TINDIVANAM PHARMA PARK ASSOCIATION

Block – D1, Baid Metha Complex, No.16, Anna Salai, Little Mount, Saidapet, Chennai- 600 015

TENDER DOCUMENT

Tender Notice No. TPPA/CF Development/Warehouse/2025-26/01

Design, Fabrication, Supply, and Erection of a Pre-Engineered Steel Building (PEB) Warehouse on Turn-Key Basis at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu

Date of Release of Bid Document	08.06.2025
Pre-bid Meeting	20.06.2025, 02.00 pm
Last Date for Submission of Bid	27.06.2025, 03:00 pm
Date of Opening of Bid	27.06.2025, 04:30 pm

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TENDER NOTICE

M/s Tindivanam Pharma Park Association (TPPA)

Block – D1, Baid Metha Complex, No.16, Anna Salai, Little Mount, Saidapet, Chennai – 600 015

TENDER NOTICE

M/s Tindivanam Pharma Park Association invites bids from prospective bidders for the following common facilities development works with grant-in-aid under the Mega Cluster Development Scheme, Government of Tamil Nadu

Item No – 1 - Reference No: TPPA/CF Development/ QC Lab/2025-26/01

- Construction of Common Testing Lab and Training Centre, including Compound Wall and Internal Road Works

Item No – 2 - Reference No: TPPA/CF Development/ Warehouse/2025-26/01

- Design, Fabrication, Supply and Erection of a Pre-Engineered Steel Building (PEB) warehouse on Turn-Key basis

at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu. Tender documents can be obtained at the TPPA address in Chennai from 08.06.2025 to 26.06.2025 on payment of Rs.17,700/- for each of the above items or can be downloaded free of cost from the website www.tppa.in, www.tansidco.tn.gov.in & www.itcot.com. Contact details: R. Pradeep, Ph: +91 9003030898 E-mail – officetppa@gmail.com.

Managing Director, TPPA

IMPORTANT NOTICE

The Tamil Nadu Transparency in Tenders Act, 1998 and The Tamil Nadu Transparency in Tender Rules, 2000 as amended, govern this tender procedure from time to time. In case of any conflict between the terms and conditions in the tender document and the Tamil Nadu Transparency in Tenders Act, 1998 and The Tamil Nadu Transparency in Tender Rules, 2000 the Act and Rules shall prevail.

Design, fabrication, supply, and erection of a Pre-Engineered Steel Building (PEB) warehouse at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu.

1. PREAMBLE

Micro, Small and Medium Enterprises (MSME) Department, Government of Tamil Nadu, under the Mega Cluster Development Scheme, through Tamil Nadu Small Industries Development Corporation (TANSIDCO), has established a Pharma Park with 46 industrial plots exclusively for Orange Category pharmaceutical formulation companies at TANSIDCO Pharma Industrial Park in Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District. 26 individual companies have been allotted plots in the Pharma Park to set up their formulation units.

The allottees of the Pharma Park have set up a Special Purpose Vehicle (SPV) in the name and style of "**Tindivanam Pharma Park Association (TPPA)**" which has all the member units as part of the SPV that would install, manage and administer the common facilities in the Pharma Park.

One of the important common facilities to be set up in the Pharma Park is the "Warehouse," hereinafter referred to as "Warehouse" in this tender document.

The Warehouse has to be designed as a Pre-Engineered Steel Building (PEB) with a clear span structure, measuring 25 m (width) x 50 m (length) with a clear height of 6 m, to serve the storage for packing materials for packing materials and logistics needs of the member units. Accordingly, this tender for the design, fabrication, supply, and erection of the Warehouse is floated. The erection and installation of the Warehouse are expected to be completed within a period of 4 months.

The design, fabrication, supply, and erection of the Warehouse and the associated infrastructure are the main part of this tender.

A schematic plan and layout for the Warehouse have been prepared and are attached along with the overall plot layout as Exhibit - I. The detailed specifications for the Warehouse are also provided in the following pages for reference.

Note: The layout provided in Exhibit - I and the specifications shall be used as a preliminary document for further development and detailed engineering of the Warehouse. Bidders are required to prepare detailed engineering drawings and good-for-fabrication drawings as part of their scope of work and submit them for approval before installation.

2. SCOPE OF WORK

Design, fabrication, supply, and erection of a Pre-Engineered Steel Building (PEB) warehouse for the Tindivanam Project, Tamil Nadu. The scope includes structural design, material procurement, fabrication, transportation, and on-site assembly, ensuring compliance with relevant standards and project specifications.

The Scope of Work for the design, fabrication, supply, and erection of a Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu, encompasses all activities required to deliver a fully functional 25 m (width) x 50 m (length) clear span warehouse with a 6 m clear height. This scope ensures compliance with Indian standards (IS 800, IS 875, IS 1893), MBMA standards, and project specifications outlined in the tender document, meeting the storage and logistics needs of the Tindivanam Pharma Park Association (TPPA).

1. Design: The design phase involves the structural engineering of the PEB warehouse to ensure safety, stability, and functionality. The design shall account for the following loading and environmental parameters:

- Dead Load: 0.11 kN/sqm, covering self-weight of structural components, roofing, and cladding.
- Roof Live Load: 0.57 kN/sqm on purlins and frames for maintenance and incidental loads.
- Solar Load: 0.2 kN/sqm for potential solar panel installations.

- HVAC & False Ceiling Load: 0.2 kN/sqm for HVAC systems and false ceilings.
- Wind Load: Basic wind speed of 50 m/s, per IS 875 (Part 3), considering site-specific factors.
- Seismic Zone: Zone III, per IS 1893 (Part 1), with appropriate response reduction and importance factors.

The structural design will include columns, rafters, purlins, girts, bracing systems, and connections, developed using industry-standard software (STAAD Pro or ETABS) and adhering to IS 800 for steel design. The design will optimise material usage, ensure cost-efficiency, and meet safety and performance requirements.

2. Drawings: Bidders shall prepare and submit detailed architectural, structural, and analysis drawings for TPPA approval within one week of contract signing. These drawings prepared using AutoCAD (for CAD) and STAAD, Pro/ETABS (for analysis), will have to be submitted in PDF and DWG formats and include:

- General Arrangement Drawings: Plan, elevation, and section views showing overall dimensions, structural layout, and components (columns, rafters, purlins, bracing).
- Anchor Bolt Plans: Layout with coordinates, sizes, and embedment details for foundation construction.
- Structural Framing Drawings: Details of primary (ASTM A570 Grade 50) and secondary (pre-galvanised, 120 GSM) members with connection specifics.
- Roof and Wall Cladding Drawings: Specifications for 0.47 mm TCT Galvalume sheeting (ASTM A792-AZ150), including fixing details for solar and HVAC loads.
- Connection Details: Base plates, column-to-rafter, and bracing connections per IS 800.
- STAAD.Pro/ETABS Analysis Drawings: Load application diagrams, member force diagrams (axial, shear, moment), deflection/drift analysis, and design checks for compliance with IS codes.
- Bill of Materials: Comprehensive list of structural and cladding components with quantities and specifications.

These drawings will facilitate seamless review, fabrication, and erection, ensuring compliance with structural, safety, and client requirements.

3. Fabrication: Fabrication involves procuring and processing materials from approved makes (SAIL, TATA, JSW for primary/secondary members; JSW, TATA for sheeting). Key activities include:

- Primary Members: Fabricate columns, rafters, and frames from ASTM A570 Grade 50 steel (yield strength: 345 MPa) with continuous welding.
- Secondary Members: Fabricate purlins, girts, and bracing from pre-galvanized steel (120 GSM, ASTM A570 Grade 50).
- Sheeting: Produce 0.47 mm TCT color-coated Galvalume sheeting (ASTM A792-AZ150) for roof and walls, with 8 mm bubble insulation.
- Surface Preparation: Wire-brush all structural members to remove dirt, grease, and mill scale, followed by one coat of red oxide/grey primer (phenol-modified alkyd resin) and two coats of enamel paint for frames.
- Quality Checks: Ensure dimensional accuracy, weld quality, and material compliance with ASTM standards (A325 for primary bolts, A307 for secondary bolts).

4. Supply: The supply phase includes procuring and transporting all materials to the Tindivanam site, including:

- Structural components (primary/secondary members, anchor bolts: EN 4.4 Grade).
- Sheeting materials (0.47 mm TCT Galvalume, ASTM A792-AZ150).
- Accessories (fasteners, butyl tape sealer, E.T.P. closures, flashings, gutters, downpipes, and three rolling shutters totalling 41 sqm). Materials will be sourced from approved makes, with test certificates provided upon request to verify compliance with specified standards.

5. Erection: Erection involves on-site assembly of the PEB warehouse, including:

- Civil Works: Execute earthwork excavation, backfilling (95% Proctor density, IS 2720), M15 PCC (100 mm thick), and RCC foundations (M25 grade, IS 456) with EN 4.4 Grade anchor bolts embedded per anchor bolt plans (DRG.No. TPPWH-1). Construct 3 m AAC block walls (IS 2185, Part 3) and HDPE sheet (250 microns) as a moisture barrier. Complete VDF flooring (M25 grade, 150 mm thick) for 2 ft above FGL with FM2 flatness tolerance.

- Structural Erection: Assemble primary and secondary members, install three rolling shutters, three canopies, roof/wall sheeting, bubble insulation, flashings, gutters, and downpipes, ensuring weather tightness and alignment with approved drawings.

- Additional Features: Install heavy-duty steel storage racks with 3 mm thick steel plates (ASTM A36), integrated staircases (IS 6533), 20 bays (12.5 m x 5 m each), ridge ventilation (4 gravity ventilators or 2 exhaust fans), PUF panels (50 mm thick, 40 kg/m^3), and three loading/unloading platforms (4 m x 3 m x 1.2 m, M25 RCC).

- Painting: Apply zinc chromate primer (25 microns DFT) and two coats of enamel paint (30 microns DFT/coat) on primary members (19.86 MT), rolling shutters, and platforms; and acrylic emulsion paint (25 microns DFT/coat) on 420 sqm AAC block walls per IS 2074, IS 2932, and IS 5410.

6. Quality Assurance and Compliance

- Material Quality: All materials shall comply with ASTM A570 Grade 50 (steel), ASTM A792-AZ150 (sheeting), and IS codes, sourced from approved makes (SAIL, TATA, JSW) with test certificates.

- Fabrication and Erection Quality: Conduct checks for welds, dimensions, coatings, alignment, and bolt torque per IS 800 and MBMA standards.

- Safety: Adhere to safety protocols, including PPE and safe lifting practices.

- Timeline: Complete the project within 5 months from commencement (T), with milestones for material procurement/fabrication (T + 3 months) and civil/erection completion (T + 5 months).

- Handover: Conduct final inspections and submit as-built drawings for project handover, ensuring structural integrity, functionality, and compliance with the schematic plan (DRG.No. TPPWH-1).

3.	**QUALIFICATION CRITERIA**

Clause	Qualification Criteria	Documentary proof to be uploaded
3(a)	The Bidder should be a Registered Legal Entity in India and should have been in existence for the past five years as on the last date of submission of the Bid.	i. In case of Private/Public Limited Companies • Copy of Incorporation certificate issued by Registrar of Companies • Copy of Memorandum and Articles of Association ii. In case of Partnership • Registered Partnership deed iii. In case of Proprietorship • Copy of GST Registration certificate
3(b)	The Bidder should have undertaken and successfully completed similar works: a) One completed work of similar nature costing Rs. 120 lakhs during 5 (five) years prior to the date of issue of the tender notice. or b) Two completed works of similar nature each costing Rs. 60 lakhs during 5 (five) years prior to the date of issue of the tender notice. or c) Three completed works of similar nature each costing Rs. 40 lakhs during 5 (five) years prior to the date	a. List of projects carried out in the design, fabrication, supply, and erection of PEB warehouses in the last five years as on last date of tender submission supported by Letter of Award / Work Orders, Work completion certificates, or handing over certificates (As per Annexure-III) duly certified by the principal employer.

	of issue of the tender notice. **Note**: For completed projects, the construction of Pre-Engineered Steel Building (PEB) warehouses should constitute no less than 30% of the overall project value. **"Similar Work(s) refers to the design, fabrication, supply, and erection of Pre-Engineered Steel Building (PEB) warehouses".**	
3(c)	The Bidder should have an average annual turnover of at least Rs. 60.00 Lakhs (excluding GST) in the last three financial years i.e., FY2021-22, FY2022-23, and FY2023-24.	• Audited Balance Sheet/certified copies of Balance Sheet, Profit & Loss statement along with schedules for FY2021-22, FY2022-23, and FY2023-24 duly certified by the practicing Chartered Accountant. • Details of the Annual Turnover as per Annexure-IV.
3(d)	The Bidder should have a positive net worth as on March 31, 2024.	Net worth duly certified by Chartered Accountant along with UDIN as per Annexure-V.
3(e)	The Bidder should not have been blacklisted by SIDCO or any other Government agency / Central and State Public Sector Organizations.	i. Declaration for not having been blacklisted either by any other Govt. agencies as per Annexure-VI. ii. Further, if the Bidder is found to be blacklisted in India before award of the contract by any Government Agency, the bid will be rejected.

4.	**PERSON SIGNING THE BID**

The person signing the Tender document should be the duly authorized representative of the firm/ company, for which a certificate of authority should be submitted. The Power of Attorney /authority to the authorized signatory must be enclosed in detail.

5.	**LANGUAGE OF THE TENDER**

The Tender preparation as well as all correspondences and documents relating to the Tender, shall be in English only. If the supporting documents are in a language other than English/Tamil, the notarised translated English version of the documents should also be enclosed. Bids received without such translation copy will be rejected.

6.	**PURCHASE / DOWNLOADING OF TENDER DOCUMENTS**

Tender Documents can be purchased on payment of Rs.17,700/- (Rupees Seventeen Thousand Seven Hundred only) including GST by Demand Draft in favour of Tindivanam Pharma Park Association payable at Chennai at Tindivanam Pharma Park Association, Block – D1, Baid Metha Complex, No.16, Anna Salai, Little Mount, Saidapet, Chennai from 08.06.2025 **to 25.06.2025 between 10:00 AM to 05:00 PM.**

Alternatively, the Tender Documents can be downloaded from either www.tppa.in, www.tansidco.tn.gov.in or www.itcot.com free of cost from 08.06.2025 to 25.06.2025. For the downloaded Tender Document, the Bidder need not enclose the Tender Document cost but should give a declaration for not having tampered the Tender Document downloaded (as per Annexure - VII)

Purchased Tender documents are not transferable and will be accepted only by the parties who have purchased the documents from TPPA. The TENDER document submissions without duly signed documents/ drawings are considered as invalid submissions.

7.	**PREBID MEETING**

a. There will be a pre-bid meeting on 20.06.2025 at 02.00 P.M in the office of Tindivanam Pharma Park Association at Block – D1, Baid Metha Complex, No.16, Anna Salai, Little Mount, Saidapet, Chennai during which the prospective Bidders can get clarifications about the tender.

b. The Bidders interested in attending the Pre-Bid meeting may send an email, indicating their willingness along with their representative details i.e., Name, Designation, Phone Number & Email ID to officetppa@gmail.com at least one day prior to the Pre-Bid meeting date. The link for the video conferencing will be sent to the designated representative by E-mail.

8.	**SITE VISIT**

The site of the proposed development is located at TANSIDCO Pharma Industrial Park at Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu and may be inspected by the Bidder or his / her representative at his / her own cost, with prior intimation to the authorized representative of TPPA through an email to officetppa@gmail.com. In case of any queries related to the site inspection, Bidders may contact Mr R Pradeep, Mobile No: +91 9003030898. The Bidder should refer to the pipeline drawing and location Map enclosed with the Tender document. (Annexure – XII, Section - 7).

9.	**CLARIFICATION ON THE TENDER DOCUMENT**

Any discrepancies, omissions, ambiguities or conflicts in the tender document or any doubts as to their meaning and any request for clarification may be sent in writing to "The Chairman, Tindivanam Pharma Park Association, Block-D1, Baid Metha Complex, No-16, Anna Salai, Little Mount, Saidapet, Chennai" or through e-mail to officetppa@gmail.com as per Annexure-VIII. The Managing Director (MD), TPPA, will review the same and where the information sought is not clearly indicated or specified in the tender documents, will issue a clarifying bulletin to all those who have purchased the tender documents and will also upload such clarification on www.tppa.in, www.tansidco.tn.gov.in & www.itcot.com. The MD, TPPA will neither make nor be responsible for any oral instructions. Request for clarification should

be brought to the notice of the MD, TPPA, in mail, before 48 hours of the opening of the tender.

10.	**AMENDMENT OF TENDER DOCUMENT**

TPPA, whether on its own initiative or because of a query, suggestion or comment of an Applicant or a Respondent, may modify the tender document by issuing an addendum or a corrigendum at any time before the opening of the tender. Any such addendum or corrigendum will be communicated through mail to all the Bidders who had purchased the tender documents and will be uploaded in www.tppa.in, www.tansidco.tn.gov.in & www.itcot.com and the same will be binding on all Applicants or Bidders, as the case may be.

11.	**EARNEST MONEY DEPOSIT**

The Tender should be accompanied by an Earnest Money Deposit (EMD) to the value of Rs.1,30,000/- (Rupees One Lakh Thirty Thousand only), including GST, in the form of Demand Draft (DD) in favour of Tindivanam Pharma Park Association payable at Chennai. EMD should be in the name of the Bidder/ Firm. Bidders are to provide their GST Registration details.

a. EMD in any other form will not be accepted.

b. EMD will be retained in the case of the successful Bidder and will not earn any interest. It will be dealt with, as provided in the terms and conditions of the tender. The EMD will be returned to the unsuccessful Bidders.

c. Any request of the Bidder, under any circumstances, claiming exemption from payment of EMD will be rejected and their Cover II price offer will not be opened.

