

**Supply installation Testing and
Commissioning of Internal
Electrification and ELV works. For
National Heavy Engineering Co-
operative Ltd (HECL) Plant. Talegaon
Pune, Maharashtra**



IDMC LIMITED
ANAND – 388 121

SECTION – 0

INVITATION FOR BID

Plot no. 124-128, G.I.D.C. Estate, Vithal Udyognagar,
 Anand – 388 121, Tel: 02692-220521
 Website: <http://www.idmc.com>

**INVITATION FOR BIDS (IFB) NATIONAL
 COMPETITIVE BIDDING(NCB)**

**Tender/Event Ref. No: IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 300
 Dated 03.08.2026.**

The IDMC Ltd having its Head Office at Anand, Gujarat invites rate bids from eligible bidders through “online E- Tender” from reputed eligible bidders for “**Supply installation Testing and commissioning of internal Electrification and ELV refurbishment works for National Heavy Engineering Co-operative Ltd (HECL) Plant, at Talegaon Pune, Maharashtra.**” as per details given below:

Estimated cost	3,00,00,000/- (including GST) (Three crore only).
Completion period	03 Months (from the date of notification of award of Contract/Purchase Order).
Earnest Money Deposit (EMD)	Rs 3,00,000/- (Three lakh only)
Mode of Tender	eProcurement at NCDFI eMarket portal, considering online restricted tender of IDMC with single stage two bid envelope system (Part I- Techno-commercial Bid and Part II- Price Bid) through www.idmc.com (click procurement) OR https://www.ncdfiemarket.com/index.php/idmc/ and can be downloaded and used as tender document for uploading the offer. The potentially invited bidders are required to submit their offer electronically through NCDFI eMarket portal. No physical tender/email is acceptable

Issued by Head (Purchase),
 tender committee, IDMC LTD, Anand.

IDMC LTD

Invitation for Bid

BIDDER

INVITATION FOR BID

Tender/Event Ref. No: IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 300
Dated 03.08.2026.

1.0 DESCRIPTION OF WORKS: The IDMC Limited, having its Head Office at Anand, Gujarat invites item rate bids from eligible bidders, for the construction & completion of the following works:

Supply installation Testing and commissioning of internal Electrification and ELV works. For National Heavy Engineering Co-operative Ltd (HECL) Plant, at Talegaon Pune, Maharashtra.

ADDITIONAL INFORMATION: Interested eligible bidders may obtain further information from and download the bidding documents from NCDFI portal www.idmc.com (click procurement) OR <https://www.ncdfimarket.com/index.php/idmc/>

2.0 REQUEST FOR BIDDING DOCUMENT:

- (a) The bid documents will be available in the website www.idmc.com (click procurement) OR <https://www.ncdfimarket.com/index.php/idmc/> can be downloaded and used as tender documents for uploading the offer.
- (b) It is hereby brought to the notice of all bidders that if any change/additions/ deletions/alterations are found to be made by them in the tender and the same is subsequently noticed at any stage, even after award of the contract, the bidders are liable for all consequences thereof and IDMC LTD shall be free to take suitable action as deemed necessary.

~~3.0 Minimum Eligibility Criteria: Minimum Eligibility Criteria: For any new bidder (who is not covered under restricted bidding process) intend to participate in tender, they must submit following documents for initial analysis of eligibility criteria offline on email id: tenders@idmc.com in ten days (10) from date of publication / issue of tender on NCDFI eMarket portal.~~

- a) ~~The Bidder, in the same name and style, should be in business at least for **five years** at the time of bid opening. In case of change of~~

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~~name of bidder by merger / acquisition / change in status, the bidder may be eligible based on the documentary evidence.~~

- ~~b) The Bidder should have valid registration under various Acts that may be applicable for the contract proposed. This shall include but not limited to Income Tax, Companies Act, GST, the Building & other construction workers' welfare cess act, Employee State Insurance, Contract Labour, Provident fund etc.~~
- ~~c) The Bidder's financial turnover in the same name and style during each of the **last three financial year (22-23; 23-24; 24-25)** ending 31st March should **not be less than 80% of the estimated contract value.**~~
- ~~d) The bidder should have positive net worth in **last two financial years.**~~
- ~~e) The bidder should have **cash profit** in any two financial years out of the last five financial years.~~
- ~~f) The Bidder in the same name & style shall have successfully executed /completed contracts of **Similar nature of work**** during the last five years ending last day of the month previous to the month in which bid is opened, either of the following:-~~

~~**I. One contract/work of similar nature costing not less than 80% of estimated value of the contract.**~~

OR

~~**II. Two contracts/works of similar nature each cost not less than 60% of the estimated value of the contract.**~~

Notes:

- ~~a) **** Similar nature of work means Desing supply Testing and commissioning of Internal and ELV works for industrial buildings in Dairy/ Food or Beverage/Pharma/ Chemical/ Electronics/Frozen Semen station having clean room laboratory/Bio-Containment Laboratory/Bio Gas/ETP Plant having similar finishes, flooring, drainage, road work, storm drainage, Misc.**~~

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- b) ~~The contract means the work done against one work order on a single location.~~
- c) ~~Cost of contracts/works shall be considered for evaluation as per the clause 4(f) above excluding the cost/recovery of materials supplied by the purchaser.~~

Bidder shall submit the following details to support their claim for meeting the minimum eligibility requirement -

1. Name / Names of project to be considered for meeting minimum eligibility criteria
 2. Nature of each project / work completed.
 3. Value of work of each project / work completed.
 4. Location of execution of each project/work completed.
- The copy of purchase order/work order, completion certificate and abstract sheet of final bill/invoice showing the cumulative value of work done should be submitted in order to support aforesaid details. In case, the final bill/invoice does not contain cumulative value of work done, copy of all the bills/invoices submitted prior to the final bill should be attached.

Note:

For evaluation and comparison of bids, the purchaser may, at its discretion, ask the bidder for clarification on the bid. The shortfall information / documents shall be sought only in case of historical documents which pre-exist at the time of tender opening and which have not under gone change since then.

So far as the submission of the documents is connected with regard to qualification criteria, after submission of the tender, only related shortfall documents shall be asked for the considered. For example, if the bidder has submitted a supply order without its completion / performance certificate, the certificate can be asked for and considered. However, no new supply order shall be asked for and considered so as to qualify the bidder.

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1. In addition to the above, the following information/documents should also be submitted along with the bid by the bidders forevaluation/determination of their eligibility:
 - a. Copy of Income Tax Returns and audited balance sheet for **three** previous years in original or certified true copies, along with Permanent Account Number (PAN) for income tax purpose.
 - b. Copy of TDS certificate issued by the clients to substantiate the claim for the value of works executed in the private sector.
 - c. **Copy of Form 26 AS for the last 3 financial Years**
2. Even though the bidder meets the specified criteria, it may be disqualified if it has:
 - a. Made untrue or false declaration in the forms, statements and attachments submitted in proof of their qualification and / or
 - b. Records of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion or financial failure etc.

As a part of **Technical Bid** (part-I) the bidder shall also submit the following documents & credentials.

1. **The deployment of manpower and organization chart at proposed site.**
2. ~~Technical capability of the firm includes the equipment owned by them. They should deploy Crane ranging from 30 Mt to 100Mt, Faran of cap 10 to 15 MT as per project requirements and fully furnished QC laboratory for regular testing of materials at project site/factory as per QAP.~~
3. **QAP plan with method statement & schedule in MS Project.**

5.0 BID DETAILS: Detailed terms and conditions as well as the technical specifications for all the items of work indicated in the invitation for bid are contained in one bidding document.

(a)	Tender/Event Ref. No.:	IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 300 Dated 03.08.2026
(b)	Transaction Fee Payment of transaction fee by NEFT/ RTGS in favour of IDMC Limited (refer clause No.-4 of Annexure-A)	: Not Applicable
(c)	Incidental charges (in land) in case documents are to be sent by courier/post	: Not Applicable
(d)	Event Start Date	: 03.08.2026
(e)	Event Close Date & time	: 13.08.2026, 17.00 Hours
(f)	Last Date and time for bid submission	: 13.08.2026, 17.00 Hours

(g)	Place of opening of bids	: ONLINE on web portal
(h)	Address for communication	: Head (Purchase), IDMC Ltd, V.U Nagar, Anand 124-128 GIDC Estate Vithal Udyognagar- 388121 Dist.- Anand (Gujarat) Tel: 02692-220521 Email: tenders@idmc.com
(i)	Estimated Cost of works	Rs 3,00,00,000/- (Including GST) (Three crore only.)
(j)	Time of completion	: 03 (Three) Months for overall completion (from the date of notification of award of Contract/ LOI/Purchase Order)
(k)	Amount of Bid Security	: Rs 3,00,000/- (Three lakh only.)
(l)	Date and time for receipt of EMD. The EMD in original to be submitted to communication address as stated above in clause (i)	: On or before 12.08.2026, 17.00 Hours

6.0 PURCHASE OF BIDDING DOCUMENT IN PERSON: Not Applicable. Only Downloading.

7.0 PURCHASE OF BIDDING DOCUMENT BY COURIER/POST: Not Applicable. Only Downloading.

8.0 EARNEST MONEY DEPOSIT (EMD): All bids must be accompanied by a Earnest Money Deposit (EMD) in the acceptable form as specified in the bidding document and must be delivered to the address of communication as stated above in **clause 5.0 (i)** on or before the last date and time of receipt of bids as given in **clause 5.0 (i)** above.

9.0 PRE-BID MEETING: (Not applicable for this work)

10.0 OPENING OF BIDS: All the bidders should submit their online bids in Part I – Technical Bid and Part II – Price Bid. The technical bid (Part I) shall contain all the details EXCEPT FOR THE PRICE. Only technical bids (of those bidders who's Original EMD, in acceptable form, have reached the office of IDMC LTD as mentioned above in clause no. 5-Bid Details (m) of this Section) shall be opened online on the date and time specified above. The date and time of opening of Price Bid (Part II) shall be communicated later to responsive /technically qualified bidders.

11.0 BID VALIDITY: The Bid shall remain valid for a period of **120 (One Hundred and twenty) days** from the date of bid opening.

12.0 BID SECURITY VALIDITY: The bid security accompanying the bid shall be valid till **31.12.2026**

13.0 TENDER DRAWINGS: Drawing(s) are attached with this bidding document and the same shall be available for reference at the office of The IDMC Ltd, at the address of communication on all working days.

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14.0 RIGHTS RESERVED BY IDMC LTD: The IDMC Ltd, at its sole discretion & without assigning any reason, thereof reserves the right to accept and / or reject any or all the bids.

Issued by Head (Purchase),
tender committee, IDMC LTD, Anand.

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IDMC Ltd.	Instructions to Bidders	BIDDER

SECTION - I - INSTRUCTIONS TO BIDDERS**A. GENERAL****1.0 General Information:**

1.1 (a) Description : Supply installation Testing and commissioning of internal Electrification and ELV works. for National Heavy Engineering Co-operative Ltd (HECL) Plant, at Talegaon Pune, Maharashtra.

(b) Owner : IDMC Limited.

1.2 Location and Area:

(a) Project site : National Heavy Engineering Co-operative Ltd (HECL) Plant, at Talegaon Pune, Maharashtra.

(b) Nearest Railway Station : Pune Railway Station.

(c) Nearest Airport : Pune.

(d) Nearest Major Town : Pune.

(e) Nearest Road : NH-48, Pune - Mumbai Highway

1.3 Period of Completion:

The Period of completion shall be **03 Months for overall completion** from the date of issuance of work order (WO / LOI), **which shall include the non-working periods during monsoon and festivals.**

2.0 Source of Funds:

The Service Recipient has arranged the funds and provided to the purchaser.

3.0 Eligibility and Qualification Requirements:

- 3.1** This invitation for bid is open to all bidders from all eligible sources.
- 3.2** All goods and services to be supplied under this Contract shall have their origin in eligible source and all expenditures made under the Contract will be limited to such goods and services.
- 3.3** For the purpose of this clause, "Origin" means the place where the goods are mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing or processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose of utility from its components.
- 3.4** The origin of goods and services is distinct from the nationality of the bidder.
- 3.5** To be eligible for the award of Contract, bidders shall provide evidence satisfactory to the IDMC Ltd, of their eligibility under **sub-clause 3.1** above, and adequacy of resources to carry out the Contract effectively. To this end, all bids submitted shall include the following information:
- (A) Copies of original documents or certified true copies, defining the constitution or legal status, place of registration and principal place of business of the company or firm or partnership.
 - (B) Power of Attorney or a true copy thereof duly attested in case an authorized representative has signed the bid.
 - (C) Details of the experience and past performance of the bidder on works of similar nature **within the past five years**, and details of current work in hand and other Contractual commitments shall be submitted as per formats given in **Schedule IV and Schedule VIII of Section VII respectively of this bidding document**.
 - (D) Major items of constructional plant proposed for use in carrying out the Contract in the format prescribed in **Schedule I** and the qualifications and experience of key personnel proposed for the administration and the execution of the Contract, both on and off site, in the format prescribed in **Schedule II of Section VII of this bidding document**.
 - (F) Proposals for sub-contracting elements of the works amounting to more

than **10%** of the bid price for each element and shall be as listed in **Schedule III of Section VII of this bidding document.**

(G) Reports on the financial standing of the bidder such as profit and loss statements, balance sheets and auditor's reports for **the past three years**, an estimate of the financial projection for the **next two years** as prescribed in the **Schedule VII of Section VII of this bidding documents**, and an authority from the bidder to seek reference from the bidder's bankers; and

(H) Statement of arbitration/disputes in which the bidder is involved as prescribed in the **Schedule VI of Section VII of this bidding document.**

Note: As a part of **Technical Bid** (part-1) the bidder shall also submit the following documents & credentials.

1. The deployment of manpower and organization chart at proposed site.

2. ~~Technical capability of the firm includes the equipment owned by them. They should deploy Crane ranging from 30 Mt to 100Mt, Faran of cap 10 to 15 MT as per project requirements and fully furnished QC laboratory for regular testing of materials at project site/factory as per QAP.~~

3. ~~fully furnished QC laboratory for regular testing of materials at projectsite as per QAP.~~

4. QAP plan with method statement & schedule in MS Project.

~~3.6 For the purposes of this particular Contract bidders shall meet the following qualifying criteria as minimum:~~

~~a) The Bidder, in the same name and style, should be in business at least for **five years** at time of bid opening. Incase of change of name of bidder by merger / acquisition / change in status, the bidder may be eligible based on the documentary evidence.~~

~~b) The Bidder should have valid registration under various Acts that may be applicable for the contract proposed. This shall include but not limited to Income Tax, Companies Act, GST, the building & other construction workers' welfare cess act , Employee State Insurance, Contract Labour, Provident fund etc.~~

~~c) The Bidder's financial turnover in the same name and style during each of~~

~~the last three financial year (22-23; 23-24; 24-25) ending 31st March should not be less than 80% of the estimated contract value.~~

- ~~d) The bidder should have positive net worth in last two financial years.~~
~~e) The bidder should have cash profit in any two financial years out of the last five financial years~~

- ~~f) The Bidder in the same name & style shall have successfully executed /completed contracts of similar nature. **Similar nature of work means Design supply testing and commissioning of Internal and ELV works of industrial buildings in Dairy/ Food or Beverage/Pharma/ Chemical/ Electronics/Frozen Semen station having clean room laboratory/Bio- Containment Laboratory/Bio-Gas/ETP plant having similar finishes, flooring, drainage including or excluding internal electrification works etc. during the last five years ending last day of the month previous to the month in which bid is opened, either of the following:—**~~

~~I. — One contract/work of similar nature costing not less than 80% of the estimated value of the contract.~~

OR

~~II. — Two contracts/works of similar nature each costing not less than 60% of estimated value of the contract.~~

Notes:

~~** Similar nature of work means Design supply testing and commissioning of Internal and ELV works for industrial buildings in Dairy/ Food or Beverage/Pharma/ Chemical/ Electronics/Frozen Semen station having clean room laboratory/Bio-Containment Laboratory/Bio- Gas/ETP Plant having similar finishes, flooring, drainage, road work, storm drainage, Misc. MS fabrication work.~~

- ~~a) The contract means the work done against one work order on a single location.~~
~~b) Cost of contracts/works shall be considered for evaluation as per the clause 3.6 (f) above excluding the cost/recovery of materials supplied by the purchaser.~~

Bidder shall submit the following details to support their claim for meeting the minimum eligibility requirement -

1. Name / Names of project to be considered for meeting minimum eligibility criteria
2. Nature of each project / work completed.
3. Value of work of each project / work completed.
4. Location of execution of each project/work completed. The copy of purchase order/work order, completion certificate and abstract sheet of final bill/invoice showing the cumulative value of work done should be submitted in order to support aforesaid details. In case, the final bill/invoice, does not contain cumulative value of work done, copy of all the bills/invoices submitted prior to the final bill should be attached.

g) In addition to the above, the following information/documents should also be submitted along with the bid by the bidders for evaluation/determination of their eligibility:

I. Copy of Income Tax Returns and audited balance sheet for **three** previous years in original or certified true copies, along with Permanent Account Number (PAN) for income tax purpose.

II. Copy of TDS certificate issued by the clients to substantiate the claim for the value of works executed in the private sector.

III. Copy of Form 26 AS for the last 3 financial Years

h) Even though the bidder meets the specified criteria, it may be disqualified if it has:

I. Made untrue or false declaration in the forms, statements and attachments submitted in proof of their qualification and / or

II. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion or financial failure etc.

4.0 Cost of Bidding:

The bidder shall bear all costs associated with the preparation and submission of his bid and the IDMC Ltd, hereinafter referred to as IDMC LTD will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

5.0 Project Site Visit:

5.1 The bidder is advised to visit and examine the site of works and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into a Contract. The

costs of visiting the site shall be at bidder's own expenses.

- 5.2** The bidder and any of his personnel or agent(s) will be granted permission by the IDMC LTD to enter upon the premises and lands for the purpose of such inspection but only upon the express condition that the bidder, his personnel and agent(s) from and against all liabilities in respect thereof and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss or damage, costs and expenses however caused, which but for the exercise of such permission would not have arisen.
- 5.3** Each of the IE & ELV contracts, if executed at site under the circumstances of an operating plant which cannot be closed down for any reason, the site works of every nature has to be planned and executed with the knowledge of operational and processing routines at existing plant, as the plant will continue uninterrupted throughout the year. The execution of contract will be done with clear understanding that their all staff and workers will have to strictly abide by the security rules and procedures that is followed by plant authorities during the concurrency of the contract.

B. BIDDING DOCUMENTS

6.0 Contents of Bidding Documents:

- 6.1** The set of Bidding documents issued for the purpose of bidding includes the number of copies as stated below, together with any addenda there to issued in accordance with **clause-8** & any minutes of the pre-bid meeting issued in accordance with **clause-16**.

Number copies	Volume	Section	Description of
1	I	0	Invitation for Bid
1	I	I	Instructions to bidders
1	I	II	General Conditions of Contract
1	I	III	Special Conditions of Contract
1	I	IV	Technical Specifications
1	I	V	Form of Bid
1	I	VI	Schedule of Materials to be issued by owner/IDMC LTD
1	I	VII	Schedule of Supplementary Information

1	I	VIII	Form of Agreement
1	I	IX	Acceptable Forms of Bank Guarantees
1	II	X	Schedule of Quantities
1	II	XI	Sketches – General Site Layout

6.2 The Bidder is expected to examine carefully all instructions, conditions, forms, terms, specifications and drawings in the bidding documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Pursuant to **clause-25**, bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

7.0 Clarification of Bidding Documents:

A prospective bidder requiring any clarification of the bidding documents may notify the IDMC LTD in writing at the address of communication indicated in the Invitation for bid. The IDMC LTD will respond in writing to any request for the clarification which is required earlier than **10 days** prior to the dead line for the submission of the bids.

8.0 Amendment of Bidding Documents:

8.1 At any time prior to the deadline for the submission of bids, the IDMC LTD may for any reason whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding document by the issuance of amendment.

8.2 The amendment will be notified separately as Corrigendum for the respective bidding document on the IDMC LTD's website/NCDFI eMarket Portal.

8.3 In order to afford prospective bidders reasonable time in which to take an amendment into account in preparing their bids, the IDMC LTD may, at its discretion, extend the deadline for the submission of bids in accordance with **clause-19**.

C. PREPARATION OF BIDS

9.0 Language of Bid:

The bid prepared by the bidder and all correspondence & documents relating to the bid exchanged by the bidder and the IDMC LTD shall be written in the **English language**. Supporting documents and the printed literature furnished by the bidder with the bid may be in another language provided if required an

English translation of the same is provided. For the purpose of the interpretation of the bid, the **English language** shall prevail.

10.0 Documents Comprising the Bid:

The bid to be prepared by the bidder shall comprise the following:

- (a) The form of bid along with Appendixes (**Refer Section V**) thereto duly filled;
- (b) The bid Security;
- (c) The Schedule of Quantities duly filled (**Refer Section X**);
- (d) The Schedule of supplementary information (**Refer Section VII**), the information on eligibility and qualifications;
- (e) The complete bidding document duly signed has to be uploaded along with bid as stated above.
- (e) Alternative offers where invited, and any other materials required to be completed and submitted in accordance with the Instruction to Bidders (**Section I**) embodied in these bidding documents.

The forms, Schedule of quantities and Schedule provided in this bidding document shall be used without exception (subject to the extension of the Schedules in the same format and to the provisions of **sub-clause 14.2** regarding the alternative form of Bid Security)

Additional special instructions:

Before uploading, of their bid, the bidder should check the IDMC LTD's website or NCDFI eMarket portal for any Corrigendum/additional information on the bidding document, if any. However, non-information in changes/amendments put on website as Corrigendum to the prospective bidders shall not bind the IDMC LTD to extend the deadline for the submission of the bids and non-compliance to such Corrigendum by the bidder shall result to non-responsiveness of the bid leading to rejection.

11.0 Bid Prices:

11.1 Unless stated otherwise in the bidding documents, the Contract shall be for the whole works as described in the Invitation for bid based on the schedule of unit rates and prices submitted by the bidder.

11.2 The bidder shall fill in rates and prices for all items of work described in the schedule of quantities. **Items against which no rate is entered by the bidder shall not be paid for by the IDMC LTD when executed and shall be deemed to have covered by the other rates in the schedule of quantities.**

11.3 All applicable Taxes (GST), levies, cess (including labour cess, seigniorage, royalty etc., as applicable to this contract) and duties shall be payable by the bidder under the Contract or for any other cause, and shall be included in the rates and the prices and total bid price submitted by the bidder and the evaluation and the comparisons of bids by the IDMC LTD shall be made accordingly.

11.4 Fixed Prices:

The rates and prices quoted by the bidder shall be fixed for the entire duration of the Contract and shall not be subjected to adjustment on any account except as defined in clause no. 11.5 below. A bid submitted with any price adjustment condition except as defined in clause no. 11.5 below shall be treated as non-responsive & rejected, pursuant to **clause 25 of this section**. Any variation in the taxation shall be subjected to the adjustment as per the detailed specified under clause 72 of section II of the bidding document.

11.5 Price Variation – Not Applicable for this contract

12.0 Currency of Bid & Payment:

The unit rates and prices shall be quoted by the bidder entirely in Indian currency and all payment shall be made in Indian currency only.

13.0 Bid Validity:

13.1 Bids submitted shall remain valid for acceptance for a period of **120 days** from the date of bid opening.

13.2 In exceptional circumstances, prior to expiry of the original bid validity period, the IDMC LTD may request the bidder for a specified extension in the period of validity. The request and the response thereto shall be made in writing. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request shall not be permitted to modify his bid, but shall be required to extend the validity of his bid security correspondingly. The provisions of **clause 14** shall continue to apply during the extended period of bid validity.

14.0 Bid Security:

14.1 The bidder shall furnish, as part of the bid, a bid security for each package separately of the amount as specified in **clause 5 (I) in the Invitation for bid, Section 0**.

14.2 The Earnest Money Deposit (EMD) shall be denominated in Indian Rupees

only, and shall be in one of the following forms.

- a) **A Bank Guarantee issued by a Nationalized Indian Bank or a Foreign Bank having Branches in India, in the form Provided in Bidding Document and 30.04.2026**

Or

- b) **A Demand Draft/ Bankers Cheque issued by a Nationalized Bank/Schedule Bank / Foreign Bank having branches in India, drawn in favour of IDMC Limited, payable at Anand.**

Or

- c) **Through Online Banking Transaction i.e. NEFT/RTGS**

Bidders can pay/remit the EMD through NEFT/RTGS to IDMC LTD Account (details mentioned below) and upload the transaction details of NCDFI eMarket Portal along with technical bid. Bidder must inform the transaction details through email (tenders@idmc.com) as per enclosed format **on or before 24:00 hrs. on the last date of receipt of bid.**

Details of IDMC LTD's Bank Account for online banking transaction i.e. NEFT/RTGS is as under:

1. Beneficiary Name	IDMC Limited
2. Beneficiary Bank & Branch	INDIAN BANK ANAND BRANCH
3. Account Number to be credited	CA - 494481837
4. RTGS/IFSC Code	IDIB000A021 (PLEASE READ 'ZERO' AFTER B)

Format for e-mail confirmation about the transaction made thru NEFT/RTGS for EMD:

Name of the Bidder	IFB Reference	EMD Amount	Bank Details UTR No. & date

Bidders shall be required to submit/upload the successful transaction details along with technical bid.

The bid shall not be considered if the valid EMD is not available at the time of opening of Technical Bid.

14.3 Any bid not accompanied by an acceptable Earnest Money Deposit (EMD) pursuant to **clause 14.1 and 14.2** hereof shall be rejected by IDMC LTD as non-responsive.

14.4 The Earnest Money Deposit (EMD) of the unsuccessful bidders shall be refunded as promptly as possible, but not later than **30 days** after the expiry of the period of bid validity as prescribed in these documents.

14.5 Earnest Money Deposit (EMD) of the successful bidder(s) shall be refunded when the bidder has signed the Agreement and furnished the required performance security.

14.6 No interest shall be paid by the IDMC LTD on the Earnest Money Deposit (EMD) furnished by the bidder.

14.7 The Earnest Money Deposit (EMD) may be forfeited

(a) If a bidder withdraws his bid during the period of bid validity; or

(b) In the case of a successful bidder, if he fails within the time limit to:

(i) Sign the agreement, or

(ii) Furnish the required performance security

15.0 Variation in Bidding Conditions:

15.1 The bidder shall submit offer which comply fully with the requirements of the bidding documents, including the basic technical design as indicated in the drawings and specifications. Conditional bids are liable to be considered as non-responsive in accordance with **clause-25**.

16.0 Pre-Bid Meeting: Not Applicable

17.0 Format and Signing of Bids:

17.1 The bidder shall prepare and upload the original copy of the documents comprising the bidding documents downloaded by him.

17.2 All pages of the bidding documents including corrigendum (if any) shall be digitally signed by person(s) duly authorized, to bind the bidder to the Contract. Proof of authorization shall be in the form of a written power of attorney which shall accompany the bid. All pages of the bid documents, where entries and amendments had been made, shall additionally be initialled by the person(s) signing the bids.

17.3 The complete bid shall be without alterations, interlineations or measures except those in accordance with instructions issued by the IDMC LTD, or as necessary to correct errors made by the bidder in which case such corrections shall be initialled by the person(s) signing the bid. No over writing shall be permitted.

17.4 Only one bid may be uploaded by each bidder. No bidder shall be allowed to participate in the bid in the name of another for the same Contract in any relation whatsoever.

17.5 The bidder shall quote the rate of each item both in figures and words.

D. SUBMISSION OF BIDS

18.0 The Technical Bid (Part I) and The Commercial Bid (Part II) has to be uploaded on-line at NCDFI eMarket portal.

19.0 Deadline for Submission of Bids:

19.1 Bids must be uploaded on or before the date and time of submission as stated in the bid.

19.2 The IDMC LTD may, at its discretion, extend the deadline for the submission of bids by issuing an amendment in accordance with **clause 8** hereof, in which case all rights and obligations of IDMC LTD and the bidders previously subject to the original deadline shall thereafter be subject to the new deadline as extended.

20.0 Late Bids: Not Applicable

21.0 Modification and Withdrawal of Bids

21.1 The bidder cannot modify or withdraw his bid after bid submission.

21.2 Withdrawal of the bid during the interval between the deadline for the submission of bids & the expiry of the period of bid validity shall result in the forfeiture of the Earnest Money Deposit (EMD) pursuant to **clause 14**.

E. BID OPENING AND EVALUATION

22.0 Bid Opening

The IDMC LTD will open the Technical bids as per company norms.

Commercial bids will be opened electronically of only those bidders whose Technical Bid is found to be acceptable by IDMC LTD.

The IDMC LTD will examine the bids to determine whether they are complete, whether the requisite Earnest Money Deposit (EMD) have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

23.0 Process to be Confidential:

23.1 After the public opening of bids, information relating to the examination clarification, evaluation and comparison of bids and recommendations concerning the award of Contract shall not be disclosed to bidders or other persons not officially concerned with such process until the award of the Contract to the successful bidder has been announced.

23.2 Any effort by a bidder to influence the IDMC LTD in the process of examination, clarification, evaluation and comparison of bids and in the decision concerning the award of Contract may result in the rejection of the bidder's bid.

24.0 Clarification of Bids:

24.1 To assist in the examination, evaluation and comparison of bids, the IDMC LTD may ask the bidders individually for clarification of their bids, including break down of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the IDMC LTD during the evaluation of the bids in accordance with **clause 26**.

25.0 Determination of Responsiveness

25.1 Prior to the detailed evaluation of the bids the IDMC LTD will determine whether each bid is substantially responsive to the requirements of the bidding documents.

25.2 For the purpose of this clause, a substantially responsive bid is one which conforms to all terms, conditions and specifications of the bidding documents without material deviation or reservation. A material deviation or reservation is one which affects in any substantial way the scope, quality or the performance of the works or which limits in any substantial way, inconsistent with the bidding documents, the IDMC LTD's right or the bidder's obligations under the Contract, and the rectification of which deviation or reservation

would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

25.3 If a bid is not substantially responsive to the requirements of the bidding documents, it will be rejected by IDMC LTD and may not be subsequently made responsive by the bidder having corrected or withdrawn the non-conforming deviation or reservation.

26.0 Correction of Errors: Not Applicable

27.0 Conversion to Single Currency:

27.1 All bid prices shall be submitted in Indian currency only.

28.0 Evaluation and comparison of the Bids:

28.1 The IDMC LTD evaluate and compare only bids determined to be substantially responsive to the requirements of the bidding documents in accordance with **clause 25**.

28.2 In evaluating bids, the IDMC LTD will determine for each bid the evaluated price by adjusting the bid price making any correction for errors pursuant to **clause 26.0**

28.3 The IDMC LTD reserves the right to accept or reject any variation, deviation or alternative offers. Variations, deviations and alternative offers and other factors which are in excess of the requirement of the bidding documents or otherwise result in the accrual of unsolicited benefits to the IDMC LTD shall not be taken in to account in bid evaluation.

28.4 Price variation provisions of the Contract shall be taken in to account in bid evaluation pursuant to **clause 11.5**

28.5 Additional Performance Security:

If the bid of the successful bidder is having ALR (Abnormally Low Rates i.e. the rates less than 40% of estimated rates) for prices of individual items or total bid price offered in relation to the IDMC LTD's item rates estimate or total price estimate of the real cost of the work to be performed under the Contract, the IDMC LTD may require that the amount of the performance security deposit set forth in the **clause 33.0** be increased at the expense of the successful bidder to a level sufficient to protect the IDMC LTD against financial loss in the event of subsequent performance of the successful bidder under the Contract.

28.6 Upon the furnishing by the successful bidder of a performance security in accordance with the **clause 33** the IDMC LTD may notify the unsuccessful bidders that their bids have been unsuccessful.

29.0 Award Criteria

The Purchaser will award the contract to the successful bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid provided further the bidder is determined to be qualified to perform the contract satisfactorily as per clause 28.

Subject to Para 29.1, the Purchaser will award one single contract or more than one contract to the successful bidder at the Purchaser's discretion.

30.0 IDMC LTD's Right to accept any bid and to reject any or all bids.

The IDMC Limited reserves the right to accept or reject any offer /bid and to annul the bidding process and reject all offers/ bids, at any time prior to the award of the Contract, without thereby incurring any liability to the affected bidder(s) or any obligation to inform the affected bidder(s) of the grounds for the IDMC Limited's action.

31.0 Notification of Award

31.1 Prior to the expiry of the period of offer /bid validity prescribed in the enquiry / bid documents, the IDMC Limited will notify the finalized bidder / vendor here in after referred to as the "Agency / Contractor", in writing on acceptance of their offer /bid and issue a Letter of Intent / Award, followed by Detailed Purchase order mentioning all the required terms and conditions and (hereinafter and in the Conditions of the Contract referred to as the "Contract price")

31.2 Upon the furnishing by the successful bidder of a performance security in accordance with the **clause 33** the IDMC LTD may notify the unsuccessful bidders that their bids have been unsuccessful.

32.0 Signing of Agreement:

32.1 At the same time that the IDMC LTD notifies the successful bidder that his bid has been accepted, the IDMC LTD will send the bidder the Form of Agreement provided in the bidding documents (**Section VIII**), incorporating all agreements between the parties.

32.2 Within **15 days** of the receipt of the Form of Agreement the successful bidder shall sign the Form and return it to IDMC LTD.

33.0 Performance Security:

33.1 Within **30 days** of the receipt of the notification of award from the IDMC LTD, the successful bidder shall furnish to the IDMC LTD a performance security for an amount of **5% (five percent)** of the Contract cost pursuant to **clause 10.0 of General Conditions of Contract (Section II)**.

Failure of the successful bidder to comply with the requirements of the **clause 32 or 33** shall constitute sufficient grounds for the annulment of the award and forfeiture of the Earnest Money Deposit (EMD).

34.0 License and Permit for Goods/Services:

Unless stated otherwise, no license or permit shall be provided by Purchaser/Owner/Service Recipient for the Goods/Services being provided by contractor against this bid.

SECTION – II

GENERAL CONDITIONS OF CONTRACT

SECTION II GENERAL CONDITIONS OF CONTRACT
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GENERAL CONDITIONS OF CONTRACT**DEFINITIONS AND INTERPRETATIONS**

- 1.0 DEFINATION AND INTERPRETATION:** In the Contract, as hereinafter defined, the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires
- 1.1 OWNER/PROJECT AUTHORITY/ SERVICE RECIPIENT - shall** mean the client on whose behalf the enquiry is issued by the IDMC Limited and shall include its successors and assignees, as well as its authorized representatives.
- 1.2 PURE AGENT/ CONSULTANT** shall mean the IDMC Limited or the consultants appointed by the IDMC Limited or the Owner for the Project.
- 1.3 IDMC LTD** shall mean the IDMC LIMITED
- 1.4 ENGINEER** shall mean the Engineer or any other authorized representative of the IDMC LTD.
- 1.5 Architect** shall mean the architect appointed by the IDMC LTD/Owner.
- 1.6 Structural Consultants** shall mean the Structural Consultants appointed by the IDMC LTD/Owner.
- 1.7 Bidder** shall be the firm/party/individual who submits the bid against the Invitation for Bid.
- 1.8 Contractor** shall mean the successful bidder whose Bid has been accepted by the Owner / IDMC LTD and on whom a work order has been placed and shall include his heirs, legal representatives and assignees.
- 1.9 Sub-Contractor** shall mean the person/firm/ party named by the Contractor whom a part of the Contract has been sublet with the consent of owner /IDMC LTD and shall include his heirs, successors, legal representatives, and assignees.
- 1.10 Contract price/rate** shall mean the prices/rates of the accepted Bid.
- 1.11 Contract** shall mean the work order along-with articles of agreement, the conditions, the appendix, the schedule of quantities, and/or specifications attached herewith.
- 1.12 "Notice in writing"** shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to

have been received) by courier/registered/ordinary post to the last known address or the registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.

- 1.13 “Engineer -In-charge”** means the site engineer designated as such or other Engineer appointed from time to time by purchaser.
- 1.14 Site** shall mean the actual place of the proposed project or any other place where work is to be executed under the Contract. It shall also include any other land allotted by the IDMC LTD for the Contractor's use.
- 1.15 Month** shall mean from the beginning of a given date of a calendar month to the end of the preceding date of the next calendar month.
- 1.16 Week** shall mean seven consecutive days.
- 1.17 Day** shall mean a day from midnight to midnight.
- 1.18 Building** shall mean the proposed building (s), roads, fencing, sanitary and water supply, underground/overhead water tank etc. under the Contract.
- 1.19 Bid Security** shall mean the sum paid along with the bid as a token to bind the Contract.
- 1.20 Award** shall mean the written acceptance of Bid by the IDMC LTD/owner given to the successful bidder.
- 1.21 Performance Security** shall mean the amount pledged with the IDMC LTD while signing the agreement for faithful and satisfactory performance of the Contract.
- 1.22 Constructional Plant** shall mean all appliances or things of whatsoever nature required in or about the execution and maintenance of the Works but does not include the materials or other things required /intended to form or forming part of the Works.
- 1.23 Specifications** shall mean the specification referred to in the bid and any modification thereof or addition thereto as may from time to time be furnished or approved in writing by the IDMC LTD/Engineer.
- 1.24 Drawings** shall mean drawings referred to in the specifications and any modification of such drawings approved in writing by the Engineer and such other drawings as may from time to time be furnished or approved in writing by the IDMC LTD/Engineer / consultant.

1.25 Temporary Works shall mean temporary works of every kind required in or about the execution or maintenance of works.

1.26 Permanent Works shall mean the permanent works to be executed and maintained in accordance with the Contract.

1.27 Works shall include both temporary works and permanent works.

1.28 Approved/Approval shall mean approval in writing, including subsequent written confirmation of previous verbal or written approval.

1.29 I.S.S. shall mean Indian Standard Specifications

1.30 Government shall mean the Government of India or any other State Government.

1.31 Tender shall mean the Bid.

1.32 Headings and Marginal notes:

All headings of and notes to the clauses of these Conditions of Contract or of and to the Specifications or any other bid document are solely for the purpose of giving concise indication and not a summary of the contents thereof, and they shall never be deemed to be the part of or be used in the interpretation or construction thereof or of the Contract.

1.33 Singular and Plural.

In this Contract document unless otherwise stated specifically the singular shall include the plural and vice-versa wherever the context so requires.

1.34 Cost

The cost shall be deemed to include overhead costs whether on or off the site.

1.35 Purchaser

The organization who is purchasing the goods/services.

ENGINEER & ENGINEER'S REPRESENTATIVE

2.0 Duties and Powers of the Engineer and the Engineer's Representative:

2.1 The field management shall be the responsibility of the Engineer. The Engineer shall carry out such duties as taking decisions and issuing

certificates and orders as specified in the Contract. The Engineer is empowered to take decisions on the following matters:

- (a) Approval of subletting of any part of the works pursuant to **clause 4.0** hereof;
- (b) Certification of additional sums under **sub-clause 53(2)** hereof;
- (c) Determination of an extension of time pursuant to **clause 44.0** hereof;
- (d) Issuance of a variation order pursuant to **clause 52.0** hereof;
- (e) Fixing rates or prices for the additional works executed under the Contract pursuant to **clause 52.0** hereof.

2.2 The Engineer's Representative shall be responsible to the Engineer and his duties are to watch and supervise the works and to test and examine any materials to be used or workmanship employed with the works. The Contractor shall get the materials or the workmanship tested, as instructed by the Engineer's Representative, at his own cost. He shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract nor, except as expressly provided hereunder or elsewhere in the Contract, to order any work involving delay or any extra payment by the Service Recipient/ IDMC LTD, nor to make any variation of or in the works.

2.3 The IDMC LTD may from time to time in writing delegate to the Engineer's Representative any of the powers and authorities vested in the Engineer. Any written instruction or approval given by the Engineer's Representative to the Contractor within the terms of such delegations, but not otherwise, shall bind the Contractor as though it had been given by the Engineer provided always as follows:

- (a) Failure of the Engineer's Representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or materials and to order the pulling down, removal or breaking up thereof.
- (b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's Representative he shall be entitled to refer the matter to the Engineer, who shall there upon confirm, reverse or vary such decision.

3.0 Inspection of Works:

3.1 The IDMC LTD and his representatives shall have full power and authority to inspect the works at any time wherever the work is in progress either on the site or at the Contractor's premises/ workshop wherever situated, premises/ workshop of any person, firm or corporation where the work in connection with the Contract may be in hand or wherefrom materials are being produced or are to be supplied, and the Contractor shall afford or procure for the Engineer every facility and assistance to carry out such inspection. The Contractor shall at all times during usual working hours and at all other times at which reasonable notice of the intention of the Engineer or the Engineer's Representative to visit the works shall have been given to the Contractor, either himself be present to receive the orders and instructions, or have a responsible agent /representative duly accredited in writing present for the purpose. Orders given to the Contractor's agent/ representative shall be considered to have the same force as if they had been given to the Contractor himself. The Contractor shall give not less than **three days** notice in writing to the Engineer's Representative before covering up or otherwise placing beyond the reach of inspection and measurement any work in order that the same may be inspected and measured. In the event of breach of the above the same shall be uncovered at the Contractor's expenses for carrying out such measurement or inspection.

3.2 No materials shall be removed from the site before obtaining the approval in writing of the Engineer. The Contractor is to provide at all times during the progress of the work and the maintenance period proper means of access with ladders, gangways, etc. and the necessary attendance to move and adopt as directed for inspection or measurement of the works by the Engineer's Representative.

3.3 The Contractor shall make available to the Engineer's Representative free of cost all necessary instruments and assistance in checking of setting out of works and checking of any works made by the Contractor for the purpose of setting out and taking measurements of works.

3.4 Nothing in this clause shall in any way relieve the contractor from any warranty or other obligations under the contract.

4.0 Sub-letting of Work:

4.1 The Contractor shall not sub-let the whole of the works. Except where otherwise provided by the Contract, the Contractor shall not sub-let any part of the works without prior written consent of the Engineer, which shall not be unreasonably withheld, and such consent, if given

shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and negligence of any sub-contractor, his agents, servants or workmen as fully as if they were the acts, defaults or negligence of the Contractor, his agents, servants or workmen, provided always that the provision of labour on a piece work basis shall not be deemed to be a sub-letting under this clause.

CONTRACT DOCUMENT

5.0 Language and Law of Contract:

- 5.1** i) All written material and correspondence shall be in **English**.
ii) The law to which the Contract is to be subjected and according to which the Contract is construed, shall be the law being in force in India and/or the state where the Contract shall be performed.

5.2 Documents Mutually Explanatory:

Except if and to the extent otherwise provided by the Contract, the provisions of the General Conditions and Special Conditions of the Contract shall prevail over those of any other documents forming part of the Contract. Several documents forming the Contract are to be taken as mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the Contracts or any of them the matter may be referred to Engineer who shall give his decisions and issue to the Contractor instructions, directing in what manner the work is to be carried out. The decision of the Engineer shall be final and conclusive and the Contractor shall carry out the work in accordance with this decision.

- 5.3** Works shown upon the drawing but not mentioned in the specifications or described in the specifications without being shown on the drawings shall nevertheless be held to be included in the same manner as if they had been specifically shown upon the drawings and described in the specifications.

6.0 Drawings: their Purpose and the Custody:

- 6.1** The Contract drawings read together with the Contract specifications are intended to show and explain the manner of executing the work and to indicate the type and the class of materials to be used.
- 6.2** In case any feature of the work is not set forth in the drawings and specifications, the Contractor shall forthwith apply to the Engineer for further instructions, drawings or specifications.

- 6.3** The drawings shall remain in the sole custody of the Engineer, but two copies shall be issued to the Contractor free of charge. One copy of the drawings, furnished to the Contractor as aforesaid, shall be kept by the Contractor on the site and the same shall at all reasonable times be available for inspection and use by the Engineer or the Engineer's Representative and by any other person authorized by the Engineer in writing. At the completion of the Contract the Contractor shall return to the Engineer all drawings issued under the Contract. The drawings and specifications issued are sole property of the Purchaser/ Consultants and these can not be reproduced/ copied or used for any other works without a written consent of the Purchaser/ Consultant.
- 6.4** The Contractor shall give written notice to the Engineer whenever planning or progress of the works is likely to be delayed unless any further drawing or instruction is issued by the IDMC LTD/ Engineer within a reasonable time. The notice shall include the detail of the drawing or instruction required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.
- 6.5** The contractor shall submit the following information, in triplicate, to the Engineer for approval within the time stipulated against each item below:
- a) A general layout plan of construction plant and equipment for the execution of work within **fourteen days** from the date of notice to proceed with the work; and
 - b) drawings or prints showing the location of major plants and other facilities which he proposes to put up at the site, including any changes in the general layout, at least **fourteen days** prior to the commencement of the respective work.
- 7.0 Further Drawings and Instructions:**
- 7.1** The Engineer may also authorize his representatives to perform his duties and functions. The Contractor shall carry out and be bound by the same. The Engineer shall have full powers and authority to supply to the Contractor from time to time, during the progress of the works, such further drawings and instructions as shall be necessary for the proper execution of the project.

GENERAL OBLIGATIONS

8.0 Contractor's General Responsibilities:

- 8.1** The Contractor shall, subject to the provisions of the Contract, and with due care and diligence, execute and maintain the Works and

provide all labour, including the supervision thereof, materials, Construction Plant and all other things, whether of a temporary or permanent nature, required in and for such execution and maintenance, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

8.2 The Contractor shall take full responsibility for the adequate stability and safety of all site operations and methods of construction, provided that the Contractor shall not be responsible, except as may be expressly provided in the Contract, for the design or specification of the Permanent Works, or for the design or specification of any Temporary Works prepared by the Engineer.

9.0 Contract Agreement:

9.1 The Contractor shall be called upon so to do enter into and execute a Contract Agreement, in the form provided at **Section VIII (Form of Agreement)** with such modification as may be necessary.

10.0 Performance Security:

10.1 Within **30 days** of the receipt of the notification of the Award of the Contract from the IDMC LTD the successful bidder shall furnish to the IDMC LTD a performance security for an amount of **5% (five percent)** of the total Contract cost.

10.2 The proceeds of the performance security shall be payable to the IDMC LTD as compensation for any loss resulting from the Contractor's failure to complete his obligation under the Contract.

10.3 The performance security shall be **denominated** in Indian Rupees and shall be in any of the following forms:

- a) A Demand draft drawn in favour of the IDMC Limited, payable at the place mentioned in the address of communication stated in the Invitation for Bid (**Section O**).
- b) A Bank Guarantee issued by a Nationalized Indian Bank or a foreign bank having branches in India. The acceptable form shall be strictly as provided in **Section IX (Acceptable Forms OF Bank Guarantees)** of the Bidding documents.

10.4 The bank guarantee (B.G.) shall be valid for the entire period of Contract including the Period of Maintenance (defects liability period) **plus 3 months claim period**. The B.G. can be initially accepted for a period as per Banking norms, on written undertaking of contractor/ bidder that the BG shall be extended before its expiry & shall be kept

valid till Period of Maintenance (defects liability period) **plus 3 months claim period**. The validity of the bank guarantee shall be suitably extended in the event of extension of time of the Contract pursuant to **clause no. 44** herein.

10.5 The performance security shall be released by the IDMC LTD not later than **60 days** following the date of delivery of the Maintenance certificate by the Engineer.

10.6 In the event of increase in the Contract cost, in actual execution, proportionate additional performance security shall be provided by the Contractor or recovered from the subsequent payments due to the contractor.

10.7 In the event of decrease in the Contract cost the performance security shall be proportionately adjusted on the completion of the work.

10.8 No interest shall be paid by IDMC LTD for the amount deposited as Performance security with the IDMC LTD.

11.0 Inspection of Site:

11.1 The Contractor shall be deemed to have inspected and examined the site and its surroundings and information available in connection therewith and to have satisfied himself, before submitting his Tender, as to the form and nature thereof, including the sub-surface conditions, the hydrological and climatic conditions, the extent and nature of work and materials necessary for the completion of the Works, the means of access to the Site and accommodation he may require and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

12.0 Sufficiency of Tender:

12.1 The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the Works and of the rates and prices stated in the priced Schedule of Quantities and the Schedule of Rates and Prices, if any, which Tender rates and prices shall, except insofar, as it is otherwise provided in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper execution and maintenance of the Works.

13.0 Work to be to the Satisfaction of Engineer:

13.1 The Contractor shall execute and maintain the Works in strict accordance with the Contract to the satisfaction of the Engineer and shall comply with and adhere strictly to the Engineer's instructions and directions on any matter whether mentioned in the Contract or not, touching or concerning the Works. The Contractor shall take instructions and directions only from the Engineer.

14.0 Programme to be furnished:

14.1 The Contractor shall, after the acceptance of his Tender, submit to the Engineer for his approval a program showing the order of procedure in which he proposes to carry out the Works. The Contractor shall whenever be required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of Works.

14.2 If at any time it should appear to the Engineer that the actual progress of the Works does not conform to the approved program referred to in **sub-clause (1)** of this Clause, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to the approved programme necessary to ensure completion of the Works within the time for completion as defined in **Clause 43** hereof.

14.3 The submission to and approval by the Engineer of such programme or the furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

14.4 The programme shall be reviewed and revised if required at three monthly intervals and shall include a chart of the principal quantities of work forecast for execution monthly and a schedule of payments expected to be made to the Contractor by the IDMC LTD.

15.0 Contractor's Superintendence:

15.1 The Contractor shall give or provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorized agent or representative approved of in writing by the Engineer, which approval may at any time be withdrawn, is to be constantly on the Works and shall give his whole time to the superintendence of the same. If such approval shall be withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving written notice of such withdrawal, remove the agent from the Works and shall not thereafter

employ him on the Works in any capacity and shall replace him by another agent approved by the Engineer. Such authorized agent or representative shall receive, on behalf of the Contractor, directions and instructions from the Engineer.

16.0 Contractor's Employees:

16.1 The Contractor shall provide and employ on the Site in connection with the execution and maintenance of the Works:

- a) Only such technical assistants as are skilled and experienced in their respective fields and sub-agents, foremen and leading hands as are competent to give proper supervision to the work they are required to supervise, and
- b) Such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the Works.

16.2 It shall be the liability of the Contractor to remove forthwith from the works any personnel engaged by the Contractor, in or about the execution or maintenance of the works, who, misconduct himself or is incompetent or negligent in the proper performance of his duties or whose engagement is otherwise considered to be undesirable and such person shall not be again engaged upon the work. Any person so removed, by the Contractor, from the works shall be replaced, by the Contractor, as soon as possible by a competent substitute.

17.0 Setting-out:

17.1 The Contractor shall be responsible for the true and proper setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing and for the correctness, subject as above mentioned of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith. If at any time, during the progress of the Works, any error shall appear or arise in the position, levels dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer in which case the expense of rectifying the same shall be borne by the IDMC LTD. The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the correctness thereof and the Contractor shall carefully protect and preserve all bench- marks, sight-rails, pegs and other things used in setting- out the Works.

18.0 Boreholes and Exploratory Excavation:

18.1 If, at any time during the execution of the Works, the Engineer shall require the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be ordered in writing and shall be deemed to be an addition ordered under the provision of **Clause 52** hereof, unless a provisional sum in respect of such anticipated works shall have been included in Schedule of Quantities.

19.0 Watching and Lighting:

19.1 The Contractor shall in connection with the Works provide and maintain at his own cost all lights, guards, fencing and watching when and where necessary or required by the Engineer, for the protection of the Works, or for the safety and convenience of the public or others.

20.0 Care of Works:

20.1 From the commencement of the Works until the date stated in the Certificate of Completion for the whole of the Works pursuant to **Clause 49** hereof the Contractor shall take full responsibility for the care thereof. Provided that if the Engineer shall issue a Certificate of Completion in respect of any part of the Permanent Works the Contractor shall cease to be liable for the care of that part of the Permanent Works from the date stated in the Certificate of Completion in respect of that part and the responsibility for the care of that part shall pass to the Owner/ IDMC LTD. Provided further that the Contractor shall take the full responsibility for the care of any outstanding work which he shall have undertaken to finish during the Period of maintenance until such outstanding work is completed. In case any damage, loss or injury shall happen to the Works, or to any part thereof, from any cause whatsoever, save and except the excepted risks as defined in **clause 20.3**, while the Contractor shall be responsible for the care thereof the Contractor shall, at his own cost, repair and make good the same, so that at completion the Permanent Works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the Engineer's instructions. In the event of any such damage, loss or injury happening from any of the excepted risks, the Contractor shall, if and to the extent required by the Engineer and subject always to the provision of **Clause 66** hereof, repair and make good the same as aforesaid at the cost of the IDMC LTD. The Contractor shall also be liable for any damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of completing any outstanding work or complying with his obligations under **Clause 50 or 51** hereof.

