KALYANI CHARITABLE TRUST'S
LATE G. N. SAPKAL COLLEGE OF ENGINEERING
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SITE VISIT REPORT ON PEB STRUCTURES

Date: 25/11/2023

Time: 10.00 am

Venue: Nakshatra Techno hub (India) Pvt. Ltd. F-89, MIDC, Ambad, Nashik, Maharashtra-422010

Name of Coordinator(s): Prof. Sachin U. Pagar.

Number of students: 26 students of ME Civil (Structures)

Photo 1.1

1.1 INTRODUCTION:

The Department of Civil Engineering of Late G. N. Sapkal College of Engineering, Nashik organized one day visit to Hot mixed Bitumen plant on 25/11/2023 for the Masters of Engineering student of Civil Engineering (ME) program.

The visit was organized with the prior permission and guidance of Respected Principal Prof. (Dr.) S. B. Bagal and HOD of Civil Department Prof. Ketan A. Salunke Along with the staff member, students of ME have taken hard efforts and initiative for the visit. Faculty Prof. Sachin U. Pagar of our college accompanied the 26 students of MEcivil program for educational visit.

1.2 OBJECTIVE OF VISIT:

The main aim of visit is to observe & understand the different aspects of PEB Structures as Civil Engineering point of view. **Er. Parth Bhavsar (Client Engineer)** has briefed the students about different units of PEB Structures. As per bending moment diagram, the sections will vary along the length. As there is smallest section, steel is saved as well as cost is reduced significantly.

Registered office-No. 6, Bora Shilp, Second Floor, Red cross signal, MG Road, Nashik – 422001

Site-228/1, Datir Mala, Shri Krishna Nagar, Ambad-Kamatwade link Road, Near Mauli Lawns, Nashik – 422010

1.3 INTRODUCTION ABOUT PROJECT

1. These Technical Specifications cover the technical requirements for the design, engineering, fabrication, manufacture, transport, Supply, Construction, and Erection / Installation of Complete Structural and Architectural Works.

2. The Technical Specification is intended for the general description of the works, quality and workmanship. These Technical Specification are however, not intended to cover the minute details of Works and Workmanship. The execution of Works and the Workmanship shall be according to the description given in the schedule of items, tender drawings, 'Released for Construction' drawings and relevant Indian standard Codes. In absence of relevant Indian standards Codes, the execution of Works and Workmanship shall be according to the best prevailing engineering practices and / or to the recommendations of relevant British and / or American standards and / or to the Instructions of Engineer-in-charge.

3. It covers design ,engineering, manufacturer, transport, supply, erection of various pre-engineered components like structural steel including all other fittings / fixtures like purlins,

flashing, bracing & Anchor Bolts, etc., for Canopies and Sheds. The broad scope shall cover but not be limited to the following Structural steel Works for PEB. Complete Engineering Design and preparation of drawings for construction of Pre-engineered buildings including furnishing of design, working drawings, calculations, data sheets, records and getting the same approved from the Owner / Consultant, testing and quality assurance, inspection and quality checks, setting and layout and levels, safety measures and inspection etc.

4. Manufacturing, Testing at Shop, Painting at shop, Supply, Transportation, Receipt, Unloading and Storage at Site, Handling, Erection and Commissioning at Site of Pre-engineered Steel Structure, furnishing of design, working drawings, calculations, data sheets, records and getting the same approved from the Owner / Consultant, testing and quality assurance, inspection and quality checks complete. The Scope of Pre-engineered Steel Structure includes various components of structural steel sections, internal including all fittings / fixtures like purlins, flashing, bracing & Anchor Bolts, Nuts, Washer, permanent bolts with templates etc. complete.

5. Providing all labor, supervision, materials, consumables, fuel, construction equipment, tools and plants, supplies, transportation, all sampling, testing and quality assurance, providing necessary facilities and equipment to Project Manager/engineer in charge for carrying out the inspection and quality checks, setting out layout and levels, safety measures, carrying out erection in a mechanized manner, storage, repair / rectification / maintenance until handing over, furnishing of design, working drawings, calculations, data sheets, records, etc. complying with statutory provisions and applicable laws etc.

6. Covering all incidental items not specifically mentioned but reasonably implied and necessary for successful completion of the work.

7. Preparation and submission of all construction drawings (Layout, Architectural, color scheme and Structural) required for the complete execution of the works, material selection and material take off. Sufficient detailing shall be done in all drawings so that no difficulty is faced by site engineers during execution. Architectural drawings including preparation Animated Computer model in 3D Max.