The amount remitted towards EMD is liable to be forfeited in case the Bidder fails to execute the contract or after acceptance of the offer by TPPA or fails to sign the contract or to remit the Performance Security within the stipulated time.

12.	**SUBMISSION OF TENDER UNDER TWO COVER SYSTEM**

Sealed Tenders should be addressed to The Managing Director, Tindivanam Pharma Park Association, Block – D1, Baid Mehta Complex, No.16, Anna Salai, Little Mount, Saidapet,

Chennai, and superscribing the **Name of the Tender** on the top left-hand corner of the cover and the name of the Bidder on the bottom left-hand corner of the cover and should be submitted in physical form till 15.06.2025, 3.00 PM. **Tenders should be submitted in person only**.

The Tender will be a Two Cover System,

A. Cover – I (Technical Bid)

Should consist of the Pre-qualification criteria, conditions of the contract and technical specifications along with EMD. Technical bids should be submitted in the original.

Cover – 1 should contain the above in sub-covers as listed below.

- **Sub Cover – 1** – EMD (Demand Draft in Original)
- **Sub Cover – 2** – Signed copy of the Tender Document with all annexures and supporting documents
  a. All Tender drawings obtained from TPPA should be duly signed in original and affixed with the seal of the Bidder along with the submission of the Tender Documents.
  b. Bidder should submit the required EMD in separate sealed envelopes duly superscribed on the Sub Cover – 1 of the Envelope viz. "EMD" along with Cover – 1. The Tenders received without EMD will be summarily rejected.
  c. If the Technical bid shows any indication of the quoted price directly or indirectly, the bid will be rejected summarily.
  d. If due to any exigency, the due date for submission and opening of tender is declared a closed holiday, in such a case, the tenders will be opened on the next working day at the same time or any other day/time as intimated by TPPA.

B. Cover – II (Price Bid)

i. Should consist of **Price Bid as per Part – 2** of the Tender Document. Price bid should be submitted in the original. In case of any discrepancy between the price quoted in words and in figures, lowest of the two will be considered.

ii. The bidders should offer their rates for the following

1. Design, Fabrication, Supply and Erection of a Pre- Engineered Steel Building (PEB) Warehouse on Turnkey basis at TANSIDCO Pharma Industrial

Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District, Tamil Nadu

iii. The rate quoted by the bidder shall be kept firm for a period specified in the tender from the date of opening of the tender. The bidder should keep the Price firm during the entire period of Contract including extension of time if any. Escalation of rate will not be permitted during the said periods whether extended or not for reasons other than increase of taxes payable to the Governments in India within the stipulated delivery period.

Cover – I and Cover – II should be kept together in a separate sealed cover superscripted as **"Tender for Design, Fabrication, Supply and Erection of a Pre-Engineered Steel Building (PEB) Warehouse at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District"** and addressed to **The Managing Director, Tindivanam Pharma Park Association, Block – D1, Baid Mehta Complex, No.16, Anna Salai, Little Mount, Saidapet, Chennai** with the name and address of the Bidder at the left side corner of the cover. Tender submitted in unsealed cover would be summarily rejected.

13. VALIDITY

The prices quoted in the Tender should be valid for acceptance by TPPA for a minimum period of 120 days from the date of opening of the Tender. Escalation in the rates will not be entertained under any circumstances.

14. BID DUE DATE

a. Bid and Enclosures of Bid should be submitted on or before the Bid Due Date i.e., 15.06.2025, 3.00 PM in the manner and form as detailed in this Tender Document.

b. TPPA may, in its sole discretion, extend the Bid Due Date by issuing and addendum in accordance with Clause 10.

c. If due to any exigency, the due date for submission and opening of tender is declared a closed holiday, in such case the tenders will be opened on the next working day at the same time or any other day/time as intimated by TPPA.

15.	**LATE BIDS**

Bid received physically by TPPA after the specified time on the Bid Due Date will not be opened and will be summarily rejected.

16.	**MODIFICATION / SUBSTITUTION / WITHDRAWAL OF BIDS**

a. No Bid should be modified, substituted or withdrawn by the Bidder on or after the Bid Due Date & Time.
b. Any alteration/modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by TPPA, will be disregarded.

17.	**REJECTION OF BIDS**

a. Notwithstanding anything contained in this Tender Document, TPPA reserves the right to reject any Bid and to annul the Bidding Process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons, therefore. In the event that TPPA rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.
b. TPPA reserves the right not to proceed with the Bidding Process at any time, without notice or liability, and to reject any Bid without assigning any reasons.

18.	**OPENING AND EVALUATION OF THE TECHNICAL BID**

The Tenders will be opened in the presence of the committee authorised by TPPA on 26.06.2025 at 04:30 PM.

Evaluation of the Technical Bid would involve two stages as follows.

i. First Stage:

a. The Sub Cover - 1 containing the EMD. If EMD is not submitted or is deficient, the tender will be summarily rejected.

ii. Second Stage:

a. Evaluation will be done on the Technical Bid to assess whether the bid meets the qualification criteria stipulated in Clause – 3.

b. The committee reserves the right to disqualify any of the bids in case the Committee is not satisfied with the documents furnished, including the past performances.

c. Any adverse /unsatisfactory remarks on the performance from the clients of previous contracts will entail disqualification of the tender and price bids will not be opened.

d. The Bidders declared as technically qualified will be informed of the date of opening of the Price bid through email.

19.	**EVALUATION OF THE PRICE BID**

a. The price bid will be evaluated in accordance with the Tamil Nadu Transparency in Tenders Act, 1998 read with the Tamil Nadu Transparency in Tenders Rules, 2000.

b. The evaluation of the price bid will be carried out as given below.

Rate quoted for Design, Fabrication, Supply and Erection of Pre-Engineered Steel Building (PEB) Warehouse on Turnkey basis at TANSIDCO Pharma Industrial Park

c. The Bidder who has quoted the lowest price will be adjudged L1.

20.	**CLARIFICATION ON THE PRICE BID**

a. Information relating to the evaluation of bids and recommendation of Contract award, will not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to the successful Bidder.

b. Any attempt by a Bidder to influence TPPA in the evaluation of the bid or contract award decisions may result in the rejection of the Bid.

c. To assist in the examination, evaluation, and comparison of the Technical and Price bid, and qualification of the Bidders, TPPA may, as its discretion, ask any Bidder for a clarification of the bid, giving a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by TPPA will not be considered. TPPA's request for clarification and the response should be in writing. No

change in the substance of the technical bid or prices in the Price bid, including any voluntary increase or decrease in the prices, shall be sought, offered, or permitted.

d. If the Bidder does not provide clarifications of the bid by the date and time set in the TPPA's request for clarification, the bid may be rejected.

e. If a Technical bid is not substantially responsive to the requirements of the Tender Documents, it will be rejected by TPPA and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

21.	**AWARD OF CONTRACT**

a. The Bidder (L1) will be invited for price negotiations for further reduction of the rate.

b. Upon finalization of the negotiated rate, TPPA will issue the Letter of Award (LoA) to the successful Bidder.

22.	**PERFORMANCE SECURITY**

a. At the time of signing of the Contract, the successful Bidder should furnish the Performance Security in accordance with the Conditions of the Contract, to ensure due performance of the contract, Performance Security is to be given in the form of Demand Draft/ Bank Guarantee from any Nationalized Bank /Scheduled Bank in favour of TPPA by the successful Bidder.

b. Performance Security shall be 5% of the work order value (inclusive of GST) minus EMD already remitted along with the Tender, in the form of a Demand Draft/ Bank Guarantee with a valid period of 17 months in favour of TPPA payable at Chennai in the name of the Bidder/ Firm from any Nationalized Bank / Scheduled Bank to be given within 15 days from the date of issue of work order before execution of the contract.

c. 100% of Performance Security will be released upon the expiry of the defect liability period as per Clause 26.

d. TPPA will en-cash the Performance Security as compensation for any loss resulting from the Contractor's failure to complete his / her obligations under the Contract.

23.	SIGNING OF CONTRACT

a. The successful Bidder should execute the contract as may be drawn up to suit the conditions on a non-judicial stamp paper of value, as prescribed in law, and shall pay for all stamps and legal expenses incidentally thereto. In the event of failure to execute the contract, within the time prescribed, the Performance Security/EMD amount remitted by the Bidder will be forfeited besides cancellation of the Tender.

b. If the contract is not executed as per the agreed terms and conditions, TPPA will hold full authority to cancel the tender or take any such action that will be deemed fit to the occasion at the risk and cost of the successful Bidder. Such cancellation will entail the forfeiture of Performance Security/EMD.

c. In the event of non-performance of the contractual provisions and if the selected Bidder has not fulfilled the contractual obligation with TPPA in any manner during the currency of the contract or also found on a later date, TPPA reserves the right to disqualify such Bidder from participating in future tenders or blacklist the Bidder up to a maximum period of 3 years.

24.	RETENTION MONEY

Retention Money will be 5% against each bill. The same will be released upon successful COD and handing over of all the works certified by TPPA / Consultants appointed by TPPA.

25.	ISSUE OF WORK ORDER

After payment of the Performance Security and successful execution of the contract, the work order will be issued by TPPA. The Bidder should complete the works as per the schedule given in Clause 27.

26.	DEFECT LIABILITY PERIOD AND ITS RECTIFICATIONS

a. Defect Liability period will be twelve months from the date of COD. Any defect arising in the work during the set period due to faulty workmanship and faulty materials should be rectified by the contractor at his / her own cost.

b. If the contractor has not corrected a Defect pertaining to the Defect Liability Period to the satisfaction of the Engineer-in–charge of TPPA, within the time specified by the Engineer-in-charge, the Engineer-in-charge will assess the cost of having the Defect corrected, and the cost of correction of the Defect shall be recovered from the Performance Security or any amount due or that may become due to the contractor and other available securities.

27. TIMELINE

a. The Design, Fabrication, Supply, and Erection of Pre- Engineered Steel Building (PEB) Warehouse at TANSIDCO Pharma Industrial Park should be completed within a period of 4 months. The project schedule is provided as follows.

S. No	Description	Timeline
1.	Commencement of work	T
2.	Procurement and fabrication of structural Steel and sheeting material	T + 2 month
3.	Construction of Civil Foundation, Erection of PEB Structure, and completion of roofing, sheeting, and accessories.	T + 4 months

b. If the contract is not completed within the stipulated time or extended time, TPPA will hold full authority to cancel the tender or take any such action that will be deemed fit to the occasion at the risk and cost of the successful Bidder. Such cancellation will entail forfeiture of Performance Security.

28. FORCE MAJEURE

a. The Bidder shall not be liable for penalty or termination for default if and to the extent that it’s delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

b. For purposes of this clause, "Force Majeure" means an event beyond the control of the Bidder and not involving the Bidder/ fault or negligence, and not foreseeable. Such events may include, but are not restricted to, acts of the TPPA in its capacity as a buyer, wars or revolutions, terrorist attacks, fires, floods, epidemics, quarantine restrictions and freight embargoes.

c. If a Force Majeure situation arises, the Bidder shall promptly notify the TPPA in writing of such condition and the cause thereof. Unless otherwise directed by the TPPA in writing, the contractor shall continue to perform its obligations under the Contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

29. MOBILIZATION ADVANCE

No mobilization advance will be provided for this project

30. PAYMENT TERMS

i. Design, Fabrication, Supply and Erection of a Pre-Engineered Steel Building (PEB) Warehouse

The payment will be made only after receipt of approval from the TPPA /Consultant appointed by TPPA and the following terms shall prevail.

Sl No	Milestone / Item Description	Percentage of Total contract value
1	Submission of all Basic Engineering drawings and documents and site mobilization	5%
2	Proof of procurement of Structural Steel	35%
3	Construction of Civil Foundation, including footings, plinth beams and flooring PCC	15%
4	Erection of PEB Structure, Installation of roof and wall sheeting, rolling shutters and accessories	20%
5	VDF Flooring completion with all finishing work	15%
6	Completion and handing over of the project with as built drawings	10%

A retention amount equivalent to 5% of the running account (RA) bill value shall be deducted from all RA bills submitted. The retention money shall be released as per Clause 24 of this tender document.

ii. The payment will be made by means of RTGS / NEFT / Cheque in favor of the Contractor.

iii. TPPA reserves the right to recover any dues from the Contractor, which are found later during audit/excess payment after the final settlement is made to them. The Contractor is liable to pay for such dues to the TPPA immediately on demand without raising any dispute/protest.

31.	**PRICE ESCALATION**

Price Escalation is not applicable to the contract.

32.	**PENALTY FOR DELAY IN COMPLETION**

Failure to complete the contract within the stipulated period will attract a penalty at a rate of 0.5% of the contract value per week or part thereof, subject to a maximum of 5% on the full contract value. Delay on the part of TPPA should be intimated and sorted out immediately without affecting the progress of works by all means. The penalty levied on the Contractor is, however, subject to modification at the discretion of TPPA for valid reasons, which are to be recorded.

33.	**TERMINATION OF CONTRACT**

TPPA reserves the right to terminate the contract at any time during the validity period on account of non-fulfilment of the contract or any of the reasons.

34.	**TENDER CONDITIONS**

a. TPPA reserves the right to relax or waive or amend any of the tender conditions.

b. Any notice regarding any problems to the Bidder should be deemed to be sufficiently served if given in writing at his/her usual or last known place of business.

c. During discussion and instruction, TPPA may disclose information of confidential and proprietary nature relating to its know-how, operations, etc. to the Bidder. Such information will be considered confidential.

d. After acceptance of the tender by TPPA, the Bidder will have no right to withdraw his / her tender.

e. The contractor, who is engaging labors for the work, is solely responsible for any untoward occurrences to the labors while carrying out the work and any payment of compensation to such laborers. The contractor should abide by all Government Orders issued from time to time in respect of Labour regulations.

f. The site will be handed over to the contractor after the signing of the Contract Agreement and issue of Work Order.

g. The bidder shall employ appropriate and skilled manpower. The list of the same shall be submitted as per the Annexure – xxx.

h. The contractor shall make his/her own arrangement for the freshwater required for the manufacturing of pipes, construction of civil works and testing of pipelines as well as for the portable water required for his/her Labour camps.

i. The installation must be carried out beneath the road using trenchless drilling technology (horizontal directional drilling (HDD), ensuring that the existing road structure is not disturbed in any way. In the event that any damage is caused to existing infrastructure during the installation process, the bidder shall be responsible for the full cost of repairs and must restore the damaged infrastructure to its original condition at no additional cost to the project.

j. The Contractor should make its own arrangements for the Labour accommodation.

k. Any notice regarding any problems to the Bidder shall be deemed to be sufficiently served, if given in writing at his usual or last known place of business.

l. Factory Inspection Requirements

    1. Scope of Inspection

- Verifying that the structural steel (ASTM A570 Grade 50), sheeting (0.47 mm TCT Galvalume, ASTM A792-AZ150), and associated materials for the Pre-Engineered Steel Building (PEB) warehouse meet the required standards as provided in the Specifications. The contractor shall provide evidence of compliance, such as material test certificates (MTC) or certificates of conformity.

- Confirming that the primary and secondary members, roofing, and cladding materials are of the correct dimensions, strength, and durability as specified in the tender specifications.

- Ensuring that all connections, bolts (ASTM A325 for primary, A307 for secondary), and accessories (fasteners, butyl tape, E.T.P. closures) are compatible with the PEB structure and suitable for use under the specified operational conditions (e.g., dead load: 0.11 kN/sqm, wind load: 50 m/s, Seismic Zone III).

- Conducting structural integrity tests to ensure the fabricated components can withstand the expected loads without failure.

2. Notification of Inspection

   The Contractor shall notify TPPA/PMC in writing at least 7 days prior to the proposed inspection date. This will allow adequate time for both parties to arrange for their representatives to be present at the factory for inspection and testing.

3. Presence of TPPA / PMC

   All tests and inspections must be carried out in the presence of authorized representatives of the TPPA/PMC. Their attendance ensures that all specified tests are properly executed and that the warehouse materials/equipment conform to the required standards.

4. Test Reports and Documentation

   Upon completion of the factory inspection for the PEB components and materials, the Contractor shall provide detailed test reports and all relevant

certificates, i.e., dimensional verification, weld quality, coating thickness, and material compliance certificates, for approval by the Client and Consultant.

5. Non-Compliance

   Non-Compliance Should any equipment or materials fail to meet the required standards or specifications, the Contractor shall take corrective action, at no additional cost to the Client, and arrange for a re-inspection to be conducted.

m. Statutory Contributions (ESI & PF)

i. The Contractor shall be fully responsible for the payment and maintenance of all statutory contributions towards the Employees' State Insurance (ESI) and Provident Fund (PF) for all employees engaged during the contract period, in compliance with applicable laws and regulations.

ii. The Contractor shall ensure the timely remittance of all dues to the relevant authorities and submit proof of payment to TPPA upon request.

iii. The Contractor shall bear all liabilities, fines, and penalties arising due to non-compliance with ESI and PF regulations.

iv. In the event that the Contractor fails to make the required payments towards ESI and PF for their employees, TPPA shall have the right to make the necessary payments to the concerned authorities on behalf of the Contractor. Any payments made by the TPPA on behalf of the Contractor for ESI, PF, or other statutory contributions shall be deducted from the Contractor's respective bills or any other payments due under this contract.

n. Labour License

i. The Contractor shall obtain and maintain a valid Labour License under the relevant labour laws before deploying any workers for the execution of this contract.

ii. The Labour License must be obtained from the appropriate government authorities, and the Contractor shall ensure its validity throughout the contract period.

o. Insurance for Materials and Work in Progress (WIP)

i. The Contractor shall take out and maintain insurance policies for materials, plant, equipment, and work in progress (WIP) during the contract period

35.	FRAUD AND CORRUPT PRACTICES

The Bidders and their respective officers, employees, agents and advisers should observe the highest standard of ethics during the Bidding Process and after the issue of the LoA and during the subsistence of the Contract. Notwithstanding anything to the contrary contained herein, or in the LoA or the Contract, TPPA may reject a Bid, withdraw the LoA, or terminate the Contract, as the case may be, without being liable in any manner whatsoever to the Bidder, if it determines that the Bidder, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, TPPA shall be entitled to forfeit and appropriate the Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to TPPA under the Bidding Documents and/ or the Contract, or otherwise.