20.2 The Contractor shall not demolish, remove or alter the structures, trees or other facilities on the site without the prior approval of the Engineer.

20.3 Excepted Risks:

The "excepted risks" are war, hostilities (whether war be declared or not), invasion, act of foreign enemies, rebellion, revolution insurrection or military or usurped power, civil war, or unless solely restricted to employees of the Contractor or of his sub-contractors and arising from the conduct of the Works, riot, commotion or disorder, or a cause solely due to the Engineer's design of the Works, or ionizing radiation or contamination by radio-activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive, nuclear assembly or nuclear component thereof, pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds, or any such operation of the forces of nature as an experienced Contractor could not foresee, or reasonably make provisions for or insure against all of which are herein collectively referred to as "the excepted risks".

21.0 Insurance of Works, etc.:

21.1 Without limiting his obligations and responsibilities, the Contractor shall prior to the commencement of the Works (**as per appendix-I, Section-V**) insure in the joint names of the Service Recipient and the Contractor by naming Service Recipient as the beneficiary against all losses or damages from whatever cause arising, other than the excepted risks, for which he is responsible under the terms of the Contract and in such manner that the Service Recipient and the Contractor are covered for the period stipulated for loss or damage arising from a cause, occurring prior to the commencement of the Period of maintenance. The realized claim amount by Service Recipient shall be reimbursed to the contractor after making good of the damages by the contractor. **Copy of the insurance policies shall be submitted prior to commencement of the work.**

- a) The Works for the time being executed to the estimated current Contract cost thereof **plus 10 percent** thereon to allow for any additional costs and professional fees resulting from the loss or damage.
- b) The Constructional Plant and other things brought on to the Site by the Contractor to the replacement value of such Constructional Plant and other things.

- c) It shall be the responsibility of the Contractor to notify the insurer of any change in nature and extent of the Works and to ensure the adequacy of the insurance cover at all times in accordance with the provisions of this Clause.

Such insurance shall be effected with an insurer and the Contractor shall, produce to the Engineer/IDMC LTD the policy or policies of insurance and the receipts for payments of the current premiums.

22.0 Damage to Persons and Property:

22.1 The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the IDMC LTD against all losses and claims in respect of injuries or damage to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation or damages for or with respect to:-

- a) The permanent use or occupation of land by the Works or any part thereof.
- b) The right of the IDMC LTD to execute the Works or any part thereof on, over, under, in or through any land.
- c) Injuries or damage to persons or property which are the unavoidable result of the execution or maintenance of the Works in accordance with the Contract.
- d) Injuries or damage to persons or property resulting from any act or neglect of the Engineer or other Contractors, not being employed by the Contractor, or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the Contractor, his servants or agents such part of compensation as may be just and equitable having regard to the extent of the responsibility of the Engineer or other Contractors for the damage or injury.

22.2 The contractor shall indemnify the IDMC LTD/Purchaser/Owner against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision to **sub-clause (1)** of this Clause.

23.0 Third Party Insurance:

23.1 Before commencing the execution of the Works the Contractor, but without limiting his obligations and responsibilities under **Clause 22** hereof, shall insure against his liability for any material or physical damage, loss or injury which may occur to any property, including that of the owner/ IDMC LTD, or to any person, including any employee of the owner/ IDMC LTD, or by arising out of the execution of Works or in the carrying out of the Contract, otherwise than due to the matters, referred to in the provision to **Clause 22.1** hereof.

23.2 Such insurance shall be effected with an insurer. The Contractor shall, produce to the Engineer/ IDMC LTD the policy or policies of insurance and the receipts for payment of the current premiums.

23.3 The terms shall include a provision whereby, in the event of any claim in respect of which the Contractor would be entitled to receive indemnity under the policy being brought or made against the IDMC LTD, the insurer will indemnify the IDMC LTD against such claims and any costs, charges and expenses in respect thereof.

23.4 **Such insurance shall be for 10 % of the value of works with number of occurrence unlimited.**

24.0 Accident or Injury to Workmen:

24.1 The IDMC LTD shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub- Contractor. The Contractor shall indemnify and keep indemnified the IDMC LTD against all such damages and compensation, save and except as aforesaid, and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto. Where any case is instituted against the IDMC LTD, the Contractor shall implead himself as a party as if the case has been instituted against the Contractor.

24.2 The Contractor shall insure against such liability with an insurer and shall continue such insurance during the whole of the time that any persons are employed by him on the Works and shall, produce to the Engineer/ IDMC LTD such policy of insurance and the receipts for the payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor, the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the IDMC LTD is indemnified under the policy, but the Contractor shall require such sub-contractor

to produce to the Engineer/ IDMC LTD such policy of insurance and receipt for the payment of the current premium.

24.3 Employee State Insurance (ESI) Act:

The Contractor shall accept full and exclusive liabilities for the compliance with all obligations imposed by the ESI Act 1948, and the Contractor shall further defend, indemnify and hold the Owner/IDMC LTD harmless from any liabilities or penalties which may be imposed by the Central, State or local authorities by reason of any asserted violation by Contractor or sub-contractor of the ESI Act, 1948 and also from all claims, suits or proceedings that may be brought against the Owner/IDMC LTD arising under, growing up or by reason of the work provided for by this Contract whether brought by the employees of the Contractor, by the third parties, or by Central or State Govt. authorities or any political sub-division thereof. The Contractor shall fill in with the ESI the declaration form and all other forms which may be required in respect of the Contractor's or sub-contractor's employees and who are employed by for the works provided for or those covered by ESI from time to time under the agreement. The Contractor shall deduct and secure the agreement of the sub-contractor and deduct the employees contribution as per the first schedule of the ESI Act from wages and affix the employees' contribution cards at wages payment intervals. The Contractor shall remit and secure that agreement of the sub- contractor to remit, the employees contribution as required by the Act. The Contractor shall maintain all codes and records as required under Act in respect of the employees and payment and the Contractor shall secure the agreement of the sub-contractor to maintain such records. Any expense incurred for the contribution or maintaining records shall be to the Contractor's account.

The Owner/IDMC LTD shall retain such amount as may be necessary from the total Contract cost until the Contractor shall furnish satisfactory proof the whole contribution as required by the ESI Act have been paid.

25.0 Remedy on Contractor's Failure to Insure:

25.1 The contractor shall not start work at site without prior written consent/ permission accorded by the site engineer which shall not be accorded in absence of, inter-alia, the required insurance policies. However, if the contractor fails to effect and keep in force the required insurance policies and commences work without authorization, the Contractor shall be solely responsible for any damage or loss.

In addition to this, the failure of the contractor in meeting the above requirements would result in the following penalties:

- a) A penalty @ 0.05% of the contract value shall be imposed (by way of deductions from his bills) on the contractor if the contractor fails to submit the required insurance policy and starts work without due authorization.
- b) If the contractor fails to extend/renew any of the existing insurance policies before expiry, for every default in any of the insurance policy a penalty @ 0.05% of the contract value shall be imposed (by way of deductions from his bills) on the contractor. The maximum penalty for such defaults would be limited to 0.10% of the contract value.

26.0 Giving of Notices and Payment of Fees:

26.1 The Contractor shall give all notices and pay all fees required to be given or paid by any National or State Statute, Ordinance, or Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution of the Works and by the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works.

26.2 The Contractor shall conform in all respects with the provisions of any such Statute, Ordinance or Law as aforesaid and the regulations or bye-laws of any local or other duly constituted authority which may be applicable to the Works and with such rules and regulations of public bodies and companies as aforesaid and shall keep the IDMC LTD

indemnified against all penalties and liability of every kind for breach of any such Statute, Ordinance or Law, regulation or bye-law.

26.3 The IDMC LTD will repay or allow to the Contractor all such sums as the Engineer/IDMC LTD shall certify to have been properly payable and paid by the Contractor in respect of such fees.

27.0 Fossils, etc.:

27.1 All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site of the Works shall as between the IDMC LTD and the Contractor be deemed to be the absolute property of the IDMC LTD. The Contractor shall take precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and, before removal, acquaint the Engineer of such discovery and carry out the Engineer's orders as to the disposal of the same.

28.0 Patent Rights and Royalties:

28.1 The Contractor shall save harmless and indemnify the IDMC LTD from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Constructional Plant, machine work, or material and for in connection with the Works or any of them and from and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. Except where otherwise specified, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works or any of them.

29.0 Interference with Traffic and Adjoining Properties:

29.1 All operations necessary for the execution of the Works shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with the convenience of the public, or the access to, use and occupation of public or private roads and footpaths to or of properties whether in the possession of the IDMC LTD or of any other person. The Contractor shall save harmless and indemnify the IDMC LTD in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters in so far as the Contractor is responsible therefore.

30.0 Extraordinary Traffic:

- 30.1** The Contractor shall use every reasonable means to prevent any of the highways or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his sub-contractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of plant and material from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such highways and bridges.
- 30.2** Should it be found necessary for the Contractor to move one or more loads of Constructional Plant, machinery or pre-constructed units or parts of units of work over a part of a highway or bridge, the moving whereof is likely to damage any highway or bridge unless special protection or strengthening is carried out, then the Contractor shall before moving the load on to such highway or bridge give notice to the concerned authority of the weight and other particulars of the load to be moved and his proposals for protecting or strengthening the said highway or bridge and obtain approval from that concerned authority at his own cost. He shall keep the Engineer informed of the action taken.
- 30.3** If during the execution of the Works or at any time thereafter the Contractor shall receive any claim arising out of the execution of the Works in respect of damage or injury to highways or bridges he shall immediately report the same to the Engineer and thereafter shall negotiate the settlement of and pay all sums due in respect of such claim and shall indemnify the IDMC LTD in respect thereof and in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto.
- 30.4** Where the nature of the Works is such as to require the use by the Contractor of water-borne transport the foregoing provisions of this Clause shall be construed as though "highway" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.
- 31.0 Opportunities for other Contractors:**
- 31.1** The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to any other Contractors employed by the IDMC LTD/owner and their workmen and to the workmen of the IDMC LTD/owner and of any other duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any Contract which the IDMC LTD may enter into in connection with or

ancillary to the Works. If, however, the Contractor shall, on the written request of the Engineer, make available to any such other Contractor, or to the IDMC LTD or any such authority, any roads or ways for the maintenance of which the Contractor is responsible, or permit the use by any such of the Contractor's scaffolding or other plant on the Site, or provide any other service of whatsoever nature for any such, the IDMC LTD shall pay to the Contractor in respect of such use or service such sum or sums as shall, in the opinion of the Engineer, be reasonable.

32.0 Contractor to Keep Site Clear:

32.1 During the progress of the Works the Contractor shall keep the site reasonably free from all unnecessary obstructions and shall store or dispose of any Constructional Plant and surplus materials and clear away and remove from the site any wreckage, rubbish or Temporary Works no longer required.,

33.0 Clearance of Site on Completion:

33.1 On the completion of the Works the Contractor, at his own cost, shall clear away and remove from the Site all Constructional Plant, surplus materials, rubbish and Temporary Works of every kind, and leave the whole of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. However for removal of surplus excavated earth & existing material, payment shall be made separately as per relevant tender item.

L A B O U R**34.0 Engagement of Labour:**

34.1 The Contractor shall make his own arrangements for the engagements of all labour, local or otherwise, and, save insofar as the Contract otherwise provides, for the transport, housing feeding and payment thereof. The Contractor to the extent possible and reasonable to employ staff and labour with required qualifications and experience from source within India.

34.2 The Owner/IDMC LTD may at their own discretion and convenience make available at the site, land for Contractor's field office, godown, workshop and assembly yard required for the execution of the Contract. The Contractor shall at his own cost construct all these temporary buildings and provide suitable water supply and sanitary arrangement approved by the Engineer.

- 34.3** The personnel so engaged by the Contractor shall be the employees of the Contractor and there shall exist no probity of Contract between the personnel so engaged and the IDMC LTD/Owner.
- 34.4** On completion of the works undertaken by the Contractor, he shall remove all temporary buildings erected by him and have the site cleaned as directed by the Engineer. If the Contractor shall fail to comply with these requirements, the Engineer may at the expenses of the Contractor remove such surplus and rubbish materials and dispose off the same as he deems fit and get the site cleared as aforesaid; the Contractor shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus material disposed off as aforesaid. The owner reserves the right to ask the Contractor any time during the tendency of the Contract to vacate the land by giving **7 days** notice without giving any reason.
- 34.5** Land for residential accommodation for staff and labour may be made available at the discretion of the IDMC LTD / Engineer.
- 34.6** The Contractor shall, so far as is reasonably practicable, having regard to local conditions, provide on the Site, to the satisfaction of the Engineer an adequate supply of drinking and other water for the use of the Contractor's staff and work people.
- 34.7** The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs or permit any such importation, sale, gift, barter or disposal by his sub-contractors, agents or employees.
- 34.8** The Contractor shall not give, barter or otherwise dispose of to any person or person, any arms or ammunitions of any kind or permit the same as aforesaid.
- 34.9** The Contractor shall in all dealings with labour in his employment, have due regard to all recognized festivals, days of rest and religious or other customs.
- 34.10** In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.
- 34.11** The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his

employees and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same. The Contractor shall be responsible to comply with the various labour laws such as **Contract Labour (R&A) Act, 1970, Payment of Wages Act, Minimum Wages Act, Provident Fund Act & Rules etc. in respect of the persons engaged by him.**

34.12 The Contractor shall be responsible for observance by his sub-contractors of the foregoing provisions.

35.0 Returns of Labour, etc.:

35.1 The Contractor shall submit to the IDMC LTD/Owner copies of the licence under the Contract Labour Act, if required and obtained by the Contractor and his Provident Fund Number. The Contractor shall, if required by the Engineer, also deliver to the Engineer a return in detail in such form and at such intervals as the Engineer may prescribe showing the supervisory staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Constructional Plant as the Engineer may require.

35.2 The Contractor shall not employ in connection with the works any person who has not **completed fifteen years of age.**

35.3 The Contractor shall in respect of labour employed by him comply with or cause to be complied with the provision of the various **labour laws and rules and regulations such as Contract Labour Act(R&A) Act, 1970, Payment of Wages Act, Minimum Wages Act, Provident Fund Act & Rules etc.** applicable to them in regard to all matters provided therein and shall indemnify the IDMC LTD in respect of all claims that may be made against the IDMC LTD for non-compliance thereof by the Contractor.

35.4 Notwithstanding anything contained herein, the Engineer may take such actions as may be necessary for compliance of the various labour laws and recover the costs thereof from the Contractor.

35.5 In the event of the Contractor committing a default or breach of any of the provisions of labour laws and rules and regulations as applicable, shall pay penalties as imposed by the statutory Authorities and shall indemnify and keep indemnified the IDMC LTD/Owner all such penalties and compensations.

MATERIALS AND WORKMANSHIP

36.0 Materials and Workmanship:

36.1 All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests as the Engineer may direct at the place of manufacture or fabrication, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used and shall supply samples of materials before incorporation in the Works for testing as may be selected and required by the Engineer.

36.2 All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

36.3 The cost of conducting any test ordered by the Engineer to ascertain the quality of the materials and the workmanship shall be borne by the Contractor.

37.0 Inspection of Operations:

37.1 The Engineer and any person authorized by him shall at all times have access to the Works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the Works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

38.0 Examination of Work before covering up:

38.1 No work shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The Contractor shall give due notice to the Engineer whenever such work or foundations is or are ready or about to be ready for examination and the Engineer shall, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such work or of examining such foundations.

38.2 The Contractor shall uncover any part or parts of the Works or make openings in or through the same as the Engineer may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of the Engineer. If any such part or parts have been put out of view after compliance with the requirement of **clause 38.1**

and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating and making good the same shall be borne by the IDMC LTD, but in any other case all costs shall be borne by the Contractor.

39.0 Removal of Improper Work and Materials:

39.1 The Engineer shall during the progress of the Works have power to order in writing from time to time.

a) The removal from the Site, within such time or times as may be specified in the order, of any materials which, in the opinion of the Engineer, are not in accordance with the Contract.

b) The substitution of proper and suitable materials and

c) The removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefore, of any work which in respect of materials or workmanship is not, in the opinion of the Engineer, in accordance with the Contract.

39.2 In case of default on the part of the Contractor in carrying out such order, the IDMC LTD shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the IDMC LTD or may be deducted by the IDMC LTD from any payment due or which may become due to the Contractor.

40.0 Suspension of Work:

40.1 The Contractor shall, on the written order of the Engineer, suspend the progress of the Works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work, so far as is necessary in the opinion of the Engineer. The extra cost incurred by the Contractor in giving effect to the Engineer's instructions under this Clause shall be borne and paid by the IDMC LTD unless such suspension is:

a) Otherwise provided for in the Contract, or

b) Necessary by reasons of some default on the part of the Contractor, or

c) Necessary by reason of climatic conditions on the Site, or

d) Necessary for the proper execution of the Works or for the safety of the Works or any part thereof insofar as such necessity does not arise from any act or default by the Engineer or the IDMC LTD or from any of the excepted risks defined in **Clause 20** hereof.

Provided that the Contractor shall not be entitled to recover any such extra cost unless he gives written notice of his intention to claim to the Engineer within **fifteen days** of the Engineer's order. The Engineer shall settle and determine such extra payment and/or extension of time under **Clause 44** hereof to be made to the Contractor in respect of such claim as shall, in the opinion of the Engineer, be fair and reasonable.

- 40.2** If the progress of the Works or any part thereof is suspended on the written order of the Engineer and if permission to resume work is not given by the Engineer within a period of **ninety days** from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of sub-clause (1) of this Clause, the Contractor may serve a written notice on the Engineer requiring permission within **twenty-eight days** from the receipt thereof to proceed with the Works, or that part thereof in regard to which progress is suspended and, if such permission is not granted within the time, the Contractor by a further written notice so served may, but is bound to, elect or treat the suspension where it affects only part of the Works as an omission of such part under **Clause 52** hereof, or, where it affects the whole Works, as an abandonment of the Contract by the Service Recipient/IDMC LTD.

COMMENCEMENT TIME AND DELAYS

41.0 Commencement of Works:

- 41.1** The Contractor shall commence the Works on Site within the period named in the **Appendix to the Tender (Form of Bid)** after the receipt by him of a written order to this effect from the Engineer and shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the Engineer, or be wholly beyond the Contractor's control.

42.0 Possession of Site:

- 42.1** Save insofar as the Contract may prescribe, the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portions shall be made available to him and, subject to any requirement in the Contract as to the order in which the Works shall be executed, the IDMC LTD will, with the Engineer's written order to commence the Works, give to the Contractor

possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the execution of the Works in accordance with the programme referred to in **Clause 14** hereof, if any, and otherwise in accordance with such reasonable proposals of the Contractor as he shall, by written notice to the Engineer, make and will, from time to time as the Work proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with the said programmes or proposals, as the case may be. If the Contractor suffers delay from the failure on the part of the IDMC LTD to give possession in accordance with the terms of this Clause, the Engineer shall grant an extension of time for the completion of the Works as, in his opinion shall be fair.

42.2 The Contractor shall bear all costs and charges for special or temporary way leaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the Site required by him for the purposes of the Works.

43.0 Time for Completion:

43.1 Subject to any requirement in the Contract as to completion of any section of the Works before completion of the whole, the whole of the Works shall be completed, in accordance with the provisions of **Clause 49** hereof, within the time stated in the Contract or such extended time as may be allowed under **Clause 44** hereof.

43.2 Upon acceptance of the bid, the contractor shall submit to the Purchaser/IDMC LTD for his approval a comprehensive work programme in the form of **Bar chart** indicating the critical activities as well. After approval by the Purchaser/IDMC LTD, the contractor shall strictly adhere to the sequence of activities stated therein. The contractor shall review the actual progress of work in each month, in relation to the approved programme and shall inform the Purchaser/IDMC LTD. The submission to and approval by the Purchaser/IDMC LTD of the programme shall not relieve the contractor of any of his duty and responsibility under the contract.

43.3 Time is the essence of the contract to the responsive bidder.

44.0 Extension of Time of Completion:

44.1 Should the amount of extra or additional work of any kind or any cause of delay referred to in these Conditions, or exceptional adverse climatic conditions, or other special circumstances of any kind whatsoever which may occur, other than through a default of the Contractor, be such as fairly to entitle the Contractor to an extension of time for the completion of the Works, the Engineer shall determine

the amount of such extension and shall notify the IDMC LTD and the Contractor accordingly. Provided that the Engineer is not bound to take in account any extra or additional work or other special circumstances unless the Contractor has within thirty days after such work has been commenced, or such circumstances have arisen, or as soon thereafter as is practicable, submitted to the Engineer full and detailed particulars of any extension of time to which he may consider himself entitled in order that submission may be investigated at the time.

45.0 No Night Work:

45.1 Subject to any provision to the contrary contained in the Contract, none of the Permanent Works shall, save as hereinafter provided, be carried on during the night without the permission in writing of the Engineer except when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer. Provided always that the provisions of this Clause shall not be applicable in the case of any work which it is customary to carry out by rotary or double shifts.

46.0 Rate of Progress:

46.1 If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any section is at any time, in the opinion of the Engineer, too slow to ensure completion by the prescribed time or extended time for completion, the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as are necessary and the Engineer may approve to expedite progress so as to complete the Works or such section by the prescribed time or extended time. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor shall seek the Engineer's permission to do any work at night, such permission shall not be unreasonably refused.

47.0 Liquidated Damages for Delay:

47.1 If the Contractor shall fail to achieve completion of the Works within the time prescribed in the **Appendix to the Form of Bid**, then the Contractor shall pay to the IDMC LTD the sum at the rate of **0.5% (zero point five percent)** of the amended up-to date total contract cost as liquidated damages for such default and not as a penalty for **each completed week** (week comprising of **7 days** including holidays and any incomplete week shall be ignored for the calculation of liquidated damages) which shall elapse between the time prescribed by **clause**

43 hereof and the date of certified completion of the particular Works. The IDMC LTD may without prejudice to any other method of recovery, deduct the amount of such damages from any payment in its hands, due or which may become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

47.2 The aggregate maximum of the liquidated damages payable to the IDMC LTD under this clause shall be subject to a maximum of **10% (ten percent) of the total order / Contract cost** (i.e. value indicated in letter of acceptance or any subsequent amendment, accepted by the contractor).

47.3 If, before the completion of the whole of the Works any part or section of the Works has been certified by the Engineer as completed, pursuant to **Clause 49** hereof, and occupied by the Owner/IDMC LTD, the liquidated damages for delay shall, for any period of delay after such certificate be reduced in the proportion which the value of the part or section so certified bears to the value of the whole of the Works.

47.4 The criteria for deriving the liquidated damage shall be the actual value of works executed and the amended time of completion.

48.0 Bonus For Early Completion: NOT APPLICABLE FOR THIS CONTRACT.

49.0 Certification of Completion of Works:

49.1 When the whole of the Works have been virtually completed and have satisfactorily passed any final test that may be prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer accompanied by an undertaking to finish any outstanding work during the period of Maintenance. Such notice and undertaking shall be in writing and shall be deemed to be a request by the Contractor for the Engineer to issue a Certificate of Completion in respect of the Works. The Engineer shall, on receipt of such notice either issue to the Contractor, with a copy to the Service Recipient/IDMC LTD, a Certificate of Completion stating the date on which, in his opinion, the Works were virtually completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, requires to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting virtual completion that may appear after such

instructions and before completion of the works specified therein. The Contractor shall be entitled to receive such Certificate of Completion, or on the completion, to the satisfaction of the Engineer, of the works so specified and making good any defects so notified.

49.2 Similarly, in accordance with the procedure set out in **sub- clause (1)** of this Clause, the Contractor may request and the Engineer shall issue a Certificate of Completion in respect of :-

- a) Any section of the Permanent Works in respect of which a separate time for completion is provided in the Contract and
- b) Any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and occupied by the IDMC LTD/ Owner.

49.3 If any part of the Permanent Works shall have been virtually completed and shall have satisfactorily passed any final test that may be prescribed by the Contract, the Engineer may issue a Certificate of Completion in respect of that part of the Permanent Works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete any outstanding work in that part of the Works during the Period of Maintenance.

49.4 Provided always that a Certificate of Completion given in respect of any section or part of the Permanent Works before completion of the whole shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Certificate shall expressly so state.

**MAINTENANCE AND DEFECTS
(WARRANTY/DEFECT LIABILITY)**

50.0 Definition of Period of Maintenance:

50.1 In these conditions the expressions the expression "Period of Maintenance" shall mean the period of maintenance named in the appendix to the tender, calculated from the date of completion of the works, certified by the engineer in accordance with the **clause 49** hereof, or, in the event of more than one certificate having been issued by the engineer under the said clause, the period of maintenance the expression the " the works" shall be constructed accordingly.

50.2 To the intent that the works shall at or as soon as practicable after the expiry of the period of maintenance be delivered to the IDMC LTD in the condition required by the contract, fair wear and tear expected, to the satisfaction of the engineer, the contractor shall finish the work, if

any, outstanding at the date of completion , as certified under the **clause 49** hereof, as soon as practicable after which date and shall execute all such work of repair, amendment, reconstruction, rectification and making good defects, imperfections, shrinkage or other faults as may be required of the Contractor in writing by the Engineer during the Period of Maintenance, or **within fifteen days** after its expiry as a result of an inspection made by or on behalf of the Engineer prior to its expiry.

50.3 All such work shall be carried out by the Contractor at his own expense if the necessity thereof shall, in the opinion of the Engineer, be due to the use of materials or workmanship not in accordance with the Contract, or to neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

50.4 If the Contractor shall fail to do any such work as aforesaid required by the Engineer, the Service Recipient/ IDMC LTD shall be entitled to employ and pay other persons to carry out the same and if such work is work which in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract, then all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Service Recipient/ IDMC LTD or may be deducted by the Service Recipient/ IDMC LTD from any payment due or which may become due to the Contractor.

50.5 The warranty/defect liability period shall be 12 month from the date of completion of works as per clause-49

51.0 Contractor to Search:

51.1 The Contractor shall, if required by the Engineer in writing, search under the direction of the Engineer for the cause of any defect, imperfection or fault appearing during the progress of the Works or in the Period of Maintenance. Unless such defect, imperfection or fault shall be one for which the Contractor is liable under the Contract, the cost of the work carried out by the Contractor in searching as aforesaid shall be borne by the Service Recipient/ IDMC LTD. If such defect, imperfection or fault shall be one for which the Contractor is liable as aforesaid, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case repair, rectify and make good such defect, imperfection or fault at his own expense in accordance with the provisions of **Clause 50** hereof.

ALTERATIONS, ADDITIONS AND OMISSIONS

52.0 Variations:

IDMC LTD

General Conditions of Contract

BIDDER

52.1 The Engineer shall make any variations of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the Contractor to do any of the following :-

- a) Increase or decrease the quantity of any work included in the Contract,
- b) Omit any such work,
- c) Change the character or quality or kind of any such work,
- d) Change the levels, lines, position and dimensions of any part of the Works, and
- e) Execute additional work of any kind necessary for the completion of the Works,
- f) Change any specified sequence, method or timing of construction of any part of the works,

No such variation shall in any way vitiate or invalidate the Contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the Contract Price.

52.2 No such variations shall be made by the Contractor without an order in writing of the Engineer. Provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Schedule of Quantities. Provided also that if for any reason the Engineer shall consider it desirable to give any such order verbally, the Contractor shall comply with such order and any confirmation in writing of such verbal order given by the Engineer, whether before or after the carrying out of the order, shall be deemed to be an order in writing within the meaning of this clause. Provided further that if the Contractor shall within seven days confirm in writing to the Engineer and such confirmation shall not be contradicted in writing within fourteen days by the Engineer, it shall be deemed to be an order in writing by the Engineer.

53.0 Valuation of Variations:

53.1 All extra or additional work done or work omitted by order of the Engineer shall be valued at the rates and prices set out in the

Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the extra or additional work, then suitable rates or prices shall be agreed upon between the Engineer and the Contractor. For settling the rates of the extra items, the contractor's cost for overheads and profits shall be taken as **15% (fifteen percent)** of the materials, labour cost etc.. In the event of disagreement the Engineer shall fix such rates or prices as shall, in his opinion, be reasonable and proper.

53.2 Provided that if the nature or amount of any omission or addition relative to the nature or amount of the whole of the Works or to any part thereof shall be such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the Works is, by reason of such omission or addition, rendered inapplicable, then a suitable rate or price shall be agreed upon between the Engineer and the Contractor. In case of disagreement the Engineer shall work out and fix the rate or the price.

53.3 In case of any class of work for which there is not such specification supplied by the Owner/Service Recipient/IDMC LTD as is mentioned in the tender documents such work shall be carried out in accordance with Indian Standard Specifications and if the I.S.S. do not cover the same the work should be carried out as per the standard Engineering practice subject to the approval of the Engineer.

Provided also that no increase or decrease under **clause 53.1** or variation of rate or price under **clause 53.2** of shall be made unless, as soon after the date of the order as is practicable and, in the case of extra or additional work, before the commencement of the work or as soon thereafter as is practicable, notice shall have been given in writing:-

- a) By the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price or
- b) By the Engineer to the Contractor of his intention to vary a rate or price.

53.4 If, on certified completion of the whole of the works, it shall be found that a reduction or increase greater than **25 (Twenty five) per cent** of the sum named in the Letter of Acceptance, results from:-

- a) The aggregate effect of all Variation Orders, and
- b) All adjustments upon measurement of the estimated quantities set out in the Schedule of Quantities,

But not from any other cause, the amount of the Contract Price shall be adjusted by such sum as may be agreed between the Contractor and the Engineer or, failing agreement, fixed by the Engineer having regard to all material and relevant factors, including the Contractor's site and general overhead costs of the Contract.

53.5 The Contractor shall send to the Engineer once in every month an account giving particulars, as full and detailed as possible, of all claims for any additional payment to which the Contractor may consider himself entitled and of all extra or additional work ordered by the Engineer which he has executed during the preceding month.

No final or interim claim for payment for any such work or expense will be considered which has not been included in such particulars. Provided always that the Engineer shall be entitled to authorize payment to be made for any such work or expense, notwithstanding the Contractor's failure to comply with this condition, if the Contractor has, at the earliest practicable opportunity, notified the Engineer in writing that he intends to make a claim for such work.

PLANT, TEMPORARY WORKS AND MATERIALS

54.0 Plant, etc., Exclusive Use for the Works:

54.1 All Constructional Plant, Temporary Works and materials provided by the Contractor shall, when brought on to the of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the site to another, without the consent, in writing, of the Engineer, which shall not be unreasonably withheld.

54.2 Upon completion of the Works the Contractor shall remove from the Site all the said Constructional Plant and Temporary Works remaining thereon and any unused materials provided by the Contractor.

54.3 The Service Recipient/ IDMC LTD shall not at any time be liable for the loss of or damage to any of the said Constructional Plant, Temporary Works or materials save as mentioned in **Clauses 20 and 66** hereof.

55.0 Approval of Materials, etc., not Implied:

55.1 The operation of **Clause 54** hereof shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to

therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

MEASUREMENT

56.0 Quantities:

56.1 The quantities set out in the Schedule of Quantities **For ELV & IE** are the estimated quantities of the work, but they are not to be taken as the actual and exact quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

57.0 Works to be measured:

57.1 The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value in terms of the Contract of work done in accordance with the Contract. He shall, when he requires any part or parts of the Works to be measured, give notice to the Contractor's authorized agent or representative, who shall forthwith attend or send a qualified agent to assist the Engineer in making such measurement, and shall furnish all particulars required by either of them. Should the Contractor not attend, or neglect or omit to send such agent, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of the work. For the purpose of measuring such permanent work as is to be measured by records and drawings, the Engineer shall prepare records and drawings month by month of such work and the Contractor, as and when called upon to do so in writing, shall, within fourteen days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If the Contractor does not so attend to examine and agree such records and drawings, they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor shall, within fourteen days of such examination, lodge with the Engineer, for decision by the Engineer, notice in writing of the respects in which such records and drawings are claimed by him to be incorrect.

58.0 Method of Measurement:

58.1 The Works shall be measured net, as prescribed in the specification of works, notwithstanding any general or local custom, except where otherwise specifically described or prescribed in the Contract. Wherever not specifically mentioned in the Contract, the mode of measurement as prescribed in the relevant IS codes shall be applicable and binding to the Contract. A list of **ISS code of practices**, which shall be referred to in that event, is attached as **annex to the Section**

IV of Technical Specifications. Only the latest editions of all the codes of practices including all latest official amendments and revisions shall be applicable.

58.2 For measurement of items of work in foundation and plinth & in super structure the criteria shall be the plinth level of the individual buildings covered under this Contract.

NOMINATED SUB-CONTRACTORS

59.0 Definitions of "Nominated Sub-Contractors":

59.1 All specialists, merchants, tradesmen and others executing any work or supplying any goods, materials or services, who may have been or be nominated or selected or approved by the Service Recipient/ IDMC LTD or the Engineer, and all persons to whom by virtue of the provisions of the Contract the Contractor is required to sub-let any work shall, in the execution of such work or the supply of such goods, materials or services, be deemed to be sub-Contractors employed by the Contractor and are referred to in this Contract as "nominated Sub-Contractors".

59.2 The Contractor shall not be required by the Service Recipient/ IDMC LTD or the Engineer or be deemed to be under any obligation to employ any nominated Sub-Contractor against whom the Contractor may raise reasonable objection, or who shall decline to enter into a sub-contract with the Contractor containing provisions :-

- a) That in respect of the work, goods, materials or services the subject of the sub-contract, the nominated Sub- Contractor will undertake towards the Contractor the like obligations and liabilities as are imposed on the Contractor towards the Service Recipient/ IDMC LTD by the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities, and
- b) That the nominated Sub-Contractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Sub-Contractor, his agents, workmen and servants and from and against any misuse by him or them of any Constructional Plant or Temporary Works provided by the Contractor for the purposes of the Contractor and from all claims as aforesaid.

59.3 If in any connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of

the permanent works or of any equipment or plant to be incorporated therein, such requirement shall be expressly stated in the Contract and shall be included in any nominated Sub-Contract. The nominated Sub-Contract shall specify that the nominated Sub-Contractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities.

59.4 For all work executed or goods, materials, or services supplied by any nominated Sub-Contractor, there shall be included in the Contract Price:-

- a) The actual price paid or due to be paid by the Contractor, on the direction of the Engineer, and in accordance with the Sub-Contract;
- b) The sum, if any, entered in the Schedule of Quantities for labour supplied by the Contractor in connection therewith, or if ordered by the Engineer as may be determined in accordance with **Clause 53** hereof;
- c) In respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provision for such is made in a special item provided in the Schedule of Quantities for such purpose.

59.5 Before issuing, under **Clause 60** hereof, any certificate, which includes any payment in respect of work done or goods, materials or services supplied by any nominated Sub- Contractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retention, included in previous certificates in respect of the work or goods, materials or services of such nominated Sub-Contractor have been paid or discharged by the Contractor, in default whereof unless the Contractor shall

- a) Inform the Engineer in writing that he has reasonable cause for withholding or refusing to make such payments and
- b) Produce to the Engineer reasonable proof that he has so informed such nominated sub-contractor in writing,

the Service Recipient/ IDMC LTD shall be entitled to pay to such nominated sub- contractor direct, upon the certificate of the Engineer, all payments, less retention, provided for in the sub-contract, which the Contractor has failed to make to such nominated sub-contractor and to deduct by way of set-off the amount so paid by the Service

Recipient/ IDMC LTD from any sums due or which may become due from the Service Recipient/ IDMC LTD to the Contractor. Provided always that, where the Engineer has certified and the Service Recipient/ IDMC LTD has paid direct as aforesaid, the Engineer shall in issuing any further certificate in favour of the Contractor deduct from the amount thereof the amount so paid, direct as aforesaid, but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

59.6 In the event of a nominated sub-contractor, as hereinbefore defined, having undertaken towards the Contractor in respect of the work executed, or the goods, materials or services supplied by such nominated sub-contractor, any continuing obligation extending for a period exceeding that of the Period of Maintenance under the Contract, the Contractor shall at any time, after the expiry if the Period of Maintenance, assign to the Service Recipient/ IDMC LTD, at its request and cost, the benefit of such obligation for the unexpired duration thereof.

CERTIFICATE AND PAYMENT

60.0 Interim Payment Certificate:

60.1(a) The Contractor shall submit a bill or shall submit measurement of works executed for the preparation of the bill on computer of Service Recipient/ IDMC LTD for interim payment in 3 copies to the Engineer on a specified date in each month in a form approved by the Engineer. The bill for interim payment shall include the following items, as applicable, which shall be taken in to account in the sequence listed:-

- i) The estimated Contract cost of the Permanent Works executed since the submission of the last bill, obtained by applying the base unit rates and prices in the Schedule of Quantities measured by the Engineer pursuant to **clause 57**. Additional part payment of an item in respect of initial part certification shall be admissible in the interim payment bill.
- ii) The estimated Contract cost of the Permanent Works as obtained above executed up to the previous bill;
- iii) The cumulative estimated Contract cost at base unit rates and prices of the Permanent Works up to the bill in question obtained by adding (i) and (ii) ;

- iv) The cumulative amounts approved in respect of extra items executed up to the bill in question, obtained by applying the rates approved.
- v) An amount reflecting any changes in cost pursuant to **clause 71 (Refer Clause 11.5 of Vol I Section I of this bidding document)** hereof;
- vi) Any amount to be withheld under the retention provisions of **clause 60.3;**
- vii) Any credit or debit for the period in question in respect of materials on site intended for, but not yet incorporated in , the Permanent Works in the amount and under the conditions set forth in **clause 60.2;**
- viii) Any amount to be deducted on account of the mobilization advance under the provisions set forth in **clause 60.5.**
- ix) Any other sum to which the Contractor may be entitled under the Contract.
- x) Deductions of Income tax shall be made on the gross amount of each bill as per the provision of the Income tax Act.
- xi) Any amount to be deducted on account of water charges and power supply, if any, pursuant to **clause 5.4 & 6.2 of Section III, Special Conditions of Contract.**
- xii) Any amount to be deducted on account of materials issued to the Contractor pursuant to **clause 7.1 of section III, Special Conditions of Contract.**

60.1(b) Within a reasonable period or any other agreed period of the receipt of the said bill with all required supporting documents for interim payment, it shall be approved or amended such that, in the Engineer's opinion, the certificate reflects the amount due to the Contractor in accordance with the Contract. In cases where there is difference of opinion as to the value of any item, the Engineer's view shall prevail. IDMC engineer/consultant shall verify the milestone invoices and process the payment of certified bill amount within 15 days as per the milestones below i.e Internal and external electrification works.

iii) Internal and external electrification works.

Activity	% of Payment
Against Submission of progressive RA bills in 15 days	90
Final 10% payment shall be released after completion & handing over and against submission of PBG of 5% valid till defect liability period	10

Note: The scope of supply shall include transportation, loading and unloading of, cables, panels, distribution boards, light fittings, CCTV, ELV systems, etc. as required in completing the BOQ items for Internal and external electrification system. All the necessary documentation shall be properly done during supply, erection and commissioning of Internal and external electrification system.

60.2 Secured Advance for Material: Not Applicable to this contract

~~The Contractor shall be entitled to such sum as the Engineer may consider proper in respect of materials intended for but not yet incorporated in the Permanent Works provided that: The materials are in accordance with the specification for the Permanent Works;~~

- ~~a) Such materials have been delivered to the site, and are properly stored and protected against loss or damage or deterioration to the satisfaction of the Engineer;~~
- ~~b) The Contractor's records of the requirements, orders, receipts and the use of materials are kept in a form approved by the Engineer and such records shall be available for inspection by the Engineer;~~
- ~~c) The Contractor shall submit with his running bill, the estimated value of the materials on site together with such documents as may be required by the Engineer for the purpose of the valuation of materials and providing evidence of ownership and payment therefore;~~
- ~~d) The ownership of such materials shall be deemed to vest in the Service Recipient; and~~
- ~~e) Secured advance, against an undertaking in the prescribed format can be paid up to 90% of value of the material applicable only for cement, Reinforcement steel & Structural steel brought and physically available at site. The value of such secured advance shall be worked out on the basis of basic rate available in purchase order or invoice rate of building material. The lower value of the two shall be payable as secured advance against material available at site. In case basic rate of building material is not indicated/ available in the purchase order, the value of such secured advance shall be worked out on the basis of invoice rate of building material. The advance on material shall be recovered as soon as material is used & billed for.~~
- ~~f) The contractor shall have to sign & give the undertaking given below for obtaining secured advance for material on site:~~

~~"Certified that the above material I/We have actually brought at the site and I/We have not previously received any advance on the same material. These materials are of imperishable nature and are actually required for use or work in connection with items for which rates for finished work have been agreed upon and agreement has been signed and executed. The above materials on which secured~~

~~advance is applied are our own property and free from encumbrances of any kind and I/We will indemnify the Board against all claims to any material in respect of which an advance has been made as aforesaid.~~

~~I/We shall made at my/our own cost all necessary and adequate arrangements for proper watch, safe custody and protection against all risks of the said materials and that until used in construction as per contract.~~

~~The said material shall remain at the site of the said work in the contractor's custody and on his own responsibility and shall at all times be open to inspection by the Board or any Officer authorized by them. In the event of the materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated. I/We will forthwith replace same with other materials of like quality or repair and made good, the same as required by the Board.~~

~~It is hereby agreed and declared that notwithstanding anything in the contract agreement and without prejudice to the power contained therein if and whenever the convenient for payment and repayment herein before contained shall become enforceable and the money owing shall not be paid in accordance with the Board may at any time thereafter adopt all or any of the following courses as they may deem best:~~

- ~~a) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractor in accordance with the provisions in that behalf contained in the said agreement debiting the Contractors with the actual cost of effecting such completion and the amount due in respect of advances under these presents and crediting the Contractor with the value of work done as if he had carried it out in accordance with the said agreement and the rates thereby provided. If the balance is against the Contractor he is to pay same to the Board on demand.~~
- ~~b) Remove and sell by public auction the seized materials or any part thereof and out of the money arising from the sale retain all the sums aforesaid repayable or payable to the Board under these present and pay over the Surplus (if any) to the Contractor.~~
- ~~c) Deduct all or any part of the money owing out of the security deposit or any sum due to the Contractor under the said agreement.~~
- ~~g) The secured advance shall be paid as advance money and will be recovered/adjusted on prorata basis from the five submitted invoice.~~

Signature of the Contractor”**60.3 Retention Money: Not Applicable to this contract**

- ~~a) A retention amounting to 5.0% of the amount included in any monthly interim payment certificate pursuant to **clause 60.1** due to the Contractor on account of the Permanent Works executed by him shall be made by the Engineer in the first and following certificates until such time as the cumulative total of such deductions shall amount to 5% of the total actual value of Work to be done;~~
- ~~b) If the Contractor so requests, the Purchaser/Service Recipient/IDMC LTD may pay the cumulative amount of retention money to the Contractor upon lodgment with the Service Recipient/IDMC LTD of a Bank guarantee issued by a Nationalized Indian Bank or a foreign bank having branches in India. The acceptable form of Bank guarantee shall be strictly as given in **Section IX** of the bidding document.~~
- ~~c) Retention money in full shall be released to the Contractor upon successful completion of works along with full and final settlement of the contract. Provided always that, if at such time there shall remain to be executed by the Contractor any works ordered during such period pursuant to **clause 50 and 51 hereof**, the Purchaser/Service Recipient/IDMC LTD shall be entitled to withhold payment until the completion of such works of so much of the balance of the retention money as shall, in the opinion of the Engineer, represent the cost of the works so remaining to be executed; and~~
- ~~d) No interest shall be paid by the Purchaser/Service Recipient/IDMC LTD to the Contractor for the amount withheld as Retention Money.~~
- ~~e) The bank guarantee (B.G.) shall be valid for the entire period of Contract **plus 3 months claim period**. The B.G. can be initially accepted for a period as per Banking norms, on written undertaking of contractor/ bidder that the BG shall be extended before its expiry & shall be kept valid scheduled completion period stipulated in the contract **plus 3 months claim period**. The validity of the bank guarantee shall be suitably extended in the event of extension of time of the Contract pursuant to **clause no. 44** herein **plus 3 months claim period**.~~

~~**60.4** The Engineer may by any Interim Payment Certificate make any corrections or modifications in any previous bills (other than one purporting to be a Final payment certificate) which shall have been~~

issued by him and shall have power to modify or withhold any Interim Payment Certificate if the works or any part thereof are not being carried out to his satisfaction.

60.5 Mobilization Advance Loan: Not Applicable to this contract

~~a) The Service Recipient/ IDMC LTD, if requested for, will make an advance loan to the Contractor for the costs of mobilization in respect of the works in a lump sum amount equivalent to **20%** of the Order/Contract price excluding the costs of the materials to be supplied by the Owner/Service Recipient/ IDMC LTD, always provided that the value of the Contract is more than **Rs.10 lakh**. Payment of the loan will be due under separate certification by the Engineer after;~~

~~i) Execution of the **Form of Agreement** by the parties thereto,~~

~~ii) Provision by the Contractor of the Performance Security in accordance with **clause 10** hereof, and~~

~~iii) Provision by the Contractor of a bank guarantee equivalent to **110%** of advance amount, valid till the delivery period of contract issued by a Nationalized Indian Bank or a foreign bank having branches in India. The acceptable form of Bank guarantee shall be strictly as given in **Section IX** of the bidding document. The bank guarantee shall remain effective until the advance loan has been completely repaid by the Contractor out of current earnings under the Contract and certified accordingly by the Engineer.~~

~~b) The acceptable form of bank guarantee shall be as given in **Section IX** of bid document. The mobilization advance loan shall be free of interest.~~

~~c) Recovery towards mobilization advance paid shall be made proportionately **starting from the first interim RA Bill in a manner so as to recover the entire mobilization advance by the time 80% work is completed. In case the scope/value of work is reduced the % rate of recovery shall be enhanced suitably.**~~

~~d) The bank guarantee (B.G.) shall be valid for the entire period of Contract **plus 3 months claim period**. The B.G. can be initially accepted for a period as per Banking norms, on written undertaking of contractor/ bidder that the BG shall be extended before its expiry & shall be kept valid scheduled completion period stipulated in the contract **plus 3 months claim period**.~~

~~The validity of the bank guarantee shall be suitably extended in the event of extension of time of the Contract pursuant to clause no. 44 herein plus 3 months claim period.~~

60.6 All interim payments shall be treated as advance payments. On completion of the entire work, the Contractor shall submit his final bill. After verifying the final bill, the Service Recipient/ IDMC LTD will issue to the Contractor a statement (hereinafter called as the Final Account statement). The Contractor shall return the Final Account Statement duly signed as an acknowledgement of full and final value of work performed under the Contract and full & final settlement of the payment. On receipt of this statement back from the Contractor, the final payment shall be released.

61.0 Approval only by Maintenance Certificate:

61.1 No certificate other than the Maintenance Certificate referred to in **Clause 62** hereof shall be deemed to constitute approval of the Works.

62.0 Maintenance Certificate:

62.1 The Contract shall not be considered as completed until a Maintenance Certificate shall have been signed by the Engineer and delivered to the Service Recipient/ IDMC LTD stating that the Works have been completed and maintained to his satisfaction. The Maintenance Certificate shall be given by the Engineer after the expiry of the Period of Maintenance, or, if different periods of maintenance shall become applicable to different sections or parts of the Works, the expiry of the latest such period, or as soon thereafter as any works ordered during such period, pursuant to **Clause 50 and 51 hereof**, shall have been completed to the satisfaction of the Engineer and full effect shall be given to this Clause, notwithstanding any previous entry on the Works or the taking possession, working or using thereof or any part thereof by the Service Recipient/ IDMC LTD/Purchaser.

62.2 The Service Recipient/ IDMC LTD shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contractor the execution of the works, unless the Contractor shall have made a claim in writing in respect thereof before the issuance of the Maintenance Certificate under this Clause.

62.3 Notwithstanding the issue of the Maintenance Certificate the Contractor and, subject to **clause 62.2**, the Service Recipient/ IDMC LTD shall remain liable for the fulfilment of any obligation incurred under

the provisions of the Contract prior to the issue of the Maintenance Certificate which remains unperformed at the time such Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties hereto.

REMEDIES AND POWERS

63.0 Default of Contractor:

63.1 If the Contractor shall become bankrupt, or have a receiving order made against him, or shall present his petition in execution levied on his goods, or if the Engineer shall certify in writing to the Service Recipient/ IDMC LTD that in his opinion the Contractor: -

- a) Has abandoned the Contract, or
- b) Without reasonable excuse has failed to commence the works or has suspended the progress of the works for **28 days** after receiving from the Engineer written notice to proceed, or
- c) Has failed to remove materials from the site or pull down and replace work for **30 days** after receiving from the Engineer written notice that the said materials or work had been condemned and rejected by the Engineer under these conditions, or
- d) Despite previous warnings by the Engineer, in writing, is not executing the works in accordance with the Contract, or is persistently neglecting to carry out his obligations under the Contract, or
- e) Has, to the detriment of good workmanship, or in defiance of the Engineer's instructions to the contrary, sub-let any part of the Contract.

Then the Service Recipient/ IDMC LTD may, after giving **15 day's** notice in writing to the Contractor, enter upon the site and the works and expel the Contractor there from and without thereby voiding the Contract, or releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and powers conferred on the Service Recipient/ IDMC LTD or the Engineer by the Contract, and may himself complete the works or may employ any other Contractor to complete the works. The Service Recipient/ IDMC LTD or such other Contractor may use for such completion so much of the constructional plant, temporary works and materials, which have deemed to be reserved exclusively for the execution of the works, under the provisions of the Contract, as he or they may think proper, and the Service Recipient/ IDMC LTD may at any time, sell any of the said Constructional Plant, temporary works and unused materials including invocation of bank guarantees and apply the proceeds of sale in or towards the satisfaction of any sum(s) due or which may become due to him from the Contractor under the Contract .

63.2 The Engineer shall, as soon as may be practicable after any such entry and expulsion by the Service Recipient/IDMC LTD, fix and determine **ex parte**, or by or after reference to the parties, or after such investigation or enquiries as he may think fit to make or institute, and shall certify what amount, if any, had at the time of such entry and expulsion been reasonably earned by or would reasonably accrue to the Contractor in respect of work than actually done by him under the Contract and the value of any of the said unused or partially used materials, any Constructional Plant and any temporary works.

63.3 If the Service Recipient/ IDMC LTD shall enter and expel the Contractor under this clause, it shall not be liable to pay to the Contractor any money on account of the Contract until the expiry of Period of Maintenance and thereafter until the costs of execution and maintenance, damages for delay in completion, if any, and all other expenses incurred by the Service Recipient/ IDMC LTD have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum(s), if any, as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Service Recipient/ IDMC LTD the amount of such excess and it shall be deemed a debt due by the Contractor to the Service Recipient/IDMC LTD and shall be recoverable accordingly.

63.4 In such event, the Service Recipient/ IDMC LTD shall charge **15%** overhead to cover the departmental charges and the same shall be recovered from the Contractor.

63.5 No credit shall be allowed to the Contractor in case the amount spent by the Service Recipient/ IDMC LTD for a particular item which shall be less than the amount payable as per the tender amount.

63.6 Risk cost purchase will be applicable if contractor failed to execute work as per owner's schedule and Project Authority/ IDMC Limited is forced to meet work completion through other agency/contractor/sub-contractor, immaterial whether if the liquidated damages is applied with or without expulsion/closure of contract. This will also include the supervision charges of 15% on and above risk purchase cost plus applicable GST.

64.0 Urgent Repairs:

64.1 If, by reason of any accident, or failure, or other event occurring to in or in connection with the works, or any part thereof, either during the execution of the works, or during the Period of Maintenance, any remedial or other work or repair shall, in the opinion of the Engineer,

be urgently necessary for the safety of the works and the Contractor is unable or unwilling at once to do such work or repair, the Service Recipient/ IDMC LTD may employ and pay other persons to carry out such work or repair as the Engineer may consider necessary. If the work or repair so done by the Service Recipient/ IDMC LTD is work which, in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract, all expenses properly incurred by the Service Recipient/ IDMC LTD in so doing shall be recoverable from the Contractor by the Service Recipient/ IDMC LTD, or may become due from the Contractor. Provided always that the Engineer, as the case may be, shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.

