

# **INDIAN RAILWAY WELFARE ORGANISATION**

## **TENDER DOCUMENTS**

### **FOR**

CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS IN STILT+3 AND STILT+4 CONFIGURATION COMPRISING 54 UNITS TYPE II, 12 UNITS TYPE-IIIA, 48 UNITS TYPE III-B, 32 UNITS TYPE IVA AND 15 UNITS OF TYPE IVB AND MEDITATION HALLS INCLUDING OF ALL CIVIL, INTERNAL AND EXTERNAL WATER SUPPLY, SANITARY INSTALLATION, DRAINAGE, SEWERAGE, INTERNAL AND EXTERNAL ELECTRICAL WORKS, ROADS, PAVEMENTS, UNDER-GROUND WATER TANKS, PUMP HOUSE, SUB-STATION, BOUNDARY WALL, GATE & GUARD ROOM ETC. AT AMBATTUR VILLAGE, NEAR T.I.CYCLES FACTORY, CHENNAI-600053 (TAMILNADU).

(VOLUME I)

(Tender Conditions-Final)

Document I.D. NO. IRWO /Tender/Ch-IIB/2016-1

Name of the Tenderer to whom issued

Date of issue:

Issued by:

Cost Rs.10,000 or Rs. 10,500 (if required by post)

---

**Head Office: Railway Offices Complex, Shivaji Bridge (Behnind Shanker Market), New Delhi-110001**

**Phone: 011-23413627, Fax – 011-23411173**

**Email: support@irwo.net, Website: www.irwo.net**

## **Volume-I**

### **INDEX**

<b>SECTION</b>	<b>CONTENTS</b>	<b>PAGE NO.</b>
<b>1.</b>	<b>NOTICE INVITING TENDERS</b>	<b>1-3</b>
<b>2.</b>	<b>INSTRCTIONS TO TENDERERS</b>	<b>4-9</b>
<b>3.</b>	<b>DRAFT FORWARDING LETTER</b>	<b>10-12</b>
<b>4.</b>	<b>DRAFT OF AGREEMENT</b>	<b>13-15</b>
<b>5.</b>	<b>SPECIAL CONDITIONS OF CONTRACT</b>	<b>16-23</b>
<b>6.</b>	<b>SALIENT TECHNICAL SPECIFICATIONS FOR CIVIL WORKS</b>	<b>24-41</b>
<b>7.</b>	<b>LIST OF APPROVED MANUFACTURERS FOR CIVIL WORKS ITEMS</b>	<b>42-45</b>
<b>8.</b>	<b>TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS</b>	<b>46</b>
<b>9.</b>	<b>LIST OF APPROVED MANUFACTURERS FOR ELECTRICAL/MECHANICAL ITEMS FOR INTERNAL ELECTRICAL WORKS</b>	<b>47-50</b>
<b>10.</b>	<b>Appendix A,B,C,D,E,F</b>	<b>51-56</b>
<b>11.</b>	<b>DRAWINGS/PLANS – 14 Nos.</b>	<b>57</b>

**NOTE – General Conditions of Contract – April 2015 and amendment issued  
on 13.10.2015**

**(Not attached – To be purchased or Downloaded from IRWO website.)**

## SECTION-1

### NOTICE INVITING TENDERS (NIT)

#### **Construction of 161 Residential Dwelling Units at Ambattur Village, Chennai (Tamil Nadu)**

**1.1** Sealed percentage rate limited tenders are invited from the pre-sort listed tenderer in the prescribed form by the **Managing Director, INDIAN RAILWAY WELFARE ORGANISATION**, Railway Complex, (Behind Shankar Market), Shivaji Bridge, New Delhi-110001 for the following.

<b>Tender Number</b>	<b>Name of Work</b>	<b>Estimated Value (In Rs.)</b>	<b>Earnest Money (In Rs.)</b>	<b>Time of Completion</b>
IRWO/TENDER/CH-IIB/2016-1	CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS IN STILT+3 AND STILT+4 CONFIGURATION COMPRISING 54 UNITS TYPE II, 12 UNITS TYPE-III A, 48 UNITS TYPE III-B, 32 UNITS TYPE IVA AND 15 UNITS OF TYPE IVB AND MEDITATION HALLS INCLUDING OF ALL CIVIL, INTERNAL AND EXTERNAL WATER SUPPLY, SANITARY INSTALLATION, DRAINAGE, SEWERAGE, INTERNAL AND EXTERNAL ELECTRICAL WORKS, ROADS, PAVEMENTS, UNDER-GROUND WATER TANKS, PUMP HOUSE, SUB-STATION, BOUNDARY WALL, GATE & GUARD ROOM ETC. AT AMBATTUR VILLAGE, NEAR T.I.CYCLES FACTORY, CHENNAI-600053 (TAMILNADU).	25.12 Crores (Excluding Cost of Reinforcement Steel)	7.60 Lakhs	24 (Twenty Four) MONTHS

Note: This tender is being invited only from the tenderers, pre-sort listed based on earlier open tender opened in January 2017. Tenderers have been advised separately through post also.

**1.2 The Tenderer may obtain Tender Document** from 17.07.2017 from 11.00 hrs. to 16.00hrs.(Monday to Friday) on payment of Rs.10,000/- (Rupees Ten Thousand only) (Non refundable) by Demand Draft and by post, on payment of Rs.10,500/- (Rupees Ten Thousand Five Hundred only), as tender cost in favour of IRWO payable at New Delhi either from the office of the Managing Director, Indian Railway Welfare Organization, Railway Complex, Shivaji Bridge, New Delhi-110001 or from the General Manager, (SZ), Engineering. Construction Office Complex, Southern Railway, Poonamallee High Road, Egmore , Chennai- 600 008. Complete set of Tender Document can also be down loaded from IRWO's website at <http://www.irwo.net> and must submit a Tender documents fee of the same amount in the form of a non-refundable Demand Draft/ Bankers Cheque alongwith the Tender.

**1.3** A Pre-Bid Meeting will be held on 25<sup>th</sup> July 2017 at 3.30pm.in the office of GM/SZ,IRWO Chennai to clarify any points that the Tenderer may have regarding the Tender. Any clarification to Tender Documents would be posted on IRWO's website at <http://www.irwo.net> by 02.08.2017. Completed Tender Documents should reach the office of the General Manager/South Zone, IRWO, Engineering Construction Office, Southern Railway, Poonamallee High Road, Egmore, Chennai-600 008 by 15.00 hours on 8<sup>st</sup> August 2017.

- 1.4** The Tenderer is required to deposit Rs.7.60 Lakhs (Rupees Eight Lakhs Only) as Earnest Money in the form of Banker's Cheque/Bank Draft on Delhi/New Delhi Branch of any Scheduled Bank in favour of Indian Railway Welfare Organization. **The tender which is not accompanied with Earnest Money shall be Summarily rejected.** The Earnest Money of unsuccessful tenderer(s) will be refunded to the Tenderer. if his tender is not accepted but without any interest/Bank commission/ Collection charges within 60 (Sixty) days from the date of acceptance/ finalization of the tender. The Earnest Money deposited shall be converted as initial security deposit in the case of successful tenderer.
- 1.5** Tender in prescribed form duly accompanied with Earnest Money should be submitted in a sealed cover Super Scribed with the name of the work in the mode specified below and must reach the office of the General Manager/South Zone, IRWO, Engineering Construction Office, Southern Railway, Poonamallee High Road, Egmore, Chennai-600 008 latest by 15.00 hrs. on 8<sup>th</sup> August 2017. IRWO shall not accept any loss or delay in transit as an excuse for Delayed/Late tender.
- 1.6** If a Tenderer does not quote Percentage Rate/Rates Above or Below the Rates shown in each Sub Section on Abstract Cum Bid Sheet in the format as specified in this Tender Document i.e. both in figures and words, the Offer will be treated as incomplete and summarily Rejected.
- 1.7** "IF THE TENDERER(S) DELIBERATELY GIVES WRONG INFORMATION/ CREDENTIALS/DOCUMENTS IN HIS/THEIR TENDERS AND THEREBY CREATE(S) CIRCUM-STANCES FOR ACCEPTANCE OF HIS/THEIR TENDER, IRWO RESERVES THE RIGHT TO SUMMARILY REJECT SUCH TENDER AT ANY STAGE, BESIDES, SHALL SUSPEND THE BUSINESS DEALING FOR ONE YEAR".
- 1.8 Mode of Submission of Tender :** The Tenderer(s) are required to submit Tender/ Offers in following manner.
- (i) Separate envelop consisting of draft for EMD shall be attached on the top of the main cover which shall consist of Volume I (Tender Conditions) and Volume II (schedule of quantities)
  - (ii) The envelop shall be marked to the General Manager, South Zone, IRWO, Engineering Construction Office, Southern Railway, Poonamallee High Road, Egmore, Chennai- 600 008. The full Name and Address of the Tenderer and the Name of Work shall be written on the Cover and Sealed.
- 1.9 Mode of opening of Tender**
- (i) The sealed envelope containing Earnest Money shall be opened first in the office of the General Manager, South Zone, IRWP, Engineering Contruction Office, Southern Railway, Poonamallee High Road, **Egmore**, Chennai-600008 at 15.30 hours on 8<sup>th</sup> August 2017.
  - (ii) Tender offer shall be opened only for those Tenderer whose Earnest money is found specified.
- 1.10** Attention of the Tenderer is invited to Instructions to Tenderer/s in Section – 2 for strict compliance.

- 1.11** The work as detailed in the tender shall be executed and completed in all respects within a period of 24 (Twenty Four) **Months** from the date of issue of the written order to commence the work in accordance with the tender documents.
- 1.12** Attention of the Tenderer is also invited to the following:
- (a) Para 2.31 of IRWO's General Conditions of Contract – April, 2015 With Amendment No.1 dated 13.10.2015 (GCC) provides for Contractor's All Risk Insurance Cover & Workmen Compensation Cover to be arranged by the contractor;
  - (b) Special Conditions, Clause 5.4.0 which provides for Reimbursement/Refund/ Compensation on variation in price of material (s); and
  - (c) Special Conditions Clause 5. Which provides for payment of Advance;
- 1.13** The tender offer shall remain valid for a period of 120 (One Hundred Twenty) days from the date of opening of tender.
- 1.14** In case a Tenderer withdraws his offer within the validity period of the tender, the Earnest Money deposited along with the tender shall stand forfeited.
- 1.15** Earnest money of the Successful Tenderer shall be forfeited in the event of refusal or delay on his part in signing the Agreement within 15 days or refusal to start the work on instructions from the General Manager.
- 1.16** The Indian Railway Welfare Organization does not bind itself to the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders either in whole or part without assigning any reasons for doing so or can bifurcate the work seeing the feasibility of execution/early completion of the project.
- 1.17** This Section including Instructions to Tenderer/s mentioned in Section 2 shall form part of the Contract. The whole Tender Document shall be signed on each page by the Tenderer and returned along with the tender.

**For Managing Director  
Indian Railway Welfare Organization**

## SECTION-2

### INSTRUCTIONS TO TENDERERS

**2.1** The Tenderer shall examine carefully all the Tender Documents Consisting of:

- i. Notice Inviting Tenders
- ii Instructions to Tenderers
- iii Tenderer/s Forwarding Letter
- iv Form of Agreement
- v IRWOs General Conditions of Contract – April, 2015, with Amendment No.1 dated 13.10.15.
- vi Special Conditions.
- vii Technical Specifications
- viii Bill of Quantities.
- ix Tender Drawings.

The Tenderer is advised to visit and inspect the site at his own cost and responsibility and to secure all necessary information which may be required for completing the work. Ignorance of site conditions or local information shall not be considered as an excuse for Non-Performance of the contract and No Claim or Compensation is payable on account of Lack of Site Information. All costs, charges and expenses that may be incurred by the Tenderer in connection with preparation of his tender shall be borne by him and IRWO will not accept any liability whatsoever in this regard.

The Tenderer can see the drawings in the office of GM/SZ, Chennai during office hours on working days.

**2.2 (a) The Scope of Work shall consist of:-**

**CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS**

- (i) 54 UNITS TYPE –II Dwelling Units. (Stilt + 4 Floor)
- (ii) 12 UNITS TYPE – III – A Dwelling Units. (Stilt + 3 Floor)
- (iii) 48 UNITS TYPE – III – B Dwelling Units. (Stilt + 4 Floor)
- (iv) 32 UNITS TYPE – IV – A Dwelling Units. (Stilt + 4 Floor)
- (v) 15 UNITS TYPE IV –B Dwelling Units. (Stilt + 4 Floor)
- (vi) MEDITATION HALLS and
- (vii) ALL CIVIL, INTERNAL WATER SUPPLY, SANITARY INSTALLATION, INTERNAL ELECTRICAL WORKS, SEWERAGE, DRAINAGE AND EXTERNAL WATER SUPPLY, SEWERAGE, DRAINAGE, ROADS, PAVEMENTS, UNDER GROUND WATER TANK, PUMP HOUSE, SUB STATION, BOUNDARY WALL, GATE AND GUARD ROOM ETC.,, AT AMBATTUR VILLAGE, NEAR T. I. CYCLES FACTORY, CHENNAI - 600053 (TAMIL NADU)

Signatures of the Tenderer/s

- 2.2 (b)** The Tenderer is required to complete the work in all respects within 24 (Twenty Four) Months from the date of issue of letter of intent/order and hand over the same complete in all respects to the satisfaction of the Employer.
- 2.3** The Tenderer shall use only the form issued with this tender to fill up the Percentage Rates Above or Below the Rates shown in each Sub Section.
- 2.3.1** Every page of the tender shall be signed on the left hand side bottom corner and any tender not so complied with is liable to be treated as defective.
- 2.3.2** The tender form must be filled in English and all entries must be made by hand in ink. If any of the documents is missing, or unsigned, the tender is liable to be treated as defective tender.
- 2.3.3** Tenders not properly filled, mutilated with incorrect calculation or generally not complying with the conditions are liable to be rejected.
- 2.3.4** Any erasers and alternations made while filling the tender must be attested by initials of the Tenderer. Over-writing of figures is not permitted. Failure to comply with either of these conditions will render the tender liable for rejection.
- 2.4** A schedule of approximate quantities for various items accompanies this tender: It must be definitely and clearly understood that this schedule is liable to alteration by omissions, deductions, or additions to any extent at the discretion of IRWO without affecting the terms of the Contract.
- 2.4.1** The scope of work may be varied by up to (+) (-) 25% (Twenty Five Percent) due to variation in the number or area and/or Type of houses or other buildings/works required to be constructed.
- 2.4.2** It shall be clearly understood that the rates quoted in the tender are for complete work at site as per instructions to Tenderers, General and Special Conditions of Contract, Specifications, Schedule of Quantities and Drawings addenda referred to therein and also for all such works as are necessary for the proper completion of the contract although specific mentions may not have been made in the specifications, drawings or tender documents.
- 2.4.3** The tenderer should quote the Percentage rate Above or Below the rates shown in each Sub – Section on Abstract cum Bid Sheet of Tender Document Vol. II. The Percentage Rates quoted by the Tenderer(s) should be expressed accurately both in words and figures, so that there is no discrepancy.
- 2.4.4** No alteration which is made by the Tenderer in the Notice Inviting Tender, Instructions to the Tenderer/s, Agreement Form, General and Special Conditions of Contract, Technical Specifications and drawings etc. accompanying the same shall be recognized and if any such alterations are made the tender is liable to be rejected.
- 2.5** The tender for the work shall remain open for acceptance for a period of 120 (One Hundred Twenty) days from the date of opening of tender. If

Signatures of the Tenderer/s

any Tenderer withdraws his offer before the said period or makes any modifications in the terms and conditions of the tender, then IRWO shall without prejudice to any other right or remedy, be at liberty to forfeit the Earnest Money of the Tenderer.

- 2.6** Canvassing in connection with the tender is strictly prohibited and the tenders submitted by the Tenderer who resort to canvassing will be liable to rejection.

**2.7 Taxes:**

**2.7.1 Introduction of G.S.T.-** Following details have been added.

- 2.7.1.1** The Goods & Service Tax (GST) has been made applicable in India with effect from 01.07.2017. The Tenderers should quote their rates considering the implementation of GST for works contract and input credit to be availed on the materials procured and services received by him, for execution of the contract. Input credit will be retained by the tenderer, this may be kept in consideration while quoting the rates.

- 2.7.1.2** The GST amount shall be paid as extra to be the tenderers as per provisions of GST Act from time to time.

- 2.7.1.3** The tenderer shall be registered with GST.

- 2.7.2** Any new Tax or any increase in the rate of levies/taxes levied on the finished work introduced by Central or State Government or by any local authorities after the opening of the tender, shall be reimbursed to the Contractor only on production of certificates from concerned authorities with authenticated documents to the fact that the same has already been deposited by the Contractor. Similarly, if there is any Government Legislation after the date of opening of Tender, the same shall be reimbursed to Contractor on production of authenticated documentary evidence to the fact that the same has been deposited by the Contractor.

Any abolition of Tax or decrease in rates of levies/taxed on the finished work introduced by Central or State Government or by any local authorities after the opening of the tender, shall be recovered by IRWO from running/on-account bills of the contractor.

**2.7.3 Introduction of RERA (Real Estate Regulation Authority)**

The RERA Notification has already been issued by Govt. of India for construction project of housing which is applicable to all Developers/Builders. For Chennai, the same is implemented by Govt. of Tamil Nadu. The tenderer shall make all efforts to complete the work in 24 months.

#### **2.7.4 Labour Cess**

The Tenderer for carrying out any construction work in Tamil Nadu (State) must get themselves registered from Registering office under Section 7 of the Building and other Construction Worker Act, 1996 and Rules made thereto by the Tamil Nadu (State) Government and submit Certificate of Registration issued from the Registering Officer of the Tamil Nadu (State) Government (Labour Department). For compliance of the Act, the Tenderer shall be required to pay Cess @ 1% (one Percent) of cost of construction, which is to be deducted from each bill. Cost of material shall be outside the purview of Cess, when supplied under a separate Schedule Item.

**2.8** The Contractor's operations and proceeding in connection with the work shall at all time be conducted during the continuance of the contract in accordance with the laws, ordinances, rules and regulations for the time being in force and the contractors shall further observe and comply with the bye-laws and regulations of the Government of India, State Government and Municipal and other authorities having jurisdiction over the area involved in connection with the works or site and over operations such as those as carried out by the contractors and shall give all notices required by such bye-laws and regulations.

**2.9** The Agreement for this acceptance shall be executed on a Non-judicial stamp paper of requisite value for which the stamp duty shall be borne by the Contractor.

**2.10** Tenders containing conditions are liable to be rejected.

**2.11** Deduction towards Income Tax, or any other Tax as per rules shall be made by IRWO from the Contractor's Bills.

#### **2.12 Unknown / Indefinite Liabilities:**

Tenders containing any conditions leading to unknown / Indefinite Liabilities are liable to be rejected. If at all any rebate(s) is/are to be offered, the Tenderer shall first quote his rates strictly on the terms and conditions stipulated in the tender documents and then show separately any rebate(s) offered specifying the condition for such rebate(s), if any.

#### **2.13 List of documents to be submitted with the Tender**

Tender with earnest money in sealed cover, Super Scribed **Tender for** "CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS IN STILT + 4 AND STILT + 3 CONFIGURATION COMPRISING OF 54 UNITS TYPE –II, 12 UNITS TYPE – III – A, 48 UNITS TYPE – III – B, 32 UNITS TYPE – IV – A AND 15 UNITS TYPE IV – B AND MEDITATION HALLS INCLUDING OF ALL CIVIL, INTERNAL WATER SUPPLY SANITARY INSTALLATION, INTERNAL ELECTRICAL WORKS, SEWERAGE, DRAINAGE AND EXTERNAL WATER SUPPLY, SEWERAGE, DRAINAGE, ROADS, PAVEMENTS, UNDER GROUND WATER TANK, PUMP HOUSE, SUB STATION, BOUNDARY WALL, GATE AND GUARD ROOM ETC.,, AT AMBATTUR VILLAGE, NEAR T. I. CYCLES FACTORY, CHENNAI - 600053 (TAMIL NADU)". Should reach the General Manager, South Zone, IRWO, Engineering Construction Office, Southern Railway, Poonamallee High

Signatures of the Tenderer/s

Road, Egmore, Chennai- 600 008, Latest by 15.00 hrs. on 8<sup>th</sup> August, 2017. IRWO shall not accept any Loss or Delay in Transit as an excuse for Delayed/Late Tendering.

(i) Tender Documents will be submitted along with Detailed Programme with PERT/CPM CHART and Targets of Completion of each Item of Work.

(ii) Registration with GST.

**2.14** Tenderer is not permitted to give alternative Offers with reduced/increased duration of the project.

**2.15** The contractor shall have to make his own arrangement for water to be used for construction purposes. No water connection would be given by IRWO. It may be desirable for the contractor to explore the possibility of sinking tube well / wells at site to ensure the availability of adequate water at any time for construction works, permitted by local/civil authorities. The Tube well/s thus sunk shall be left as such after the works are over.

**2.16** Few drawings are supplied along with the Tender which may have to be modified at the time of Construction and No Claim of the Contractor would be entertained on this account.

For consolidated items of tender schedule some concept drawings have been prepared and the same would be available in the office of GM (SZ), IRWO/Chennai for perusal by the Tenderer. These may have to be modified at the time of construction and no claim of the contractor would be entertained on this account.

**2.17** The successful Tenderer will be notified about the acceptance of his tender by the Employer in duplicate and the Agreement should normally be signed within 15 (Fifteen) days of being advised. Letter of Acceptance and its acknowledgement will be a binding Contract.

**2.18** The successful Tenderer shall have to furnish the Performance Guarantee in terms of Clause .2.22 of IRWOs General Conditions of Contract – with Amendment No.1 dated 13.10.2015, in the format attached as Annexure 'G' therein, within 15 days from the date of issue of LOI. In case of failure to submit P.G. the Earnest money shall be forfeited without any correspondence.

**2.19** If any ambiguity is found in Percentage Rate quoted in Words and Figures, Rate mentioned in Words shall be applicable.

**2.20** The Rate quoted shall be deemed to include obtaining of all NOCs required by/from all Statutory/Regulatory authorities at various stages including Plinth Level and completion/occupancy certificate on completion of work from the concerned authority before handing over of the Dwelling Units to IRWO and then to Allottees. However, statutory receipted payments shall be made by IRWO.

**2.21** Contract Agreement will be governed by IRWOs General Conditions of Contract, April, 2015 with Amendment No.1 dated 13.10.2015. This is not

Signatures of the Tenderer/s

Annexed with the Tender Document and is available on sale at IRWOs Corporate Office or can be down loaded free from IRWO website <http://www.irwo.net>.

- 2.22** The work shall be executed as per CPWD Specifications for Civil and Electrical Works. In addition, various norms laid down by Bureau of Indian Standards (BIS) will also be followed. The brief Specifications are laid down in Sections, 6 and 8.

### SECTION-3

#### DRAFT FORWARDING LETTER

FROM:

M/s. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

To;

**The Managing Director,  
Indian Railway Welfare Organisation,  
Corporate Office - Railway Complex,  
Shivaji Bridge,  
Behind Shankar Market,  
New Delhi-110001.**

**Ref :** “TENDER FOR “CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS IN STILT + 4 AND STILT + 3 CONFIGURATION COMPRISING OF 54 UNITS TYPE –II, 12 UNITS TYPE – III – A, 48 UNITS TYPE – III – B, 32 UNITS TYPE – IV – A AND 15 UNITS TYPE IV – B AND MEDITATION HALLS INCLUDING OF ALL CIVIL, INTERNAL WATER SUPPLY, SANITARY INSTALLATION, INTERNAL ELECTRICAL WORKS, SEWERAGE, DRAINAGE AND EXTERNAL WATER SUPPLY, SEWERAGE, DRAINAGE, ROADS, PAVEMENTS, UNDER GROUND WATER TANK, PUMP HOUSE, SUB STATION, BOUNDARY WALL, GATE AND GUARD ROOM ETC.,, AT AMBATTUR VILLAGE, NEAR T. I. CYCLES FACTORY, CHENNAI - 600053 (TAMIL NADU)” for **Indian Railway Welfare Organization.**

Dear Sir.

With reference to the tender invited by you. I/We hereby offer to perform, provide, execute and complete the works in Conformity with the Conditions of Contract, Drawings and Specifications for the respective Items of Schedule of Quantities attached hereto.

Signatures of the Tenderer/s

1. I/We have satisfied myself/ourselves as to the location and prevailing conditions of the site, and have read carefully the tender booklets containing Articles of Agreement, Conditions of Contract, Specifications, General Conditions of Contract, April 2015 with Amendment No.1 dated 13.10.2015 and Special Conditions, Technical Specifications, Drawings etc. and I/we understand that the works are to be completed within 24 (Twenty Four) Months from the date of issue of Letter of intent/Order and fully understand that the time will be the essence of the contract.

2. I/We enclose a Banker's Cheque/Demand Draft No.\_\_\_\_\_ dated\_\_\_\_\_ for an amount of Rs.\_\_\_\_\_ (\_\_\_\_\_) as per clause no. 2.17 of General Conditions of Contract – April, 2015, drawn on \_\_\_\_\_ Bank, payable at Delhi/New Delhi in favour of **Indian Railway Welfare Organization**. New Delhi, as Earnest Money and fully understand that this amount will not bear any interest.