Without prejudice to the rights of TPPA under Clause (32) hereinabove and the rights and remedies which TPPA may have under the LoA or the Contract, or otherwise if a Bidder or Contractor, as the case may be, is found by TPPA to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the LoA or the execution of the Contract, such Bidder shall not be eligible to participate in any tender or RFP called for by TPPA for a period of 2 (two) years from the date such Bidder, or Contractor, as the case may be, is found by TPPA to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

For the purposes of this Clause (35), the following terms shall have the meaning hereinafter, respectively assigned to them:

a. **"corrupt practice"** means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of TPPA who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LoA or has dealt with matters concerning the Contract or arising therefore,

before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of TPPA, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process), engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LoA or after the execution of the Contract, as the case may be, any person in respect of any matter relating to the work or the LoA or the Contract, who at any time has been or is a legal, financial or technical adviser of TPPA in relation to any matter concerning the work;

b. **"Fraudulent practice"** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process.
c. **"Coercive practice"** means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process.
d. **"Undesirable practice"** means (i) establishing contact with any person connected with or employed or engaged by TPPA with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
e. **"Restrictive practice"** means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

36	**DISPUTE RESOLUTION BOARD**

A Dispute Resolution Board (DRB) shall be formed in order to resolve the disputes that may arise during the currency of the contract. The members of the DRB shall be nominated by TPPA and the bidder and the list of members will be finalized by TPPA. If any party is not satisfied with the decision of the DRB, the issue shall be referred for Arbitration.

37.	**ARBITRATION**

a. In case of any dispute in the bid, including interpretation if any on the clauses of the bid or the agreement to be executed, the matter, if not resolved through amicable settlement, shall be referred to arbitration by an arbitral tribunal constituted in accordance with Clause 37(b). Such arbitration shall be proceeded as per the

provisions of the Arbitration and Conciliation Act, 1996 or under any statute in force at that point of time

b. There shall be an arbitral tribunal comprising three arbitrators, of whom each Party shall select one, and the third arbitrator shall be appointed by the two arbitrators so selected and in the event of disagreement between the two arbitrators, the appointment shall be made in accordance with the Rules.

c. The venue of the Arbitration shall be the Head office of Tindivanam Pharma Park Association. The decision of the arbitral tribunal shall be final and binding on both the parties to the Arbitration.

d. The arbitral tribunal may with the mutual consent of the parties, extend the time for making the award. The award to be passed by the arbitral tribunal is enforceable in the Court at Chennai city only.

38.	**JURISDICTION OF THE COURT**

Any dispute arising out of non-fulfilment of any of the terms and conditions of this Tender / Contract or any other dispute arising out of the arbitration award will be subject to the jurisdiction of the Courts in the City of Chennai only.

We agree to the above terms and conditions.

SIGNATURE OF THE BIDDER:
(WITH SEAL)
DATE:

NAME IN BLOCK LETTERS:

DESIGNATION:

ADDRESS:

Annexure - I

Covering letter for submission of Part - I

Date:_____

From,

Name:
Address:
Ph:
Fax:
E-mail:

To,

The Managing Director,
Tindivanam Pharma Park Association,
Block – D1, Baid Metha Complex,
No.16, Anna Salai, Little Mount,
Saidapet, Chennai.

Sir,

Sub : Submission of Tender for Selection of contractor Design, Fabrication, Supply and Erection of a pre-Engineered Steel Building (PEB) Warehouse on Turnkey basis at TANSIDCO Pharma Industrial Park in Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District -Part - I - Reg.

Ref: Your Tender Notice .....

1. I/We …… having examined the details given in the Invitation to Bidders, we hereby submit the following information and relevant documents.

   a. I/We hereby certify that all the statements, information and data provided in the enclosed Annexure I to XII and accompanying statements are true and correct to the best of my / our knowledge.

   b. I/We …….. have read the instructions appended with the Prequalification documents and I/We understand that any contract made between ourselves and TPPA, on the basis of the information given by me/us is liable to be cancelled if any false information is detected at a later date.

c. I/We …… have also no objection if enquiries are made on all the projects and works listed by me/us in the accompanying sheets or any other enquiry on the information furnished herewith in the accompanying sheets.

d. I/We have furnished all information and details as asked for and have no further pertinent information to provide.

e. I/We hereby submit the certificates in support of my/our suitability, technical know-how and capability for having successfully completed the works during the last five years.

f. I/We hereby also agree that the decision of the TPPA in the Qualification and selection of Contractors will be final and binding upon me/us.

g. I/We hereby agree TPPA reserves the right to qualify any contractor to cancel the exercise without assigning any reason for doing so, or to incur any liability to any part whatsoever.

h. I/We hereby agree not to withdraw from the contract after issue of Letter of Award / Work Order and before signing the contract. Incase if, I/We withdraw before signing the contract, I/We hereby agree for the forfeiture of the Earnest Money Deposit as per the Tender condition.

i. The documents as requested in the Qualification Criteria are enclosed herewith.

I/We hereby agree to as a Bidder to all the terms and conditions of the Tender.

Yours faithfully,

SIGNATURE OF THE BIDDER
(With Seal and Address)

ANNEXURE – II

Structure and Organization of Bidder

Sl.No.	Details required	To be filled by the Bidder
1	Name of the Bidder	
1A	Legal Status	Sole Proprietorship / Partnership / Company
2	Nationality of Bidder	
3	Establishment of the Company	
	i) Year	
	ii) Location	
4	The Bidder is a Company	Yes / No
	(Please enclose attested copy of Registration / Incorporation under appropriate laws of the Bidder's Country	Enclosed / Not enclosed
5	Address of the Bidder	
i)	Registered Office Address	
	Telephone Number	
	Fax Number	
	E-mail Address	
	Web site	
ii)	Local office address:	
	Telephone Number	
	Fax Number	
	E-mail Address	
iii)	Office address through which this work will be handled and name of the Officer-in-charge	
	Telephone Number	
	Fax Number	
	E-mail Address	
6	Details of the Board of Directors	
	i) Name of the Director	
	ii) Qualification	
	iii) Organization	
	iv) Office Address	
	v) Telephone Number	
	vi) Fax Number	
	vii) E-mail Address	

Sl.No.	Details required	To be filled by the Bidder
7	Enclose Company's Organization Chart showing the structure of the Organization including the names of the Directors / Chief Executive Officer and position of Officers	Enclosed / Not enclosed
8	Number of years of experience and other Details	
9	Area of business activities other than construction works, if any (If yes please furnish specific information)	Yes / No
10	Whether registered with any Government / Public Sector Undertaking / Local bodies like CPWD / MES / PWD or equivalent applicable in the Bidder's Country. If yes, please furnish details of Class and Type of Registration	Yes / No
11	Please give at least three references of Clients (Engineers, Engineering Consultants or top Officials of Organization) for whom you may have executed construction works of importance and similar nature from whom TPPA, can verify	1. Name : Designation: Company : 2. Name: Designation: Company: 3. Name: Designation: Company:
12	Any special information, which you may like to provide	
		Signature of the Bidder
	Place :	Common Seal of the Company
	Date :	Office Address

ANNEXURE – III

Details of Similar Projects Carried out in Last Five Years

S No	Project Name	Name of Client	Description of the Work	Value of Contract in Rs Crores	Completion time as stated in the work Order (Months)	Actual completion time (Months)	Extension of Time (EoT), if any, with/ without fine	Total Payment Received in Rs Crores

SIGNATURE OF THE BIDDER
(With seal and Address)

Note:

1. The Bidder should enclose a copy of the work order and completion certificates in support of the project experience for each of the projects mentioned above.
2. Project Experience without work orders and Completion Certificates will not be considered for evaluation.
3. Completion Certificates issued by the Executive Engineer and above will be considered for evaluation in case of projects executed for Government Entities
4. In the case of projects Executed for the Private Sector, Certificates signed by the Officials representing Senior Management will only be considered.
5. Similar projects will be as per the eligibility criteria mentioned in the Tender Document.

ANNEXURE – III - A

Details of Works in Hand

Sl. No.	Client with Address	Description of the work	Value of contract in Rs Crores	Completion time as stated in the Contract	Percentage completion	Remarks / Status

SIGNATURE OF THE BIDDER
(With seal and Address)

Note:

1. The Bidder should enclose the copy of the work order in support of the project experience for each of the projects mentioned above.

ANNEXURE - IV

Financial Capacity

A. Name of the Bidder			
B. Financial Information of the previous 3 years (in Rs Crores)	2021-22	2022-23	2023-24
C. Turnover			

Note:

1. The above details should be certified by a practicing Chartered Accountant.
2. Copies of the Financial Statement, Audited Balance Sheets should be provided for the last three financial years as above.

For (Name of Accounting Firm)

Name of Partner Chartered Accountant Membership Number

(Rubber

Stamp)

ANNEXURE – V

Networth Certificate

(on the Letterhead of Registered/ Practicing Chartered Accountant)

This is to certify that the Net worth of M/s. …… is Rupees ……. only as on _____. It is further certified that the computation of Net worth, based on my/ our scrutiny of the books of accounts, records and documents, is true and correct to the best of my / our knowledge and as per information provided to my / our satisfaction.

Place:

Date:

For (Name of Accounting Firm)
Name of Partner Chartered Accountant Membership Number
(Rubber Stamp)

SIGNATURE OF THE BIDDER
(With seal and Address)

ANNEXURE - VI

Declaration for Not Blacklisted.

CERTIFICATE

Date…….

Certified that M/s. ……/ the firm /company or its partners/shareholders had not been blacklisted by TANSIDCO / any Government Agencies.

SIGNATURE OF THE BIDDER
(With seal and Address)

ANNEXURE - VII

Declaration Form

Date…….

a) I/We …….. having our office at …….. do declare that I/We have carefully read all the conditions of tender for the Tender floated vide tender Ref. No._____ for Design, Fabrication, Supply and Erection of Pre-Engineered steel Building (PEB) warehouse on turnkey basis at TANSIDCO Pharma Industrial Park in Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District and will complete the entire contract within the schedule fixed and as per all tender conditions.

b) I/We have downloaded the tender form from the internet site www.tppa.in/ www.tansidco.tn.gov.in/ www.itcot.com and I /We have not tampered/modified the tender forms in any manner. In case, if the same is found to be tampered/modified, I/ We understand that my/our tender will be summarily rejected, and full Earnest Money Deposit will be forfeited, and I /We am/are liable to be banned from doing business with TPPA or prosecuted.

SIGNATURE OF THE BIDDER
(With seal and Address)

ANNEXURE – VIII

Clarifications on Tender Document

<table>
<tr><td colspan="4">BIDDER’S REQUEST FOR CLARIFICATION</td></tr>
<tr><td colspan="2">Name and Address of the Organization submitting the request</td><td>Name and position of the person submitting the request</td><td>Contact Details of the Organization/ Authorized Representative</td></tr>
<tr><td colspan="2" rowspan="3"></td><td rowspan="3"></td><td>Tel:</td></tr>
<tr><td>Fax:</td></tr>
<tr><td>Email:</td></tr>
<tr><td>S. No</td><td>Reference (s) (Section, Page)</td><td>Content of Tender requiring clarification</td><td>Points of clarification required</td></tr>
<tr><td>1</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td></tr>
</table>

SIGNATURE OF THE BIDDER
(With seal and Address)

ANNEXURE – IX

List of Tools and Tackle

List of Tools and Tackle to be deployed for the project

S No	Type	Make/ Model	Nos. Owned	Year of Procurement	Present condition	Present Location	Availability for Project	Remarks

SIGNATURE OF THE BIDDER
(With seal and Address)

For (Name of Accounting Firm)
Name of Partner Chartered Accountant Membership Number
(Rubber Stamp)

ANNEXURE – X

Qualification and experience of manpower to be deployed for the Project

S No	Position	Name	Qualification	Years of Experience (General)	Years of experience in the proposed position

SIGNATURE OF THE BIDDER
(With seal and Address)

For (Name of Accounting Firm)
Name of Partner Chartered Accountant Membership Number
(Rubber Stamp)

Notes: Short CVs of the Personnel nominated for the project should be provided along with the Annexure-X

ANNEXURE – XI

CHECKLIST

S.No	Description	Submitted	Page No.(see Note below)
COVER – 1- TECHNICAL BID			
SUB COVER – 1			
1	EMD	Yes / No	
SUB COVER – 2			
1	Copy of Incorporation Certificate issued by Registrar of Companies / Partnership Deed	Yes / No	
2	Copy of GST Registration Certificate	Yes / No	
3	Copy of Pan Card along with IT returns for the last five preceding financial years.	Yes / No	
4	Annual Reports / Audited Financial Accounts of the Bidder for the last three financial years preceding the Bid Due Date.	Yes / No	
5	Signed copy of Technical Specifications	Yes / No	
6	Covering letter as per Annexure - I	Yes / No	
7	Structure and Organization of Bidder as per Annexure – II	Yes / No	
8	Details of Similar Projects carried out in the last five years as per Annexure – III	Yes / No	
9	Details of Work in Hand as per Annexure – III- A	Yes / No	
10	Financial Eligibility along with all relevant documents as per Annexure – IV	Yes / No	
11	Net worth Certificate as per Annexure - V	Yes / No	
12	Letter of Undertaking for not blacklisted as per Annexure – VI	Yes / No	
13	Declaration of not tampered the Tender Document as per Annexure – VII	Yes / No	
14	Clarification on Tender Document as per Annexure - VIII	Yes / No	
15	List of Tools and Tackle as per Annexure – IX	Yes / No	
16	Details of Manpower to be deployed as per Annexure – X	Yes / No	
16	Additional Information if any	Yes / No	
	COVER – 2 (PRICE BID)		
1	Price Bid as per Annexure – XIII		

Notes:-

1. All the statements, copies of the certificates, documents etc., should be given page numbers on the right corner of each certificate, which will be indicated in last column against each item. The statements furnished should be in the formats appended to the Tender document.

2. The information should be filled-in by the Bidder in the checklist and Annexure – I to XII, for the purposes of verification as well as evaluation of the Bidder's compliance to the qualification criteria as provided in the Tender document.

3. All copies of the supporting documents submitted by the Bidder should be duly attested by Notary Public/ Gazetted officer.

SIGNATURE OF THE BIDDER
(With seal and Address)

ANNEXURE - XII

TECHNICAL ASPECTS

SECTION - 1

INDEX

SECTION - 1
PROJECT INTRODUCTION

The Micro, Small and Medium Enterprises (MSME) Department, Government of Tamil Nadu, under the Mega Cluster Development Scheme, through Tamil Nadu Small Industries Development Corporation (TANSIDCO), has established a Pharma Park with 46 industrial plots exclusively for Orange Category pharmaceutical formulation companies at TANSIDCO Pharma Industrial Park in Pellakuppam, Kollar & Venmaniyathur villages, Tindivanam Taluk, Villupuram District. Approximately 35 individual companies have been allotted plots in the Pharma Park to set up their formulation units.

The allottees of the Pharma Park have formed a Special Purpose Vehicle (SPV) named "Tindivanam Pharma Park Association (TPPA)," comprising all member units, to install, manage, and administer the common facilities in the Pharma Park.

One of the key common facilities to be established in the Pharma Park is a "Common Warehouse," hereinafter referred to as the "Warehouse" in this tender document. The Warehouse is designed as a Pre-Engineered Steel Building (PEB) with a clear span structure, measuring 25 m (width) x 50 m (length) with a clear height of 6 m, to serve the storage for packing materials and logistics needs of the member units. The Warehouse features a 1:10 roof slope, 0.47 mm TCT colour galvanized high tensile profile sheeting for roof and walls, 8 mm bubble insulation, three rolling shutters, and three canopies, ensuring durability, functionality, and thermal efficiency.

A schematic plan and layout for the Warehouse have been prepared and are attached as Exhibit-III. The detailed specifications for the Warehouse, including design loads (e.g., Dead Load: 0.11 kN/sqm, Wind Load: 50 m/s, Seismic Zone: Zone III) and material requirements, are provided in the following sections for reference.

The layout provided in Annexure XII and the specifications shall be used as preliminary documents for further development and detailed engineering of the Warehouse. Bidders are required to prepare detailed engineering drawings,

including general arrangement drawings, anchor bolt plans, structural framing drawings, and STAAD. Ro/ETABS analysis drawings, as part of their scope of work and submit them for approval prior to fabrication and erection.

SECTION – 2
SCOPE OF WORK

Design, fabrication, supply, and erection of a Pre-Engineered Steel Building (PEB) warehouse for the Tindivanam Project, Tamil Nadu. The scope includes structural design, material procurement, fabrication, transportation, and on-site assembly, ensuring compliance with relevant standards and project specifications.

a. SCOPE OF DESIGN

The Scope of Design for the Pre-Engineered Steel Building (PEB) warehouse at the Tindivanam Project, Tamil Nadu, encompasses the structural design of the warehouse to ensure safety, stability, and compliance with Indian standards (IS codes) and project specifications. The design shall account for the following loading and environmental parameters:

1. **Dead Load**: 0.11 kN/sqm, accounting for the self-weight of the structural components, roofing, and cladding materials.
2. **Roof Live Load on Purlins**: 0.57 kN/sqm, applied to purlins to account for maintenance and incidental loads on the roof.
3. **Roof Live Load on Frames**: 0.57 kN/sqm, considered in the design of main frames to ensure structural integrity under live loads.
4. **Solar Load**: 0.2 kN/sqm, incorporated to account for the weight and loading from solar panel installations on the roof.
5. **HVAC & False Ceiling Load**: 0.2 kN/sqm, included to accommodate the weight of HVAC systems and false ceiling installations.
6. **Wind Load**: Designed for a basic wind speed of 50 m/s, as per IS 875 (Part 3), considering site-specific exposure, terrain, and topography factors.
7. **Seismic Zone**: Zone III, as per IS 1893 (Part 1), with seismic design incorporating appropriate response reduction factors and importance factors for the warehouse structure.