SPECIAL RISKS

65.0 No Liability for War etc.:

65.1 Notwithstanding anything in the Contract contained:-

The Contractor shall be under no liability whatsoever whether by way of indemnity or otherwise for or in respect of destruction of or damage to the works, save to work condemned under the provisions **of Clause 39** hereof prior to the occurrence of any special risk hereinafter mentioned, or to property whether of the Service Recipient/ IDMC LTD or of third parties, or for or in respect of injury or loss of life which is the consequence of any special risk as hereinafter defined. The Service Recipient/ IDMC LTD shall indemnify and save harmless the Contractor against and from the same and against and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising there out or in connection therewith.

65.2 If the works or any material on the site, or any other property of the Contractor used or intended to be used for the purposes of the works, shall sustain destruction or damage by reason of any of the said special risks the Contractor shall be entitled to payment for:-

- a) Any permanent work and for any materials so destroyed or damaged, and, as so far as may be required by the Engineer, or as may be necessary for the completion of the works, on the basis of costs plus such profit as the Engineer may certify to be reasonable
- b) Replacing or making good any such destruction or damage of the works:
- c) Replacing or making good such materials or other property of the Contractor used or intended to be used for the purposes of works.

- 65.3** Destruction, damage, injury or loss of life caused by the explosion or impact whenever and wherever occurring of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, shall be deemed to be a consequence of the said special risks.
- 65.4** The Service Recipient/IDMC LTD shall repay to the Contractor any increased cost of or incidental to the execution of the work, other than such as may be attributable to the cost of reconstruction work condemned under the provisions of **Clause 39** hereof, prior to the occurrence of any special risk, which is however, attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this clause hereinafter contained in regard to outbreak of war, but Contractor shall as soon as any such increase of cost shall come to his knowledge forthwith notify the Engineer thereof in writing.
- 65.5** The Special Risks are unprecedented flood, earthquake or other convulsion of nature, war, hostilities (whether war be declared or not) invasion, act of foreign enemies, the nuclear and the pressure wave risk described in **clause 20** hereof, or in so far as it relates to the country in which the works are being or are to be executed or maintained, rebellion, revolution, insurrection, military or usurped power, civil work, or unless solely restricted to the employees of the Contractor or of his Sub-Contractors and arising from the conduct of the works, riot, commotion or disorder.
- 65.6** If, during the currency of the Contract, there shall be an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the works, the Contractor shall, until and unless the Contract is terminated under the provision of this Clause, continue to use his best endeavors to complete the execution of the works. Provided always that the Service Recipient/ IDMC LTD shall be entitled at any time after such outbreak of war to terminate the Contract by giving written notice to the Contractor and, upon such notice being given, this Contract shall, except as to the rights of the parties under this clause and to the operation of **clause 65.8** hereof, terminate, but without prejudice to the right of either party in respect of any antecedent breach thereof.
- 65.7** If the Contract shall be terminated under the provisions of the last preceding sub-clause the Contractor shall, with all reasonable despatch, remove from the site all constructional plant and shall give similar facilities to his sub-Contractors to do so.
- 65.8** If the Contract shall be terminated as aforesaid, the Contractor shall be paid by the Service Recipient/ IDMC LTD, as in so far as much amount

or items shall not have already been covered by payments on account made to the Contractor, for all works executed prior to the date of termination at the rates and prices provided in the Contract and in addition:-

- a) The amounts payable in respect of any preliminary terms, so far as the works or service comprised therein has been carried out or performed, and a proper proportion as certified by the Engineer of any such items, the work or service comprise in which has been partially carried out or performed.
- b) The cost of materials or goods reasonably ordered for the works which shall have been delivered to the Contractor, or of which the Contractor is legally liable to accept delivery, such materials or goods becoming the property of the Service Recipient/ IDMC LTD upon such payments being made by him.
- c) A sum to be certified by the Engineer, being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the works insofar as such expenditure shall not have been covered by the payments in this sub-clause before mentioned.
- d) Any additional sum payable under the provision of the **clauses 65.1, 65.2, and 65.4.**
- e) The reasonable cost of removal of construction plant under **clause 65.7** and, if required by the Contractor, return thereof to the Contractor's main plant yard in his country of registration or to any other destination, at no greater cost.
- f) The reasonable cost of repatriation of all the Contractor's staff and workmen employed in or in connection with the works at the time of such termination.

Provided always that against any payments due from the Service Recipient/ IDMC LTD under this sub-clause, the Service Recipient/ IDMC LTD shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of constructional plant and materials and any other sums which at the date of termination were recoverable by the Service Recipient/ IDMC LTD from the Contractor under the terms of the Contract.

66.0 Payment in the Event of Frustration:

- 66.1** If a war or other circumstances outside the control of both parties, arises after the Contract is made so that either party is prevented from

fulfilling his Contractual obligation, or under the law governing the Contract, the parties are released from further performance, then the sum payable by the Service Recipient/ IDMC LTD to the Contractor in respect of the work executed shall be the same as that which would have been payable under **clause 65** hereof if the Contract had been terminated under the provisions of **clause 65** hereof.

67.0 Settlement of Disputes:

67.1 If the Contractor considers any work demanded of him to be outside the requirements of the Contract, or considers any drawings, record or ruling of the Engineer on any matter in connection with or arising out of the Contract or the carrying out of the work to be unacceptable, he shall promptly ask the Engineer in writing, for written instructions of decision. There upon the Engineer shall give his written instructions or decision within a period of **thirty days** of such request.

67.2 Upon the receipt of the written instructions or decisions the Contractor shall promptly proceed without delay to comply with such instructions or decisions.

67.3 If the Engineer fails to give his instructions or decisions in writing within a period of **thirty days** after being requested, or if the Contractor is dissatisfied with the instructions and decisions appeal to the Service Recipient/ IDMC LTD which shall afford an opportunity to the Contractor to be heard and to offer an evidence in support of his appeal. The Service Recipient/ IDMC LTD shall give a decision within a period of **thirty days** after the Contractor has given the said evidence in support of his appeal.

67.4 If the Contractor is dissatisfied with this decision, the Contractor within a period of **thirty days** from the receipt of the decision shall indicate his intention to refer the dispute to Arbitration, failing which the said decision shall be final and conclusive.

68.0 Arbitration:

In the event of any dispute in the interpretation of the terms and conditions of this order/ agreement or difference of opinion between the parties or any point in the order / contract arising out of or in connection with the agreement/ accepted order/ contract or with regard to performance of any obligation hereunder by either party, the parties hereto shall use their best efforts to settle such disputes or difference of opinion amicably by mutual negotiations. In case no agreement is reached, either party may forthwith give to the order, a notice in writing of the existence of such question, dispute or difference of opinion and the same shall be referred to the adjudication of **sole**

arbitrator to be appointed by “IDMC LTD” whose decision in the matter shall be final and binding on the parties. The arbitration proceedings shall be governed under the provisions of the **Indian Arbitration and Conciliation Act of 1996** and the rules thereunder or any statutory notification thereof for the time being in force. In the order/ contract, the venue of such arbitration shall be **Anand (Gujarat)** and courts at Anand alone shall have jurisdiction regarding any matter arising out of order/ contract.

69.0 Notices:

69.1 All certificates, notices or written orders to be given by the Service Recipient/ IDMC LTD or by the Engineer to the Contractor under the terms of the Contract shall be served by sending by post to or delivering the same to the Contractor's principal place of business, or such other address as the Contractor shall nominate for this purpose.

69.2 All notices to be given to the Service Recipient/ IDMC LTD or to the Engineer under the terms of the Contract shall be served by sending by post or delivering the same to the respective addresses nominated for that purpose.

69.3 Either party may change a nominated address to another address in the country where the works are being executed by prior written notice to the other party and the Engineer may do so by prior written notice to both parties.

70.0 Default of Service Recipient/ IDMC LTD:

70.1 In the event of the Service Recipient/ IDMC LTD:-

- a) Failing to pay to the Contractor the amount due under any certificate of the Engineer within **60 days** after the same shall have become due under the terms of the Contract, subject to any deduction that the Service Recipient/ IDMC LTD is entitled to make under the Contract, or
- b) Interfering with or obstructing or refusing any required approval to the issue of any such certificate, or
- c) Giving to the Contractor a formal notice that for any unforeseen reasons, it is impossible for Service Recipient/ IDMC LTD to meet its Contractual obligations.

The Contractor shall be entitled to terminate his employment under the Contract after giving thirty days prior written notice to the Service Recipient/ IDMC LTD, with a copy to the Engineer.

70.2 Upon the expiry of the **fourteen days** notice referred to in **clause 70.1**, the Contractor shall, notwithstanding the provisions of **clause 54.1** hereof, with all reasonable dispatch, remove from the site all constructional plant brought by him thereon.

70.3 In the event of such termination the Service Recipient/ IDMC LTD shall be under the obligations to the Contractor in regard to payment as if the Contract had been terminated under the provisions of **clause 65** hereof, but, in addition to the payments specified in **clause 65.8** hereof, the Service Recipient/ IDMC LTD shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination, as are deemed reasonable & fair.

71.0 Changes in Cost and Legislation: (Refer Clause 11.5 of Vol I Section I of this bidding document)

72.0 Taxation:

72.1 The prices quoted by the Contractor shall include all applicable Taxes (GST), levies, cess and duties that may be levied according to the laws and regulations on the constructional plant, material and supplies acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the contract shall relieve the Contractor from his responsibility to pay any tax that may be levied on profits made by him in respect of the Contract. Any variation after receipt of bids on account of change in rates of applicable Taxes, levies, cess and duties shall be considered for payment provided the price break up is submitted by the party in their bid. If, any altogether new Tax, levy, cess and duty is imposed on such contract after the bid opening date, the same shall be considered for payment / reimbursement upon documentary evidence.

GST Notification No. 20/2017 (Central Tax – Rate) dated 22 August, 2019 is not applicable for this Job.

Applicable GST for this job is @ 18%. However, the actual GST shall be paid as per the prevailing rate at the time of billing.

72.2 The Contractor's staff, personnel and labour will be liable to pay personnel income taxes in respect of such of their salaries and wages as are chargeable under the laws and regulations for the time being in force, and the Contractor thereof as may be imposed on him by such laws and regulations.

72.3 Please refer & provide undertaking as per Schedule-IX of Section VII.

73.0 Bribery and Collusion:

73.1 The Service Recipient/IDMC LTD shall be entitled to terminate the Contract and recover from the Contractor the amount of any loss resulting from such termination if the Contractor shall have offered or given to any person any gift or consideration of any kind as an inducement or reward for doing, or for bearing to do any action in relation to obtaining, or in the execution of Contract or any other Contract with the Service Recipient/ IDMC LTD, or if any of the like acts shall have been done by any person employed by the Contractor or acting on his behalf (whether with or without the knowledge of the Contractor), or if the Contractor shall have come in to any agreement with another Contractor(s) whereby an agreed quotation or estimate shall be offered as a bid to the Service Recipient/ IDMC LTD by one or more Contractors.

73.2 In the event of such termination, the Contractor shall:

- a) Proceed as provided in sub **clause 65.7** hereof, and
- b) Be paid by the Service Recipient/IDMC LTD as provided in sub **clause 65.8** hereof, provided that any loss referred herein shall first be deducted.

74.0 Termination of Contract for Service Recipient / IDMC LTD's Convenience:

74.1 The Service Recipient/IDMC LTD shall be entitled to terminate this Contract at any time for its own convenience after giving **60 days** prior notice to the Contractor, with a copy to the Engineer.

74.2 In the event of such termination the Contractor:

- a) Shall proceed as provided in **sub clause 65.7** hereof, and
- b) Shall be paid by the Service Recipient/ IDMC LTD as provided in sub **clause 65.8** hereof.

SECTION – III

SPECIAL CONDITIONS OF CONTRACT

SECTION III

SPECIAL CONDITIONS OF CONTRACT

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Section III

SPECIAL CONDITIONS OF CONTRACT

1.0 General:

The following Special conditions of Contract shall supplement the General conditions of Contract, given in **Section II**. Wherever there is a conflict the provision herein shall prevail over those in the General conditions of Contract.

2.0 Taxes:

2.1 The prices quoted by the Contractor shall include all applicable Taxes (GST), levies, cess and duties that may be levied according to the laws and regulations on the constructional plant, material and supplies acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the contract shall relieve the Contractor from his responsibility to pay any tax that may be levied on profits made by him in respect of the Contract. Any variation after receipt of bids on account of change in rates of applicable Taxes, levies, cess and duties shall be considered for payment provided the price break up is submitted by the party in their bid. If, any altogether new Tax, levy, cess and duty is imposed on such contract after the bid opening date, the same shall be considered for payment / reimbursement upon documentary evidence.

3.0 Time of Completion: 03 Months from the date of LOI/Purchase order and applicable as per GCC

3.1 The Contractor shall execute the Contract up to **10% increase** in the value of the works within the specified completion period of the Contract and no extension of time shall be granted. In case the increase in the value **exceeds 10%** of the Contract amount, proportionate extension of time shall be granted, for the entire amount of increase over the original Contract value.

4.0 Engineer's Office Accommodation & Project's Name Board: Not applicable

4.1 ~~The Contractor shall at his own cost provide a temporary furnished office accommodation in the form of either three nos. of containers (Portable Office Cabins) each 20 sqm (with AC) or approx. 60 Sq.m building area at the approved locations and as per approved plan along with AC (Air Conditioner) and modern toilet facility with electrical and water connection.~~

~~Further, 4 Nos. office tables, 1 Conference table, 3 Nos. Cupboards, 12 Nos. Chairs, Colour television of 55 inch and A3 multifunctional colour printer, etc. (this includes the replacement of cartridge on time-to-time basis) shall also be provided by Contractor for IDMC LTD site officers. Contractor shall provide free electricity during the duration of contract and shall be liable for regular maintenance of the facilities. The structure shall be removed after the completion of work, by the Contractor, at his own cost. However, this requirement shall be applicable only if the estimated contract amount is more than **Rs. 100 lakhs**.~~

~~**4.2** The contractor at his own cost shall also provide near the entrance of the project site, a suitable name board fabricated from MS sheet with support structure, duly painted and lettering, indicating the name of project, owner, turnkey consultant, architect, civil contractor and mechanical contractor etc., as per drawing and details approved by purchaser's site engineer. However, this requirement shall be applicable only if the estimated contract amount is more than **Rs. 100 lakhs**.~~

5.0 Water for Construction and Other Use:- Shall be provided by IDMC at one point within the premises, further distribution shall be in bidder scope.

~~**5.0** Unless otherwise specified the Contractor shall make his own arrangement for water for the work and nothing extra shall be paid for the same.~~

~~**5.1** The water used by the Contractor shall be fit for drinking as well as construction purposes to the satisfaction of the Site Engineer/Project Authority.~~

~~**5.2** The Contractor may be allowed to construct temporary tube well/wells in the Project site for getting water after he has got written consent of the Owner/Project Authority/Engineer. The Contractor shall be required to provide necessary arrangements to avoid any accident or damage to the buildings, roads, and service lines adjacent to the tube wells/wells sunk. The Contractor shall dismantle the tube well/well on completion of work and restore the ground to its original condition at his own cost.~~

~~**5.3** In case the Owner/Project Authority/purchaser supplies water, it shall be on the following conditions:~~

- ~~**1.** Water charges shall be recovered from each RA bill @ **0.5%** of net amount of work done of such bill.~~

~~2. The water shall be provided at one point in the site at the discretion of the Engineer. The Contractor shall make its own arrangement for water connection and distribution pipe lines in the construction area.~~

~~3. The Owner/Project Authority shall not guarantee the maintenance of uninterrupted water supply. It will be the responsibility of the Contractor to make alternative arrangements for water supply at his own cost in the event of any break down so that the progress of work is not affected for want of water. No claim or damage or refund of water charges shall be entertained on account of such break down.~~

6.0 Power (Electricity) Supply: Shall be provided by IDMC at one point within the premises, further distribution shall be in bidder scope:

~~6.1 Unless otherwise specified the Contractor shall have to make his own arrangements for the power supply at his cost. All the electrical works shall be done as per **INDIAN ELECTRICITY RULES**. The temporary lines shall be removed by the Contractor at his cost after the completion of the work or if there is any hindrance , to the other works due to the alignment of these lines, during the Contract period.~~

~~6.2 In case the ELECTRIC power supply is provided by the Purchaser/Owner/project Authority, it shall be on the following conditions:-~~

~~1. Electricity charges shall be recovered from each RA bill @ **0.5%** of net amount of work done of such bill.~~

~~2. The supply shall be made at one point in the site at the direction of the Engineer. The Contractor shall make his own arrangement to receive, carry and distribute the power wherever it is required within the site as per **INDIAN ELECTRICITY RULES**.~~

~~3. The Purchaser/owner / project authority shall not guarantee the maintenance of uninterrupted electricity supply and voltage fluctuations etc. It will be the responsibility of the contractor to make alternative arrangements for electricity supply at his own cost in the event of any breakdown so that the progress of work is not affected for want of electricity. No claim or damage or refund of electricity charges shall be entertained on account of the above.~~

4. ~~The temporary supply lines shall be removed and the site shall be cleared by the Contractor after the completion of the work at his own cost.~~

**7.0 Materials to be issued by the Purchaser/Owner/Project Authority:
(Not applicable for this contract)**

~~7.1 If the specification of the work provides for the use of any material of special description to be supplied from the Purchaser/Owner/Project Authority's stores or is required that the Contractor shall use certain stores to be provided by the Engineer, such materials and stores, and price to be charged therefore, as hereinafter mentioned being as practicable for the convenience of the Contractor, but not so as in any way to control the meaning or the effect of the Contract, the Contractor shall bound to purchase and shall be supplied with such materials and stores as are from time to time required to be used by him for the purpose of the Contract only. The sum due from the Contractor for the value of materials supplied by the Project Authority/Owner **plus 5%** of its value towards wastage shall be recovered from the interim bill on the basis of the actual consumption of the materials in the works covered and for which the interim bill has been prepared. After the completion of the works, the Contractor shall account for full quantity of the material supplied to him as per relevant clauses herein.~~

~~7.2 The value of the materials as may be issued to the Contractor by Purchaser/Owner/Project Authority shall be debited to the Contractor's account at the rate shown in the Schedule of material given in **Section VI (Schedule of material to be issued by owner/IDMC LTD)** of this bidding document and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the Contract shall include the cost of carriage and all other expenses whatsoever such as normal storage, supervision charges which shall have been incurred in obtaining the same at the Owner/Project Authority's stores. All materials so supplied to the Contractor shall remain the absolute property of the Purchaser/Owner/ Project Authority and shall not be removed on any account from the site of work unless specifically approved by the Engineer and shall be at all times open for inspection to the Engineer. Any such serviceable material remaining unused at the time of the completion or termination of the Contract shall be returned to the Purchaser/Owner/ Project Authority stores at a place as directed by the Engineer in perfectly good condition.~~

7.3 ~~Conditions for Issue of Materials:~~

- ~~i) Materials specified as to be issued by the Purchaser/Owner/Project Authority will be supplied to the Contractor by the Engineer from his stores as given in the **'Schedule of material to be supplied by the Owner/ IDMC LTD in Section VI** of this bidding document. It shall be the responsibility of the Contractor to take delivery of the materials and arrange for its loading, transport and unloading at the site of works at his own cost. The material shall be issued during the working hours and as per the rules of the Purchaser/Owner/ Project Authority as framed from time to time.~~
- ~~ii) The Contractor shall bear all incidental charges for the storage and safe custody of the materials at site after they have been issued to him.~~
- ~~iii) Materials as specified to be issued by the Purchaser/Owner/Project Authority shall be issued in standard sizes and quantities obtained from the manufacturers.~~
- ~~iv) The Contractor shall construct suitable godown wherever required at the site of works for storing the issued materials safely against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.~~
- ~~v) It shall be the duty of the Contractor to inspect material supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the Purchaser/Owner/Project Authority, it shall be the responsibility of the Contractor to keep these in good condition and if the materials are lost or damaged, at any time the value thereof shall be recovered from the Contractor pursuant to **clause 7.4** hereof and **clause 5.0 of Section VI**.~~
- ~~vi) The Purchaser/Owner/Project Authority shall not be liable for delay in supply or non-supply of any material which they have undertaken to supply, where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the Purchaser/Owner/Project Authority. In no case, the Contractor shall be entitled to claim any compensation or loss by him on this account.~~

~~vii) It shall be the responsibility of the Contractor to arrange in time all materials required for the works other than those supplied by the Purchaser/Owner/ Project Authority. If, however, in the opinion of the Engineer the execution of the works is likely to be delayed due to the Contractor's inability to make arrangements for supply of such materials which normally he has to arrange for the Engineer shall have the right at his own discretion to issue such material if available with the Purchaser/Owner/ Project Authority or procure such materials from the market or elsewhere and the Contractor will be bound to take such materials at the rates decided by the Engineer.~~

~~This, however, shall not absolve the Contractor from the responsibility of making arrangement for the supply of such materials in part or full, should such situation occur nor shall this constitute a reason for delay in the work.~~

~~vii) Unless specifically approved by the Engineer, none of the materials supplied to the Contractor shall be utilized by the Contractor for manufacturing the item which can be obtained as supplied from standard manufacturer in finished form.~~

~~ix) The Contractor shall, if desired by the Engineer, be required to execute an indemnity bond in the prescribed form, for safe custody and accounting all materials issued by the Purchaser/ Owner/Project Authority.~~

~~x) The Contractor shall furnish to the Engineer sufficiently in advance the statement showing his requirement of the quantities of the materials to be supplied by the Purchaser/Owner/Project Authority and the time when the same will be required by him for the works, so as to enable the Engineer to make necessary arrangement for procurement and supply of the material.~~

~~xi) A day account of the materials issued by the owner shall be maintained by the Contractor indicating the daily receipt, consumption and balance in hand. This account shall be maintained in a manner prescribed by the Engineer along with all connected paper viz. requisition, issues etc. and shall be always available for in the Contractor's office at site.~~

- xii) The Contractor should see that only the required quantity of the materials is issued. The Contractor shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the store wherefrom they were issued or to the place as directed by the Engineer.
- xiii) Materials/equipment supplied by the purchaser/Owner / Project Authority shall not be utilized for any other purpose other than issued for.
- xiv) Completion of the works and the receipt of unutilized materials issued to the Contractor by the Owner/Project Authority/Purchaser pursuant to **clause 7.3** herein. The Contractor shall submit the reconciliation statement of materials received, utilized in the works and wastage thereon. The wastage of materials so determined shall be accounted for pursuant to **clause 5.0 of Section VI**, and the value thereof shall be recovered from the Contractor.
- 7.4** Notwithstanding anything contained to the contrary in any or all clauses of this Contract where any materials for the execution of the Contract are procured with the assistance of the Owner/ Project Authority/ Purchaser either by issue from Owner' stock or purchase made under orders, or permits or licenses issued by the Govt., the Contractor shall hold the said materials as trustee for the owner and use such materials economically and solely for the purpose of the Contract and not dispose them off without the permission of the Owner/ Project Authority/ Purchaser and return, if required by the Engineer, all surplus or unserviceable materials that may be left with him after the completion of the Contract or at its termination for any reason whatsoever on his being paid or credited such price as Engineer shall determine having due regard to the condition of the materials. The price allowed to the Contractor, however, shall not exceed the amount charged to him excluding the storage charges, if any, shall be decided by the Engineer. In the event of the breach of the aforesaid condition, the Contractor shall, in terms of the licenses or permits and /or for criminal breach of trust, be liable to compensate the Owner/ Project Authority/ Purchaser at double the item rate or at double the prevailing market rate if the material was issued free of charge or any higher rate in the event of those materials at that time having higher rate or not being available in the market, than any other rate to be determined by the Engineer.

8.0 Works in Existing Plant: NOT APPLICABLE

In cases where the works against this contract have to be carried out by successful bidder in an existing plant/building, the contractor has to follow all the related rules & regulations of the plant & to plan his activities in consultation with owner/purchaser/Project authority's site in-charge so that regular operation/activities of the plant are not affected. There can be restrictions on the movement of workers, stacking of materials & to ensure cleanliness of the area. If any shut down is required by the contractor to work in a operating plant, the same shall be taken through IDMC LTD site in-charge from Project authorities after providing details & it has to be ensured that work is completed within the agreed shutdown period.

Contractor have to provide and erect 3m height barricade using suitable New/ old colour coated MS/ GI sheet and supporting structure all around the proposed buildings as decided by the Engineer in charge and as per project requirement. No additional payment will be given for the barricade works. After completion of the project work the same need to be dismantled and taken back by the contractor as decided by the Engineer in charge.

8.1 CCTV REQUIREMENT DURING CONSTRUCTION:

The bidder shall supply, install & commission High Resolution Video Camera (connected through CCTV system) at site to capture the live images of site execution activities at all the time. The recording of the CCTV footage of the works which are being carried out at site will be made available for the last 15 days only. The older data (>15 days) would get automatically deleted. The cameras is to be kept at strategic locations and should have adequate range of not less than 50m. The cameras should be fitted with infra-red devices to capture nightvision.

There has to be system where in LIVE coverage access be given to the Engineer-in-charge at project site only The locations of all camera will be changed at strategic locations as per directions of Engineer in charge. The bidder shall submit the methodology for the same. The methodology to include the approximate nos. of cameras type of Cameras, Approx. locations of the cameras, ensuring Continuous power supply connectivity, etc. at all times. All cost associated towards. hardware, software, networking, connectivity, power supply etc. is deemed to be included in the contract price.

~~9.0 Cement/steel Consumption, Reconciliation and Variation for Cement/Steel Arranged & Supplied by Contractor:~~

~~9.1 Cement: On completion of work, theoretical cement consumption shall be worked out. Over the theoretical consumption, a variation up to 2.5% (minus two point five percent) is permissible. The difference in quantity of cement bags actually consumed less than the permissible variation shall be recovered at the rate twice the average (for the contract duration) market rate of one cement bag. Nothing extra will be paid for over consumption of cement above the theoretical cement consumption.~~

~~9.2 Reinforcement & Structural Steel: Material supplied shall confirm for weight per meter as per relevant I S Code. Variation for under weight shall be allowed as per I S Codes. However no compensation shall be admissible for overweight of material, rolling margin, wastage etc. Reconciliation of steel shall be done at the final bill stage for quantity received, consumed in works and billed, wastage etc. After reconciliation of steel, it is to be ensured that total quantity of steel paid is not more than the total quantity received at site. For this purpose, from each consignment / truck load of steel received at site and for each diameter/category, samples (3 samples for 10 MT of steel) shall be taken jointly & weighed to establish actual unit weight for reconciliation. All this information shall be entered in steel register maintained by site engineer of IDMC LTD.~~

10.0 Storage of Building Materials and Construction Equipment:

10.1 The contractor shall make suitable arrangements at project site for storage of all the material and equipment being supplied by him. Suitable watch and ward arrangement shall be made by the contractor. This arrangement has to be done by the contractor at his own cost.

~~10.2 Cement shall be stored in separate godown with pucca floor, weather proof walls and roof. The cement bags shall be stacked horizontally, continuous in each line. The stacks shall be in the rows of 12 bags high with a minimum clearance space of 600mm between stacks and peripheral walls. The capacity of the godown / Silos shall be minimum 1000 bags or above as per requirement of the project and decided by the Engineer In-charge. The cement godown shall be dismantled & site shall be cleared after completion of the works~~

10.3 The Pre-painted sheet roofing shall be stacked strictly as per manufacturers' guideline and stored in a covered shed.

10.4 The fabrication yard for MS sections shall have a levelled pucca floor, and should be maintained dust free at all times. The structural sections shall be stacked & stored orderly so as to avoid initial warping of the sections.

11.0 Rate of Progress - Contractor's Schedule:

A. The schedule prepared by the Contractor shall be based on the normal day of eight hours of working plus a break of one hour. All Sundays and local holidays should be considered as the day of rest. The schedule shall thus be prepared considering above working conditions. The contractor shall plan the resources adequately to meet the schedule date of completion.

B. Progress photographs will be within the scope of bidder. The photograph shall be taken through drone for aerial view every fortnight. After completion of project the videography and all photographs shall be submitted to project authority.

12.0 Mode (Drawings/specifications) of Execution:

The bid drawings/tender drawings displayed/presented for inspection are liable to changes and the work shall be executed as per construction/execution drawings & details released for execution in accordance with technical specifications & schedule of quantities.- The items not covered under technical specifications, if any, shall be executed as per latest applicable BIS code of practice.

13.0 Basic rate of material indicated in schedule of quantities: Not applicable

~~In case of Cement and reinforcement steel price adjustment shall be governed by clause 11.5 of Section-I (Instruction to Bidders) of the tender.~~

~~In case of material other than cement and steel (for which basic price is indicated in schedule of quantities), rate difference (of actual procurement rate and basic rate) shall be paid / recovered, to/from the contractor, for any variation on either side of the basic price. However, price variation (if opted by the bidder for materials other than cement & reinforcement steel) shall be applicable for the value of the items executed excluding the value of material covered by basic rate. The basic rates of material indicated in schedule of quantities & procured by contractor are to be fixed as per basic rate of material indicated in original tax paid purchase bill / invoice including all applicable taxes & duties indicated in original tax paid purchase bill / invoice.~~

14.0 Quality Control Engineer & QA-QC Lab:

14.1 The Contractor shall at his own cost deploy a dedicated and full time qualified quality control engineer (Electrical) at site throughout the entire duration of the contract. The engineer shall be a B.Tech (Electrical) with minimum 5 years of experience OR a Diploma (Electrical) with minimum 7 years of experience specifically in the field of quality assurance and control of similar type of PEB works. The quality engineer should be conversant with relevant IS codes, material testing procedures, record keeping/documentation, in-situ testing, quality conformance of bought out materials & quality of workmanship in various construction activities at project site. The CV & experience certificates of the quality engineer are to be submitted along with the bid document.

Non deployment, delay in deployment and /or withdrawal of quality engineer from project site without prior written permission of IDMC LTD Engineer in charge shall invite permanent deduction of Rs. 80,000/- (Rupees Eighty thousand) per month from the running bills. Thereafter, IDMC LTD will be selecting the quality control engineer to be appointed by the contractor on their rolls for the entire duration of their contract with IDMC LTD. Nothing extra shall be paid by IDMC LTD on this account.

Above conditions at clause no. 14.1 is generally applicable for IE and ELV works contract value of Rs. 5.0 Crore and above.

~~**14.2** The Contractor shall at his own cost construct and maintain for the total duration of the contract an onsite quality control laboratory of size not less than 4m x 3m with white board of size 4feetx3feet, proper working platform, foundations for testing machines and hard levelled floor at the approved location within the project site and as per approved plan by engineer in charge. The laboratory is to be equipped with all required equipment/machines /instruments, power points etc. required for carrying out testing of various construction materials, in-situ tests etc. to implement the quality assurance plan & quality control processes as directed by Engineer in-charge.~~

15. Instructions for billing:**15.1 Minimum Billing Requirement: Not applicable to this contract**

~~At any point during the currency of the contract, the minimum bill submitted by the contractor shall be 2 Crore (basic amount) plus applicable GST.~~

15.2 Billing Plan: The contractor shall submit a detailed billing plan prior to the commencement of work. The billing plan must outline the contractor's expected monthly billing amounts and ensure that the work is completed as per the agreed commitment/timeline. The billing plan shall be calculated by dividing the total purchase order value by the delivery period (in months), with the monthly billing amount being the greater of:

15.3 Adherence to Billing Plan: The contractor is obligated to adhere strictly to the billing plan submitted. Any deviation from the agreed plan, resulting in non-compliance with the minimum billing amount, shall be treated as a breach of contract.

15.4 Non-Compliance and Consequences: In case the contractor fails to meet the minimum billing requirement as specified above, the Engineer-In-Charge reserves the right to reject the contractor's bill without any further explanation or correspondence. Additionally, the contractor may be subject to penalties or other actions deemed appropriate as per the terms of the contract.

15.5 Enforcement: The Engineer-In-Charge has the authority to monitor the contractor's billing progress and ensure compliance with the billing plan and minimum billing requirements throughout the contract duration.

16. Instruction for Local Liaisoning and statutory compliance

16.1 Local Liasoning: The contractor shall be required to ensure that all works and activities undertaken under this contract comply with local regulations, norms, and any specific instructions related to local governance. The contractor must maintain regular communication with the local authorities, if applicable, and ensure that all required permits and approvals are obtained in a timely manner for the smooth execution of the work.

16.2 Statutory Compliance: The contractor shall comply with all applicable laws, statutes, rules, regulations, and orders issued by government authorities, including but not limited to labor laws, environmental regulations, tax laws, safety standards, and any other legal requirements that may be relevant to the performance of the contract. The cost for same shall be included in the quoted rate by the contractor. The contractor is responsible for ensuring that all statutory obligations, including but not limited to:

Registration with local labor authorities

- Registration with BOCW and applicable fees/Cess to be considered. Any invoices/JMS submitted for payment must accompany the details of payment made toward labour Cess.
- Payment of applicable taxes, duties, and levies
- Compliance with health and safety standards
- Environmental compliance requirements
- Any other statutory or regulatory compliance specific to the nature of the work being undertaken are strictly adhered to throughout the duration of the contract.
- Timely compliance related to GST submission to be ensured before submission of bills.

16.3 Indemnification for Non-Compliance:

The contractor shall indemnify and hold harmless the employer from any loss, damage, or penalty that may arise due to the contractor's failure to comply with local regulations or statutory requirements during the execution of the contract.

16.4 Documentation and Reporting:

The contractor shall maintain records of all statutory filings, permits, and compliance reports and shall make these available for inspection by the employer or relevant authorities upon request. The contractor shall provide periodic updates on the status of statutory compliance as may be required by the employer.

16.5 Failure to Comply:

In case of non-compliance with any local regulations or statutory requirements, the employer reserves the right to take corrective action, including but not limited to withholding payment, imposing penalties, or terminating the contract, as deemed appropriate.

SECTION – IV

TECHNICAL SPECIFICATIONS (IE & ELV WORKS)

**SECTION IV
INTERNAL ELECTRIFICATION AND ST
LIGHTING ETC TRADE INDEX**

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03	Power Cable Work	IV-318 to IV-323
04	Telephone, Computer Data And Television Wiring	IV-323 to IV-324
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INTERNAL ELECTRIFICATION AND ST LIGHTING ETC
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1. INTRODUCTION**TECHNICAL SPECIFICATIONS FOR INTERNAL ELECTRIFICATION WORKS**

The Following specifications will apply under all circumstances to the equipment to be supplied and installed against this contract and it is to be ensured that the contractor shall obtain for himself at his own expense and on his own responsibility all the information which may be necessary for the purpose of submitting the tender and for entering into a contract keeping in view the specifications of installation and inspection of site etc.

1.1 ABBREVIATIONS

A	Ampere
AC	Alternating Current
APFC	Automatic Power factor Control
BOQ	Bill of Quantity
CI	Cast Iron
CRCA	Cold Rolled Cold Annealed
D	Diameter
DB	Distribution Board
DC	Direct Current
DG	Diesel Generator
ELCB	Earth Leakage Circuit Breaker
GI	Galvanized Iron
IDA	Industrial Development Authority
IR	Insulation Resistance
IEC	International Electro Technical Commission
KA	Kilo Ampere
KN/m ²	Kilo Newton per meter square
LDB	Lighting Distribution Board
LT	Low Tension
M	Meter
MCB	Miniature Circuit Breaker
Mm	Millimetre
MOC	Material of Construction
MS	Mild Steel
O/G	Out Going
PCC	Power Control Centre
PDB	Power Distribution Board
PVC	Polyvinyl Chloride
RCC	Reinforced Cement Concrete
RPM	Revolutions per Minute
SMC	Sheet Moulding Compound
SPN	Single Pole Neutral
SS	Stainless Steel
TPN	Three Pole Neutral
TS	Technical Specification
UPS	Uninterrupted Power Supply
V	Volts

1.2 References

The following Indian Standard Specifications and code of practices amended as on date will apply to the equipment, materials and installation for this contract:

a)	Steel boxes for enclosure of electrical accessories	IS 5133 – 1969 Part I
b)	Fittings for rigid steel conduits	IS 2667 – 1964
c)	Rigid PVC Conduits for electrical wiring	IS 9537 Part III
d)	Accessories for rigid PVC conduits for electrical wiring	IS: 2667-1964 & IS: 3857-1966
e)	Switch socket outlets	IS 4615 – 1968
f)	Three pin plug and socket outlets	IS 1293 – 1967
g)	Switches for domestic and similar purpose	IS 3854 – 1966
h)	PVC wires	IS 694 – 1990
i)	PVC Insulated Heavy Duty Cables	IS 1554 – 1976
j)	Conductor for Insulated Electric Cables	IS 8130 – 1984
k)	PVC Insulated & PVC Sheathed solid Al conductor cables – 1100 volts.	IS 4288 – 1988
l)	Low Voltage Switchgears & Control Gears	IS 13947 – 1993
m)	Switchgear bus bars	IS 375 – 1963
n)	Enclosures for low voltage switchgear	IS 2147 – 1962
o)	Moulded Case Circuit Breakers	IS 13947 – 1993
p)	Miniature Air Circuit Breakers for AC Circuits	IS 13947 – 1993
q)	Code of Practice for Installations & Maintenance of power cables	IS 1255 – 1983
r)	Code of Practice for Electrical wiring installation	IS 732 – 1989
s)	Code of Practice for Selection, Installation & Maintenance of Switchgear & Control gear	IS 10118 – 1982
t)	Code of practice for Earthing	IS 3043 – 1987
u)	Code of Practice for Lightning protection	IS 2309 – 1989
v)	Code of Practice for personal hazard & fire safety of buildings	IS 1644 – 1960
w)	Code of Practice for Electrical Installation fire Safety of Building	IS 1646 – 1982
x)	XLPE Insulated Heavy Duty Cables	IS 7098

Indian Electricity Rule 1956 & Indian Electricity Act 1910 amended as on date and NATIONAL BUILDING CODE OF INDIA**2 CONCEALED / SURFACE CONDUIT WORKS****2.1 Rigid PVC Conduits specification & size**

2.1.1 Rigid PVC Conduits: These shall be grey coloured rigid PVC conduit of perfectly circular tubing having minimum wall thickness of medium gauge 1.8 mm approved by F.I.A. & I.S.I. and shall conform to IS 9537 Part III. No PVC conduit of less than 25 mm dia shall be used for electrical wiring.

i) Up to 38 mm diameter - min. 1.8 mm wall thickness

ii) Above 40 mm diameter - min. 2.2 mm wall thickness

2.1.2 PVC Conduit fittings: Connections between PVC conduit shall be with rigid PVC conduit accessories only. PVC conduit accessories / fittings such as couplers, unions, bends, tees, junction boxes, reducers, chase nipples, split couplings, plugs etc. shall be specifically designed and manufactured for their particular application. All conduit accessories shall be PVC grip type and shall conform to IS: 2667-1964 and IS: 3857-1966. As far as possible, the conduit system shall be so laid out that it will alleviate the use of tees, and sharp bends. No elbows shall be used and only PVC regular bends, slip in type shall be used for bonding/turning.

2.1.3 In long distance straight runs of conduits, inspection boxes at reasonable intervals shall be provided. The conduit pipes including all bends, unions, couplers, tees, junction boxes etc. forming part of the conduit system shall be adequately supported. Bending of conduit with large radius while laying at site to minimize use of readymade bends shall be adopted as far as possible. For diversion purpose pipes shall be bent."

2.2 Conduit Cross Section / Size:

The conduit shall be of ample section area to facilitate the drawing of PVC wires/cables. In no case shall the total cross section of wires/cables measured overall, be more than half the inside area of the conduits.

MINIMUM CONDUIT DIA (O.D.) FOR ELECTRICAL WIRING - 25 MM.

2.3 Laying of Conduits

2.3.1 Conduits shall be laid before casting in the upper portion of a slab/in PCC if below flooring or otherwise, as may be instructed in accordance with approved drawings, so as to conceal the entire run of conduits and ceiling outlet boxes with a concrete cover of minimum 12 mm. Conduits shall be so laid that they are interconnected. This is required to facilitate pulling of wires from different routes in case of any of the portion of conduit/junction box/outlet box is blocked during slab casting. Vertical drops shall be cut in masonry work by the contractor to sufficient depth to allow full thickness of plaster over conduits. The width of the chases will be made to accommodate the required number of conduits. The chases will be filled with cement, coarse sand mortar (1:4) and properly cured by watering by the contractor.

2.3.2 This filling of chases shall be done by electrical contractor prior to building contractor doing finishing plaster on walls. When the conduit is to be embedded in a concrete member it shall be adequately tied by steel wires to the reinforcement to prevent displacement during casting/vibrating of concrete. Tying wire shall be supplied by the contractor. Conduit in chases or laid in the slab shall be supported at maximum of 1 m centre.

2.3.3 Cutting of chases in any R.C.C. member/finished floor/ already finished wall surface is not allowed unless prior approval of Site Engineer is taken in site instruction book. If a chase is cut in an already finished surface,

the contractor shall fill the chases and finish it to match the existing finish including painting at his cost to Site Engineer's satisfaction.

2.3.4 Contractor shall not cut any steel reinforcement bars or steel structure to fix the conduits. Puncturing of wooden/ steel shuttering for R.C.C. slab/beams/column etc. for conduit work is also not allowed, unless Site Engineer permits in site instruction book under special conditions.

2.3.5 Run of conduit pipe through expansion joints in R.C.C. members should be avoided as far as possible and if unavoidable, flexible conduit pipe should be used with ceiling outlet box on both sides of expansion joint.

2.3.6 Surface Conduiting : Conduit on surface of walls/R.C.C. members shall be avoided as far as possible and if unavoidable prior approval of Site Engineer on sample saddles, clamps, screws and a **minimum 5 M** conduit laid on surface shall be taken, to achieve best possible workmanship. Distance between 2 consecutive clamps for fixing conduit on surface shall not exceed 600 mm. No wooden gutties for fixing saddles/clamps shall be used. Rawl plug/steel fastener with hard setting/sealing compound shall be used. Conduits & boxes fixed on surface shall be painted with finishing paint of approved colour & finish.

WHERE EVER FALSE CEILING IS BEING PROVIDED, CONCEALED CONDUITS IN RCC SLAB SHALL NOT BE PROVIDED BUT SURFACE CONDUITING WITH MS SUPPORTS / CLAMPS ETC. SHALL BE DONE OVER FALSE CEILING. SIMILARLY FOR INSULATED CEILING & WALLS, ONLY SURFACE CONDUITING TO BE PROVIDED.

2.4 Conduiting on Stone wall: In case of stone masonry, necessary conduits with MS boxes should be placed as the masonry is in progress, since after completing masonry; it is very difficult to cut chases in walls. Special location of cement concrete shaft is also recommended to conceal conduit in stone masonry.

2.5 Conduits below floor: In ground floor conduiting below the flooring should be avoided. Wherever it is unavoidable GI 'A' class pipe or heavy gauge PVC pipe/Raceways shall be used with prior approval of Site Engineer.

2.6 Steel draw wires: All conduits shall be provided with steel draw wires (fish wires) of at least 16 SWG wherever required.

2.7 Ceiling/Wall outlet boxes for lights/fans

2.8 Outlet boxes shall be of minimum 16 SWG steel sheets or of casting with remove-able cover sheet for all the light points & the fan points and so installed as to maintain continuity throughout. These shall be protected at the time of laying by filling with jute/earth/cotton etc. so that no cement mortar finds its way inside during concreting or plastering etc. Typical sketches SK – 1A & B for such outlet boxes are attached. While installing lighting fixture and ceiling fans, remove able covers to be removed and 3 mm thick matching colour hylem sheet covers to be used.

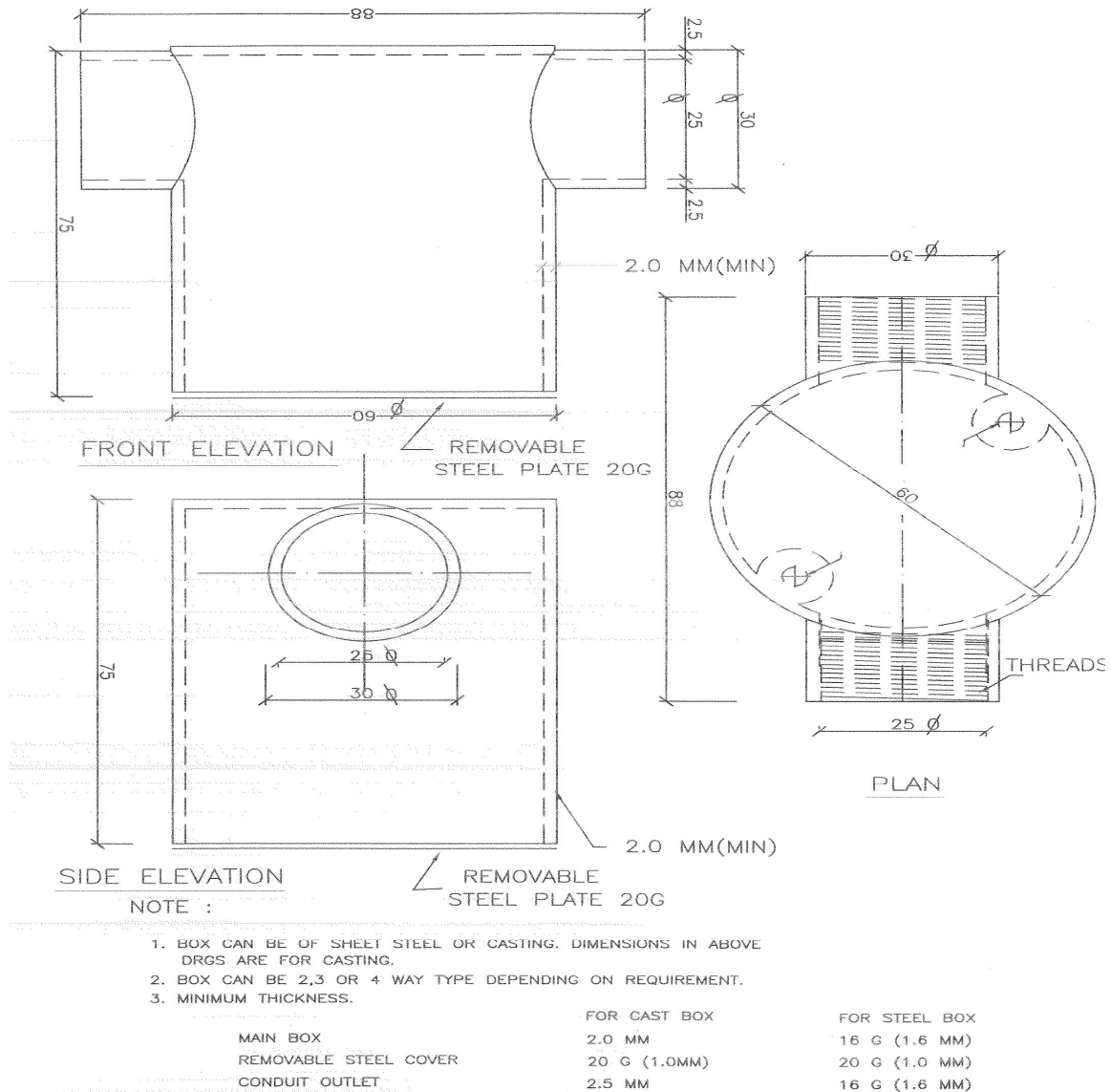
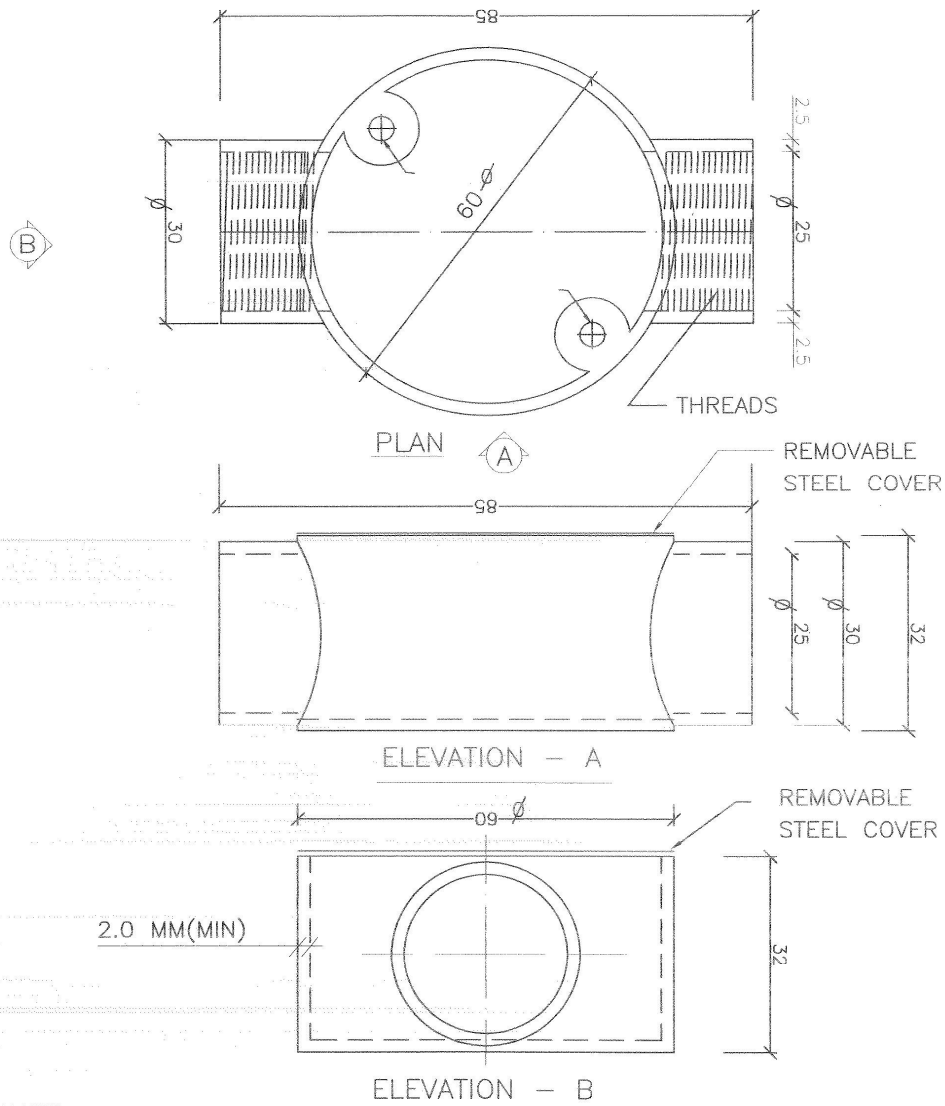


Fig – 1A, Details of outlet box for installation of light fitting on Slab.



NOTE :

1. BOX CAN BE OF SHEET STEEL OR CASTING. DIMENSIONS IN ABOVE DRGS ARE FOR CASTING.
2. BOX CAN BE 2,3 OR 4 WAY TYPE, DEPENDING ON REQUIREMENT.
3. MINIMUM THICKNESS.

	FOR CAST BOX	FOR STEEL BOX
MAIN BOX	2.0 MM	16 G (1.6 MM)
REMOVABLE STEEL COVER	20 G (1.0MM)	20 G (1.0 MM)
CONDUIT OUTLET	2.5 MM	16 G (1.6 MM)

Fig – 1B, Details of outlet box for installation of light fitting on Wall.

- 2.9** For fixing lighting fixtures/brackets, outlet boxes complete with check nut for holding conduits shall be used. For fixing lighting fixture suitable for 14 /18 /20 Watts fluorescent tubes/ incandescent lamps/discharge lamps on RCC slabs/walls, only one outlet box is required. For fixing lighting fixture suitable for 28 / 36 / 40 / 54 Watts fluorescent lamps in RCC slabs/walls, two numbers outlet boxes should be provided at a distance of 300 mm away from the centre in the longitudinal direction of the fixture, so that the use of gutties / rawl plugs etc. may be avoided, as well as wiring from outlet box to the light fitting is completely concealed. However, if for fixing of lighting fixture suitable for 28/36/40/54 W fluorescent lamp in RCC slab walls, 2 nos. anchor fasteners are being used, only one outlet box may be provided. If the light fitting is to be installed in RCC beam, and due to heavy reinforcement at the bottom of beam it is not possible to provide outlet boxes, simple conduit should be provided. These details have been shown in the attached sketch no. Fig-2 and these should always be followed.