3. I / We agree to keep the offer open for 120 (One Hundred Twenty) days from the date of opening of the tender.

4. Should this tender be accepted in whole or in part, I/We hereby agree to abide by and fulfill all the terms and conditions annexed hereto. If I/we fail to commence the work specified in tender documents, I/we agree that my/our Earnest Money shall stand forfeited absolutely to the Employer, otherwise the said Earnest Money shall be retained by the Employer towards Security Deposit (Retention Money). I/we also agree to the balance security money being deducted from my/our bills in accordance with the conditions of contract.

5. All the terms and conditions contained in the Notice Inviting Tenders, General and Special Conditions of Contract. Specifications for execution of work and additional conditions and the Agreement etc. constituting the tender documents have been fully read by me/us and explained to me/us and I/we hereby accept the same and sign hereunder in token of their acceptance.

Signatures of the Tenderer/s

6. We are further enclosing herewith the following documents.

(a) **Tender documents** duly signed along with detailed programme and targets of completion of each type of work.

(b) **Registration with GST.**

c) Demand Draft No. \_\_\_\_\_ Dated \_\_\_\_\_ drawn on \_\_\_\_\_ for Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only)

**Name of Proprietor/Partners/Directors of the Firm**\_\_\_\_\_.

Yours faithfully,

Date \_\_\_\_\_

Name & Signature of Tenderer(s)  
Office-stamp & Seal of the tenderer(s).

M/s \_\_\_\_\_

\_\_\_\_\_

Witness: \_\_\_\_\_

Address \_\_\_\_\_

Occupation \_\_\_\_\_

Signatures of the Tenderer/s

## SECTION – 4

### DRAFT OF AGREEMENT

Articles of agreement made this day ..... of 2017 between **Indian Railway Welfare Organization**, registered under the Societies Act XXI of 1860 and having its registered office at **Railway Complex, (Behind Shankar Market), Shivaji Bridge. New Delhi - 110 001** (hereinafter referred to as "**IRWO**" which expression shall unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successor in office, executor, administrator, assignees) of the one part.

AND

M/s \_\_\_\_\_ having their office at \_\_\_\_\_ herein after referred to as "**CONTRACTOR**", which expression shall unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successor in office, executor, administrator, assignees) of the other part.

**IRWO** and **CONTRACTOR** are hereinafter individually referred to as "**PARTY**" and collectively as "**PARTIES**"

### **WHEREAS**

- i. IRWO is desirous of CONSTRUCTION OF 161 RESIDENTIAL DWELLING UNITS IN STILT + 4 AND STILT + 3 CONFIGURATION COMPRISING OF 54 UNITS TYPE – II, 12 UNITS TYPE – III – A, 48 UNITS TYPE – III – B, 32 UNITS TYPE – IV – A AND 15 UNITS TYPE IV – B AND MEDITATION HALLS INCLUDING OF ALL CIVIL, INTERNAL WATER SUPPLY, SANITARY INSTALLATION, INTERNAL ELECTRICAL WORKS, SEWERAGE, DRAINAGE AND EXTERNAL WATER SUPPLY, SEWERAGE, DRAINAGE, ROADS, PAVEMENTS, UNDER GROUND WATER TANK, PUMP HOUSE, SUB STATION, BOUNDARY WALL, GATE AND GUARD ROOM ETC.,, AT AMBATTUR VILLAGE, NEAR T. I. CYCLES FACTORY, CHENNAI - 600053 (TAMIL NADU)
- ii The Contractor has been furnished the building Drawings and Specifications duly prepared by IRWO, describing the works to be done on the basis of the Notice Inviting Tenders, instructions to Tenderer/s, General and Special Conditions of Contract, Building Drawings, Technical Specifications have been signed by or agreed to be executed upon and subject to the conditions Set-forth herein (Hereinafter referred to as "The Said Conditions") and the Special Conditions and Specifications of the work described in the said Specifications and included in the Schedule of Rates at Rates therein Set forth amounting to the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) hereinafter referred to as "Contract Amount" and more specifically detailed out in Volume – II hereinafter.

Signatures of the Tenderer/s

- iii And whereas the Contractor has deposited with the IRWO the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ Only) as the Earnest Money, which shall become part of the Security Deposit to be retained until the expiry of the defects liability period for the due observance and performance of this contract.
- iv And whereas the Contractor has furnished a Bank Guarantee bearing No. \_\_\_\_\_ Dated \_\_\_\_\_ for a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) Executed by \_\_\_\_\_ in Favour of IRWO towards Security Deposits and Performance Guarantee, valid up to \_\_\_\_\_.
- v And whereas the contractor hereby agrees to extend the validity of the Bank Guarantees for such further period or periods as may be required by IRWO and if the contractor fails to obtain such extension (s) from the Bank, the Contractor shall pay forthwith or accept recovery of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) from the bills in one Installment and the Contractor further agrees that failure to extend the validity of the Bank Guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of Contract. In addition to above, IRWO shall be entitled to take such action as deemed fit and proper for recovering the said sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only)  
(Above provisions relating to Bank Guarantee/Performance Guarantee to be incorporated only if Security Deposit/Performance Guarantee is furnished in the form of a Bank Guarantee before the execution of the Agreement)

**NOW THIS AGREEMENT WITNESSETH AND IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:**

1. In consideration of the said Contract Amount to be paid at Different Periods of time and in the manner set-forth in the said Conditions, the Contractor shall, upon and subject to the said conditions execute and complete the work described as per the said Plans and Specifications and / or the Schedule of Rates and other conditions and within \_\_\_\_\_ Months of the date of commencement of the work which shall be no later than \_\_\_\_\_
2. The commencement of work will be taken as the date of issue of the letter of Acceptance/Order for award of the contract.
3. IRWO shall pay to the Contractor the said Contract Amount or such other sum as shall become payable at the times as hereinafter specified in the conditions.
4. Whenever under this Contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the General Conditions of Contract or other conditions governing this Agreement.

Signatures of the Tenderer/s

5. All charges on Account of Octroi, Terminal and other Taxes including Sales Tax or other duties on material obtained for execution of the said works shall be borne and paid by the Contractor.
6. The following document (s) shall be deemed to form and be read and construed as part of the Agreement along-with the Amendments, Negotiated and Confirmed in various subsequent letters exchanged as mentioned hereinafter,
  - i) Notice Inviting Tender.
  - ii) Instructions to Tenderers;
  - iii) Building Plans.
  - iv) Details of the Work, Eligibility, Technical Specifications & Special Conditions.
  - v) Tender Forms.
  - vi) CPWD Specifications for Civil (2009) and Electrical (2013) Works.
  - vii) General Conditions of Contract – April, 2015, with Amendment No.1 dated 13.10.2015.
  - viii) IRWO's Letter No. IRWO/\_\_\_\_\_ dated \_\_\_\_\_ 2017 to the Contractor for award of the Contract.
  - ix) Tenderer's Letter No. \_\_\_\_\_ Dated \_\_\_\_\_ to IRWO in acceptance of the Award of Contract.
  - x) IRWO's Technical Specifications for Internal and External Electrical Works.
7. Parties hereto shall respectively abide by submitting themselves to the conditions and comply with the Performance of the said Agreement on their part respectively in such conditions stated in the Tender Document.

IN WITNESS WHEREOF, the Parties hereto have signed this Agreement on the date and place First Written Above.

**1. SIGNED BY THE SAID**

IRWO (First Party)

Indian Railway Welfare Organization

In the Presence of

Signature

Name

Address:

**2. SIGNED BY THE SAID**

Contractor (Second Party)

In the Presence of

Signature

Name

Address:

## SECTION-5

### SPECIAL CONDITIONS OF CONTRACT

#### **5.1 Mobilization Advance :**

At the request of the successful contractor, Interest Free mobilization advance equivalent to 4% (Four Percent) of the Contract Amount may be paid to the contractor against submission of the valid 'Irrevocable Bank Guarantee' from any Nationalized Bank in favour of Indian Railway Welfare Organization. The date of expiry of bank guarantee should be at least Three Months beyond from the expected date of recovery of the Mobilization Advance. The payment of said advance should be according to conditions given below:-

##### **i) First Mobilization Advance**

Advance equivalent to 2% (Two Percent) of the Contract Amount to be paid after signing of Agreement and submission of irrevocable Bank Guarantee equal to the full amount of advance by the Contractor. This advance shall be recovered from the Contractor in Five Equal monthly installments starting from the payment of the second Running On-Account Bill.

##### **ii) Second Mobilization Advance:**

Advance equivalent to 2% (Two Percent) of the Contract Amount to be paid after completion of 30% (Thirty Percent) of the work and submission of Irrevocable Bank Guarantee equal to the full amount of advance by the Contractor. The advance shall be recovered from the Contractor in Five equal monthly installments starting from the next Running On-Account Bill which may become due after the Second Mobilization advance is paid to the contractor.

**iii)** The Second mobilization advance shall be payable only after full recovery of the first advance has been made from the Contractor. All mobilization advances will be recovered fully before completion of 85% (Eighty Five Percent) of the total work.

**iv)** The Employer shall have the right to recover the entire advance so granted from the amount due, or that may become due, or encash bank guarantee(s) furnished by the contractor, if in the opinion of the Employer the advances are not being used strictly and timely for the purpose for which they are granted. Employer reserve the right to recover interest @ 12% (Twelve Percent) P.A. for portion of mobilization advance not used and in case the progress of work is not according to Bar Chart finalized between Contractor and Employer. Assessment made by Employer shall be final and binding on the contractor.

## **5.2 SECURED ADVANCE**

### **5.2.1 Payment against material at site:**

If requested by the Contractor, payment against the materials (excluding materials supplied by the Employer) required for execution of the work during the next 6 (Six) months and actually brought at site may be made by the Employer only in respect of such materials which conform to the specifications and are neither dangerous nor hazardous to store nor are perishable or liable to deteriorate or waste with time. The amount of payments shall be limited to 75% (Seventy Five Percent) of the market value of the materials, or that material elements cost in the rate item as decided by the Engineer, whichever is less, which cost shall exclude all incidental charges such as packing, handling, freight, transportation, storage etc. The advance so arranged shall be recovered through on account bills. The recovery will be limited to materials actually consumed in the work up to the time of preparation of the on account bills. The Contractor shall execute an Indemnity Bond on approved Performa indemnifying the Employer against all losses whether due to theft, damages, wastages or any other cause whatsoever and shall be bound to refund to the Employer all the outstanding value of the advance, when the value of the work executed reaches 85% (Eighty Five Percent) of the value of the contract. The Contractor shall be bound to store the materials at the site of work (earmarked for the purpose by the Employer and shall not remove from site nor use the same for any other work than) exclusively for execution of the work for which advance was granted for such materials. If on completion of the work, any materials against which the advance payment was made by the Employer is rendered surplus, the Employer shall not take over such material and contractor shall remove all such materials from the site within seven days after the completion of the work. The grant of such advance shall not in any way be constituted as an amount due from the Employer under the conditions of contract. The employer shall have the right to recover the entire advance so granted if in the opinion of the Employer, the advances are not being used strictly for the purpose for which they are granted.

- 5.2.2** Payment of secured advance against material at site will be released against paid vouchers and correctness of the same will be the responsibility of the Contractor. In case it is proved subsequently that payment was got released on the basis of incorrect vouchers, Contractor is liable for penalty by 50% (Fifty Percent) of excess amount got released.

### **5.3 Issue of Materials by the Employer Free of Cost for Execution of work:**

**For Execution of work under this contract, all other materials shall be arranged by the contractor at his cost and only Reinforcement Steel shall be supplied free to the Contractor by IRWO, subject to the stipulations mentioned below:**

- 5.3 (a)** A standing Bank Guarantee of Rs.20.00 Lakhs (Rupees Twenty Lakhs only) from a Nationalized Bank in favour of Indian Railway Welfare Organization, valid for the entire contract period including the subsequent extensions, if any, shall have to be submitted by the Contractor for free supply of above referred material by IRWO to Contractor. BG can be refunded after full quantity of steel is consumed at site on the request of contractor.
- 5.3 (b)** Before taking delivery of above material, the Contractor shall satisfy himself about the quality as per specifications stipulated in the purchase documents and the Contractor shall be responsible for any discrepancy, defects or imperfections in materials brought to site and cost of such materials shall be recovered from the Contractor's dues.
- 5.3 (c)** The point of delivery of Steel shall be as instructed by the Employer, Cost of transportation, if any, shall be borne by the Employer beyond the work premises.
- 5.3 (d)** The quantities to be supplied free shall be limited to the extent as actually required for the work including permissible wastage of 1.5% (One Point Five Percent)
- 5.3 (e)** The Rate should be quoted keeping in view the supply of above material free of cost by the Employer, for all items except as laid down in Para 5.3.4.
- 5.3 (f)** For quantities consumed in excess of those required at site as per 5.3 (d), the cost of such Steel shall be recovered at Rates as specified later in Para 5.3.4 (i).
- 5.3 (g)** Contractor shall prepare the Bar Bending Schedule for the whole work and work out the total requirement of Steel to be supplied and submit these details to IRWO at the start of the work.

#### **5.3.1 STEEL:**

- (i) Reinforcement Steel will be issued by the Employer by weight to the Contractor for execution of works under the Contract at site or nearest Rail Head/Depot/Stock Yard.
- (ii) In case the Reinforcement Steel is issued at the nearest Rail Head/ Depot, Employer shall give an authorization to the Contractor for taking delivery of the Steel from the Rail Head/Depots of the suppliers. The Contractor shall accept these authorizations and will make his own arrangements to take delivery of Steel and transport to the site of work. The cost of Transportation only (Including Loading/Unloading) from such Rail Head/Depot to the site will be borne by the Employer subject to such transportation cost being certified by the Engineer on the basis of prevailing market rates.

All other costs subsequently such as Loading, Un-loading, transportation to Contractor's godown, storage, etc., till the materials are used in the works or

returned to the Employer at specified location within the site shall be to the account of the Contractor.

- (iii) **TOR/TMT Steel Bars** may be supplied in straight lengths or in coils and any lengths as may be available with the Employer. In the event of bars of specified diameters as per the drawings not being available, the nearest size available will be used and the spacing/numbers or number of bars to be used may be adjusted in consultation with the Engineer.
- (iv) For the purpose of accounts, payment of Steel Bars (TOR/TMT) used in the work the nominal sectional weight stipulated in the I.S. Codes shall be adopted as Unit Weight for bars per metre. The total requirement of Reinforcement bars shall be worked out on the basis of bar bending schedule and the sectional weight.
- (v) (a) In case of Reinforcement Steel, the theoretical quantity of Steel shall be calculated on the basis of actual measurements as given in sub clause (iv) above. The Contractor will not be required to return the cut pieces of steel, but the recovery up to 3% of the quantity over theoretical quantity will be made from the contractor at fixed price of Rs. 38,000/- for TOR/TMT steel bars per MT.
- (b) The excess over 3% of the theoretical quantity of steel issued to the contractor shall be recovered at 1.5 times the rate of steel as given in the clause 5.3.4 (i) or market rate whichever is higher.
- (c) Variations, if any, between issues by weight and theoretical consumption on account of rolling margins and wastage of all sorts etc., will be the responsibility of the Contractor.
- (d) The Contractor is requested to give Periodic demand for various diameters of bars close to his actual requirements. The Employer shall not receive back any such surplus bars.

- 5.3.3** (i) During execution of the work, a Joint record of day to day consumption of Cement and Steel shall be maintained by the Contractor and the Engineer's representative and signed by them. In case Contractor fails to maintain such records on day to day basis, he shall be deemed to have waived off his right and the statement of actual consumption of Cement and Steel recorded by the Engineer or his representative shall be treated as authentic record.
- (ii) The decision of Employer in regard to the excess Steel Bars used shall be final and binding.

### **5.3.4 GENERAL :**

- (i) The Contractor shall not have the option to refuse to take delivery of the stores mentioned above, and offered to him. No Claim on this account shall be entertained.
- (ii) All incidental charges like shifting at site, storage and safe custody of materials, etc., shall be borne by the Contractor.
- (iii) The Contractor shall construct suitable accommodation at the site of work duly approved by the Engineer for storing the material safe against damage by Sun, Rain, Dampness, Fire, Theft etc.,. The Contractor shall employ necessary watch and ward establishment for the purpose to the satisfaction of the Engineer.
- (iv) Steel required for shuttering, centering, scaffolding and Contractor's godown, offices etc., will be arranged by the Contractor at his own cost.
- (v) For steel to be supplied by IRWO, the Contractor shall give at least One Month's Notice in writing of his requirement to the Engineer in accordance with the agreed phased programme. Such materials shall be supplied for the purposes of the Contract only. At the time of submission of Bills, the Contractor shall properly account for the materials issued to him to the satisfaction of the Engineer, certify that balance of materials supplied are available at site.

### **5.4.0 Price Escalation:**

If the prices of materials (not being materials supplied or services rendered at fixed prices by the Employer) and, or wages of labour required for execution of the work, increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the conditions that the compensation for escalation in prices shall be available only for work done during the stipulated period of the contract including such period for which the validity of the contract is extended under the provisions of IRWOs General Conditions of Contract – April, 2015 with amendment No.1 dated 13.10.2015. No price escalation shall be payable for period when extension is granted with liquidated damages/penalty and only original quoted rates shall be paid. No such compensation shall be payable for a work for which the stipulated period of completion is 6 (Six) months or less. Such compensation for escalation in the prices of materials and labour when due, shall be worked out based on the following provisions:

- 5.4.1** The base date for working out such escalation shall be the last date on which tenders were stipulated to be received.
- 5.4.2.** The cost of work on which escalations will be payable shall be reckoned as 85% (Eighty Five Percent) of the cost of work as per the bills, running or final, and from this amount the value of materials supplied under clause 5.3.4 of this contract or

Signatures of the Tenderer/s

services rendered at fixed charges shall be deducted before the amount of compensation for escalation is worked out. In the case of materials brought to site for which any secured advance is included in the bill, the full value of such materials, as assessed by the Engineer (and not the reduced amount for which advance has been paid) shall be included to the cost of work done for operation of this clause. Similarly, when such materials are incorporated in the work and the secured advance is deducted from the bills, the full assessed value of the materials originally considered for operation of this clause should be deducted from the cost of the work shown in the bill, running or final. Further the cost of the work shall not include any work for which payment is made as per General Conditions of Contract – April, 2015 with Amendment No.1 dated 13.10.2015 at prevailing market rates.

**5.4.3** The components of materials and labour shall be as shown in para 5.4.7 and the decision of the Engineer in working out such percentage shall be binding on the contractor.

**5.4.4** The compensation for escalation for materials and labour shall be worked out as per the formula given below :

**i) Material :**

$$VM = W \times A/100 \times (MI - Mlo)/Mlo$$

VM = Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

A = Component of materials expressed as percent of total value of work Clause (5.4.7)

W = Value of work done, worked out as indicated in sub- para 5.4.2 above.

MI & Mlo = All India Whole Sale Price Index (for all commodities) for the period under reckoning as published by the Economic Advisor to Govt. of India, Ministry of Industry and Commerce, for the period under consideration and that valid at the time of last date of receipt of tenders, respectively.

**ii) Labour :**

$$VL = W \times B/100 \times (LI - Llo)/Llo$$

VL = Variation in labour cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Value of work done, worked out as indicated in sub- para 5.4.2 above.

B = Component of labour expressed as percent of the total Value of the work. Clause (5.4.7)

Lio = Minimum daily wages in rupees of an unskilled adult Male mazdoor, as fixed under any law, statutory rule or order as on the last date on which tenders for the work were to be received.

LI = Minimum (daily) wages in rupees of unskilled adult male mazdoor as fixed under any law statutory rule or order as applicable on the last day of the quarter previous to one during which the escalation is being paid.

**5.4.5** The following principles shall be followed while working out indices mentioned in sub para 5.4.4 above.

a) The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done during the previous three calendar months. The first such payment shall be made at the end of three months after the month in which the tender was accepted and thereafter at three months intervals.

b) The index (MI etc.,) relevant to any quarter for which such compensation is paid shall be the arithmetical average of the indices relevant to the previous three calendar months. If the period up to date of completion after the quarter covered by the last such installment of payment is less than three months, the index M/LI shall be the average of the indices for the months falling within that period.

c) The base index, Mio, Lio etc., shall be the one relating the month in which the tender was stipulated to be received.

d) The minimum wage of an unskilled male mazdoor mentioned in sub-para 5.4.4.(ii) above shall be as notified by the Local Administration relevant to the place of work and the period of reckoning.

e) Irrespective of variations in minimum wages of a category of labour for the purpose of this clause, the variation in the rates for an unskilled adult male mazdoor alone shall form the basis for working out the escalation compensation payable on the labour component.

**5.4.6** In the event the price of materials and/or wages of labour required for execution of the work decreases, there shall be downward adjustment of the cost of work, so that such prices of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard formula herein before stated under this clause shall mutatis mutandis apply, provided that:

i) No such adjustment for the decrease in the price of materials and/or wages of labour afore-mentioned would be made in case of contracts in which the stipulated period of completion of the work is less than six months.

ii) The Engineer shall otherwise be entitled to lay down the principles on which the provision of this sub clause shall be implemented from time to time and the decision of Engineer in this behalf shall be final and binding.

**5.4.7** The components of materials and labour indicated in the para 5.4.3 have been pre-determined as below :

#### **Civil Work**

**CIVIL WORK      Electrical, Sanitary, Sewerage, Plumbing &**

Signatures of the Tenderer/s

<b>Road work</b>				
a)	Material	(A)	70%	80%
b)	Labour	(B)	30%	20%
	TOTAL		100%	100%

**5.5.0** The Electrical Sub Contractor should possess and submit a copy of valid Electrical Contractor License from Government of Tamil Nadu.

**5.6.0** Price of any substituted or extra item shall be worked out on the basis of Clause 4.3 of General Conditions of Contract – 2015 with Amendent No.1 dated 13.10.2015.

## SECTION - 6

### **SALIENT TECHNICAL SPECIFICATION FOR CIVIL WORK**

#### **6.1 Quality Assurance:**

- (b) To maintain the quality of works, the work shall be executed as per CPWD Specifications for Civil and Electrical works. In addition, various norms laid down by Bureau of Indian Standards (BIS) shall also be followed. Specifications given herewith will prevail over CPWD specifications.
- (ii) It shall be necessary to maintain a Testing Laboratory as per Clause 3.26 (a) of IRWO's General conditions of Contract – April, 2015 with Amendment No.1 dated 13.10.2015 and maintain all records to obtain best quality of work to be executed. Contractor shall prepare and submit for approval to IRWO Check Lists for ensuring quality control of materials and various activities of work, e.g. setting out the Blocks/Dwelling Unit's earth work, concrete, R.C.C. works, masonry works, plastering, flooring, roofing, plumbing, electrical Installations and other activities of work required for the project and carry out joint checks with IRWO as per the approved Check Lists.
- (iii) All the outer Columns of the Building frame/structure shall be additionally checked for plumb and verticality by plumb bob as well as Theodolite (Transit Theodolite) as the work progresses to upper floors. Also internal Columns and walls shall be checked by taking measurements from centre to row of columns for their exact position and plumb. Record of plumb of vertical structural member shall be got checked/verified to the satisfaction of Engineer.

#### **6.2 Boundary Wall:**

Boundary wall shall be constructed and provided with M.S. Railing of approved pattern to required height with Gates, Wicket Gates, Security Guard Huts, Toilet as per approved drawings. Each Dwelling Unit shall be provided with Security System from Guard's Hut at the Gate.

#### **6.3 Foundations:**

R.C.C. Footings/Masonry Foundation for the Multi Storey Buildings and Ancillary Structures compliant to Earth Quake resistant design in ZONE-III shall be provided.

#### **6.4 Earth Quake Resistant Structure:**

The building with Frame shall be designed as per provisions of Earth Quake resistant Codes IS : 1893 (Pt.-I) 2002. Criteria for Earth Quake Resistant Design of Structures – General Provisions and Buildings and IS : 4326 : 1993 – Earth Quake Resistant Design and Construction of Buildings – Code of Practice (For Zone – III).

#### **6.5 Reinforcement Steel:**

The Steel used for Reinforcement will be of **Grade Fe – 500**.

#### **6.6 Cement:**

PPC/OPC Cement used for the work should be produced by integrated unit and of a brand approved by IRWO. If OPC cement is used, Fly Ash conforming to Grade – I of IS : 3812 shall be used as part replacement of cement up to 30% (Thirty Percent) by weight. Design Mixes shall be got approved from IRWO.

#### **6.7 Anti Termite Treatment:**

Prevention of the termite from reaching the super structure of the building and its contents shall be achieved by creating a chemical barrier between the ground and the building. This will be achieved by treating the soil beneath the building and around the foundations, bottom of trenches, and side of trench along wall including treating the back filling and other locations and pre-construction soil treatment with an insecticide using an approved insecticide using an approved process to the satisfaction of the Engineer. The chemical treatment work can be carried out by a specialized agency only with the approval of the Engineer, who must be a member of IPCA and work shall be carried out as per Para 6.4 of IS : 6313 (Pt.1 & 11) 1981. Holes up to 50 mm to 75 mm deep at 150 mm centre to center both way shall be made with 12 mm diameter steel rod on the surface to facilitate saturation of the soil with chemical emulsion.

