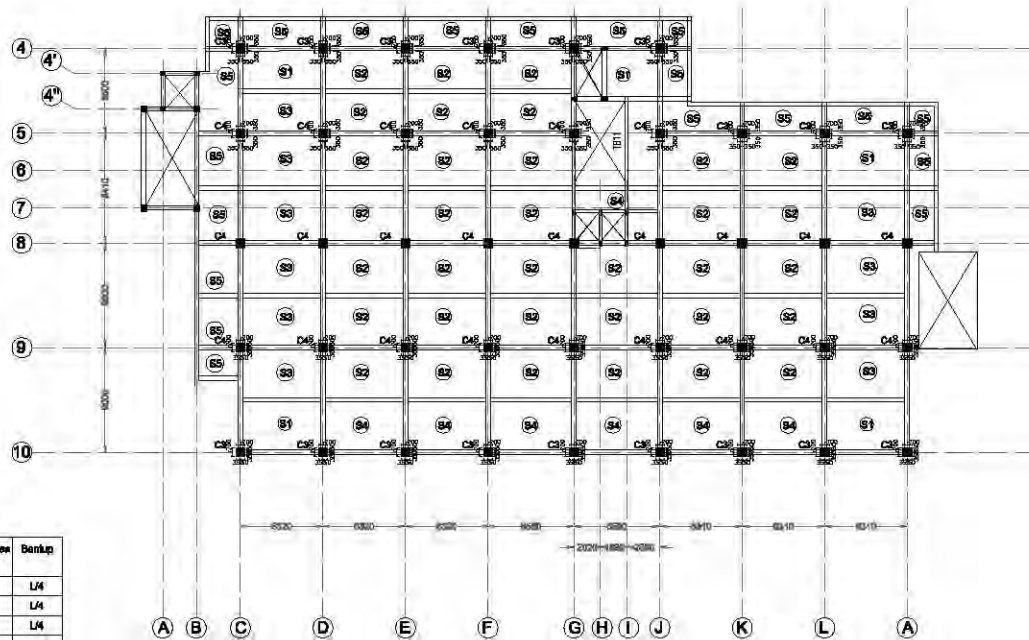
DRAWING RELEASED FOR:  
☒ APPROVAL  
☐ FOR TENDER  
☐ ADVANCE COPY  
☐ CONSTRUCTION