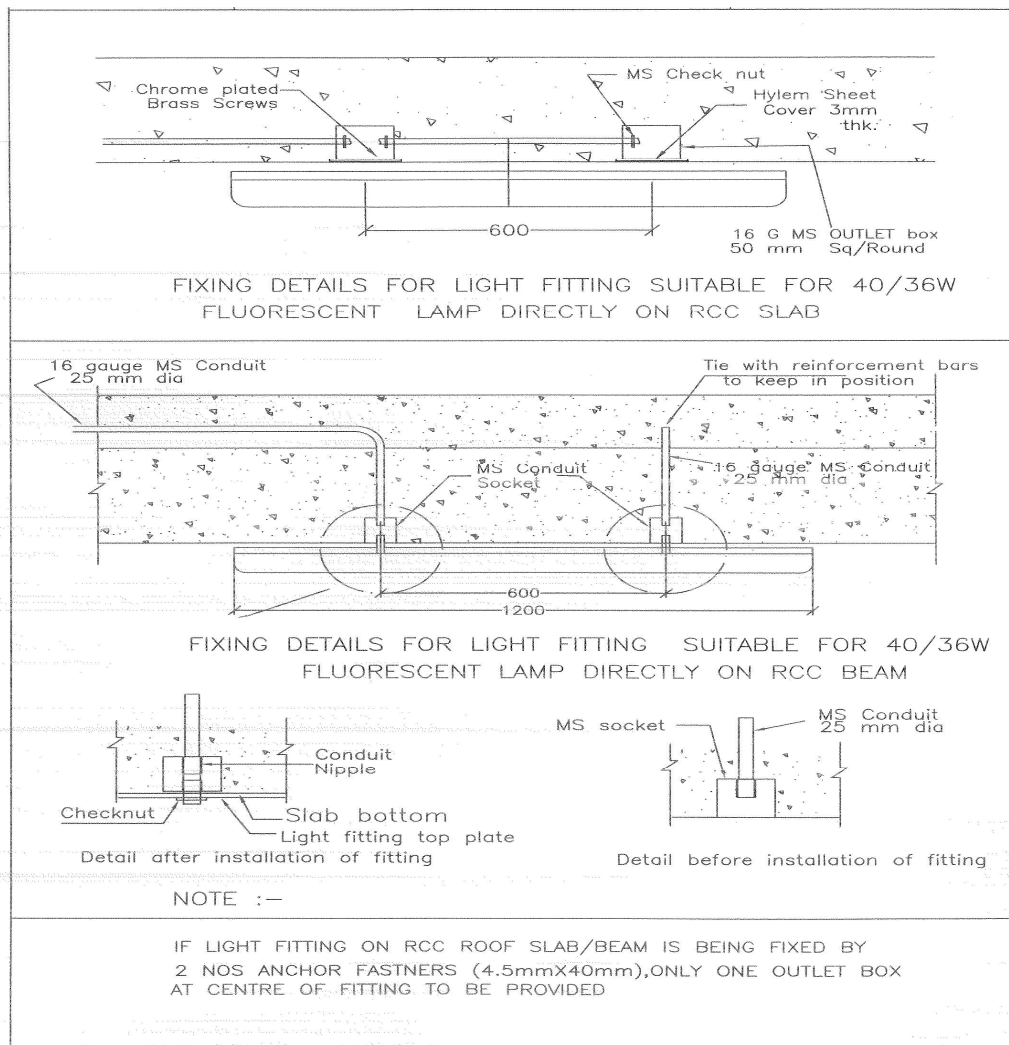


Fig – 2, Fixing details of Fluorescent light fitting.

The drawing consists of two main views: an Elevation (Sectional) view and a Plan view.

Elevation (Sectional) View:

- Shows a cross-section of the assembly. The top part is an R.C.C. SLAB with a PLASTER layer.
- An M.S. CONDUIT is embedded in the slab, secured by CHROMIUM PLATED 3/16 DIA SCREWS.
- A FAN ROD passes through the conduit, secured by CHECK NUTS.
- The rod is supported by a HYLEM SHEET 3 MM TK. 150 DIA.
- Dimensions: 150, 125, 150, 150, 150.

Plan View:

- Shows the top view of the assembly.
- The central part is a 16 G TK HEXAGONAL MS BOX with 25 D HOLES.
- It is covered by a 16G STEEL SHEET COVER.
- Dimensions: 150 dia, 16 G, 12 DIA ROD, 16 G, 35 min, 20, 75, 150.
- Labels include: WELDING, CENTRE LINE OF CONDUIT ENTRY, 3/16" TAPPING HOLE, 16 G SHEET WELDING.

Fig-3, Outlet box and installation for ceiling fan.

2.11 Draw Out Junction Boxes

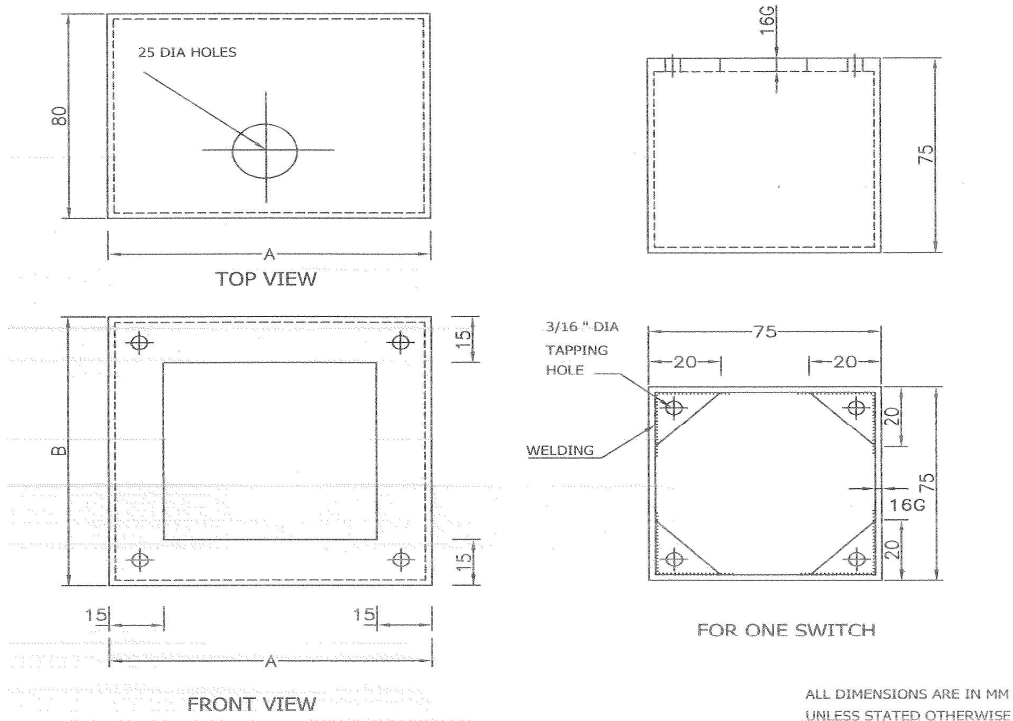
Heavy gauge PVC / Steel draw out boxes fabricated from minimum 16 SWG sheet steel of ample dimensions shall be provided at convenient points on walls/ceilings to facilitate pulling of long runs of cables/wires. These shall be completely concealed with 3 mm thick hylem sheet covers, flush with plasterwork. These draw out boxes should be five sided. The location of these boxes is to be decided prior to fixing, as per site requirement and following shall be treated as general guidelines for deciding the location of these:

- a) These shall be provided at a place where these are not in direct view. Recommended place is 400 /450 mm below ceiling, if conduits are running vertically.
- b) Junction boxes in the offset of bottom of R.C.C. beamed vertical wall shall not be provided.
- c) If junction boxes are coming side by side for two or more conduits, one common MS box of proper size can be used to act as junction box.
- d) Junction box in ceiling to be avoided as far as possible & if junction box is to be provided in ceiling, its position should be so located that it is in line with other light/fan points.
- e) Junction boxes shall never be used for splitting one conduit into two or more. Junction box for such functions is avoidable and for this, number of conduits to be connected to one switchboard shall be calculated correctly as per drawing before laying conduits in ceiling.
- f) Locating junction boxes on outer surface of exterior walls of building shall be avoided as these are in direct view and are also exposed to weather.
- g) Junction boxes shall never be closed permanently by plaster. Removable covering of Aluminium / Sheet Steel shall be provided for conduit boxes acting as junction boxes and for MS junction boxes removable hylem (white colour) plate shall be provided. This cover shall be painted with wall colour.
- h) Junction boxes in important areas shall be avoided and can be located in toilets/corridors/service shafts & stores etc.

2.12 Switch Boxes (for Piano type switches)

Steel boxes of required sizes fabricated from 16 SWG steel sheets, shall be provided to house speed regulators of fans, switches for lights, fans, plug sockets etc. as per requirement of drawings. These should be so designed that accessories on hylem sheet could be mounted with tapped holes and brass machine screws, leaving ample space at the back and on the sides for accommodating wires and check nuts at conduit entries. These shall be attached to conduits by means of check nuts on all walls of the boxes through which the conduits are entering. These shall be completely concealed leaving edges flush with finished wall surfaces. 3 mm thick hylem cover should be fixed to these switch boxes by means of brass chrome plated machine screws. Utmost care shall be taken by contractor to ensure that all switch boxes are in line and level. Inside each switchbox, one bolt shall be welded to receive earthing wire.

Typical sketches for these switchboxes are shown in the attached Fig4. Unless otherwise specified in execution drawings, the height of switch boxes, outlet boxes for lights in walls, power plugs etc. From finish floor level shall be as shown in Fig-5



DIMENSION A & B OF BOX & NOS. OF SWITCHES IF MORE THAN 1 SWITCH

4" X 4" FOR 2 SWITCHES OR 1 SWITCH & 5A SOCKET

6" X 4" FOR 16A POWER POINT, 3/4 SWITCHES

9" X 11" FOR SWITCHES & 2 FAN

13" X 11" FOR SWITCHES & 4 FANS

6" X 8" FOR 2 MCB'S OF GROUP LIGHTING & SWITCH BOARD

NOTE :

- 1) THE BOXES SHOULD BE FABRICATED OUT OF 16 SWG SHEET.
- 2) ALL BOXES SHALL BE PAINTED WITH RED OXIDE AFTER FABRICATION
- 3) NOS. & LOCATIONS OF CONDUIT HOLES SHALL BE PROVIDED AS PER REQUIREMENT
- 4) A STUD SHALL BE PROVIDED INSIDE SWITCH BOXES FOR EARTING, SIZE 6MM
- 5) ALL BOXES SHALL HAVE MINIMUM DEPTH OF 80 MM
- 6) IF ELECTRONIC FAN REGULATORS ARE BEING USED, SIZE OF BOXES CAN BE REDUCED FROM WHAT IS SPECIFIED ABOVE IN CONSULTATIONS WITH SITE IN-CHARGE

Fig-4, Details of M.S.Box for Switch board (Piano Switch).

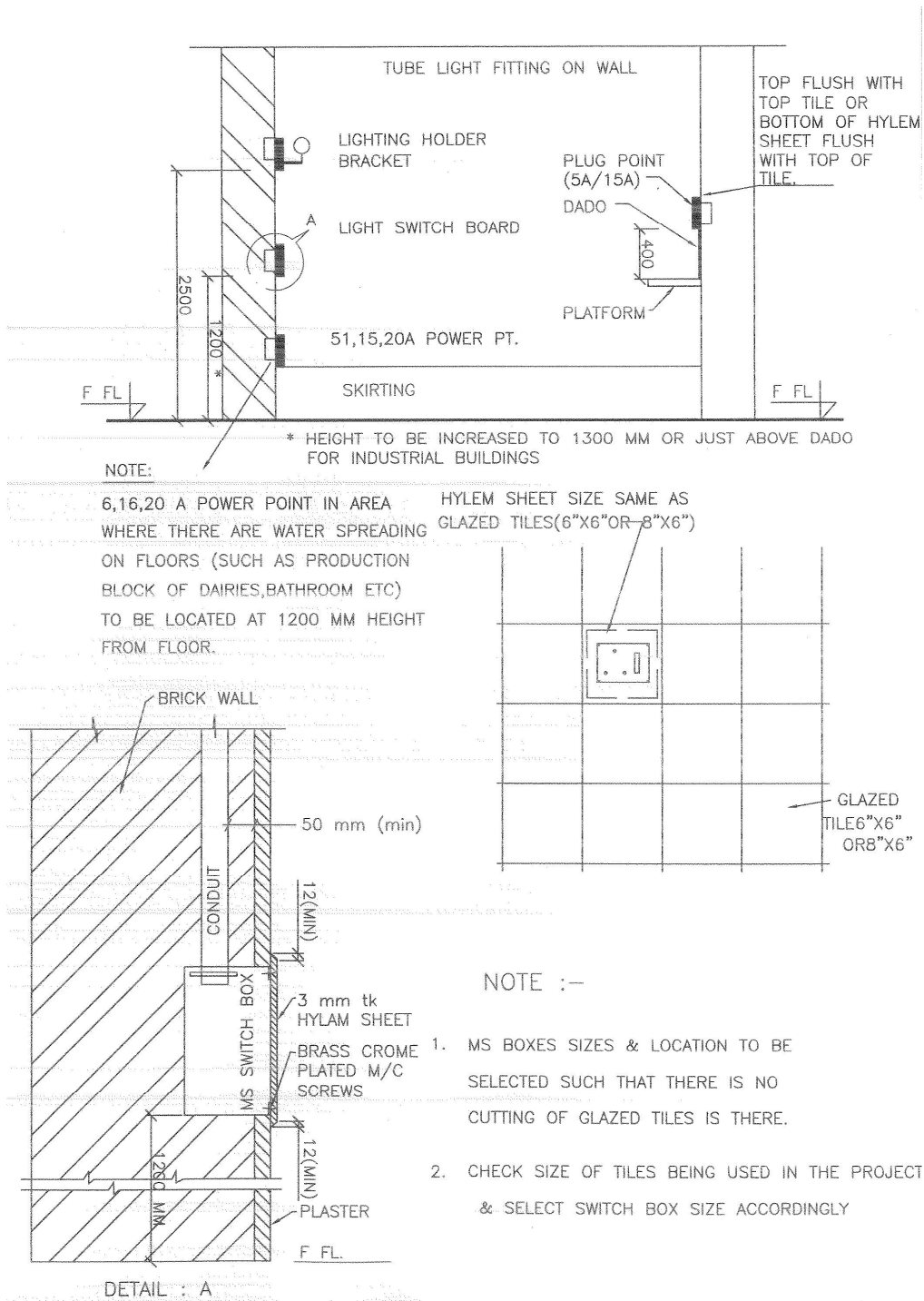


Fig-5, Installation tips for lighting Switch board.

2.13 Switch Boxes (for Modular type switches)

Same as above but only Zinc chromate passivated MS boxes suitable to house modular type switches, fan regulators & sockets of required ratings. These shall be so designed that accessories are mounted on a grid plate with tapped holes for brass machine screws. The grid plates & MS boxes shall be fitted with a brass earth terminal. Moulded front covers made from high impact resistant, flame retardant and ultra violet stabilized engineering plastics shall be fixed by means of counter sunk chromium plated brass machine screws.

NOTE:

Conventional piano type or modular switches and corresponding switch boxes shall be used at locations and as per the detail specified in schedule of quantities/drawings/ instruction of site engineer.

2.14 Cleaning and Protection of Conduit System

The entire conduit system including outlet boxes, junction boxes and switchboxes shall be thoroughly cleaned after completion of erection and tested for non-blockage by air/sound or steel wire (minimum 16 gauge) prior to finishing of building and before drawing in of cables/wires.

To safe guard conduit system against filling up with the plaster/cement slurry/water etc. all the outlet and switch boxes will have to be provided with temporary jute/cotton filling, covers and plugs etc. within tendered cost which shall be replaced later on by hylem sheet cover after wiring as required.

2.15 Painting of MS Outlet & switch boxes

All outlet & switch boxes etc. should have their original finish & paint in good finish prior to erection & if due to long storage in open, painting has been peeled off/damaged/worn-out; fresh coat of paint should be applied.

2.16 Raceways

These shall be used for drawing wiring for system like UPS, telephone, data processing etc. specially under floors or above false ceiling, due to use of modular furniture. Heavy-duty removable cover raceways of sizes as per schedule of quantities/ drawings fabricated from 14 SWG sheet of approved design and make shall be provided. The raceways shall be embedded in floors, with covers flush with finished floor level or shall be fixed on surface over false ceiling, as indicated in drawings and as required. Covers of raceways shall be screwed on neoprene gasket top with counter sunk brass chrome plated screws. Sheet steel raceways shall be galvanized. Fixing of raceways in floors shall be done in close co-ordination with civil works & utmost care shall be taken to prevent mortar from seepage into the raceways. These raceways be provided when floors are being laid. If these have to be provided after laying of floors, cost of cutting chases in floor and making them good, as required shall be without any extra cost. All telephone & data raceways shall be at least 300 mm away from those of electrical unless otherwise stated / shown in drawings. Common raceways with steel partition can be used (with approval) for power and telephone data purpose.

2.17 WIRING AND SWITCHES:
2.17.1 Specification of wires , sizes and laying/termination.

All wires shall have been manufactured in accordance with the latest IS Specification (IS 694-1990 Part II). All wires shall be PVC insulated, unsheathed, single core, FRLS (Fire Resistance Low Smoke), copper conductor (stranded), of 1100 volt grade. Cross section of the conductor shall be as per the specification mentioned in schedule of quantities.

Minimum cross section of copper stranded conductor for electrical wiring - 1.5 mm square.

For single phase wiring, color of live conductor's insulation shall be Red/Yellow/Blue (only one of these color for one building) and Black for neutral. Earthing is to be done by green PVC insulated copper conductor. For three phase wiring, color of live conductor's insulation shall be Red/Yellow/Blue, as per

relevant phase and black for neutral. However, if due to unavoidable circumstances, these color codes cannot be used by contractor, prior approval of the Site Engineer shall be taken and correct color PVC tape should be put in distribution board/ outlet boxes/switch boxes etc. wherever these wires are to be inspected. Earth wire shall always be of Copper conductor PVC insulated & color of insulation shall be Green. Whenever wires are being terminated in a Distribution Board / Switch Box / Plug Points / Outlet Box etc., a minimum of 200-mm long extra wire should be provided in the form of a loop for future maintenance/use. Conductor having nominal cross sectional area exceeding 4 Sq. mm. Shall always be provided with crimping lugs unless switchgear is having facility to receive direct naked wires.

No joints in wires shall be made inside conduits and inspection draw out boxes.

2.18 Switches and Sockets (Conventional piano key type)

All 6 and 16 Ampere switches shall be conventional piano key type 240 volts AC of best quality & standard. The switch's moving & fixed contacts shall be of silver nickel and silver graphite alloy & contact tips coated with silver. Switches controlling the light, fan or sockets shall be connected on to the phase wire of the circuit. 6 A socket shall be 3-pin type with safety shutter, suitable for 240 V AC, 16 A socket shall be universal type (6 pins) suitable for 240 V AC with safety shutter.

2.19 SWITCHES AND SOCKETS (Modular type)

All 6 & 16 A switches shall be of the modular flush mounting type, 240 V AC of best quality & standard. The switch's moving & fixed contacts shall be of silver nickel & silver graphite alloy & contact tips coated with silver. Housing of switches shall be made from high impact resistant, flame retarding & ultra violet stabilized engineering plastic material. Fan regulators shall be fixed inside the switch boxes on grid plates with tapered holes & brass machine screws leaving ample space at the back & sides for accommodating wires. Switches & sockets shall be provided with moulded cover plates of approved colour, shape & size made from high impact resistant, flame retarding & ultra violet stabilized engineering Plastic material & secure 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. 6 / 16 A socket outlets shall be of modular flush mounting type & shall be switch three pin type (for 6 A) and 6 pin type (for 16 A) and fitted with automatic linear safety shutters to ensure safety from putting fingers. Socket outlets shall be made from high impact, flame retarding & ultra violet stabilized engineering plastic material. Switch & sockets shall be located in the same plate.

2.20 Point Wiring**2.20.1 For lights, fans, call bells & 6 A plug points in lighting switch boards**

- (a) Providing & fixing of conduit, conduit accessories, draw out boxes, outlet boxes and switch boxes etc. in concealed / surface system.
- (b) Looping system shall be adopted from terminal to terminal throughout including supply and drawing of required numbers and sizes (minimum 1.5 sq. mm copper stranded conductors) of wires without stripping off the insulation in-between.
- (c) All flush type switches and accessories will be used on 3 mm thick hylem sheet in MS switch box or modular switches in special boxes as per technical specifications & requirement given in schedule of quantities.

- (d) The point will commence from the switch box and would end up to outlet box and shall also include supply and fixing of 6 A switch for each light point or group of light points as the case may be for the items.

(CIRCUIT WIRING INCLUDING CONDUITING UP TO SWITCH BOARDS IS NOT INCLUDED IN SCOPE OF POINT WIRING)

- (e) POINT WIRING AND CIRCUIT WIRING IN SAME CONDUIT IS NOT ALLOWED AND THESE SHOULD BE DRAWN IN INDEPENDENT CONDUITS. POINT WIRING ORIGINATING FROM TWO DIFFERENT PHASES SHALL NOT BE RUN IN THE SAME CONDUIT.

- (f) The ceiling fan point shall be complete with special outlet box as specified in 2.10 including fixing and connection of regulator. Supply and fixing of 6A switch and electronic stepped fan regulator for each ceiling fan is included in scope of the contractor. Switch box for ceiling fan shall be suitable for electronic type regulators unless otherwise specified.

- (g) For exhaust fans, ceiling rose near exhaust fan to be provided.

- (h) In any switch box, not more than six (6) regulators for ceiling fans should be provided unless approved in writing by the Site Engineer.

Joining of wires by taping inside the switch box to be avoided by utilizing neutral & phase pin of 6/10, 16/20, 6/16, 10/20, 25 A socket or of suitable capacity connector if there is no socket in switch box.

- (j) Fan regulator in switch box should be earthed if it is chocked or resistance type. Earthing of light fittings / call bells / fans not required. 6 Amp. Convenience plug point's 3rd pin to be earthed with 1.5 sq. mm. green PVC insulated copper wire.

- (k) In one switch box, only one phase circuit shall be provided.

- (l) Building for point wiring (lights, fans, call bells and 6 A (plug points & Lighting switch boards) shall be two types:

Type a -Non Industrial building such as residential quarters, office buildings, hostels, marketing shops/milk booths and guest houses etc.

Type b - Industrial buildings such as production block, service block, sub-station, ref. block, boiler house and workshop etc.

2.20.2 For 16/20 A Power Plug Points

- (a) Providing & Fixing of conduit, conduit accessories, draw out boxes switch boxes etc. in concealed/surface system including supply and drawing of circuit wiring. Conduit and wiring up to power plug point shall be paid separately and is not including in the scope of work for supplying & fixing power plug point.
- (b) Providing and drawing of wires of sizes as specified in the item. In one circuit, there shall not be more than 2 nos. 16/20 A power plug points and circuit shall be 2 x 2.5/4.0 sq. mm 1 x 1.5 /2.5 sq.mm. copper stranded conductor wires, as specified in schedule of quantities.
- (c) One no. flush type plug socket outlet and switch shall be supplied and fixed for each power point on 3 mm thick hylem sheet cover. Plug socket shall be universal type (one common 16 A switch for 6/16 or 10/20 A sockets). 6-pin switch & socket to be piano type in conventional MS box or modular type in special MS box as required in schedule of quantities.

- (d) The point would commence from the distribution board and will end up to the switch box. Looping of circuit would be done to second 16/20 A power point from first 16/20 A power point.
- (e) Each circuit would have its own 2.5/4.0 sq. mm. green PVC insulated copper wire from distribution board to switch box and would be connected to third pin of socket outlet.
- (f) For some special 16/20 A power plug point, only one point on one circuit has to be provided as required in schedule of quantities/drawings.

Note: Conduit and wiring up to 16/20 A power plug point from DB shall be paid under circuit wiring on length basis and supplying fixing of MS box with switch & socket shall be paid on number basis for each point.

2.20.3 For 20/ 25 A Power Plug Point

- (a) Providing and fixing of conduit, conduit accessories, draw out boxes & switch box etc. in concealed/surface system.
- (b) Providing and drawing of wires of sizes as specified in the item. In one circuit, there shall be only one power point and circuit shall be 2 x 4.0 sq. mm copper stranded conductor wire as specified in schedule of quantities, complete with 4.0 mm sq. green PVC insulated copper wire.
- (c) One no. M.C.B. 20 / 25 A, single phase shall be fixed for each power point on 3-mm thick hylem sheet cover, in such a way that only knob is outside MS switch box. It should also have one no. 20/25 A three-pin metallic type socket outlet complete with metallic plug top if specified in schedule of quantities. However, for modular socket & MCB grid & switch plate with special MS box shall be provided.
- (d) The point would commence from the distribution board and will end up to the switch box.

Note: Conduit and wiring up to 20/25 A power plug point from DB shall be paid under circuit wiring on length basis and supplying fixing of MS box with switch SP MCB, metallic plug & socket shall be paid on number basis for each point.

2.20.4 Group Wiring (for industrial lighting)

- a) Specification for this would be applicable if either 1 or more lights of total 200 Watts or more lighting load is controlled by one M.C.B.
- (b) Lights would be controlled by M.C.B. of rating and wire size, as specified in schedule of quantities. However, it shall not be less than 6 A and 2.5 sq.mm copper conductor respectively. Light points controlled by one M.C.B. would be in parallel.
- (c) M.C.B. for these lights would be installed in a suitable modular MS box with modular grid & switch plate. Total electric load to be controlled from this "Group Lighting Board" would not exceed 3000 W or 6 groups of lights.
- (d) 'Group Lights' point would commence from group lighting switch board in surface / concealed conduit system, necessary wiring and up to the last light of the group.

2.21 Circuit / Sub Mains Wiring
2.21.1 Circuit wiring with PVC insulated wires

Specification for this item covers, PVC insulated wires from distribution boards to light switchboard or to Group lighting switchboard, or to 6/16/20/25 A isolated power plug points, in surface/concealed conduit system. This shall also cover wiring between two light switchboards or between two group lighting switchboards or between Two 6/16/20/25/30 A power plug points. This shall be carried out as follows:

- (a) Supply and fixing of conduit, conduit accessories, draw out boxes etc. in concealed /surface system as per specification given in 2.0.
- (b) Providing and drawing of wires of sizes as specified in items details specified in schedule of quantities. For each circuit, independent conduit of size as specified in schedule of quantities to be provided i.e., pulling of more than one circuit in one conduit is not allowed. **However, this condition can be relaxed by Site Engineer as per site conditions. In such cases one circuit shall be paid as per the relevant circuit wiring item and wires for other circuits shall be paid in items of pulling wires in existing conduits.**
- (c) Each circuit shall have a parallel independent running earthing of green PVC insulated copper stranded conductor wire of sizes as specified in schedule of quantities. For single-phase (2 wires) circuit one earthing wire and for 3 phase (4 wires) circuit, 2 earthing wire shall be drawn.
- (d) For the purpose of determining the load per circuit, the following electric rating of points shall be assumed:

Light points (4' Fluorescent lamp)	80 Watts
Light points (incandescent lamp)	60 Watts
Light points (Compact Flu. lamp)	20 Watts
Light points (Discharge lamps)	As per the load of the fitting
Call bell point	20 Watts
Convenience plug point 6/10 A	100 Watts
Fan points	60 Watts
Exhaust Fan points	300 Watts or as specified.
Convenience plug point 16/20 A	1000 Watts

Type and size of circuit shall be specified in the drawings. However, if this is not specified the same may be worked out based on following guidelines:

1. For non-industrial buildings such as office building, worker's amenity, staff quarters etc. the load per lighting circuit (light points, fan points & 6 A socket outlet) shall not exceed 1000 W or a total of 10 lights, fan or socket points whichever is less and hence circuit of 2.5 sq. mm copper conductor wire may be used.
2. For industrial buildings load per lighting circuit can be more than 1000 W. Size of copper conductor wire for circuit may be

For load up to 1500 W	: 2.5 sq.mm circuit
For load above 1500 & up to 2000 W	: 4.0 sq.mm circuit
For load above 2000 & up to 3000 W	: 6.0 sq.mm circuit
For load more than 3000 W	: 10 sq. mm circuit

For Industrial Building depending upon the load 3 phase circuits of 4.0 & 6.0 sq.mm can also be used.

3. For 16/20/25 A power plug points circuit wiring of min. size 2.5 sq. mm copper conductor to be used. Maximum two 16 A power plugs points can be provided in one power circuit.

2.22 Sub-Main Wiring with PVC insulated wires

Specification for this item covers, PVC insulated wires/cables from main switch board to distribution board or from one distribution board to other distribution board in surface/concealed conduit system. This shall be carried out as specified in 2.21.1

2.23 Sub-Main Wiring with XLPE insulated, PVC sheathed armoured cables.

Same as 2.21.1 above except that XLPE insulated, PVC outer & inner sheath, armoured, Al. conductor cables shall be used instead of PVC insulated wire/cable.

3 **POWER CABLE WORK**

3.1 Specification of Cables

Heavy duty, **XLPE insulated**, PVC outer and inner sheath, steel armoured, **Aluminium** conductor cables suitable for 1100 Volts AC, as per **IS 7098** of sizes as specified in schedule of quantities. The conductor of cable of size 16 sq. mm. & above shall be stranded whereas cables of size up to 10 sq. mm. shall be of single strand. While deciding the sizes of cable (if not specified in drawings) for current rating following conditions may be considered

a)	Maximum conductor Temperature	70 deg. C
b)	Ambient Air Temperature	45 deg. C.
c)	Ground Temperature	30 deg. C
d)	Depth of Laying	750 mm.
e)	Load	Maximum connected load
f)	Grouping of cable	Yes
g)	Voltage drop	Not to exceed 5% from one end to another end

3.2 General Precautions for handling of cables

Before laying cables, these shall be tested for physical damage, continuity, absence of cross phasing, insulation resistance to earth and between conductors. Insulation resistance tests shall be carried out with 500/1000-Volt Insulation Tester.

3.2.1 The cables shall be supplied to site wound on wooden drum as far as possible. For smaller length and sizes, cable in properly coiled form can be accepted. The cables shall be laid by mounting the drum of the cable on drum carriage (specially for cable of sizes above 50 sq. mm.). Where the carriage is not available, the drum shall be mounted on a properly supported axle, and the cable laid out from the top of the drum. In no case the cable will be rolled on, as it produces kinks which may damage the conductor.

3.2.2 Sharp bending and kinking of cables shall be avoided. The bending radius for PVC insulated and sheath armoured cable shall not be less than 12 D where 'D' is overall dia of the cable.

3.2.3 While drawing cables through GI pipes and conduits & RCC pipe, ensure that size of pipe is such that, after drawing cables, 40% area is free. After drawing cable, the end of GI pipes/conduits shall be sealed with cotton/bituminous compound. After drawing cables through RCC pipes, the ends shall be sealed with lean mortar of brickbat.

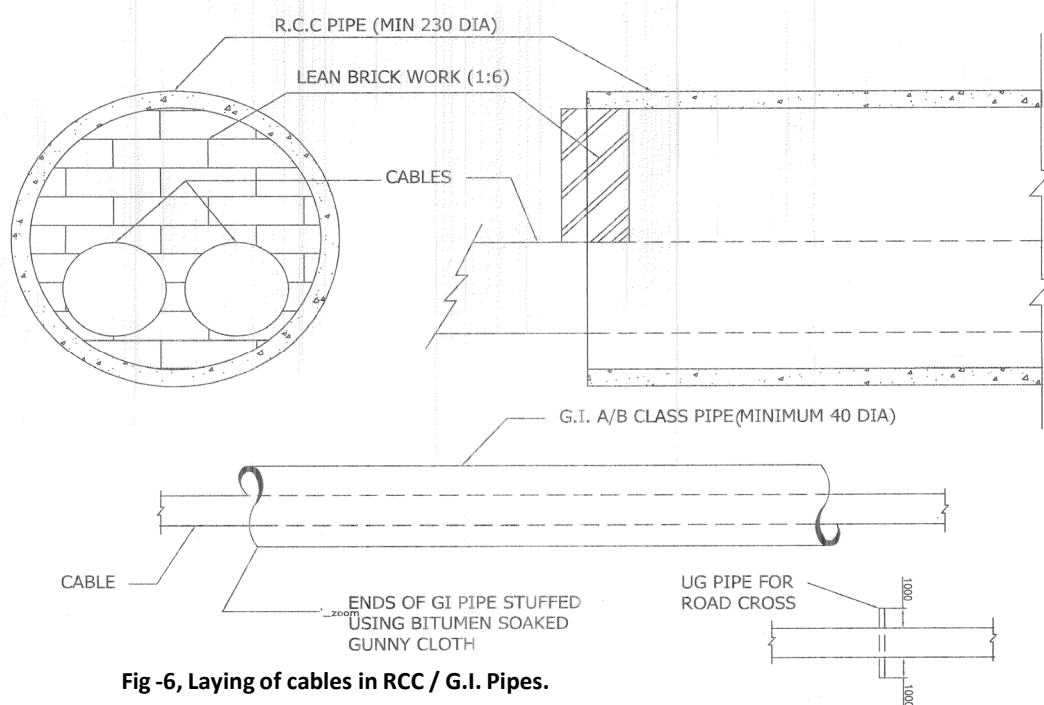


Fig -6, Laying of cables in RCC / G.I. Pipes.

3.2.4 Electric power cables and telephone wires/cables shall not be laid in same trench, G.I./conduit/R.C.C. pipe. Minimum distance of 400 mm between power and telephone wire/cable shall be maintained.

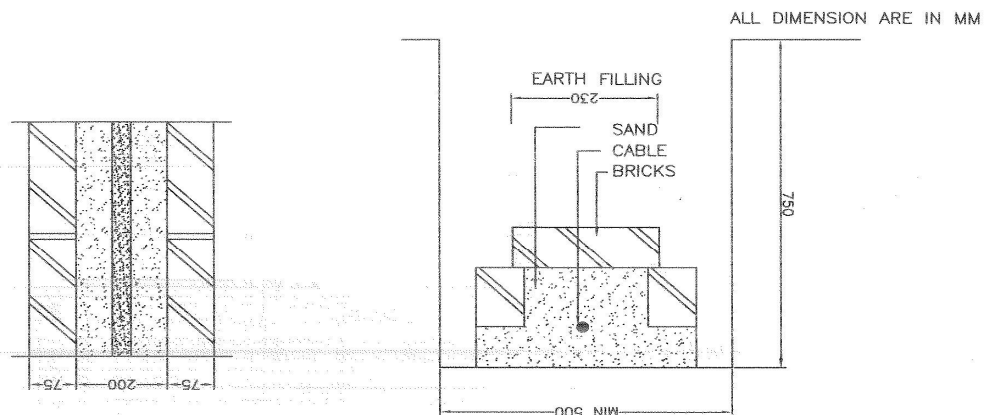
3.2.5 Armoured cables shall never be concealed in walls / floor/ roads without GI pipes, conduit or R.C.C. pipes.

3.3 Laying of Cables (Underground System)

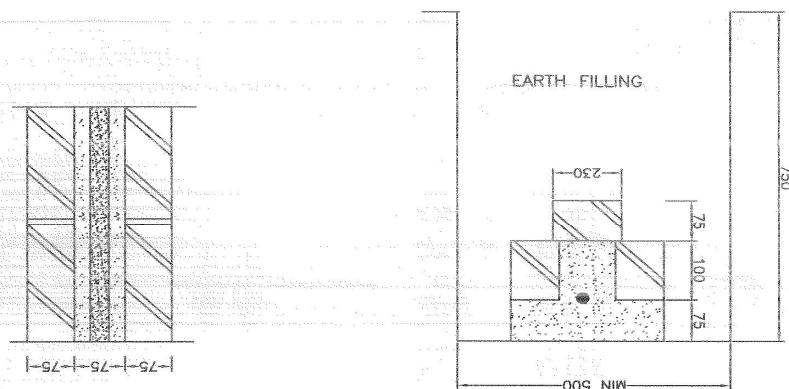
3.3.1 Cables shall be so laid in ground that these will not interfere with other underground structures. All water pipes, sewage lines or other structure which become exposed by excavation shall be properly supported and protected from injury until the filling has been rammed solidly in places under and around them. Any

telephone or other cables coming in the way are to be properly shielded, diverted as directed by the Site Engineer.

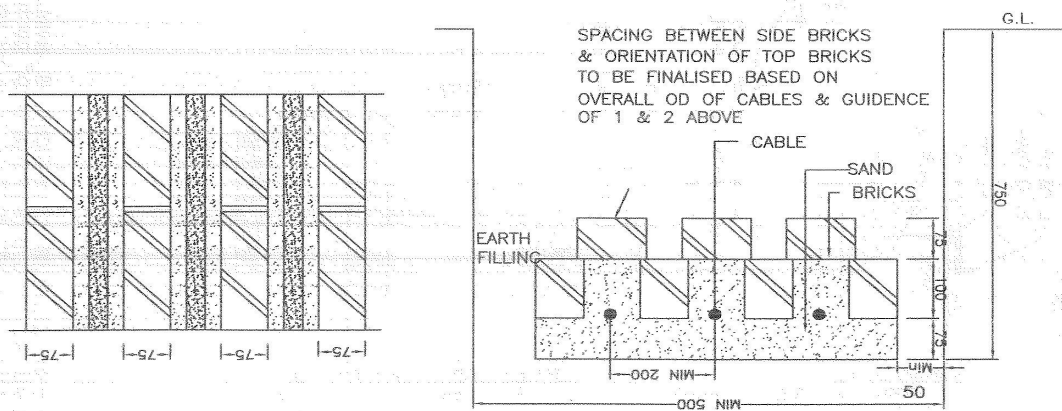
- 3.3.2** Cables shall be laid at a minimum depth of 750 mm from existing ground level. Excavation will generally be in ordinary alluvial soil. The width of the trench shall be sufficient for laying of required number of cables.
- 3.3.3** Sand bedding 75 mm thick shall be made below and above the cables. A layer of second class bricks (full size 230 x 100 x 75 mm) shall be laid over the cable, above sand bedding to cover cable completely. More than one cable can be laid in the same trench by providing sand between two cables. For details of laying of cables see Fig no-7 attached. However, the relative location of cables in trench shall be maintained till termination. The surface of the ground after back filling the earth shall be made good so as to conform in all respects to the surrounded ground and to the entire satisfaction to Site Engineer.



1. FOR SINGLE CABLE OF OVERALL OUTER DIA UPTO 25 MM



2. FOR SINGLE CABLE OF OVERALL OUTER DIA ABOVE 25 MM



3. FOR GROUPING OF CABLE IN SAME TRENCH (TYPICAL)

Fig -7, Laying of cables (Under Ground).

3.3.4 Cable Joints: Joints in the cable throughout its length of laying shall be avoided as far as possible and if unavoidable, prior approval of site engineer shall be taken. If allowed proper straight through epoxy joint shall be made including preparing necessary bedding without any additional cost.

3.3.5 Cable Loops: A minimum loop of 3 M shall be provided on both ends of the cable at entry of buildings, or after every 150 M of un-jointed length of cable, and on both ends of straight through cable joint. This additional length shall be used for fresh termination in future. Cable for this loop shall be paid for supply and laying.

The loop shall be kept in "s" form and loops of different cables should not overlap.

3.4 Laying of cables (in air)

3.4.1 If major length (more than 75 %) of cable is in air above ground & balance underground, full length would be considered laid in air whereas if major portion (more than 75%) is in the ground and part length is in air, full length would be considered in underground system.

3.4.2 Cables in air shall be laid in GI 'A' class pipes or on cable trays, as specified in schedule of quantities. Clamping of cables directly on wall surface shall not be allowed. Suitable aluminium clamps with aluminium cast saddles to be provided if GI pipes is laid on wall surface. For fixing cables on cable trays, Aluminium strip clamp of minimum 2-mm thickness shall be used. Providing and fixing of MS supports for cable tray would be done by electrical contractor without any extra cost. However cable trays shall be paid extra.

3.4.3 Clause no. 3.3.4, 3.3.5, 3.4.1 of underground cable system shall be applicable to cable in air system also.

3.5 Cable Trays:

These shall be perforated type, heavy duty, return flange or inward bend shape, manufactured from mild steel conforming to IS 226 and hot dip galvanized as per IS 2629 / BS 729. Width of cable Tray shall be as per the requirement. Height to be minimum 50 mm & thickness of plate to be 1.5 mm up to 300 mm cable tray width. For cable Trays having width more than 300 mm, height to be 75 mm & Thickness of plate to be 2.0 mm. Cable Trays to be supplied to site in standard length of 2.5 M. Necessary accessories of cable trays such as coupler side plates for joining cable trays, bends, outside riser, inside riser etc. to be provided. MS supports for cable trays and fixing of these supports to RCC roofs with anchors fasteners are included in scope of supply and installation.

3.6 Termination & Jointing of Cables

3.6.1 On both ends of cables suitable size brass chrome plated (CP) heavy duty, double compression type cable glands shall be used before it enters terminal box/main L.T. panel/distribution board/sub-distribution board/joint box/cable box etc. Armour of cable shall be connected to earth point.

3.6.2 All the cores of PVC cables, of conductor size exceeding 4 sq. mm. shall be connected at the ends with the help of appropriate size and type of sockets/lugs. These sockets shall be of tinned copper or Aluminium alloy (socket material to be same as of cable conductor) and these shall be fitted on conductor by crimping process only with appropriate crimping tool. Following is the recommended procedure for crimped joint and the same shall be followed

- (i) Strip off the insulation of the cable and with every precaution, not to severe or damage any strand. All insulations to be removed from the stripped portion of the conductor and ends of the insulation should be clean and square.

- (ii) The cable should be kept clean as far as possible before assembling it with the terminal/socket. For preventing the ingress of moisture and possibility of re-oxidation after crimping of the Aluminium conductors, the socket should be fitted with corrosion inhibiting compound. This compound should also be applied over the stripped portion of the conductor and the palm surface of socket.
- (iii) Correct size and type of socket/ferrule/lug should be selected depending on size of conductor and type of connection to be made.
- (iv) Make the crimped joint by suitable crimping tool.
- (v) If after crimping the conductor in socket/lug, some portion of the conductor remains without insulation the same should be covered sufficiently with PVC tape.

4 TELEPHONE AND COMPUTER DATA WIRING

4.1 Point Wiring for Telephone System

- (a) The point wiring shall be carried out with telephones wires/cables, 2 pair, un-armoured, PVC insulated and sheath, 0.51 mm dia annealed tinned copper conductor, conforming to ITD specification S/WS-113C armouring and outer sheath as per IS: 1554 (Part -I) in 25 mm PVC conduit (one pair always remaining spare for one point). If more than one telephone point has to be provided at one point, multi-core, un-armoured telephone cable shall be used (pairs required are equal to 2 x no. of points) in suitable size conduit. If specifically mentioned in schedule of quantities, instead of ordinary PVC insulated telephone wire as specified above, UTP cable Cat – 5 to be supplied & laid.

The item includes providing and fixing/laying of conduit, switch boxes, socket for telephones connection and telephone wires/cables etc.

MINIMUM DIAMETER OF PVC CONDUIT FOR TELEPHONE WIRING -25 mm

- (b) The point shall commence from the main telephone tag box/sub tag box and would terminate at outlet box of point. Connection at both ends included in point wiring.
- (c) Steel conduit, accessories, draw out boxes, switch boxes etc. shall be supplied & laid as per the details given at 3.0.
- (d) Each telephone point shall have 1 no. flush type RJ11 telephone jack fixed on modular plate in MS outlet box (size 100 x 100 mm). More than one telephone socket outlet (maximum 2 nos.) can be fixed on one outlet box, provided these points are at one place and multi-pair (more than 2 pair) telephone cable has been drawn to this point from tag box. However if specified in schedule of quantities, telephone cord grid plate mounted outlet unit (RJ – 11) with moulded cover plate in recessed galvanised MS box to be provided.
- (e) Joint in telephone wiring (between main tag box/sub tag box and outlet box of point) shall not be allowed and the contractor should bear the wastage of wire if resulted due to this special requirement of telephone system. No looping in telephone system is allowed unless specifically shown in the drawing or instructed by site engineer in the drawing/instruction book.
- (f) Telephone and computer data wiring can be drawn in the same conduit, provided after drawing wires, 50% of conduit cross sectional area is free. However independent PVC insulated telephone & data wire of suitable size shall be used for telephone and computer data.
- (g) To identify each pair of multi-pair telephone wire/cable, PVC indication numbers shall be put on both ends of pair just before termination.

4.2 Point Wiring (Computer Data)

- (a) The point wiring shall be carried out with data cable of 4 (FOUR) pairs (or as specified in schedule of quantities) un-armoured, PVC insulated and sheath, 0.50 mm dia annealed tinned copper conductor (CAT 5E or CAT 6 as specified in schedule of quantities), in suitable size conduit.

The item includes providing and fixing/laying of conduit, switch boxes, socket for computer connection and data wires/cables etc

MINIMUM DIA OF PVC CONDUIT FOR COMPUTER DATA WIRING- 25 MM

- (b) The point shall commence from the main junction box or sub junction box at floor of computer data system, and would terminate at outlet box of point. Connection at both ends of cable shall be carried out by purchaser.
- (c) General specification for concealed/surface conduit system of telephone system (clause no. 4.1 (c), 4.1 (d) & 4.1 (g) shall be applicable for this system also.
- (d) Joint in computer data cable (between junction box and outlet box of point) shall not be allowed and the contractor should bear the wastage of cable if resulted due to this special requirement of computer data system.

4.3 Telephone Cable Work (Underground System)

- (a) The cable shall be suitable for telephone system of suitable pairs (as specified in schedule of quantities), steel armoured, PVC insulated and sheath, 0.51 mm dia annealed tinned copper conductor, conforming to ITD specification S/WS-113C armouring and outer sheath as per IS:1554 (Part-I). All telephone cables for underground laying shall be jelly filled type.
- (b) Specification for laying of telephone cable in underground system shall be same as for electrical system (clause nos. 3.3) and the same shall be followed.

4.4 Telephone Tag Boxes

These shall be of KRONE type using insulation displacement technique in which there is no stripping or soldering of wire, of MS sheet 14 G with connector suitable for telephone connection. It shall have hinged MS sheet cover. Tag box to be of sufficient size to not only accommodate required KRONES but also space for dressing of wires.

5 INSTALLATION OF LIGHTING FIXTURES/FANS**5.1 Technical specifications of lighting fixtures/fans**

Lighting fixtures, fans and exhaust fans are generally not to be supplied by the contractor and hence the detail specifications of these are not being given here.

5.2 Installation of Lighting Fixtures

5.2.1 Scope of work under this item shall start from light point, with a 6 A Bakelite connector, 2 core 1.5 Sq. mm PVC insulated copper stranded conductor wires from this connector to the connector inside the lighting fixture, connections, fixing of lighting fixture complete with all accessories, lamps on wall/roof/steel truss etc. testing the lighting fixture and commissioning. If wire length of light point is enough to reach connector of light fitting, connector in light point can be deleted.

5.2.2 If lighting fixtures are being supplied by IDMC/Client, the contractor would take delivery of these from site store, test the same before installation and if found defective, the defect would be brought to the notice of site engineer. Repair of wiring/circuit of the fitting shall be carried out by contractor without any additional cost. However, if any component of the lighting fixture is defective/ damaged, the same would be located and brought to the notice of site engineer, who would arrange repair/procurement of the same. However, labour for replacement of the damaged/defective component of lighting fixture shall be done by contractor without any additional cost.

5.2.3 Contractor shall clarify from site engineer for type of installation (direct on ceiling/hanging) of lighting fixture, if not specifically mentioned on drawings. Length of the suspension rods shall also be decided in consultation with site engineer.

5.3 Installation of Ceiling Fans

5.3.1 Scope of work under this item shall start from fan point with a 6 A Bakelite connector, 2 core 1.5 Sq. mm PVC insulated copper stranded conductor wires from this connector to the connector of fan, connections, fixing of fan (complete with all accessories) to the fan hook of fan point, testing the fan with regulator and commissioning.

5.3.2 If ceiling fans are being supplied by IDMC, the contractor would take delivery of these from site store, assemble the same, test before installation and if found defective, the defect would be brought to the notice of site engineer. If any component of fan is defective /damaged, the same shall be located and brought to the notice of site engineer, who would arrange repair/procurement of the same. However, labour for replacement of the damaged/defective component of fan shall be done by contractor without any additional cost.

5.3.3 Extension/replacement of hanging rod of fans shall be carried out only if advised by site engineer on drawing/site instruction book. Only GI pipe ('B' class) shall be used for ceiling fan hanging. Screwed joint within the length of fan hanging rod is not allowed and shall never be adopted. Fan hanging rod should be preferably of one piece and if not possible, welded joint can be allowed. This hanging rod shall be painted with enamel paint as directed.

5.4 Installation of Wall Fans

Specification same as 5.3 except that fan has to be fixed on wall with screws/bolts grouting instead of on fan hooks.

Installation of Exhaust Fans

Scope of work under this item shall start from exhaust fan point, with a 6A socket/Plug, 2 core 2.5 Sq. mm PVC insulated copper stranded conductor cable in flexible conduit from ceiling rose to connector of exhaust fan, connections, fixing of exhaust fan in existing opening, complete with accessories and louvers on walls with hold- fasts, testing the exhaust fans and commissioning.

- 5.4.1** Same as 5.3.2 (read exhaust fan instead of ceiling fans).
- 5.4.2** If instructed by Site Engineer, Electrical contractor shall make opening in wall for exhaust fan including repair and finishing of opening. Charges of this work shall be paid separately as per schedule of quantities.
- 5.5** Special Notes
- 5.5.1** Location of lighting fixtures/fans shall be shown on the working drawings and the same shall be followed. However, if due to site conditions the location cannot be adhered to, the same shall be brought out to the notice of site engineer for advice.
- 5.5.2** Maintenance & custody of light fixture/fans after installation/ commissioning would be with contractor till that building/area is completed and handed over to IDMC Site Engineer in satisfactory working order.

6 SWITCH BOARDS AND DISTRIBUTION BOARDS

6.1 Cubicle type electrical switch boards

6.1.1 General

It shall be of cubicle type (having individual cubical for each incoming and outgoing feeder), totally enclosed, dust and vermin proof, floor mounted, fabricated out of 14 G CRCA sheets of commercial quality. However doors & covers may be fabricated from 1.6 mm thick (16 G) CRCA sheets. A base channel of 75 x75 mm shall be provided at the bottom. A horizontal wire way cable compartments with screwed cover shall be provided at the top or bottom (as per site conditions, first preference being at top) to take inter connecting control wiring between vertical sections. Separate cable compartments of adequate size running for the complete height of the switchboard in the case of front access boards shall be provided for incoming and outgoing cables. Adequate & proper support shall be provided in cable compartments to support cables.

The height of switchboard to be so designed that no operating switch is at more than 1900 mm and less than 300 mm from finished floor level. Door closing shall be by quick openable thumb screws. Mechanical interlocking to be there for doors of cubicles having incoming/outing feeder such that door can be opened only if feeder is OFF.

6.1.2 Painting

All the MS parts shall be given rigorous rust proofing process comprising degreasing, pickling, phosphatising etc. and anti rust primer coating, followed by powder coated finish with two coats of **Siemens Grey RAL 7032** shade. Paint thickness shall not be less than 60 microns. Half-litre paint shall be supplied along with panel for touch up wherever necessary.

6.1.3 Gaskets

All joints between different sections and the switchboard shall be provided with synthetic rubber gaskets so as to make the complete board completely dust proof as per IP 54.

6.1.4 Bus Bars

A completely enclosed ventilated dust & vermin proof bus bar compartment for the horizontal & vertical busbars. The rectangular bus bar shall be made of high conductivity **Aluminium** alloy, PVC sleeved (heat shrinkable), air insulated, and of adequate size (full load current for phase busbars and half rated current for

neutral busbars), current density to be considered as **0.8 A/mm²** for operation on 3 phase, 4 wire, 440 V, 50 Hz. AC supply system, as per IS 345-1963 with amendment till date. The busbars shall be supported and separated by strong epoxy based SMC/DMC blocks at close intervals to prevent bus bar sag and to effectively withstand electro-magnetic stresses in the event of a short-circuit (25 MVA fault level on 415 volts for 1 sec). Minimum clearance to be maintained for enclosed indoor air insulated busbars working at system voltage up to 600 V shall be as follows:

Phase to neutral - 20 mm Phase to phase - 25 mm

Feeder boxes should be completely shrouded by sheet steel plates provided between the feeder boxes and the bus bar chambers, in order to avoid falling down of any nuts/ bolts/parts into the bus bar chambers while carrying out maintenance of the feeder components.