8. After award of work Contractor should submit, design Basis Report for approval of Owner/consultant. On the approval of the same the detailed design & drawing of the buildings to be submitted. All the copies are to be submitted in 3 sets of hard copies & a soft copy.

9. Contractor may depute their supervisor at site during placing of Anchor Bolts before casting of concrete.

10. Change in Frame type, bay spacing, position & style of roof and wall bracing system as shown in tender drawing is permitted to optimize the structure. However the fabrication of the structure is to be started only after approval of the "Good for Construction" drawings.

Picture 1.2

1.4 QUALITY ASSURANCE PLAN (QAP)

1. The Contractor shall adopt suitable quality assurance plan to ensure that materials and services under the scope of contract, whether manufactured or performed within the contractor's works or at the owner's site or at any other place of work are in accordance with the specifications. Such Plan shall be outlined by the contractor and shall be finally accepted by the owner/ consultant. QAP shall be submitted to owner/consultant for review and comment. Hard copies of final quality plans shall be submitted for stamping and approval.

2. Manufacturing Quality Plan (MQP) will detail out for all the components, various test/ inspection, to be carried out as per requirement of this specification and standard mentioned therein and quality practices and procedures followed by contractor's Quality Control Organization, the relevant reference documents and standards, acceptance norms etc. during all stages of manufacturing including raw material procurement, in-process manufacturing,

assembly, and final testing.

3. Field Quality Plans (FQP) will detail out for all the equipment, the quality practices and procedures etc. To be followed by the contractor's "Site Quality Control Origination ", during various stage of site activities.