ARCHITECT'S SIGN: \_\_\_\_\_

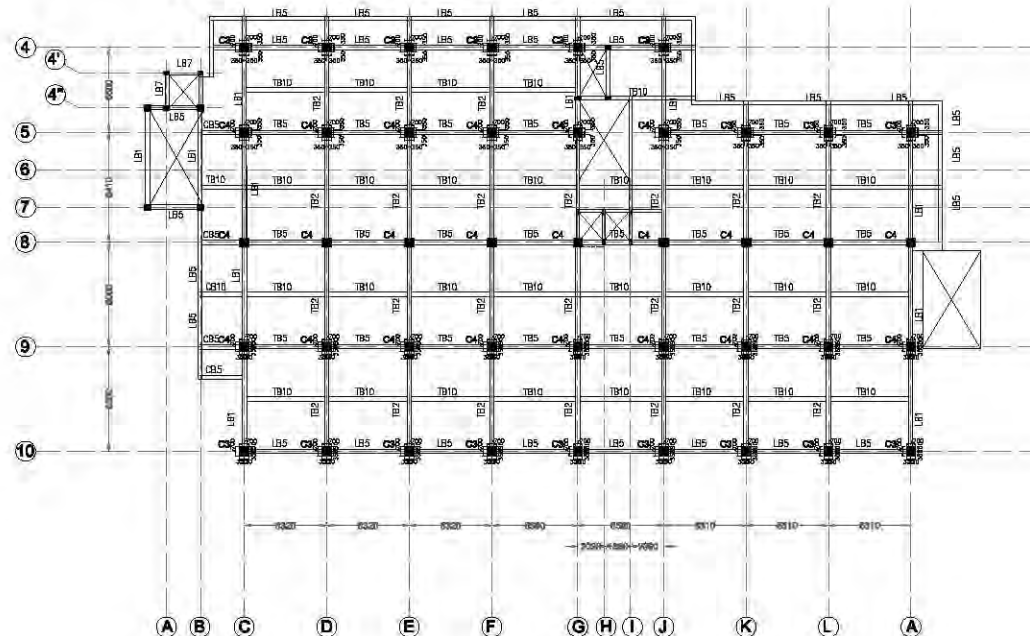




| Br.no. | Mark | Main Reinforcement<br>(Along The Shorter Span) | Transverse Reinforcement<br>(Along The Longer Span) | Thickness | Barlap |
|--------|------|--|---|-----------|--------|
| 1.     | S1   | 108 @180 c/c                                   | 108 @200 c/c  | 200       | L/4    |
| 2.     | S2   | 108 @200 c/c                                   | 88 @180 c/c   | 200       | L/4    |
| 3.     | S3   | 108 @200 c/c                                   | 88 @200 c/c   | 200       | L/4    |
| 4.     | S4   | 108 @170 c/c                                   | 88 @200 c/c   | 200       | L/4    |
| 5.     | S5   | 88 @180 c/c                                    | 88 @200 c/c   | 200       | L/4    |



**FIRST FLOOR SLAB LAYOUT**



**FIRST FLOOR BEAM LAYOUT**

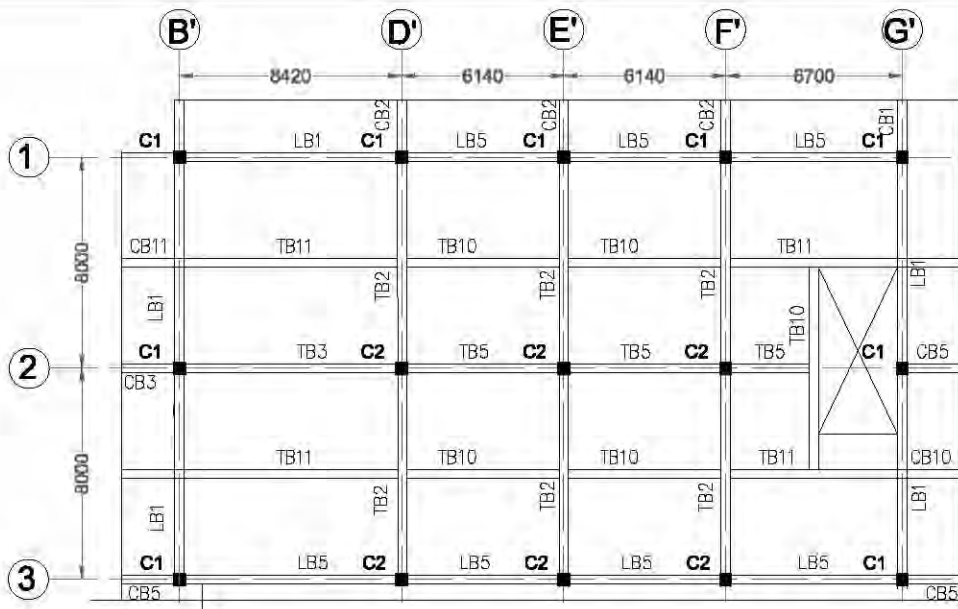
| GENERAL NOTES -   |  |                         |
|---|--|-------------------------|
| <p>NOTES &amp; REFERENCES</p> <p>1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS, ANY INSTRUMENTAL DRAWING, AND ANY INSTRUMENTAL DRAWING.</p> <p>2. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>3. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>4. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>5. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>6. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>7. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>8. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>9. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>10. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>11. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>12. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>13. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>14. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>15. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>16. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>17. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>18. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>19. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>20. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>21. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>22. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p>  |  |                         |
| <p>SPL. NOTES-</p> <p>1. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>2. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>3. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>4. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>5. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>6. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>7. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>8. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>9. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>10. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>11. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>12. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>13. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>14. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>15. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>16. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>17. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>18. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>19. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>20. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>21. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> <p>22. IN ALL DIMENSIONS AND IN ALL INSTRUMENTAL DRAWINGS, THE DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.</p> |  |                         |
| <p>CLIENT NAME: BAREILLY SMART CITY LTD.</p>  |  |                         |
| <p>PROJECT TITLE: URBAN HAAT BAREILLY</p>   |  |                         |
| <p>DRAWING TITLE: CONVENTION CENTRE F.F. SLAB &amp; BEAM LAYOUT</p>   |  | <p>DWG NO: ST-07-02</p> |
| <p>SCALE: N.T.S.</p>  |  |                         |
| <p>DRAWN BY: SHIVA</p>  |  |                         |
| <p>DESIGNED BY: SIVA</p>  |  |                         |
| <p>CHECKED BY: NG</p>   |  |                         |
| <p>DATE: 30-01-2021</p>   |  |                         |
| <p>DRAWING RELEASED FOR:</p> <p>APPROVAL FOR TENDER</p> <p>ADVANCE COPY FOR CONSTRUCTION</p>  |  |                         |
| <p>ARCHITECT'S SIGN</p>   |  | <p>OWNER'S SIGN</p>     |