#### **6.8 Brick Work:**

All Brick work of Fly – Ash or fired clay shall be of Class Designation 50 minimum thickness of Brick work shall be as per approved drawings. Half Brick Wall shall be laid as for Brick work and include expanded metal sheet 20 mm x 40 mm x 2.24 mm, 50 mm wide laid in every third course. The sheets will be anchored at their ends, where the portion ends or where the wall joints with other walls. The cover, i.e. the mortar imposed between the sheet and bricks shall be not less than 8 mm. The mortar covering in the direction of joint shall not be less than 15 mm. The cost of expanded metal sheet provided with the half Brick work is deemed to be included in the Rates quoted by the Contractor.

## **6.9 Doors/Windows:**

- 6.9.1** All door and window frames shall be of Kiln seasoned 1st class teak wood/Paduak wood.
- 6.9.2** The Main Entrance Door Shutter shall be 35 mm thick Panelled Door with Teak Finish. Panels formed with 1st Class Teak Wood with mouldings as approved by IRWO.
- 6.9.3** Internal doors shall be provided. Flush Door shutters (With both sides commercial veneering) finished with synthetic enamel paint of approved shade and make.
- 6.9.4** All windows shutters shall be of Paduak Wood having double shutters, glazed with 4/5 mm thick float glass and SS Wire mesh wherever required including accessories, as per approval of IRWO.
- 6.9.5** The Windows shall also be provided with MS Grill of approved pattern and thickness.

## **6.10 Sand:**

In case river sand is not available, M-sand can be used in other than plastering work with the approval of IRWO. M-sand should be as per IS specifications.

## **6.11 Flooring:**

Vitrified Tile Flooring shall be provided in the Drawing , Dining Room and Bed Rooms. Matt Finished Ceramic Tiles of approved make shall be provided in Verandas/Balconies with minimum thickness of 7,5 mm – 8.0 mm or above. Vitrified Floor Tiles of 600 x 600 mm size should have a minimum thickness of 9.0 mm. Pre Cast and Pre Polished Concrete Tiles (**Eurocon or equivalent**) for Stair case and common areas.

## **6.12 Wall and Ceiling Finish:**

All internal walls shall be plastered with Cement mortar and provided with White Cement Putty and finished with Acrylic Paint or Dry Distemper of colour and shade to be approved by IRWO. Ceiling to be White Washed.

## **6.13 External Façade:**

External Facade to be finished with Textured Paint of approved Brand.

#### 6.14 **Bath Room/Toilets:**

Ceramic Glazed Wall Tiles of approved make up to full height in Bath Rooms and Toilets with minimum thickness of 5.5 mm and above and Anti Skid Matt finished Ceramic Tiles for Flooring with minimum thickness of 7.5 mm and above. Approved make and model Ceramic Bath Room fixtures, C. P. Brass fittings and Mirror and Quarter Turn Chromium plated Brass Fittings along with concealed Plumbing of approved make. CPVC Internal pipes for Cold and Hot water.

**European Water Closet:** Floor Mounted EWC.

**Wash Basin:** 550 mm x 400 mm provided with C. P. Brass Pillar Tap of approved Make and Model.

**Bath Fittings:** C. P. Brass Wall Mixer with Shower Rose of minimum 100 mm dia in One Toilet of each Dwelling Unit, other Toilets to have C. P. Brass Stop with Shower Rose.

#### 6.15 **Kitchen:**

Granite Stone working Top with Ceramic Glazed Wall Tiles up to 600 mm height on walls above the working top, with minimum thickness of 5.5 mm and Anti Skid Matt finished Tiles for Flooring with minimum thickness of 7.5 mm. Kitchen Sink of Stainless Steel with 250 mm deep bowl shall be provided with Swan type Swival Pillar Tap.

#### 6.16 **Water Proofing:**

- (i) **Terrace:** Brick Bat Coba as per CPWD Specifications and relevant IS Codes or as per Specifications approved by IRWO.
- (ii) **UG Tank:** Injection Grouting with Water Proofing Compound as per CPWD Specifications and relevant IS Codes.
- (iii) **Sunken Slabs:** Three course Acrylic and Cement based Water Proofing treatment as follows:
  - (a) Top of Structural RCC Slab shall be laid on a gentle slope of 1 in 100 towards spout side, 25 mm dia drainage spout be fixed through the external wall at an appropriate level, so that its invert level is at the final finish surface. This drainage spout should project about 75 mm (Minimum) outside external wall, while the inner face shall be flushed with the final treated surface. This drainage spout may be laid to gentle slope 1 in 50.

- (b) All C.I./G.I./PVC/PPR/CPVC Pipes and accessories in the Sunken portion shall be laid, fixed and tested. The discharge from wash basin, ablution tap shall be connected through G.I. extension pipe to C. I. 'P' Trap in accordance with details shown in the drawing. The opening around G.I./C.I./PVC/UPVC/PPR/CPVC and spout pipes shall be grouted in cement concrete mixed with Water Proofing Compound as shown in drawing and junction of all C.I./G.I./PVC/PPR/CPVC pipes shall be sealed with approved brand of sealant namely Aqua coat S & F of M/s Essen Supplement India Ltd., or Pidi – Seal A-11 of M/s Pedilite as shown in the drawing and tested for leakage.
- (c) Surface should be cleaned and made free from oil, grease, dirt, dust and other surface contaminate and all Cavity/Holes shall be filled up and leveled. Surface shall be thoroughly dampened with water preferably over night before application of the treatment.
- (d) Base Coat of 12 mm thick layer of Cement Mortar 1 : 6 (1 Cement : 6 Coarse Sand) Admixed with integral water proofing compound of approved brand conforming to IS : 2645 – 1975 and IS : 9103 – 1999, in proportion approved by Engineer and recommended by the manufacturer laid to required slope on the horizontal surface of Sunken portion and treating similarly adjacent vertical surface/wall, up to full height of Sunken portion including rounding off junction.
- (e) Two Coats of Acrylic based integral Water Proofing coating using approved brand of Water Proofing Compound conforming to IS : 2645 – 1975 (Re-affirm 1990 and IS : 9103 – 1991, mixed in proportion specified by the manufacturer with cement or otherwise and applied in a manner prescribed by them to horizontal and vertical surfaces of Sunken portion. The second coat shall be applied at least after 4 hours of the application of the first coat and the thickness of each coat shall be about 1 mm or as prescribed by the manufacturer. The Water Proofing Compound being used shall be of approved brand.
- (f) Final coat of 12 mm thick layer of cement mortar 1 : 6 (1 Cement : 6 Coarse sand) admixed with integral Water Proofing Compound of approved brand conforming to IS : 2645 – 1975 and IS : 9103 – 1999 in proportion approved by Engineer and recommended by the manufacturer laid to required slope on the horizontal surface of Sunken portion and treating similarly adjacent vertical Surface/ Wall, up to full height of Sunken portion including rounding off junction. The Water Proofing Compound being used shall be of approved brand.
- (g) The whole Sunken area shall be flooded with water for minimum period of Two Weeks.

(h) Only following approved brand of Water Proofing Compound shall be used.

(i) For mixing in Cement Plaster or Base Coat and Final Coat.

- **CONPLAST** by M/s FOSROC  
 - **CONFLOW** by M/s Essen Supplement India Ltd.,  
 - **TAPECRETE** by M/s CICO  
 - **PIDIPROOF** by M/s OIDLITE  
 - **ROFFE SUPERCRETE** by M/s ROFFE  
**For Acrylic based integral Water Proofing Coating.**

- **BRUSH BOND** by M/s FOSROC  
 - **AQUA COAT S&F** by M/s Essen Supplements India Ltd.,  
 - **PROOF COAT BLACK** by M/s PIDILITE

(j) **Measurement:** Horizontal and Vertical surface of the Sunken portion as existing before treatment shall be measured and paid for.

**Work shall be executed in accordance with drawing No.IRWOWP/Sunken/IRWO.**

#### **6.17      Internal and External Piping:**

Approved make CPVC pipes conforming to IS : 15778 shall be used for internal water supply for the Dwelling Units. UPVC pipes conforming to IS : 4985 (Class – 3) with injection moulded fittings conforming to IS : 7834 – 1975 shall be used for External Water Supply. UV stabilized soil, waste and rain water pipes conforming to IS : 13592 – 1992 Type – B shall be used with V-Shaped Rubber Ring conforming to IS : 5382.

#### **6.18      ROADS:**

- (i) Sub – Grade to be compacted at OMC in Layers not exceeding 20 cm depth to achieve 90% (Ninety Percent) of dry density.
- (ii) Water Bound Macadam (WBM) in two Layers of 150 mm and 100 mm thick with stone aggregate of 90 mm to 45 mm and 63-45 respectively mm including 12.5 mm size stone screening, duly compacted.
- (iii) 25 mm thick Top Layer of Pre-mixed bituminous carpet surfacing with Tack Coat as per BOQ.

### **6.19 Letter Boxes:**

Letter Boxes of design and material approved by IRWO are also to be provided at suitable Location for each Dwelling Unit with unit number written on each Letter Box.

### **6.20 Water Supply System:**

Source of Water Supply at one point with pumping arrangement to Over Head Water Tank on Top of each Block of Dwelling Units shall be provided. Pumps shall be of adequate capacity and of approved make.

### **6.21 Sewerage System:**

Properly designed Under Ground Sewerage System with Man Holes shall be provided and taken to External Sewerage System of the Local Authority for final disposal of the treated Sewage.

#### **6.22.0 Soil, Waste & Vent Pipes**

#### **6.22.1 UPVC Pipes and Fittings**

##### **6.22.1.1 Specifications**

UV Stabilized soil and vent pipes conforming to IS:13592-1992 Type B with minimum thickness 3.2 mm. V-shaped Rubber Ring conforming to IS:5382 shall be used.

Fittings for UPVC soil and vent pipes viz. Floor traps, Bends, Door Bends, Y Junction, Reducers, Q-P & S traps, Tee, Door Tee, WC Connector, Vent Cowl, Socket Plug, etc. shall be injection moulded and conform to DIN: 19534-1979 or ISO:3663-1991 with minimum thickness of 3.2 mm. Lubricant and Solvent Cement shall be of approved make.

##### **6.22.1.2 Laying and Jointing UPVC Pipes in standard length of 6m, 3m, 1.8m, 1.2m, 0.9 m and 0.6 m and normally no cutting is required for laying these standard lengths.**

However, when minimum required lengths are less than these standard lengths, pipes shall be cut square by wrapping newspapers or smaller sheet of paper around the pipes with no overlap on the edges and mark the line around the pipe to be cut with pencil or felt-tip pen and cut the pipe at the marked line with fine tooth saw. The pipe shall be chamfered at an angle of approximately 15° to about 1/3 rd of the pipe thickness with a coarse file

Clean the spigot and socket ends of the pipe and inner side of the sealing groove of the fitting so that these are free from dust, grit, grease and are dry. Insert pipe into socket without the rubber seal ring in place and mark pipe when it is fully inserted. Remove the pipe and place rubber seal ring in groove of the socket ensuring that seal is perfectly placed. Apply jointing lubricant at the lip of the rubber ring and chamfering end of the spigot of the pipe or fittings only. Push the pipe firmly into socket and put the insertion mark previously made.

Where expansion gap is required, the pipe may be pulled back to the required length. Marking pipe to ensure that the appropriate expansion gap is left can be done either by inserting the pipe to full depth, marking pipe around pipe mouth of the socket and then withdrawing to the required amount or by measuring insertion depth and marking spigot and then inserting to the required depth.

**Quantities of lubricant shall be regulated as follows:**

<b>Size of Pipe in mm</b>	<b>No. of joints per kg.</b>
75	500
110	300
160	200

Pipes shall be supported by suitable pipe clips. For light duty and small pipe size plastic pipe clips may be used. For heavy duty installation matching metal pipe support should be used. Maximum support distance between clips shall be as follows:

<b>Pipe size in mm</b>	<b>Horizontal meters</b>	<b>Vertical meters</b>
40 mm	1.2	0.5
50 mm	1.2	0.7
75 mm	1.8	0.9
110 mm	1.8	0.9
160 mm	1.8	1.0

Stand off distance from the centre line of the pipe to the face of the wall shall not be less than the appropriate value given below:

<b>Size of Pipe in mm</b>	<b>Stand of distance in mm</b>
75 mm	70 mm
110 mm	85 mm
160 mm	110 mm

For installation in walls/concrete the pipe and fitting pipe inserted into slots without a cement base have to be first applied with thin coat of PVC solvent cement followed by sprinkling of dry sand (medium size) and allowed to dry. Solvent cement of approved make shall be used. Solvent cement can be stored in cool place except when actually being used at the work site. Solvent cement should be properly closed and kept in a shady place when not in use. Do not add any thinner to the cement and after making the joint the excessive solvent cement should be cleaned with a cloth. The (approximate) number of joints that can be made with one kg. of approved brand of solvent cement are as follows:

Size JTS	20 324	25 270	32 225	40 180	50 130	63 125	75 103
Size JTS	90 79	110 54	140 36	160 27	180 25	200 15	
Size JTS	225 12	250 9	280 7	315 5	355 3	400 2	

#### 6.22.1.3 Fixing of pipes with Holder Bat Clamps:

All pipes (G.I, C.I and PVC etc.) will be kept 75 mm (minimum) clear from the wall fixed with M.S. holder bat clamps fabricated with M.S. flat 25 mm x 6mm fixed with angle iron of size 40 x40 x 6 mm, of required size, shape & length, with nuts and bolts of minimum 10 mm dia at all heights and levels. The angle iron shall be fixed in cement concrete (1:2:4) blocks 115 x115 mm. The angle iron and holder bat clamp shall be painted with two coats of enamel paint over a coat of primer of approved brand. The cost of labour and material for fixing arrangement and painting of the same will be deemed to be included in the rate of providing and fixing of pipes.

#### 6.22.1.4 Stays:

The terminal-vent part of all soil, waste & vent pipes shall be supported with M.S. stays. The stays shall be minimum one meter long of 10 mm dia M.S. bar. One end of stay shall be bent for embedding in the wall in cement concrete block of size 20 x 10 x10 cm in 1:2:4 (1 cement : 2 coarse sand: 4 graded stone aggregate 20 mm nominal size). The concrete shall be finished to match the surrounding surface.

## 6.23.0 Traps

### 6.23.1 General

The entry of foul air to the building should be prevented by suitable traps, properly situated. Traps should always be of a self cleaning pattern. A trap, which is not an integral part of an appliance, should be directly attached to its outlets and the pipe bore should be uniform throughout and have a smooth surface. Traps for use in domestic waste installation and all other traps should be conveniently accessible and provided with cleaning eyes or other means of cleaning.

The size of the trap shall be as per the internal diameter of the waste pipe of the appliances to which it is attached. Minimum internal diameter for various waste appliances are as given in the following table.

Item	Diameter (mm)
Wash basins	30
Domestic sinks and baths	40
Floor traps (outer diameter)	65

### 6.23.2 UPVC Floor Trap

UPVC Q, P or S Trap & Gully Trap shall be of minimum 3.2 mm thickness and topping for inlet to floor traps may be with or without cover.

#### 6.23.2.1 Installation of UPVC Floor Traps

- ☐ Determine correct location of "P"/"Q"/"S" Traps and set in on a firm base, located relative to the floor finish by pouring concrete on a slab.
- ☐ Bedding can be carried out by pouring concrete around "P" or "Q" or "S" Trap, ensuring that Trap's outlet is left clear of concrete.
- ☐ Place Supreme WC Connector Ring to the socketed end of 125/110 "P" "Q"/"S" Trap. Apply Rubber lubricant on WC Connector Ring as well as on outer side of Indian Type WC pan and now complete the joint by pushing Indian Type WC pan to home of 125 mm socket of "P"/"Q"/"S" Trap.
- ☐ When 110/110 mm "P"/"Q"/"S" Trap. are to be used, (for jointing other than Indian Type WC pan connection) the joints are to be completed with help of solvent cement.
- ☐ The outlet of 110 mm can be inserted in the socket end of pipe/fittings (as the case may be) and joint can be Solvent Cemented to make a leak proof joint.

**6.24.0 Installation Of Soil, Waste & Ventilation Pipe Work:****6.24.1 Gradient**

The gradient of a horizontal branch should not be flatter than 1 in 50 and not steeper than 1 in 10.

**6.24.2**

The pipe work in branch connections should always be arranged to allow free drainage of the system. Connections to main or branch pipes should be so arranged as to prevent cross flow from one appliance to another. Connections should be made with an easy sweep in the direction of flow

**6.24.3 Joints**

All joints in pipes work and all pipe work to appliances should be made in such a manner as to be air tight and water tight and to remain so during use.

**6.24.4 Bends**

Bends should be of long radius where practicable. In the case of bender in the bottom most of pipes, they should necessarily be of long radius and should preferably be made of 135 degree (1/8) bends.

**6.24.5 Access:**

Ample provision should be made for access to all pipe work and embedding of joint in walls should be provided as far as possible. All tee and cross pieces shall be with access doors. Wherever instructed by the Engineer, the bends with access doors shall also be provided. The bottom most pipe of every soil and waste stack shall be provided with an access piece of a height not more than 35 cm from the finished ground level.

**6.24.6 Soil Pipes**

Soil pipes, whether inside or outside the building shall not be connected with any rain water pipe and there shall not be any trap in such soil pipe or between it and any drain with which it is connected.

**6.24.7 Ventilating Pipe:**

a. Ventilating pipes should be so installed that water cannot be retained in them. They should be fixed vertically. Whenever possible, horizontal runs should be avoided. Ventilating pipe shall be carried to such a height and in such position as to afford by means of open end of such pipe or vent shaft, a safe outlet for foul air with the least possible nuisance.

b. The upper end of the main ventilating pipe may be continued to the open air above roof level as separate pipe or it may point the MSP and /or MWP above the floor level of the highest appliance. Its lower end may be carried down to join the drain at a point where air relief may always be maintained.

c. Branch ventilating pipe should be connected to the top of the BSP and BWP between 75 mm & 450 mm from the crown of the trap.

d. The ventilating pipe shall always be taken to a point 150 cm above the level of the caves or flat roof or terrace parapet whichever is higher or the top of any window within a horizontal distances of 3 m. The least dimension shall be taken as a minimum and local conditions shall be taken into account. The upper end of every ventilating pipe shall be protected by means of a cowl.

#### **6.24.8 Concrete Encasing:**

All soil and waste pipes below ground floor fills and in wall chases (but not in open ducts) shall be supported and covered with 50 mm cement concrete 1:3:6 in bed and all around without any extra cost. Encasement of such pipes shall be done after testing of pipes.

#### **6.24.9 Painting:**

All pipes in ducts and in exposed position shall be painted with minimum three coats of paint of approved shade and quality. Pipes under floor or in chases need not be painted.

#### **6.25.0 Rain Water Pipes**

Pipes for the conveyance of rain water from the roof top, balcony, etc. shall generally be, of UPVC conforming to IS. 13592-1992 Type A with minimum thickness of 1.8 mm and rubber ring shall conform to IS:5382. Other fittings like tees, bends, reducers shoes etc. shall be injection moulded and conform to DIN-19534-1979 or ISO-3633-1991. RWP's shall be measured in running meter length. Cost of necessary fittings, fixing arrangement as per para no. 8.8.4 etc., shall be deemed to be included in the rate. The main water pipe will be supported on pedestal or embedded in brick masonry/cement concrete. The pedestal or cement concrete/brick covering will be paid for separately.

#### **6.25.1 Installation of UPVC Rain Water Pipes:**

☐ The Rain water pipes shall be fixed to the outside of the external walls of the building or in recesses or chases cut or framed in such external walls or in such other manner as may be approved by the Engineer.

□ A rain water pipe conveying rain water shall discharge directly or by means of a channel into or over an inlet to a surface drain or shall discharge freely in a compound drained to surface drain but in no case shall it discharge into any closed drain.

□ Whenever it is not possible to discharge a rain water pipe into or over an outlet to a surface drain or in a compound drain to a surface drain or in a street drain within 30 m from the boundary of the premises, such rain water pipe shall discharge into a gully trap which shall be connected with the street drain. Such a gully trap shall have a screen and a silt catcher incorporated in its design.

□ If such street drain is not available within 30 m of the boundary of the premises, a rain water pipe may discharge directly into the kerb drain and shall be taken through a pipe outlet across the footpath, if any, without obstructing the path.

□ A rain water pipe shall not discharge into or connect with any soil pipe or its ventilating pipe or any waste pipe or its ventilating pipe, nor shall it discharge into a sewer unless specifically permitted to do so by the administrative authority, in which case such discharge into a sewer shall be intercepted by a gully trap.

□ A bell mouth inlet at the roof surface is found to give better drainage effect, provided proper slopes are given to the roof surface.

□ Spacing of the pipes depends on the position of the windows and arch openings but 6 m apart is a convenient distance.

□ The strainer fixed to the bell mouth inlet shall have an area 1 ½ to 2 times the area of the pipe which it connects.

□ The storm water shall be let off in a suitable open drain to a water course. The open drain, if not of pucca masonry throughout, shall be so at least where there is either a change in direction or a gradient change.

#### **6.26.0 External Water Supply:**

#### **6.26.1 UPVC Pipes & Fittings for External Water Supply:**

##### **6.26.2.1 Specifications**

Wherever specified, the UPVC pipes for water supply shall be reasonably round and shall be supplied in straight lengths with socketed ends. The internal and external surfaces of pipes shall be smooth and clean, free from grooving and other defects. The end shall be cleanly cut and square with the axis of pipe. The pipe shall be designated by external diameter conforming to IS:4985 with latest amendments.

Fittings shall be injection moulded and conform to IS : 7834-1975 and the joints wherever required shall be made by solvent welding. All dimensions and tolerances of UPVC pipes shall conform to table below:

**(REFERENCE TO IS CODE 4985 : 2000)**

					Working Pressure, Mpa											
Nominal out side diameter (Nominal size)	Mean out side diameter		Out side diameter at any point		WALL THICKNESS IN MM											
					Class-1 0.25		Class – 2 0.40		Class-3 0.60		Class-4 0.80		Class-5 1.00		Class-6 1.25	
	MAX	MIN	MIN	MAX	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
90	90.0	90.3	88.9	91.1	1.3	1.7	2.1	2.6	3.1	3.7	4.0	4.6	5.0	5.7	6.1	7.1
110	110.0	110.4	108.6	111.4	1.6	2.0	2.5	3.0	3.7	4.3	4.9	5.6	6.1	7.1	7.5	8.7
125	125.0	125.4	123.5	126.5	1.8	2.2	2.9	3.4	4.3	5.0	5.6	6.4	6.9	8.0	8.5	9.8
140	140.0	140.5	138.3	141.7	2.0	2.4	3.2	3.8	4.8	5.5	6.3	7.3	7.7	8.9	9.5	11.0
160	160.0	160.5	158.0	162.0	2.3	2.8	3.7	4.3	5.4	6.2	7.2	8.3	8.8	10.2	10.9	12.6
180	180.0	180.6	177.8	182.2	2.6	3.1	4.2	4.9	6.1	7.1	8.0	9.2	9.9	11.4	12.2	14.1
200	200.0	200.6	197.6	202.4	2.9	3.4	4.6	5.3	6.8	7.9	8.9	10.3	11.0	12.7	13.6	15.7

The pipes shall be classified by pressure RATINGS (Working Pressure) at **27 ° C** as follows

Class of Pipes	Working Pressure
<b>Class - 1</b>	0.25 Mpa (2.5 Kg./cm <sup>2</sup> )
<b>Class – 2</b>	0.4 Mpa (4 Kg./cm <sup>2</sup> )
<b>Class – 3</b>	0.6 Mpa (6 Kg./cm <sup>2</sup> )
<b>Class – 4</b>	0.8 Mpa (8 Kg./cm <sup>2</sup> )
<b>Class - 5</b>	1.0 Mpa (10.0 Kg./cm <sup>2</sup> )
<b>Class – 6</b>	1.25 Mpa (12.5 Kg./cm <sup>2</sup> )

**6.26.2.2** All excavation work for laying UPVC shall be done as described in the specifications or Schedule of Quantities or as shown in the drawings.

**6.26.2.3 Trenches:**

The trench bottom shall be carefully examined for the presence of hard objects such as flints, rock projections or tree roots etc. Pipes shall be bedded in sand or soft soil free from rock and gravel. Backfill 15 cm above the pipe shall also be of fine sand or soft soil. Width of trench shall not be less than outside diameter of pipe plus 30 cm. Pipes shall be laid at 90 cm below the ground level (measured from ground to top of the pipe).

Signatures of the Tenderer/s

#### **6.26.2.4 Jointing**

Only injection moulded fittings shall be used. Solvent cement recommended by manufacturer is to be applied generously on both the surfaces to be jointed with non-synthetic brush and joint is made at ambient temperature. Full load on joints to be applied after 24 hours. Dust, oil, grease etc shall be wiped out with a dry cloth and suitable solvent from the outer surface and inside of the fitting shall be roughened with emery paper. Pipe shall be pushed to the total insertion of the socket and held for 2 minutes as otherwise the pipe may come out of fitting. Surplus cement solvent on the pipe surface shall be wiped out.