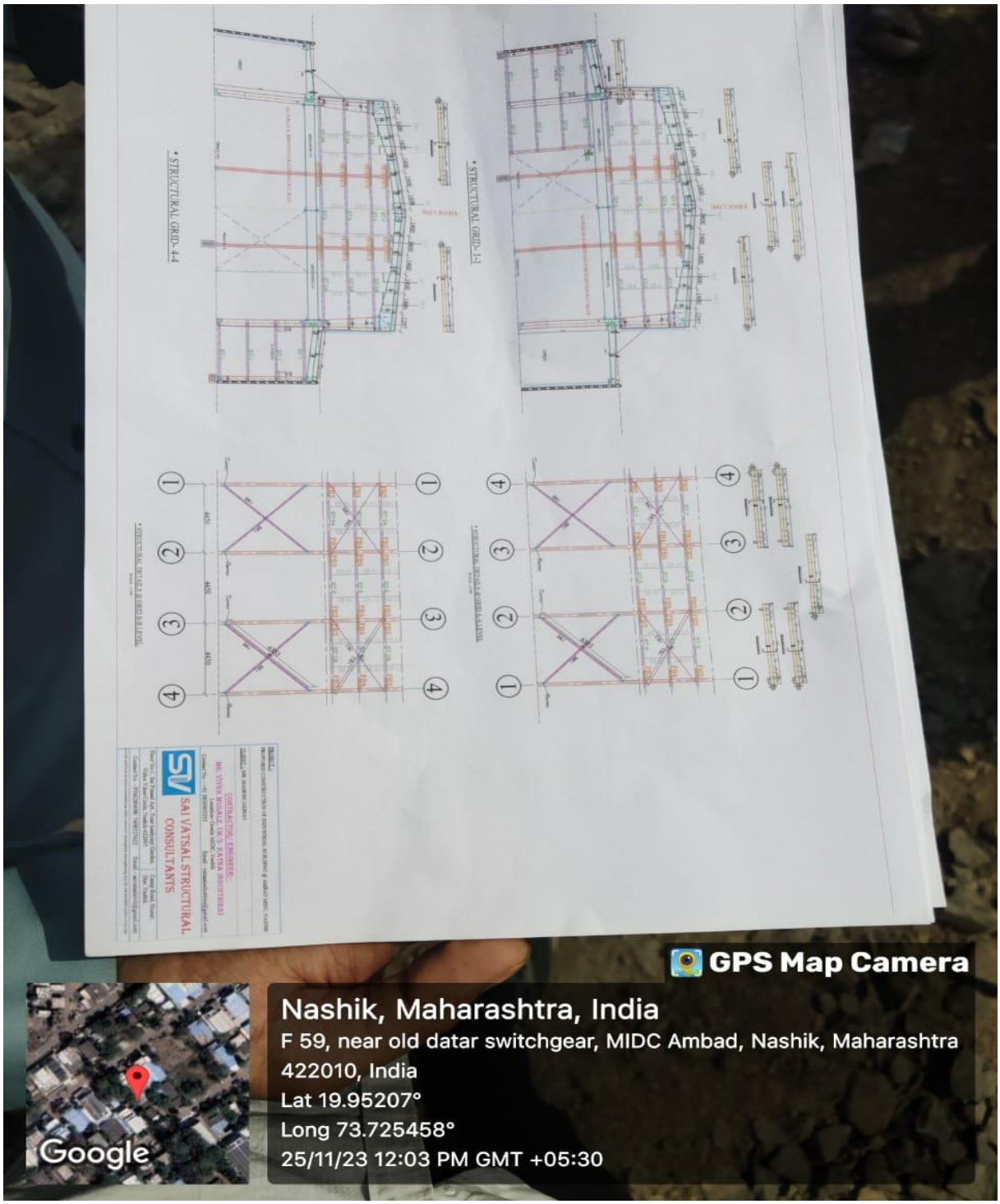

Photo 1.3

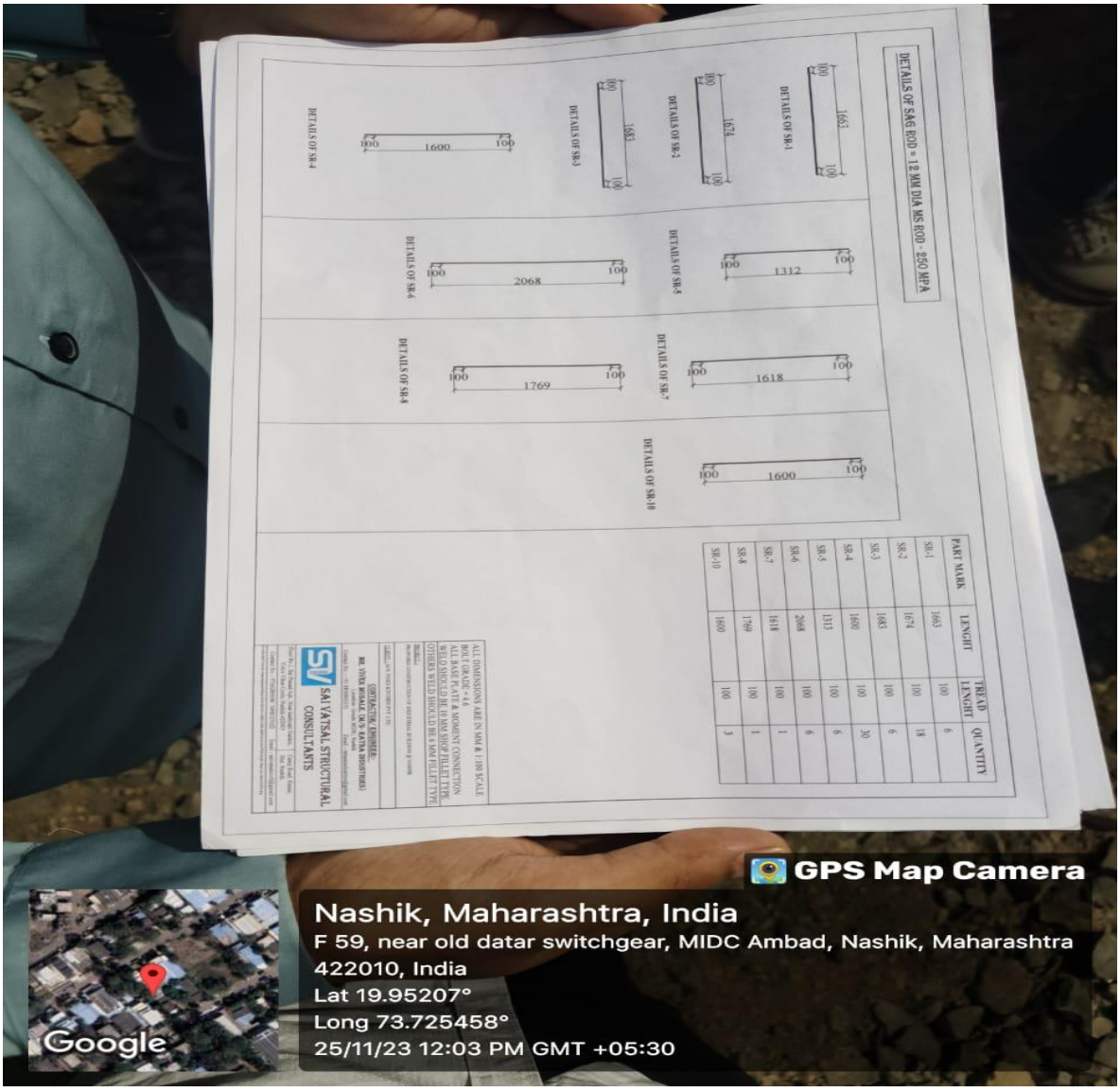

Photo 1.4

1.5 Review of design and approved good for construction drawings-

1. Complete structural design and construction drawings shall get reviewed by Owner / Consultant in detail before taking up any fabrication / manufacturing activity.

2. For all structures, requisite number of prints of design calculation and working drawing shall be sent to Owner / Consultant for approval and site for construction.

Photo 1.5

Photo 1.6

Photo 1.7

Photo 1.8

1.6 Surface preparation of structural steel

Surface Preparation: The surfaces to be painted shall be shot blasted as per SAE 2.5. The following specification shall be used for painting of structural steel work.

1.7 Painting on structural steel

Painting for structural members shall be one or more coat of Red Oxide primer and 2 or more coats of Synthetic Enamel Paint of approved brand having thickness of 90–100-micron DFT at site.

The following points must be observed for painting work:

a) Primer and paint shall be compatible to each other and should be from the same manufacturer.

b) The recommendation of the paint manufacturer regarding mixing, matching and application must be followed meticulously.

c) Technical representative of paint manufacturer should be available at site as and when required by Owner / Consultant for their expert advice as well as to ensure that the painting work is executed as per the instruction of paint manufactures. Paints and primers shall be supplied at site in original container with factory seal otherwise such paints and primers shall not be allowed to be used. Mode of application i.e. by spray, brush or roller shall be strictly as per recommendation of paint manufacturer. Painting materials must be used before the expiry date indicated on the containers. Number of coats and DFT per coat must be strictly followed as indicated above. If the desired DFT is not achieved for primer and finish paints in two coats (each), contractor shall be required to apply extra coat (s) to achieve the desired DFT without any extra cost to Owner / Consultant. Color shade for each coat of primer and finish paint must be different to identify the coats without any ambiguity. Shade for the final finish coat shall be decided by Owner / Consultant at site. All painting materials must be accompanied by manufacturers test certificates. However, Owner / Consultant has any doubt regarding quality of materials, he shall have the right to direct contractor to get the doubtful material tested or and provided (by contractor) testing agencies for which no extra payment shall be made to the contractor and the charges shall deemed to be covered in the unit rates quoted for fabrication and erection of structural work.