The design shall include the development of structural drawings, calculations, and specifications for the PEB components, including columns, rafters, purlins, girts, bracing systems, and connections. The structural analysis will be performed using industry-standard software, adhering to IS 800 for steel design. The design will ensure optimal material usage, cost-efficiency, and compliance with safety and performance requirements, while accommodating the specified loads and environmental conditions.

b. SCOPE OF DRAWINGS

The Scope of Drawings for Approval for the Pre-Engineered Steel Building (PEB) warehouse at the Tindivanam Project, Tamil Nadu, includes the preparation and submission of detailed architectural, structural, and analysis drawings for client review and approval. The drawings will be developed based on the specified design parameters and will comply with Indian standards (IS codes). The following drawings will be provided:

1. General Arrangement Drawings: Plan, elevation, and section views of the warehouse, showing overall dimensions, structural layout, and key components such as columns, rafters, purlins, and bracing systems.

2. Anchor Bolt Plans: Detailed layout of anchor bolts with coordinates, sizes, and embedment details for foundation design and construction.

3. Structural Framing Drawings: Detailed drawings of primary and secondary structural members, including columns, rafters, purlins, girts, and bracing, with member sizes and connection details.

4. Roof and Wall Cladding Drawings: Specifications for roofing and wall cladding systems, including material types, thicknesses, and fixing details, accommodating solar panel and HVAC loads.

5. Connection Details: Detailed drawings of critical connections, including base plates, column-to-rafter connections, and bracing connections, designed per IS 800.

6. STAAD. Pro or ETABS Analysis Drawings: Structural analysis outputs from STAAD. Pro or ETABS software, including:

    - Load application diagrams showing dead load (0.11 kN/sqm), roof live load (0.57 kN/sqm), solar load (0.2 kN/sqm), HVAC & false ceiling load (0.2 kN/sqm), wind load (50 m/s), and seismic loads (Zone III).

- Member force diagrams (axial, shear, and moment) for critical structural elements.
- Deflection and drift analysis diagrams to verify compliance with serviceability limits per IS codes.
- Summary of design checks for columns, rafters, and connections, ensuring compliance with IS 800.

7. Bill of Materials: A comprehensive list of all structural and cladding components, including quantities, sizes, and material specifications.

All drawings will be prepared using industry-standard CAD and structural analysis software (AutoCAD for CAD drawings, STAAD. Pro or ETABS for analysis), presented in a clear and annotated format, and submitted in PDF and DWG formats for approval. The drawings will ensure compliance with the project's structural design, safety requirements, and client specifications, facilitating seamless structural review, fabrication, and erection processes.

c. SCOPE OF EXECUTION

This section outlines the execution methodology, quality assurance, and responsibilities for the design, fabrication, supply, and erection of the Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park, Villupuram District, Tamil Nadu, for the Tindivanam Pharma Park Association (TPPA). The execution shall ensure compliance with the project specifications, Indian standards (IS 800, IS 875, IS 1893), and MBMA standards, delivering a 25 m x 50 m clear span warehouse with a 6 m clear height within the stipulated timeline.

Execution Methodology

The execution of the PEB warehouse project shall follow a systematic approach, encompassing the following phases:

- **Fabrication Phase**:
  - Procure materials from approved makes (SAIL, TATA, JSW for primary and secondary members; JSW, TATA for sheeting) as per design and drawings primary structure, secondary structure. roofing sheet, cladding sheet, bubble insulation, flashings, gutters/downpipes, and rolling shutters.
  - Fabricate primary members (e.g., columns, rafters) from ASTM A570 Grade 50 steel and secondary members (e.g., purlins, girts) from pre-

galvanized (120 GSM) steel, with surface preparation (wire brushing) and application of one coat of red oxide/grey primer and two coats of enamel paint for frames.

- Ensure quality checks during fabrication, including dimensional accuracy, weld quality, and material compliance with ASTM standards (e.g., A325 for primary bolts, A307 for secondary bolts).

- **Supply Phase**:
  - Transport fabricated components, including anchor bolts (EN 4.4 Grade), sheeting (0.47 mm TCT Galvalume), and accessories (e.g., fasteners, butyl tape sealer, E.T.P. closures), to the site in Tindivanam.
- **Civil Works Phase**:
  - Execute civil works as per the Design & Drawings approved earthwork excavation, backfilling, filling, block work, shuttering, M15 PCC concrete, RCC concrete (Minimum M30 grade) as per design submitted, steel reinforcement, plastering, painting, HDPE sheet, and grouting.
  - Construct foundations based on approved anchor bolt plans, ensuring a 4 ft elevation from Natural Ground Level (NGL) to Finished Ground Level (FGL) and 2 ft from FGL to Finished Floor Level (FFL).
  - Complete civil works, including 1.2 m brick wall construction, within from material readiness.
- **Erection Phase**:
  - Erect the PEB structure, including primary and secondary members, 3 rolling shutters, and 3 canopies, etc.,
  - Install roof and wall sheeting (0.47 mm TCT Galvalume, ASTM A792-AZ150), bubble insulation, flashings, gutters, and downpipes, ensuring weather tightness and compliance with approved drawings.
  - Conduct final inspections and handover the completed warehouse, ensuring structural integrity and functionality.

3. Quality Assurance

- **Material Quality**: All materials shall comply with specified standards (e.g., ASTM A570 Grade 50 for steel, ASTM A792 for sheeting) and be sourced from

approved makes (SAIL, TATA, JSW). Test certificates shall be provided upon request.

- **Fabrication Quality**: Conduct quality checks for welds, dimensions, and coatings during fabrication, adhering to IS 800 and MBMA standards.
- **Erection Quality**: Ensure alignment, bolt torque, and sheeting installation meet design specifications, with on-site inspections by qualified personnel.
- **Safety Compliance**: Adhere to safety protocols during civil works and erection, including use of personal protective equipment (PPE) and safe lifting practices.

SECTION - 3

General Specification for Pre-Engineered Steel Building (PEB) Warehouse

This General Specification outlines the requirements for the design, fabrication, supply, and erection of a Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park, Villupuram District, Tamil Nadu, for the Tindivanam Pharma Park Association (TPPA). The warehouse is a clear span structure measuring 25 m (width) x 50 m (length) with a 6 m clear height, designed to serve as a common storage and logistics facility for pharmaceutical formulation units.

1. Scope of Specification

The specification covers all structural components, materials, and finishes for the PEB warehouse, including primary and secondary members, roof and wall sheeting, connections, insulation, and accessories. The design shall comply with MBMA standards and Indian standards (IS 800, IS 875, IS 1893), accommodating the following loads:

- Dead Load: 0.11 kN/sqm
- Roof Live Load (Purlins and Frames): 0.57 kN/sqm
- Solar Load: 0.2 kN/sqm
- HVAC & False Ceiling Load: 0.2 kN/sqm
- Wind Load: 50 m/s
- Seismic Zone: Zone III

2. Structural Framing

- Primary Members: Transverse rigid frames, canopy rafters, corner columns, and end wall wind columns, fabricated from plate or bar stock with continuous welding, conforming to ASTM A570 Grade 50 or equivalent (minimum yield strength: 50,000 PSI / 345 MPa). Hot-rolled shapes shall conform to ASTM A572 Grade 36 (minimum yield strength: 36,000 PSI / 250 MPa).
- Secondary Members: Purlins, girts, eave struts, wind bracing, flange bracing, base angles, and clips, fabricated from pre-galvanized steel (120 GSM) conforming to ASTM A570 Grade 50 or equivalent. Rod and angle bracing shall conform to ASTM A36 (minimum yield strength: 36,000 PSI / 250 MPa).
- Surface Preparation and Painting: All structural members shall be wire-brushed to remove dirt, grease, oil, and loose mill scale, and coated with one

shop coat of red oxide or grey primer (phenol-modified alkyd resin, air-drying). Additional finish painting is excluded unless specified.

3. Roof and Wall Sheeting

- Material: 26-gauge (0.47 mm TCT) color-coated Galvalume steel, conforming to ASTM A792-AZ150, with a minimum yield strength of 345 N/mm^2. Exterior and interior faces pre-painted with factory-applied polyester paint (white/grey).
- Coverage: Each panel provides 1 m coverage, with lengths up to 10 m.
- Wall Condition: 1.2 m brick wall at the base, with Galvalume sheeting above.
- Insulation: 8 mm bubble insulation applied to roof and walls for thermal efficiency.
- Canopies: 3 nos., clad with 0.47 mm TCT color galvanized high tensile profile sheeting.

4. Connections

- Field Connections: Bolted, unless otherwise specified.
- Primary Connections: High-strength bolts conforming to ASTM A325 or equivalent.
- Secondary Connections: Machine bolts conforming to ASTM A307 or equivalent.
- Anchor Bolts: EN 4.4 Grade (black), supplied with templates as per anchor bolt setting plans (DRG.No. TPPWH-1, dated 05.03.2025).

5. Accessories

- Sheeting Fasteners: No. 14, Type-A self-tapping screws with hexagonal heads, zinc-plated, and color-coated to match sheeting, equipped with metal and neoprene washers.
- Sealer: 6 mm wide x 5 mm thick butyl tape (asbestos fiber-filled, pressure-sensitive), non-asphaltic, non-shrinking, non-drying, and non-toxic, suitable for temperatures from -51°C to +104°C.
- Closures: Solid or closed-cell Ethylene Polypropylene Terpolymer (E.T.P.) closures matching panel profiles, installed at eaves, rakes, and specified locations.
- Ridge Cover: Formed panel matching the color, slope, and profile of roof panels.

- Flashings and Trim: 26-gauge steel (ASTM A446 Grade C, minimum yield strength: 40,000 PSI / 275 MPa), provided at rakes, corners, eaves, and framed openings for weather tightness and aesthetics (white for rake/eave, wall color for corners).
- Eave Gutters: Box-shaped, color-coated, 0.47 mm thick steel, supported by 0.47 mm straps at 1.2 m maximum spacing.
- Downspouts: Rectangular, color-coated, 0.47 mm thick steel, with 45-degree elbows at the bottom, supported at 3.0 m maximum spacing.
- Rolling Shutters: 3 nos., totalling 41 sqm, for secure access points.

6. Foundation of Civil Work

The foundation and associated civil works shall be designed and executed to support the PEB warehouse structure, ensuring stability, load transfer, and durability, in compliance with IS 456 (concrete), IS 2911 (foundations), and the schematic plan (DRG.No. TPPWH-1, dated 05.03.2025). The following components shall be included:

- **Earthwork, Excavation, and PCC**:
    - Excavation: Earthwork excavation to achieve a foundation depth suitable for stable soil conditions, with a minimum bearing capacity of 150 kN/sqm, as per site geotechnical data.
    - Backfilling: Backfilling with approved earth, compacted in layers (150 mm thick) to 95% Proctor density, per IS 2720.
    - Plain Cement Concrete (PCC): PCC (1:4:8 mix, M10 grade) laid as a levelling course (100 mm thick) below footings and grade beams, ensuring a uniform base.
- **Column, Pedestal RCC Footing Foundation with Anchorage Bolt**:
    - Footings: Reinforced Cement Concrete (RCC) isolated footings RCC concrete, of M25 grade, designed to support steel columns, steel reinforcement (conforming to IS 1786, Fe 415/500).
    - Pedestals: RCC pedestals (minimum 300 mm above FGL) to elevate steel columns, cast integrally with footings, incorporating EN 4.4 Grade anchor bolts (black) fixed as per anchor bolt plans (DRG.No. TPPWH-1).
    - Anchorage: Anchor bolts shall be embedded to a minimum depth of 600 mm, with proper alignment and grouting using non-shrink cementitious grout (compressive strength ≥ 30 MPa).

- **Connecting Grade Beam/Plinth Beam of Foundation**:
    - Grade Beams: RCC grade beams (M25 grade, RCC concrete) connecting column footings, designed per IS 456 to transfer loads and ensure structural stability. Beams shall have a minimum width of 300 mm and depth of 450 mm, reinforced with steel (Fe 415/500).
    - Plinth Beams: RCC plinth beams at Finished Ground Level (FGL, 4 ft above NGL) to support the 3 m AAC block walls, integrated with 114 sqm shuttering for formwork.
- **Steel Column to Plinth Beam Connection**:
    - Connection: Steel columns (ASTM A570 Grade 50) shall be fixed to RCC plinth beams via base plates (minimum 12 mm thick, ASTM A36) and anchor bolts (EN 4.4 Grade), designed to transfer axial, shear, and moment loads per IS 800.
    - Grouting: Base plates shall be grouted with non-shrink cementitious grout to ensure full contact and load transfer, with a minimum compressive strength of 30 MPa.
- **Floor Basement, Earth Free Consolidation**:
    - Consolidation: Earth filling with approved soil, compacted in 150 mm layers to 95% Proctor density (per IS 2720), to achieve a stable floor basement at 4 ft above Natural Ground Level (NGL).
    - HDPE Sheet: 1290 sqm of HDPE sheet (minimum 250 microns) laid as a moisture barrier below the floor basement to prevent capillary rise, per IS 14995.
- **PCC 1:4:8**:
    - Specification: PCC (1:4:8 mix, M10 grade) laid as a 100 mm thick base layer over the compacted floor basement, providing a level surface for subsequent flooring works.
    - Execution: PCC shall be compacted and cured for a minimum of 7 days per IS 456, ensuring a compressive strength of ≥ 10 MPa.
- **VDF Flooring on Complete**:
    - Specification: Vacuum Dewatered Flooring (VDF) for the entire 1250 sqm floor area, using M25 grade concrete (RCC concrete), with a minimum thickness of 150 mm, finished via vacuum dewatering for a smooth, durable surface.

- Levels: Flooring shall be at Finished Floor Level (FFL, 2 ft above FGL), with a flatness tolerance of FM2 per IS 1904.
- Performance: VDF flooring shall provide high abrasion resistance and load-bearing capacity to support rack loads and forklift traffic, complying with pharmaceutical storage standards.

7. Material Sourcing

- Primary Members: SAIL, TATA, or JSW.
- Secondary Members and Sheeting: JSW or TATA.
- Compliance: All materials shall meet ASTM standards or equivalent, with test certificates provided upon request.

8. Drawing and Design Requirements

- Design Software: Structural analysis using STAAD.Pro or ETABS, with outputs for load application, member forces, deflection, and design checks.
- Drawings: Bidders shall submit detailed engineering drawings for approval within 1 week of contract signing, including:
  - General arrangement drawings (plan, elevation, sections).
  - Anchor bolt plans (per DRG.No. TPPWH-1).
  - Structural framing and connection details.
  - Roof and wall cladding specifications.
  - STAAD.Pro/ETABS analysis outputs.
- Bill of material:
  - Primary Structure
  - Secondary Structure
  - Angles, Rods & Fasteners
  - Roofing Sheet
  - Cladding Sheet
  - 8 mm Bubble Insulation
  - Flashings
  - Gutter & Down Take Pipe

9. Compliance and Standards

- The warehouse shall be designed and fabricated to meet MBMA standards and Indian standards (IS 800 for steel design, IS 875 for loads, IS 1893 for seismic design).
- All components shall comply with the schematic plan (DRG.No. TPPWH-1, dated 05.03.2025) and project specifications, ensuring structural integrity, durability, and functionality.

  This General Specification ensures the PEB warehouse meets the operational and environmental requirements of the Tindivanam Pharma Park, with high-quality materials and adherence to industry standards.

SECTION - 4

ADDITIONAL WAREHOUSE FEATURES AND SPECIFICATIONS

This section outlines additional features and specifications for the Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park, Villupuram District, Tamil Nadu, to enhance functionality, storage efficiency, and environmental control. The warehouse, measuring 25 m (width) x 50 m (length) with a 6 m clear height, shall incorporate the following features to meet the operational needs of the Tindivanam Pharma Park Association (TPPA).

1. Inside Stacking Details (Rack Design with Staircase Loading & Unloading)-

Rack Design: The warehouse shall include heavy-duty steel storage racks designed to maximize vertical storage within the 6 m clear height, optimized for pharmaceutical goods. Racks shall be modular, bolted, and capable of supporting uniformly distributed loads, considering the specified design loads (Dead Load: 0.11 kN/sqm, Roof Live Load: 0.57 kN/sqm, Solar Load: 0.2 kN/sqm, HVAC & False Ceiling Load: 0.2 kN/sqm).

Staircase Access: Racks shall include integrated steel staircases for safe and efficient loading and unloading of goods. Staircases shall comply with IS 6533 for design and safety, featuring non-slip treads, handrails, and a minimum width of 1 m to facilitate worker access to upper rack levels.

Layout: Racks shall be arranged to allow clear aisles (minimum 2 m wide) for forklift and manual handling, ensuring compliance with storage safety standards.

2. Plate on Rack

Specification: Each rack level shall be fitted with steel plates (minimum 3 mm thick, conforming to ASTM A36 or equivalent) to ensure load distribution and prevent damage to stored goods. Plates shall be securely fastened to rack frames, with a corrosion-resistant coating (e.g., galvanized or epoxy paint) to match the warehouse's pre-galvanized secondary members (120 GSM).

Purpose: Plates provide a stable, flat surface for stacking pharmaceutical goods, protecting packaging and ensuring compliance with storage regulations for Orange Category pharmaceutical units.