MINIMUM SIZE OF MAIN AL. BUSBAR OF CUBICAL TYPE MAIN SWITCH BOARD TO BE -- 50 X 6 SQ.MM.

6.1.5 Components of switch boards

The panel shall be provided with switches, fuses, MCB, MCCB, meters and instruments etc. of size, capacity as specified in schedule of quantities. Only approved make as selected by contractor in annexure III can be used for manufacture of switchboard.

Switches disconnecter fuse switches:

The load break switches shall confirm to IES-947-3 and IS 13947-3 specification. They shall be suitable for continuous maximum rating having positive isolation with position indication of contact separation. They should have high short circuit making and withstanding capacities. Breaking capacity should correspond to AC 23A utilisation category. Switches handle shall be provided with door interlocking arrangement. Also 'defeat' arrangement shall be provided to open the door in switch 'Close' position for testing purpose. Live terminals of the switch shall be shrouded.

HRC cartridge fuse links:

These shall be non deteriorating HRC cartridge link type with operation indicator which will be visible without removing fuses for the service. These shall be complete with moulded phenolic fuse base and cover. The fuse base shall be so located in the modules to permit insertion of fuse pullers and removing of fuse links without any problem.

Miniature circuit breakers (MCB)

These shall be suitable for 230/415 V, 50 Hz. AC supply and current rating as specified in schedule of quantities. These shall be of short circuit current of 10 KA minimum at 0.5 pf on 230 V.AC, long mechanical and electrical operation life, with over load tripping through accurately calibrated thermal bimetal strips and short circuit tripping through magnetic coil. Complete MCB should be housed in heat resistant moulding. Over current tripping should result in switching off all poles automatically even if tripping only takes place in one pole. Miniature circuit breakers shall confirm IS 13947 - 1993.

Moulded Case Circuit Breakers (MCCB)

The MCCB shall be as per to provisions of IS 13947 – 1993. The MCCB's shall be of triple / four pole construction arranged for simultaneous three /four pole manual closing or opening and automatic instantaneous tripping on short circuits. Closing mechanism shall be quick make, quick break and trip-free type. 'ON', 'OFF' and 'Trip' indications shall be provided on the front cover with door interlocking facility. All

feeders having MCCB shall be provided with neutral link complete with isolating link, if not FOUR POLE type. The control voltage shall be 240 V AC.

MCCB's shall be provided with following interlocking devices for interlocking to door of switchboard.

Handle interlock to prevent unnecessary manipulation of the breaker.

Door interlock to prevent doors being opened when the breaker is on ON position.

De-interlocking device to open the door even if the breaker is in ON position.

The MCCB's shall be rated for continuous maximum duty as specified. The rating of the MCCB's shall be as per the feeder details.

Rated breaking capacities shall be as under:

MCCB's up to 100 Amps 25 kA (minimum) at 415 volts

Above 100 A to 200 Amps 35 kA (minimum) at 415 volts

Above 200 A 50 KA (minimum) at 415 volts

Measuring instruments & Indication Lamps

Measuring instruments shall be of square pattern having approximate dimensions 96mm x 96mm, flush mounting type. Necessary auxiliary instruments like CTs, PTs etc. are also included in the scope of supply.

All AC meters shall be of moving iron type having class 1.0 accuracy for voltmeters and 1.5 for ammeters. Voltmeter shall be suitable for direct line connection. Voltmeters shall be connected through fuses only.

Energy meters shall be suitable to measure unbalanced/balanced loads of 3-phase 3/4-wire system.

Ammeters provided for switch fuse units shall be with rotary selector switches and those for motors shall be without selector switches.

All voltmeters shall be provided with selector switches.

Ammeters for 40 Amps and above shall be CT operated.

For each outgoing feeder, LED type indication Lamp shall be provided in its cubicle door. For incoming feeder, LED type indication lamp shall be provided for all three phases.

If specifically asked in schedule of quantities, digital type Ammeters, Voltmeters & Energy meters shall be provided rather than analogue type specified above.

Current Transformers (CTs) & Potential Transformers (PTs)

CTs shall be cast resin insulated type. Primary and secondary terminals shall be marked indelibly. CTs shall preferably be mounted on stationery parts. CT rating and ratios shall be as per feeder ratings. These shall be capable of withstanding momentary short circuit and symmetrical short circuit current for 1 second. Neutral side of CTs shall be earthed. Protection CTs shall have low reactance, accuracy class "SP" and an accuracy limit factor greater than "10". Instrument CTs shall be of accuracy class "1.0" and accuracy limit factor less than "5.0". CT shall conform to IS 2705 (part I, II & III) in all respects. PTs shall conform to IS 3156 (part I, II & III) in all respects.

Earth leakage circuit breakers (ELCB/RCCB)

These current operated ELCB's shall be suitable for 2/4 poles 230/415 V, 50 Hz. AC supply, current and sensitivity rating to be as specified in schedule of quantities. (If not specified it may be taken as 30 MA). These shall be able to withstand short circuit current of 3 kA minimum at 230 V AC and have long

operational life. This shall incorporate highly sensitive relay to trip the circuit in case of earth leakage. This shall have the facility to trip the circuit during interruption in the earth connection or loss of supply neutral. Over current tripping should result in switching off all poles automatically even if tripping takes place in one pole. Earth leakage circuit breakers shall conform to BS - 4293.

6.1.6 Connections

Connections to the busbars shall be made by drilling holes. However, no holes shall be left in the busbars. The bolts & nuts used for connections to busbars shall be of Aluminium alloy of tinned forged brass. For tapping of connections from busbars suitable size PVC insulated copper stranded conductor wire (minimum size for power wiring 4.0 sq. mm & for control wiring 1.5 sq. mm.) shall be used with suitable size and type of crimped lugs/cable sockets. For connection of feeder above 63 Amps, only Al. alloy busbar links with PVC tapes shall be used. Suitable size cable boxes shall be provided for incoming/ outgoing cable of sizes more than 95 sq.mm. For all outgoing cables, cable alleys of suitable sizes in sides and tops, as required for proper cable connections/laying inside the panel, shall be provided. Switchboard shall be suitable for Aluminium conductor PVC insulated incoming and outgoing cables. Removable gland plates shall be provided for cable entries.

6.1.7 Earthing

Two independent earthing points shall be provided outside the panel near bottom and these shall be interconnected with GI earthing busbars of minimum size 40 x 6 mm. All earthing points inside the distribution board shall be interconnected to these earthing points with suitable size copper conductor PVC insulated wire.

6.1.8 Name Plates

Switch board/distribution board shall be provided with danger plate and name plates for all incoming and outgoing feeders. These name plate shall be of PVC (black colour base & white letters engraved) screwed to panel. PVC identification ferrule numbers shall be used for all internal wiring.

6.1.9 Approvals

The drawing showing general arrangements and detailed wiring diagram for the switch board shall be submitted to IDMC/Engineer-In Charge for approval, prior to manufacture and switch board shall be got inspected, prior to despatch to project site. The complete switchboard and its component shall conform to Indian Electricity Rules & relevant I.S.S. Approval if required from Electrical Inspector shall be obtained by contractor and changes if desired by Electrical Inspector shall be carried out.

6.1.10 Rubber Matting

A 15 mm thick rubber matting, 1 meter wide shall be provided in front and along full length of the main switchboard. The rubber mat shall withstand 15 kV for 1 minute & Leakage current shall not exceed 160 mA.

6.1.11 Space Heaters

The main switchboard shall have thermostatically controlled space heaters with a controlling 16 A, 230 V, SP MCB & socket outlet to eliminate condensation.

6.2 Electrical Distribution Boards**6.2.1 General**

These shall be standard readymade, wall mounted, surface/flush type, indoor type enclosure, hinged front cover with double door, dust and vermin proof fabricated out of 16 G mild steel sheet of commercial quality. All components such as switches, M.C.B. etc. to be so mounted inside the distribution boards, that only operating handles/knobs are visible outside the front hinged door. Detachable cable/conduit entry plates with required 25 mm dia knockouts shall be provided on top and bottom of D.B.

If distribution board is concealed and receiving incoming power from bottom of board by Armoured cable through GI pipes, height of DB shall be increased suitably, so that 2 mm thick gland plate can be fixed as shown in the attached sketch no. 24.

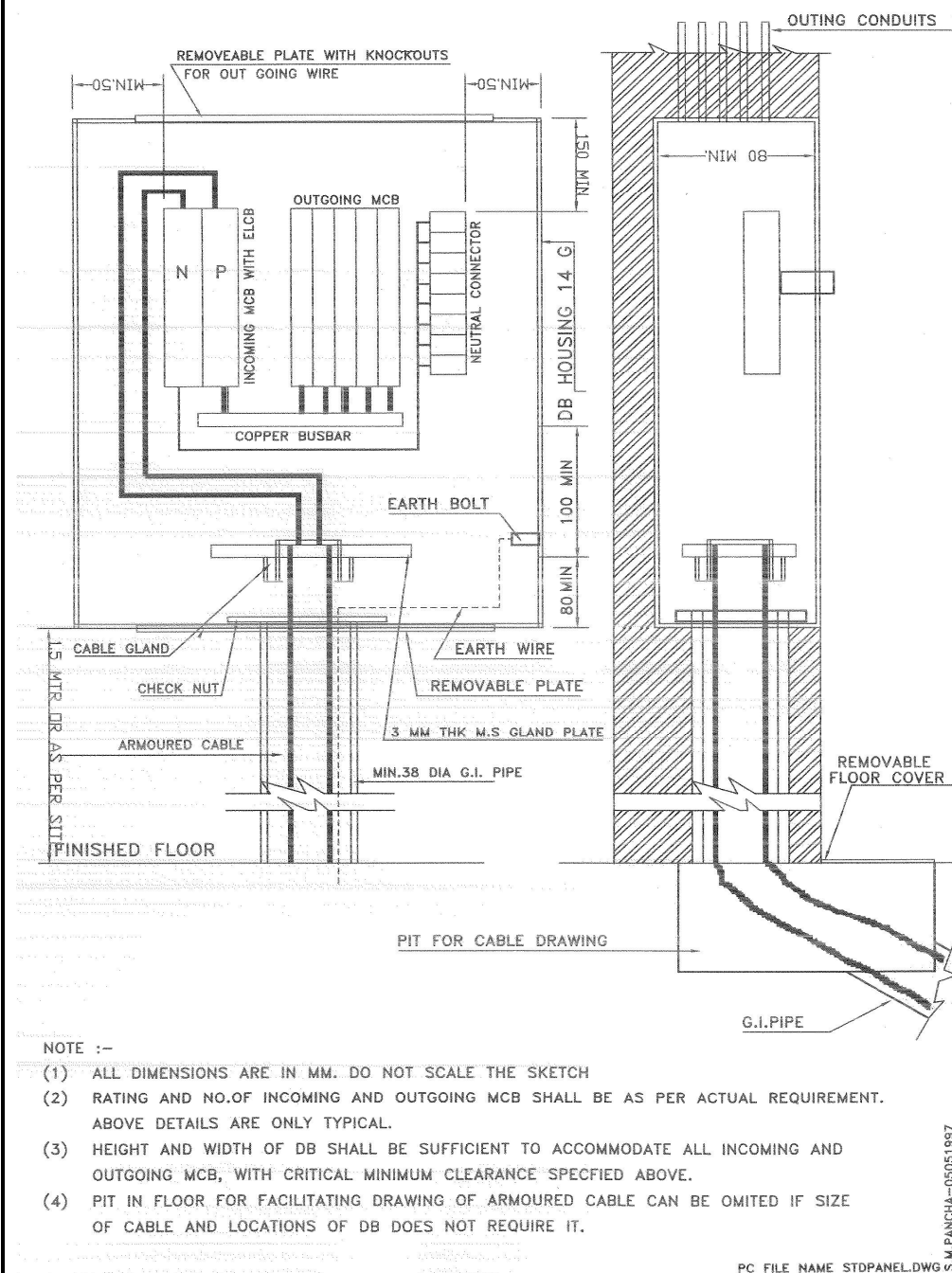


Fig-12, Electrical Standard Termination of armoured cable in concealed DB.

Alternatively, if specifically asked, readymade DBs (in standard size/ capacity) of reputed make, as approved by the IDMC, with double metal door (16/18 G sheets) complete with Tinned copper bus bars, neutral link, earth bus, DIN rail, detachable gland plate and all interconnections may also be provided and installed.

6.2.2 Painting

Same as clause no. 6.1.2 of cubicle switch boards.

6.2.3 Gaskets

Same as clause no.6.1.3 of cubicle switch boards.

6.2.4 Bus bars

Same as clause no. 6.1.4 of cubicle switchboard except that these shall be only of copper & minimum size of busbars shall be 19 x 6 mm, current density being 1.2A/mm².

6.2.5 Component of Distribution board

Same as clause no. 6.1.5 of cubicle switch board.

6.2.6 Connections

All interconnections shall be done either by solid copper PVC insulated or by suitable size (minimum 4.0sq.mm.) Copper stranded conductor PVC insulated wires with suitable size and type of crimped type lug. Arrangement shall be there for directly mounting of M.C.B. on busbars. The bolts and nuts used for connections to busbars shall be of Al. alloy or tinned forged brass.

Enough space shall be provided inside the distribution board to accommodate loop of surplus incoming and outgoing wires. For all line conductor PVC colour of wire would be Red, Yellow, Blue & that of neutral to be Black. For accommodating neutral wires of all incoming and outgoing circuits, suitable size connector or neutral bus shall be provided inside the distribution board.

6.2.7 Earthing

Two independent earthing points shall be provided inside the distribution board in case of 3 phase and one earthing point in case of single phase distribution system. An earthing bus of copper shall be provided inside the D.B.

6.2.8 Name plates

Same as clause no. 6.1.8 of cubicle switch boards.

6.2.9 Approval

Same as clause no. 6.1.9 of cubicle switch boards except that sample approval of only one typical distribution board may be taken from IDMC/Engineer In charge.

6.2.10 Components of distribution boards

Same as clause no. 6.1.5 of cubicle switch boards.

7 COMPLETION TEST AND DRAWINGS

After supply and installation of complete project or a particular building/area, following tests shall be carried out by the contractor as instructed by Engineer-in charge. Before switching on the power to installation and the results shall be recorded and submitted to the site engineer. If results are not satisfactory/as per the standard set herewith, the contractor shall identify the defects/short coming and shall rectify the same. Nothing extra shall be paid for carrying out these tests and contractor has to arrange all necessary instruments.

7.1 Insulation resistance to earth

This to be measured with all fuse links in place, all switches on, all lamps and appliances in position by applying a voltage not less than twice the working voltage (subject to a limit of 500V). Insulation resistance of the whole or any part of the installation to earth must not be less than 50 Mega-ohms divided by the number of outlets (points and switch positions) except that it need not exceed 1 Mega ohm. for the whole installation.

7.2 Insulation resistance between conductors

Test to be made between all the conductors connected to one pole or phase conductor of the supply and all the conductors connected to the middle wire or neutral or the other pole or phase conductors of the supply. For this test, all lamps shall be removed and all switches put on. The result of the test must be 50 Mega-ohms divided by the number of outlets (point and switch positions) but need not exceed one Megaohm for the whole installation.

7.3 Polarity of single pole switches

Test shall be made to verify that all non-linked single pole switches are on phase conductor (Live) and not on the neutral or earthed conductor. This can be done by connecting test lamps between two terminals of switch and earth. If the lamp lights up when switch is ON & either terminal is touched the switch is correctly installed.

7.4 Resistance of metal conduits/sheaths (Earth continuity test)

In case of cables encased in metal whether conduit of metallic sheathing, the total resistance of the conduit or sheathing from the earthing point any other position in the completed installation shall not exceed 2 ohms. This can be carried out by the circuit shown in Annexure VII. One end of the lead is connected to the ECC at its connection with the electrode and the other to the farthest point of the ECC. First, current through the circuit is measured with the resistance of 2 ohms short-circuited by the link. Next, current is measured through the two ohms resistance by disconnecting the two leads from the ECC and joining them together. If current is more in the first case, the resistance of ECC is less than two ohms.

7.5 Completion Drawings and Documents**7.5.1** Completion drawings

After completion of works & before issuance of virtual completion certificate the contractor shall submit completion drawings in the form of one complete set of originals with two sets of blue prints & three sets of documents as listed below:

- i) As built conduit layout for lights, sockets, outlets, fans, telephones and computer data circuits & sub-mains showing position of bends/inspection boxes/draw-out boxes/junction boxes / outlet boxes / switch boxes, conduit size, number & size of wires in each run, number & size of earth continuity conductor etc.
- ii) As built layout of lights, sockets outlet, telephone points, computer data
Points, telephone tag boxes, computer data patch panels, switch boards,
Distribution boards etc.
- iii) As built details of electric, telephone & computer cable runs, showing size, type & number of cables of mode of installation.

- iv) As built detail earthing conductors, earth pits and lightning protection system etc.
- v) As built General Arrangement and schematic diagrams of switchboards & Distribution boards.
- vi) A certificate shall be furnished by the contractor countersigned by the licensed electrical supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply/electrical inspector authority. The contractor shall be responsible for getting the electrical installation inspected & approved by the local & statutory authorities concerned.

8 MODE OF MEASUREMENT

8.1 WIRING (PART I) TRADE CODE 81

8.1.1 Item Mode of Measurement

- 1. One 6 A switch and socket shall be measured as one no.
- 2. One 16 A ON/OFF switch and socket shall be measured as one no.
- 3. One 25A socket and MCB shall be measured as one no.
- 4. Each light point shall be measured as one no.
- 5. Two light points shall be measured as one no.
- 6. Three light points shall be measured as one no.
- 7. One light with 2 switches shall be measured as 1 no.
- 8. Group of Two light points controlled by one MCB shall be measured as one no.
- 8.1 Group of Three Light point controlled by one MCB shall be measured as one no.
- 8.2 Group of Four Light point controlled by one MCB shall be measured as one no.
- 8.3 Group of Five Light point controlled by one MCB shall be measured as one no.
- 8.4 Group of Six Light point controlled by one MCB shall be measured as one no.
- 8.5 Group of Seven Light point controlled by one MCB shall be measured as one no.
- 8.6 Group of Eight Light point controlled by one MCB shall be measured as one no.
- 9. One fan point shall be measured as one no.
- 10. One exhaust/bracket fan shall be measured as one no.
- 11. Each Power point 16A/20A/25A/32A shall be measured as one no.
- 12. Length of conduit including bends laid shall be measured in meters. Measurement to be restricted upto two points after decimal.
- 13. Industrial Plug and Socket controlled by MCB shall be measured as one no.
- 14. Length of GI pipe including bends shall be measured in meter.

8.2 INSTALLATION AND SUPPLY OF FIXTURES (TRADE CODE 82)

Item Mode of Measurement

- 1. Each lighting fixture shall be measured as one no
- 2. Each lighting fixture shall be measured as one no.
- 3. Each fan shall be measured as one no.
- 4. Each exhaust fan shall be measured as one no..
- 5. Each opening of exhaust fan shall be measured as one no.
- 6. Each clamp shall be measured as one no.

8.3 FLOOD LIGHTING (PART-III) (TRADE CODE 83)
8.3.1 Item Mode of Measurement

- 1 Each flood light tower shall be measured as one no.

8.4 TELEPHONE AND COMPUTER DATA WIRING SYSTEM (PART-V) (TRADE CODE 85)
8.4.1 Item Mode of Measurement

1. Each telephone point shall be measured as one no.
2. Two telephone points in one box shall be measured as one no.
3. Length of cable including bends used to be measured in Meter. Measurement to be restricted up to two points after decimal.
4. Each socket shall be measured as one no.

8.5 DISTRIBUTION SYSTEM (PART-VI)

TRADE CODE 86

8.5.1 Item Measurement

1. Each switchboard /distribution board complete with switchgear for incoming and outgoing feeder shall be measured as one set.
2. Each switchboard /distribution board complete with switchgear for incoming and outgoing feeder shall be measured as one set.
3. Each switchboard /distribution board complete with switchgear for incoming and outgoing feeder shall be measured as one set.
4. Each switchboard /distribution board complete with switchgear for incoming and outgoing feeder shall be measured as one set.
5. Each switchboard /distribution board complete with switchgear for incoming and outgoing feeder shall be measured as one set.
6. Total length of cable supplied to be measured in metre. Measurement to be restricted up to two points after decimal.
7. Length of XLPE insulated, PVC sheath cable to be measured in meters (Portion of cable without outer insulation and armouring inside the main panel/distribution board also to be measured and paid. All loops inside the board/in ground or trench also to be measured and paid). Measurement in meters to be restricted up to two points after decimal and in addition no reduction in rates or quantity to be effected for drawing cable through hume pipe/ trench/ GI pipe etc. provided by employer for not providing bricks and sand etc.

NOTE : FOR ONE CABLE SHALL BE MEASURED UNDER ONE ITEM ONLY THOUGH IT MIGHT HAVE BEEN LAID UNDER TWO ITEMS (UNDER GROUND AS WELL AS IN AIR) FOR DIFFERENT PORTION OF IT'S LENGTH. ITEM AS PER WHICH MORE LENGTH HAS BEEN LAID SHALL BE APPLICABLE FOR COMPLETE LENGTH.

8.6 GENERAL

The following guidelines to be followed for recording part payment of various items, Engineer –In charge agrees to recommend part rate for the partial completion.

8.6.1 Part I (Wiring)

- (a) Point wiring, sockets wiring, group wiring, circuit wiring, sub-main wiring etc.

- Supply & laying of conduit in ceiling only (30% of the item rate)

- Supply & laying of conduit in ceiling/ walls and switch boxes i.e., point ready without wiring (30% of the item rate)

- Item ready with wiring & switches but without testing / commissioning (30% of the item rate)
- Testing & commissioning (10% of the item rate)
- (b) Providing and fixing Cable Tray
 - Supply of cable tray only (85% of the item rate)
 - Laying of cable trays (10% of the item rate)
 - Testing & commissioning (5% of the item rate)
- (c) Wiring in existing conduit/pipes/modular furniture etc.
 - Supply of wires (80% of item rate)
 - Laying of wires (10% of item rate)
 - Testing and commissioning (10% of item rate)

8.6.2 Part II (Installation of Fixtures)

- After installation of fixture (90% of the item rate)
- After testing & commissioning (10% of the item rate)

8.6.3 Part III (Flood Lighting)

- (a) Installation of fixtures
 - Installation of fixtures (90% of the item rate)
 - Commissioning of fixtures (10% of the item rate)

8.6.4 Part V (Telephone & Computer Data Wiring System)

- (a) Point Wiring & wiring
 - Supply & laying of conduit in ceiling only (30% of the item rate)
 - Supply & laying of conduit in ceiling/ walls and switch boxes i.e., point ready without wiring (30% of the item rate)
 - Item ready with wiring and switches but without testing/commissioning (30% of the item rate)
 - Testing & commissioning (10% of the item rate)
- (b) Supply of Cable
 - Supply of cables only (90% of the item rate)
 - Testing & commissioning (10% of the item rate)
- (c) Laying of cables
 - laying of cables (90% of the item rate) testing and commissioning (10% of item rate)
- (d) Providing wires & laying of wires in existing conduits/ pipes/ modular Furniture
 - Supply of wires (80% of item rate)
 - Laying of wires (10% of item rate)
 - Testing and commissioning (10% of item rate)

8.6.5 Part VI (Distribution System)

- (a) Supply and installation of panels / distribution boards
 - Supply of Panel / DB (80% of the item rate)
 - Installation, Testing & commissioning of panel / DB (20% of the item rate)
- (b) Supply of cables
 - Supply of cables (90% of item rate)
 - Testing & commissioning (10% of item rate)
- (c) Laying of cables
 - Laying of cables (90% of item rate)
 - Testing and commissioning (10% of item rates)

9 APPROVED MAKE AND TYPE OF EQUIPMENTS/INSTRUMENTS

Sr	ITEM DESCRIPTION	First Preferred Make/ Manufacturer	Second preferred Make/ Manufacturer
1	PVC Conduits	PRECISION, POLYCAB , SUPREME,LK, BHARATH	Any ISI equivalent
2	PVC Conduit Accessories	PRECISION, POLYCAB, LK, BHARATH	Any ISI equivalent
3	Copper wires	FINOLEX,LAPP , RR KABEL, HAVELS	POLYCAB, ANCHOR,
4	MS Conduits	AKG, BEC , BHARATH	RAMA
5	MS Conduit Accessories	SHARMA, AKG	RAMA, BHARATH
6	XLPE insulated, armoured, Aluminium conductor cables	FINOLEX, NICCO, RPG, GLOSTER	CCI, POLYCAB, UNIVERSAL,
6	Flush types, piano switches and sockets outlet etc.	ANCHOR, ELLORA	RIDER, LISA
7	Modular switches, socket outlets, fan regulators & moulded cover plates	CRABTREE, MK , NW, CLIPSAL, ABB, WIPRO, LEGRAND	ROMA (ANCHOR),
8	Miniature Circuit Breakers (M.C.B)	ABB, L&T,SIEMENS, SCHNEIDER	LEGRAND, INDO KOPP
9	Earth Leakage Circuit Breakers (ELCB/RCCB)	ABB, L&T,SIEMENS, SCHNEIDER ,LEGRAND,	
10	Moulded Case Circuit Breakers (MCCB)	L&T, SIEMENS, ABB SCHNEIDER	
11	Ammeters, Voltmeters, PF Meters (Analogue)	L&T ,SCHNEIDER	MECO,AE, RISHABH,
12	Ammeters, Voltmeters, PF Meters (Digital)	SCHNEIDER, L&T	MECO,AE, RISHABH,
13	Current Transformers (Cast Resin)	KALPA,KAPPA	MAXWELL, MECO, AUTOMATIC ELECTRIC
14	Telephone/ Co-axial wires & Cables	DIGILINK, FINOLEX, , LAPP KABEL	NETLINK, POLYCAB
15	Computer Data Cables (CAT 5e/6)	LUCENT, AT&T, LAPP KABEL, NETLINK,	FINOLEX, DELTON, POLYCAB
16	Telephone Tag Box	KRONE	POUYET
17	Low Tension Switchgear	ABB, SCHNEIDER, L&T, SIEMENS	
18	Cable Compression Glands	COMET, BRACKO, HENSEL LAPP KABEL	PEECO
19	Cable Lugs	LAPP KABEL, BRACKO DOWELL'S, PHOENIX	COMET
20	Industrial type Metallic plug sockets	LEGRAND, CG,ABB, SIEMENS,	INDO KOPP , HENSEL ,CLIPSAL,
21	Selector Switches	L&T, SALZER, ABB, SIEMENS	KAYCEE ,TEKNIC,
22	Twisted copper conductor FRLS wire	SKYLINE	NATIONAL
23	Distribution Boards	LEGRAND, L&T, ABB, SIEMENS, SCHNEIDER	ANCHOR, WIPRO,

24	Indication Lamps (LED Type)	L&T ABB, SIEMENS	TEKNIC, ESBEE
25	Push Buttons	L&T, SIEMENS, ABB	TEKNIC, ESBEE
26	Connectors	PHOENIX, ELMEX	CONNECTWELL
27	Cable Trays	INDIANA, RISHABH	Any ISI Make

NOTE:

- 1 For equivalent, ISI or approved marked items included above, if opted by contractor, specific approval to be taken by contractor for make, before procurement and use.
- 2 For the items not indicated above but to be used for civil & internal electrification works, specific approval to be taken before procurement and use after submitting sample, detail of manufacturer, source of supply etc.
3. Drawings for these items to be submitted for approval (if standard sketches not provided by IDMC) before starting fabrication. After fabrication, these items also to be offered for inspection at vendor's works before dispatch to site.

- Electrical switch boards
- Street light poles & brackets.
- Galvanized Raceways & its junction box.
- Flood light Tower
- Distribution Boards, if fabricated

4. Samples for all bought out items like pipes, aluminum sections, Door & window fittings, bricks, GI color coated sheets, sanitary & water supply fittings etc.
5. Sample for Distribution Boards, modular switches, sockets, cover plate and their boxes.
6. Samples for telephone & computer data outlet box and outlet.
7. Samples of GI Wires and strips.
8. All electrical works shall be carried out by a licensed electrical contractor possessing a valid contractor's license in the state where site is located, employing licensed

Supervisor & skilled workers having valid permits as per the regulations of Indian Electricity Inspector requirement. Copy of contractor's electrical license shall be furnished along with the tender.

We have noted the above and confirm that our tender is based on above approved makes.

Date: _____

Signature and Seal of Bidder

CONTENTS

- 1. INTRODUCTION**
- 2. HVAC CONTROL/ AUTOMATION SYSTEM**
- 3. FIRE SAFETY SYSTEM**
- 4. ACCESS CONTROL AND DOOR INTERLOCKING SYSTEM**
- 5. CCTV SYSTEM**

1.0 INTRODUCTION

This document provides the general technical specification of the BMS and LV Systems (Access control, DIS, FAS & CCTV).

Description of Document

This specification covers design, manufacturing, inspection, testing at works, packing, forwarding, supply, installation, testing, commissioning and validation including performance guarantee of BMS System and LV Systems

It is not the intent to specify all the details of design and construction of an BMS System. Nevertheless, the system shall conform in all respects to high standards of engineering, design and workmanship. It shall meet all statutory requirements and be able to operate continuously meeting the contractor's guaranteed performance and acceptable to the owner/ consultant who will have the power to reject the equipment in whole or in part if it is not in accordance with the specifications.

1.1 Abbreviations

mA	Milli Amperes
AHU	Air Handling Unit
BMS	Building Management System
CFM	Cubic Feet per Minute
CFR	Code For Regulation
RH	Relative Humidity
HVAC	Heating Ventilation and Air Conditioning
DDC	Direct Digital controller
FAS	Fire Alarm System
CCTV	Close Circuit Television System
ACS	Access Control System
IP	Ingress protection
DIS	Door Interlocking System
VFD	Variable Frequency Drive
LAN	Local Area Network

REFERENCES

The following Indian Standard Specifications and code of practices amended as on date will apply to the equipment, materials and installation for this contract:

Analogue dc voltage signals for industrial process measurements and control systems	IS 8493:1977
Signal conditioning devices for process control systems	IS 12555:1988
Transmitters for use in industrial process control systems	IS 13122
Programmable controller	IS 14254/ IEC 61131

Symbolic representation, for process measurement control functions and instrumentation	ISO 3461/ 3511
Polyethylene Insulated Cables for working voltages Up to and incl.110V. (Digital and power cable specs.)	IS 1596
Stabilized power supply DC output	IEC 60529
Specification of conduit fitting for electrical installation	IEC 61035
Controllers with Analogue signals for Use in Industrial-Process Control Systems, Part1: Methods of Evaluating the Performance	IEC 60746
Networking Standard	IEEE 802.4
Electrical and instrumentation loop check	IEC62382
Rigid PVC Conduits for electrical wiring	IS 9537 Part III
Enclosure for Industrial Controls & Systems	ICS6
National Fire Protection Association	NFPA
Accessories for rigid PVC conduits for electrical wiring	IS 2667-1964 & IS 3857-1966
Code of Practice for personal hazard & fire safety of buildings	IS 1644 – 1960
Code of Practice for Electrical Installation fire Safety of building	IS 1646 – 1982

2.0 HVAC CONTROL SYSTEM

The HVAC Systems for RTUC Facility shall be controlled and operated with automation system using DDC control panels. The no. of DDCs and the configuration of DDCs for the HVAC system of each of the buildings shall be selected based on no. of parameters to be controlled and programmed as per the control philosophy. Preferably one DDC to be considered for each AHU and exhaust systems. There shall be an integrating DDC for integrating room parameters & other DDCs and shall be networked with a PC including SCADA and any other software required for smooth operation of the automation system and for report generation of all the AHU Parameters, duct level parameters and room level parameters. The system shall also generate fault alarms. The scope of Automation includes all DDC control panels including 24 V DC SMPC power supply system, PC (i10/Latest configuration) with 22" LED Display monitor, Network Switch, integration software/ SCADA etc.

The HVAC system should be operated with complete safety with adequate alarms and controls for safe and efficient operation. Please refer to the attached diagrams for designing of the Automation System.

The following additional aspects to be considered while designing the BMS system,

1. All Airtight Dampers shall be Monitored and Controlled from BMS.
2. Differential Pressures of All rooms shall be monitored and controlled through BMS.
3. Room Supply Air, Return/ exhaust Air Duct dampers to be monitored and controlled through BMS for Maintaining Room Air Flow and Pressures.

4. Exhaust Systems: Damper Actuators and Velocity sensors shall be Monitored and Controlled from BMS.
5. All Exhaust Systems: VFD Driven Exhaust Fan should be controlled through BMS by getting Feedback from Static Pressure Sensor in the Exhaust duct and also the velocity sensor.
6. All VFDs shall be Monitored and Controlled from BMS.

A) CONTROL PHILOSOPHY

- Actuators shall be provided for Supply, Return/Fresh air damper of AHUs, Exhaust Damper, and Fumigation Exhaust Damper.
- Actuators shall be provided for Supply and Return/Exhaust Air damper of each Room.
- T&RH sensor in Common Return duct near AHU
- Air Flow Measuring station in Supply Air near AHU (1m Clear Space required for the same on both side of Air Flow unit)
- Smoke Detectors in Supply and Return Air Duct. Actuators for Fire dampers

OPERATION AND FAILURE SEQUENCES:

- Start Sequence
- Stop Sequence.
- Control of VFD (Airflow)
- Control of Outdoor units
- Control of Heater Bank
- Fumigation.
- Failure, Maintenance and Emergency Operations (Failure of Power, AHU blower, during maintenance etc. and Fire accident)
- Recovery for Power

a. Start Sequence:

- All the dampers of Supply AHU and Exhaust AHU shall be opened.
- Supply air Damper/ VAV and Exhaust/ return damper/ VAV of room shall be opened.
- Exhaust unit shall be switched on first (in case of Once thru unit) and then Supply unit.

b. Stop Sequence:

- All Dampers shall be closed.
- All Supply and Exhaust AHU shall be switched off.

c. Control of VFD:

- Air Flow Station shall be provided in Supply Air Duct.
- Air Flow station shall check the air flow capacity and VFD shall be controlled to maintain required airflow.

d. Control of Outdoor units

- T&RH Sensor shall be provided in Return Air Duct.
- T&RH sensor shall check the return air conditioning and Condensing units shall be controlled to maintain required Temperature.

e. Control of Heater Bank

- T&RH Sensor shall be provided in Return Air Duct.

- T&RH sensor shall check the return air condition and Heater bank shall be controlled to maintain RH.

f. Fumigation of Rooms**Pre-Fumigation phase:**

- AHU Dampers and Return Air Dampers of AHUs and each room shall be closed.
- Room Doors and any penetrations in wall and ceiling panels shall be sealed either with sealant or adhesive tape.

During Fumigation phase:

- Fumigation shall be done by keeping a fumigator in each Room for required fumigation time.

Post Fumigation:

- Post Fumigation of the Dampers in Return and Supply Duct of each room and in AHU shall be opened.
- ii) The Fumigation
- iii) More Fresh air shall be taken and

g. Emergency Operations

- Shut down sequence shall be followed During Failure of Power.
- AHU blower, for maintenance and Fire Accident.

h. Recovery of Power

- Upon recovery of power and after maintenance, the start sequence shall be followed.

B) ROOM CONTROLS and DISPLAYS

- To control the room pressures, each room shall have a damper with Actuator and a pressure sensor inside the room.
- Local display of Temperature, RH and Differential Pressure Display (with in-built sensors) display unit shall be considered.
- The Individual damper actuator shall be connected to Junction Boxes and then to a DDC Controller.

The DDC Panel shall be programmed for the above operations etc. and shall be password protected. The operator shall be able to monitor the parameters and the authorized person can able to set the set-points.

Note: The DDC controller panel shall have spare provision for accommodating 20% extra I/Os.

2.2 TECHNICAL SPECIFICATION OF DDC CONTROL PANEL**SYSTEM DESCRIPTION & INPUT OUTPUT SUMMARY**

Microprocessor based Direct Digital Distributed Controllers (DDC) shall interface with sensors, actuators and environmental control systems (i.e., HVAC systems, pumps, fans, tanks level sensor, lighting etc.) and carry out followings functions:

- a) Individual input/output point scanning, processing and control.
- b) Alarm Detection and early recognition of faults.

- c) Prevention of unauthorized or unwanted access.
- d) Suggestive preventive maintenance for all equipment as well as own error diagnosis.
- e) Optimum support of personnel.

2.3 DIRECT DIGITAL CONTROLLER (DDC) HARDWARE REQUIREMENT

- 1) DDC controllers shall be capable of fully "stand- alone" operation i.e. In the event of loss of communication with other DDC's or Control Station, they shall be able to function on their own.
- 2) The controllers shall consist of single 32/ 64 bit microprocessors for reliable throughput, with EEPROM based operating system on BACNET
- 3) The memory available to the controller board should serve as working space and there should not be any limitation of using particular function block other than the memory.
- 4) The controllers shall be UL listed and conforming to CE.
- 5) The controller shall have support programs built in RAM for a minimum of 120 hours in the event of a power failure and it shall be possible to fit any battery thus expanding the time limit to 5 years. An alarm shall be generated on low battery voltage. The battery shall not be required to supply power to actuators, valves, dampers etc.
- 6) DDC shall have embedded TCP/IP connectivity so that it can be hooked into the Local Area Network (LAN) provided by the client/ can be on dedicated network created by the vendor. Each DDC can be accessed from the Graphical User Interface (GUI) or from a standard Web browser (WBI) by connecting to the server.
- 7) Controller shall have capability to communicate with other controllers for any interlock or data sharing using peer to peer technology. The Controller which routes the messages or data sharing through the system, or any intermediate hardware/ controller shall not be acceptable.

Vendor to demonstrate this capability during the commissioning time and the same shall be verified at the time of handing over.

- 8) Each controller shall have RS232 port built on to it so that any trouble shooting required at field level can be carried out without removing the controller from the network (LAN).
- 9) All controllers shall accept 230V, 50Hz Uninterrupted power supply, provided by end user, directly so that the in between hardware such as transformers and SMPS are avoided.
- 10) Controller shall support DHCP addressing over Local Area Network (LAN) so that the static IP requirements are reduced however a single static IP shall be provided for system so that it can be hosted on to internet in consultation with end user / consultant.
- 11) All controllers shall have capability to provide 24V DC auxiliary power supply for the sensor which requires power, however the same shall not be required to high power consuming devices/ Equipment such as actuators, dampers etc.

Vendors to provide details on the same at the time of offer.

- 12) The microprocessor based DDC's shall be provided with power supply, A/D and D/A converters, memory and capacity to accommodate a maximum of 128 input/output (I/O) hardware points (with or without an expansion board).

- 13) If the controllers provided by the contractor have the configurable plug in function cards, then the following minimum specifications shall have to be met:
- The cards shall provide analog or digital, input or output, hardwired connections to the installed plant.
- ii) The quantity and combination of these cards shall be determined by the requirement of the plant in that location with the concurrence of the Owner/ Consultant.
- 14) The DDC's shall have 20 % spare capacity for each type of point (digital/ analog input/ output) to give flexibility for future expansion.
- 15) All DDC controllers shall have 10 / 12 bit A/D resolution and be capable of handling voltage, milli-ampere, resistance or open and closed contacts inputs in any mix, if required.

Analog inputs/outputs of the following minimum types shall be supported:

- o 4-20 mA.
- o 0-10 volts.
- o 2-10 volts.

Resistance Signals (either PTC or NTC such as PT 100, PT 1000, PT 3000, NTC20K)

Digital input/output types to be supported shall be, but not limited to the following:

- o Normally open contacts.
- o Normally closed contacts.
- o Pulse inputs.

Modulating outputs shall be true proportional outputs and not floating control type.

- 15) It shall be possible to change the analog inputs to accept any of the above depending upon the site condition or system requirement using a jumper. The DDC which is configured using software trigger/ switch shall not be acceptable.
- 16) Controller's packaging shall be such that complete installation and check out of field wiring can be done prior to the installation of electronic boards.
- 17) All board terminations shall be made via plug-in connectors to facilitate troubleshooting, repair and replacement. Soldering of connections shall not be permitted.
- 18) Controllers shall preferably be equipped with diagnostic LED indicators with at least indication for Power up Test OK, Watch dog and Bus Error. All LEDs shall be visible without opening the DDC cover.
- 19) It shall be possible for the controllers to accept regulated uninterrupted power supply to maintain full operation of the controller functions (control, logging, monitoring and communications) in the event of a localized mains failure.
- 20) Controllers requiring fan cooling are not acceptable.
- 21) There shall be the facility for accessing controller data information locally, via a portable plug-in color LCD display which will be common to all controllers and normally removed to prevent unauthorized tampering. In either case, access to the system thus provided shall be restricted by passwords in the same way as at the main operator terminal.
- 22) In case the Portable operator Terminals (POT) are required to programme the controllers, sockets shall be provided for same. Attachment of POT shall not interrupt or disable normal panel operation or bus connection in any way.

- 23) The controllers shall be housed in vandal proof boxes to protect them from tampering by any unauthorized personnel. All DDC controllers used in room spaces and external application shall be housed IP66/IP54 rating enclosures.
- 24) It shall be possible to add new controllers to the system without taking any part of the system off-line.
- 25) All DDC should have XML web service option which can be enabled in later stage for any higher interface with IT infrastructure or any other service.
- 26) Individual DDC should be BTL (Bacnet Testing Lab) tested.

2.3 FIELD DEVICES

2.3.1 ELECTRIC AND ELECTRONIC CONTROLS RELATED EQUIPMENT

a) TEMPERATURE SENSOR

Temperature sensors for space, pipes and ducts, shall be of the Resistance Temperature detector (RTD) type or thermistor. These shall be two wire type and shall conform to the following specifications :

- b) Immersion sensors shall be high accuracy type with a high resistance versus temperature change. The accuracy shall be at least ± 1.33 deg C.
- c) Immersion sensors shall be provided with separate Brass thermowell. These shall be manufactured from bar stock with hydrostatic pressure rating of at least 10 kgf/cm².
- d) The connection to the pipe shall be screwed type. An aluminum sleeve shall be provided to ensure proper heat transfer from the well to the sensor. Terminations to be provided on the head. Flying leads shall not be acceptable.
- e) The sensor housing shall plug into the base so that the same can be easily removed without disturbing the wiring connections.
- f) Duct temperature sensors shall be with rigid stem and of averaging type. These shall be suitable for duct installation.
- g) Outdoor air temperature sensor shall be provided with a sun shield.
- h) The sensors shall not be mounted near any heat source such as windows, electrical appliances etc.

The temperature sensors may be of any of the following types:

- 1) PT 100, PT 1000, PT 3000
- 2) Thermistor

2.4 DUCT MOUNTED TYPE T & RH SENSOR

Temperature & humidity sensors shall have sensing range of -10 to 60 °C & 0% to 90% RH . Accuracy shall be + 3% or better. . T & RH combine the voltage or current humidity transmitter output with a passive temperature transmitter or RTD output.

2.5 DIFFERENTIAL PRESSURE SWITCH FOR PIPE WORK

These shall be used to measure pressure differential across suction and discharge of pumps. The range shall be as specified in the data sheet. Switch shall be ON with increase in differential. Housing for these shall be weather proof with IP 55 protection. The pressure switch shall be capable of withstanding a hydraulic test pressure of 1.5 times the working pressure. The set point shall fall in 40-70% of the scale range and shall have differentials adjustable over

10%-30% of the scale range. The switches shall be provided with site adjustable scale and with 1 NO/NC contacts.

2.6 DIFFERENTIAL PRESSURE SWITCH FOR AIR SYSTEMS

These shall be diaphragm operated. Switches shall be supplied with air connections permitting their use as static or differential pressure switches.

The switch shall be of differential pressure type complete with connecting tube and metal bends for connections to the duct. The housing shall be IP 54 rated. The pressure switches shall be available in minimum of 3 ranges suitable for applications like Air flow proving, dirty filter, etc. The set point shall be concealed type. The contact shall be SPDT type with 230 VAC, 1A rating.

The switch shall be supplied suitable for wall mounting on ducts. It should be mounted in such a way that the condensation flow out of the sensing tips. Proper adaptor shall be provided for the cables.

The set point shall fall within 40%-70% of the scale range and it has differentials adjustable over 10%-30% of the scale range. The switches shall be provided with site adjustable scale and with 1 NO/NC contacts.

2.7 AIR PRESSURE SENSOR

The pressure sensor shall be differential type. The construction shall be spring loaded diaphragm type. The movement of the membrane in relation to the pressure should be converted by an inductive electromagnet coupling which would give an output suitable for the controller. The pressure sensor shall be in a housing having IP 54 ratings in accordance with IEC 529. Suitable mounting arrangement shall be available on the sensor. The sensor shall come complete with the PVC tubes & probes.

2.8 AIR VELOCITY SENSOR

Air Velocity Sensor shall be integrated Surface/ Duct mounted type on the field. These shall work on 24V AC/DC supply with $\pm 10\%$ variation, the output being standard type i.e., 4-20 mA/ 0- 10 Volts etc. with an accuracy of $\pm 3\%$. It shall be possible to select the different ranges by changing the jumpers on the sensor. At least 3 selection ranges on the sensors are required.

2.9 Air Flow Measuring Station

The AFMS should have properly sized pressure transducer. It should be designed to maintain a constant parallel airflow pattern over the static sensing port. The airflow station consist of single or multiple airflow elements. AFMS have flanged end for connection with duct.

2.10 ROOM TEMPERATURE, HUMADITY & DIFFERENTIAL PRESSURE SENSOR

Display type T, RH & DP wall mounted type microcontroller based with large bright LED display & alarms. Temperature range (-5 to 60 °C), RH range (0-100 %) & DP (-120 Pa – 100 Pa.). Sensor should be mounted on SS enclosure.

2.11 ROOM DIFFERENTIAL PRESSURE SENSOR

Display type wall mounted type microcontroller based with large bright LED display & alarms. Sensor should be mounted on SS enclosure.

2.12 LEVEL SWITCH/ SENSOR

It should be suitable for tanks. Connection should be flanged/ threaded. Wetted part should be SS 304 for soft water tank, hot water tank & SS-316 for RO water tank.

3.0 ADDRESSABLE FIRE ALARM SYSTEM

FIRE ALARM CONTROL PANEL (FACP)

This refers to the microprocessor-based panel that shall be connected to the various sensors/devices by means of wire loops. The FACP shall be able to supervise individual detectors for proper performance as well as to give pinpoint location of Fire or Fault Alarm and initiate Alarms. The panel shall also have the provision through volt-free contact to activate an Auto-Dialer to dial selected phone numbers in case of fire.

Loop

A loop shall mean a 2-wire circuit connecting 198 Addressable Devices, which shall include 99 Sensors and 99 Modules. The loop card shall have built-in short circuit isolators to accommodate Class A wiring.

Addressable Devices

This term indicates the complete group of addressable devices such as Sensors or Detectors, Manual Call Stations, Addressable Output / Input Modules etc.

Required Functions

The operator console/HMI shall offer the means to display monitor and control all the ALARM, TROUBLE and SUPERVISORY signals from the initiating devices connected to the Fire alarm control panel (FACP). The operator console/HMI shall meet the specifications mentioned for it under "Product Specification" part of this document.

Operation of ALARM, TROUBLE and SUPERVISORY initiating devices shall be annunciated at the FACP and the Remote Annunciator indicating the type of device, the operational state of the device (Alarm, Trouble or Supervisory) and shall display the custom label associated with the device.

Fire Alarm events shall have highest priority. Subsequent alarm events are queued in the order received and do not affect existing alarm conditions. Priority Two, Supervisory and Trouble events have second, third, and fourth-level priority, respectively. Signals of a higher-level priority take precedence over signals of lower priority even though the lower-priority condition occurred first. However, all the events shall be annunciated regardless of priority or order received.

A system alarm shall include:

- Indication of alarm condition at the FACP and at the annunciators.
- Identification of the device / zone triggering alarm at the FACP and the annunciators.
- Operation of audible and visible notification appliances until silenced at FACP.
- Initiation of smoke control sequence as defined.
- Transmission of signal to the supervising station.
- The following audio messages and actions shall occur simultaneously:
 - An evacuation message shall be sounded on fire floors (zones) immediately above and below (adjacent to) the fire floor (zone) <general alarm evacuation>. It is the intent of this message to advise occupants hearing this message that they are near danger and should leave the building via the stairs (nearest exit) immediately.
 - Activate visual strobes on the fire floors <zones> immediately above and below (adjacent to) the fire floor (zone) <general alarm evacuation>. The visual strobe shall continue to flash until the system has been reset. The visual strobe <shall><shall not > stop operating when the "Alarm Silence" is pressed.

- An instructional message shall be sounded in the stairwells instructing occupants to move carefully and quickly down the stairs to exit the building and to exit to a safe floor if you encounter smoke in the stairwell.

PRODUCT SPECIFICATION**FIRE ALARM CONTROL PANEL (FACP)**

This refers to the microprocessor-based panel that shall be connected to the various sensors/ devices by means of wire loops. The FACP shall be able to supervise individual detectors for proper performance as well as to give pinpoint location of Fire or Fault Alarm and initiate Alarms.

A loop shall mean a 1-wire circuit connecting 99 Addressable Devices, which shall include Sensors and Modules. The loop card shall have built-in short circuit isolators to accommodate Class A wiring.

FACP shall connect all the field devices (Detectors, MCPs, Control Modules, Monitor Modules, Sounder, and Sounder cum Strobes etc.), shall fully monitor them and communicate to them for their status and shall be able to take intelligent decision of ALARM, TROUBLE, SUPERVISORY based on the programmed cause-n-effect logic. It should have an interactive HMI (display cum operation interface), with status monitoring LEDs for AC Power, Fire Alarm, System Trouble, System Supervisory, Ground Fault and shall have at least 5 programmable switches with LED for seamless operation and maintenance.

The Fire Alarm System shall conform to EN54 and NFPA 71/72 in respect of design and installation.

The FACP shall have the facility to connect addressable Input/ Output Devices in the peripheral RS 485 bus. These may be 8 way input cards, 4 way relay cards, 4 way sounder cards, passive/ active repeater panels and mimic driver cards.

Panel shall have Bacnet/Modbus interface module for BMS integration.

The system shall be based on an "Open Protocol" to ensure flexibility of using Sensors/ Detectors of an alternate manufacturer in case the user requires such an option at a later date.

The FACP shall also give adequate warning signal whenever there is dust accumulation in detectors, and up to the point of its replacement it should be possible to change the level of ambient alarm calibration condition either by the use of software program operable by the owner or by resetting the detector.

Short/ Open circuit units shall also be reported at the FACP. In such cases, the system through the use of fault isolators shall be able to isolate that segment between the two fault isolators. The missing Detectors/Devices shall also be reported at the FACP with identification of the location.

The FACP shall have the facility to set sensitivity of each smoke sensor remotely. It shall also be possible to set the sensitivity to a global high or global low based on night or daytime.

When an alarm condition is sensed at the FACP from a smoke or heat detector, a delay time/ alarm verification period shall be started. If the sensor is still in alarm after the delay time expires, an alarm condition is reported. The delay time shall be adjustable from 0 to 990 secs.

The FACP shall have the facility to perform walk test such that an operation can be periodically checked out for all initiating devices. As each device is placed into alarm the FACP shall print the condition and automatically reset the device. Audible devices shall be initiated, if required at a pre-programmed time. If a zone is inadvertently left in walk test mode, it shall automatically reset to normal after the idle time is exceeded. During the walk test the zones

other than the programmed zones shall be under continuous supervision (normal mode). In case of any alarm initiated by detector/devices the walk test shall get terminated automatically.

The FACP shall have a Liquid Crystal Display of Alphanumeric type to indicate immediately all conditions. The display should be high resolution, backlit 2 (lines) x 40 character. In case of testing of the system from the FACP the Display shall be able to give readouts of analogue value of all detectors being tested. The FACP shall also be able to carry out continuous self-monitoring when in normal condition.