1.8 Erection and setting of steel structure-

1. The erection of steel work shall be in accordance with Bureau of Indian Standard Specifications Nos. IS-800 and IS - 816.

2. The contractor shall be responsible for the suitability, safety and capabilities of all plant and equipment used for erection.

3. Prior to starting erection of fabricated structure, defects if any shall be rectified. The contractor

shall give to the Owner / Consultant not less than 24 hours' notice of his intention to set out or give levels for any part of works, in order that arrangements may be made for checking. The contractor shall provide all necessary arrangements and assistance, which the Owner / Consultant may require for checking the setting out.

4. The contractor shall erect the structural steel members in position, to dimension, and levels, as in relevant drawings and shall take care to see that component parts are not interchanged. Girders, stanchions etc., must rest fairly on their beds and will not be taken as erected until completely plumbed, aligned leveled, bolted or welded and strengthened, in every respect. The camber, if any, is to be maintained as shown in relevant drawings.

5. Particular care should be taken to ensure free expansion and contraction wherever provided in the relevant design / drawings or so directed on site.

6. While erecting, the holes in different component parts of structure should be made concentric with the use of drifts before any service bolts are fitted. No drifting shall be allowed except for bringing together several parts forming a member but the drifts must not be driven with such force as to disturb or damage the metal above the holes. Hammering of bolts to make holes concentric shall in no case be allowed. No nuts should be allowed to become loose and no unfilled bolt-holes are to be left in any part of the structure unless otherwise specified in the relevant drawings. Welding should be adopted wherever specified in the drawings. Wooden rams or mallets shall be used in forcing members to position, in order to protect metal from injury or shocks, chipped edges shall be finished off smooth and all concave surface rounded off.