3. Bay Splitting

- **Configuration:** The warehouse interior shall be divided into 20 distinct bays to optimize storage and operational efficiency. The 25 m x 50 m floor area (1250 sqm) shall be split into 20 bays, each approximately 12.5 m x 5 m, separated by lightweight, non-load-bearing partitions or marked zones. Aisles (minimum 1.5 m wide) shall be provided between bays to facilitate access.
- **Design**: Bays shall be designed to accommodate specific storage needs (e.g., raw materials, finished products) with clear signage and access paths. Partitions, if used, shall be constructed using AAC blocks (as specified below) or removable steel frames to allow flexibility in reconfiguration.
- **Access**: Bays shall be organized to ensure efficient access, with at least one rolling shutter (3 nos., 41 sqm total) serving groups of bays (approximately 6-7 bays per shutter) and integrating with the rack and staircase system for efficient loading/unloading.

4. Ridge Ventilation (Roof or Fan)

Ventilation System: The warehouse shall incorporate ridge ventilation to ensure adequate air circulation, maintaining a controlled environment suitable for pharmaceutical storage. Ventilation shall include roof-mounted ridge ventilators or industrial exhaust fans.

Roof Ventilators: Minimum 4 nos. gravity ridge ventilators (aluminium or galvanized steel, 0.47 mm thick) shall be installed along the roof ridge, designed to provide natural ventilation per IS 3103, with a throat size sufficient to achieve an air change rate suitable for the 1250 sqm floor area.

Alternative Fans: If roof ventilators are not feasible, industrial ceiling or wall-mounted exhaust fans (minimum 2 nos., 0.5 HP each) shall be installed, ensuring compliance with ASHRAE standards for warehouse ventilation.

Integration: Ventilation systems shall account for the 1:10 roof slope and 8 mm bubble insulation, ensuring no compromise to thermal efficiency or structural integrity.

5. VDF Flooring

Specification: The warehouse shall feature Vacuum Dewatered Flooring (VDF) for the entire 1250 sqm floor area, designed to withstand heavy loads and forklift traffic. The flooring shall be M25 grade concrete (per IS 456), with a minimum thickness of 150 mm, finished using vacuum dewatering techniques to achieve a smooth, durable surface.

Levels: The floor shall be elevated 2 ft from Finished Ground Level (FGL) to Finished Floor Level (FFL)

Performance: VDF flooring shall provide high abrasion resistance, flatness (FM2 tolerance per IS 1904), and a load-bearing capacity to support rack loads and material handling equipment, ensuring compliance with pharmaceutical storage standards.

6. AAC Block

Specification: The lower 3 m of the warehouse walls shall be constructed using Autoclaved Aerated Concrete (AAC) blocks, Blocks shall conform to IS 2185 (Part 3), with a minimum compressive strength of 4 N/mm^2 and density of 550-650 kg/m^3.

Construction: AAC blocks shall be laid with cement mortar (1:4 ratio) and finished with 12 mm cement plaster and two coats of weather-resistant paint.

Purpose: AAC blocks provide thermal insulation, lightweight construction, and fire resistance, complementing the 0.47 mm TCT Galvalume sheeting above the 1.2 m wall height.

7. Puff Panel

- **Specification**: Polyurethane Foam (PUF) panels shall be installed in designated areas (e.g., critical storage zones or partition walls) to enhance thermal insulation, complementing the 8 mm bubble insulation on roof and walls. PUF panels shall have a minimum thickness of 50 mm, with a density of 40 ± 2 kg/m^3, and be clad with 0.47 mm TCT pre-painted Galvalume steel (conforming to ASTM A792-AZ150) on both faces.

- **Purpose**: PUF panels provide superior thermal insulation and fire resistance, ensuring a controlled environment for sensitive pharmaceutical goods, particularly in high-priority storage bays.
- **Installation**: Panels shall be fixed using corrosion-resistant fasteners, with joints sealed using non-toxic butyl tape (6 mm x 5 mm) to ensure airtightness and alignment with the warehouse's aesthetic (white/grey color scheme).

8. Loading/Unloading Platform

- **Specification**: Three loading/unloading platforms shall be constructed adjacent to the 3 rolling shutters, each platform measuring approximately 4 m x 3 m x 1.2 m high, using M25 grade RCC concrete (per IS 456) with steel reinforcement (As per proposed Design)
- **Design**: Platforms shall have a smooth VDF finish (matching the warehouse floor) and a slight slope (1:100) for drainage. Non-slip surfaces and edge guards shall be provided for safety, complying with IS 1904.
- **Purpose**: Platforms facilitate efficient loading and unloading of goods via forklifts or manual handling, integrating with the rolling shutters and bay access paths to streamline logistics operations.

9. Rolling Shutter

- **Specification**: The warehouse shall include 3 rolling shutters, constructed from galvanized steel slats (minimum 0.8 mm thick, conforming to ASTM A653 Grade 50) with a corrosion-resistant coating. Shutters shall be manually or electrically operated, with a minimum clear opening height of 4 m to accommodate forklift access.
- **Integration**: Each shutter shall serve approximately 13-14 bays, aligned with loading/unloading platforms and internal rack systems. Shutters shall include weather seals and locking mechanisms for security and weather tightness.
- **Purpose**: Rolling shutters provide secure and efficient access points for goods movement, ensuring compliance with pharmaceutical storage and logistics requirements.

Note: All features shall comply with the schematic plan (DRG.No. TPPWH-1, dated 05.03.2025) and project specifications. Bidders shall include these features

in their detailed engineering drawings, submitted for approval after contract signing, and ensure integration with the PEB structure's design and civil works.

SECTION - 5
PAINT SPECIFICATION

This section provides detailed specifications for the painting of structural members, AAC block walls, and other surfaces of the Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park, Villupuram District, Tamil Nadu. The painting shall enhance corrosion resistance, durability, and aesthetics, ensuring compliance with Indian standards (e.g., IS 2074, IS 2932) and the operational requirements of the Tindivanam Pharma Park Association (TPPA) for a 25 m x 50 m clear span warehouse.

1. Scope

The paint specification covers the application of protective and decorative coatings on:

- Primary structural members (e.g., columns, rafters) and built-up sections.
- Secondary structural members (e.g., purlins, girts, bracing) where applicable.
- AAC block walls (lower 1.2 m of warehouse walls)
- Other surfaces, such as rolling shutters and loading/unloading platforms, as required.

All painting shall use materials from approved makes (Asian Paints, Berger, or equivalent) and comply with the schematic plan (DRG.No. TPPWH-1, dated 05.03.2025).

2. Structural Members

- Primary Members and Built-Up Sections:

-Surface Preparation: All surfaces shall be cleaned by wire brushing to remove dirt, grease, oil, and loose mill scale, achieving a clean, dry surface per IS 1477 (Part 1).

-Primer: One coat of Zinc Chromate or Yellow Paint (phenol-modified alkyd resin, air-drying, conforming to IS 2074), minimum dry film thickness (DFT) of 25 microns.

-Finish Coat: Two coats of synthetic enamel paint (conforming to IS 2932), minimum DFT of 30 microns per coat, in a colour approved by the Employer

(e.g., grey or white to match the warehouse's aesthetic). The paint shall provide corrosion resistance and UV stability.

Quantity: Approximately 19.86 MT of primary structure and built-up sections shall be painted.

-Secondary Members:

-Specification: Purlins, girts, and bracing (10.82 MT) shall be pre-galvanized (120 GSM, conforming to ASTM A653) and typically do not require additional painting unless exposed to harsh conditions or specified by the Employer.

-Optional Painting: If painting is required, apply one coat of zinc-rich primer (DFT 25 microns) and one coat of enamel paint (DFT 30 microns) after surface cleaning, matching the primary members' finish.

3. AAC Block Walls

- Surface Preparation: The 3 m high AAC block walls shall be plastered with 12 mm cement plaster (1:4 ratio) and cured for a minimum of 7 days per IS 2250. Surfaces shall be clean, dry, and free of dust or efflorescence.
- Primer: One coat of acrylic-based exterior primer (conforming to IS 109), DFT of 20 microns, to ensure adhesion and alkali resistance.
- Finish Coat: Two coats of weather-resistant acrylic emulsion paint (conforming to IS 5410), DFT of 25 microns per coat, in a color approved by the Employer (e.g., white or light grey). The paint shall provide UV resistance, water repellence, and fungal resistance suitable for pharmaceutical storage environments.
- Quantity: Approximately 420 sqm of wall surfaces shall be painted

4. Other Surfaces

- Rolling Shutters: The 3 rolling shutters (41 sqm total, galvanized steel slats) shall be coated with one coat of zinc-chromate primer (DFT 25 microns) and two coats of polyurethane-based enamel paint (DFT 30 microns per coat) for enhanced corrosion resistance and aesthetics, matching the warehouse's colour scheme.
- Loading/Unloading Platforms: The 3 RCC platforms (4 m x 3 m each) shall be finished with one coat of cement-based primer (DFT 20 microns) and one

coat of epoxy floor paint (DFT 50 microns) to provide abrasion resistance and a non-slip surface, compatible with VDF flooring.

- Miscellaneous: Any additional steel components (e.g., rack plates, staircase handrails) shall be painted with one coat of zinc-rich primer and two coats of enamel paint, matching the primary members' specification.

5. Application Methods

- Surface Preparation: All surfaces shall be cleaned per IS 1477 (Part 1), with steel surfaces wire-brushed and degreased, and masonry surfaces brushed to remove loose particles.

- Painting Methods:

  - Structural members: Brush or airless spray application for uniform coverage, ensuring no runs or sags.

  - AAC block walls: Roller or brush application for smooth finish, with spray application permitted for large areas if approved.

  - Rolling shutters and platforms: Brush or spray application, ensuring even coating on all surfaces.

-Environmental Conditions: Painting shall be performed at temperatures between 10°C and 35°C, with relative humidity below 85%, and surfaces shall be dry and free of moisture.

- Coating Intervals: Allow a minimum drying time of 6 hours between primer and first finish coat, and 8 hours between finish coats, per manufacturer's recommendations.

6. Quality Assurance

- Material Quality: Paints and primers shall be sourced from approved makes (Asian Paints, Berger, or equivalent), with test certificates provided upon request to verify compliance with IS 2074, IS 2932, IS 109, and IS 5410.

- Application Quality: Ensure uniform thickness and coverage, with DFT measurements taken using a dry film thickness gauge. Surfaces shall be free of defects (e.g., peeling, cracking, or blistering).

- Inspection: The Employer's Engineer shall inspect painted surfaces at each stage (primer, first coat, final coat) to verify compliance with specifications.

- Warranty: Paints shall carry a minimum 5-year warranty against fading, peeling, or chalking, with manufacturer guarantees submitted by the bidder.

Note: The paint specification shall be integrated into the detailed engineering drawings, submitted for approval within 1 week of contract signing, and comply with the schematic plan (DRG.No. TPPWH-1, dated 05.03.2025). Bidders shall ensure painting enhances the warehouse's durability and suitability for pharmaceutical storage, coordinating with structural and civil works.

SECTION - 6

APPROVED MAKES

The following is the list of products and approved manufacturers for the Pre-Engineered Steel Building (PEB) warehouse at Tindivanam Pharma Park. Bidders may propose equivalent makes in their offer, but during execution, they shall obtain prior approval from the Employer's Engineer before procuring items not listed below.

S. No	Item	Makes
1.	Primary Steel Members	Sail/TATA/JSW Equivalent
2.	Secondary Steel Members	JSW/TATA/Equivalent
3.	Roof and Wall Sheeting	JSW/TATA/Equivalent
4.	Anchor Bolts	Reputed Manufacturers/Equivalent
5.	Cement (OPC Grade-53)	ACC/ Ultratech/Ultratech/ Ambuja/Coromandel
6.	Steel Reinforcement	Sail/Tata/JSW/Equivalent
7.	Sheeting Fasteners	Reputed Manufacturing/Equivalent
8.	Bubble Insulation (8mm)	Supreme / Equivalent
9.	Galvalume Coating (AZ150)	JSW/TATA/ Equivalent
10.	Paint and Primers	Asian Paints / Berger / Equivalent
11.	Rolling Shutters	Reputed Manufacturers/ Equivalent
12.	Concrete (PCC & RCC)	ACC/ Ultratech/ Equivalent
13.	VDF Flooring/ FM2 Flooring/Polished Flooring/ Epoxy & PU Flooring	Primo Flooring

Note: All materials shall comply with the specifications outlined in the tender document, including ASTM A570 Grade 50 for primary and secondary members, ASTM A792-AZ150 for sheeting, and relevant Indian standards (IS 800, IS 875, IS 1893). Bidders shall provide test certificates for all materials upon request, and any proposed equivalent makes must meet or exceed the specified standards.

SECTION - 7

REFERNECE DOCUMENTS & DRAWINGS

Three documents/drawings are provided as reference to this tender

1. Overall layout of the Pharma Park showing the location of all plots. (Exhibit - I)
2. Area Allotted for Warehouse in Utility Area.(Exhibit – II)
3. GA Drawing for Warehouse. (Exhibit - III)

ANNEXURE – XIII

PART – 2 (PRICE BID)

Price Bid

Design, Fabrication, Supply and Erection of a pre-engineered steel building (PEB) warehouse on Turnkey basis at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

Sl No	Description	Total Rate in Rs	Total Rate (In words)
1	Design, Fabrication, Supply and Erection of a pre-engineered steel Building (PEB) warehouse Excluding GST		
	Add: GST @ 18%		
	Total Contract Value including GST		

Total sum of (in Figures as in Rs. ……(Including GST) (in Words) Rupees ……

Note:

- **Incase of any discrepancy between the price quoted in words and figures, lowest of the two shall be considered.**
- **GST should be quoted separately**
- **In case of any deviation, the NPV estimated by TPPA will be final**

Dated:

Bidder's Signature

Address……

Witness……..

Seal

Address…….

EXHIBIT

1. Overall layout of the Pharma Park (EXHIBIT-I)
2. Area Allotted for Warehouse in Utility Area (EXHIBIT-II)
3. GA Drawing for Warehouse (EXHIBIT – III)

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TOWN AND COUNTRY PLANNING DEPARTMENT
VILLUPURAM DISTRICT

INDUSTRIAL LAYOUT APPROVAL: TANSIDCO Pharma Industrial Park Layout in Plot No.A17 of Approved SIPCOT Industrial Park Layout L.P/A.D.T.C.P(V.D) NO : 20/2022.

VILLUPURAM DISTRICT, TINDIVANAM TALUK, MAILAM PANCHAYAT UNION, PELLAKUPPAM VILLAGE: S.F.NOS: 1/1, 1/2A, 1/2B, 1/2C, 1/2D, 1/3, 1/4, 1/5A, 1/5B, 2, 3/1, 3/2, 4/1A, 4/1B, 4/1C, 4/2, 4/3, 4/4, 4/5, 4/6, 5/1, 5/2, 6/1, 6/2A, 6/2B, 6/3, 10/1A1, 10/1A2, 10/2A1, 10/2A2,14/1A1A, 14/1A2, 14/2A1, 14/2A2, 15/1, 15/4, 15/5, 16, 17/3A, 17/4, 17/5A1, 17/5A2, 17/5B, 17/5C, 17/7, 18/3, 18/4

MAILAM PANCHAYAT UNION, KOLLAR VILLAGE: S.F.NOS: 202/2A, 202/2B, 202/2C, 202/2D, 202/2E, 202/2F, 202/2G, 202/2H, 202/2I, 202/2J, 203/1A, 203/1B, 207/2

OLAKKUR PANCHAYAT UNION, VENMANIYATHUR VILLAGE: S.F.NOS: 50/2B, 51/1, 51/2, 51/3B, 51/4, 52/2B, 52/3, 52/5

FILE NO:HIVL68HD/2023/TCP — SCALE 1:1600

GENERAL NOTES

TOTAL EXTENT	:	111.47 Acres
ROAD AREA	:	15.95 Acres (14.31%)
EXTENT AFTER DETECTION OF ROAD AREA	:	95.52 Acres
PUBLIC PURPOSE	:	11.45 Acres (10.27%)
COMMERCIAL PURPOSE (CMP)	:	2.77 Acres (2.48%)
SALEABLE INDUSTRIAL AREA	:	81.30 Acres (72.93%)

NUMBER OF PLOTS

INDUSTRIAL PLOTS	:	46 NOS.
COMMERCIAL PURPOSE PLOTS(SHOP)	:	11 NOS.
PUBLIC PURPOSE PLOTS	:	9 NOS.
TOTAL NO OF PLOTS	:	66 NOS.