The FACP shall have facility for in-built or external printer coupled to the FACP, which shall log all events with time. The printout shall clearly indicate the event - Fire/ Pre-Alarm/ Fault etc. With the unit address and time.

The FACP shall also be able to discriminate between false alarms and fire conditions, as well as priority selection of alarm in case alarm activates in two or more remotely located units simultaneously. In such cases, the Manual Call stations shall have the highest priority.

The FACP shall have its own Battery Backup of a minimum of 24 hours in normal condition and then half an hour in alarm condition. The backup time calculation shall be done as per IS 2189 standards. The Battery shall be 2*12V (24V) DC and of sealed lead acid rechargeable maintenance free type, housed inside the FACP.

The FACP shall have EN 54: LPCB approval.

The system shall be designed such that it shall be possible to add at least 20% of the Detectors for future expansion without extra cost on the panel.

MULTI SENSOR DETECTOR

The Detector shall be Analogue Addressable type and be able to send analogue output to the FACP regarding its condition. It shall be able to communicate with the FACP by the pulses emitted from the FACP. The detector should be programmed using a decade or rotary switch.

The base of the Detector shall be electronics free and interchangeable with other smoke or heat detectors. The enclosure shall meet IP 42 protection grade.

All detectors are fitted with plug-in system type connections, from the maintenance and compatibility point of view. An alarm release will not affect a detector's good functioning. After resetting the alarm, the detector will resume operations without readjustment of any kind.

The detector shall be able to sense incipient fire by detecting the presence of visible and invisible products of combustion. The detector shall be suitable for low voltage (15 to 32 V DC) two wires supply. The detector shall be provided with Twin LED indication and the sensitivity of the detector shall not vary with change in ambient temperature, humidity, and pressure or voltage variation.

Neither its performance shall be affected by air current up to 1.52mtr per second. The detector shall be suitably protected against dust accumulation/ ingress and it shall be free from maintenance and functionally tested at intervals. All detectors shall be identical in construction design and characteristic to facilitate easy replacement.

It shall have in-built locking mechanism to check the removal and pilferage of the detector. The quiescent current flow must not exceed 250 micro amps and alarm condition current shall be maximum 10 ml amps.

The Detector shall have LPCB approval.

MANUAL PULL STATION

Manual Pull Station shall be addressable and shall sit on the detection loop of the FACP and shall communicate to the FACP to report its status.

Manual Pull Station shall require dual action to generate a manual fire alarm.

Manual Pull Station shall have manual DIP switch addressing method that does not require any special tool from manufacturer and commissioning activity for replacing the Manual Pull Station in case it goes faulty.

Manual Pull Station shall have LPCB approval.

STROBE WITH SOUNDER

Strobe with Sounder unit shall have both audible and visual output units housed within the same devices. The audible output shall be multi-tone horn output up to 98DB and strobe output shall have selectable intensity of 15, 30, 75 and 110 candela.

Strobe unit shall have a flash rate of 1Hz synchronized throughout the Fire Alarm Network.

Strobe with Sounder unit shall be connected to the NAC of FACP and it shall be fully monitored by FACP.

Strobe with Sounder unit shall report its status with configured parameters of each unit (sounder and strobe) to FACP.

Strobe with Sounder unit shall support individual field testing in "Silent Mode" and "Non-Silent Mode" (full operational mode).

If asked for, it shall be possible for FDA system to generate, print and e-mail the diagnostic report of notification devices with tested and verified parameters.

Strobe with Sounder unit shall be controlled independently on the same 2-Core NAC as per programmed activation and deactivation criteria or from the FACP. Audible (hooter) and Visible (strobe) outputs shall be independently configurable from FACP for its activation and deactivation criteria as required.

In absence of any specific mention of activation and deactivation criteria, the hooter shall stop at "Alarm Acknowledge" or "Alarm Silence" and the strobe shall stop at "System Reset" or "Panel Reset". This requirement shall not be deviated from unless otherwise stated cause-n-effect configuration or unless a formal written approval is taken from the design consultant.

Strobe with Sounder unit shall support individual performance check by a hand-held testing tool during in "Silent-Mode" or "Sound-Mode" to facilitate performance check during normal working hour.

Strobe with Sounder unit shall have LPCB approval.

PROGRAMMABLE CONTROL MODULE

Control Module shall be addressable and shall sit on the detection loop of the FACP and shall communicate to the FACP to report its status.

Control Module shall provide programmable, power limited, potential-free, Form-C, SPDT Relay to control external 3rd party utilities in case of fire alarm.

Control Module shall have the contact rating of 2A@24Vdc (resistive) and 1A@24Vdc (inductive).

Control Module shall have manual DIP switch addressing method that does not require any special tool from manufacturer and commissioning activity for replacing the control module in case it goes faulty.

Control Module shall have LPCB approval.

PROGRAMMABLE MONITOR MODULE

Monitor Module shall be addressable and shall sit on the detection loop of the FACP and shall communicate to the FACP to report its status.

Monitor Module shall supervise potential-free, NO (Normally Open) dry contacts in order to monitor the status of an external 3rd party device.

Monitor Module shall be configurable to report supervisory signal and alarm signal.

Monitor Module shall have LPCB approval.

ADDRESSABLE FAULT ISOLATOR MODULE

Fault Isolators shall be addressable and shall sit on the detection loop after every 20 device of the FACP and shall communicate to the FACP to report its status.

Fault Isolators shall be dual port, bidirectional communication isolator so that it isolates the short-circuited wire of any side (left side or right side).

Fault Isolators shall be compatible to isolation from the FACP for the field diagnostic purposes.

Fault Isolator shall power up in isolated mode and shall be directed by FACP to connect the detection loop segment. It shall connect the detection loop segment only if the segment is short circuit free and acceptable else shall remain in isolated mode to impart short-circuit survivability and tolerance to the remaining detection loop.

Fault Isolator shall be fully monitored and addressable by FACP. It shall report its status to the FACP and shall be controlled from FACP.

Fault Isolator shall have manual DIP switch addressing method that does not require any special tool from manufacturer and commissioning activity for replacing the fault isolator in case it goes faulty.

Fault Isolator shall have LPCB approval.

RESPONSE INDICATOR

In addition to built-in response indicator in each detector, Secondary response indicator of LED type shall be provided outside the rooms and at ceiling for above false ceiling detectors. This will provide healthiness and actual status of detector.

BATTERY REQUIREMENTS

Vendor will provide battery calculation considering 24 hrs normal and 30min. alarm condition.

CABLE

Entire loop cabling shall be done with 2C x 1.5 Sq.mm stranded copper conductor, XLPE insulated, extruded PVC inner sheathed overall armored flame-retardant low smoke (FRLS) outer shielded type 1.1 KV grade cable RED in colour.

INSTALLATION AND TESTING

Installation shall be in accordance with the local and state codes, as shown in the drawings, and as recommended by the equipment manufacturer.

All fire detection and alarm system devices, control panels and remote enunciators shall be flush mounted or surface mounted as per instructions of the Engineer-in-charge.

Manual call boxes shall be suitable for surface mounting or semi-flush mounting and shall be installed at a height of not less than 1,000 mm, or more than 1200 mm above the finished floor level.

The ends of all cables shall be sealed by means of proprietary seals and associated glands. No heat shall be applied to any seal or termination. Cable tails shall be insulated.

Where protection of the cable glands is required or terminations are on display, the glands shall be enclosed in red colored shrouds of the appropriate British Standard colour.

All other tests as required by the client at the time of handing over.

Initial testing can be carried out as per following but not limiting to:

S.No.	Description	Visual	Test readings	Documentation
1	All cables are tested for continuity, insulation, resistance etc.			√
2	Carry out visual checks on panel, cables, inter phase modules etc. to ensure they are clean and free from any mechanical damage	√		
3	Check for proper termination and feruling	√		
4	Check input A/C supply voltage		√	
5	Check location/spacing of Detectors as per standards	√		
6	All devices are addressed as per drawing		√	
7	Check Distribution of Detector/ Loops/ Zones as per Drawing		√	
8	Check all Modules/ Detectors, for healthy blinking status	√		
9	Apply Smoke to random detectors and check output of the same in panel, shall display proper Address/ Loop		√	
10	All the manual call point are working properly		√	
11	Strobe with Sounder are working as programmed		√	
12	If power fails, whether panel working on battery supply		√	
13	Panel display and all key working properly		√	

COMMISSIONING

At final commissioning of each system, the Contractor shall confirm that:

All detectors and devices are tested and operate correctly.

All outputs operate in the required manner, including alarm sounders or voice alarm system loudspeakers, visual indicators and connections to ancillary services and other systems.

Commissioning shall be fully documented, and the documentation submitted to the Engineer.

The Contractor shall demonstrate each fire detection and fire alarm system to the satisfaction of the Engineer by conducting a series of witnessed acceptance tests as directed by the Engineer. This shall take place after the above final commissioning and following receipt of the commissioning documentation by the Engineer. Acceptance testing shall include the actuation of all devices in the system, simulation of various faults and operation of all manual controls.

Upon completion of the installation activity, the Fire Alarm contractor shall Test, Start-up, Commission and Handover the system to the customer.

The Fire Alarm contractor shall make use of the following documents to record test results and details of commissioning tests:

- Cable Test Sheets
- Installation Check Report
- System Layout Drawing(s)
- System Schematic Diagram(s)
- The Fire Alarm contractor shall be responsible for inspecting and testing the complete system, including:
 - Detectors
 - Call Points
 - Sounders
 - Ancillary Devices

The Fire Alarm contractor shall test all functions of the system, including the software, to ensure that it operates in accordance with the requirements of the design specification and relevant standards.

Following the satisfactory completion of installation, testing and start up, the Fire Alarm contractor shall demonstrate to the customer that the system successfully performs all of the functions set out in the design specification.

The Fire Alarm contractor shall provide the customer with an agreed quantity of spare parts testing equipment and consumables which are to be used during routine maintenance and testing of the system.

The Fire Alarm contractor shall provide a customer appointed fire system supervisor with on-site training in the use, operation and maintenance of the system and explain the procedures to be followed in the event of fire and false alarms. The system supervisor shall also be shown how to carry out routine maintenance and testing procedures, and how to keep the Logbook.

The Fire Alarm contractor shall prepare a report detailing all tests performed during installation and commissioning of the system. The report shall include the results of the tests and details of any specific Settings or adjustments made. Any outstanding tasks or activities which are to be completed at another time shall also be included in the report.

The Fire Alarm contractor shall present an Acceptance Certificate for signature by the customer.

4.0 ACCESS CONTROL AND DOOR INTERLOCKING SYSTEM

A networkable access control system is proposed to provide control through centralized management software. The movements of the cardholder into & across access-controlled location can be tracked by generating an appropriate report. The Access Control system will remain in operation, even in the event of Network failure as the Door Control Units shall continue to operate.

4.1 Approvals

- Design and operation of the system shall conform to the following referenced codes, regulations, and standards as applicable:
- National Electrical Code (NEC)
- UL 294 and UL 1076 as required where applicable.
- National Electrical Manufacturers Association (NEMA)
- Applicable State, and Local laws, regulations and codes.
- CE mark as and where applicable

4.2 Features

- Database management
- Audit trail
- Reports
- Future database Fields
- Event & Transaction History
- Cardholder definition
- Badge definition
- Real time system activity window
- Product Specification
- Geographic time zone support
- Daylight Saving Time
- Leap year support
- 4 bit parallel accurate to 50 ppm

4.3 Communication Modules:

- RS485
- Ethernet (TCP/IP)
- Door control Unit shall be capable of reporting the following alarm conditions to the server:
- Enclosure door tamper
- Primary power failure
- Low battery conditions
- Loss of communications
- All access control violations.

4.4 Biometric Finger scan Reader cum Controller

- The Biometric Finger scan reader must store upto 1000 & about 10,000 Event buffers.
- It must have real time auto update of Finger Templates to monitor changes in the fingerprint.
- It must high Protection from Scratch and ESD (Electrostatic Discharge)
- It must have high quality Optical Sensor.
- Easy template distribution for network applications

- It must have LCD for Time & Attendance Display along with user defined LCD messaging.
- Configurable card or fingerprint verification for logging in to the device for extra security.
- It must have duress finger implementation for enhanced security.
- Configurable Operating Modes
- (Card/ UID) + Finger
- Finger only

4.5 Software Requirements

The software shall be capable of partitioning (segmenting) the database which must include at least but not limited to the following items:

- Cardholders
- Badges
- Time zones
- Holidays
- Access Groups
- Panels
- Readers/Terminals
- Workstations

Magnetic Door Locks

Low energy consumption (DC 12V/ 24V), Silent and continuous duty operation, Instantaneous release in the event of emergency, 600 lbs holding force with LED indicator, Safety feature: LED will be GREEN colour is the door is closed properly. Otherwise, LED will be RED colour.

4.6 Installation and Testing

Installation shall be as shown on the drawings, and as recommended by the major equipment manufacturer.

All cables, junction boxes, cables support shall be concealed in finished areas and may be exposed in unfinished areas. Device shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect devices from contamination and physical damage.

The Controller and its associated component parts shall be installed in the location specified in the design drawings.

The controller equipment shall be securely fixed, and if required, marked with appropriate notices, warnings, signs as applicable.

All Device shall be installed in the exact locations specified in the design drawings; thus, providing the best possible protection.

All Devices shall be securely fixed to approved boxes and allow for easy fitting and removal of Device.

S.No.	Description	Visual	Test Readings	Documentation
1	All cables are tested for continuity, insulation, resistance etc.			√
2	Carry out visual checks on all devices free from any mechanical damage, cables, interface modules	√		√

S.No.	Description	Visual	Test Readings	Documentation
	etc. to ensure they are properly installed.			
3	Check for proper termination & feruling	√		√
4	Check input A/C supply voltage		√	
5	Check location Controller & Devices as per drawing	√		√
6	In Test mode check for each Door		√	

4.7 Commissioning

The contractor shall allow for the manufacturer's representative to attend commissioning of the entire installation in the presence of the owner and/or its representative.

All necessary instrumentation, equipment, materials and labour shall be provided by the Contractor.

The Contractor shall record all tests and system calibrations and a copy of these results shall be retained on site in the System Logbook.

Visually check all pipes to ensure that all joints, fittings, bends etc., comply with the Specification.

Check to ensure that all ancillary devices are installed as specified.

4.8 Door Interlocking system

The Door interlock system shall be such that only one door can unlocked at a time. For emergencies, the system shall have facility to defeat interlocking & immediate release of all doors. This should have the facility to link it with the emergency alarm system of the plant.

The doors of the airlock/ change rooms should maintained locked in normal conditions by using electromagnetic locks. The microprocessor-based door interlocking system should monitor the status of the doors and locks or releases the doors as per set system logic. The door station with the required control buttons and indications buzzer should be provided on both sides of the door. The user can understand the status of both the doors through the indication/ buzzer provided.

On the door station user can request for release of a door, by operating the available door release push button. The controller should accept the command and release the door only if the other door is in locked condition. The position and the status of the door are monitored by the controller through the signal received by door position sensor either mounted on the door or provided in the electromagnetic lock.

The integration of interlocking with Access control & fire alarm system has to be possible.

The door interlock system should allow only one door to be opened at one time; the simultaneous opening of the doors should not be allowed by the system. The system should be capable of taking fire input. In case of emergency, it is desirable to override the door interlock system operating conditions to save precious human life. Emergency push button/ glass break has to be provided on the key to override the system conditions. The door interlock system should release all the doors when the user operates emergency button/ glass break on any side of both the doors or receive fire input. This facility will allow free passage for the users through the air lock.

Door interlock system shall consist of Microprocessor based door controller, door position sensor, Electromagnetic lock, Indication, alarm & other accessories required for door interlocking Logic and alarm conditions.

Doors should be interlocked with shower cycle. The exit door should only open once the shower cycle is completed. The door should be interlocked with solenoid valve of shower water supply.

5.0 CCTV SYSTEM

SYSTEM DESCRIPTION & GENERAL GUIDELINES

The scope of the work is Supply, Installation, Testing and Commissioning of an IP based CCTV system, with the objective shall be to provide High degree of surveillance system.

The purpose is to monitor & supervise the premises for security purposes, as well as record and inform officials on unwanted, untoward incidents. It is also essential to have recorded images stored at least for 30 days of all critical areas to facilitate investigations of a reported case.

The CCTV system shall consist of:

- Varifocal Indoor Dome Cameras
- Outdoor Bullet Camera
- Network Video Recorder (30/31 days storage)
- 32" LED Screens for Viewing
- Related required accessories
- Network Backbone

Performance Requirements

CCTV System shall have Indoor IP Colour cameras connected to NVR with associated IP Network.

All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's system.

All systems the Implementation Contractor shall ensure to upgrade the firmware and software of the latest version without commercial implications during the Warranty period.

The CCTV is required to supply the operator with the following information and facilities:

Display of images on monitors through commands given by the operator's keyboard.

Automatic camera selection, positioning and display to pre-set positions.

Remote camera, monitor and recording selection.

Display of single and/or quadruplicated images on any selectable monitor. (Optional)

The image resolution shall be 1.3MPx, 2MPx for IP Cameras. Users can specify many resolutions smaller than default for a specific purpose.

The camera shall provide Wide Dynamic Range (WDR), Automatic white balance, automatic gain control, automatic electronic shutter, backlight compensation, and motion detection. The camera shall also provide manual white balance.

The camera shall provide on-screen text displays. User and Administrator password protection levels shall be provided. A mechanical reset button shall be provided to return the camera to factory default settings.

No unique or proprietary client software shall be required for viewing or controlling the camera.

The camera shall be configurable, and users may modify the camera's web pages according to a specific purpose.

All external cameras should have Day/ Night operation facility & automatic switching from colour to black & white mode in the night.

The system should be design for ONVIF open standard.

GENERAL PRODUCT SPECIFICATION

Indoor Dome Camera

S.No.	Parameters	Required Technical Specifications
1	Image Sensor	1/3" Progressive Scan CMOS
2	Min. Illumination	0.1Lux @ (F1.2, AGC OFF), 0.01Lux @ (F1.2, AGC ON)
3	Lens	2.8 - 12 mm Vari focal Lens
4	Video Compression	H.265, MJPEG, H.264
5	Max. Resolution	1920 × 1080
6	Max Frame Rate	25fps
7	Protocols	HTTP, PPPoE, UPNP, FTP, DDNS, VPN, RTSP
8	Standard	ONVIF
9	Interface	RJ45 for 10Base-T/100 Base TX PoE
10	Operating Conditions	-10 °C ~ +50 °C, 0% to 90% (non-condensing)
11	Input voltage/Current	190mA/DC12V, 430mA/DC12V IR LED ON
12	Material	White Epoxy Spray paint/Aluminium Dai cast
13	Ingress Protection	IP66
14	IR Range	5~30 meters
15	Weight	380g

Network Video Recorder

S.No.	Parameters	Required Technical Specifications
1	Main Processor	Dual/ Quad-Core embedded processor
2	Operating System	Embedded Linux
3	IP Camera Input	8/16 Channel
4	Two-way Talk	1 Channel input, 1 channel output, RCA
5	Interface	2 HDMI, 1 VGA
6	Network	Ethernet: 2 RJ-45 port (10/100/1000 Mbps) POE: 8 Ports (IEEE802.3at/af)
7	Protocols	IPv4/v6, HTTP, HTTPS**, SSL/TLS**, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, DNS, DynDNS, NTP, UPnP™, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS
8	Resolution	3840x2160, 1920x1080, 1280x1024, 1280x720, 1024x768

S.No.	Parameters	Required Technical Specifications
9	Display Spilt	1/ 4/ 8/ 16
10	OSD	Camera title, Time, Video loss, Camera lock, Motion detection, Recording
11	Recording Compression	H.265/ H.264/ MJPEG
12	Resolution	5MP, 1080P, 720P, etc.
13	Bit Rate	1 ~ 20Mbps
14	Video Detection & Alarm	Recording, PTZ, Tour, Alarm deo push, Email, FTP, Snapshot, Buzzer & screen tips, motion detection, MD zones, Video loss & Camera blank, 16 Alarm Input & 6 Relay Output
15	Playback & backup	Time/ Date, Alarm, MD & Exact search (accurate to second) Smart search. Play, Pause, Stop, Rewind, Fast Play, Slow Play, Next file, Previous File, Next camera, Previous camera, Full screen, Shuffle, Repeat, Backup Selection, Digital Zoom. USB Device/ Network/ Internal SATA burner/ eSATA device
16	Storage	Internal: 4SATA II Ports, up to 24 TB External: 1eSATA
17	Auxiliary inputs	USB: 3ports (2 Rear USB3.0, 1 Front USB 2.0) RS 232: 1 port for pc Communication & Keyboard RS 485: 1 port for PTZ control
18	Power supply	Single, AC 100~240V, 50/60 Hz
19	Working Environment	-10 °C to 50 °C (-40 °F to 131 °F) Humidity 10 - 100% RH (condensing)

INSTALLATION AND TESTING

Initial testing can be carried out as per following but not limiting to:

S.No	Description	Visual	Test Readings	Docume- tation
1	All cables are tested for continuity, insulation, resistance etc.			√
2	Carry out visual checks on all cameras, cables, etc. to ensure they are clean and free from any mechanical damage	√		
3	Check for proper termination & feruling	√		
4	Check all the equipment with respect to BOQ	√		
5	System Identification complete with all NVR' s and cameras labelled	√		
6	Randomly select a camera and check the resolution		√	
7	Check the motion detection activation.		√	

S.No	Description	Visual	Test Readings	Documentation
8	All Cameras are correctly angled, and correct area of coverage is being achieved.		√	
9	Check the recording speed each camera		√	
10	Check the illumination levels per camera & check the resolution for low lux levels		√	
11	Check the backup capacity per NVR per camera		√	
12	Check the watermark and the screen shot printing facility		√	

LIST OF PREFERRED MAKES

S.No.	ITEM DESCRIPTION	MAKES
1	Data Cables (CAT 5e,6)	LUCENT, AT&T, LAPP KABEL, NETLINK, DLINK
2	Network Switches	DLINK/CISCO/NETGEAR/DIGISOL.
3	CCTV & CAMERAS	HONEYWELL, BOSCH, JOHNSON CONTROL
4	UPS & INVERTER	TATA EMERSON, APC
5	LED TV or Monitor	SAMSUNG, LG, SONY.

6. GENERALS

a) Commissioning

The contractor shall allow for the manufacturer's representative to attend commissioning of the entire installation in the presence of the owner and/ or its representative.

All necessary instrumentation, equipment, materials, and labour shall be provided by the Contractor.

The Contractor shall record all tests and system calibrations and a copy of these results shall be retained on site in the System Logbook.

Visually check all pipes to ensure that all joints, fittings, bends etc., comply with the Specification.

Check to ensure that all ancillary devices are installed as specified.

b) Documentation

- The contractor, upon completion of the commissioning activity, shall hand over the system to the customer.
- At the time of hand over, the contractor shall provide the customer with the following documentation:
 - Copy of detailed report
 - Component and equipment list
 - Product description sheets
 - System design drawing- As built layouts- Contractor shall be responsible to make as built drawings incorporating all the changes made at site as per actual installation.
 - System schematic diagram

- System operating manuals

c) Handover

Prior to final acceptance, the installing contractor shall provide complete operation and maintenance instruction manuals to the owner. All aspects of system operation and maintenance shall be detailed, including wiring diagrams of all circuits, a written description of the system design, sequence of operation and drawing(s), illustrating control logic and equipment used in the system. Checklists and procedures for emergency situations, maintenance operations and procedures shall be included in the manual.

d) Training

The contractor shall provide the customer with details of the training required by personnel to operate and maintain the LV systems.

The Contractor and the Customer shall jointly agree the number of staff to attend the training courses.

7. Special Requirements (Note for Vendor)

Bidders need to visit the site before submitting their technical offer in order to consider all tools, tackles & accessories required for installation work.

Bidders should submit following deliverables along with technical offer:

Organization chart/ Project Organogram

Project Timelines & Implementation schedule as per timeline mentioned.

Resource allocation chart as per timeline.

The item code for any item installation shall include all hardware required for completing the job for safe operation, minor civil work associated with the same. No extra claim for items associated with the installation. Will not be paid for the same.

The quantity of Cable, Conduit & Cable tray items specified in the tender BOQ is as per layouts. Vendors are supposed to check this quantity at site based on actual site condition and supply the material accordingly. A vendor will be solely responsible for correct measurement and actual supply of material at site based on his measurement. Further following points to be noted:

Vendors need to procure items only after permission from IDMCs representative. If the BOQ items are procured W/O permission, it will not be paid.

The cost of balance material after completion of job will not be paid to vendor.

For all equipment supplied by the owner, the vendor scope of installation also includes unloading at site, shifting to site or transit store if site is not ready also back to site when site is ready. All lifting, shifting, shifting tools & tackles & cranes etc. are in vendor's scope. The job also includes unpacking & physical inspection.

The vendor must note that any supply items which is included in BOQ scope of supply, the same material client can supply directly, for that the installation cost will not be change.

The vendor must verify installation drawings in terms of site condition and actual requirement accordingly needs to prepare shop floor drawings as per requirement. if required and send it to consultant for approval.

If there is any conflict between tender specification and BOQ or design refer in following order:

- 1) BOQ, 2) Drawings & 3) Tender Specification.

SECTION- V
FORM OF BID

SECTION V**FORM OF BID**

The Appendices (I to IV) of Form of Bid is a part of the bid. Bidders are required to fill up all the blank spaces in this Form of Bid and Appendices.

Bid Reference No. : **IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 300 Dated 03.08.2026**

Name and address of
Project Authority / Employer : **IDMC Limited.**

Description of Works : Supply installation Testing and commissioning of internal Electrification and ELV works. For National Heavy Engineering Co-operative Ltd (HECL) Plant, at Talegaon Pune, Maharashtra.

Dear Sirs,

1.0 Having examined the Drawings, Terms & Conditions of Contract, Technical Specifications and Schedule of Quantities for the execution of above mentioned works, we, the undersigned offer to execute, complete and maintain the whole of the said works in conformity with the said Drawings, Terms & Conditions of Contract, Technical Specifications and Schedule of quantities in accordance with the said conditions.

2.0 We undertake, if our bid is accepted, to commence the Works **within** _____ **days** of receipt of the Letter of Acceptance, and to complete and deliver the whole of the above said works comprised in the Contract **within** _____ (_____) **months** calculated from the lastday of the aforesaid period in which the Works are to be commenced.

3.0 If our bid is accepted, we will furnish a performance security in the form of a bank guarantee (to be approved by you) / Demand draft, to be jointly and severally bound with us in **amount of 5%** of the above named sum in accordance with the Conditions of Contract.



4.0 We agree to abide by this bid for the period of **120 days** from the date of bid opening as prescribed in **clause 13** of the Instruction to Bidders, and it shall remain binding upon us and may be accepted at any time before the expiry of that period.

5.0 Unless and until an Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.

6.0 We understand that you are not bound to accept the lowest or any Bid you may receive.

Date _____

Signature of bidder with seal

Place _____

Witnesses:

1. Signature:

Name:

Address:

2. Signature:

Name:

Address:

APPENDIX – I (FORM OF BID)

Important Conditions of Contract

Sl. No.	Description	Vol-I SEC-II Clause No.	Remarks
1.	Amount of Performance Security	10	5 (Five) percent of Total contract value
2.	Minimum amount of Third	23	Such insurance shall be for 10% of the value of works with number of Occurrence unlimited. .
3.	Minimum amount of insurance of work	21	110 (Hundred & ten) percent of contract value
4.	Period for Commencement, from the Date of Letter of Acceptance	41	15 (Fifteen) Days.
5.	Time for Completion	43	03 Months (Three Months).
6.	Rate of Liquidated Damages	47	0.5 (Zero point five) percent per week of total contract value
7.	Maximum Limit of Liquidated Damages	47	10 (Ten) percent of total contract value
8.	Rate of Bonus	48	NOT APPLICABLE
9.	Period of Maintenance (Defects Liability Period)	50	12 (Twelve) Months
10.	Percentage Recovery of Retention	60.3	10(Ten) percent

Sl. No.	Description	Vol-I SEC-II Clause No.	Remarks
11	Maximum limit of Retention money	60.1(b)	10 (Ten) percent
12.	Maximum amount of	60.2	Not Applicable
13.	Maximum amount of Advance	60.5	Not Applicable
14.	Time within which the payment would be made after submission of measurement / bill	60	as per GCC
15.	Price Variation	71	NA
16.	Contractor's Profit & Overhead Cost for settling extra items	53.1	15 (fifteen) percent

Date : _____

Signature of Bidder with Seal
Place: _____

APPENDIX - II (FORM OF BID) BIDDING**TERMS DEVIATION STATEMENT FORM**

1.) The following are the particulars of deviations from the requirements of the bidding conditions/ terms:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)
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The terms and conditions prescribed in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Dated: _____

Signature and Seal of Bidder

Place: _____

Note :-

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "NO DEVIATIONS".

APPENDIX – III (FORM OF BID) TECHNICAL**DEVIATION STATEMENT FORM**

- 1.) The following are the particulars of deviations from the requirements of the tender technical specifications:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)
--------	-----------	--------------------------------------

The technical specification furnished in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Dated : _____

Signature and Seal of Bidder

Place: _____

Note :-

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating “NO DEVIATIONS”.

APPENDIX - IV (FORM OF BID)LIST**OF SUGGESTED MAKES
(For Internal electrical and ELV work)**

The following is the suggested list of products and name of the manufacturer against each product. The contractor shall quote rates for the various items of works such that their rates should be valid for all makes suggested hereunder. It will be prerogative of IDMC LTD to approve any make out of this list or any other equivalent make. The makes specified in schedule of quantities shall have preference over the makes suggested hereunder. Wherever make is not suggested, the material should be as per relevant BIS specification.

SR. NO.	ITEM DESCRIPTION	SUGGESTED MAKES/MANUFACTURES
1.	ANTI CORROSIVE PRIMER	ASIAN OR EQUIVALENT CONFORMING TO IS - 2074
2.	STRUCTURAL STEEL & ALL MS ELEMENTS & PLATES	SAIL / TATA / VIZAG (RINL)/JSPL/ JSW

SR. NO.	ITEM DESCRIPTION	SUGGESTED MAKES/MANUFACTURES
3.	FLOAT/ PLAIN GLASS	MODI FLOAT/ ASAHI FLOAT/ SATIN GOBAIN/ TRIVENI
4.	SS FITTINGS	KICH/GOLDEN/GERGE/ ENOX
5.	ALUMINIUM SECTIONS	HINDALCO/JINDAL/INDAL/BANCO
6.	FRICTION STAY	HETTICH/HAFELE/EBCO
7.	HYDRAULIC DOOR CLOSURE/ FLOOR DOOR SPRINGS	GOLDEN/GODREJ/HARDWYN/EVERITE /HYPER/STERLING/OZONE/DORSET/ ENOX/ DORMA
8.	DOOR LOCKS	KICH/GODREJ / GOLDEN / WELMADE (PUNE)
9.	PAINTS (PREMIUM QUALITY)	ASIAN / BERGER / J&N / SHALIMAR/ICI / NEROLAC/ SNOWCEM INDIA LTD.
10.	PLASTIC EMULSION / ACRYLIC EMULSION PAINT / SYNTHETIC ENAMEL	ASIAN PAINTS / J & N / BERGER / SHALIMAR / ICI
11.	MS PIPE	TATA/JINDAL /BST /QST /PRAKASH SURYA
12.	MS HOLLOW SECTION	TATA / JINDAL/APL APOLO



IDMC
LIMITED

Section-V

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**SR.
NO.**

ITEM DESCRIPTION

SUGGESTED MAKES/MANUFACTURES

13.

STAINLESS STEEL.

JINDAL/ RATNAMANI/ APEX/ SUBHLAXMI/
RENSA/RAAJRATNA

IDMC LTD

Form of Bid

BIDDER

SR. NO.	ITEM DESCRIPTION	SUGGESTED MAKES/MANUFACTURES
14.	NIGHT LATCH / MORTISE LOCK/ TUBULAR LOCK	GODREJ / GOLDEN / WELMADE (PUNE) / LINK/KICH
15.	POLYCARBONATE SHEET	LEXAN / PALRAM/EQUALIVALENT
16.	STANDARD ROLLED STEEL SECTIONS /WINDOWS	AGEW (AHMEDABAD)/ SUPER STEEL (MUMBAI) / ANAND WINDOWS (NEW DELHI) / PERFECT (AHMEDABAD), EQUIVALENT
17.	TURBO VENTILATOR/ ROOF EXTRACTOR/ ECO-VENTILATOR	DEVASHISH TURBO VENTILATORS (DIPL), MUMBAI / DHAKAR ENGINEERS, UDAIPUR / MB ENTERPRISE, AHMEDABAD / SUDHA VENTILATING SYSTEM PVT LTD, AHMADNAGAR / M/S SYGURU TECHNOLOGY SERVICES, VADODARA, SAI CORPORATION VADODARA OR EQUIVALENT APPROVED
18.	GALVANISED STEEL PRECOATED PROFILE SHEETS	TATA BLUE SCOPE / INTERARCH / METACOLOUR /JSW
19.	SS DOOR	ICLEAN, SHAKTI HORMANN
20.	AUTOMATIC SLIDING GATE MOTOR	GANDHI, BROSIS OR EQUIVALENT APPROVED
21.	FRP/GRP GRATINGS	BALAJI/ERCON/EQUIVALENT
22.	SLIDING GATE OPENER MOTOR CONTROL UNIT PCB CONTROLLER CIRCUIT BOARD/ELECTRONIC CARD	GANDHI AUTOMATION/ HITSAN/VISHWAS

NOTE:

- 1 For equivalent, ISI or approved marked items included above, if opted by contractor, specific approval to be taken by contractor for make, before procurement and use.
- 2 For the items not indicated above but to be used for PEB Works , specific approval to be taken before procurement and use after submitting sample, detail of manufacturer, source of supply etc.

WE HAVE NOTED THE ABOVE AND CONFIRM THAT OUR TENDER IS BASED ON ABOVE SUGGESTED MAKES.

Date:_____

Signature and Seal of Bidder

LIST OF SUGGESTED MAKES OF ELECTRICAL WORKS

The following is the list of products and names of the approved manufacturer against each product. The contractor shall quote rates for the various item of works using these products based on maximum two makes out of these approved manufacturers selected & filled up in format given below by the bidder. Any other make of product, not approved below, shall not be allowed for use in this work unless specifically approved in writing separately by purchaser after establishing its technical suitability, price availability & effecton price quoted by contractor for the item where this item is being used. If no make has been selected by the bidder, the purchaser shall be at liberty to advice the contractor to use any of the approved manufacturer given below for any product for this contract.

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
1.	PVC CONDUITS	PRECISION, POLYCAB, POLYPACK, BHARAT, SUDHKAR
2.	PVC CONDUIT ACCESSORIES	PRECISION, POLYCAB, POLYPACK, BHARAT, SUDHKAR
3.	PVC INSULATED, FLEXIBLE STRANDED COPPER CONDUCTOR FRLS WIRES	FINOLEX, RR KABEL (UNILAY), L&T, HAVELL'S, POLYCAB
4.	PVC INSULATED ARMOURED, ALUMINIUM CONDUCTOR CABLES	KEC, RPG-ASIAN, FINOLEX, NICCO, RR KABEL, CCI, POLYCAB, HAVELS
5.	MODULAR SWITCHES, SOCKET OUTLET & MOULDED COVER PLATES	MK ELECTRIC, CRABTREE, SCHEINDER, ANCHOR ROMA (PANASONIC), L&T, CLIPSAL, LK PACE (ENGLISH MODULE), ABB, HAVELS, SCHNEIDER
6.	MINIATURE CIRCUIT BREAKERS (M.C.B)	LEGRAND, L&T ,HAGER, SIEMENS, ABB, HAVELL'S (CRABTREE),
7.	EARTH LEAKAGE CIRCUIT BREAKERS (ELCB)/RESIDUAL CURRENT CIRCUIT BREAKER (RCCB)	LEGRAND, L&T ,HAGER, SIEMENS, ABB, HAVELL'S (CRABTREE),

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
8.	MOULDED CASE CIRCUIT BREAKERS (MCCB)	SIEMENS, L&T, ABB, MERLIN GERIN, LEGRAND, ENGLISH ELECTRIC, SCHNEIDER COMPACT NSX
9.	SWITCH FUSE UNITS WITH HRC FUSES FOR PANELS (TPN &TP)	L&T, SIEMENS, ABB, SCHNEIDER, ENGLISH ELECTRIC, TELEMCHANIC
10.	AMMETERS, VOLTMETERS, PF METERS (ANALOGUE)	AUTOMATIC ELECTRIC, L&T (RISHAB), MECO, IMP, SCHNEIDER
11.	AMMETERS, VOLTMETERS, PF METERS (DIGITAL)	L&T (RISHAB), SCHNEIDER, SIEMENS, L&T (RISHAB)
12.	CURRENT TRANSFORMERS (CAST RESIN)	KAPPA, GILBERT MAXWELL, AUTOMATIC ELECTRIC, MECO, BHARATI
13.	ENERGY METERS (MECHANICAL)	UNIVERSAL, JAIPUR, HAVELL
14.	ENERGY METERS (ELECTRONIC)	L&T, RISHAB, SCHNEIDER, SIEMENS REICO, SECURE, MECO, ICD, ELECON
15.	TELEPHONE WIRES & CABLES	FINOLEX, RR KABEL, POLYCAB, SKYTONE, L&T, DELTON
16.	COMPUTER DATA CABLES (CAT 5/6)	LUCENT, AT&T, AMP,D-LINK
17.	TELEPHONE TAG BOX	KRONE, POUYET
18.	LOW TENSION SWITCHGEAR	L&T, SIEMENS, ABB, SCHNEIDER
19.	CABLE COMPRESSION GLANDS	COMET, PEECO, DOWELL, LAPP KABEL
20.	CABLE LUGS	DOWELL'S, LAPP KABEL, COMET PEECO
21.	INDUSTRIAL TYPE METALLIC PLUG SOCKETS	LEGRAND, CUTTLER & HAMMER, SIEMENS,SCHNEIDER, INDO KOPP, CLIPSAL

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
22.	DISTRIBUTION BOARDS	LEGRAND , L&T (HAGER), SIEMENS, ABB, HAVELL'S (CRABTREE) , INDO KOPP, SCHNEIDER
23.	SELECTOR SWITCHES	KAYCEE, L&T SULZER
24.	INDICATION LAMPS (LED TYPE)	L& T SIEMENS, ABB, SCHNEIDER, ESSEN, BCH, VAISNAV, TECHNIC
25.	RISING MAINS	CONTROL & SWITCHGEAR, ZETA
26.	POWER CAPACITORS	ASIAN, EPCES, L&T,SCHNEIDER, MOMAYA, SEIMENS
27.	MS / GI CONDUITS	AKG, BEC, VIMCO, GUPTA, BHARAT
28.	MS / GI CONDUIT ACCESSORIES	SHARMA, RAMA
29.	TIMER	L&T / SEIMENS/ MINILEC
30.	CABLE TRAYS	PROFAB / UBITECH / TECHNOFAB /OBO/LEGRAND/FRASER
31.	LIGHT FITTINGS	PHILIPS / CG / WIPRO / BAJAJ
32.	EARTH ELECTRODE	ASHLOK / GRAVIN
33.	UPS	SCHNEIDER-APC / CONSUL NEOWATT / HIREL-HITACHI/ EMERSON
34.	CEILING FAN / ESHAUST FAN	ALMONARD / CROMPTON /HAVELLS/ ORIENT/ CROMPTON GREEVES
35.	BATTERY BACK UP KIT & EXIT SIGNAGES	BAJAJ/ CROMPTON/ COOPER
36.	FLAME PROOF SOCKETS, SWITCHES	BALIGA/ COOPER/CND HI TECH
37.	RACK	SCHNEIDER/ RITTAL/COMMSCOPE/ PANDUIT
38.	POP UP BOX/NET BOX	A&H MEYER/ LEGRAND

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
39.	TV CABLES	SKYTON/ FINOLEX/ DELTON
40.	TERMINAL BLOCKS	DOWELL'S/ ELEMEX/ WAGO/ PHOENIX
41.	ELECTRIC MOTORS	SIEMENS/ABB/BHARAT BIJLEE/CROMPTON/KIRLOSKAR/L&T
42.	AIR CIRCUIT BREAKER	L&T – U POWER OMEGA/ SIEMENS 3 WL / SCHNEIDER MASTERPACT NW SERIES/ ABB
43.	MCCB	L&T D' SINE / LEGRAND / SIEMENS 3 VL / MERLIN GERIN COMPACT SERIES/ ABB TMAX/ GE RECORD RANGE / HAGER/SCHNEIDER
44.	PROTECTION RELAYS	L&T / SIEMENS / ABB / AREVA T&D/ ASHIDA
45.	CONTACTORS	L&T / SIEMENS / ABB / SCHNIEDER/ GE
46.	TIMERS ELECTRONIC	L&T / SIEMENS / GE/ ABB/ SCHNIEDER
47.	SWITCH DIS-CONNECTOR FUSE UNITS	L&T / SIEMENS / ABB /SCHNIEDER/GE
48.	MCB/RCCB	LEGRAND/HPC/INDO KOPP/SIEMENS / HAGER / MERLIN GERIN / LEGRAND/ABB/ L&T/ GE/ SCHNIEDER/HAVELLS
49.	MCCB	L&T/ SIEMENS/ABB/LEGRAND/HAGER
50.	INDICATING LAMPS	L&T / SIEMENS / SCHNEIDER / VAISHNO / TEKNIC / ABB
51.	PUSH BUTTONS	ESBEE / SIEMENS / ABB / VAISHNO / TEKNIC/ L&T
52.	ISOLATORS	SIEMENS /ABB / BCH/ HAVELLS/

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
		L&T/HANSU/HENSEL/SINTEX
53.	LOAD MANAGER	SIEMENS/ ABB/ L&T / SCHNEIDER/ CONZERV/ ALLEN BRADLEY (ROCKWELL)
54.	DIGITAL AMMETER & VOLTMETER	CONZERV / L&T / RISHABH /AE/IMP/MECO
55.	ANALOG AMMETER & VOLTMETER	RISHABH / IMP / AE/ L&T/SCHNEIDER
56.	DIGITAL ENERGY METER	CONZERV / L&T / ABB/SIEMENS /HPCL/UNIVERSAL/JAIPUR/REIL
57.	PVC CONDUIT & ACCESSORIES	PRECISION / POLYCAB / CLIPSAL
58.	POWER FACTOR METER	RISHABH / IMP / MECO / AE/ L&T
59.	CURRENT TRANSFORMER	KAPPA / BHARTI/ ASHMORE/ L&T/RISHABH / AE /MAXWELL/IMP/MECO/GILBERT
60.	HT XLPE POWER CABLES	GLOSTER/ CCI / KEC / FINOLEX / NICCO /KEI
61.	LT XLPE POWER CABLES	GLOSTER/ CCI / KEC / FINOLEX /LAPP KABEL / NICCO /RR KABEL /SBEE
62.	LT COPPER CONTROL CABLES	LAPP KABEL / CONcab / CCI / RPG ASIAN / FINOLEX / RR KABELS/ SBEE/GLOSTER
63.	SIGNAL & INSTRUMENT CABLE	LAPP KABEL / CONcab /RR KABEL/SBEE/ DIGILINK
64.	POWER CAPACITORS	SIEMENS/ EPCOS / L&T/ ABB/ SCHNIEDER / GE/NEPTUNE-DUCATI
65.	APFC RELAY	BELUKE /SIEMENS / EPCOS / L&T/ ABB/ SCHNEIDER/ NEPTUNE- DUCATI/ GE
66.	CABLE TRAY	INDIANA / MEK / SUNRISE / SUPER /

SR. NO.	ITEM DESCRIPTION	APPROVED MAKES
		PILCO / SINTEX
67.	ISOLATING SWITCHES	SIEMENS/ABB/L&T/ SCHNEIDER
68.	HRC FUSES	L&T / SIEMENS / GE/ ABB /EE
69.	TERMINAL BLOCKS	WAGO / LAPP INDIA / CONNECT WELL/ ELMEX
70.	POTENTIAL TRANSFORMERS	KAPPA / JYOTI/ BHARTI/AE / ASHMORE
71.	ROTARY SELECTOR SWITCH	KAYCEE / SALZER - L&T / SIEMENS / ABB
72.	CABLE GLANDS	COMET / EX-PROTECTA / DOWELS / LAPP KABEL
73.	CABLE LUGS	DOWELS / COMET / LAPP KABEL/ BRACKO
74.	MECHANICAL INTERLOCK	L&T / SCHNEIDER / ABB/ GE/SIEMENS
75.	XLPE CABLE JOINTING / TERMINATING KIT	RAYCHEM / M-SEAL/BIRLA 3M
76.	PROGRAMMABLE PROTECTION RELAY	MINILEC/ ABB/ L&T/ SIEMENS/ SCHNIEDER/ GE
77.	LT SANDWICH BUS DUCT	L&T/ GE/ C&S/ SIEMENS/ ABB/ SCHNIEDER
78.	STEEL STRUCTURE	SAIL/ESSAR/TISCO/ JINDAL
79.	LT SWITCHGEAR	L&T/SIEMENS/ABB/ SCHNIEDER
80.	POWER / CONTROL CABLES, WIRES	CCI / GLOSTER/ FINOLEX/ UNIVERSAL/ NICCO/ RPG
81.	INDICATION LAMP LED TYPE	BINAY/ SIEMENS/ L&T/ TEKNIC/ ABB
82.	WEATHER PROOF BOXES FOR ISOLATORS, PUSH BUTTONS	HANSU/ HENSEL/ SINTEX

Note:

The following shall be got approved from Purchaser:

1. Samples of Conduit, conduit bends & junction box.
2. Samples of Switch box and outlet box with hylem sheet cover & switches.
3. Drawings & inspection for following:
 - (i) Distribution boards
 - (ii) Electrical switch boards
 - (iii) Street light poles & brackets.
 - (iv) Galvanised Raceways & its junction box.
 - (v) Flood light Tower
4. Samples for modular switches, sockets, grid & cover plate and their boxes.
5. Samples for telephone & computer data outlet box & outlet.
6. Samples of GI wires and strips.
7. All Electrical works shall be carried out by a licensed electrical contractor possessing a valid electrical contractors license in the state where site is located, employing licensed supervisor & skilled workers having valid permits as per the regulations of Indian Electricity Rules and local Electrical Inspector requirements. Copy of contractor's electrical license shall be furnished along with the tender.

WE HAVE NOTED THE ABOVE AND CONFIRM THAT OUR TENDER IS BASED ON THE APPROVED MAKES INDICATED ABOVE.

Date_____

Signature & Seal of Bidder

**MAXIMUM CAPACITY OF CONDUITS FOR THE DRAWING-IN OF 1100 VOLTSGRADE
PVC COPPER WIRES AS PER IS & BS**

Nominal Cross Sectional Area of wire (Cu) Sq. mm	Size of Conduit (mm)											
	19		25.0		32.0		38		50		63.0	
	S	B	S	B	S	B	S	B	S	B	S	B
1.5	5	4	10	8	14	12	-	-	-	-	-	-
2.5	5	4	8	6	12	10	-	-	-	-	-	-
4.0	3	2	8	6	10	8	-	-	-	-	-	-
6.0	2	1	5	3	8	5	-	-	-	-	-	-
10.0	-	-	3	2	5	4	6	5	-	-	-	-
16.0	-	-	-	-	3	2	6	4	-	-	-	-
25.0	-	-	-	-	2	1	4	3	6	4	7	5
35.0	-	-	-	-	-	-	3	2	5	4	6	4
40.0	-	-	-	-	-	-	2	2	5	4	7	5
50.0	-	-	-	-	-	-	2	1	4	2	5	4

NOTE: This table shows the maximum capacity of conduit for the simultaneous drawing of wires. The table applies to 1100 volts grade wire/cables. The columns headed S applies to runs of conduit which have distance not exceeding 4.25 m between draw-in-boxes and which do not deflect from the straight by an angle of more than 15 deg. The columns headed B apply to runs of conduit which deflect from the straight by an angle of more than 15 deg.

LIST OF STANDARD SKETCHES

S No	DESCRIPTION
?	Fixing Details for LED Light Fittings (Sketch No. 16)
?	Outlet Box & Installation Details for Ceiling Fan(Sketch 17)
?	Details of MS Outlet Box for Installation of Fittings on Slab(Sketch No. 18-A)
?	Details of MS Outlet Box for Installation of Fittings on Wall (Sketch No. 18-B)
?	Installation Tips for Lighting Switchboards (Sketch No. 20)
?	Termination of Armoured Cable in Concealed Distribution Board (Sketch No. 24)
?	Laying of Cables , Underground(Sketch No. 26)
?	Rout Maker for Underground Cables & Ckt. Diagram for Earth Continuation Test (Sketch No. 27)
?	Laying of cables in RCC /G I Pipes(Sketch no. 30)

NOTE: ITEMS TO BE SUPPLIED AND INSTALLED AS PER DETAILS GIVENIN THESE SKETCHES WHEREVER APPLICABLE.

IDMC LTD
Form of Bid
BIDDER

SECTION- VI
SCHEDULE OF MATERIAL
TO BE ISSUED

SECTION VI**SCHEDULE OF MATERIAL TO BE ISSUED BY
SERVICE RECIPIENT /IDMC**

No material shall be issued by Service Recipient/IDMC unless otherwise specified in the bidding document. All the materials/goods & services are to be arranged by the bidder/contractor for proper completion of the works as per specification, terms & conditions of the bidding document/contract.

SECTION- VII

**SCHEDULE OF SUPPLEMENTARY
INFORMATION**

SECTION - VII, SCHEDULE OF SUPPLEMENTARY INFORMATION

The bidder shall provide the Supplementary Information as Annexed in the form of schedules mentioned hereunder. All these supplementary information shall be considered for the bid evaluation and same in the contract execution. If the requisite information is not supplied by the bidder then the bid may be considered non-responsive and shall be rejected.

a)	Schedule	I	Major items of construction plant to be deployed by the bidder.
b)	Schedule	II	Key Personnel.
c)	Schedule	III	Nominated Sub-Contractors.
d)	Schedule	IV	Major works successfully completed during the last five years.
e)	Schedule	V	Statement of Bonus earned/ Liquidity damages paid in the last five years.
f)	Schedule	VI	Statement of Arbitration & Disputes in the last five years.
g)	Schedule	VII	Financial Business Capability.
h)	Schedule	VIII	Works in hand
i)	Schedule	IX	Undertaking for Declaration of GST Invoice Raising

SECTION – VII, SCHEDULE – I
Major items of Constructional plant to be deployed by the bidder.