In summer months joints shall be made preferably early in the morning or in the evening when it is cooler to avoid joint from pulling apart when it cools. Heat application method shall not be allowed.

#### **6.26.2.5 Flanged Joint**

For jointing UPVC pipes to valves, vessels and large size metal pipes, the joint is made by the compression of a gasket or ring seal set in the face of C I flange. Flange solvent welded in UPVC pipes shall be as per manufacturer's specifications.

#### **6.26.2.6 Crossing Road or Drain**

Where UPVC pipe crosses a road or drain it shall be through RCC pipe==

#### **6.27 Water Harvesting:**

Properly designed Water Harvesting arrangements shall be provided as per the requirements of the Local/Central sanctioned authority.

#### **6.28 Anti – Termite Treatment :**

##### **Chloropyrifos Emulsifiable Concentrate:**

1% only be used for Anti termite treatment.

Contractor shall procure the chemical of required concentration with the specific approval of Engineer-in-Charge in sealed original containers directly from the reputed and authorized dealers. The chemical shall be kept in the custody of the Engineer-in-Charge or his authorized representatives and issued for use to meet the day's requirements. Empty containers after washing of concentrated chemical left unused at the end of the day's work shall be returned to the Engineer-in-Charge or his authorized representative. Full quantity shall be brought to site before completing the excavation in foundations.

### **Pre– Construction Chemical Treatment:**

Chemical treatment of soils for the protection of buildings from attack of subterranean termites shall be done as per IS:6313(PART II). Treatment shall be got done only from the approved specialized agencies using the chemical procured directly as per direction of the engineer in charge from reputed and authorized dealers. Graduated containers shall be used for dilution and spraying of the chemical shall be done using hand operated pressure pumps. Proper check should be kept to ensure that the specified quantity of chemical is used for the required area during the operation.

### **Treatment for Masonry Foundation and Basement:**

(a) The bottom surface and the sides (Up to a height of 300 mm) of the excavations made for masonry foundations and basement shall be treated with the chemical at the rate of 5 Litres per square meter surface area.

(b) After the masonry foundations and the retaining wall of the basements come up, the back fill in the immediate contact with the foundation structure shall be treated at the rate of 7.5 Litres Per Sq. m. of the vertical surface of the substructure for each side. If water is used for ramming the earth fill, the chemical treatment shall be carried out after the ramming operation is done by rodding the earth at 150 mm centers close to the wall surface and spraying the chemical with the above dosage. The earth is usually returned in layers and the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth in contact with these surfaces is treated with the chemical.

### **Treatment for R.C.C Foundation and Basements:**

In the case of R.C.C foundations, the concrete mix is dense (being 1:2:4 or richer). It is, therefore, unnecessary to start the treatment from the bottom of excavations. The treatment shall start at the depth of 500 mm below ground level except when such ground level is raised or lowered by filling or cutting after the foundations have been cast. In such cases, the depth of 500 mm shall be determined from the new soil level resulting from the filling or cutting mentioned above, and soil in immediate contact with the vertical surfaces of R.C.C foundation shall be treated at the rate of 7.5 Liters per square Metre. The other details of treatment shall be as laid down in

### **Treatment of Top Surface of Plinth Filling:**

The top surface of the filled earth within the plinth walls shall be treated with chemical emulsion at the rate of 5 Litres Per Sq. m of the surface before the Sand/Sub – Grade is laid. Holes up to 50 mm to 75mm deep at 150 mm centers both ways shall be made with crow bars on the surface to facilitate saturation of the soil with chemical emulsion.

### **Treatment of Junction of the Walls and the Floor:**

To achieve continuity of the vertical chemical barrier on inner wall surfaces from the ground level, a small channel 30 mm x 30 mm shall be made at all the junctions of walls and columns with the floor (Before laying the sub grade) and rod holes made in the channel up to ground level 150 mm apart and the chemical emulsion poured along the channel @ 7.5 Liters Per Sq.m of the vertical wall or column surface so as to soak the soil right to bottom. The soil shall be tamped back in to place after this operation.

### **Treatment of Soil along External Perimeter of Building:**

After the building is complete, 300mm deep holes shall be provided in the soil with iron rods along the external perimeter of the building at intervals of about 150 mm and these holes shall be filled with chemical emulsion at the rate of 7.5 Litres Per Sq. m of vertical surfaces of external walls. If the depth of filling is more than 300mm, the external perimeter treatment shall extend to the full depth of filling up to the ground level so as to ensure continuity of the chemical barrier. In case the earth outside the building is graded on completion of building. This treatment shall be carried out on completion of such grading.

### **Treatment of Soil under Apron (Plinth Protection) along External Perimeter of the Building:**

Top surface of the consolidated earth over which the apron is to be laid shall be treated with chemical emulsion at the rate of 5 Litres per square Metre of the surface before the apron is laid. If consolidated earth does not allow emulsion to seep through, holes up to 50 mm to 75 mm deep at 150 mm centers both ways may be made with 12mm diameter mild steel rod on the surface to facilitate saturation of the soil with the chemical emulsion.

### **Treatment of Expansion Joints:**

Anti – Termite Treatment shall be supplemented by treating with chemical emulsion through the expansion joint after the sub – grade has been laid @ 2 Litres per linear meter of expansion joint.

### **Treatment of Walls Retaining Soil above Floor Level:**

Retaining walls like the basement walls and outer walls above the floor level. Retaining soil need to be protected by providing chemical barrier by treatment of retained soil in immediate vicinity of walls, so as to prevent entry of termites through the voids in masonry, cracks and crevice etc above the floor level. The soil retained by the walls shall be treated at the rate of 7.5 Litres per square metre of the vertical surface so as to affect a continuous outer chemical barrier, in continuation of the one formed above.

### **Treatment of the Soil Surrounding Pipes, Wastes and Conduits:**

When Pipes waste and conduits enter the soil inside the area of foundations, the soil surrounding the points of entry shall be loosened around each such pipe water or conduit for a distance of 150 mm and to a depth of 75mm before treatment is commenced. When they enter the soil external to the foundations, they shall be similarly treated for a distance of over 300 mm unless they stand clear of the walls of the buildings by about 75 mm.

Guarantee bond shall have to be furnished as per Proforma at appendix A & B

All empty container shall be broken/crushed as directed by Engineer and these shall be buried in earth pits sufficiently deep for which no extra payment shall be admissible

### **6.29 Approved List of Materials/Equipments and Manufacturers :**

- (i) All materials to be used in construction shall be strictly as per the List of approved manufacturers as indicated in Annexure – I attached. If any material required for completion of work and its make is not mentioned in the List of approved manufacturers, it shall be got approved from IRWO before placing order or before procurement, manufacture or fabrication.
- (ii) Samples of all the finishing materials to be used shall be got approved from IRWO before procurement and approved samples preserved in IRWO site office for reference.

**LIST OF APPROVED MANUFACTURERS FOR CIVIL WORKS ITMES**

S.No.	Details of Material/Equipment	Manufacturer's Name
1.	Thermo Mechanical Treated Bars	SAIL, TATA, RINL, JINDAL Steel & POWER Ltd., JSW Steel Ltd., SHYAM Steel Industries Ltd.,
2.	Ordinary Portland Cement Grade – 43/ PPC Cement	ACC, J. K. Cement Ltd., J. K. Lakshmi Cement Ltd., Birla Corporation Ltd., Prism, Ambuja Cement Ltd., Ultra Tech Cement Ltd., Chittinad, Birla gold
3.	Flush Door Shutters	Archid Ply, National, Swastik (Kit Ply), Alpro, Kutty, Duck & Parrot, Century
4.	Float Glass	Saint Gobain, Asahi, Emirates, Pilkington, Modi.
5.	Source of Toughening of Glass	Gold Plus, Asahi, GSC, Allied Glasses, Sejal
6.	Fire Check Doors	Navair, Pacific, Tristar, Promat.
7.	Aluminium Structural Members/ Aluminium Extrusions.	Hindalco, Indalco, Jindal
8.	S S Hand Rail	D-Line (Denmark), Dorma, Linox, Technology (Australia), Jindal Moonglow
9.	Structural Steel – MS Tubular Sections.	TATA, SAIL, RINL, JINDAL.
10.	Silicon Sealants.	Dow Corning, Wacker, GE Silicon.
11.	Special Enamel Paint	OIKOS (I) Ltd., Asian Paints, ICI, Nerolac
12.	Mirror	Saint Gobain, Atul, Modi.
13.	Vitrified Tiles	Kajaria (World), RAK Ceramics, Somany, Simpolo.
14.	Ceramic Glazed Tiles	Kajaria Somany, Regency, Simpolo.
15.	Anti Skid Ceramic/Heavy Duty Matt Finished Floor Tiles.	Kajaria Somany, Asian, Simpolo.
16.	Paint Distamper.	ICI, Asian, Johnson & Nicolson, Nerolac.
17.	Poly Carbonate Sheets	Danpalon (Dan Pal (I) Pvt., Ltd.), GE Plastic.

Signatures of the Tenderer/s

18.	Gypsum Board	Lafarge, India Gypsum (Gyprock – Saint Gobain.
<b>S.No.</b>	<b>Details of Material/Equipment</b>	<b>Manufacturer's Name</b>
19.	Calcium Silicate False Ceiling Tiles.	Aerolite, Hilux or approved equivalent.
20.	S S Hardware Fittings	Godrej Boyce, Haffle, Hittachi, Blum, Golden Architectural, Arkay.
21.	Masking Tapes, Polymer.	Sun Control, Wonder.
22.	S S Screws for Fabrication	Kundan, Puja, Atul, GKW.
23.	Dash Fasteners, Anchor Bolts	Hilti, Fisher, Bosch.
24.	EDPM Gaskets.	Anand, Roop.
25.	Broken AAC Blocks.	BILT or Approved Equivalent.
26.	Water Proofing Chemicals	Kerakol, Bal Endura, Pidilite, Sika, Fair Mate, Bostik, Latricrete, CICO.
27.	Admixtures/Pigments.	Pidilite, Structural Water Proofing Co., Fosroc, Chemistik.
28.	Paver Blocks	NITCO, Hindustan, M-30 Strength Blocks Cast Locally by Firm Approved by IRWO.
29.	Mortice Lock and Latch, Night Latch	D Line Denmark, Godrej.
30.	Hydraulic Door Closer.	D Line Denmark, Hardwyn, Dorma.
31.	Pre Laminated Particle Board	Archid Ply, Alpro, Jyoti, Merino
32.	Aluminium Louvers	Hunter Douglas or Approved Equivalent
33.	White Cement	J. K., Birla, ACC, Jaypee.
34.	Cement Primer	Oikos Italy, Dulux, Asian, Nerolac, ICI
35.	Exterior Grade Paint	Asian, Nerolac, ICI.
36.	Cement Paint	Spectrum or Approved Equivalent.
37.	Poly Sulphide Sealant	Pidilite, Firmate, Fosroc
38.	G. I. Pipes	Tata, Jindal.

Signatures of the Tenderer/s

39.	G. I. Fittings	Unik, Zoloto.
<b>S.No.</b>	<b>Details of Material/Equipment</b>	<b>Manufacturer's Name</b>
40.	Sluice Valve	Kirloskar, Indian Valve Company.
41.	Butterfly Valve	Zoloto, Audco, Jayahiwa, Advance
42.	Pressure Reducing Valve	Leader, Zoloto, R. B.
43.	EWC Pan	Kohler, Hindware, American Standard, CERA, Parryware, Roca.
44.	Wash Basin	Kohler, Hindware, American Standard, CERA, Parryware, Roca.
45.	Urinal	Kohler, Hindware, American Standard, CERA, Parryware, Roca.
46.	C. P. Fittings	Jaquar, Grohe, Kohler, Marc, Mayur.
47.	Water Treatment Plant	Lon Exchange, Thermax, Pentair.
48.	Sewage Treatment Plant	Lon Exchange, Thermax, Pentair.
49.	Water Supply Pumps	Kirloskar, Mather and Platt, Crompton, KSB, Jyoti, BE, Voltas, Greaves Cotton.
50.	Electric Motors	Kirloskar, A. B. B., Siemens.
51.	M. S. Pipe Line	Tata, Jindal.
52.	Non Return Valves	Kirloskar or Approved Equivalent.
53.	Ball Valves	Normex or Approved Equivalent.
54.	CPVC Internal Pipes	Astral, Lubrizol.
55.	UPVC Pipes	Supreme, Prince, Kissan.
56.	Pressure Gauge	H – Guru or Approved Equivalent.
57.	W. C. Flusher/Urinal Flusher	Jaquar, Kohler, American Standard, AOS.
58.	Auto Water Tap	Jaquar, Kohler, American Standard, AOS, Marc, Mayur.
59.	Angle Valve/Mixer/Bottle Trap/ Flush	Jaquar, Kohler, American Standard, AOS, Marc,

Signatures of the Tenderer/s

	Valve	Mayur.
<b>S.No.</b>	<b>Details of Material/Equipment</b>	<b>Manufacturer's Name</b>
60.	S. S. Sink	Nil Kanth, Jayna.
61.	Wall Putty	Birla White Putty, J. K. White.
62.	C. I. Pipes	Neco, SKT.
63.	C. I. Fittings	Neco, SKT.
<b>NOTE:</b>	<b>Any other Item required to complete the Job and not mentioned above, shall be got Approved from IRWO before Procurement/Manufacture.</b>	

Signatures of the Tenderer/s

## **SECTION-7**

### **TECHNICAL SPECIFICATION FOR INTERNAL ELECTRICAL WORKS**

Booklet for Standard Technical Specifications for Internal & External Electrical works as applicable in IRWO is available for sale in the Office of Managing Director, IRWO, Railway Offices Complex, Shivaji Bridge (Minto Bridge), New Delhi-110001. This can be purchased on payment of rs.500/- each. These Technical Specifications are general in nature and will be applicable wherever required based on Scope of Work, BOQ and Drawings.

The Technical Specifications for Internal Electrical work is also part of this Booklet which will be followed for this Tender also.

However, the Special Condition of this Contract will be as under:-

1. After the work is awarded and before start of the electrical works in the building i.e. conduiting work for wiring, the civil Contractor will submit the profile of Electrical Sub-Contractor along with his credential which will be approved by General Manager/Elec., IRWO, Corporate Office, New Delhi.
2. The proposed Electrical Sub-Contractor will submit an attested copy of the valid Electrical Contractor Licence from State Govt. which will be approved by GM/Elect.
3. The Electrical Sub-Contractor should be 'A' Class Contractor and should have completed similar electrical works with any Govt., Semi-Govt. or Govt. Undertaking/Departments.
4. The Electrical Sub-Contractor will submit a list of competent Engineers and Staff working under him.
5. Enclosed is a list of approved manufacturers for Electrical and Mechanical items for internal and external electrical works which should be followed. In case any item of work is not mentioned in this list, the same will be got approved from GM/Electrical.

Signatures of the Tenderer/s

**List of approved Manufacturars for Electrical/ Mechanical items For internal/external  
Electrical Works**

S.No.	Details of Material/ Equipment	Manufacturer's Name
1	Lightning Arrestor	Elpro
		Oblum
2	L.T Panels /Feeder Pillars/Control panels/Meter Box	CPRI approved Manufactures
3	M.V. Switch gear	L&T
		Schneider
		ABB
		Siemens
4	XLPE Insulated Electrical cable with aluminium /copper conductor 1100 V Grade (L.T.Cable )	Skytone
		Polycab
		KEI
		Havell's
		Grandlay
		Gloster
		Finolex
5	Cable Glands & thimbles	Comet
		Dowell's ( Billar India )
		Cosmos
		Hax Brass (Copper Alloy India )
6	Selector Switches & Rotary Switches	Kaycee
		Siemens
		Salzor (L&T)
7	Indicating Meters (Voltmeters, Ampere meters etc. )	A.E
		HPL
		Rishab
8	Electronic meters	L&T
		Siemens
		Secure
		HPL
9	Indicating lamps	Rishab
		BCH
		Siemens
10	APFC Panel Factory Fabricated	L&T
		schneider (Conserve)
		ABB
		Siemens

Signatures of the Tenderer/s

11	Contactors & Starters	L&T
		Schneider
		ABB
		Siemens
12	Change Over Switches	L&T
		Schneider
		ABB
		Siemens
13	Timers	L&T
		Schneider
		ABB
		Siemens
14	Push Buttons	L&T (Salzar)
		Schneider
		ABB
		Siemens
15	PVC insulated copper conductor multistranded flexible wiring cable 1100 V grade	Skytone
		Polycab
		Finolex
		Grandlay
		Havells
16	Lighting Fixture/ luminaire with LED Lamps	Havells
		Philips
		Wipro
		Crompton
		HPL
		Osram
		Bajaj
		Zircon
17	MCBs & Earth Leakage Circuit Breakers	Legrand
		Siemens
		Schneider
		L&T ( Hager )
18	MCB distribution Boards	Legrand
		Siemens
		Schneider
		L&T ( Hager )
19	MCCBs	L&T
		ABB

Signatures of the Tenderer/s

		Schneider
		Siemens
20	HRC Fuse & Fuse Fittings	Legrand
		Hager (L&T)
		Siemens
		Schneider
21	Tools & Tackles	Taparia
22	Fire Extinguishers (ISI marked )	Minimax
		Safex
		Zennith
23	Cable Trays	Maheswari Electrical
		Needo
		Rico Steel
		Global Electrical
24	PVC conduit	AKG
		Supreme
		Finolex
		BEC
		Polypack
25	M.S.Conduit	BEC
		AKG
		steel craft
26	Modular Swiches, Socket , Bell Push, Fan Regulators etc	Anchor ( Roma)
		Legrand
		Havell,s (Crabtree,)
		North West
27	Ceiling Fans	Havells
		Bajaj
		Crompton
		Khaitan
28	Exhaust Fans	GEC
		Havells
		Crompton
29	PV Module Solar Panel,Street lighting system	Plaza
	MNRE approved	Redical
		Tracksun
		Vikram
30	Water Supply Pumps	Kirloskar
		KSB
		Crompton

Signatures of the Tenderer/s

31	AC Motors	Kirloskar
		Siemens
		Crompton
32	CT s ( Cast Resin Epoxy Coated)	Rishab
		Crompton
		Kappa
		AE
33	Gate Valves ( Gun Metal/ Ball Valves )	Leader
		Sant
34	Sluice Valves	Kirloskar
		Leader
		IVC
35	Non Return Valve	Kirloskar
		Leader
		IVC
36	Pressure Gauge	H Guru
		Fiebig
37	Pressure Switch	Indfoss
38	Enamel Paint/ Red Oxide	Asian
		Burger
		Nerolec
39	Lifts/Elevators	OTIS
		Thyssen Krupps
		Johnson
		Kone
		Shindllers

**NOTE: Any other item required to complete the job shall be got approved from IRWO before procurement/manufacture**

Signatures of the Tenderer/s

**APPENDIX-A****GUARANTEE FOR PRE-CONSTRUCTION ANTI-TERMITE TREATMENT TO BE GIVEN  
BY GUARANTOR (SPECILIST FIRM)**

To,

The Managing Director  
Indian Railway Welfare Organisation,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi -110 001.

Sub: Pre-construction Anti-termite treatment work for buildings of IRWO constructed  
at \_\_\_\_\_ Under contract agreement  
No. \_\_\_\_\_ By M/s \_\_\_\_\_

Dear Sir,

1. We M/s ..... (GUARANTOR) hereby guarantee the work of pre-construction anti-termite treatment carried out by us for foundation, floors and plinth protections of all buildings constructed under C.A. No. .... by M/s ..... Shall remain entirely free of termites for a period of 10 years from the date of completion of CA No. .... i.e. from .....

2. If any re-infestation by termite is observed during the period of guarantee of 10 years then it shall be treated with post-construction anti-termite treatment by us without any extra cost to the owner. The work of treatment shall be taken up within 15 days of receipt of intimation of the re-infestation by termites from IRWO.

3. However we shall not be responsible in anyway if the portion of the building where pre-construction anti-termite treatment has been done, is tampered by any other agency for any work addition/alterations. Further we shall not be responsible if the structure of the building is damaged due to sinking, or any act of God beyond our control.

WITNESS Signature of the Proprietor/Director of Specialist firm  
(By Principal Guarantor)  
(Signature should be stamped and dated)

Signatures of the Tenderer/s

**APPENDIX-B****GUARANTEE FOR PRE-CONSTRUCTION ANTI-TERMITE TREATMENT TO BE  
GIVEN BY GUARANTOR (PRINCIPAL GUARANTOR)**

To,

The Managing Director  
Indian Railway Welfare Organisation,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi-110 001.

Sub: Pre-construction Anti-termite treatment work for buildings of IRWO constructed at  
.....Under contract agreement No. .... By M/s ...

Dear Sir,

1. We M/s ..... (PRINCIPAL GUARANTOR) hereby confirm that the work of pre-construction anti-termite treatment for all foundation, floors and plinth protections of all buildings constructed by us under CA No. .... have been got executed from M/s ..... in terms of clause ..... on page ..... of the contract agreement.

2. The ten years guarantee for the pre-construction anti-termite treatment given by M/s ..... is enclosed here with in original.

3. We hereby guarantee as PRINCIPAL GUARANTOR under clause ..... on page ..... of contract agreement that if any infestation to termite is observed during the period of 10 years and the same is not rectified by M/s ....., the guarantor, then we as PRINCIPAL GUARANTOR shall get the rectification of termite infestation done at our own cost and without any extra cost to the Allottees. We further agree that if we default in getting the rectification of termite infestation within reasonable time after the receipt of notice from the Employer/Allottee, then IRWO may employ any other person to rectify the default. All expenses consequent thereon and incidental there to shall be borne by us and shall be recoverable from us by IRWO

4. We shall not be responsible in anyway if the portion of the building where pre-construction anti-termite treatment has been done, is tampered by any other agency for any work addition/alterations. Further we shall not be responsible if the structure of the building is damaged due to sinking, or any act of God beyond our control.

WITNESS

Signature of the Principal Guarantor (Proprietor /Director of the firm)

Signature

Name

Address

Signature

Name

Address

Signatures of the Tenderer/s

**APPENDIX-C****GUARANTEE FOR WATERPROOFING WORK GIVEN BY GUARANTOR  
(SPECILIST FIRM)**

To,

The Managing Director  
Indian Railway Welfare Organisation ,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi-110 001.

Sub: Waterproofing work for buildings of IRWO constructed at .....  
under contract agreement No. .... By M/s .....

Dear Sir,

1. We M/s ..... (GUARANTOR) hereby guarantee the work of waterproofing treatment carried out by us for all sunken floors, terraces and ..... of all buildings constructed under CA No. .... by M/s ..... shall remain entirely waterproofed for a period of 10 years from the date of completion of CA No. .... i.e. from .....

2. If any leakage/seepage/dampness occurs during the period of guarantee of 10 years, then it shall be rectified by us without any extra cost to the owner. The work of rectification shall be taken up within 15 days of receipt of intimation of the leakage/seepage/dampness from IRWO.

3. However we shall not be responsible in anyway if the portion of the building where waterproofing treatment has been done, is tampered by the occupants or any other agency for any work addition/alterations. Further we shall not be responsible if the structure of the building is damaged due to sinking, or any act of God beyond our control.

**WITNESS**

Signature of the Proprietor/Director of Specialist firm  
(By Principal Guarantor)  
(Signature should be stamped and dated)

Signatures of the Tenderer/s

**APPENDIX-D****GUARANTEE FOR WATERPROOFING WORK GIVEN BY GUARANTOR  
(PRINCIPAL GUARANTOR)**

To,

The Managing Director  
Indian Railway Welfare Organization,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi-110 001.

Sub: Waterproofing work for buildings of IRWO constructed at .....  
under contract agreement No. .... By M/s .....

Dear Sir,

1. We M/s ..... (PRINCIPAL GUARANTOR) hereby confirm that the work of waterproofing treatment for all sunken floors, terraces and of all buildings constructed by us under CA No. .... have been got executed from M/s ..... in terms of clause ..... on page ..... of the contract agreement.

2. The ten years guarantee for the waterproofing treatment given by M/s ..... is enclosed here with in original.

3. We hereby guarantee as PRINCIPAL GUARANTOR under clause ..... on page ..... of contract agreement that if any leakage/seepage/dampness occurs during the period of 10 years and the same is not rectified by M/s ....., the guarantor, then we as PRINCIPAL GUARANTOR shall get the rectification of leakage/seepage/dampness done at our own cost and without any extra cost to the Allottees. We further agree that if we default in getting the rectification of leakage/seepage/dampness within reasonable time after the receipt of notice from the Employer/Allottee, then IRWO may employ any other person to rectify the default. All expenses consequent thereon and incidental there to shall be borne by us and shall be recoverable from us by IRWO

4. We shall not be responsible in anyway if the portion of the building where waterproofing treatment has been done, is tampered by any other agency for any work addition/alterations. Further we shall not be responsible if the structure of the building is damaged due to sinking, or any act of God beyond our control.

WITNESS

Signature of the Principal Guarantor  
(Proprietor /Director of the firm)

1. Signature  
Name Address

2. Signature  
Name Address

Signatures of the Tenderer/s

**APPENDIX-E****GUARANTEE FOR UPVC/PVC/CPVC PIPE FITTINGS & PLUMBING WORKS GIVEN  
BY GUARANTOR (SPECIALIST FIRM)**

To,

The Managing Director  
Indian Railway Welfare Organisation,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi-110 001.