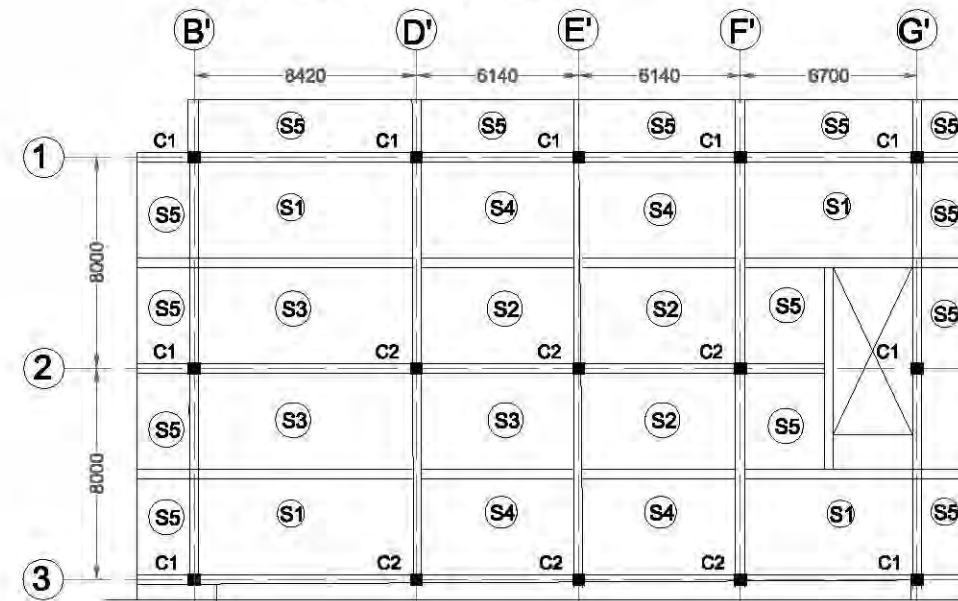








FIRST FLOOR BEAM LAYOUT



FIRST FLOOR SLAB LAYOUT

| Sr.no. | Mark | Main Reinforcement<br>(Along The Shorter Span) | Transverse Reinforcement<br>(Along The Longer Span) | Thickness | Bentup |
|--------|------|--|---|-----------|--------|
| 1.     | S1   | 10Ø @180 c/c                                   | 10Ø @200 c/c  | 200       | L/4    |
| 2.     | S2   | 10Ø @200 c/c                                   | 8Ø @180 c/c   | 200       | L/4    |
| 3.     | S3   | 10Ø @200 c/c                                   | 8Ø @200 c/c   | 200       | L/4    |
| 4.     | S4   | 10Ø @170 c/c                                   | 8Ø @200 c/c   | 200       | L/4    |
| 5.     | S5   | 8Ø @160 c/c                                    | 8Ø @200 c/c   | 200       | L/4    |

## GENERAL NOTES -

### NOTES & REFERENCES

1. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS, ANY INSTRUMENTAL PLANES SHALL BE SUBMITTED TO THE OFFICE OF ENGINEERING.
2. ALL DIMENSIONS & LOCATIONS ARE IN METERS.
3. DO NOT SCALE ANY DIMENSIONS.
4. CENTER LOCATIONS OF WALLS WITH RELEVANT AREA DIMS.
5. FOR RCC WORK THE DESIGN MAY ALSO CONFORMING TO IS 456 : 2000 OR AS SPECIFIED IN RELEVANT DMS.
6. THE REINFORCEMENT SHALL BE CALCULATED SHOWING BARS (SIZES) DO NOT LATE, BARS TO-DOES HAVING YIELD STRENGTH NOT LESS THAN 200 N/MM<sup>2</sup> AND CONFORMING TO IS 1786 - 2008.
7. THE CLEAR COVER TO THE REINFORCEMENT SHALL BE AS FOLLOWS:-
 