PUBLIC PURPOSE LAND

SL No	PP No	DESCRIPTION	EXTENT IN ACRES
1	PP - 1		1.29
2	PP - 2		0.43
3	PP - 3	STP & ETP	5.07
4	PP - 4	UTILITY	2.76
5	PP - 5	WTP	1.20
6	PP - 6	WELL	0.24
7	PP - 7	BORE WELL	0.04
8	PP - 8	STP Collection Well	0.16
9	PP - 9	ETP Collection Well	0.26
TOTAL			11.45

COMMERCIAL PURPOSE LAND

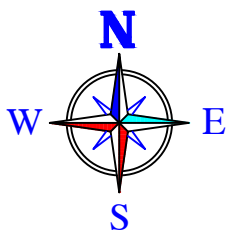
SL.NO	CMP No	EXTENT IN ACRES
1	CMP - 1	0.44
2	CMP - 2	0.38
3	CMP - 3	0.26
4	CMP - 4	0.21
5	CMP - 5	0.17
6	CMP - 6	0.12
7	CMP - 7	0.24
8	CMP - 8	0.20
9	CMP - 9	0.16
10	CMP - 10	0.22
11	CMP - 11	0.37
TOTAL		2.77

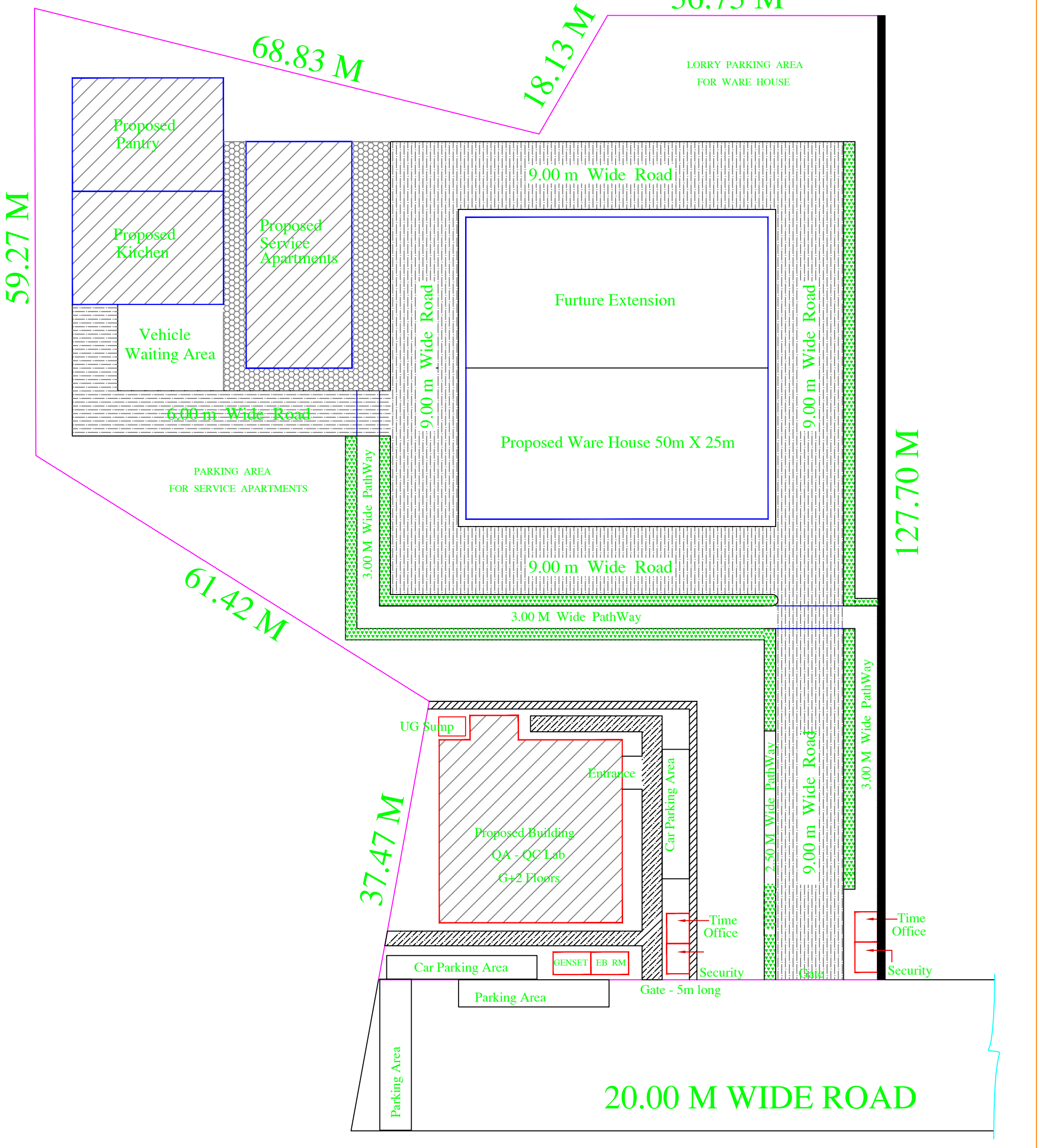
ALL DIMENSIONS ARE IN 'METER'

INDEX:

- LAYOUT HIGHWAYS ROAD
- INTERNAL ROADS
- COMMERCIAL PLOTS
- PUBLIC PURPOSE

EXHIBIT-II



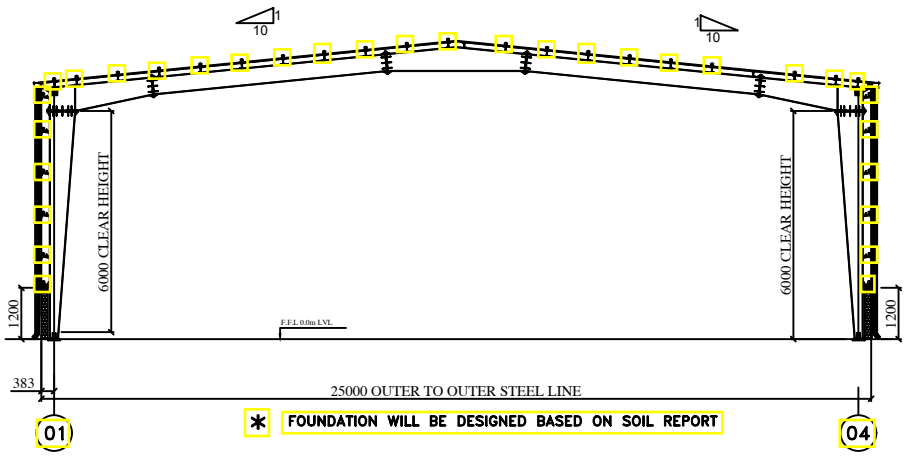


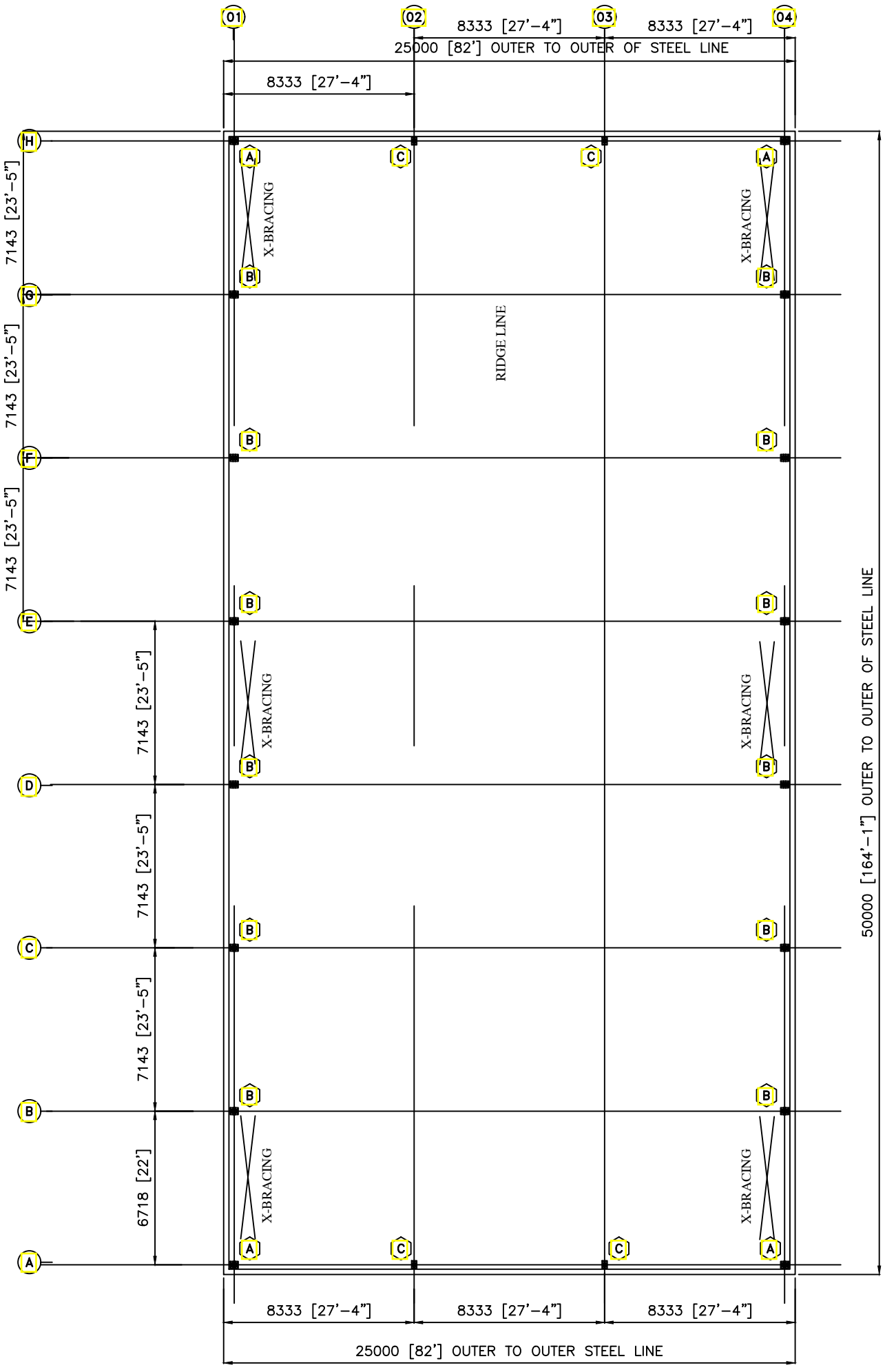
SCHEMETIC PLAN SHOWING THE
PROPOSED COMMON QC LAB
AT TINDIVANAM PHARMA PARK
ESTATE, TINDIVANAM, MEGA PHARMA
CLUSTER, TINDIVANAM,
VILLUPURAM DISTRICT, TAMILNADU - 604 001.

SITE PLAN

DATE : 03.04.2025	SCALE : N.T.S	DRG.No. TPP-7-R1

EXHIBIT-III





SCHEMETIC PLAN SHOWING THE
PROPOSED COMMON WARE HOUSE
(ITCOT), AT TIDIVANAM PHARMA PARK..
VILLUPURAM DISTRICT, TAMILNADU - 604 001.

ANCHOR BOLT
PLAN & CROSS SECTION

DATE : 05.03.2025	SCALE : N.T.S	DRG.No. TPPWH-1

GEOTECHNICAL INVESTIGATION REPORT

for Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu

EXECUTIVE SUMMARY

M/s. Tindivanam Pharma Park Association, Chennai are proposing to construct a Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

The site for the proposed project is situated on the Northern side of 20m wide road and on the Western side 25m wide road in TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu. The proposed building measures approximately 50m x 50m in size. The site is open on all the sides and is fairly level in topography. The site is lower than the adjacent road by about 0.5m. Vegetation in the form of grass and bushes were observed within the site during the period of field investigations.

The proposed structure consists of a Warehouse building.

Geotechnical investigations have been undertaken at the site as per the scope of investigations, stipulated by the client, which consisted of conducting 2 boreholes down to 10m depth below existing ground level irrespective of type of substrata encountered.

The results of borehole investigations indicate the presence of Brown clayey silty sand with gravel/ silty sand with gravel down to 2.5/2.6/2.7m depth below existing ground level at which refusal/rock strata (where N-value is >100) was encountered. The refusal/rock strata encountered is in the form of Brownish white/white/yellow/brown completely weathered rock (Sandstone based) and continued down to the termination depths of the boreholes of 10m below existing ground level.

The soil strata is in a medium dense state down to the depths of refusal/rock strata encountered at 2.5m -2.7m depth below existing ground level.

Ground water table was encountered at 2.1m depth in the boreholes during the period of field investigations. This shallow depth of ground water table might be due to the rains prior to the period of field investigations and may go down in due course of time.

In view of the observed subsoil conditions, the proposed structures can be supported on *Isolated/Strip footings laid at a minimum depth of 2m below the existing ground level* or *alternatively, at a minimum depth of 0.3m in weathered rock strata. Net allowable bearing pressures for Warehouse Building with various widths of foundations laid at different depths are given below:*

Depth of Foundations Below EGL (m)	***Allowable Settlement (mm)***	***Net Allowable Bearing Pressure (t/m²) for Widths of Foundations (m)***	
		1.5	***≥3***
2	*25*	*17*	*22*
0.3m in WR	*12*	*40*	*40*

WR - Weathered Rock Strata

The excavated soil can be used for backfilling purposes.

After the excavations for the foundations, the foundation surface should be watered for at least 24 hours. The top slush should then be removed and the surface compacted heavily. If any loose pockets are observed, the same shall be filled with brickbats/ gravel and compacted well. Foundations can subsequently be laid over such a prepared surface.

Stiff Tie-beams connecting the columns in both directions may be provided which will render additional rigidity to the structure.

REPORT ON GEOTECHNICAL INVESTIGATION FOR WAREHOUSE BUILDING AT TANSIDCO PHARMA INDUSTRIAL PARK, PELLAKUPPAM, KOLLAR & VENMANIYATHUR VILLAGE, TINDIVANAM TALUK, VILLUPURAM DISTRICT, TAMIL NADU

1.0 INTRODUCTION

1.1 Overview

1.1.1 M/s. Tindivanam Pharma Park Association, Chennai are proposing to construct a Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

1.1.2 The geotechnical investigations have been carried to ascertain the soil conditions for the design of foundations of the proposed building.

1.2 Authority

A detailed geotechnical investigations programme has been conducted as per the authorisation by M/s. Tindivanam Pharma Park Association, Chennai vide their Work Order No. TPPA/Soil Test/WO/2024/01 dated 05.12.2024.

*2.0 PROJECT DETAILS*t

2.1 Site Location

The site for the proposed project is situated on the Northern side of 20m wide road and on the Western side 25m wide road in TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

2.2 Site Layout and Topography

2.2.1 The proposed building measures approximately 50m x 50m in size. The site is open on all the sides and is fairly level in topography. The site is lower than the adjacent road by about 0.5m. Vegetation in the form of grass and bushes were observed within the site

during the period of field investigations.

2.2.2 The colour of the exposed soil surface is Brown.

2.3 The Structure

As per information provided by the client, the proposed structure is a Warehouse building.

2.4 Seismic Zone

Site for the proposed building is situated in Tindivanam near Chennai which falls under Seismic Zone III as per IS 1893 (Part 1) - 2016.

2.5 Geographical Information

2.5.1 The site for the proposed project is located at:

a) Latitude : 12° 25'

b) Longitude : 79° 38'

3.0 OBJECT OF INVESTIGATIONS

3.1 For designing the foundation system of the proposed building, the following data are required:

a) Type of foundation system.

b) Depth below the ground level at which the foundation system is to be laid.

c) Allowable bearing pressure at the foundations levels.

3.2 To determine above factors, the following information would be required:

a) The subsoil profile indicating thicknesses of the various soil strata, to a depth down to the influence zone below the foundations.

b) Engineering properties of the soil strata at various levels.

c) Physical characteristics of the soil strata.

d) Variation of the strength of the strata with depth.

3.3 For evaluating the above parameters, field investigations and laboratory investigations on the soil samples collected during the field investigations, have been carried out.

3.4 The results from these investigations have been analysed to provide the recommendations for the design of foundations.

4.0 SCOPE OF INVESTIGATIONS

4.1 Scope of investigations as given in the work order consisted of:

a) Conducting 2 boreholes down to 10m depth below existing ground level irrespective of type of substrata encountered, as required by the client.

b) Conducting standard penetration tests at 1.5m intervals.

c) Recovering undisturbed soil samples from various levels of the subsoil strata.

d) Recording ground water table levels, if met with.

e) Conducting relevant laboratory tests on soil samples recovered.

f) Preparation and submission of a technical report containing the details of the tests carried out, their analysis and recommendations regarding the foundation system to be adopted. Two copies of the report are to be submitted.

5.0 FIELD INVESTIGATIONS

5.1 Preliminary Details

5.1.1 The locations of the boreholes were shown at site by the client's representative. A schematic site plan showing the location of the boreholes is given in fig. 1.

5.1.2 Weather was clear during the period of field investigations which were carried out in the last week of December 2024. There were few spells of rain prior to the period of field investigations.

5.2 Boreholes

5.2.1 The boreholes were progressed by mechanically operated rotary core drill method.

5.2.2 Refusal strata (i.e. where N-value is >100) was encountered at 2.5/2.7m depths below the existing ground level in the form of completely weathered rock (Sandstone based). The drilling in rock strata was conducted using NX size core barrel fitted with diamond bits.

5.2.3 The boreholes were terminated at 10m depth below existing ground level, as per the stipulated scope of work.

5.2.4 The locations of boreholes, depths at which ground water table was encountered in the boreholes during the period of field investigations, depths at which refusal/rock strata was encountered and termination depths of the boreholes are given below:

BH No.	Depth of Ground Water Table Below EGL (m)	Depth of Refusal/ Rock Strata Below EGL (m)	Termination Depth below EGL (m)
1	2.1	2.5	10
2	2.1	2.7	10

5.2.5 Ground water table was encountered at 2.1m depth in the boreholes during the period of field investigations. This shallow depth of ground water table might be due to the rains prior to the period of field investigations and may go down in due course of time

5.2.6 Standard Penetration Tests were conducted in soil strata at 1.0m depth intervals.

5.2.7 Disturbed soil samples recovered from split spoon sampler were packed in polythene bags, labelled and retained for identification purposes.

5.2.8 Undisturbed soil samples were recovered by thin walled tubes conforming to IS 2132. These tubes had an area ratio of less than 10%. The diameter of soil samples were 50mm and length 45cm.

6.0 LABORATORY INVESTIGATIONS

6.1 The soil samples brought to the laboratory were subjected to various tests to determine the following properties

a) Type of soil and its gradation

b) Consistency limits

c) Natural density

d) Natural water content

e) Triaxial tests

6.2 In order to determine the above properties listed in 6.1, the following tests were conducted.

a) Sieve analysis on the coarse grained soil fraction

b) Hydrometer analysis on the fine grained soil fraction

c) Liquid and plastic limits

d) Natural Density and Water Content tests

e) Triaxial compression tests

f) Free Swell Index tests

6.3 The rock core samples brought to the laboratory were subjected to various tests to determine the following properties

a) Unit Weight

b) Porosity

c) Water Absorption

d) Uniaxial strength of rock

7.0 RESULTS AND ANALYSIS

7.1 Presentation of Results

7.1.1 The results of borehole investigations and of the laboratory investigations conducted on

the soil samples collected from the boreholes have been presented in the form of soil profile tables in Table Nos. 1 to 4.