Sub: UPVC/PVC/ CPVC pipe fitting & plumbing works for building of IRWO constructed  
at .....under contract agreement No. .... By M/s .....

Dear Sir,

1. We M/s ..... (GUARANTOR) hereby guarantee the work of  
UPVC/PVC/CPVC plumbing work carried out by us and ..... of all buildings  
constructed under CA No. .... By M/s ..... shall remain  
entirely leakage/seepage proof without any failure of system for a period of 10 years  
from the date of completion of CA No.----- i.e. from .....

2. If any leakage/seepage/dampness or failure of system executed occurs during the  
period of guarantee of 10 years, then it shall be rectified by us without any cost to  
owner. The work of rectification shall be taken up within 15 days of receipt of intimation  
of leakage/seepage/dampness complaint from IRWO.

3. However we shall not be responsible in anyway if the portion of the building where  
UPVC/PVC/ CPVC plumbing work done is tampered by the occupant or any other  
agency for any work addition/alteration. Further we shall not be responsible if the  
structure of the building is damaged due to sinking or any act of God beyond our  
control.

**WITNESS**

Signature of the Proprietor  
/Director of Specialist firm  
(By Principal Guarantor)  
(Signature should be stamped and dated)

Signatures of the Tenderer/s

**APPENDIX-F****GUARANTEE FOR UPVC/PVC/CPVC PIPE FITTINGS & PLUMBING WORKS GIVEN  
BY GUARANTOR (PRINCIPAL GUARANTOR)**

To,

The Managing Director  
Indian Railway Welfare Organization,  
Corporate Office, Railway Complex,  
Shivaji Bridge, Behind Shankar Market,  
New Delhi-110 001.

Sub: UPVC/PVC/CPVC pipe fitting & plumbing works for building of IRWO constructed  
at .....under contract agreement No. .... By M/s .....

Dear Sir,

1.We M/s ..... (PRINCIPAL GUARANTOR) hereby confirm that the  
work of UPVC/PVC/CPVC plumbing of all building constructed by us under CA No.  
.....Have been got executed from M/s ..... In terms of clause ..... on page ..... of  
the contract agreement.

2. The 10 years guarantee for the PVC plumbing work given by M/s .....  
is enclosed herewith in original.

3.We hereby guarantee as Principal Guarantor under clause ..... on page ..... of  
contract agreement that in case of any leakage/seepage/dampness or failure of  
plumbing system of UPVC/PVC/CPVC occurs during the period of guarantee of 10  
years and the same is not rectified by M/s ..... , then we as Principal  
Guarantor shall get the rectification of leakage/seepage/dampness done at our own cost  
without any extra cost to the Allottee. We further agree that, if we default in getting the  
rectification of leakage/seepage/dampness/failure of plumbing system within reasonable  
time after the receipt of notice from the Employer/Allottee then IRWO may employ any  
other person to rectify the faults. All expenses consequent thereon and be incidental  
thereto shall be borne by us and shall be recoverable from us by IRWO.

4.We shall not be responsible in anyway if the portion of the building where  
UPVC/PVC/CPVC plumbing work done is tampered by any other agency for any work  
addition/alteration. Further we shall not be responsibly if the structure of the building is  
damaged due to sinking or any act of God beyond our control.

Signature of the Principal Guarantor (Proprietor /Director of the firm)

1. Signature

2. Signature

Name

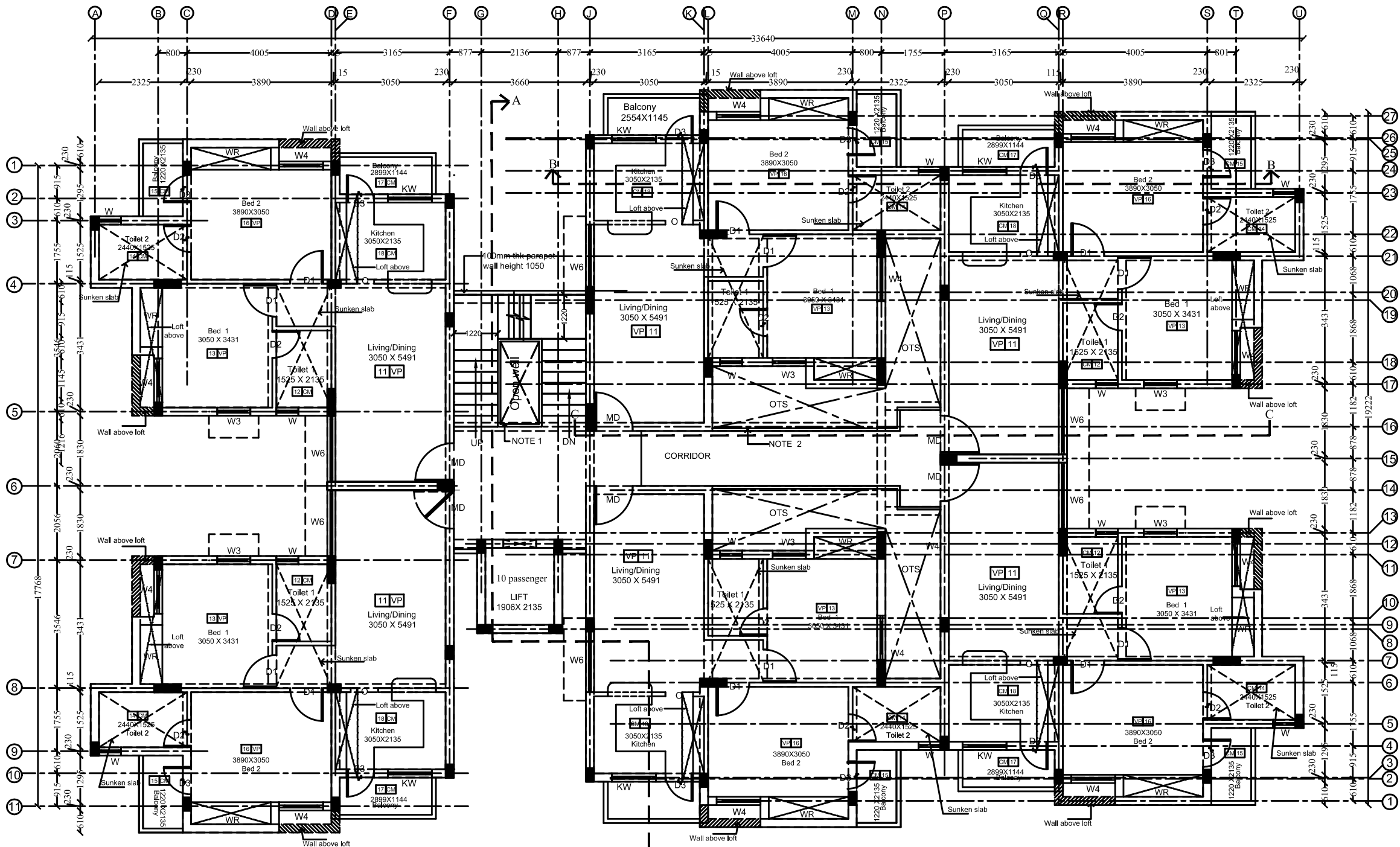
Name

Address

Address

Signatures of the Tenderer/s





## TYPICAL FLOOR PLAN

NOTE : 1

4 1/2 thk brick wall upto 1.2 m height  
from the top of step riser.

NOTE : 2

4 1/2 thk brick wall upto 1.2 m height  
& 75 mm thk RC Drops upto to lintel lvl

## CONFIGURATION-6 UNITS / FLOOR

NO.OF FLOORS STILT +4 FLOORS

NO.OF UNITS - 24 D.U.s

14 CM

JOINERY SCHEDULE				
Item	Description	Wtd	Ht	Sl
MD	TW Main door	1050	2135	Loft
GD	Grill door	1000	2135	Loft
D1	CW framed flush door	915	2135	above
D2	CW framed with (BWP) Plastic coated flush door	760	2135	
D3	CW framed with (BWP) flush door	760	2135	
W4	CW framed window with side hung glazed shutter	1220	1370	760
W6	CW framed window with side hung glazed shutter	1830	1370	760
KW	CW framed window with side hung glazed shutter	1220	1070	1070
W	CW framed window with top hung glazed shutter	610	1220	1525
O	Opening	760	2135	
GD 5	Grill door in Two portions	1525	2135	
V.6	Ventilator	1830	610	1525

FOUNDATION	R.C.C. Column footings Grade of concrete-m25
R.C.C.	M-20 Grade concrete for slabs, beams & lintels
SUPERSTRUCTURE	Masonry work with good quality of bricks & fly ash bricks
PLASTERING	C.M 1:6 for walls & 1:3 for ceiling
FLOORING	Ceramic / vitrified Tile flooring
CEMENT PAINT	2 Coats of oil bound paint distemper with 1 coat primer for walls and ceiling
WOOD WORK	Good quality First Class treated Timber frames with Flush Shutters for doors and glazed shutters for windows / ventilators
WEATHERING	B.Jelly lime mortar with burnt preservative

All Dimensions are in Millimetres	
FINISH LEGEND:	ROOM NUMBER
FLOOR FINISH	FLOOR FINISH
VP - 600 X 600mm vitrified polished tile 14 CM	
CM - 300 X 300mm ceramic matt finish tile	
CT - Colour Concrete paving Tiles	

WALL TILE	
Toilet - wall dadoing with 300 x450 mm ceramic glazed tiles upto roof level,	15 CM
kitchen - 300 x450 mm ceramic glazed tile 600 mm above kitchen Plaf form	
service -300 x450 mm ceramic glazed tile upto 1.065 m height	

FINISH NOTES	
1. 12 mm Drop in floor finish for all toilets.	
2. 25 mm Drop in floor finish for all balconies & utilities.	
Refer Blown up details of kitchen & toilet layout for correct finished floor lvl	

Rev No	Description	Date

## TYPICAL FLOOR PLAN

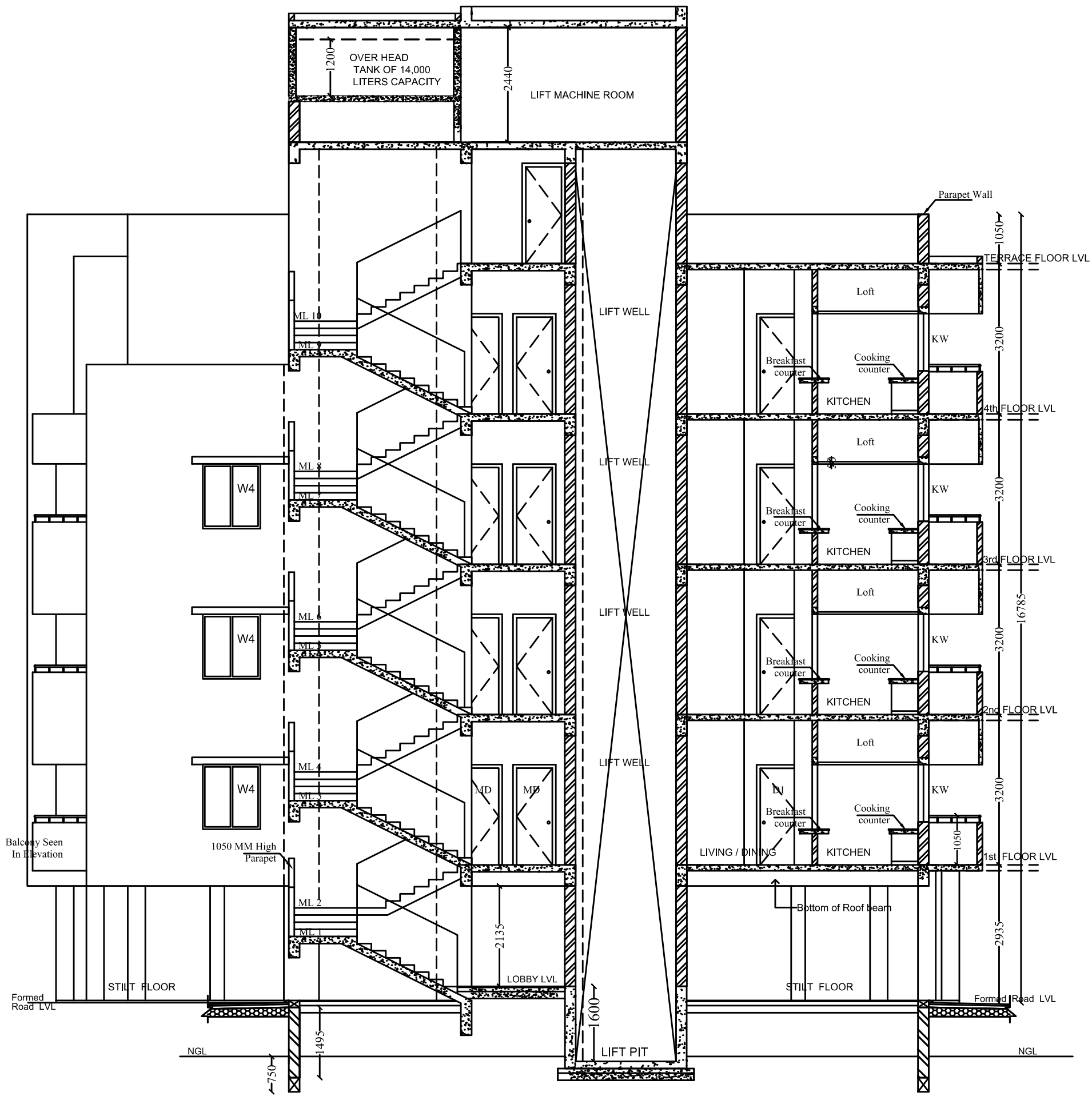
Proposed Housing For M/S IRWO at Chennai - Phase - II B

## TYPE II-B

Job no	Drg no	Date	Drn by	Chd By
1024/C	WD - 03	20.11.2014	JM	S.R

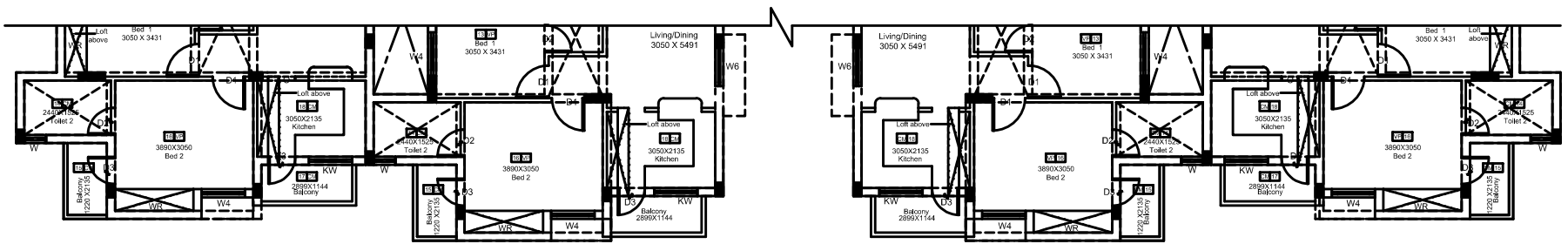
## archi-tec allied

No.1 Masilamani street, T.Nagar  
Chennai - 600 012,  
Ph : 2435 2468, Tele fax :4206 8884  
e-mail : architec allied@gmail.com

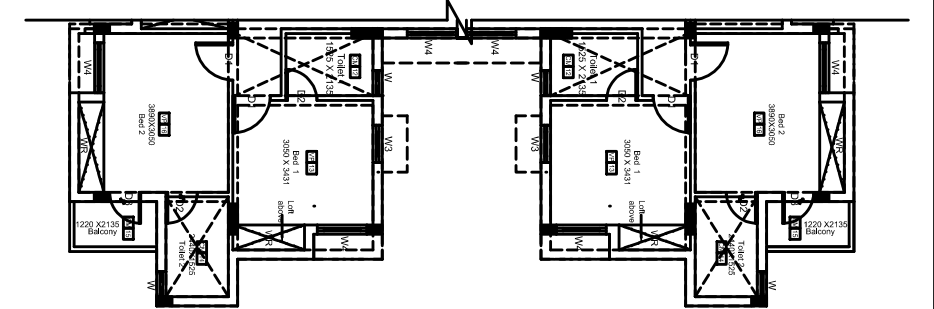


SECTION AA

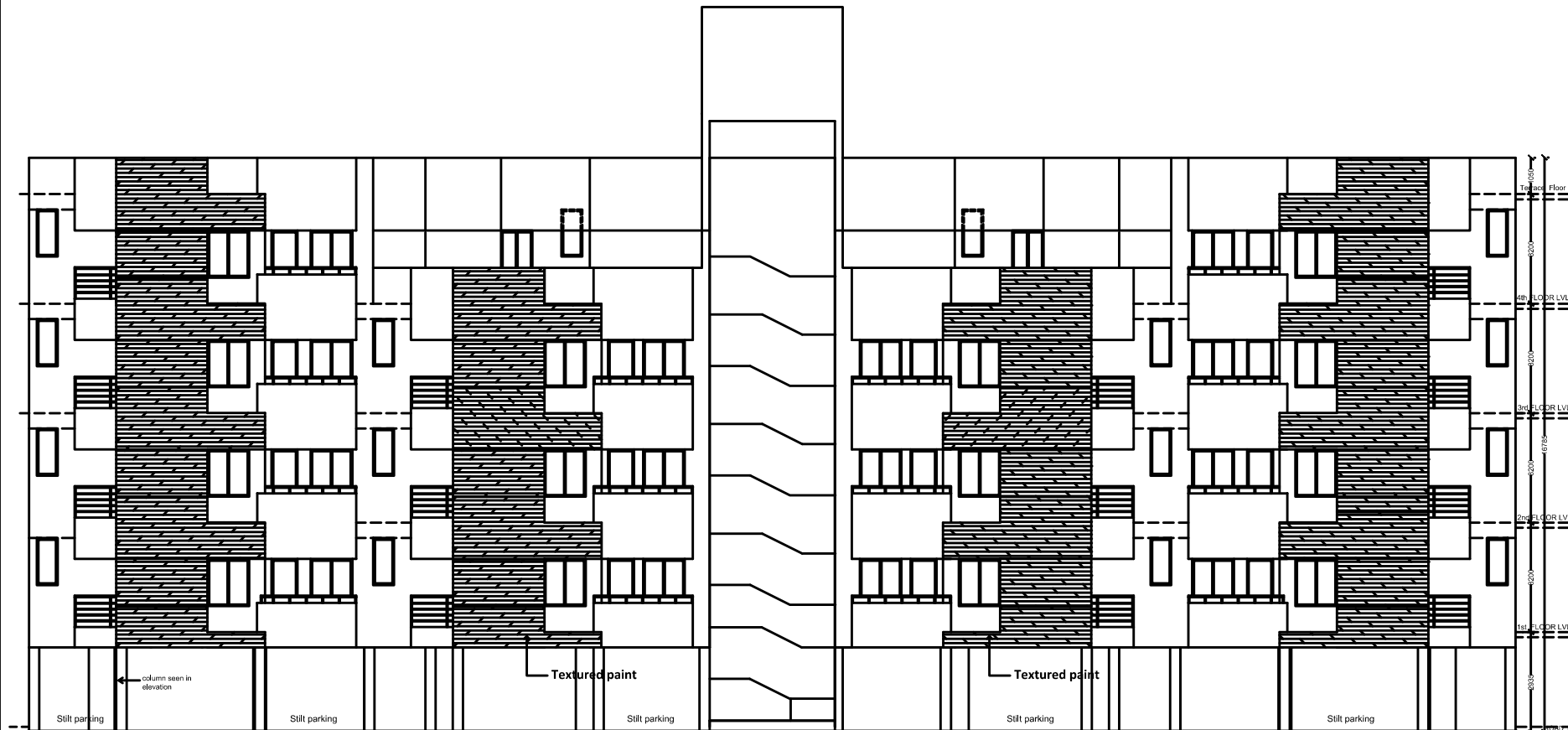
Proposed Housing For M/S IRWO at Chennai - Phase - II B	SECTION & ELEVATION					Architect Archi-tec Allied #1, Masilamani street, T-Nagar, Chennai-17. PH - 24352468 , 42068884
	Job no	Drg no	Date	Dwn by	Chd By	
TYPE II- A	1024/C	WD - 06	30 .12 .2014	JM	S.R	



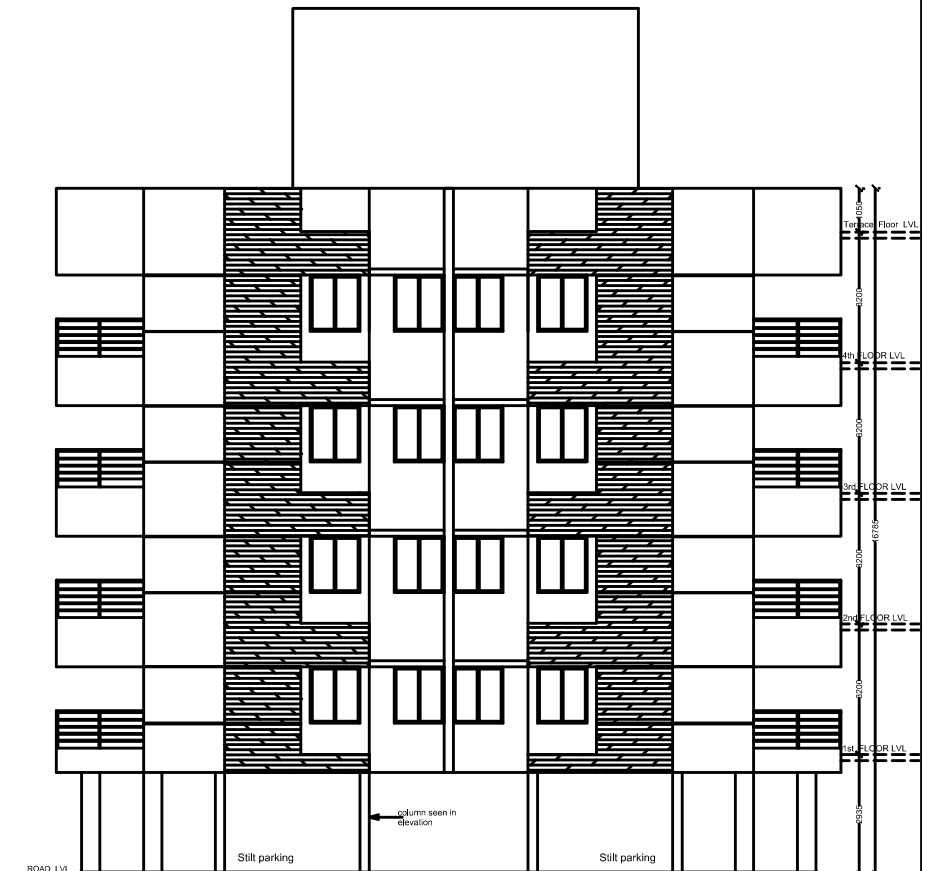
ELEVATION A



ELEVATION B

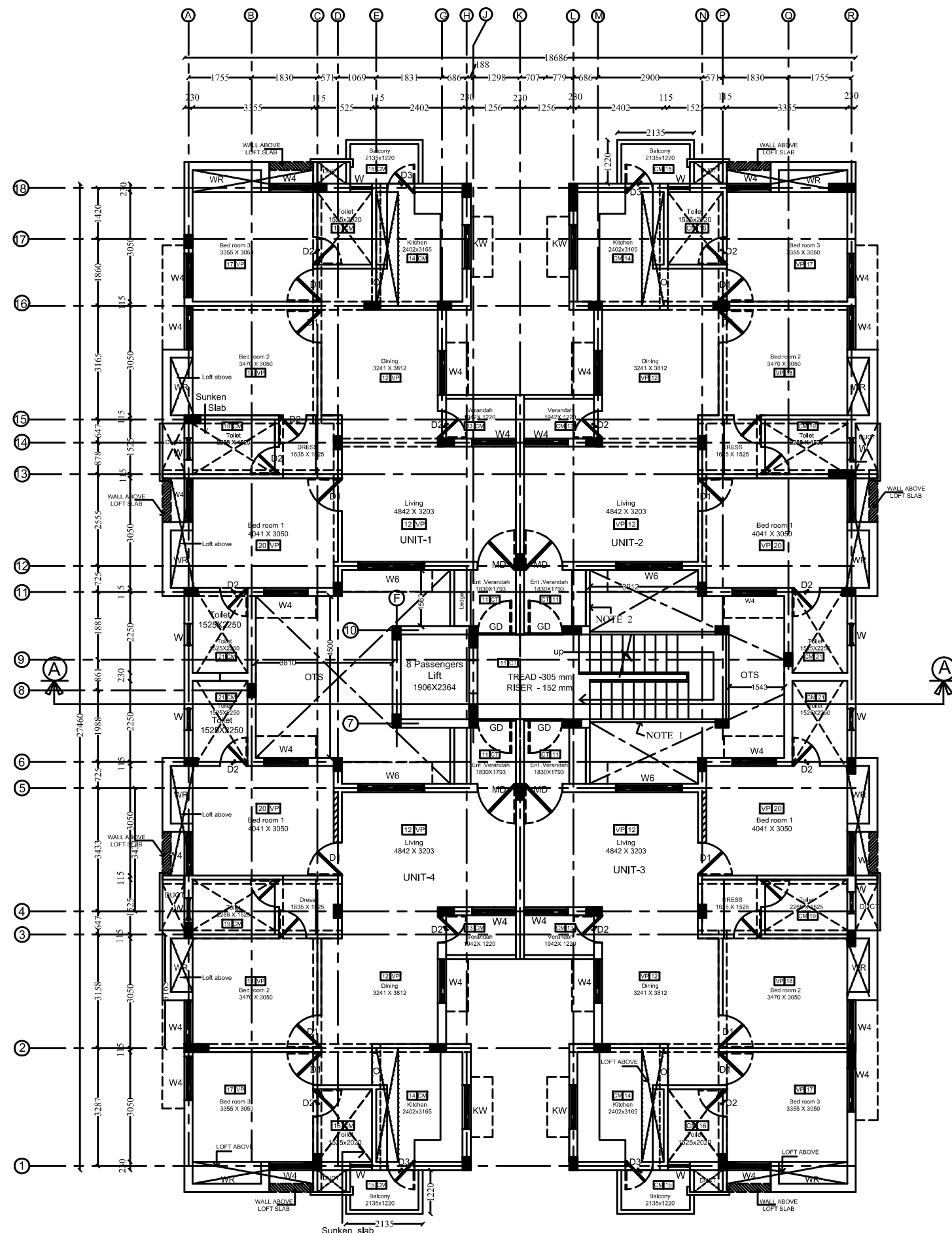


ELEVATION



ELEVATION

Proposed Housing For M/S IRWO at Chennai - Phase - II B	SECTION & ELEVATION					Architect Archi- tec Allied #1,Masilamani street, T-Nagar,Chennai-17, PH - 24352468 , 42068884
	Job no	Drg no	Date	Dwn by	Chd By	
TYPE II - A	1024/C	WD - 07	30.12.2014	JM	S.R	