|                         |                      |
|-------------------------|----------------------|
| (a) EXTERIOR            | 40 MM                |
| (b) SLAB (Top & Bottom) | 30 MM AND COVER 25mm |
| (c) SLAB                | 20 MM                |
| (d) CHAIRS/CHERRY       | 20 MM                |
| (e) R.C.C. WALL         | 25 MM                |
8. NORMAL COVER IS THE DEPTH OF CONCRETE COVER TO ALL STEEL REINFORCEMENT REQUIRED UNLESS NOTED OTHERWISE.
9. NOT MORE THAN ONE OF THE BARS SHALL BE LAPPED AT ANY SECTION LONGER THAN 1/6 AND SPAN IN BOTTOM BARS A CLOSE TO SUPPORTS IN TOP BARS SHALL BE AVOIDED.
10. REINFORCED TOP BARS
 

|                     |                     |
|---------------------|---------------------|
| REINFORCED TOP BARS | REINFORCED TOP BARS |
| REINFORCED TOP BARS | REINFORCED TOP BARS |
11. ALL REINFORCEMENT SHALL BE MACHINE ROLLED, VIBRATED AND CURED THOROUGHLY AS PER IS 456-2000.
12. ALL REINFORCEMENT SHALL BE PLACED WITH RESPECT TO THE CENTER LINE OF COLUMN.
13. REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS WHEREVER REQUIRED FROM SPACERS SPACERS ARE TO BE PROVIDED BETWEEN THE LAYERS OF REINFORCEMENT AS PER SLABS.
14. ALL DIMENSIONS MUST BE CHECKED WITH ARCHITECT'S DESIGN IN CASE OF ANY DISCREPANCY ARCHITECT'S DESIGN SHALL PREVAIL.
15. ALL CONSTRUCTION DETAILS SHALL BE APPROVED BY CONSULTING ON THE BASIS OF SCHEME APPROVED BY CONTRACTOR.
16. TOP AND BOTTOM EXTRA BARS IN BEAMS TO EXTEND BEYOND THE FACE OF SUPPORT AS SHOWN IN THE RELEVANT SECTION.
17. THE FIRST STAIRS IN BEAMS SHALL BE AT A DISTANCE OF 300MM FROM THE JOINT FACE THE SPECIAL REINFORCEMENT SHALL BE PROVIDED THROUGH THE JOINT AS THE OVER SPACING IN COLUMN.
18. ALL JOINTS ARE TO BE MADE AS PER RELEVANT IS CODES.
19. PROVIDE ONE STEEL BAR OVER EACH TOP BARS IN BEAMS 1/6.
20. ALL REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, AS PER IS 456-2000.
21. THE REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, AS PER IS 456-2000.
22. THE REINFORCEMENT SHALL BE PROVIDED IN TWO LAYERS, AS PER IS 456-2000.

### SPL. NOTES-

1. IN NORMAL CIRCUMSTANCES AND WHERE APPROPRIATE PORTLAND CEMENT IS USED, FERRIC RUST GENERALLY BE REQUIRED AFTER THE EXPOSURE PERIODS.
 

|  |  |
|--|--|
| • RUSTY SURFACES AND SURFACES OF ALL MEMBERS | • RUSTY SURFACES AND SURFACES OF ALL MEMBERS |
| • RUSTY SURFACES AND SURFACES OF ALL MEMBERS | • RUSTY SURFACES AND SURFACES OF ALL MEMBERS |
2. THE REMOVAL OF RUSTY SURFACES SHALL BE DONE BY THE CONTRACTOR.
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22. THE REMOVAL OF RUSTY SURFACES SHALL BE DONE BY THE CONTRACTOR.

|   |            |                  |
|---|------------|------------------|
| R2  | 18-11-2020 | FOR APPROVAL     |
| R1  | 03-11-2020 | FOR APPROVAL     |
| R0  | 02-11-2020 | FOR APPROVAL     |
| REV. NO.  | DATE       | REVISION         |
| CLIENT NAME: BAREILLY SMART CITY LTD.   |            |                  |
| PROJECT TITLE: URBAN HAAT BAREILLY  |            |                  |
| DRAWING TITLE: DORMITORY F.F. SLAB & BEAM LAYOUT  |            | DWG NO. ST-08-02 |
| SCALE:-   | N.T.S      |                  |
| DRAWN BY:-  | SHIVA      |                  |
| DESIGNED BY:-   | SIVA       |                  |
| CHECKED BY:-  | NG         |                  |
| DATE:-  | 30-01-2021 |                  |
| DRAWING RELEASED FOR:   |            |                  |
| <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> FOR TENDER<br><input type="checkbox"/> ADVANCE COPY <input type="checkbox"/> CONSTRUCTION |            |                  |
| ARCHITECT'S SIGN  |            | OWNER'S SIGN     |