7.1.2 The soil profile tables indicate the following:

a) Standard Penetration Test Values (i.e. N- values observed) at various depths

b) Soil description identifying the type of soil

c) Grain size analysis indicating composition of subsoil

d) Consistency limits

e) In-situ bulk density and Water content

f) Triaxial test results

7.1.3 The rock profile tables indicate the following:

a) Description of rock

b) Number of core pieces in each drill run

c) Core Recovery in each drill run

d) RQD in each drill run

e) Unit Weight of rock samples

f) Porosity of rock samples

g) Water Absorption of rock samples

h) Uniaxial strength of rock derived from point load index

7.2 Analysis of Soil and Rock Profile

7.2.1 A perusal of the data presented in the soil androck profile tables indicate the presence of the following soil strata.

a) Stratum - I : Brown silty sand with gravel

b) Stratum - II : Brown clayey silty sand with gravel

c) Stratum - III : Brownish white/white completely weathered rock strata (Sandstone based)

7.2.2 The thicknesses in each borehole of each strata described in 7.2.1 are given in the table below:

BH No.	Depth (m) : from - to		
	Stratum - I	Stratum - II	Stratum - III
1	-	0.0 - 2.5	2.5 - 10
2	0.0 - 2.7	-	2.7 - 10

7.2.3 The above results show that :

a) Stratum - I consisting of Brown silty sand with gravel having significant percentages of sand and varying percentages of silt and gravel, has been encountered from ground level down to 2.5m depths below existing ground level only at the location of borehole BH1.

b) Stratum - II consisting of Brown clayey silty sand with gravel having significant percentages of sand and varying percentages of clay, silt and gravel, has been encountered from ground level down to 2.7m depths below existing ground level only at the location of borehole BH2.

c) Stratum - III consisting of Brownish white/white/brown/yellow completely weathered rock strata (Sandstone based) has been encountered from 2.5/2.7m depth down to the termination depths of boreholes of 10m depth below existing ground level.

7.3 Soil Composition

7.3.1 The grain size distribution of the soil samples at various depths, as determined in the laboratory have been presented in the form of grain size analysis curves in fig. 3.

7.3.2 The variations in the grain size distribution - strata wise across the boreholes are as follows:

a) Stratum - I : Brown silty sand with gravel

BH No.	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
1	6	57	37	0

This stratum was encountered only at the location of borehole BH1.

b) Stratum - II : Brown clayey silty sand with gravel

BH No.	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
2	23	55	15	7

This stratum was encountered only at the location of borehole BH2.

7.3.3 The above results indicate that the soil in :

a) Stratum - I consists of about 37% of silt, 57% of sand and 6% of gravel.

b) Stratum - II consists of about 7% of clay, 15% of silt, 55% of sand and 23% of gravel.

7.4 In-situ Density and Water Content

7.4.1 The bulk/in-situ bulk densities, water contents and dry densities obtained from undisturbed soil samples are tabulated below.

BH No.	Depth (m)	In-situ Bulk Density (g/cm^3)	Water Content (%)	Dry Density (g/cm^3)
1	2	1.82	6.9	1.7
2	2	1.98	9.2	1.81

7.4.2 The above results indicate that the soil strata is in a medium dense state. Undisturbed soil samples could not be collected satisfactorily in some of the boreholes, as the tubes got damaged due to the presence of refusal at shallow depths below existing ground level.

7.5 Consistency Limits

7.5.1 The Consistency Limits determined for the soil in Stratum - I (Brown silty sand with gravel) indicate that the soil in this stratum is non plastic in nature.

7.5.2 The Consistency Limits determined for the soil in Stratum - II (Brown clayey silty sand with gravel) indicate that the soil in this stratum is non plastic in nature.

7.5.3 The Consistency Limits indicate that the soil in :

a) Stratum - I ((Brown silty sand with gravel) is non plastic in nature.

b) Stratum - II (Brown clayey silty sand with gravel) is non plastic in nature.

7.6 Standard Penetration Tests

7.6.1 Standard Penetration Test values (N-values observed) are presented in the soil/rock profile table nos.1 to 4.

7.6.2 The soil strata is in a medium to dense state from existing ground level down to refusal strata encountered at 2.5-2.7m depth below existing ground level with observed N-values ranging is 46.

7.6.3 In completely weathered rock, high blow counts have been recorded for small depths of penetration of the SPT sampler, indicating that the completely weathered rock encountered below refusal is very hard and compact in-situ.

7.7 Triaxial Test Results

7.7.1 The cohesion 'c' obtained from consolidated drained triaxial compression test is negligible and the angle of shearing resistance 'ϕ' of the soil is 32°.

7.7.2 The cohesion 'c' obtained from Triaxial shear tests on remoulded samples is 0.03kg/cm² and the angle of shearing resistance 'ϕ' of the soil is 29°.

7.8 Free Swell Index

7.8.1 The free swell index of the soil samples collected at 1.5m depths are given below:

BH No.	Free Swell Index (%)
1	7.2
2	5.2

7.8.2 The above results indicate that the soil strata is low swelling in nature. Hence, the excavated soil can be used for backfilling purposes.

7.9 Rock Conditions

7.9.1 An analysis of the data provided in the rock profile tables indicates the following :

a) The rock strata generally consists of Sandstone based rock.

b) The colour of the rock generally is Brownish white/white down to the maximum depth investigated.

c) Core recoveries ranging from nil, small pieces to 14% have been observed at different depths in different boreholes.

d) RQD values of nil have been observed at different depths in boreholes.

e) Unit weight of the rock generally varies between 2.56g/cm^3 and 2.61g/cm^3.

f) Porosity of the rock varies between 0.36% and 0.52%.

g) Water absorption of the rock varies between 0.18% and 0.29%.

h) Point load strength of the rock generally varies between 40kg/cm^2 and 81kg/cm^2.

7.9.2 The above results indicate that the rock strata has been observed to be in a completely weathered state (i.e. characterised by nil, small pieces to 14% core recovery and nil RQD) at different depths in different boreholes.

7.9.3 In completely weathered rock strata, high blow counts have been recorded for small depths of penetration of the SPT sampler, indicating that the completely weathered rock encountered below refusal is very hard and compact in-situ.

7.10 Compiled Soil Profile

7.10.1 An overview of the results and their analysis has been presented in the form of a compiled soil (fig. 2).

7.10.2 The above figure shows the various strata encountered and their thicknesses in each of the boreholes and also gives the soil / rock composition and the observed N-values and undisturbed soil samples collected at various depths along with core recovery and RQD in the rock strata.

8.0 DESIGN CRITERIA

8.1 Design Parameters

8.1.1 The parameters required for the design of foundation system for the proposed Building are:

a) Type of foundation to be adopted

b) Depth at which the foundations have to be laid

c) Allowable bearing pressure on the soil at the foundation level

8.1.2 On the basis of the analysis of the results of investigations, the required design parameters have been arrived at and are given in the following sections.

8.2 Type of Foundations

8.2.1 The type of foundation depends on the following:

a) Subsoil conditions

b) Type of structure

c) Configuration at loading points

d) Loading intensity on each sub-structure/structural element.

8.2.2 As per information provided by the client, the proposed structure consists of a Warehouse building.

8.2.3 The results of the investigations have shown that the soil is in a medium dense state state from the existing ground level down to the depths of refusal/rock strata.

8.2.4 In view of the above, *Shallow Foundations - Isolated/Strip Footings* can be adopted for the proposed builindg.

8.3 Depth of Foundations

8.3.1 The depth at which foundations should be laid will be governed by the following criteria.

a) Top filled up strata/loose soil, if any

b) There should be sufficient thickness of soil above the footing/foundations so that the bearing capacity of the soil can be fully mobilised.

c) Soil below the level of footings/foundations should have the requisite strength to support the anticipated bearing pressures on the foundations without allowing the settlement of footings/foundations to exceed the acceptable limits.

d) Requirements of the type of structure (Warehouse building).

8.3.2 The results of the investigations have shown that the soil is in a medium dense state state from the existing ground level down to the depths of refusal/rock strata encountered at 2.5m to 2.7m below existing ground level.

8.3.3 In view of the above factors, foundations of the proposed buildin can be laid at a *minimum depth of 2m below the existing ground level*. The soil available at the founding level will be Brown silty sand with gravel/Brown clayey silty sand with gravel.

8.3.4 Alternatively, as refusal/rock strata has been encountered at shallow depths below existing ground level, foundations of the proposed structures can be laid at a *minimum depth of 0.3m in completely weathered rock strata.*

8.4 Allowable Bearing Pressure

8.4.1 An allowable settlement of 25mm has been considered to evaluate the allowable bearing

pressure for Isolated/Strip footings in soil strata.

8.4.2 Allowable bearing pressure has been evaluated by:

a) Shear failure criteria based on the average soil data

b) Settlement criteria based on the SPT values (N-values)

c) Settlement criteria based on deformation modulus

8.4.3 A water table correction factor of 0.5 has been considered.

8.4.4 The Allowable bearing pressure for foundations resting in weathered rock strata is based on the provisions given in Table 2 of BIS code IS 12070 - 1987 (RA - 1995).

8.4.5 On the basis of the above, net allowable bearing pressures for Warehouse Building with various widths of foundations laid at different depths are given below.

Depth of Foundations Below EGL (m)	***Net Allowable Bearing Pressure (t/m²) for Widths of Foundations (m)***	
	1.5	***≥3***
2	*17*	*22*
0.3m in WR	*40*	*40*

WR - Weathered Rock Strata

8.4.6 The settlement of foundations resting in completely weathered rock strata will be within 12mm as per IS 13063-1991 (RA 1996).

9.0 RECOMMENDATIONS

9.1 Type of Foundations

Shallow Foundations - Isolated/Strip Footings

9.2 Allowable Bearing Pressure

Net allowable bearing pressures for various widths of foundations laid at different depths are given below:

Depth of Foundations Below EGL (m)	*Allowable Settlement (mm)*	*Net Allowable Bearing Pressure (t/m²) for Widths of Foundations (m)*	
		1.5	*≥3*
2	*25*	*17*	*22*
0.3m in WR	*12*	*40*	*40*

WR - Weathered Rock Strata

9.3 Construction Advisories

9.3.1 The soil of each strata has been described with name, colour etc. During excavation, any variations observed in the nature and condition of the soil from those given in this Report should be noted and appropriate action should be taken.

9.3.2 The excavated soil can be used for backfilling purposes.

9.3.3 After the excavations for the foundations, the foundation surface should be watered for at least 24 hours. The top slush should then be removed and the surface compacted heavily. If any loose pockets are observed, the same shall be filled with brickbats/ gravel and compacted well. Foundations can subsequently be laid over such a prepared surface.

9.3.4 Stiff Tie-beams connecting the columns in both directions may be provided which will render additional rigidity to the structure.

9.4 Appendices

9.4.1 The calculations for the allowable bearing pressure have been provided in Appendix-A of this report.

9.4.2 The List of IS codes referred for providing the recommendations and that which might be required to implement the same have been given in Appendix-B of this report.

9.5 Notes

9.5.1 The recommendations given in this report have been arrived at on the basis of design

parameters which have been judiciously adopted by giving due consideration to the results of field and laboratory investigations as well as NAGADI's experience of over four decades in working in various types of soil and rock conditions all over India.

9.5.2 The entire report should be studied before adopting the recommendations given in the report.

10.0 LIMITATIONS

This Geotechnical investigation has been carried out at locations in the site chosen by the client as representing the entire site. The recommendations provided in this Report are hence valid only for those test locations. However, if there is any change in the subsoil conditions and properties at places between or beyond the chosen test locations, Nagadi may be contacted for further actions. Fresh investigations will have to be carried out at such locations.

Dr. N. Santosh Rao
Technical Director & Chief Consultant
*For **NAGADI CONSULTANTS PVT. LTD.***

ANALYSIS FOR ALLOWABLE BEARING PRESSURE

Data

(i) Soil Properties :

c (kg/cm^2) = 0.01 $\phi = 31^\circ$ γ (g/cm^3) = 1.9

(ii) Depth of Foundation, D (m) = 2

(iii) Allowable Settlement, s (mm) = 25

Shear Failure Criterion (Ref. IS : 6403)

$N_c = 27.05$ $N_q = 16.11$ $N_\gamma = 19.39$ $R_w = 0.50$ $R_w' = 0.50$

$$q_s = \frac{1}{2.5}\left(c \cdot N_c + \gamma \cdot D \cdot N_q \cdot R_w + 0.5 \cdot \gamma \cdot B \cdot N_\gamma \cdot R'_w\right) - \gamma \cdot D \cdot R_w$$

	B (m)		
	1.5	≥3	
q_s (t/m^2)	17.0	22.5	

Settlement Criterion (Ref. IS : 8009)

(i) From N Values

B (m)	1.5	≥3
H (m)	1	1
N_{av}	58	60
q_a (t/m^2)	34.3	29.9

(ii) From Triaxial Compression Tests : $q_a = \dfrac{s \cdot E}{0.7 \cdot H}$

B (m)	1.5	≥3
H (m)	1	1
E (kg/cm^2)	80	100
q_a (t/m^2)	28.5	35.7

ADOPT	**B (m)**	**1.5**	**≥3**
	q (t/m^2)	**17**	**22**

Note : q_s and q_a are NET VALUES, Weight of backfill etc. need not be added to the loading except in case of filling above original G.L.

LIST OF IS CODES

Field Investigation

1. IS : 1498 - 1970 : Classification and identification of soils for general engineering purposes (First Revision) (Amendment 2)
2. IS : 1892 - 1979 : Code of practice for sub surface investigations for foundations (First revision)
3. IS : 2131 - 1981 : Method of Standard Penetration Tests for soils (First revision)
4. IS : 2132 - 1986 : Code of practice for thin walled tube sampling of soils (Second revision)

Laboratory Tests

1. IS : 2720 - 1983 (Part 1) : Methods of test for soils: Preparation of dry soil samples for various tests (Second revision)
2. IS : 2720 - 1980 (Part 2) : Method of test for soils: Determination of water content (Second revision) Amendment 1
3. IS : 2720 - 1980 (Part 3/Sec 1) : Method of test for soils : Determination of Specific Gravity : Fine grained soils. (First revision)
4. IS : 2720 - 1980 (Part 3/Sec 2) : Method of test for soils : Determination of Specific Gravity : Fine, Medium & Coarse grained soils. (First revision).
5. IS : 2720 - 1985 (Part 4) : Method of test for soils : Grain size analysis (Second revision)
6. IS : 2720 - 1985 (Part 5) : Method of test for soils : Determination of liquid and plastic limit (Second revision)
7. IS : 2720 - 1977 (Part 40) : Methods of tests for soils: Determination of free swell index of soils.

Foundation Construction

1. IS : 1080 - 1986 : Code of practice for design and construction of shallow foundations on soils (other than raft, ring and shell) (Second revision)
2. IS : 1904 - 1986 : Code of practice for design and construction of foundation in soils: General requirements (Third revision)
3. IS 6403 - 1981 : Code of practice for determination of bearing capacity of shallow foundations : First revision (Amendment 1)
4. IS 8009 - 1976 (Part 1) : Code of practice for calculation of settlements of foundations : Shallow foundations subject to symmetrical static vertical loads (Amendment 2)
5. IS 12070 - 1987 : Design and construction of shallow foundations in rocks (RA - 1995)
6. IS 13063-1991 (RA 1996): Structural safety of buildings on shallow foundations on rocks — Code of practice

NAGADI CONSULTANTS PRIVATE LIMITED
GEOTECHNICAL CONSULTANTS
Delhi : 011 (T) 26891980 (F) 26897403 delhi@nagadi.co.in
Bangalore : 080 (T) 23156076 (F) 23303007 bangalore@nagadi.co.in
Chennai : 044 (T) 24487870 (F) 24488957 chennai@nagadi.co.in
Secunderabad : 040 (T) 27754446 (F) 27751194 secunderabad@nagadi.co.in

SOIL PROFILE

Project: Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

B.H. Location: | Water Table: 2.1m | Term. Depth : 10m | B.H. No. : 1

N - Value#	Depth (m)	Soil Description	Grain Size Analysis				Atterberg Limits		In-situ properties		Triaxial Test		
			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid (%)	Plastic (%)	Density * (g/cm^3)	Water Cont (%)	Type	c (kg/cm^2)	ϕ (°)
	0.0	Ground level											
46	1.5	Brown silty sand with gravel	6	57	37	0	-	NP					
	2.0	Brown silty sand with gravel							1.82	6.9	DS	-	32
	2.5	Change of strata											
>100 (112)		White Completely Weathered Rock (Sandstone based)											

*-Natural Bulk Density # -N Values (Observed)

Job No. : 10004A

Sheet No. : 1

NAGADI CONSULTANTS PRIVATE LIMITED
GEOTECHNICAL CONSULTANTS
Delhi : 011 (T) 26891980 (F) 26897403 delhi@nagadi.co.in
Bangalore : 080 (T) 23156076 (F) 23303007 bangalore@nagadi.co.in
Chennai : 044 (T) 24487870 (F) 24488957 chennai@nagadi.co.in
Secunderabad : 040 (T) 27754446 (F) 27751194 secunderabad@nagadi.co.in

Job No. : G(C)10004A

Sheet No. : 2

ROCK PROFILE

Project : Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

Location :

B.H. Size :