TYPICAL FLOOR PLAN

SHEET NO: III-A-03  
DATE: 20.11.2014  
DATE: 09.11.2016

CONFIGURATION-UNITS /FLOOR  
NO.OF FLOORS STILT +3 FLOORS  
NO.OF UNITS - 12 D.U.s

JOINERY SCHEDULE				
Item	Description	Wid	Ht.	Sill
MD	TW Main door	1050	2135	
GD	Grill door	1000	2135	
D1	CW framed flush door	915	2135	
D2	CW framed with (BWP) Plastic coated flush door	760	2135	
D3	CW framed with (BWP) flush door	760	2135	
W4	CW framed window with side hung glazed shutter	1220	1370	760
W6	CW framed window with side hung glazed shutter	1830	1370	760
KW	CW framed window with side hung glazed shutter	1220	1070	1070
W	CW framed window with top hung glazed shutter	610	1220	1525
O	Opening	760	2135	
GD 5	Grill door in Two portions	1525	2135	
V 8	Ventilator	1830	610	1525

FOUNDATION	R.C.C Column footings Grade of concrete-m25
R.C.C	M-20 Grade concrete for slabs, beams & lintels
SUPERSTRUCTURE	Masonry work with good quality of bricks & ash bricks
PLASTERING	C.M 1:6 for walls & 1:3 for ceiling
FLOORING	Ceramic /vitrified Tile flooring
CEMENT PAINT	2 Coats of oil bond paint distemper with 1 coat primer for walls and ceiling
WOOD WORK	Good quality First Class treated Timber frames with Flush Shutters for doors and glazed shutters for windows / ventilators..
WEATHERING	B.Jelly lime mortar with burnt pressed clay tiles on top

All Dimensions are in Millimetres

**FLOOR FINISH**

VP - 600 X 600mm vitrified polished tile  
CM - 300 X 300mm ceramic matt finish tile  
CT - Colour Concrete paving Tiles

**WALL TILE**

Toilet -wall dadoing with 300 x450 mm ceramic glazed tiles upto roof level,  
kitchen - 300 x450 mm ceramic glazed tile 600 mm above kitchen Plat form  
service -300 x450 mm ceramic glazed tile upto 1.065 m height

**FINISH NOTES:**

1. 12 mm Drop in floor finish for all toilets.  
2. 25 mm Drop in floor finish for all balconies & utilities.  
Refer Blown up details of kitchen & toilet layout for correct finished floor lvl

Rev No	Description	Date
--------	-------------	------

TYPICAL FLOOR PLAN

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

TYPE III -A

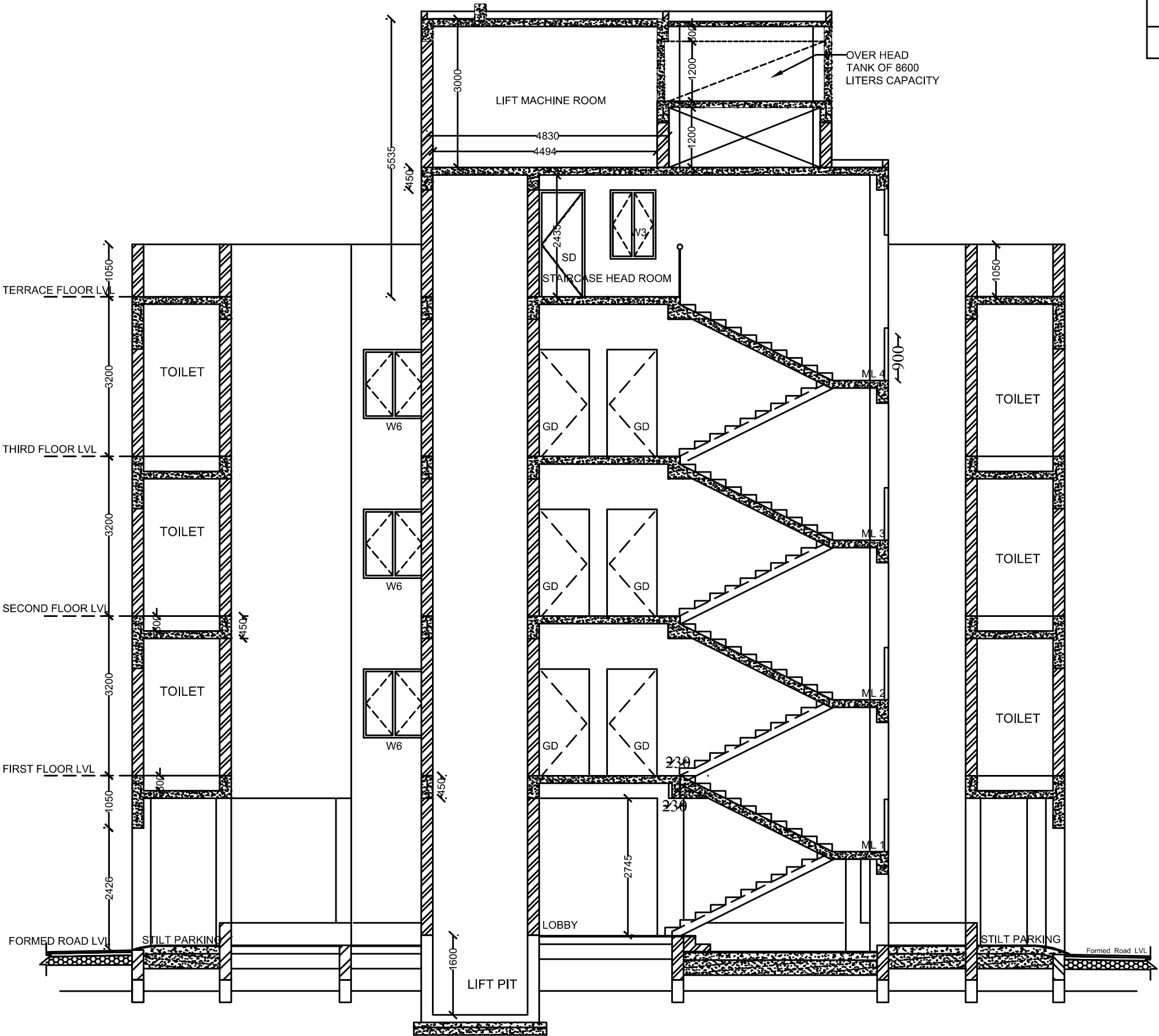
Job no	Drg no	Date	Dm by	Chd By
1024/C	WD - 03	20.11.2014	JM	S.R

**archi-tec allied**  
No.1 Masilamani street, T.Nagar  
Chennai - 600 017.  
Ph : 2435 2468, Tele fax :4206 8884  
e-mail : architecally@gmail.com

SHEET NO: III-A -06

DATE: 20 .11 .2014

DATE: 09.11.2016



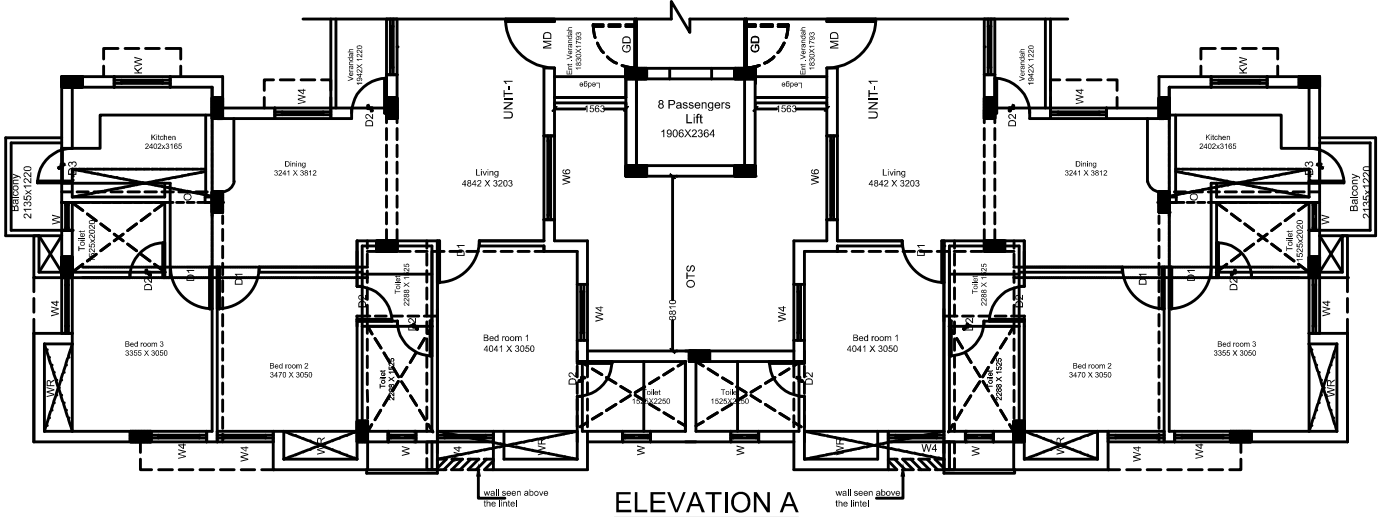
**Note :**

For Type IIIA there is an average difference of around 1150mm from Natural Ground Level to the proposed Road level , and the Lobby level is around 1500 mm from the NGL So we are Providing one beam. If the Lobby level is more than 1500mm from the NGL then we should provide two beams as instructed by Structural Engineer.

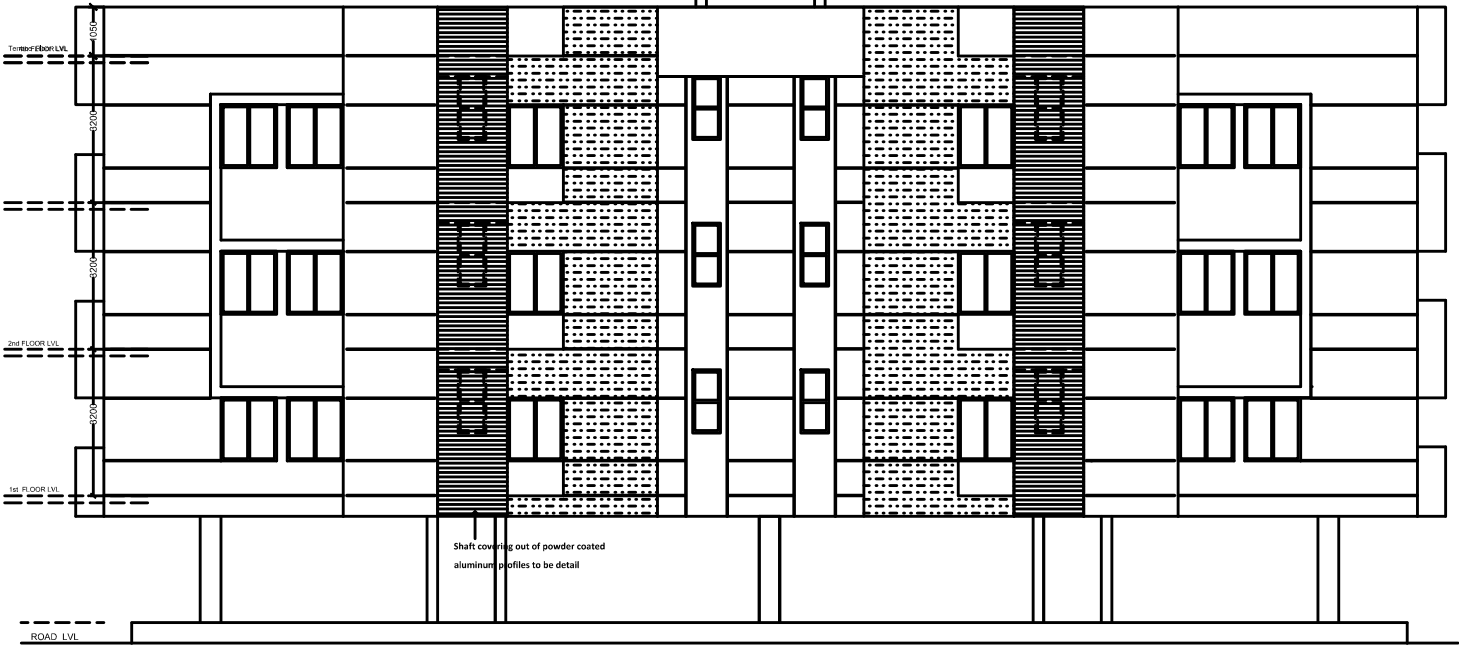
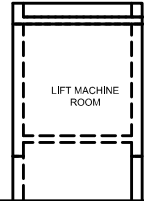
Proposed Housing For M/S IRWO at Chennai - Phase - II B	SECTION AA					Architect :
	Job no	Drg no	Date	Drn by	Chd By	
	1024/C	WD - 06	20 .11 .2014	JM	S.R	
TYPE III -A						Archi-tec Allied #1,Masilamani street, T-Nagar,Chennai-17. PH - 24352468, 42068884

TYPE III a

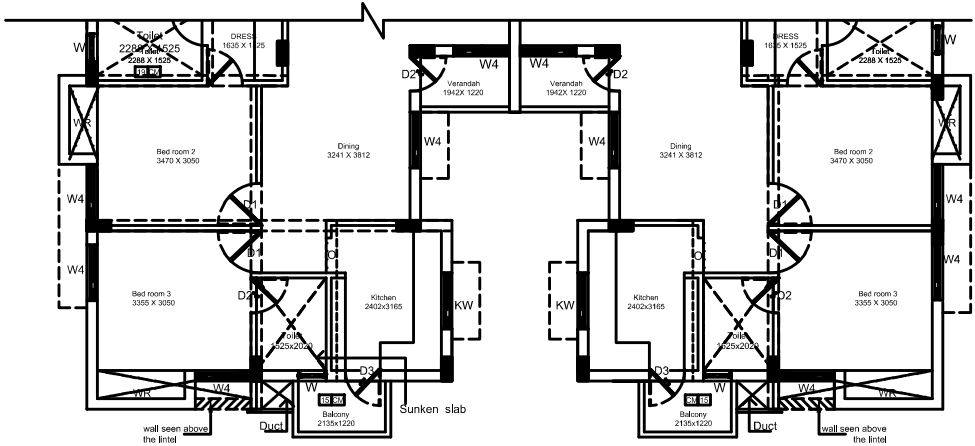
SHEET NO: III-A-07  
DATE: 30.12.2014  
DATE: 09.11.2016



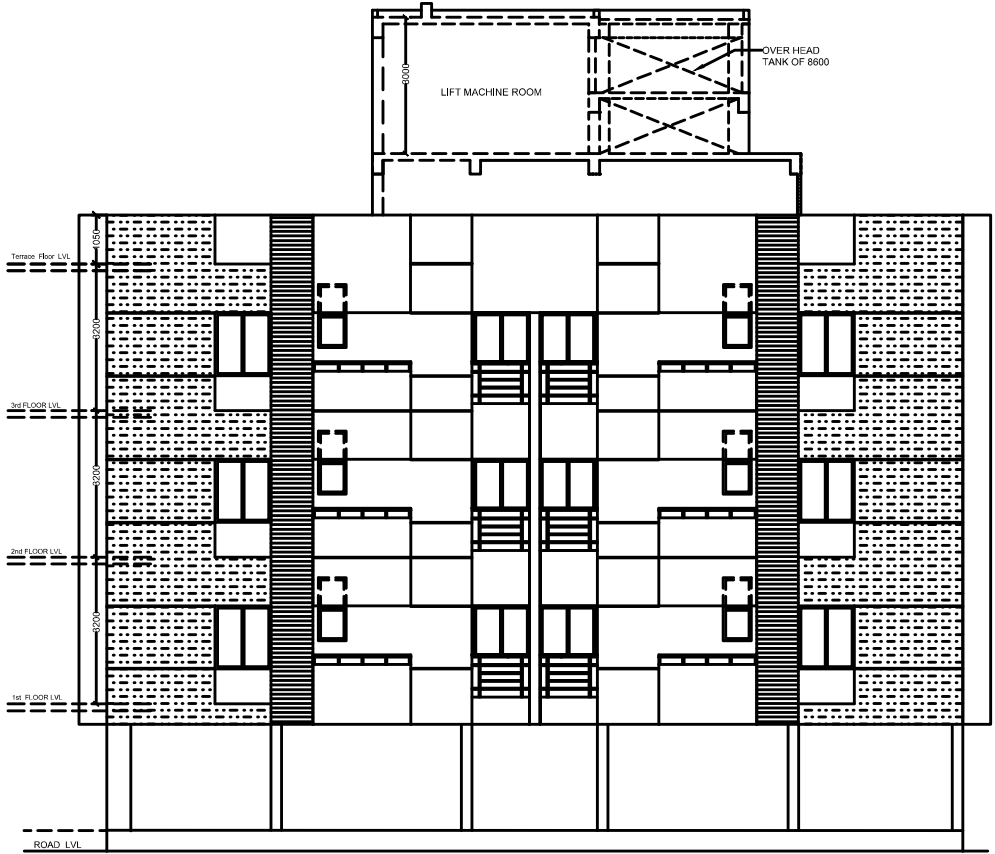
ELEVATION A



ELEVATION



ELEVATION B

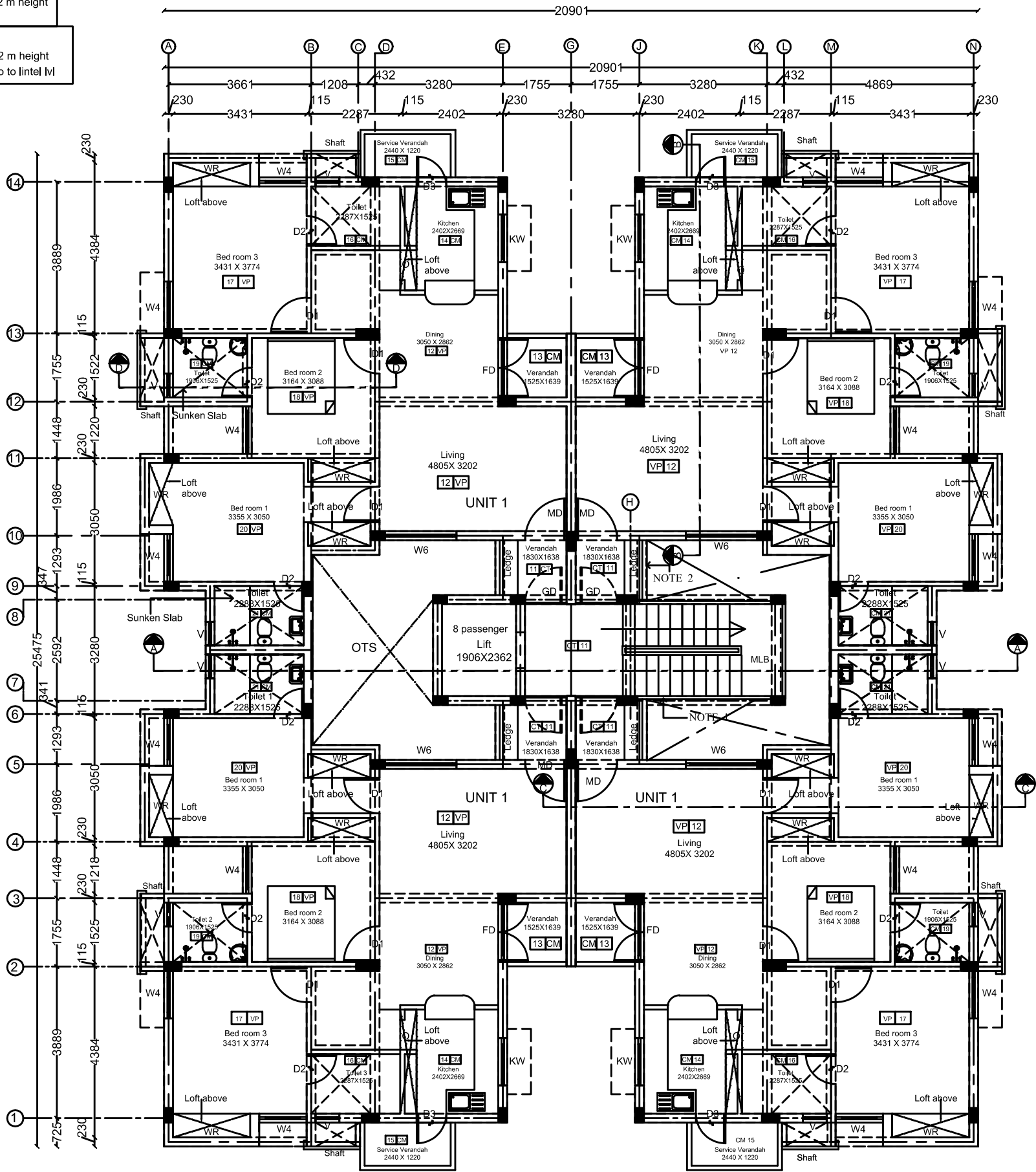


ELEVATION

Proposed Housing For M/S IRWO at Chennai - Phase - II B	ELEVATION					Architect Archi-tec Allied #1,Masilamani street, T-Nagar,Chennai-17. PH - 24352468 , 42068884
	Job no	Drg no	Date	Dm by	Chd By	
TYPE III -A	1024/C	WD - 07	30.12.2014	JM	S.R	

NOTE:1  
4 1/2 thk brick wall upto 1.2 m height  
from the top of step riser.