Sl. No.	Description	Specification/Capacity	Machinery Proposed To Be Deployed At Site By Contractor	
			Owned	To Be Hired
1.	Survey Equipment			
	Total Station With Accessories			
	Auto Level With Staff			
2.	Earth Moving Equipment			
	Backhoe Loader (JCB)	Shovel Capacity :		
	Breaker For Above			
	Poclain With Hydraulic Chisel /Breaker	Bucket Capacity :		
	Front End Loader	Bucket Capacity :		
	Reversible Plate/vibro Roller Earth Compactor			
	Plate Earth Compactor			
	Tamping Rammer			
	Water Sprinkling System			
3.	Lifting Equipment			
	Tower Crane			
	Hoist			
	Mobile Crane/Hydra	Capacity :		
4.	Concreting Equipment			

Sl. No.	Description	Specification/Capacity	Machinery Proposed To Be Deployed At Site By Contractor	
			Owned	To Be Hired
	PLC Controlled Batching Plant With Printing Facility Of Batching Slip & Cement Silos	Machine Capacity = 15cum/Hr		
		Machine Capacity = 25cum/Hr		
		Machine Capacity = 30cum/Hr		
	Concrete Pump	Suitable For Pumping Concrete Upto 50mtr Vertical Height & 100mtr Horizontal Length		
	Boom Placer	Upto Horizontal Reach 40m		
	Transit Mixers	Capacity=6 CUM		
	Concrete Mixer With Hopper	Batching Capacity = 1 Bag Cement ; Machine Capacity =		
	Vibrator Machine Electric Operated			
	Vibrator Machine Diesel Operated			
	Vibrator Needles	60mm Dia.		
		40mm Dia.		
		25mm Dia.		
	VDF Kit			
	Screed Vibrator			
	Power Trowel			
	VDF Mat			
5.	Building Work Equipment			
	Mortar Mixtures (For Mortar Making)	Capacity : Min. 1 Bag		
	Bar Bending Machine	Upto 32mm Dia		
	Bar Cutting Machine	Upto 32mm Dia		
	Chase Cutting Machine			

Sl. No.	Description	Specification/Capacity	Machinery Proposed To Be Deployed At Site By Contractor	
			Owned	To Be Hired
	Rotary Sans Screening Machine			
	Marine Densified Plywood Shuttering (New)	Min. – 600 sqm.		
	Steel Shuttering Plates	Min. – 600 sqm		
	Scaffolding	Min. – 1200 sqm		
	Grinding Machine			
	Hammer Drilling Machine			
	Welding Machine			
	Air Compressor			
	Concrete Breakers			
	De Watering Pumps			
6.	Road Work Equipment			
	Tandem Vibratory			
	Smooth Wheeled Roller 8-10 MT			
	Hot Mix Plant			
7.	Transportation Equipment			
	Hydraulic Dumpers			
	Trucks /Tractor With Trolley			
	Wheel Borrow			
	Tough Rider			
8.	De Watering Equipment			
	De Watering Pump	_____HP		
	Mud pump			
9.	Power Equipment			

Sl. No.	Description	Specification/Capacity	Machinery Proposed To Be Deployed At Site By Contractor	
			Owned	To Be Hired
	DG Set	_____KVA		
10.	Piling Equipment's (not applicable)			
	Percussion/Rotary Drilling Rigs Using Direct/Reverse Mud Circulation			
	TMR/ Bailer & Chisel Rigs.			
	Winch			
	Derrick			
	Boring/Chiselling Tools			
	Temporary Casings	Pipes-		
11.	Tremie Arrangements (not applicable)			
		Concrete Hopper-		
		Hopper Plugs-		
		Tremie Pipe-		
		Holding Clamps-		
		Hoisting Plug-		
	Accessories Like Concrete Placer, Wheel Barrow, Measuring Chain, Bailers, Crow Bars, Dog Clamps With Pins, Steel Measuring Tapes, Mucking Shovel Etc.- 1 Lot			

Note:- Bidder to submit the documents pertaining to ownership of equipment owned by them.

Signature and seal of Bidder

SECTION - VII, SCHEDULE – II, KEY PERSONNEL

1.	Technical Personnel Requirement	No. of persons employed with the bidder	No. of persons to be deployed for the project.
	a) Senior Engineer (Project Manager)- 1 no.		
	b) Site Engineer (Degree holder)- 2 no.		
	c) Billing Engineer (Degree holder)- 1 no.		
	d) Quality control engineer-1 no.		
	e) Electrical engineer – 1 no.		
	f) Safety engineer – 1 no.		
2.	Supervisory Personnel		
	a) Supervisor (Diploma holders) 2		
	b) Foremen		
	c) Technicians		
3.	Other key staff		

Signature and seal of Bidder

SECTION - VII, SCHEDULE – III, Nominated Sub-contractor

(List of works of value more than 10% of the contract value proposed to be sublet)

Sl. No.	Description	Approx. Value Rs.	Name of the Sub-contractor	Place where similar works previously executed.
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Signature and seal of Bidder

SECTION - VII, SCHEDULE – IV

Major similar nature of works successfully completed during the past five years:

Similar nature of work means Civil works of industrial buildings in Dairy/ Food or Beverage/Pharma/ Chemical/ Electronics/Frozen Semen station having clean room laboratory/Bio-Containment Laboratory/Bio-Gas/ETP plant having similar finishes, flooring, drainage including or excluding internal electrification works etc. during the last five years.

Sr. No.	Name of work	Place	Contract Ref.	Name of Client	Value of Work	Time of Completion	Date of Completion
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Note: Documentary evidence for above information to be attached separately in the form of completion certificate, purchase order, TDS certificate , details of payments etc. issued by the client.

Signature and seal of Bidder

SECTION - VII, SCHEDULE - V

Statement of Bonus earned/ Liquidity damages (L.D.) paid in the past five years :

S. N.	Name of Work	Place	Contr- act ref.	Name of Owner	Valu e of Work (Rs. Lakh)	Time of Completion (Months)		Bonus / L.D.
						Contract	Actual	

Signature and seal of Bidder

SECTION - VII, SCHEDULE – VI**Statement of Arbitration & disputes in the last five years.**

S. N.	Name of Work	Place	Contract reference	Name of Client	Value of Work (Rs. Lakh)	Nature of Dispute	Award of Arbitration
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Signature and seal of Bidder

SECTION - VII, SCHEDULE – VII
Financial and business Capability.

1. Audited annual accounts/ Accounts :
audited under section 44AB of Income
Tax Act of past 3 years
2. Where accounts are not required to be :
audited following information shall be
given for last three years duly attested
by a Chartered Accountant/ Manager of
nationalised Bank.
 - a. Share Capital :
 - Free Reserves :
 - Other Reserves :
 - b. Term loans from financial institutions & :
banks
 - c. Current Liabilities :
 - Bank Cash Credits :
 - Others (Including sundry creditors) :
 - d. Provisions :
 - e. Contingent Liabilities including claims :
not acknowledged
 - f. Fixed Assets :
 - Gross :
 - Net :
 - g. Cash and Bank Balances :
 - h. Inventories :
 - i. Debtors & Advances considered good

- More than 6 months :
- Less than 6 months :
- j. Profit before tax :
- k. Loss, if any :
3. Other information
- Name of the Bankers :
- Bank facilities including credit limits :
4. Projected turn over for the next two years
- Year 1 :
- Year 2 :

NOTE:

Wherever required documentary evidence may be attached separately.

Signature and seal of Bidder

**SECTION - VII, SCHEDULE - VIII,
WORKS IN HAND**

[illegible]

On Bidder's Letter Head

SECTION - VII, SCHEDULE - IX, Declaration of GST Invoice Raising Location

To:

Date :

IDMC Limited

124-128, GIDC Estate,

Vithal Udyognagar-388121,

Dist. Anand, Gujarat

Subject: Undertaking for Declaration of GST Invoice Raising Location

We have carefully examined and reviewed the tender documents, including all terms and conditions, specifications, and requirements pertaining to the work _____ at _____. Based on our review and understanding of the tender requirements, we hereby declare and undertake as under:

We, M/s _____, shall raise GST invoices for the execution of the above-mentioned work from the following office/establishment:

Office Name: _____

Complete Address: _____

GST Registration: _____

We confirm that all tax invoices related to the said contract, if awarded to us, shall be issued from the above-mentioned GST registration/location.

We further undertake that the GST registration details furnished above are valid and active as on the date of submission of the bid.

In the event of any change in the invoice-issuing location or GST registration during the contract, we shall immediately inform to principle contractor (IDMC Limited) in writing and comply with all applicable statutory and contractual requirements.

We understand and acknowledge that this declaration forms an integral part of our bid submission. Any false statement, misrepresentation, concealment of facts, or deviation from this undertaking may result in rejection of our bid, cancellation of award, termination of contract, forfeiture of security deposit/performance security, and/or any other action deemed appropriate by the Employer.

We hereby certify that the information furnished above is true, complete, and correct to the best of our knowledge and belief.

For, M/s. _____ -

Authorised Signatory

SECTION- VIII
FORM OF AGREEMENT

SECTION VIII-FORM OF AGREEMENT FOR CIVIL CONSTRUCTION WORK

(To be submitted by successful bidder after award of contract On Non-Judicial Stamp Paper of minimum value of Rs. 300/- or as per stamp act of Local State Government)

THIS AGREEMENT is made and executed at Anand on the _____ day of _____ 20____ between the IDMC Limited, having its registered office at Anand-388121,

_____ (hereunder referred as 'Service Recipient') name of the project authority) which expression shall, unless repugnant to the context or meaning thereof, include the successors and assignees of the pure agent) of the ONE PART and

_____ (herein after referred to as the **Contractor**, which expression, shall, unless repugnant to the ~~context or meaning thereof, include the heirs, successors, assignees, executors and administrators of the Contractor~~) of the OTHER PART.

WHEREAS the service recipient is desirous that certain Works should _____ be _____ executed, viz

_____ and has, by Letter of Acceptance/Work Order Acceptance dated _____, accepted a bid by the Contractor in response to the Pure Agent's bidding document ref no. _____ for carrying out the above job at a cost Rs. _____ (hereinafter referred as contract price), **NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:**

1.0 In this agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2.0 The following documents shall be deemed to form and be read and construed as a part of this agreement, viz

i) This Form of Agreement

- ii) The Letter of Acceptance/Work Order Acceptance
- iii) The said bid and Appendix
- iv) The Schedule of Quantities
- iv) The Technical Specifications
- v) The Drawings
- vii) The Schedule of Supplementary information
- viii) Special Conditions of Contract
- ix) General Conditions of Contract
- x) Schedule of Materials to be issued by Project Authority/Pure Agent
- xi) Form of Bank Guarantees
- xii) Work Order No. _____

3.0 The aforesaid documents shall be taken as complementary and mutually explanatory of one another, but in the case of ambiguities and discrepancies shall take precedence in the order set out above.

4.0 In the consideration of the payment to be made by the Pure Agent to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Pure Agent to execute, complete and maintain the works in conformity in all respects with the provisions of the Contract and bidding document.

5.0 The Pure Agent hereby covenants to pay the Contractor in consideration of the execution, completion and maintenance of the works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this agreement to be executed in accordance with their respective laws the day, month and year first above written.

Signed, sealed & delivered by the
Authorized Signatory for the
Pure Agent

Signed, sealed & delivered
by the Authorized
Signatory for the
Contractor

Authorized Signatory
IDMC Limited

Authorized Signatory
Contractor

(In the capacity of Pure Agent to _____
_____ Project Authority Name

In the presence of:

WITNESS

1) Signature
Name
Address

2. Signature
Name
Address

In the presence of:

WITNESS

1. Signature
Name
Address

2. Signature
Name
Address

SECTION IX**Acceptable Forms of Bank Guarantees****Table of contract**

S. No.	Description	Sequential Page No.
1.0	Performance Security	IX-2 to 4
2.0	Bid Security	IX-5 to 7
3.0	Advance payment	IX-8 to 10
4.0	Retention money	IX-11 to 13
5.0	Solvency Certificate	IX-14

		Section IX		Page - IX - 2	
1.0 Bank Guarantee to secure performance (to be executed on stamp paper of appropriate value - usually Rs. 100/-)					
Currency: INR / EURO / USD		Amount in figures			
Amount in words					
Date of execution				Date up to when in force/ Date of expiry	
Date of Claim/ Demand (up to 45 days beyond the date of expiry)					
Name and address of beneficiary		IDMC Limited, Plot no. 124-128, GIDC Estate, Vithal Udyognagar, District Anand, Gujarat -388121			
Name and address of the vendor and/ or service provider (i.e. purchaser of the bank guarantee from the bank)					
THIS deed of guarantee made on this _____ day of _____, 2023 between _____ (name of the bank issuing this guarantee), herein after called 'the bank', on the first part and _____ (hereinafter referred to as 'vendor and/ or service provider in relation to IDMC Limited' and 'purchaser in relation to the bank' respectively) on the second part. WHEREAS, the purchaser of the bank guarantee has been engaged by IDMC Limited as a vendor and/ or service provider for _____ (e.g. design, manufacture and supply of equipment or installation/ testing/ commissioning/ job work/ preventive maintenance/ break-down maintenance/ consulting or advising services as envisaged in purchase order(s)/ contract(s) _____ dated _____) which is required to be performed in pursuance of the said purchase order(s)/ contract(s); WHEREAS, the vendor and/ or service provider is required to submit this bank guarantee for a sum of Rs. _____ (Rupees _____ only) as security for fulfilling its obligation to secure performance of the _____ (description of goods and/ or services) under the said purchase order(s)/ contract(s).					
IDMC Ltd.		Acceptable Form of Bank Guarantees		BIDDER	

AND WHEREAS, at the request of the vendor and/ or service provider, the bank has agreed to guarantee the refund of the said amount in case the aforesaid goods and/ or services do not perform to the satisfaction of IDMC Limited as per the terms and conditions of the said purchase order(s)/ contract(s).

NOW THIS DEED OF GUARANTEE DOES WITNESSETH AS UNDER:

1. That in consideration of IDMC Limited having awarded the said purchase order(s)/ contract(s), the bank does hereby irrevocably guarantee and indemnify that if the vendor and/ or service provider has supplied and/ or provided _____ (description of goods and/ or services), which is not to the satisfaction of IDMC Limited, as per the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, the Bank shall, without demur, repay and indemnify IDMC Limited within seven (7) working days as the bank may be called upon to pay subject to a ceiling of Rs. _____ (Rupees _____);
2. We, _____ (name of the bank), further agree that this performance guarantee will remain in full force and effect up to _____ by which duration IDMC Limited believes it may be reasonable to certify that the defect liability period has been successfully completed as per the details contained in the purchase order(s)/ contract(s), *supra*.
3. That the bank shall not question any of the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, including but not limited to the amount of consideration agreed upon between IDMC Limited and the vendor and/ or service provider for the purposes of determining its acceptance of liabilities under this bank guarantee and forthwith accept the demand of IDMC Limited to determine this bank guarantee;
4. That at the written request of either IDMC Limited or the vendor and/ or service provider, the bank shall renew this bank guarantee before it's date of expiry.
5. That the Bank agrees that the amount hereby guaranteed shall be immediately due and payable to IDMC on serving the bank with a notice before the date of expiry or date of claim/ demand, whichever is earlier. The claim can be lodged by IDMC limited up to 45 days beyond the date of expiry or extended date of expiry.
6. This Bank Guarantee shall be subject to the law as applicable in India.

7. Notwithstanding anything stated herein before:

- (i) The Bank's liability under this guarantee is restricted to Rs. _____ /-(Rupees _____ only);
- (ii) This guarantee shall remain in force till _____ and;
- (iii) The Bank is liable to pay the guaranteed amount or any part thereof under this bank guarantee only if IDMC Limited serves upon the Bank a written claim/ demand on or before _____ (Date of Claim/ Demand) including 45 days of grace period from date of expiry.

IN WITNESS WHEREOF, the bank has signed on this _____ day of _____, 2023.

Signature of Bank Manager

2.0 Form of Bank Guarantee for Bid security (On the Non-Judicial Stamp paper of Rs. 100 minimum or as per the stamp act of Local State Government).

Bank Guarantee No:

Date:

This deed of guarantee made this _____ day of _____ (two thousand and _____) by (Name and the address of the Bank), hereinafter referred to as the Bank, which shall unless repugnant to the context and the meaning thereof includes its legal representatives, successors and assignees and the IDMC Limited, (hereinafter referred to as the IDMC Limited) which expression shall unless repugnant to the context and meaning thereof include its legal representative, successors or assignees.

Whereas the IDMC Limited has invited bids for the Construction of the proposed _____ by the Invitation to bid no. _____.

AND WHEREAS M/s _____ (Name and the Address of the bidders) who having submitted their bids (hereinafter referred to as the bidder) and have agreed to deposit to the IDMC Limited an amount indicated in the Invitation to bid as per the terms and the conditions of the bidding documents.

AND WHEREAS the IDMC Limited is also willing to accept a Bank guarantee in lieu of payment by demand draft of an amount equivalent to the amount of bid security required to be deposited by the bidder to the IDMC Limited and the guarantee shall be kept valid for 120 days after the day of the opening of the bids.

In consideration of the IDMC Limited having agreed to consider the bid proposals having submitted by the bidder without depositing the amount of bid security and against this Bank guarantee, we (name and the address of the Bank) hereby undertake and guarantee to make payment to the IDMC Limited the amount of bid security or any part thereof not deposited by the bidder to the IDMC Limited at any time (time being the essence of the Contract) when the IDMC Limited asks for the same as per the terms and the conditions of the bidding documents within 120 days from the date of opening of the bids.

The Bank further undertakes not to revoke this guarantee during its currency except with the previous consent of the IDMC Limited in writing

IDMC Ltd.**Acceptable Form of Bank Guarantees****BIDDER**

and the guarantee shall be continuous and irrevocable guarantee up to a sum of Rs. _____ (Rupees _____ only) provided always that any indulgence or forbearance on the part of the IDMC Limited to the said bidder, with or without the consent of the Bank shall not prejudice or restrict remedies against the bank nor shall the same in any event be a ground of defence by the Bank against the IDMC Limited.

In case the IDMC Limited puts forth a demand in writing on the Bank for the payment of the amount in full or in part against this Bank guarantee, the Bank will consider without demur that such demand by itself is a conclusive evidence and proof that the bidder has failed in complying with the terms and conditions stipulated by the IDMC Limited in its bidding document and payment will be made to the without raising any disputes regarding the reasons for such failures on the part of the bidder.

The Bank shall not be discharged or released from this guarantee by any arrangement between the bidder and the IDMC Limited with or without the consent of the Bank or any alterations in the obligations of the parties or by an indulgence, forbearance shown by the IDMC Limited to the bidder.

This guarantee shall be in addition to and without prejudice to any other securities or remedies which the IDMC Limited may have or hereafter possess against the bidder and the IDMC Limited shall be under no obligations to marshal in favour of the Bank any such securities or fund or assets that the IDMC Limited at its absolute discretion may vary, exchange, renew, modify or refuse to complete or enforce or assign any security or instrument.

The Bank agrees that the amount hereby guaranteed shall be due and payable to the IDMC Limited on serving us with a notice before expiry of Bank Guarantee requiring the payment of the amount and such notice shall be deemed to have been served on the Bank either by actual delivery thereof to the Bank or by dispatch thereof to the Bank by registered post at the address of the Bank.

In order to give full effect to the provisions of this guarantee the Bank thereby waives all rights inconsistent with the above provisions and which the Bank might otherwise as a guarantor be entitled to claim and enforce.

The guarantee shall remain in force until _____ and the Bank undertakes to renew the Bank Guarantee provided the request is made by the bidder before the expiry of Bank Guarantee.

Notwithstanding anything stated hereinbefore:(I) our liability under this guarantee is restricted to Rs. _____ (Rupees _____)

_____ only) (ii) The bank guarantee shall remain in force till_____ and (iii) The bank is liable to pay the guarantee amount or any part thereof under this bank guarantee only if the IDMC Limited serves upon the Bank a written claim or demand on or before_____.

Place

Signature

Date:

Bank Seal

Bank Code no.

Note :

- (i) **Bidders should ensure that the seal and code no. of signatory is put by the Bankers, before submission of the Bank guarantees.**
- (ii) **The value of stamp duty should be minimum Rs. 100 or as per latest stamp act of Local State Government, from where the bank guarantee is issued.**

Bank Guarantee to secure advance

(to be executed on stamp paper of appropriate value - usually Rs. 100/-)

Currency: INR / EURO / USD	Amount in figures	
Amount in words		
Date of execution		Date up to when in force/ Date of expiry
Date of Claim/ Demand (up to 45 days beyond the date of expiry)		
Name and address of beneficiary	IDMC Limited, Plot no. 124-128, GIDC Estate, Vithal Udyognagar, District Anand, Gujarat -388121	
Name and address of the vendor and/ or service provider (i.e. purchaser of the bank guarantee from the bank)		

THIS deed of guarantee made on this _____ day of _____, **2023**
between _____ (name of the bank issuing this guarantee),
herein after called 'the bank', on the first part and _____
(hereinafter referred to as 'vendor and/ or service provider in relation to
IDMC Limited' and 'purchaser in relation to the bank' respectively) on the
second part.

WHEREAS, the purchaser of the bank guarantee has been engaged by IDMC
Limited as a vendor and/ or service provider for _____ (e.g.
design, manufacture and supply of equipment or installation/ testing/
commissioning/ job work/ preventive maintenance/ break-down
maintenance/ consulting or advising services as envisaged in purchase
order(s)/ contract(s) _____ dated _____) which is required to be

IDMC Ltd.

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supplied/ provided latest by _____ (dd/mm/yyyy) in pursuance of the said purchase order(s)/ contract(s)

WHEREAS, IDMC Limited is required to pay the vendor and/ or service provider a sum of Rs. _____ (Rupees _____ only) against submission of this bank guarantee towards part value of _____ (description of goods and/ or services) ordered to be manufactured/ supplied/ provided under the said purchase order(s)/ contract(s);

AND WHEREAS, at the request of the vendor and/ or service provider, the bank has agreed to guarantee the refund of the said amount, in case the aforesaid goods and/ or services do not deliver to the satisfaction of IDMC Limited as per the terms and conditions of the said purchase order(s)/ contract(s).

NOW THIS DEED OF GUARANTEE DOES WITNESSETH AS UNDER:

1. That in consideration of IDMC Limited having agreed to pay an advance of Rs. _____ (Rupees _____) to the vendor, the bank does hereby irrevocably guarantee and indemnify that if the vendor and/ or service provider fails to supplies/ provides to IDMC Limited the goods and/ or services as per the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, the Bank shall, without demur, repay and indemnify IDMC Limited within seven (7) working days all such advances paid by IDMC Limited to the vendor and/ or service provider as the bank may be called upon to pay subject to a ceiling of Rs. _____ (Rupees _____);
2. That the guarantee furnished herein shall be realised and discharged the moment the vendor and/ or service provider supplies/ provides the equipment to the satisfaction of IDMC Limited, as per the details, terms and conditions contained in the said purchase order(s)/ contract(s);
3. That the bank shall not question any of the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, including but not limited to the amount of consideration agreed upon between IDMC Limited and the vendor and/ or service provider for the purposes of determining its acceptance of liabilities under this bank guarantee and forthwith accept the demand of IDMC Limited to determine this bank guarantee;
4. That at the written request of either IDMC Limited or the vendor and/ or service provider, the bank shall renew this bank guarantee before it's date of expiry.

5. That the Bank agrees that the amount hereby guaranteed shall be immediately due and payable to IDMC on serving the bank with a notice before the date of expiry or date of claim/ demand, whichever is earlier. The claim can be lodged by IDMC limited up to 45 days beyond the date of expiry or extended date of expiry.
6. This Bank Guarantee shall be subject to the law as applicable in India.
7. Notwithstanding anything stated herein before:
- a. The Bank's liability under this guarantee is restricted to Rs. _____/-(Rupees _____ only);
 - b. This guarantee shall remain in force till _____ and;
 - c. The Bank is liable to pay the guaranteed amount or any part thereof under this bank guarantee only if IDMC Limited serves upon the Bank a written claim/ demand on or before _____ (Date of Claim/ Demand) including 45 days of grace period from date of expiry.

IN WITNESS WHEREOF, the bank has signed on this _____ day of _____, 2024.

Signature of Bank Manager

4.0 Form of Bank Guarantee for Retention Money (on Non-judicial Stamp Paper of Rs. 100 minimum or as per stamp act of local state Govt.)

Bank Guarantee no.

Date:

This deed of guarantee made this _____ day of _____ (two thousand _____) by _____ (Name and the address of the Bank), hereinafter referred to as "the Bank", which express where the context and the meaning so require, include its legal representatives, successors and assignees of the bank and IDMC Limited, (hereinafter referred to as the IDMC Limited) which expression shall unless repugnant to the context and the meaning thereof include its legal representative, successors and assignees.

WHEREAS the IDMC Limited has placed its Contract order bearing no. _____ dated _____ on (name and address of the party) hereinafter called the Contractor, for the construction of _____

AND WHEREAS the IDMC Limited has agreed to pay to the Contractor the retention money i.e. **5% of the value of the Contract** on submission of a Bank guarantee of equal amount, which will be kept valid up to _____.

In consideration of the IDMC Limited having agreed to pay to the Contractor Rs. _____ (Rupees _____ only) being the retention money we (the Bank), hereby undertake and guarantee to make repayment to the IDMC Limited of the said amount without any demur or any part thereof which does not become payable to the Contractor by the IDMC Limited in accordance with and subject to the terms and conditions of the said Contract. The Bank further undertakes not to revoke this guarantee during its currency except with the previous consent of the IDMC Limited in writing and this guarantee shall be a continuous and irrevocable guarantee up to a sum of Rs. _____ (Rupees _____ only).

The Bank shall not be discharged or released from this guarantee by any arrangement between the Contractor and the IDMC Limited with or without the consent of the Bank or any alterations in the obligations of the parties or by an indulgence, forbearance shown by the IDMC Limited to the Contractor and the same shall not prejudice or restrict remedies against the Bank nor shall the same in any event be a ground of defence by the Bank against the IDMC Limited. We (name of bank) do hereby undertake to pay an amount

IDMC Ltd.

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equal to Rs. _____ being the amount due and payable under this guarantee without any demur, merely on a demand from the IDMC Limited stating that the amount claimed is due to the IDMC Limited. In case, the IDMC Limited puts-forth a demand in writing on the bank for the payment of amount in full or in the part against this bank guarantee, the bank shall consider that such demand by itself is conclusive evidence and proof that the contractor has failed in compliance with the terms and conditions stipulated by IDMC Limited in the contract and payment shall be made to IDMC Limited without raising any dispute regarding the reasons for any such lapse/ failure on the part of the contractor.

This guarantee shall be in addition to and without prejudice to any other securities or remedies which the IDMC Limited may have or hereinafter possess in respect of the works executed or intended to be executed and the IDMC Limited shall be under no obligation to marshal in favour of the bank any such securities or funds or assets that the IDMC Limited may be entitled to receive or have a claim upon and the IDMC Limited at its absolute discretion may vary, exchange, renew, modify or refuse to complete to enforce or assign any security or instrument.

The Bank agrees that the amount hereby guaranteed shall be due and payable to the IDMC Limited on IDMC Limited's serving us with a notice before expiry of Bank Guarantee requiring the payment of the amount and such notice shall be deemed to have been served on the Bank either by actual delivery thereof to the Bank or by dispatch thereof to the Bank by registered post at the address of the said Bank.

We, _____, undertake to renew the bank guarantee provided the request for renewal is made by the contractor before the expiry of bank guarantee.

In order to give full effect to the provisions of this guarantee the Bank hereby waives all rights inconsistent with the above provisions and which the Bank might otherwise as guarantor be entitled to claim and enforce.

Notwithstanding anything stated herein before : (I) our liability under this guarantee is restricted to Rs. _____ (Rupees _____ only), (ii) The guarantee shall remain in force till _____ and (iii) The Bank is liable to pay the guarantee amount or any part thereof under the bank guarantee only if the IDMC Limited serves upon the Bank a written claim or demand on or before_____.

Place

Signature

IDMC Ltd.**Acceptable Form of Bank Guarantees****BIDDER**

Date

Bank Seal

Bank Code no.

Note:

- 1: Contractor should ensure that the seal and code no. of signatory is put by the Bankers, before submission of the Bank guarantees.**
- 2: The value of stamp duty should be minimum Rs. 100 or as per latest stamp act of Local State Government from where the Bank Guarantee is issued.**

5.0 Format of Solvency Certificate (On the letter head of issuing bank)

Ref:

Date:

**FORMAT OF SOLVENCY CERTIFICATE FROM THE NATIONALISED /
SCHEDULED BANK / FOREIGN BANKS OPERATING IN INDIA**

This is to certify that to the best of our knowledge & information M/s. / Shri _____ having the address as _____
per bank records as _____,

a customer of our bank is respectable and can be rated as good for any
engagement upto a limit of Rs. _____ (Rupees _____).

The certificate is issued without any guarantee and responsibility on behalf
of the bank or any of its Officers.

Date _____

(Signature)

(Name & designation of the officer with
address of Bank & its branch code)

(Bank's Official Rubber Stamp)

SECTION – X

SCHEDULE OF QUANTITIES FOR INTERNAL ELECTRIFICATION & EXTRA LOW VOLTAGE WORKS

BOQ INTERNAL ELECTRIFICATION & STREET LIGHT + ELV WORK AT NHEC PUNE					
Item No.	Item Description	Unit	Qty.	Unit Rate (INR)	Amount (INR)
	WIRING (PART-I, TRADE CODE -81)			Excl. GST	Excl. GST
	SHED WIRIG				
	Supply & Lying of armoured XLPE / PVC insulated cables of following sizes on cable trays, supported on steel structures, in ready made trenches and / or to pull-through pipes. The rates shall include Installation, testing and commissioning of a G.I. saddles / clamps, saddle bars, etc, including transportation from owner's site store to the place of installation, unpacking and return the cable drums to site stores with all labour and materials as per the standard specifications, drawings and directions of 'Engineer-in-charge.				
1.00	4c x 2.5 sq mm FRLSH, Armoured, copper for shed area light and fans.(For Flood light and Highbay fittings)	Mtr	1600.00		
2.00	4c x 4 sq mm FRLSH, Armoured, copper (for Three phase metal plug and socket.)	Mtr	1200.00		
3.00	4c x 16 sq.mm AL XLPE (FOR DBS)	Mtr	2000.00		
4.00	3.5c x 185 sqmm AL XLPE Sub Main Panel Incommer (For Main Lighting Panel)	Mtr	120.00		
5.00	Supply and Making & Termination of cables of different sizes and connection of the Leads including supply of weatherproof single / compression type cable glands and tinned copper lugs, including cutting / stripping of cable insulation, Installation, testing and commissioning of cable glands, crimping of the cable cores, marking with wire number ferrules, etc., including all labour and materials, as per standard specifications and directions of 'Engineer-in-charge.				
5A	4c x 2.5 sq mm FRLSH, Armoured, copper for shed area light and fans.	No	300.00		
5B	4c x 4 sq mm FRLSH, Armoured, copper for Three phase metal plug and socket.	No	60.00		
5C	4c x 16 sq.mm AL XLPE (FOR DBS)	No	60.00		
5D	3.5c x 185 sqmm AL XLPE Sub Main Panel Incommer	No	2.00		
	OFFICE WIRING				
6.00	Wiring with ISI approved and marked, FRLS insulated 1100 V grade wires with electrolytic stranded copper conductor confirming to IE 322-123, IS:694. Fire insurance approved (FIA) wires in 25 mm dia RIGID PVC MMS conduits and weather proof junction BOXES, ISI MODULER TYPE switches, sockets, boxes, plate covers to be used. Concealed type wiring ceiling height 6.5 m. (Average distance considered up to 15M)				

	Light point wiring with 1.5 Sq.mm FRLS insulated copper conductor 1100 V grade wires for phase, N & E in 25 mm dia RIGID PVC conduit system including providing and fixing one no. 6 Amp single pole ISI modular switch in 16 SWG MS box with plate cover complete in all respects for one light point controlled by one switch 6.5 m ceiling height. (Average distance considered 10M)	No	150.00		
7.00	--do-- but as erection loop light point from primary point without control switch as per item no. 10 (Average distance considered 10M)	No	220.00		
8.00	Ceiling fan point wiring with 1.5 Sq.mm FRLS insulated copper conductor 1100 V grade wires for phase neutral & earth in 25 mm dia RIGID PVC conduit system including provided and fixing one no 6 Amp single pole ISI modular switch in MS box with plate cover with space in MS box 5 step electronic modular for fan regulator (HUMFREE type) and MS box for fan suspension complete in all respect. 6.5 m ceiling height. (Average distance considered 15M)	No	166.00		
9.00	Exhaust / wall / bracket fan point wiring same as item 8.00 without provision for regulator in switch box and MS box with hook for fan suspension with 3 pin 6A modular socket. (Average distance considered 15M)	No	85.00		
10.00	6 Amp power point wiring with 1.5 Sq.mm FRLS insulated copper conductor 1100 V grade wires and 1.5 Sq.mm green FRLS insulated copper earth wire in 25 mm dia. RIGID PVC conduit system including providing and fixing one no. 6 Amp 3 pin 250 V socket outlet and 6 Amp 250 V ISI modular type switch in MS box with cover PLATE complete in all respect with circuit from lighting SB at convenient location. (Average distance considered 15M)	No	2.00		
11.00	Same as above but power point is in the light switch board itself.	No	120.00		
12.00	16 Amp power point wiring with 4 sq mm FRLS insulated copper conductor. 650 V grade wires and 2.5 sq mm green PVC insulated copper earth wire in 25 mm dia. RIGID PVC conduit system including providing and fixing one no. 16 Amp universal 6 pin. 250 V ISI MODULER TYPE switch in MS box with PLATE cover including circuit from DB. (15 mtr Avg.)	No	60.00		
13.00	--do-- but 16 A loop point from primary 15 A point. (15 mtr Avg.)	No	30.00		
14.00	SITC of 32 amp 5 pin, three phase, IP65, Polycarbonate plugs and sockets with top end cover and one no. 32Amp 4P, MCB in enclosure, Make:- Legrand. (With MCB)	No	12.00		
15.00	SITC of 32 amp 5 pin, three phase, IP65, Polycarbonate plugs and sockets with top end cover and one no., Make:- Legrand. (for 3-phase outlet) (Without MCB)	No	12.00		

16.00	20 Amp 1-phase, 3-pin metal clad plug and socket with top end cover with MCB (at the exhaust fan side)	No	5.00		
17.00	Providing computer power point board having 16A SP modular switch- 1 No.and 6A modular socket -3 Nos. with 2x2.5 sq.mm &1 x 1.5 sq.mm circuit as 81.23 from DB or from existing computer point (Max.3 computer on one circuit) (15 mtr Avg.)	No	50.00		
18.00	Circuit wiring with FRLS insulated 1100 V grade copper conductor wires for power and copper conductor for Earthing in RIGID PVC conduit system complete with wire and conduit size as given below.				
	2x2.5 Sq mm for power and 1 x 1.5 sq mm for Earthing in 25 mm dia conduit. Up to 2 circuits in one conduit.	RM	5000.00		
19.00	-do- but with 2 x4 Sq mm for power and 1 x 2.5 sq mm for Earthing in 25 mm dia conduit.	RM	600.00		
20.00	-Do- but with 2x1.5 sq mm for power and 1x1.5 sq mm for Earthing in 25 mm dia conduit.	RM	1000.00		
21.00	Providing & laying spare concealed or surface 25 mm dia 1.9 mm thick rigid PVC FIA conduits for power wiring complete with accessories and draw out boxes and their covers.	RM	200.00		
22.00	Providing & laying spare concealed or surface 40 mm dia 1.9 mm thick rigid PVC FIA conduits for power wiring complete with accessories and draw out boxes and their covers.	RM	100.00		
23.00	Providing & fixing of uPVC trunking of size 50 x 50 mm having white high impact uPVC, having self-extinguishing and corrosion-resistant properties, trunking features a double-locking clip-on lid, offering a high degree of resistance to water penetration and mechanical shock.	RM	200.00		
24.00	Supply, Installation testing & commissioning of lighting fixture suitable for fluorescent / LED lamps directly on ceiling/beams/walls/ trusses/ false ceiling panel etc. complete with all accessories without any extra clamps or additional fixing device including connecting with 1.5 sq mm copper conductor wires P,N,E from light point .				
	(a) 40W LED tube light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos.	60.00		
	(b) 20 W LED tube light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos.	220.00		
	(c) 15/20W LED Surface down light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos.	10.00		
	(d) 42W LED 2 feet x 2 feet down false ceiling light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos.	46.00		
	(e)Supply and installation of 15/20W LED down false ceiling light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Ea	20.00		
	(f) Supply and installation of 6W LED down false ceiling/Surface light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Ea	10.00		

25.00	Supply, Installation testing and commissioning of ceiling / WALL / Bracket/ Exhaust fan with all standard accessories and connecting with 1.5 sq mm copper conductor FRLS wires.P,N & E.				
	(a) 1200 MM ceiling fan (MAKE:- BAJAJ,CG,HAVELS) BLDC fans	No	166.00		
	(b) 250 MM plastic body exhaust fan (MAKE:- BAJAJ,CG,HAVELS)	No	22.00		
	(C) Supply and installation of 400MM DOMESTIC WALL FAN	Ea	10.00		
	(d) 600 MM air circulator fan, heavy duty (MAKE:- ALMONARD)	No	30.00		
26.00	SITC of 3-phase, 415V, RPM-1400, Air delivery - 6200 m³/h ,heavy duty exhaust fan, 450 mm size (MAKE:- CG,HAVELS)	No	12.00		
27.00	Supply and installation of standard hanging rod of ceiling fan to be replaced with new GI class 'B' type up to 2000 mm long.	No	166.00		
28.00	Supply, Installation ,Testing & commissioning of bulk head fitting out door type with glass cover, wire guard, rubber gasket with 10 W LED / CFL lamp, installation on wall and making connections to existing point with 3.0 core wire.				
	(a) 10W LED bulck head light fitting (MAKE- C&S,HAVELLS,BAJAJ,CG)	No	12.00		
29.00	SITC of 1-phase, 230V, metal body exhaust fan, 380 mm size (MAKE:- CG,HAVELS)	No	1.00		
30.00	Making opening in wall including finishing in all respects for exhaust fan up to 450 mm size.	No	12.00		
31.00	SITC of 600mm, metal body pedestal fan, 600 mm size (MAKE:- CG,HAVELS)	No	12.00		
32.00	SITC of 600mm, metal body wall fan, 600 mm size (MAKE:- CG,HAVELS)	No	32.00		
33.00	Supply and installation of 3-phase, 415V, RPM-700, Air delivery -7100 m³/h ,heavy duty exhaust fan, 600 mm size (MAKE:- Almonard make only).	No	6.00		
34.00	Supply and installation of 1A to 1.6A 3 Pole MPCB	No	15.00		
35.00	Supply, Installation and commissioning of industrial / FLP well glass lighting fitting / LED Flood light with cable glands, making connections with 1.5 sq.mm phase neutral earth wires and supply of suitable clamp.				
	(a) 100 W LED high bay/mid bay luminair (MAKE- C&S,HAVELLS,BAJAJ,CG)	No	235.00		
36.00	Supply and installation of 60 W LED Flood light luminair (MAKE-C&S,HAVELLS,BAJAJ,CG)	Ea	50.00		
37.00	Supplying and installation of M.S.louvers shutter for exhaust Fan of size up to 600 mm.	No	12.00		
38.00	Supplying and installation of M.S.louvers shutter for exhaust Fan of size up to 380 mm.	No	1.00		
39.00	Supply & installation of electrical distribution board flush type indoor enclosure, hinged front cover, dust & vermin proof, fabricated out of 14 G mild steel sheets complete with switchgear given below and interconnection,mouonted on angle iron frame grouted on wall.				
	Do- TPN DB 6 way per phase with for office.				

	Incoming	No	18.00		
	63 Amp 4 pole, MCB -1 No.				
	Outgoing				
	25A, 2 pole 30 mA sensitivity, RCCB- 3 No. 6A-32A SPN MCB - 12 Nos. Light				
40.00	Do- TPN DB 8 way per phase with for office.	No	4.00		
	Incoming				
	40 Amp 4 pole 30 mA sensitivity RCCB -1 No.				
	Outgoing				
	25A, 2 pole 30 mA sensitivity, RCCB- 3 No. 6A-32A SPN MCB - 18 Nos. Light				
41.00	-do- but 12 way SPN DB	No	5.00		
	Incoming				
	25 A DP RCCB 30 mA sensitivity				
	1 No.				
	Outgoing				
	10 A SP MCB - 6 Nos. 20 A SP MCB - 4 Nos.				
	Do- TPN DB 6 way per phase with for office.	No	5.00		
	Incoming				
	63 Amp 4 pole 30 mA sensitivity RCCB -1 No.				
	Outgoing				
42.00	16 A to 32A SP MCB - 18 Nos.				
	Main panel for lighting				
	Supply & installation, testing & commissioning of power control panel cubical type made of 16 G sheet steel painted by seven tank method and powder coated, pedestal mounting type 350 mm deep having cable alley and switch gears duly mounted with suitable wire connections D- rail mounted connectors as under.				
	Incoming Feeder				
	400 A 65 KA TPN MCCB WITH 0-200mA ELR & SHUNT TRIP: 1 SET	No	1.00		
	Front operated, 400A copper bus bar TPN & E				
	Indicating lamps LED type RYB- 2 Sets				
	Digital Multifunction meter and control mcb and CTs 1 set				
	Outgoing Feeder				
	160 A 35 KA 4P MCCB 415 V - 2 Nos.				
	125 A 35 KA 4P MCCB 415 V - 4 Nos.				
	100 A 35 KA 4P MCCB 415 V - 2 Nos.				
	63 A 25 KA FP MCB - 20 NOS.				
43.00	Supply, installation & commissioning of MCB type electrical distribution board : flush type, indoor enclosure, hinged front cover, dust & vermin proof, fabricated out of 16 G mild steel sheets, along with powder coating painting, and complete with switchgear as given below with interconnection. All MCB & RCCB / ELCB shall be of minimum 10 KA rupturing capacity. RCCB / ELCB shall have sensitivity of 300 MA. - 8 way V- TPN Double door, IP 43, Incomer, : 100 Amp, MCCB, 3 ph +N, Out Going: 4 pole MCB of 63 Amp , 16KA, 5 nos. + 40Amp, 1 nos	No	4.00		

44.00	Supply & laying of 6 sq.mm. Cu FRLS flex. Wire Green Colour in existing pipe / in ground / on cable tray (work include termination at both ends)	RM	500.00		
45.00	Providing & fixing 6 module MCB enclosure, M.S. powder coated with 2 nos. 1. to 1.6A 3 Pole MPCB.	Nos.	3.00		
46.00	Providing & fixing 9 module MCB enclosure, M.S. powder coated with 3 nos. 1. to 1.6A 3 Pole MPCB.	Nos.	2.00		
47.00	Providing & fixing 12 module MCB enclosure, M.S. powder coated with 4 nos. 1. to 1.6A 3 Pole MPCB.	Nos.	2.00		
48.00	Providing & fixing 4 module MCB enclosure, M.S. powder coated with 4 nos. 6A-32A single Pole MCB, "C" curve.	Nos.	30.00		
49.00	Providing & fixing of FRP sintex make street light pole junction box of size 250mmx200mmx100mm, IP 65 with 4 nos. 6A single Pole MCB, "C" curve and bakelite connector.	Nos.	6.00		
50.00	Installation testing & commissioning of lighting fixture suitable for LED 4 feet batten directly on ceiling/beams/walls/ trusses/ false ceiling panel etc. complete with all accessories without any extra clamps or additional fixing device including connecting with 1.5 sq mm copper conductor wires P,N,E from light point .	Nos.	50.00		
51.00	10 KVA online UPS, three phase I/P & Single phase O/P, with 30 Min. battery back-up,(For Plant Building)	Nos.	1.00		
52.00	6 KVA online UPS, three phase I/P & Single phase O/P, with 30 Min. battery back-up,(for Canteen and Admin Building)	Nos.	1.00		
53.00	Removal of the existing MS/PVC/Trunking,conduits, point wirings, circuit wiring and any size wires from Wall and Ceiling and shifting to the place as directed by the site in charge. (Height up to 10meter)	Job.	1.00		
54.00	Removal of the existing MS Junction box/Distribution board/Power boxes/Motor starters of any size from the wall and shifting to the place as directed by the site in charge.	Job.	1.00		
55.00	Removal of the existing all types of lights and fans fixtures from the wall and ceiling and shifting to the place as directed by the site in charge.	Job.	1.00		
	TOTAL AMOUNT PART A (INTERNAL IE WORK)				
	STREET LIGHT SECTION				

56.00	Supply and Installation of 7.0 mtr 70/135 AF Octagonal Pole manufactured from 3mm thick HDGI with 225 x 225 x 12 base plate, complete with M20 x 600mm foundation bolt set, including all necessary hardware, erection, alingment, grouting, testing and commossioning for complte installation as per approved drawings and specification. The work also involves fixing of single arm /double/three arm bracket as required with supply and fixing of GI cable entry & exit pipes having 1.5 mtr. long B class and 38/40 mm dia. with clamps if necessary. Supply & installation spiral earthing with filling of chemical powder and painting of street light pole as directed are also included in the scope of supply.(Cost of foundation also includes in the item rate with all respect as per drawing)	Nos	50.00		
57.00	Supply of single arm bracket with arm made of 50mm dia. (OD) x 1.5 mtr. long G.I. pipe (Medium class) for mounting of LED street light fittings on pole. The bracket to be fixed with 4 nos bolts (Cap dia. to suit the top dia. of the pole) with supply of street light mounting SMC/ FRP/GI switch box of 300mmX300mm x 95 mm size & having 4 way connector for power, 2 A SP MCB for each light fitting, water proof of I.P 54 protected with all necessary clamp and bolt. (For single arm pole)	Nos	40.00		
58.00	Supply of double arm bracket with arm made of 50mm dia. (OD) x 1.5 mtr. long G.I. pipe (Medium class) for mounting of LED street light fittings on pole. The bracket to be fixed with 4 nos bolts (Cap dia. to suit the top dia. of the pole) with supply of street light mounting SMC/ FRP/GI switch box of 300mmX300mm x 95 mm size & having 4 way connector for power, 2 A SP MCB for each light fitting (2 nos), water proof of I.P 54 protected with all necessary clamp and bolt. (For double arm pole)	Nos	10.00		
59.00	Supply and installation of 40 mm dia GI pipe B class 1.5 mtr long duly welded on 20 cm dia 3 mm thick base plate on wall for mounting or on grouting of lighting with grouted bolts with tube duly painted as directed.	Nos	15.00		
60.00	Supply and Fixing, testing & commissioning bracket light fixture including wiring from pole junction box to fixture with 3 x 2.5 Sq mm copper conductor PVC insulated flexible cable on street light pole. (A) 45W LED IP65 street light. (Considere average wire from juction to fixture15 mtr) (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos	15.00		
61.00	Supply and Fixing, testing & commissioning street light fixture including wiring from pole junction box to fixture with 3x2.5 Sq mm copper conductor PVC insulated flexible cable on street light pole. (Considere average wire from juction to fixture 7 mtr) (A) 72W LED IP65 street light (MAKE-C&S,HAVELLS,BAJAJ,CG)	Nos	70.00		

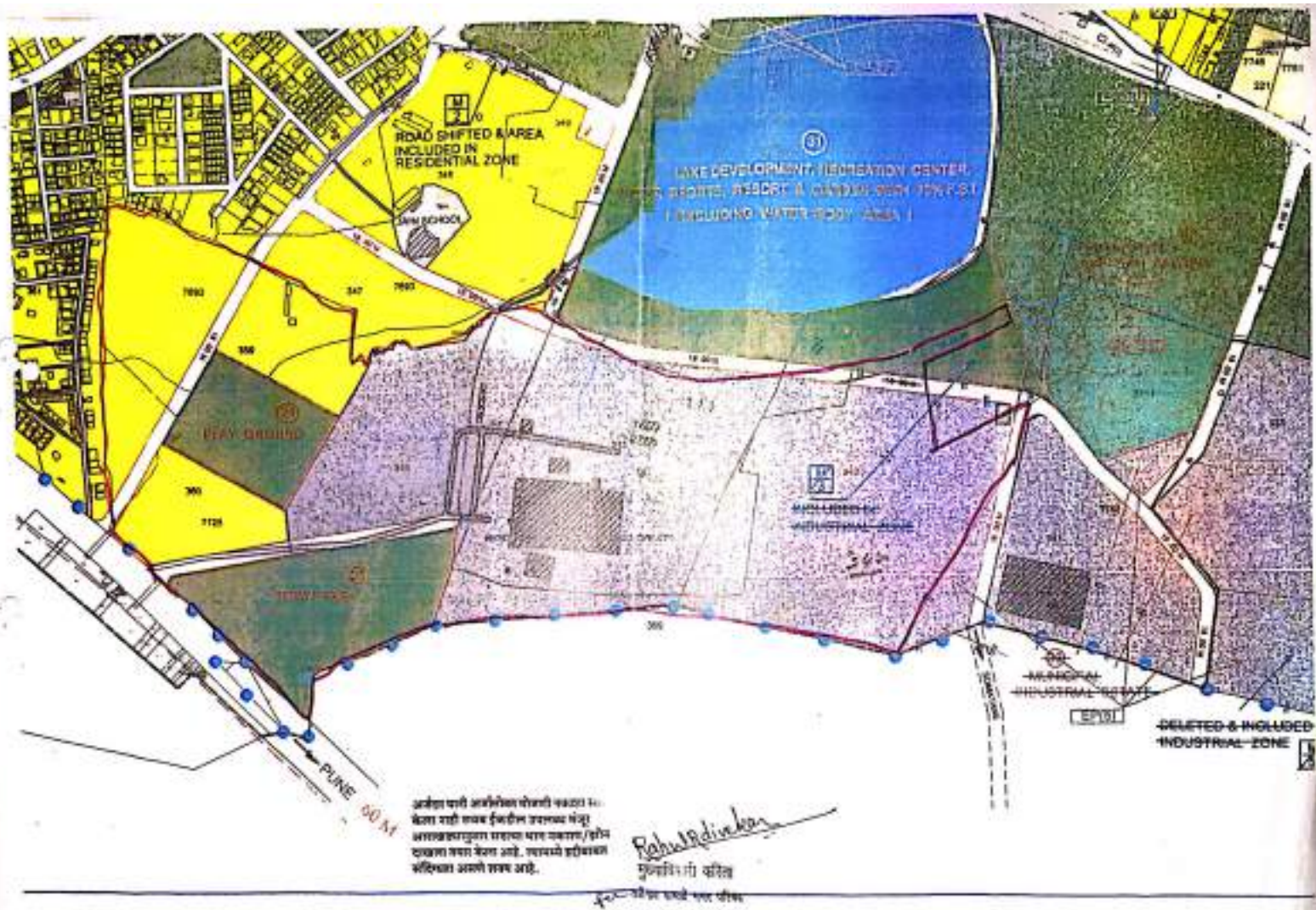
62.00	Providing & laying Copper conductor, PVC insulated external and internal sheath armored cable, grade 1100 volts ion underground system, including connection at both ends.				
	(a) - do -as above. 83.17 but 4 x 4 sq mm copper conductor	RMT	2200.00		
63.00	Supply and installation of double compression cable gland of plated brass and suitable cable lugs as under				
	(a) Armored cables up to 10.00 sq.mm	Nos	110.00		
64.00	Excavation of cable trench in ground 900 mm deep and mm 400 mm wide for cable laying providing and laying sand cushion, 150mm dia HALF ROUND RCC HUME PIPE covering for cable, filling back the trench and leveling by ramming the clay, after laying cable.	RMT	1500.00		
65.00	Supply & installation, testing & commissioning of street light control panel cubical type made of 16 G sheet steel painted by seven tank method and powder coated, pedestal mounting type Incoming Feeder --40 A 4P 10 KA MCB - 1 No. Outgoing Feeder--40 A 3P Pole power contactor operative at 380 - 460 V, 50 H with NV coil 230 V, and indication lamps 3 Nos., 20 A 10 KA FP MCB - 4 NOS , Adjustable daily dial timer (GIC-FM-1) for Auto switch on and by pass toggle switch. - 1 set.	Nos	2.00		
66.00	Providing, testing and completion of Chemical earth pit with 3M long Copper Bonded Earth Rod 10' x 5/8" made from high tensile low carbon steel and each rod should molecularly bonding 99.9% + 30Kg RESLO Earthing with Earth pit and LPI pure electrolytic copper to the low carbon steel core in accordance with national and international standards such as BS6651, BS7430 and UL467. LPI's Resistance Lowering Compound (RESLO-30Kg) shall possess excellent electrical conductivity equivalent to Model: LPI 3Mtr CBR+ 30 Kg GRESLO. The unit rate for this item shall include excavation, back filling, construction of chamber, with cover, etc.	Nos	4.00		
67.00	Providing & laying earth continuity conductor in ground / on surface of building with necessary clamps as required of size for 6 sq.mm. Cu FRLS flex. Wire Green Colour in existing pipe / in ground / on cable tray (work include termination at both ends)	RM	70.00		
	TOTAL AMOUNT PART B (STREET LIGHT WORK)				-
	PASSIVE NETWORK REQUIREMENTS				
	Fiber requirements for Common Network (below works included fiber testing and termination works)				
1	Providing/Laying of 12 core outdoor armoured 9/125 Singlemode - UniTube. Make :-Techlite/ VTL-Birla.	Meter	3000.00		