Water Table (m) : 2.1m

Term. Depth (m) : 10m

BH No.: 1

Depth (m)	Strata Description	No. of Core Pieces of				Core Recovery (%)						RQD (%)	Run Time (min)	Unit Weight (g/cm^3)	Porosity (%)	Water Absorption (%)	Unconfined Compressive Strength (kg/cm^2)	Point Load Strength (kg/cm^2)	Remarks
		<10	10-25	25-75	>75	20	40	60	80	100									
2.5	White Completely Weathered Rock (Sandstone based)																		(N Values) >100 (119/40cm)
3.5	White Completely Weathered Rock (Sandstone based)										Nil	Nil	20						
4.5	White Completely Weathered Rock (Sandstone based)										Nil	Nil	20						
5.5	White Completely Weathered Rock (Sandstone based)										SP	Nil	25						
6.5	White Completely Weathered Rock (Sandstone based)	2									5	Nil	25	2.56	0.52	0.29		40	
7.5	White Completely Weathered Rock (Sandstone based)	1									4	Nil	27	2.58	0.47	0.27		40	
8.5	White Completely Weathered Rock (Sandstone based)	1									5	Nil	32	2.59	0.41	0.22		40	
9.5	White Completely Weathered Rock (Sandstone based)	1									7	Nil	37	2.61	0.36	0.18		40	
10.0	White Completely Weathered Rock (Sandstone based)	1									12	Nil	30	2.60	0.37	0.22		40	

SOIL PROFILE

Project: Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

B.H. Location: | Water Table: 2.1m | Term. Depth : 10m | B.H. No. : 2

N - Value#	Depth (m)	Soil Description	Grain Size Analysis				Atterberg Limits		In-situ properties		Triaxial Test		
			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid (%)	Plastic (%)	Density * (g/cm^3)	Water Cont (%)	Type	c (kg/cm^2)	Φ (°)
	0.0	Ground level											
46	1.5	Brown clayey silty sand with gravel	23	55	15	7	-	NP					
	2.0	Brown clayey silty sand with gravel							1.98	9.2	CD$	0.03	29
	2.7	Change of strata											
>100 (119/40cm)		Brownish white Completely Weathered Rock (Sandstone based)											

*-Natural Bulk Density # -N Values (Observed)

$ - Remoulded Sample

NAGADI CONSULTANTS PRIVATE LIMITED

GEOTECHNICAL CONSULTANTS

Delhi : 011 (T) 26891980 (F) 26897403 delhi@nagadi.co.in
Bangalore : 080 (T) 23156076 (F) 23303007 bangalore@nagadi.co.in
Chennai : 044 (T) 24487870 (F) 24488957 chennai@nagadi.co.in
Secunderabad : 040 (T) 27754446 (F) 27751194 secunderabad@nagadi.co.in

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NAGADI CONSULTANTS PRIVATE LIMITED
GEOTECHNICAL CONSULTANTS
Delhi : 011 (T) 26891980 (F) 26897403 delhi@nagadi.co.in
Bangalore : 080 (T) 23156076 (F) 23303007 bangalore@nagadi.co.in
Chennai : 044 (T) 24487870 (F) 24488957 chennai@nagadi.co.in
Secunderabad : 040 (T) 27754446 (F) 27751194 secunderabad@nagadi.co.in

Job No: GC)10004A

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ROCK PROFILE

Project : Warehouse Building at TANSIDCO Pharma Industrial Park, Pellakuppam, Kollar & Venmaniyathur Village, Tindivanam Taluk, Villupuram District, Tamil Nadu.

Location :

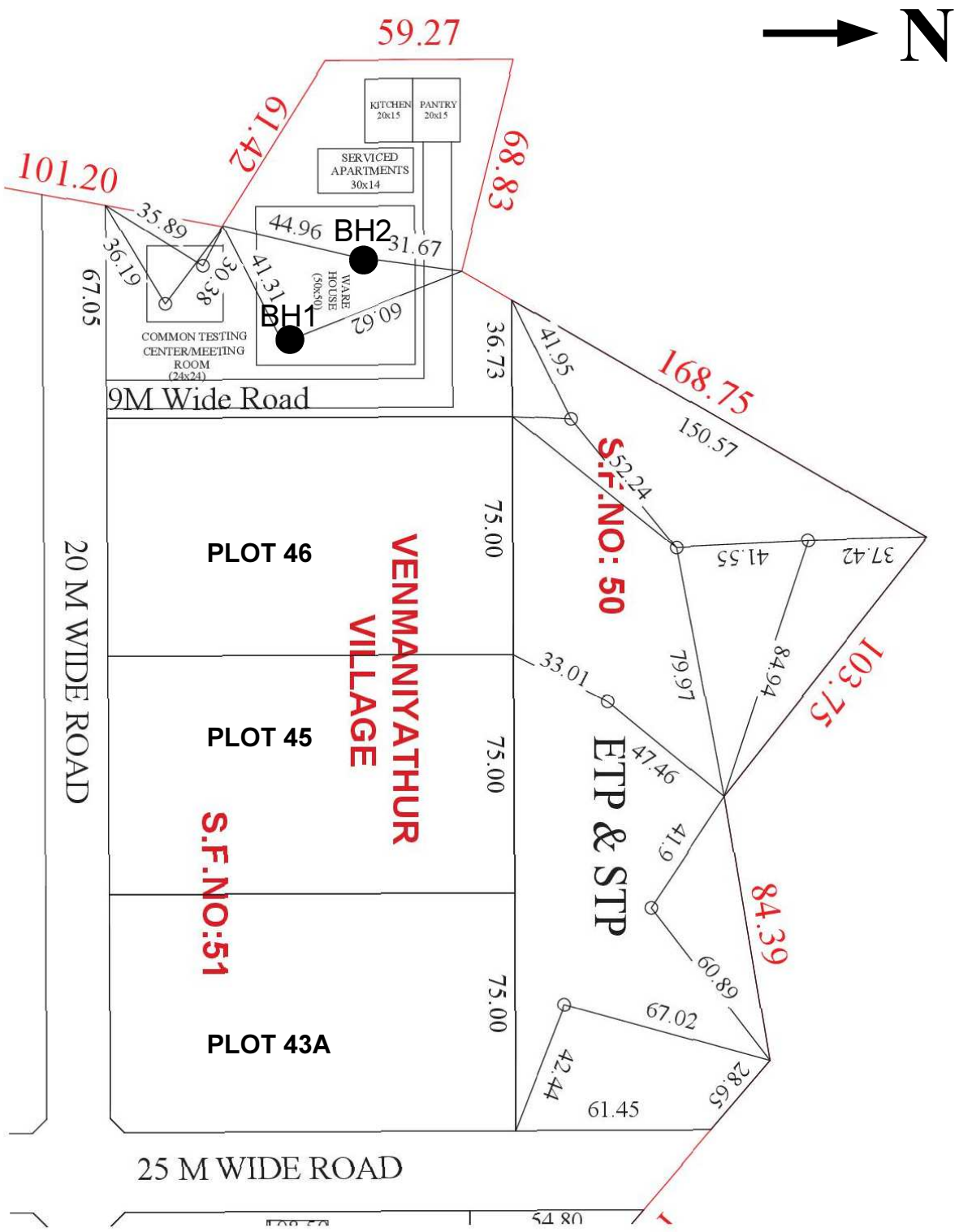
B.H. Size :

Water Table (m) : 2.1m

Term. Depth (m) : 10m

BH No.: 2

Depth (m)	Strata Description	No. of Core Pieces of				Core Recovery (%)						RQD (%)	Run Time (min)	Unit Weight (g/cm^3)	Porosity (%)	Water Absorption (%)	Unconfined Compressive Strength (kg/cm^2)	Point Load Strength (kg/cm^2)	Remarks
		<10	10-25	25-75	>75	20	40	60	80	100									
2.7	Brownish white Completely Weathered Rock (Sandstone based)																		(N Values) >100 (119/40cm)
3.5	Brownish white Completely Weathered Rock (Sandstone based)										Nil	Nil	20						
4.5	Brownish white Completely Weathered Rock (Sandstone based)										Nil	Nil	20						
5.5	Brownish white Completely Weathered Rock (Sandstone based)										SP	Nil	24						
6.5	Brownish white Completely Weathered Rock (Sandstone based)	1									4	Nil	30	2.58	0.47	0.23		81	
7.5	Brownish white Completely Weathered Rock (Sandstone based)	1									5	Nil	32	2.59	0.45	0.22		40	
8.5	Brownish white Completely Weathered Rock (Sandstone based)	1									6	Nil	35	2.61	0.41	0.18		40	
9.5	Brownish white Completely Weathered Rock (Sandstone based)	1									6	Nil	37	2.59	0.36	0.12		81	
10.0	Brownish white Completely Weathered Rock (Sandstone based)	1									14	Nil	30	2.59	0.37	0.21		40	



SCHEMATIC SITE PLAN

(Not to Scale)

Legend

● **BH -Borehole**

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GEOTECHNICAL CONSULTANTS

Delhi	: 011 (T) 26891980	(F) 26897403	delhi@nagadi.co.in
Bangalore	: 080 (T) 23156076	(F) 23303007	bangalore@nagadi.co.in
Chennai	: 044 (T) 24487870	(F) 24488957	chennai@nagadi.co.in
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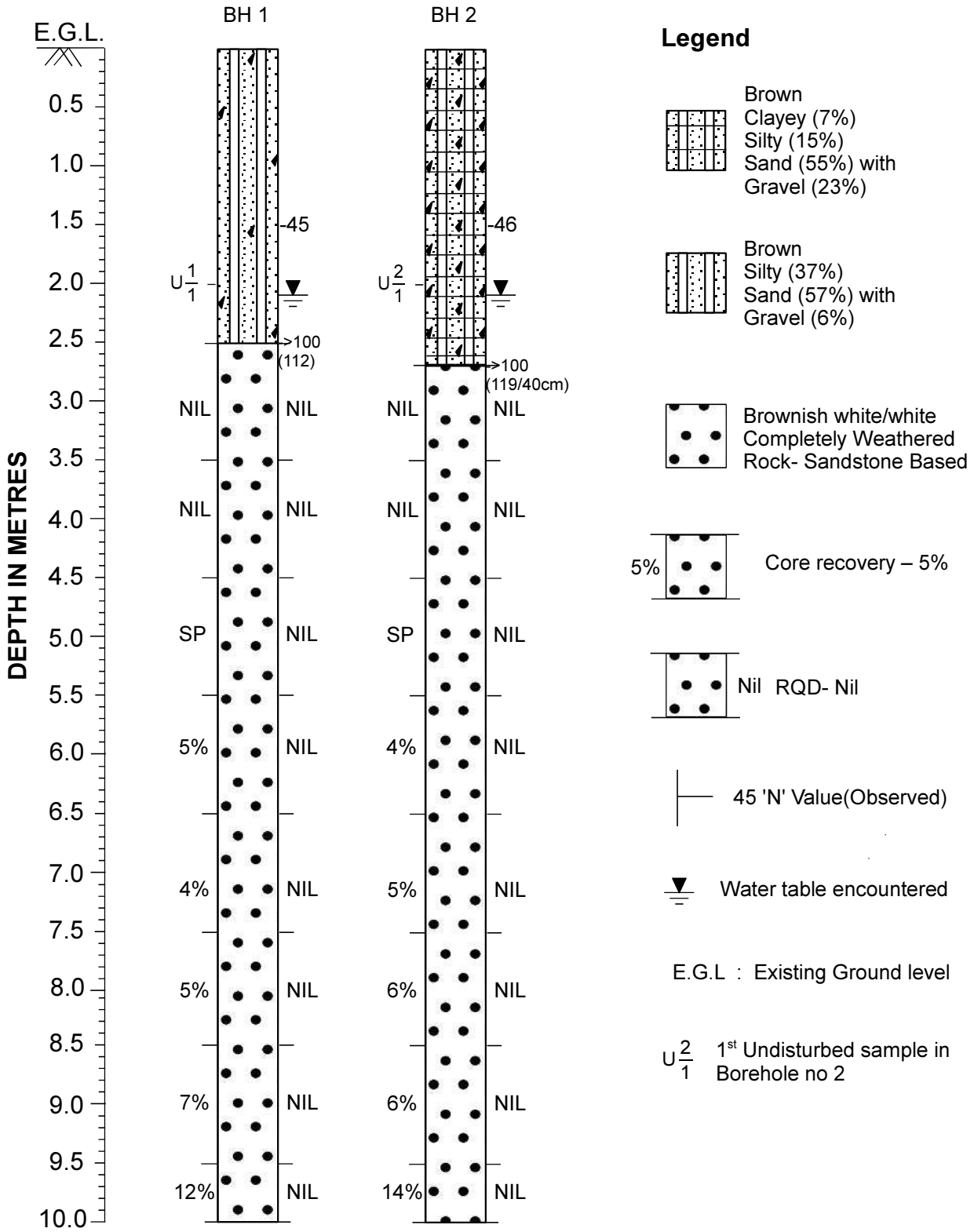

COMPILED SOIL/ROCK PROFILE

PROJECT : WAREHOUSE BUILDING AT TANSIDCO PHARMA INDUSTRIAL PARK, PELLAKUPPAM, KOLLAR & VENMANIYATHUR VILLAGE, TINDIVANAM TALUK, VILLUPURAM DISTRICT, TAMIL NADU

NAGADI CONSULTANTS PRIVATE LIMITED
GEOTECHNICAL CONSULTANTS

Delhi	: 011 (T) 26891980	(F) 26897403	delhi@nagadi.co.in
Bangalore	: 080 (T) 23156076	(F) 23303007	bangalore@nagadi.co.in
Chennai	: 044 (T) 24487870	(F) 24488957	chennai@nagadi.co.in
Secunderabad	: 040 (T) 27754446	(F) 27751194	secunderabad@nagadi.co.in

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NAGADI CONSULTANTS PRIVATE LIMITED
GEOTECHNICAL CONSULTANTS
Delhi : 011 (T) 26891980 (F) 26897403 delhi@nagadi.co.in
Bangalore : 080 (T) 23156076 (F) 23303007 bangalore@nagadi.co.in
Chennai : 044 (T) 24487870 (F) 24488957 chennai@nagadi.co.in
Secunderabad : 040 (T) 27754446 (F) 27751194 secunderabad@nagadi.co.in

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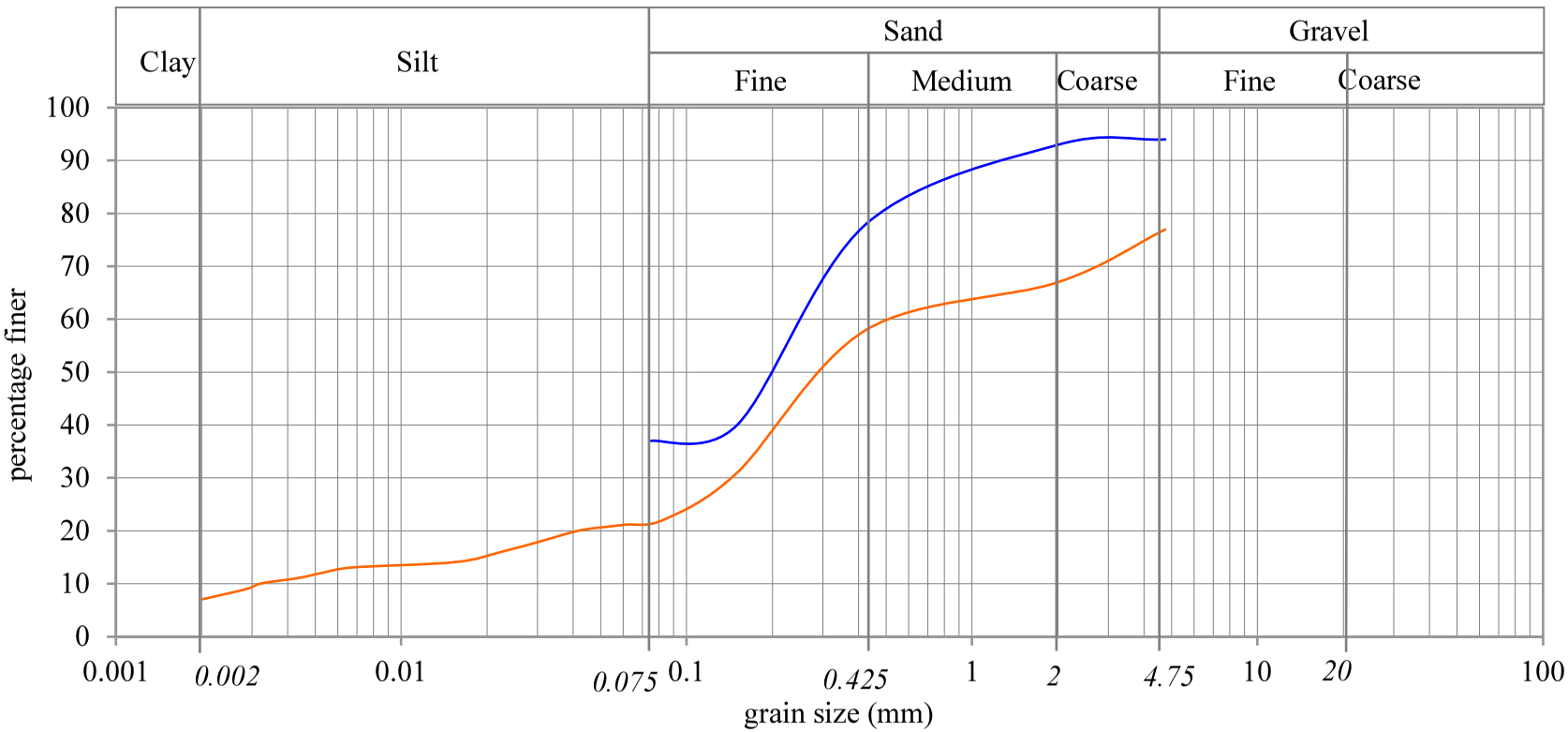

Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d_{60}	d_{10}	U
	1	1.5	Silty sand with gravel	6	57	37	0	0.250	-	-
	2	1.5	Clayey silty sand with gravel	23	55	15	7	0.500	0.003	166.7