NOTE:2  
4 1/2 thk brick wall upto 1.2 m height  
& 75 mm thk RC Drops upto to lintel M



TYPICAL FLOOR PLAN

SHEET NO: III-B-03  
DATE: 20.11.2014  
DATE: 09.11.2016

CONFIGURATION-4UNITS / FLOOR  
NO.OF FLOORS STILT +4 FLOORS  
NO.OF BLOCK - THREE  
NO.OF UNITS - 48 D.Uns (2X 16)

JOINERY SCHEDULE				
Item	Description	Wid	Ht.	Sill
MD	TW Main door	1050	2135	
GD	Grill door	1000	2135	
D1	CW.framed flush door	915	2135	
D2	CW.framed with(BWP) Plastic coated flush door	760	2135	
D3	CW.framed with(BWP) flush door	760	2135	
W2	CW.framed window with Side hung glazed shutter	610	1370	760
W4	CW.framed window with side hung glazed shutter	1220	1370	760
W3	CW.framed window with side hung glazed shutter	915	1370	760
W6	CW.framed window with side hung glazed shutter	1830	1370	760
KW	CW.framed window with side hung glazed shutter	1220	1070	1070
W	CW.framed window with top hung glazed shutter	610	1220	1525
O	Opening	760	2135	
GD 5	Grill door in Two portions	1525	2135	
V 6	Ventilator	1830	610	1525
FD	French door CW.framed door side hung glazed shutter	1525	2135	

FOUNDATION	R.C.C Column footings Grade of concrete-m25
R.C.C	M-20 Grade concrete for slabs,beams & lintels
SUPERSTRUCTURE	Masonry work with good quality of bricks/ash bricks
PLASTERING	C.M 1:6 for walls & 1:3 for ceiling
FLOORING	Ceramic/vitrified Tile flooring
CEMENT PAINT	2 Coats of oil bound paint distemper with 1 coat primer for walls and ceiling
WOOD WORK	Good quality First Class treated Timber frames with Flush Shutters for doors and glazed shutters for windows / ventilators..
WEATHERING	B.Jelly lime mortar with burnt pressed clay tiles on top

All Dimensions are in Millimetres

FINISH LEGEND:  
FLOOR FINISH  
VP - 600 X 600mm vitrified polished tile  
CM - 300 X 300mm ceramic matt finish tile  
CT - Colour Concrete paving Tiles

ROOM NUMBER  
FLOOR FINISH  
X Y

WALL TILE  
Toilet -wall dadoing with 300 x450 mm ceramic glazed tiles upto roof level,  
kitchen - 300 x450 mm ceramic glazed tile 600 mm above kitchen Plat form  
service -300 x450 mm ceramic glazed tile upto 1.065 m height

FINISH NOTES:  
1. 12 mm Drop in floor finish for all toilets.  
2. 25 mm Drop in floor finish for all balconies & utilities.  
Refer Blown up details of kitchen & toilet layout for correct finished floor lvl

Rev No	Description	Date
--------	-------------	------

TYPICAL FLOOR PLAN

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

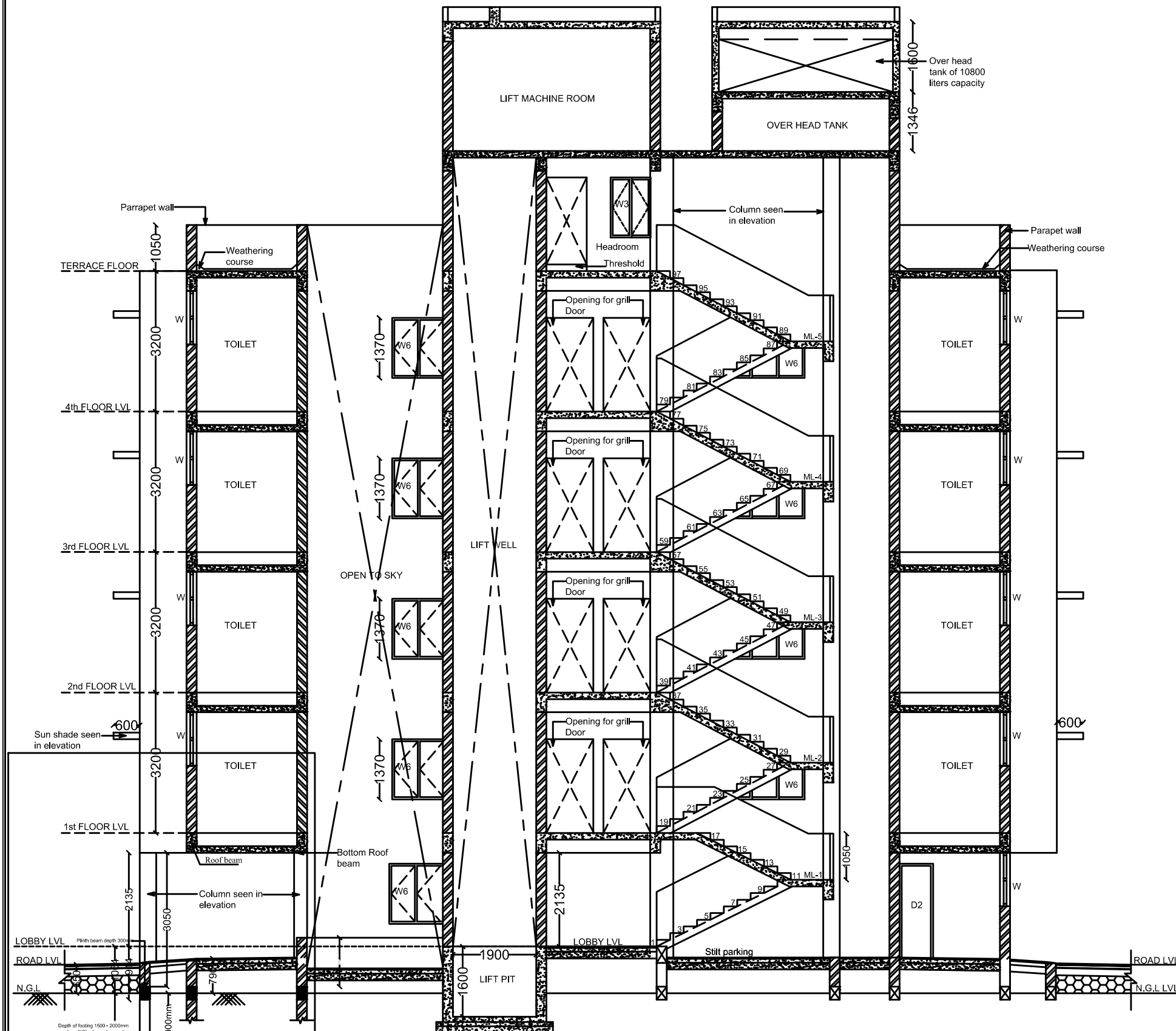
TYPE III-B

Job no	Drg no	Date	Dm by	Chd By
1024/C	WD - 03	20.11.2014	JM	S.R

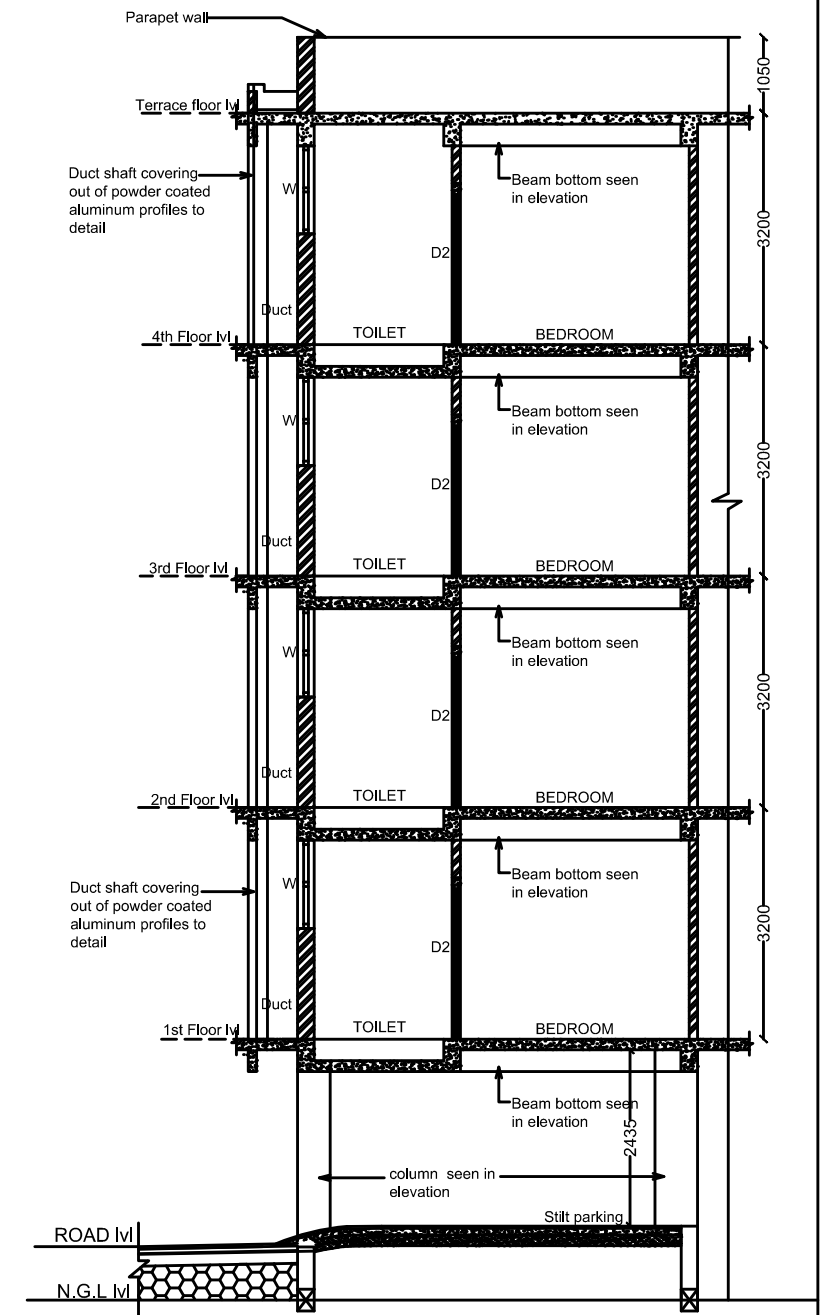
archi-tec allied

No.1 Masilamani street, T.Nagar  
Chennai - 600 017.  
Ph : 2435 2468, Tele fax :4206 8884  
e-mail : architecallied@gmail.com

We have indicated the Plinth lvl Beam at the Natural Ground Level by deleting the Grade Beam another Tie at Floor Level.



SECTION A-A'



SECTION D-D'

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

SECTION A-A'&D-D'

Architect

TYPE III - B

Job no

1024/C

Drg no

WD - 06

Date

20 .11 .2014

Drn by

JM

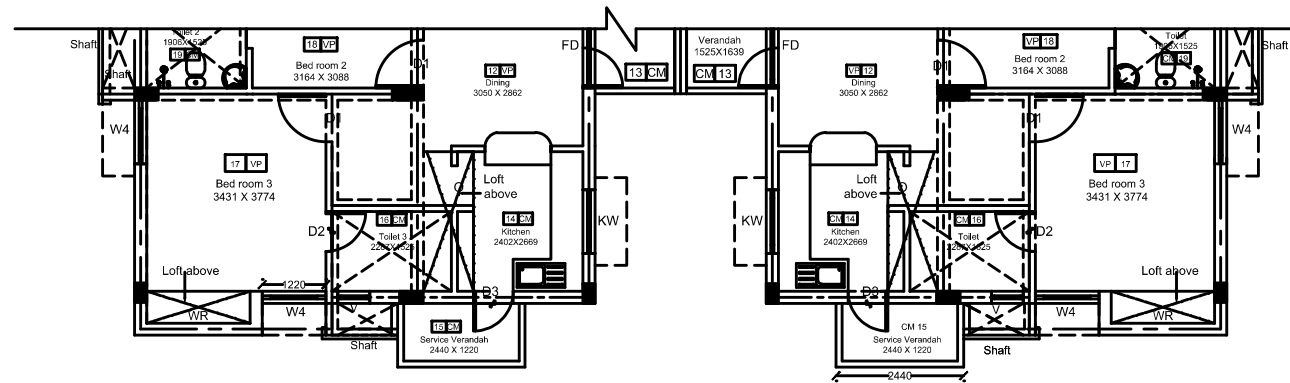
Chd By

S.R

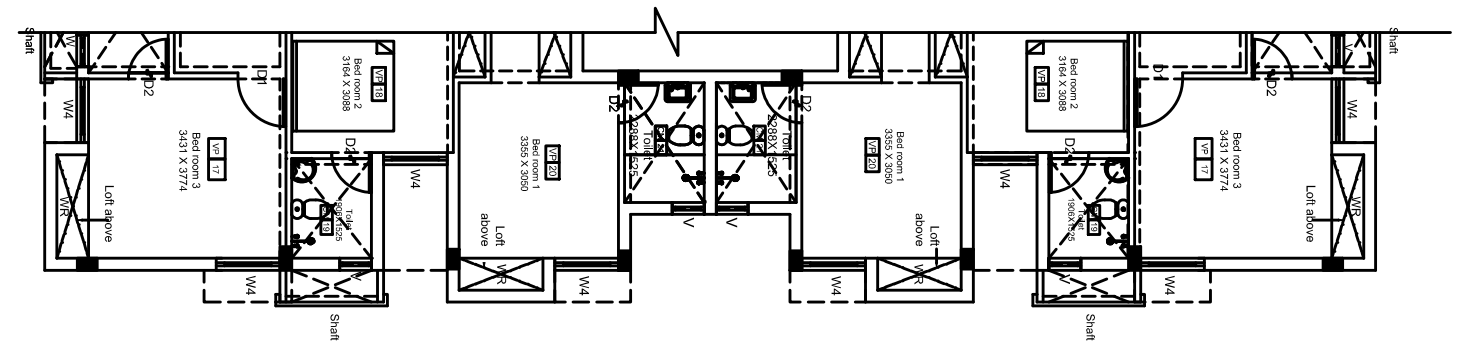
Archi- tec Allied  
#1, Masilamani street,  
T-Nagar, Chennai-17.  
PH - 24352468 , 42068884

We have indicated the Plinth lvl Beam at the Natural Ground Level by deleting the Grade Beam another Tie at Floor Level.

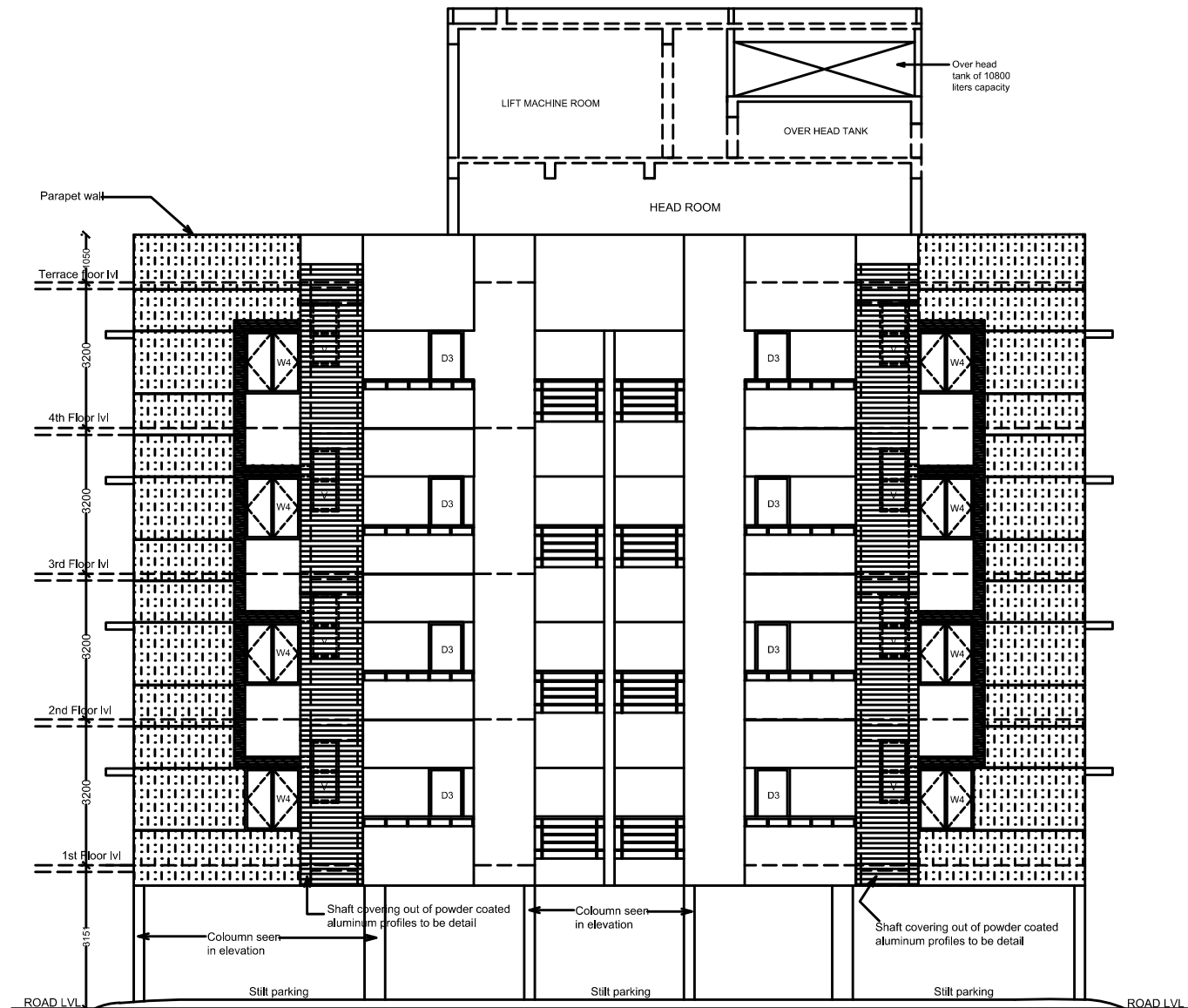
For Type III there is an average difference of around 650 mm from Natural Ground Level to the proposed Road level, and the Lobby level is around 1050 mm from the N.G.L.



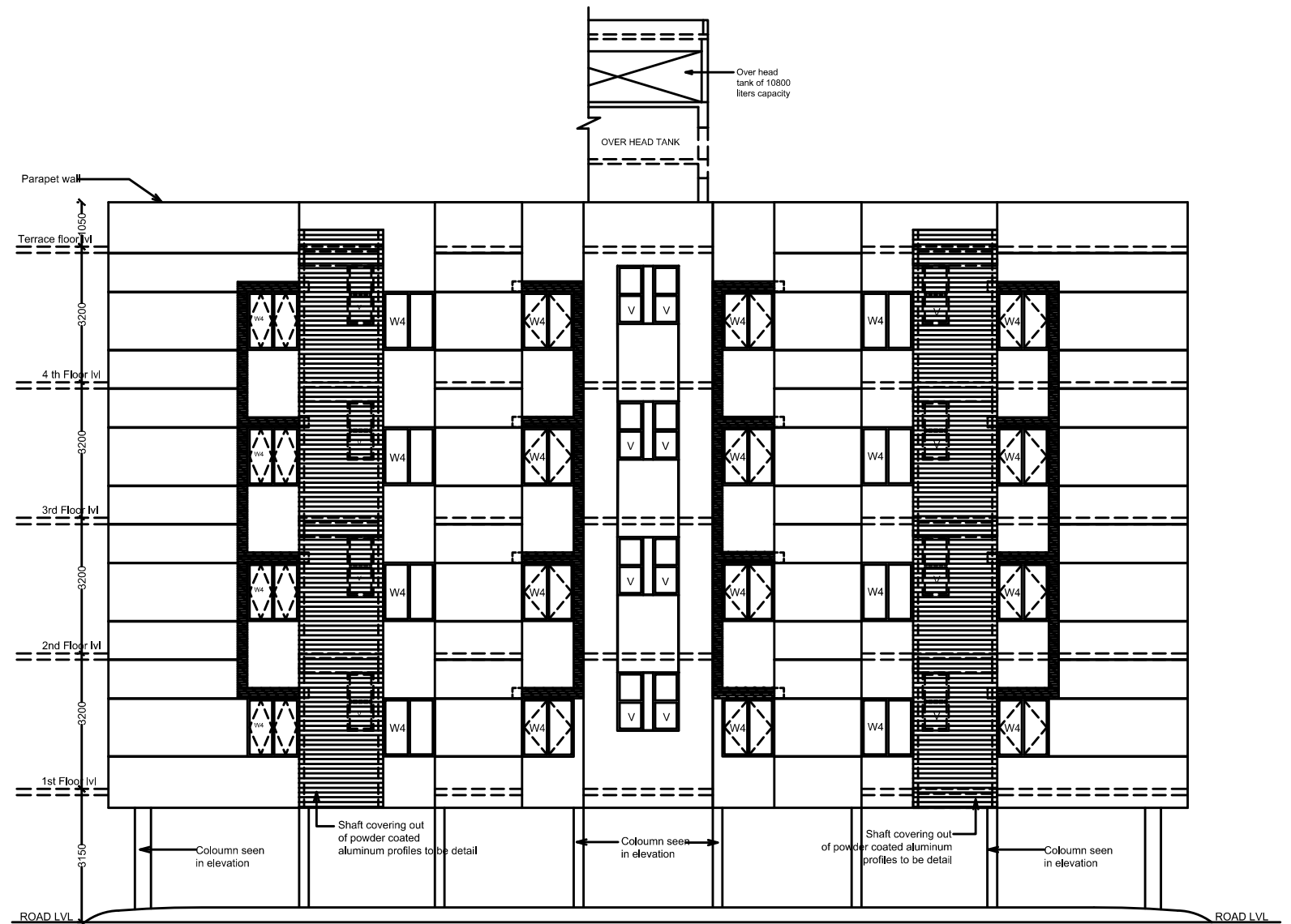
ELEVATION A



ELEVATION B



ELEVATION



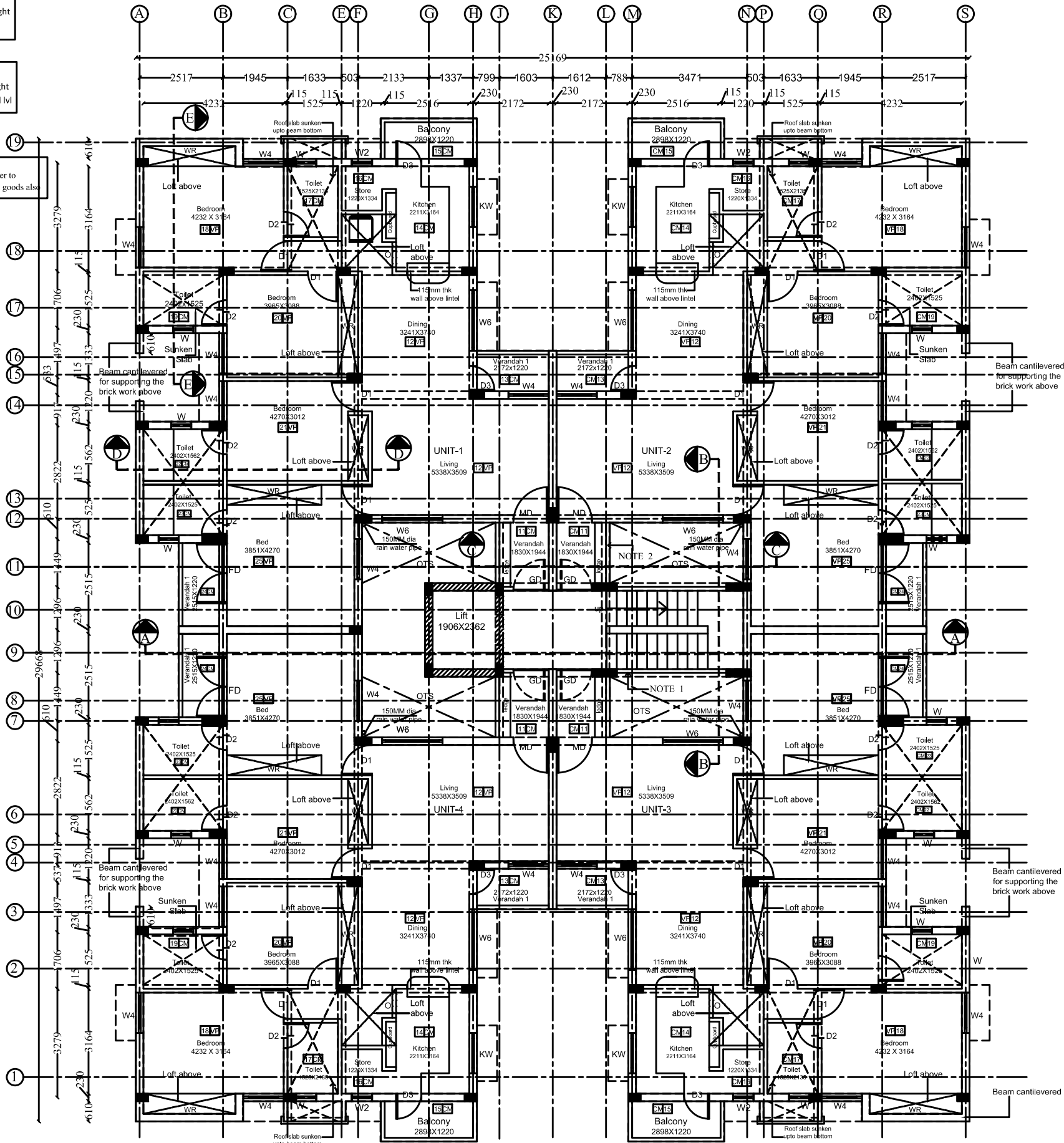
ELEVATION

Proposed Housing For M/S IRWO at Chennai - Phase - II B	SECTION & ELEVATION					Architect Archi-tec Allied #1,Masilamani street, T-Nagar,Chennai-17, PH - 24352468 , 42068884
	Job no	Drg no	Date	Drm by	Chd By	
TYPE III - B	1024/C	WD - 07	30.12.2014	JM	S.R	

NOTE : 1  
4 1/2 thk brick wall upto 1.2 m height  
from the top of step riser.