7. All erection tools and plants viz. derricks, cranes etc. will have to be provided by the contractor as required in the erection work. All erection devices must be removed after the work is over, in such a way that no damage is done to the erected structures. Any damages, in this respect must be rectified by the contractor at his own cost.

8. The maximum tolerance for line and level of the steel work shall be + 3.0 mm on any part of the structure. The structure shall not be out of plumb more than 3.5 mm on each 10 M. Section of height and not more than 7.0 mm per 30 meter section. These tolerances shall apply to all parts of the structure unless mentioned in the drawings issued for erection purposes

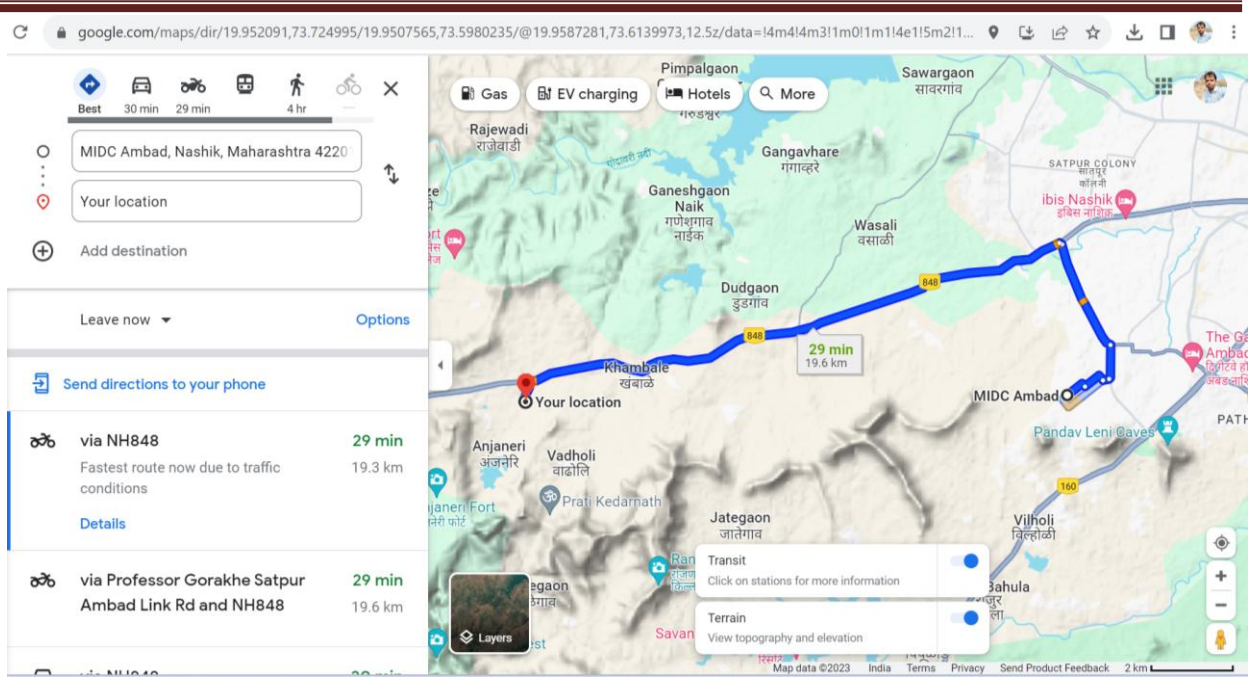

Photo 1.9

Photo 1.10

1.9 REFERENCES

SR. NO.	CODES & STANDARDS	CODE NO. & YEARS
1	IS Code Practice for Hot rolled sections and plates	IS:2062
2	IS Code Practice for General Construction in Steel	IS:800-2007
3	IS Code of Practice for Cold form design	IS:801-1975
4	IS Code of Practice for Dead Loads Part-1	IS:875-1987
5	IS Code of Practice for Live Loads Part-2	IS:875-1987
6	IS Code of Practice for Wind Lateral Loads Part-3	IS:875-2015
5	Practice for Earth Quake Loads Part-1	IS:1893-2016
6	Handbook for Wind load calculation	SP:64-2001
7	Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle Sections	IS:808-1989
8	Cold Formed Light Gauge Structural Steel Sections	IS:811-1987

➢ CONCLUSION

The site visit to Nakshtra Techno hub gives us the clear idea about the process of PEB structures. We learn about the types of PEB structures, codal provisions for steel structures.