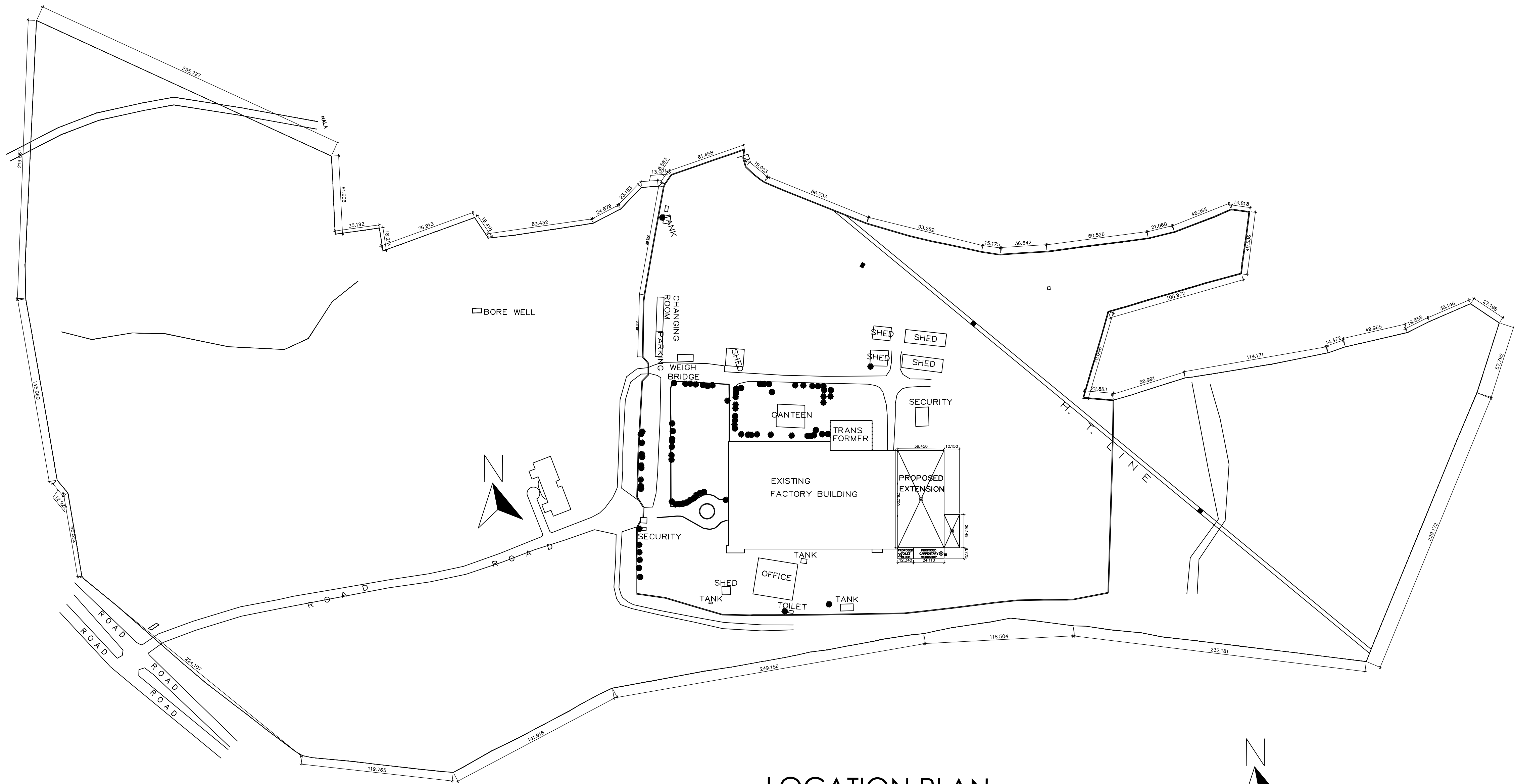
2	Supply/Installation/Testing including splicing of the 24 Port LIU Fully Loaded, Make :- Techlite/ VTL-Birla	Nos.	21.00		
3	Supply/Installation/Testing including splicing of the 6 port LIU Fully Loaded, Make :- Techlite/ VTL-Birla	Nos.	6.00		
4	Supply/Installation/Testing of the SC to LC Patch Cord 1 Mtr Single Mode, Duplex,	Nos.	42.00		
5	Supply/Installation/Testing of the LC To LC 1 Mtr, Single Mode, Duplex, Make :- Techlite/ VTL-Birla	Nos.	42.00		
6	/Providing/Providing/Laying of the HDPE Duct 32 mm	Mtr	2,000		
	Passive - Copper requirements - Data - 200 Nodes + WiFi- 10 Total Nodes = 32 Nodes (Cat 6A Solutions)				
7	Providing/Laying of Cat 6 UTP Cable, roll of 305m/ Box Make :-D-Link/ Molex	Mtr	6100.00		
8	SITC of 24 Port Straight Patch Panel , 1U - Unloaded, suitable for Cat- 6 Make :-D-Link/ Molex	Nos.	8.00		
9	SITC of Cat 6A FTP Information Outlet -Rack End Make :-D-Link/ Molex	Nos.	192.00		
10	SITC of Cat 6A FTP Information Outlet -User End Make :-D-Link/ Molex	Nos.	192.00		
11	SITC of CAT 6/CAT6A IDC Type RJ45 Shielded Field Termination Plug Make :-D-Link/ Molex	Nos.	20.00		
12	SITC of Cat 6A FTP Patch Cord, 1mtr -@ Rack end Make :-D-Link/ Molex	Nos.	200.00		
13	SITC of Cat 6A FTP Patch cord, 3 Mtr @ User end Make :-D-Link/ Molex	Nos.	200.00		
14	SITC of synergy Wall Plate and back box of 1/2/4 Port - 86mmx86mm- White. Make :-D-Link/ Molex	Nos.	200.00		
	Passive Copper requirements -, CCTV- 100 Nos.				
15	Providing/Laying of Cat 6 UTP Cable, roll of 305m/ Box Make :-D-Link/ Molex	Mtr	3050.00		
16	SITC of Cat6 UTP Information Outlet - Rack End Make :-D-Link/ Molex	Nos.	100.00		
17	SITC of Cat6 UTP Information Outlet - User End Make :-D-Link/ Molex	Nos.	100.00		
18	SITC of Cat6 SL series Patch panels - 24 port Unloaded Make :-D-Link/ Molex	Nos.	21.00		
19	SITC of RJ45 Termination Plug Make :-D-Link/ Molex	Nos.	100.00		
20	SITC of Cat 6 UTP Patch Cord - 1 Mts. Make :-D-Link/ Molex	Nos.	100.00		
21	SITC of Cat 6 UTP Patch Cord - 2 Mts. Make :-D-Link/ Molex	Nos.	100.00		

	Telephone Raiser Backbone Cable Requirements				
22	Providing/Laying of 100 Pair Telephone, jelly filled armoured Raiser Cable Make :-Finolex	Meter	800		
23	Providing/Laying of 20 Pair Telephone, jelly filled armoured Raiser Cable	Meter	400.00		
24	SITC of 100 Port Voice Backbone Panel	Nos.	1.00		
25	SITC of 50 Port Voice Backbone Panel	Nos.	1.00		
26	SITC of 20 Pair MDF with Krone Modules	Nos.	2.00		
27	Providing/Laying of Jumpering Wire	Coil	1.00		
28	1KVA Inverter with Upto 12 Year Life Integrated 1280Wh Lithium-Ion Battery (Make Genus)	Nos.	2		
29	Providing/Laying of 5- pair, unarmoured. 0.6 mm dia cu. telephone flexible wire	Coil	10.00		
30	SITC of RJ11 telephone socket (Make:- Anchor Roma	Nos.	160.00		
31	SITC of Cable termination for telephone wire from junction to field	Nos.	42.00		
32	IPBX Make Matrix 1. SITC of Matrix make Digital EPABX System model Eternity PENX 6SAC configured for 2 CO/Trunk lines, 2 Digital and 20 extensions, expendable up to 48 ports (upto 100 users each) 2. NX DBM VOCODER 64 (Vocoder card preloaded with 4 VOIP channels and 5 IP users). 3. License Sarvam Vocoder Ch4, channels for internal	Nos.	4.00		
	Rack Accessories				
33	SITC of 24U Wall mount Rack with 500MM Depth with standard accessories of 5/15A Horizontal PDU -1No. Hardware Mounting kit-1 Pkt, Rack Mounted fan etc. (For Sec.cabin) Make :-Netrack/D-Link		2.00		
34	SITC of 16U Wall mount Rack with 500MM Depth with standard accessories of 5/15A Horizontal PDU -1No. Hardware Mounting kit-1 Pkt, Rack Mounted fan etc. (For Sec.cabin) Make :-Netrack/D-Link	Nos.	21.00		
35	SITC of of PVC 1U Front Cable Manager	Nos.	48.00		
	Local materials				
36	Providing/Laying of HDPE Pipe - 25mm outer Dia .	Meter	250.00		
37	Providing/Laying of G.I Pipe - 25mm Dia with accessories Make :-Zindal	Meter	20.00		
38	Providing/Laying of PVC Cable Duct 100 MM X 50 MM Make :-M.K India	Meter	20.00		
39	SITC of Customized metal Back boxes 4"X4"	Nos.	12.00		
40	Providing/Laying of 25mm dia PVC Conduits with necessary accessories	Meter	6000.00		

41	Providing/Laying of 32mm dia PVC Conduits with necessary accessories	Meter	200.00		
42	Supply and Providing/Laying of PVC flexible Conduit -	Meter	50.00		
43	Providing/Laying of GI flexible Conduit -One Inch	Meter	50.00		
44	Installation of OFC Marker	Nos.	30.00		
45	Installation of Out door Junction box for swSITCh	Nos.	4.00		
	CAMERA AND RELATED REQUIREMENTS				
1	SITC of 4MP Vandal Dome/Bullet 30mtrs Outputs 4MP (2560 × 1440)@25/30 fps, max. supports 4MP (2688 × 1520) @ 20 fps WDR, 3D NR, HLC, BLC,applicable to various monitoring scenes, the rates also includes out door type Junction box for bullet camera. (Indoor Camera)	Nos.	40.00		
3	SITC of 4MP Bullet 80mtrs WDR, 3D NR, HLC, BLC, digital watermarking, applicable to various monitoring scenes Intrusion, tripwire. the rates also includes out door type Junction box for bullet camera.(Out-door Camera)	Nos.	40.00		
4	Network PTZ camera 16x zoom	Nos.	8.00		
5	SITC of NVR system along with Surveillance Harddisk 64 channels	Nos.	2.00		
6	Varifocal Camera 4 MP	Nos.	10.00		
7	SITC of IP66 rated Outdoor Camera Enclosure	Nos.	100.00		
8	SITC of third Party Camera Mounting Bracket	Nos.	100.00		
9	Western Digital Ultrastar DC HC580 24TB Internal Hard Drive (WUH722424ALE6L4)	Nos.	2.00		
	ACTIVE REQUIREMENTS				
1	SITC of 24 Port PoE + 4 Port SFP L2 Giga Smart Manged Network SwSITCh Make:-Netgear-GS728TP/MS324TXUP/ (2.5GB+POE)	Nos.	21.00		
2	SITC & configuration of 24 Port L2 Giga Smart Manged Network SwSITCh Make-Netgear:-GS724T/MS324TXUP (2.5GB+POE)	Nos.	10.00		
3	SITC & configuration of 16 Port L3 SFP 10G 12 Port Backward Compatible 1G, 4 Port Dedicated 10G Network SwSITCh,Make:- Netgear:- XSM4216F/MS324TXUP (2.5GB+POE)	Nos.	3.00		
4	SITC & configuration of 8 Port L2 Industrial Giga 8 Port POE + 2 Port SFP SwSITCh L2 Make:-eK-IGS10L28G2S-LB(P)\MS324TXUP (2.5GB+POE)	Nos.	4.00		
5	SITC & configuration of 10 Port L2 Industrial Giga 8 Port POE + 2 Port SFP SwSITCh L2 Make:-eK-IGS10L28G2S-LB(P)\MS324TXUP (2.5GB+POE)	Nos.	4.00		
6	SITC & configuration of SFP Module (10GB 2.5GB SF	Nos.	42.00		

	INSTRUMENTS REQUIREMENTS				
1	SITC of Pop Up box including, 1 no. HDMI, 1 No USB-C(Type), 1 no USB, 2 nos, LAN, 2 nos 6/16A Power socket, 1 no-VGA.	Nos.	4.00		
	Wi-Fi instruments				
1	SITC of Sophos AP6 420 Wi-Fi6 Upto 2.4Gbps Data Rate Indoor Wireless Access Point - 2x2:2 Streams, 3x1GE Ports, 1xUSB Port, 802.3af/at PoE Support (For Wifi)	Nos.	10.00		
2	SITC of Wi-Fi Controller Make: Grandstream (For Wifi6)	Nos.	1.00		
	Total Basic Amount				-
	GST 18%				
	Total Amount				





LOCATION PLAN
(SCALE-1:100)

STAMP OF APPROVAL

AREA STATEMENT

SQ.M.

1)	TOTAL AREA OF LAND (AREA OF PLOT RESERVED FOR)	4,23,000.00
2)	STAFF HOUSING	36,376.00
3)	AREA UNDER T.P. ROADS	70,827.00
4)	AREA UNDR NALLA	15,897.00
6)	AREA UNDER GREEN BELT	19011.00
7)	TOTAL DEDUCTIONS	1,42,111.00
8)	PERMISSIBLE BUILT UP PLINTH AREA 50%	1,40,444.00
9)	TOTAL PLINTH AREA	12026.17

F.S.I.STATEMENT

SQ.M.

BUILDING	PLOT AREA	PERMISSIBLE AREA (50%)	GROUND FLOOR	FIRST FLOOR	TOTAL AREA
OFFICE BUILDING			362.51	362.51	362.51
FACTORY BUILDING	4,23,000	1,40,444.0	362.51	----	362.51
CANTEEN BUILDING			362.51		
TOTAL	725.02		725.02	725.02	

LEGEND

PLOT BOUNDARY	BLACK LINE	DRAINAGE LINE	RED DOTTED
PROPOSED WORK	RED LINE	WATER LINE	BLACK LINE
EXIST WORK	YELLOW LINE	RD. WIDENING LINE	BLACK HATCH

DESCRIPTION OF PROPOSAL AND PROPERTY

PROPOSED SITE PLAN FOR NATIONAL HEAVY
ENGG. CO. OP. LTD. AT TALEGAON DHABHDE
TAL.MAVAL, DIST. PUNE.

NAME AND SIGN. OF THE OWNER OR PAH.

NATIONAL HEAVY ENGG. CO. OP. LTD.

TALEGAON DHABHADE

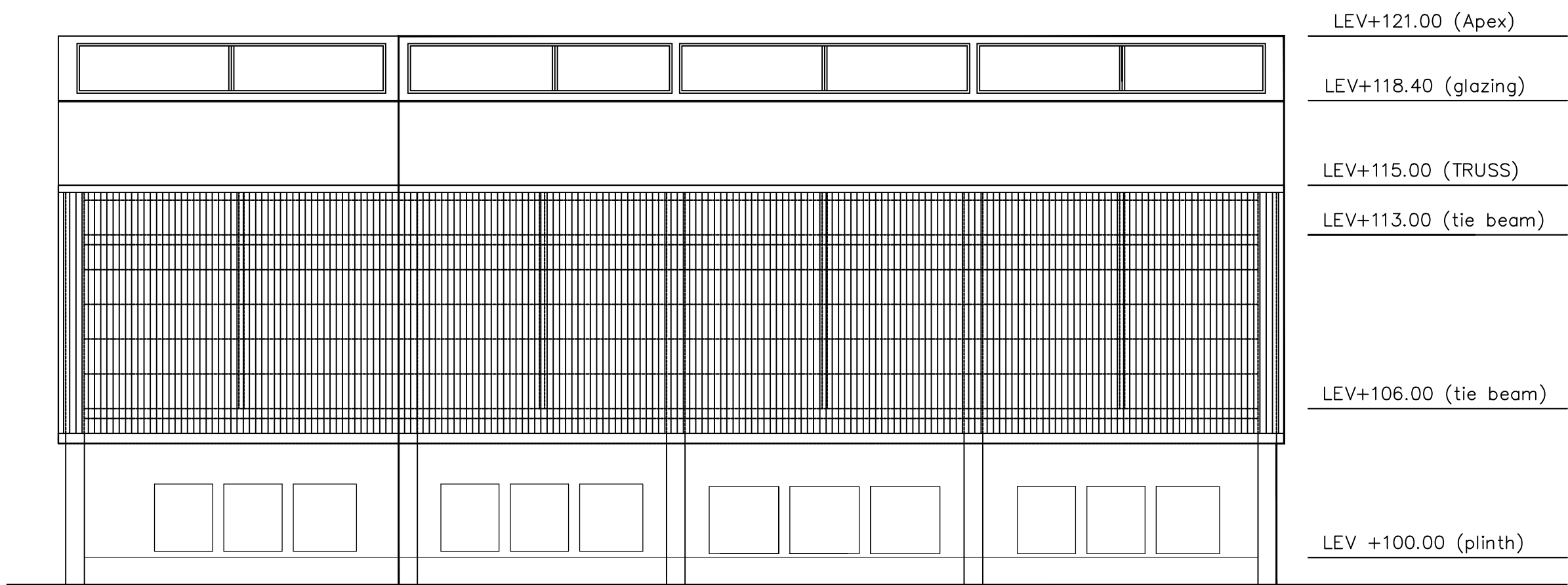
SIGNATURE OF OWNER OR PAH.

NORTH	DATE	SCALE	DRN.BY	1/1
AS SHOWN	17/10/2012	1 : 100	KIRAN	

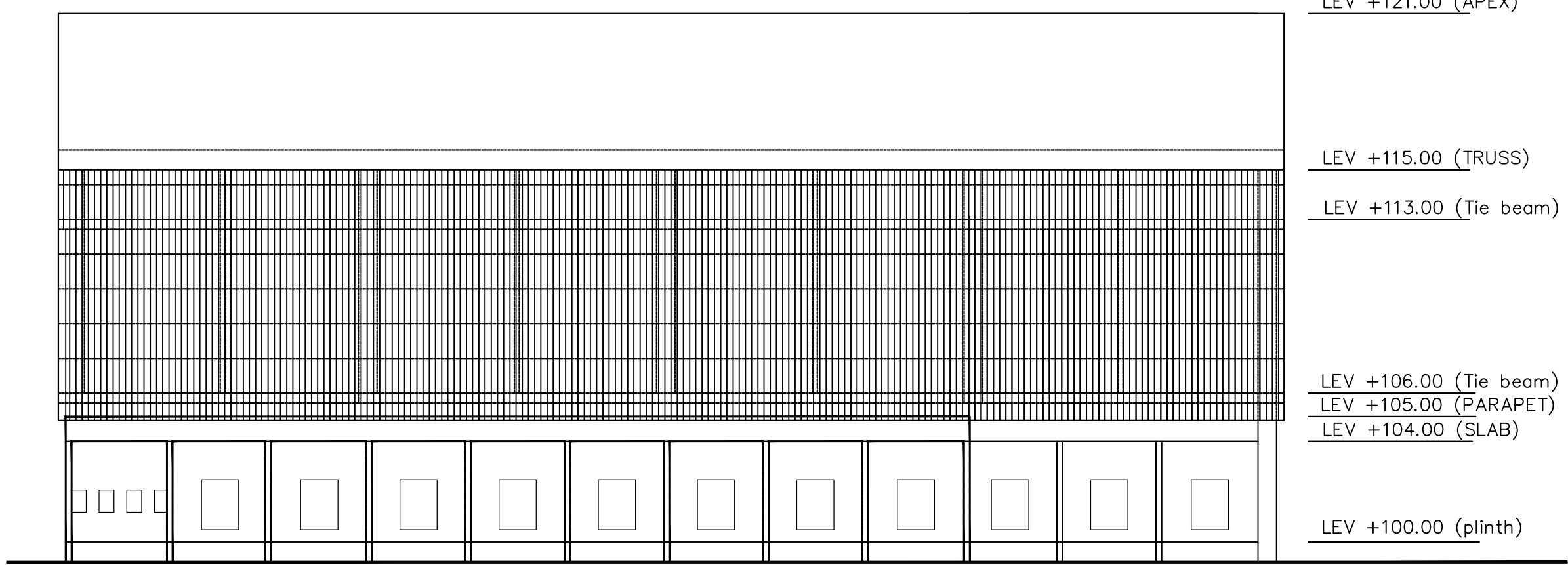
 ATUL HAMPE & ASSOCIATES

ARCHITECTURAL CONSULTANT
PLOT NO 98,SHREE GANESH COLONY
NEAR JIJAMATA CHOWK
TALEGAON DABHADE, PUNE
PH.NO.9970079009
EMAIL- atulhampe@rediffmail.com
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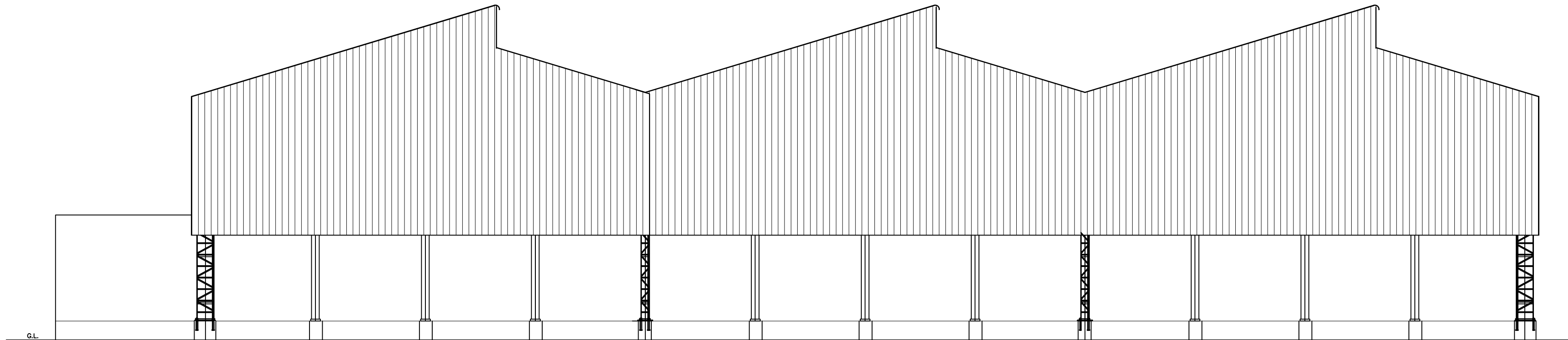
STAMPS & SIGH



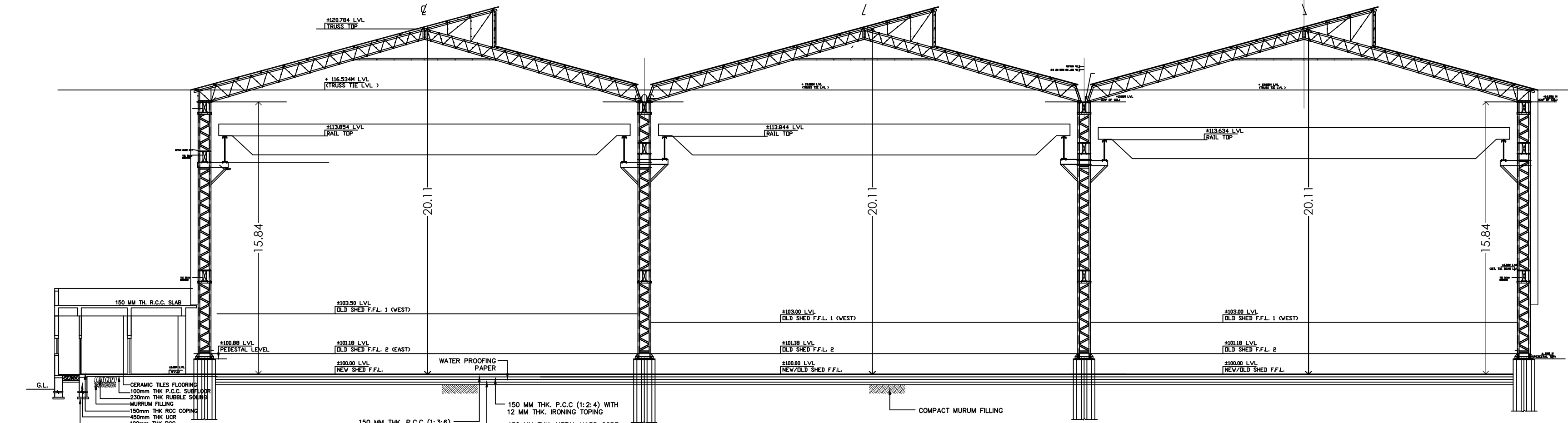
NORTH SIDE ELEVATION
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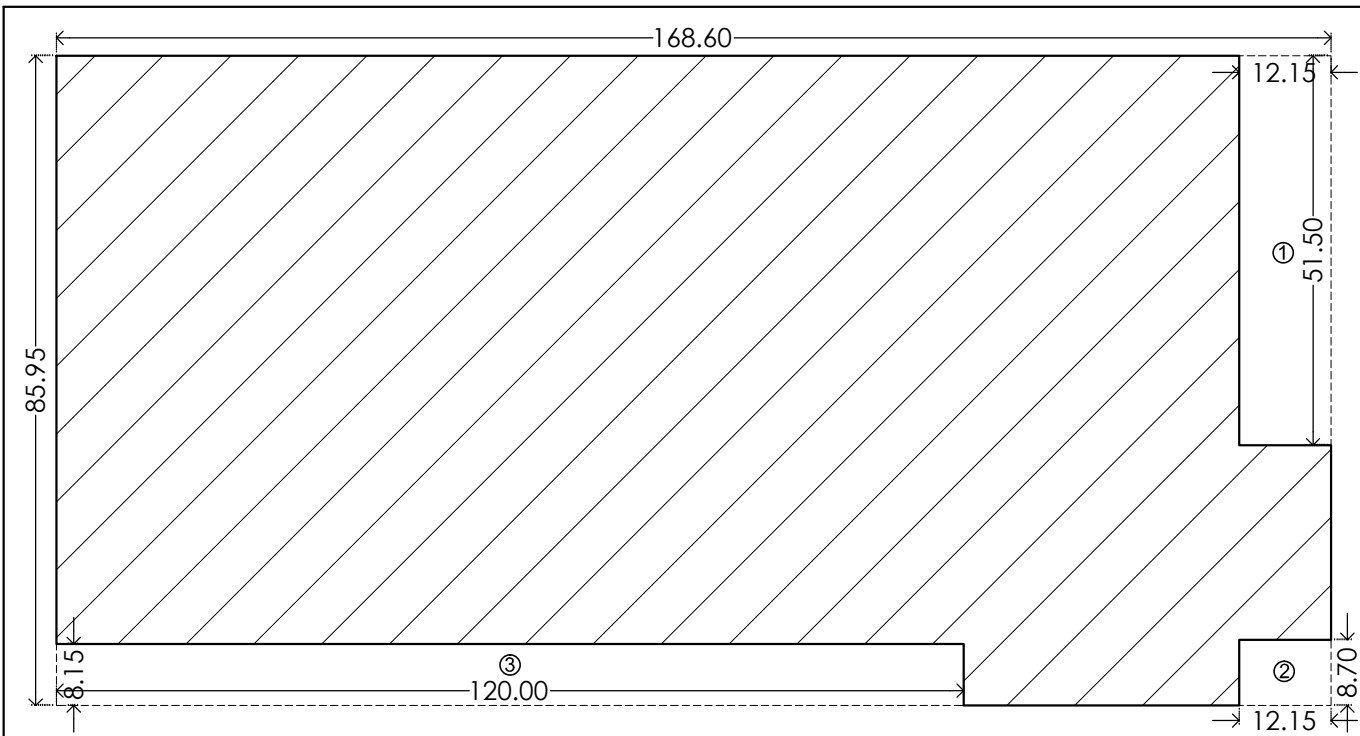
SOUTH SIDE ELEVATION
SCALE: 1:100



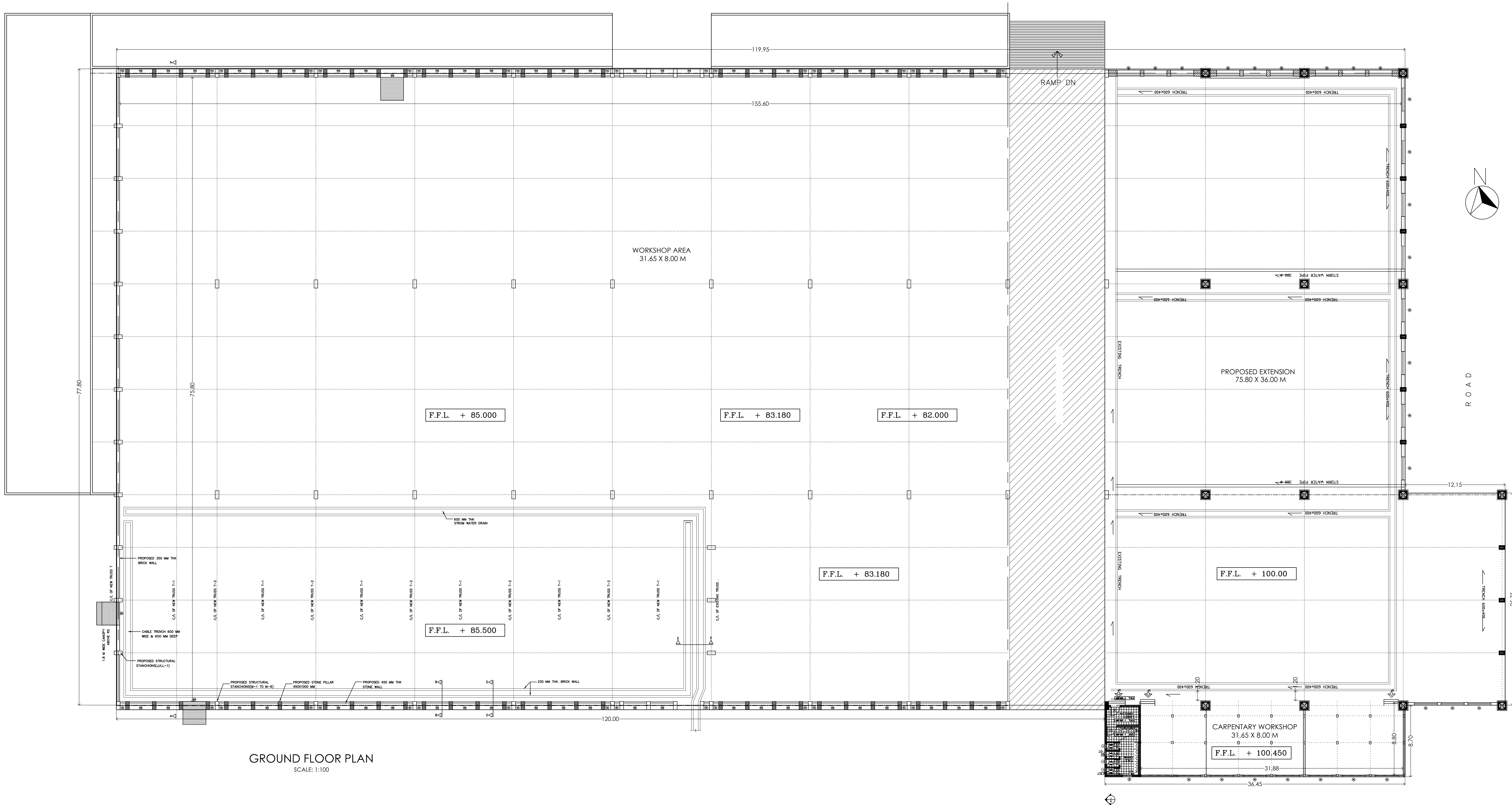
SECTION AT BB
SCALE: 1:100



SECTION AT AA
SCALE: 1:100



AREA CALCULATION FOR GROUND FLOOR PLAN			
AREA OF BLOCK = 168.60 X 85.95 = 14491.17 SQ.M.			
DEDUCTIONS 1) 12.15 X 81.50 = 625.73			
2) 12.15 X 8.70 = 105.70			
3) 120.00 X 8.15 = 978.00			
TOTAL DEDUCTIONS = 1709.43 SQ.M			
AREA OF BLOCK - TOTAL DEDUCTIONS			
14491.17 - 85.95 = 364.65 SQ.M.			
NET B/UP OF GROUND FLOOR = 364.65 SQ.M.			



GROUND FLOOR PLAN
SCALE: 1:100

STAMP OF APPROVAL

SHED

PROFORMA - A

AREA STATEMENT		SQ.M.
1)	AREA AS PER CTS EXTRACT (AREA OF FRAGULATION METHOD)	175.00
3)	ALLOWABLE B/UP AREA 50%	87.50
4)	GROUND FLOOR PLAN	32.81
5)	FIRST FLOOR PLAN	83.27
6)	SECOND FLOOR PLAN	50.20
7)	TOTAL BUILT UP AREA	166.28
8)	FSI CONSUMED	0.95

F.S.I.STATEMENT			SQ.M.		
FLOORS	FLOOR AREA	BALC.AREA		EXC.	TOTAL AREA
		PERM.	PROP.		
GROUND	32.81	-NIL-	-NIL-	----	32.81
FIRST	83.27	14.13	13.73	----	83.27
SECOND	50.20	11.05	5.77	----	50.20
EX.BALC.					
TOTAL	166.28	25.18	19.50	----	166.28

BALCONY AREA STATEMENT

i) PERMISSIBLE BALCONY PERIMETER	25.18
ii) PROPOSED BALCONY PERIMETER	19.50

TENEMENT STATEMENTS

PERMISSIBLE TENEMENT 300.00 X 250/HECT	=
PROPOSED TENEMENT	=
TOTAL TENEMENT	=

DOOR & WINDOWS SCHEDULED

DOOR	SIZE	WINDOW	SIZE
D1	0.90X2.10	W1	1.20X1.20
D2	0.90X2.10	W2	1.20X0.90
D3	0.75X2.10	W3	1.20X1.20
D4-1	1.80X2.10	V1	0.60X0.90
D5-1	2.70X2.40		

LEGEND

PLOT BOUNDARY	BLACK LINE	DRAINAGE LINE	RED DOTTED
PROPOSED WORK	RED LINE	WATER LINE	BLACK LINE
EXIST WORK	YELLOW LINE	RD. WIDENING LINE	BLACK HATCH

DESCRIPTION OF PROPOSAL AND PROPERTY

PROPOSED FIRST FLOOR EXTENSION OF CANTINEEN
BUILDING AT TALEGAON DHABHDE
TALMAVAL, DIST. PUNE.

NAME AND SIGN. OF THE OWNER OR PAH.

NATIONAL HEAVY ENGG. CO. OP. LTD.

TALEGAON DHABHDE

SIGNATURE OF OWNER OR PAH.

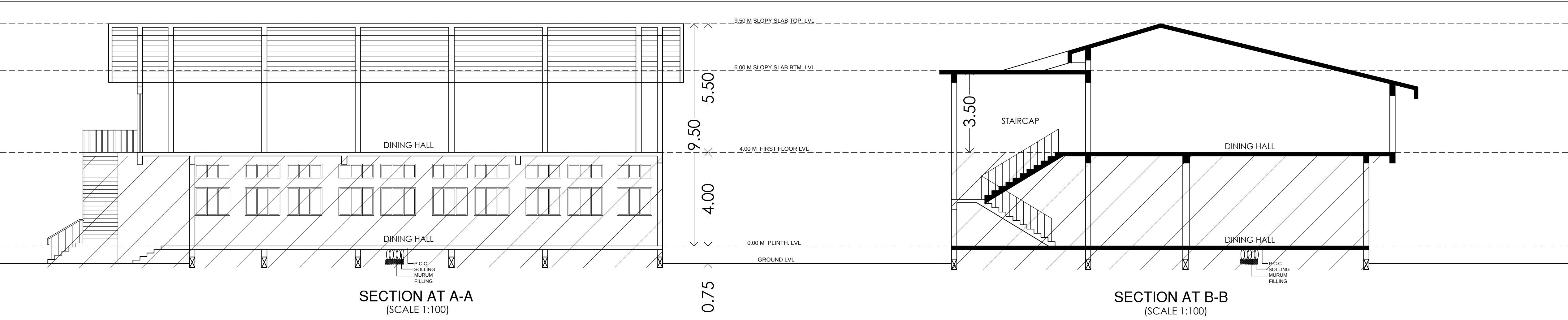
NORTH DATE SCALE DRN.BY

AS SHOWN 17/10/2012 1 : 100 KIRAN

ATUL HAMPE & ASSOCIATES

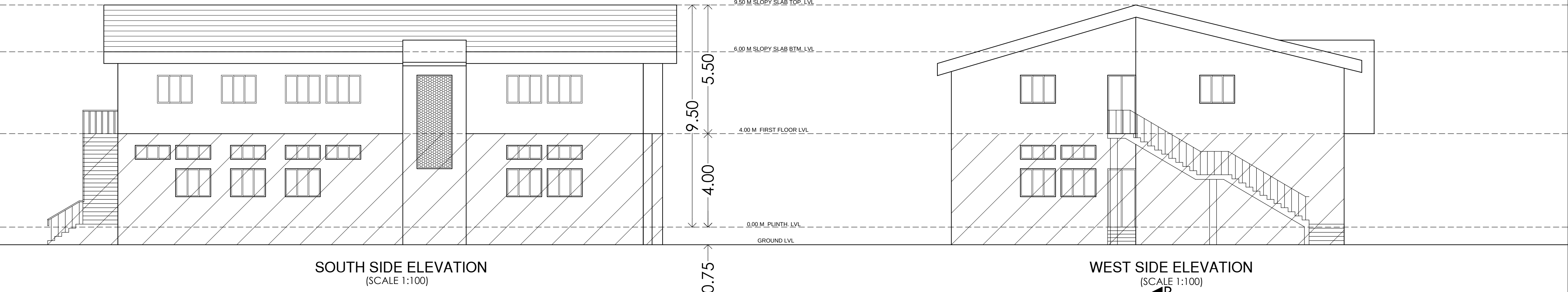
ARCHITECTURAL CONSULTANT
PLOT NO 98,SHREE GANESH COLONY
NEAR JUAMATA CHOWK
TALEGAON DASHADE, PUNE
PH.NO:9970079009
EMAIL:- atulhampe@rediffmail.com
atul_19_hampe@yahoo.com

STAMPS & SIGN



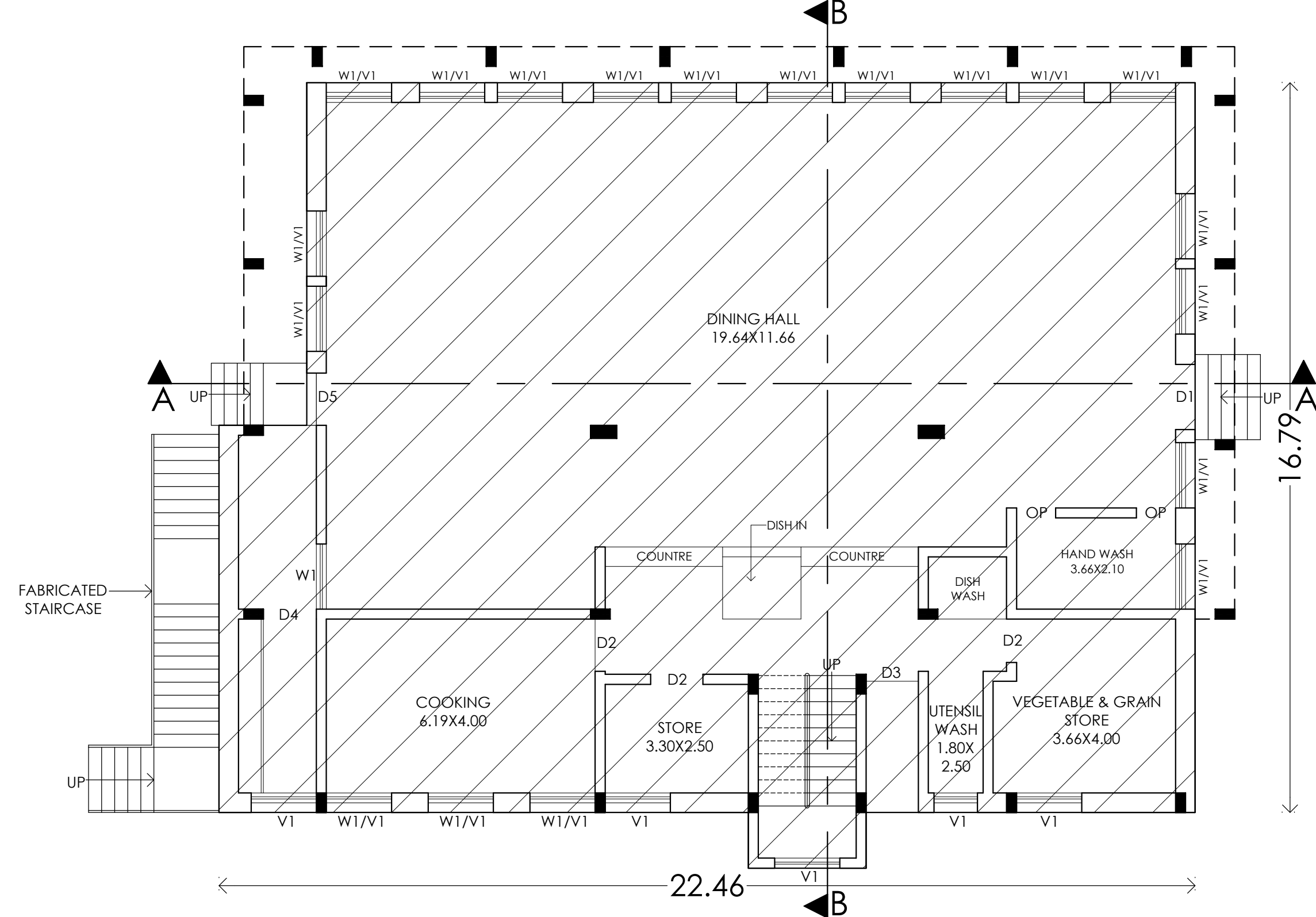
SECTION AT A-A
(SCALE 1:100)

SECTION AT B-B
(SCALE 1:100)

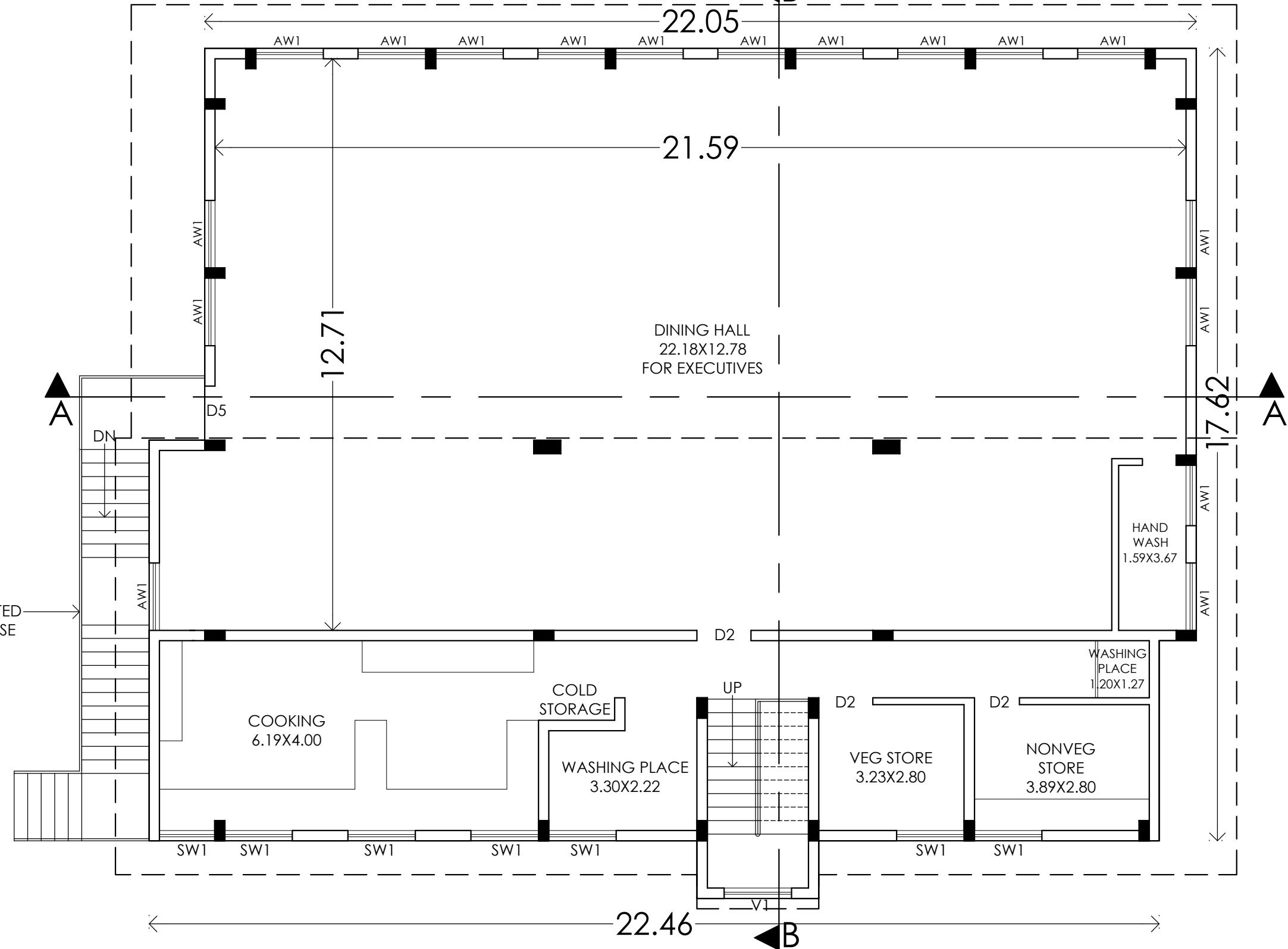


SOUTH SIDE ELEVATION
(SCALE 1:100)

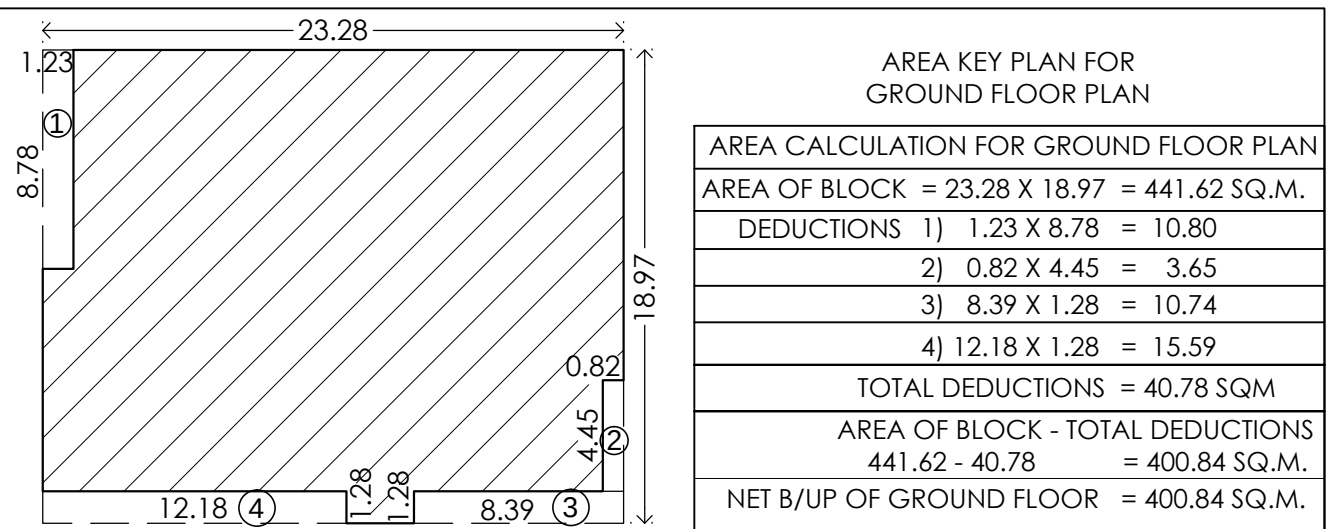
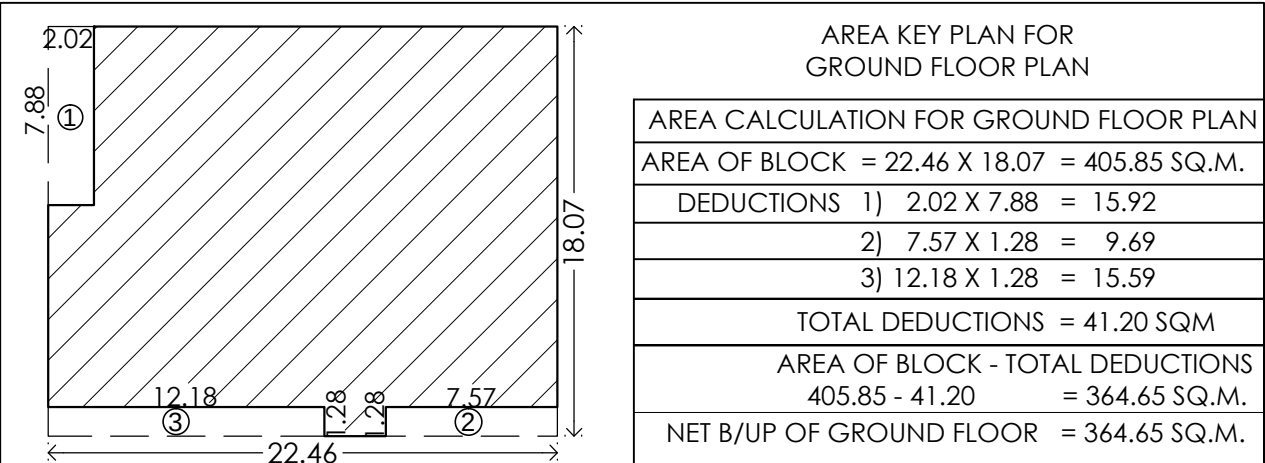
WEST SIDE ELEVATION
(SCALE 1:100)



GROUND FLOOR PLAN
(SCALE 1:100)



FIRST FLOOR PLAN
(SCALE 1:100)



STAMP OF APPROVAL					
BUILDING - CANTEN					
AREA STATEMENT				SQ.M.	
1)	TOTAL AREA OF LAND (AREA OF PLOT RESERVED FOR)			4,23,000.00	
2)	STAFF HOUSING			36,376.00	
3)	AREA UNDER T.P. ROADS			70,827.00	
4)	AREA UNDR NALLA			15,897.00	
6)	AREA UNDER GREEN BELT			19011.00	
7)	TOTAL DEDUCTIONS			1,42,111.00	
8)	PERMISSIBLE BUILT UP PLINTH AREA 50%			1,40,444.00	
9)	TOTAL PLINTH AREA			12026.17	
F.S.I.STATEMENT				SQ.M.	
FLOORS	FLOOR AREA	BALC.AREA			TOTAL AREA
		PERM.	PROP.	EXC.	
GROUND	362.51	-NIL-	-NIL-	----	362.51
FIRST	362.51	-NIL-	-NIL-	----	362.51
TOTAL	725.02	-NIL-	-NIL-	----	725.02
DOOR & WINDOWS SCHEDULED					
DOOR	SIZE	WINDOW	SIZE		
D1	1.40X2.50	AW1	1.50X1.20		
D2	1.20X2.50	AW2	1.50X0.90		
D3	0.75X2.10	SW1	1.20X1.20		
ALD-1	1.40X2.50	W1	1.50X1.20		
		V1	1.50X0.60		
LEGEND					
PLOT BOUNDARY-----BLACK LINE		DRAINAGE LINE ----- RED DOTTED			
PROPOSED WORK-----RED LINE		WATER LINE -----BLACK LINE			
EXIST WORK -----YELLOW LINE		RD. WIDENING LINE--BLACK HATCH			
CONTENTS OF SHEET					
LOCATION PLAN , SITE PLAN , ELEVATION, SECTION , AREA CALCULATIONS					
DESCRIPTION OF PROPOSAL AND PROPERTY					
PROPOSED RESIDENSIAL BUILDING ON P. NO.81 AT DNYANESHWAR NAGAR TALEGAON DHABHDE TAL.MAVAL, DIST. PUNE.					
NAME AND SIGN. OF THE OWNER OR PAH.					
MR.ARIHANT BUILDCON					
DNYANESHWAR NAGAR					
SIGNATURE OF OWNER OR PAH.					
NORTH	DATE	SCALE	DRN.BY	1/4	
AS SHOWN	17/10/2012	1 : 100	KIRAN		
		ATUL HAMPE & ASSOCIATES			
ARCHITECTURAL CONSULTANT PLOT NO 9B,SHREE GANESH COLONY NEAR JIJAMATA CHOWK TALEGAON DABHADE, PUNE PH.NO.9970079009 EMAIL- atulhampe@rediffmail.com atul_19_hampe@yahoo.com			STAMPS & SIGH		