NOTE : 2  
4 1/2 thk brick wall upto 1.2 m height  
& 75 mm thk RC Drops upto to lintel lvl

8 passenger capacity lift  
The lift shaft is intentionally kept bigger to  
Facilitate provision of lift for carrying goods also



Typical Floor plan

SHEET NO: IV-A-03  
DATE: 22.12.2014  
DATE: 09.11.2016

CONFIGURATION-4 UNITS / FLOOR

NO.OF FLOORS STILT +4 FLOORS

NO.OF BLOCK - TWO

NO.OF UNITS - 32 D.U.s (2X 16)

JOINERY SCHEDULE				
Item	Description	Wid	Ht.	Sill
MD	TW Main door	1050	2135	
GD	Grill door	1000	2135	
D1	CW,framed flush door	915	2135	
D2	CW,framed with( BWP) Plastic coated flush door	760	2135	
D3	CW,framed with( BWP) flush door	760	2135	
W2	CW, framed window with Side hung glazed shutter	610	1370	760
W4	CW, framed window with side hung glazed shutter	1220	1370	760
W6	CW, framed window with side hung glazed shutter	1830	1370	760
KW	CW, framed window with side hung glazed shutter	1220	1070	1070
W	CW, framed window with top hung glazed shutter	610	1220	1525
O	Opening	760	2135	
FD	French door CW, framed door with side hung glazed shutter	1830	2135	
GD 5	Gril door in Two portions	1525	2135	
V.g	Ventilator	1830	610	1525

FOUNDATION	R,C,C Column footings Grade of concrete-m25
R.C.C	M-20 Grade concrete for slabs,beams & lintels
SUPERSTRUCTURE	Masonry work with good quality of bricks/fly ash bricks
PLASTERING	C,M 1:6 for walls & 1:3 for ceiling
FLOORING	Ceramic /vitrified Tile flooring
CEMENT PAINT	2 Coats of oil bound paint distemper with 1 coat primer for walls and ceiling
WOOD WORK	Good quality First Class treated Timber frames with Flush Shutters for doors and glazed shutters for windows / ventilators..
WEATHERING	B.Jelly lime mortar with burnt pressed clay tiles on top

All Dimensions are in Millimetres

FINISH LEGEND - FLOOR FINISH		ROOM NUMBER	FLOOR FINISH
VP	- 600 X 600mm vitrified polished tile		
CM	-300 X 300mm ceramic matt finish tile		
CT	- Colour Concrete paving Tiles		

**WALL TILE**  
Toilet -wall dadoing with 300 x450 mm ceramic glazed tiles upto roof level,  
kitchen - 300 x450 mm ceramic glazed tile 600 mm above kitchen Plat form  
service -300 x450 mm ceramic glazed tile upto 1.065 m height

**FINISH NOTES:**  
1. 12 mm Drop in floor finish for all toilets.  
2. 25 mm Drop in floor finish for all balconies & utilities.  
Refer Blown up details of kitchen & toilet layout for correct finished floor lvl

Rev No	Description	Date
--------	-------------	------

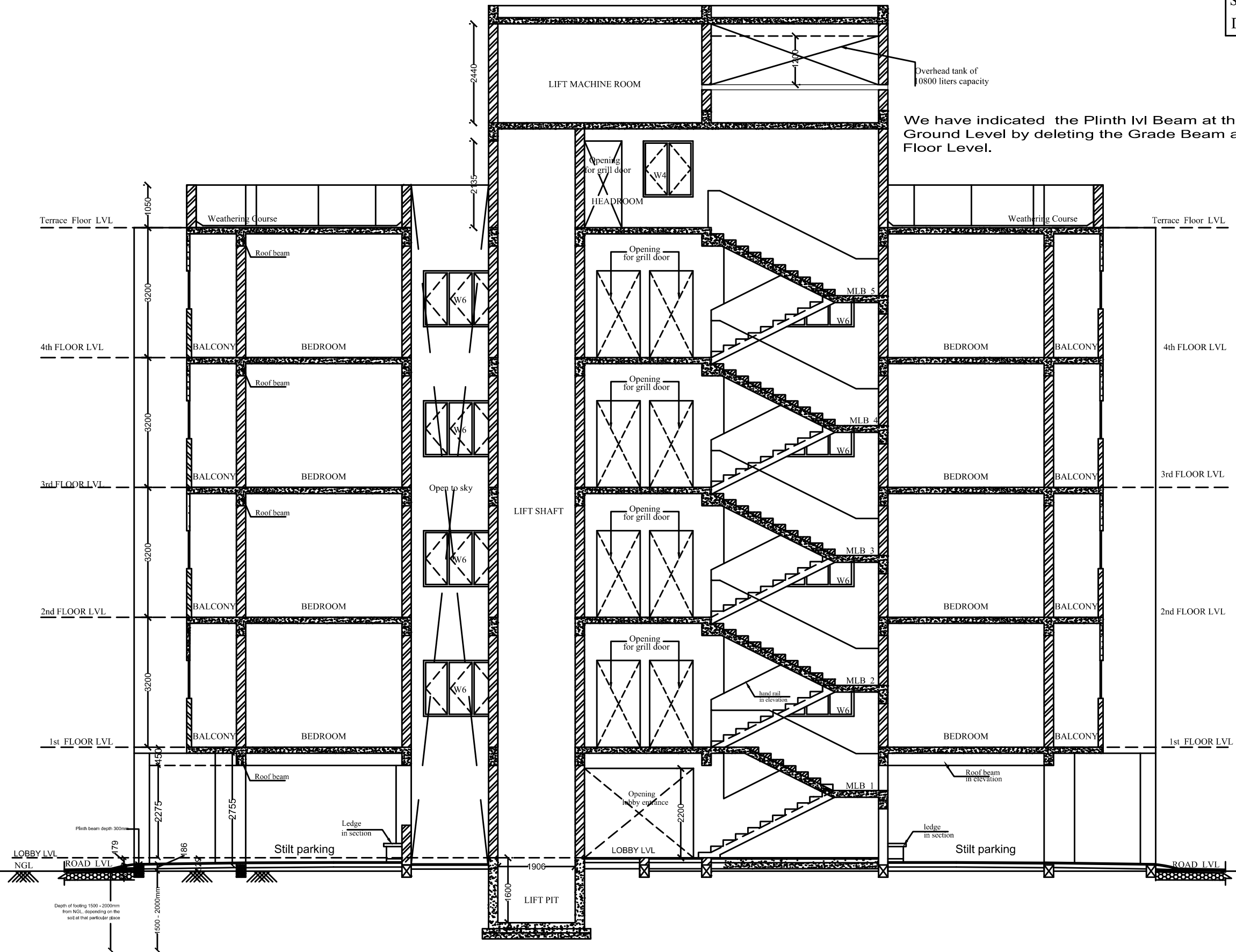
TYPICAL FLOOR PLAN

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

TYPE IV -A

Job no	Drg no	Date	Dm by	Chd By
1024/C	WD - 03	22.12.2014	JM	S.R

**archi-tec allied**  
No.1 Masilamani street, T.Nagar  
Chennai - 600 017.  
Ph : 24335 2468, Tele fax :4206 8884  
e-mail : architecallied@gmail.com



TYPE II

TYPE IV

## SECTION AA

We have indicated the Plinth lvl Beam at the Natural Ground Level by deleting the Grade Beam another Tie at Floor Level.

For Type IV the Natural Ground Level and the proposed Road level, the Finished Floor Level are not having much variation in levels and Height.

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

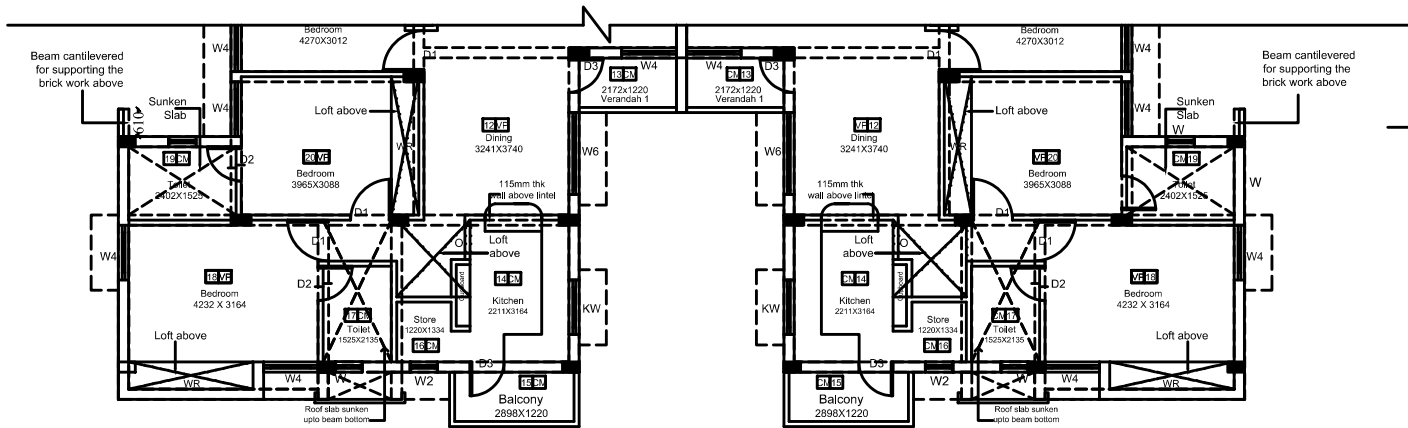
### SECTION

Job no	Drg no	Date	Drm by	Chd By
1024/C	WD - 06	20 .11 .2014	JM	S.R

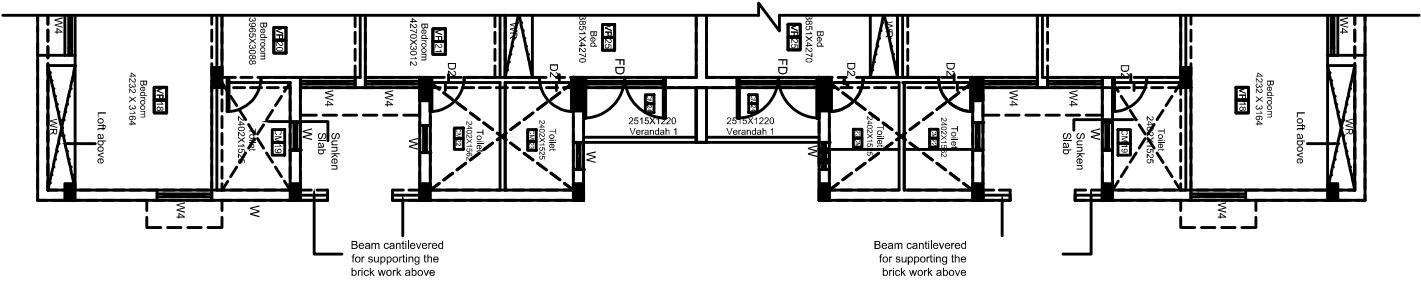
Architect

Archi- tec Allied  
#1, Masilamani street,  
T-Nagar, Chennai-17,  
PH - 24352468 , 42068884

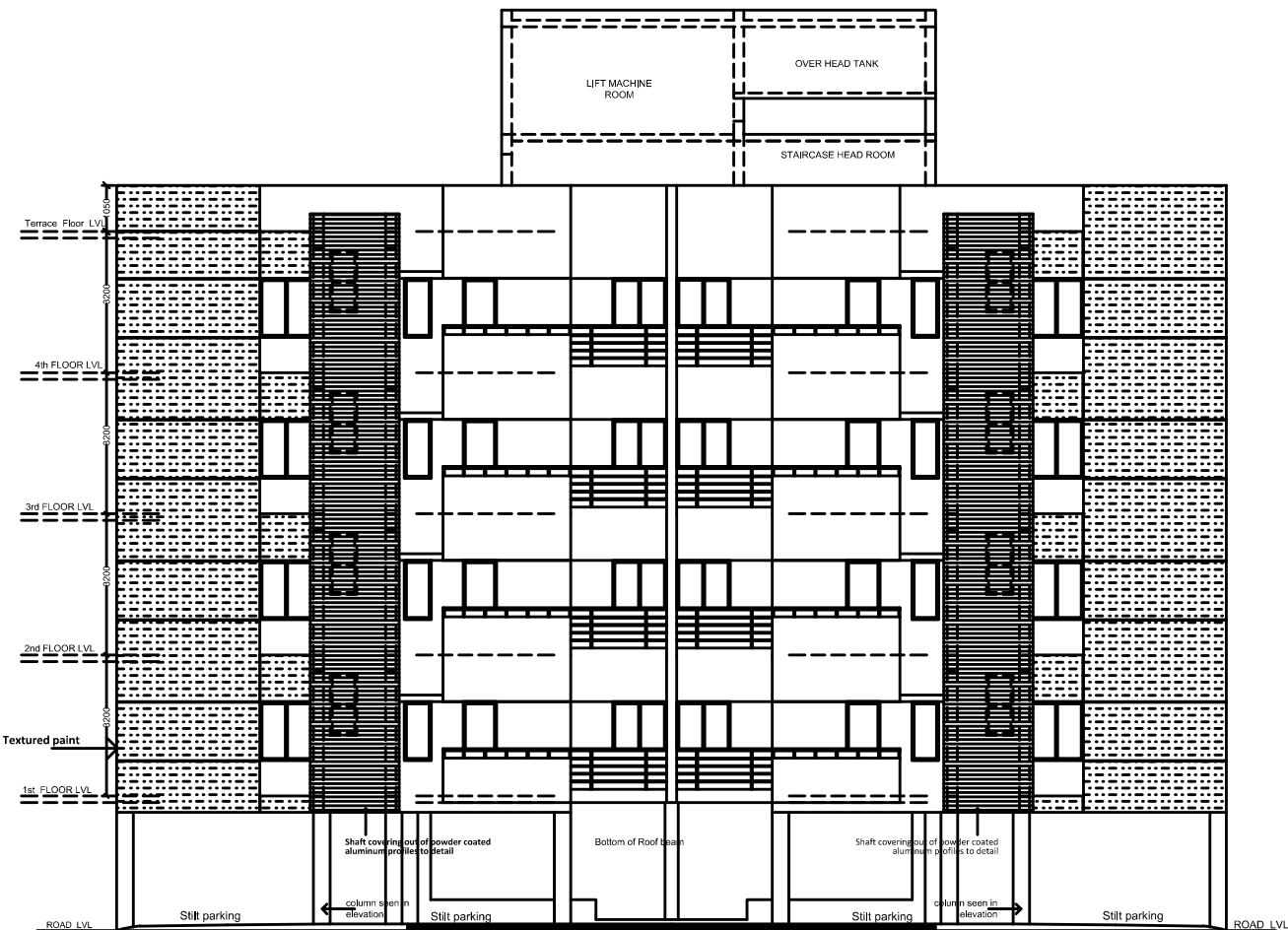
TYPE IV - A



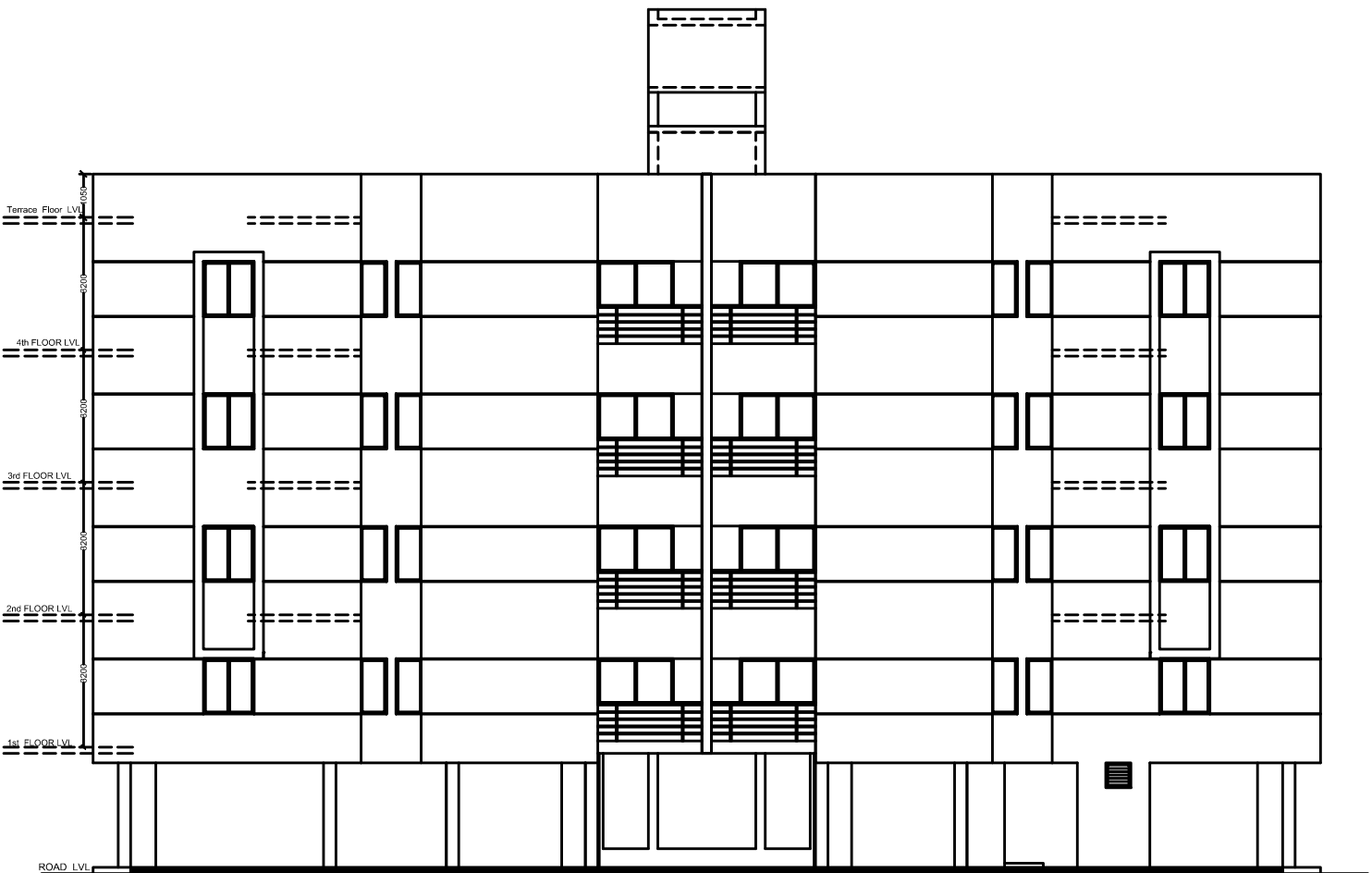
ELEVATION A



ELEVATION B

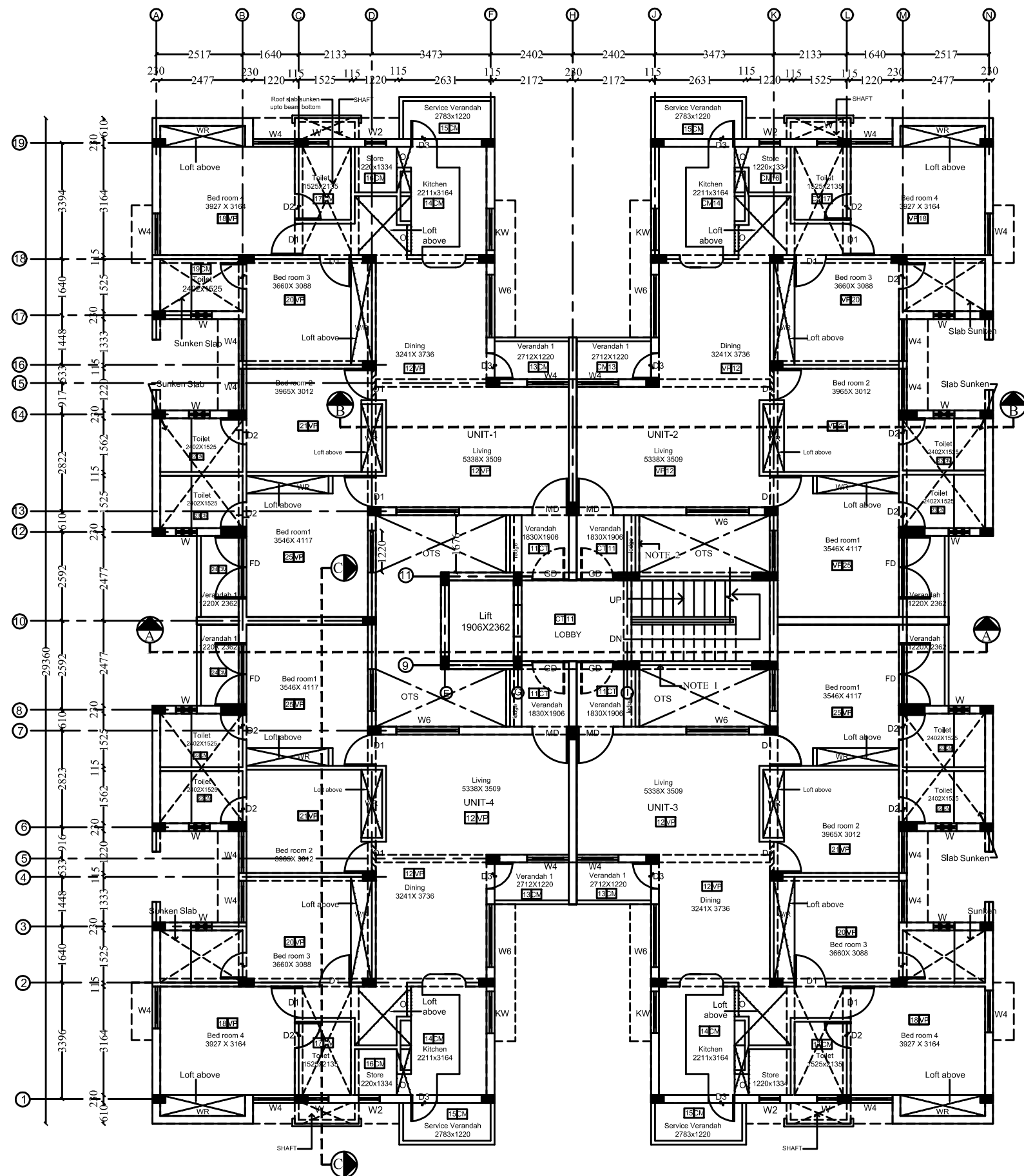


ELEVATION



ELEVATION

Proposed Housing For M/S IRWO at Chennai - Phase - II B	SECTION					Architect  Archi- tec Allied #1,Masilamani street, T-Nagar,Chennai-17. PH - 24352468 , 42068884
	Job no	Drg no	Date	Drn by	Chd By	
TYPE IV - A	1024/C	WD - 07	30 .12 .2014	JM	S.R	



NOTE : 1  
4 1/2 thk brick wall upto 1.2 m height  
from the top of step riser.

NOTE : 2  
4 1/2 thk brick wall upto 1.2 m height  
& 75 mm thk RC Drops upto to lintel lvl

SHEET NO: IV-B-03  
DATE: 20.11.2014  
DATE: 09.11.2016

CONFIGURATION-4UNITS /FLOOR  
NO.OF FLOORS STILT +4 FLOORS  
NO.OF UNITS - 15 D.U.s

JOINERY SCHEDULE				
Item	Description	Wid	Ht.	Sill
MD	TW Main door	1050	2135	
GD	Grill door	1000	2135	
D1	CW,framed flush door	915	2135	
D2	CW,framed with (BWP) Plastic coated flush door	760	2135	
D3	CW,framed with (BWP) flush door	760	2135	
W2	CW, framed window with Side hung glazed shutter	610	1370	760
W4	CW, framed window with side hung glazed shutter	1220	1370	760
W6	CW, framed window with side hung glazed shutter	1830	1370	760
KW	CW, framed window with side hung glazed shutter	1220	1070	1070
W	CW, framed window with top hung glazed shutter	610	1220	1525
O	Opening	760	2135	
FD	French door CW, framed door with side hung glazed shutter	1830	2135	
GD 5	Grill door in Two portions	1525	2135	
V 6	Ventilator	1830	610	1525

FOUNDATION	R.C.C Column footings Grade of concrete-m25
R.C.C	M-20 Grade concrete for slabs,beams & lintels
SUPERSTRUCTURE	Masonry work with good quality of bricks/fly ash bricks
PLASTERING	C.M 1:6 for walls & 1:3 for ceiling
FLOORING	Ceramic/Mitrified Tile flooring
CEMENT PAINT	2 Coats of oil bound paint distemper with 1 coat primer for walls and ceiling
WOOD WORK	Good quality First Class treated Timber frames with Flush Shutters for doors and glazed shutters for windows / ventilators..
WEATHERING	B.Jelly lime mortar with burnt pressed clay tiles on top

All Dimensions are in Millimetres

FINISH LEGEND	ROOM NUMBER
FLOOR FINISH	FLOOR FINISH
VP	- 600 X 600mm vitrified polished tile
CM	- 300 X 300mm ceramic matt finish tile
CT	- Colour Concrete paving Tiles

**WALL TILE**  
Toilet -wall dadoing with 300 x450 mm ceramic glazed tiles upto roof level,  
kitchen - 300 x450 mm ceramic glazed tile 600 mm above kitchen Plat form  
service -300 x450 mm ceramic glazed tile upto 1.065 m height

**FINISH NOTES :**  
1. 12 mm Drop in floor finish for all toilets.  
2. 25 mm Drop in floor finish for all balconies & utilities.  
Refer Blown up details of kitchen & toilet layout for correct finished floor lvl

Rev No	Description	Date
--------	-------------	------

TYPICAL FLOOR PLAN

Proposed Housing For M/S IRWO  
at Chennai - Phase - II B

TYPE IV -B

Job no	Drg no	Date	Dm by	Chd By
1024/C	WD - 03	20.11.2014	JM	S.R

**archi-tec allied**  
No.1 Masilamani street, T.Nagar  
Chennai - 600 017.  
Ph : 2435 2488, Tele fax :4206 8884  
e-mail : architecallied@gmail.com